

Motorola Canopy[®] Prizm Release 3

User Guide

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*MOTO***wi**⁴



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1 NEW IN THIS ISSUE

This section identifies features, descriptions, and revisions that are new since Issue 1. Issue 1 of this user guide supports only Prizm Release 3.0. Issue 2 supports both Release 3.1 and, except where noted, 3.0 as well.

1.1 RELEASE 3.0 FEATURES DESCRIBED IN THIS USER GUIDE

Release 3.0 perpetuates most of the features that were present in Release 2.1 and introduces the following features:

- enhancements for creating, managing, and controlling network views. See
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
- a user task scheduler. This feature allows you to define the following tasks:
 - Updating element firmware or software. See [Updating Element Firmware or Software](#) on Page 327 and its subsections.
 - Configuring network elements. See [Scheduling Network Element Configuration](#) on Page 277.
 - Sending local information to technical support staff. See [Using the Technical Support Information Tool](#) on Page 421 and its subsections.
 - Activating or suspending element accounts. See [Activating or Suspending a Batch of Customer Accounts on Schedule](#) on Page 299.
 - Rebooting elements. See [Rebooting Network Elements](#) on Page 285.
 - Activating or suspending element management. See [Activating or Suspending Element Management](#) on Page 315.
 - Refreshing elements. See [Refreshing Elements on Schedule](#) on Page 177.
 - Clearing element logs. See [Clearing Element Logs](#) on Page 345.

These sections above describe the task-specific actions for the various tasks that you will define. However, a task definition also requires specifying

- how often and when Prizm should perform the task. See [Scheduling Prizm Tasks](#) on Page 381.
 - the set of elements on which Prizm should perform the task. The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described in the sections listed for the "enhancements for creating, managing, and controlling network views" bullet item above.
- the capability to monitor and interrupt a firmware or software auto update task in progress. See [Auto Update Task](#) on Page 341.

- a tool for sending local information to technical support staff. See [Using the Technical Support Information Tool](#) on Page 421 and its subsections.
- enhanced security features in the user manager. See [Procedure 5: Adding an administrator](#) on Page 66 and [Procedure 7: Adding a user account](#) on Page 73.
- automatic aging of alerts for specified intervals before clearing. See [Procedure 30: Defining an alert](#) on Page 151.
- the capability to for an administrator to send a message to a user through Prizm and receive a reply. See
 - [Sessions Side Tab](#) on Page 88
 - [Messages Side Tab](#) on Page 89.
- the capability to specify a pop-up note that specific users will see when they log into Prizm. See [Banners Side Tab](#) on Page 86.
- the capability to shut off or turn on the rediscovery of network elements that are discovered, ignored, or provision-rejected from other networks in Prizm. See [Procedure 13: Configuring the subnet for Prizm to apply](#) on Page 101.
- changes in predefined element configurations. See [Using Canopy Element Configuration Templates](#) on Page 261.
- the capability to change element management passwords. See [Updating Element Passwords](#) on Page 259.
- the capability to move elements to a position in the hierarchy of another destination network in Prizm. See [Figure 64: Example Move \(n\) Elements To window](#) on Page 147.
- enhanced element detail views. See [Viewing Full Details on a Selected Element](#) on Page 180.
- right-click access to Edit menu selections.
- the capability to control access to new element tags that you create. See [Tagging an Element](#) on Page 193.
- the capability to have Prizm automatically apply certain tags, according to element type, for a single network or all networks. See [Specifying Tags for Element Type\(s\)](#) on Page 98.
- the capability to configure a general security policy that covers access attempts by users, user password rules, and user session rules. See [Configuring a Security Policy](#) on Page 69.
- the capability to configure your own email service. See [Configure Email Service Preferences](#) on Page 352.
- the capability to add menu items for your own use to the Help menu that Prizm will present to you. See [Configure Custom Menu Preferences](#) on Page 352.
- the addition of a field in the subnet definition that allows you to specify the IP address of the NAT server so that, where Prizm exists behind a NAT device, APs can exchange messages with the Prizm server about the SM auto update process. See [Figure 32: Example Subnet Configuration pane](#) on Page 104.
- the capability to upload web files and then open them from an Available Files page accessed from the Prizm client startup web page. See [Logging In](#) on Page 59.

- consolidation of information about used and available licenses from four tabs (Authentication Licenses, Server Licenses, Management Licenses, and Bandwidth Licenses) to only two: Prizm and Bandwidth. See [Figure 54: Example Licensing Information window, both tabs](#) on Page 133.
- new attributes to support the Prizm Release 3.0 features. These appear in [Figure 73: Select Columns Attribute scroll selections](#) on Page 171.
- new configurable attributes to support new element parameters. These appear in [Table 23: Selectable attribute tree](#) on Page 267.
- new statistics to reflect new element fields. These appear in [Figure 74: Select Columns Statistics scroll selections](#) on Page 175.
- compatibility with newer versions of element software. See [Software Compatibility](#) on Page 47.

The use of some of these features is restricted based on permission level in the User Manager. See [Table 9: Allowed activities per permission level](#) on Page 72.

1.2 RELEASE 3.1 FEATURES DESCRIBED IN THIS USER GUIDE

Release 3.1 perpetuates most of the features that were present in Release 3.0 and introduces the following features:

- a reconfigured status bar in the console. See
 - [Resources Consumed for Polls and Refreshes](#) on Page 45.
 - [Syncing Time](#) on Page 90.
- new authentication options to provide flexibility in handling devices that would have been locked out for 15-minute intervals in Prizm Release 3.0. See
 - [BAM Server-licensed Operations](#) on Page 42
 - [Table 11: Mode Column of Discovered Elements List, possible values](#) on Page 113
 - [Quarantining Elements Discovered in Authentication Attempts](#) on Page 118.
- support for two new device types in Prizm. See
 - [Supported Network Elements](#) on Page 50
 - [Procedure 15: Specifying default network settings](#) on Page 115
- a graphic button that replaces the [display] **Columns** button. The new button now appears in the following elements of this guide:
 - [Procedure 25](#) on Page 145
 - [Selecting the Data to View](#) on Page 169
 - [Saving the Criteria of a Generated View](#) on Page 206
 - [Procedure 93](#) on Page 365
 - [Procedure 94](#) on Page 375
 - [Procedure 96](#) on Page 379
 - [Column Selections Discarded If Search Dialog is Not Cleared](#) on Page 410

- new configurable attributes that support parameters that have been added to element interfaces. See
 - [Selecting the Data to View](#) on Page 169
 - [Table 23: Selectable attribute tree](#) on Page 267
- a graphic button that replaces the **Show Details** button. The new button now appears in the following elements of this guide:
 - [Viewing Full Details on a Selected Element](#) on Page 180
 - [Saving the Criteria of a Generated View](#) on Page 206
 - [Responding to an Event](#) on Page 216
 - [Associating the IP/MAC Address with Customer Information](#) on Page 225
 - [Procedure 55](#) on Page 239
 - [Procedure 58](#) on Page 246
 - [Procedure 86](#) on Page 333
 - [Procedure 94](#) on Page 375
- a graphic button that replaces the **Browse** button. The new button now appears in the following elements of this guide:
 - [Generating a Tree View](#) on Page 195
 - [Saving the Criteria of a Generated View](#) on Page 206
 - [Responding to an Event](#) on Page 216
 - [Interacting With Your Dashboard](#) on Page 358
 - [Procedure 93](#) on Page 365
 - [Procedure 94](#) on Page 375
- access to the web server of the primary licensing server by a Prizm account type Administrator on the client application. See [Figure 54](#) on Page 133.
- a search function in the status bar of the console to find an element, a customer, a message about an event or alert, or an end user device. See [Searching the Prizm Database](#) on Page 244.
- device user and SNMP accounts to enhance network element security. See [Device Security in Release 3.1 and Later](#) on Page 245.
- an ever-present Dashboard tab to simultaneously present various user-configured modular displays in checkerboard fashion across the console. See [Dashboard](#) on Page 353. Permissions for users to configure their own dashboards are reflected in updates to
 - [Figure 15](#) on Page 76
 - [Figure 16](#) on Page 78
- four reports available on demand to account type Administrators. See [Ordering Predefined Configurable Reports](#) on Page 366.

The use of some of these features is restricted based on permission level in the User Manager. See [Table 9: Allowed activities per permission level](#) on Page 72.

1.3 NEW DESCRIPTIONS AND REVISIONS IN THIS USER GUIDE

The following other elements of this guide have been added, clarified, or corrected:

- [Table 5: Floating licenses that Prizm requests from License Manager](#) on Page 42
- [Operating Systems](#) on Page 48
- [Dependencies](#) on Page 48
- [Changing Your User Password](#) on Page 79
- [Messages Side Tab](#) on Page 89
- [Correlating Customers with Elements](#) on Page 242
- [Procedure 61: Defining an element configuration](#) on Page 264
- [Configuring Network Elements](#) on Page 273
- [Scheduling Network Element Configuration](#) on Page 277
- [Procedure 73: Activating or suspending customers from a network view](#) on Page 297
- [Updating Element Firmware or Software](#) on Page 327
- [Scheduling Prizm Tasks](#) on Page 381

1.4 PROBLEMS NEWLY DOCUMENTED

The following sections include descriptions of problems that were discovered after Issue 1 of this user guide was published:

- [Authentication Occurred Not Updated to False](#) on Page 400
- [Increments for Task Scheduling and Implementing Vary](#) on Page 400
- [RF Airlink Security Attribute Not Supported](#) on Page 402
- [Configuration Functions Not Working in Accepting State](#) on Page 403
- [Help Button Not Functioning](#) on Page 410
- [Element View Links from Customer Manager Not Working Properly](#) on Page 411
- [Problems in Checking Out and Holding Licenses](#) on Page 415
- [Uncertain Behavior Toward Quarantined Elements During Switch to RADIUS](#) on Page 403
- [Web Proxy Failing if Prizm Launched in HTTP](#) on Page 403
- [Web Proxy Cannot Download Certain Configuration Files](#) on Page 403
- [License Status Commands Not Triggering Status Display](#) on Page 404
- [Deleted Service Plan or VLAN Profile Can Be Applied](#) on Page 412
- [Initial Failure of Network Inventory Report](#) on Page 412
- [Authentication Account State Not Updated for Slave Removed from RADIUS](#) on Page 413
- [Active Dashboard Menu Item Nonfunctional](#) on Page 413

1.5 MOVEMENT OF DOCUMENTATION

The section [Provisioning an Administrator for Prizm Privileges](#) is moved to the front of [Provisioning Prizm Accounts](#) on Page 65.

2 USING THIS USER GUIDE

This document should be used with Motorola Canopy® Prizm Release 3. The audience for this document includes the Prizm client application default administrator, assigned administrators, and users.

2.1 FINDING THE INFORMATION YOU NEED

2.1.1 Becoming Familiar with This User Guide

This is a guide to the guide. A high-level overview of the guide and some examples of where to look provide insight into how information is arranged and labeled.

The Table of Contents provides not only a sequential index of topics but also a visual glance at the organization of topics in this guide. A few minutes spent with the Table of Contents in either the paper or the electronic version of this guide can save much more time in finding information now and in the future.

Quick Reference

This user guide documents the topics described in [Table 1](#).

Table 1: User guide organization scheme

Section	Purpose
Section 1: New in This Issue	This section points to elements of this guide that support Release 3.0 features, includes a placeholder where later issues will call attention to new or changed portions of the guide, and announces problems that were discovered since the last user guide was published.
Section 2: Using This User Guide	This section familiarizes you with the organization of this document and conventions used in it. This section also tells you where to direct your questions and comments.
Section 3: Introduction to Prizm	This section presents a high level view of Prizm functions and provides current information on how successful Prizm operation may depend on appropriate software versions, hardware capacity, and the type of elements that are present in your network.
Section 4: Starting Work in the Prizm Client Application	This section describes how to successfully launch the Prizm client application, provision administrators and users, understand and use the GUI, and ensure that time set differences among devices does not adversely affect your operations.
Section 5: Setting Up Views	This section explains how to create and adjust the views that you want of your network.
Section 6: Viewing Network Information	This section explains how to manage the network views and create subsets that are based on your own criteria.
Section 7: Handling Data	This section explains how to request and send data from Prizm.

Section	Purpose
Section 8: Manipulating Networks and Elements	This section explains how to use Prizm to perform operations on network elements and how to use the templates and tools that Prizm includes.
Section 9: Setting User Preferences	This section describes how Prizm allows you to adjust the GUI experience to your preference.
Section 10: Concluding a Prizm Session	This section describes how Prizm responds to the shutdown of a session.
Section 11: Cases of Using Prizm to Manage Networks	This section provides examples of various uses of Prizm for network oversight and manipulation.
Section 12: Server and Client Functions and Permissions	This section provides a matrix of Prizm functions against the device that supports them and the minimum permission level required to perform them.
Section 13: Problems in Prizm Operation	This section advises you of all known problems that currently exist in Prizm and of those that Release 3.0 resolves, describes how you can collect information to assist in troubleshooting, and documents the process of preparing for and obtaining technical support.
Appendix A: Reference Information	This appendix contains additional information such as the software licensing agreement to use Prizm.
Appendix B: History of Documentation	This appendix logs the changes that have been made by issue to this user guide.
Appendix C: Device Configuration Source Attribute	This appendix describes the conditional effects of values for this attribute.
Appendix D: Transitional Reference for BAM Users	This temporary appendix uses permuted index style to point to information that former BAM users need to find in this user guide.

Examples

A list of common tasks and references to information that supports each task is provided in [Table 2](#).

Table 2: Examples of where to find information

If you want to know...	then see...
how to accept or reject from a network view an element that Prizm has newly discovered	Section 5: Setting Up Views
what browsers Prizm supports	Section 3.3.3: Web Browsers
how to force the configuration settings of an element to match a predetermined set	Section 8: Manipulating Networks and Elements
the identification of a customer device behind a Canopy SM	Section 7: Handling Data
what databases have been successfully tested with Prizm	<i>Motorola Canopy® Prizm Setup Guide for Windows Platforms or Motorola Canopy® Prizm Setup Guide for Linux Platforms</i>

If you want to know...	then see...
how to define new element types	<i>Prizm™ Software Development Kit (SDK)</i>
general examples of how you can use Prizm in your network	Section 11: Cases of Using Prizm to Manage Networks
how to create a template for monitoring a generic (non-Canopy) device	Section 8: Manipulating Networks and Elements
how to view the history of SM loads on an AP	Section 7: Handling Data
how to build an interface between Prizm and a higher-level system	the separate document <i>Prizm™ Software Development Kit (SDK)</i>
how to attach a note in Prizm to an event record	Section 6: Viewing Network Information
how to set up automatic email notification for alerts	Section 5: Setting Up Views
how to view a list of the worst performance network elements	Section 7: Handling Data
how to manage user permissions per management area	Section 4.5: Provisioning Prizm Accounts
how to restore an alert	Section 5: Setting Up Views
how to interpret the color of the status indicator for a link	Section 6: Viewing Network Information
how to trigger operations to automatically start	Section 8: Manipulating Networks and Elements
how to view Canopy element web pages	Section 8: Manipulating Networks and Elements

Availability of Prizm Functions

Whether a function is available to a user and on a device (client or server) is enforced based on simple concepts. However, with a large number and variety of functions in Prizm, availability can be confusing or difficult to remember. After you have read Sections 3 through 8 of this user guide, use the following other reference sources on the availability of functions relative to permissions:

- [Table 9: Allowed activities per permission level](#) on Page 72
- [Server and Client Functions and Permissions](#) on Page 391

2.1.2 Searching This User Guide

To search this document and the software release notes of supported releases, look

- in the Table of Contents for the topic.
- in the Adobe Reader® search capability for keywords that apply.¹

¹ Reader is a registered trademark of Adobe Systems, Incorporated.

2.2 INTERPRETING TYPEFACE AND OTHER CONVENTIONS

This document employs distinctive fonts to indicate the type of information, as described in [Table 3](#).

Table 3: Font types

Font	Type of Information
variable width bold	Selectable option in a graphical user interface or settable parameter in the web-based interface to a Canopy component.
constant width regular	Literal system response in a command-line interface.
<i>constant width italic</i>	Variable system response in a command-line interface.
constant width bold	Literal user input in a command-line interface.
<i>constant width bold italic</i>	Variable user input in a command-line interface.

This document employs specific imperative terminology as follows:

- *Type* means press the following characters.
- *Enter* means type the following characters and then press Enter.
- *Highlight* means click anywhere in a row of data to highlight the entire row.
- Depending on the context, *select* means either
 - use the mouse to click on or branch to the menu item that follows.
 - check the far left-column box associated with each desired element in the network view to choose the group of elements for the upcoming operation.

This document also employs a set of consistently used admonitions. Each type of admonition has a general purpose that underlies the specific information in the box. These purposes are indicated in [Table 4](#).

Table 4: Admonition types

Admonition Label	General Message
	NOTE: informative content that may ◦ defy common or cursory logic. ◦ describe a peculiarity of the Canopy implementation. ◦ add a conditional caveat. ◦ provide a reference. ◦ explain the reason for a preceding statement or provide background for what immediately follows.
	RECOMMENDATION: suggestion for an easier, quicker, or safer action or practice.
	IMPORTANT! informative content that may ◦ identify an indication that you should watch for. ◦ advise that your action can disturb something that you may not want disturbed. ◦ reiterate something that you presumably know but should always keep in mind.
	CAUTION! a notice that the risk of harm to equipment or service exists.
	WARNING! a notice that the risk of harm to person exists.

2.3 GETTING ADDITIONAL HELP

Help is available for problems with supported products and features. [Obtaining Technical Support](#) on Page 420 provides the sequence of actions that you should take if these problems arise.

2.4 SENDING FEEDBACK

We welcome your feedback on Canopy system documentation. This includes feedback on the structure, content, accuracy, or completeness of our documents, and any other comments you have. Send your comments to technical-documentation@canopywireless.com.

3 INTRODUCTION TO Prizm

3.1 OVERVIEW OF Prizm

Motorola Canopy® Prizm provides an array of capabilities, including auto discovery, monitoring, fault management, element software updates, and element management, all from a single server. A set of typical use cases for Prizm is provided under [Cases of Using Prizm to Manage Networks](#) on Page 363.

Further, Prizm provides various tiered permission levels to grant and block access to Prizm so that an appropriate balance between efficiency and security can be maintained in network operations. This access is summarized in

- [Server and Client Functions and Permissions](#) on Page 391
- [Table 9: Allowed activities per permission level](#) on Page 72

Subject to licensing, operations in Prizm can be either BAM-only (limited to bandwidth, authentication, and VLAN management) or all (including BAM-licensed). The Prizm interface and documentation refer to elements that are set up for only BAM as *provisioned* elements. The BAM functionalities are described in this user guide under

- [Managing Authentication](#) on Page 290.
- [Managing Bandwidth](#) on Page 301.
- [Managing VLANs](#) on Page 317.

3.1.1 Network Definition and Element Discovery

Prizm allows the user to partition the entire Canopy network into criteria-based subsets that can be independently managed. To assist in this task of defining networks, Prizm auto discovers Canopy network elements that are in

- user-defined IP address ranges
- SM-to-AP relationships with APs in the user-defined range
- Backhaul slave-to-master relationships with masters in the user-defined range.

Prizm also automatically assigns

- IP addresses to
 - SMs that are discovered as being associated with Prizm-managed APs but that do not yet have assigned management IP addresses.
 - Backhaul slaves that are discovered as being associated with Prizm-managed masters but that do not yet have assigned management IP addresses.
- default SNMP community strings
- SNMP accessing subnet parameters.
- the address(es) to which elements should send their SNMP traps.



CAUTION!

If you accept into a network a PTP slave element that provides connectivity to the entire network, and Prizm must change the IP address of that element, then a reboot of that element is required. The reboot will cause an outage of service in the network.

The list of element types that Prizm discovers and allows you to manage is provided in [Supported Network Elements](#) on Page 50.

3.1.2 Monitoring and Fault Management

Prizm receives the traps that Canopy elements send and generates an alert event for each of these. Prizm also allows the user to establish sets of criteria that would generate other alerts and trigger email notification.

For any individual element that the user selects, Prizm offers text and graphed displays of element configuration parameters and performance statistics from an interval that the user specifies.



NOTE:

Prizm supports the Canopy OFDM Series Backhaul products to the extent that these modules support SNMP traps and communication. Currently, the MIB for these modules defines a limited set of objects. See the section titled "Configuring Trap Handling" in the *Motorola Canopy® Prizm Release 3 Setup Guide for Windows Platforms* or the *Motorola Canopy® Prizm Release 3 Setup Guide for Linux Platforms*.

Optionally, the user can specify a trap template. In this case, Prizm receives traps for non-Canopy elements in the network.

3.1.3 Element Management

Prizm allows the user to perform any of the following operations on any specified element or group of elements, presuming that they each have a valid non-null root account and password provisioned:

- Manage
 - large amounts of SNMP MIB data.
 - module passwords.
 - IP addresses.
 - other communications setup parameters.
 - site information—Site Name, Site Location, and Site Contact parameters.
- Reset the element.
- Upgrade or downgrade the software and firmware.

Attributes Writeable by Both Prizm and the User

For three location attributes in Prizm, the system allows the user to enter the information *until or unless the element sends its own*: **GPS Latitude**, **GPS Longitude**, and **GPS Altitude**.² If the element (CMMmicro, for example) makes this information available to Prizm, then the system uses it to overwrite the user entry. In either case, Prizm also makes this information available to a network management system through the Northbound Interface.

Attribute Differences from One Release to Another

In both element management and the broader network management that Prizm allows you to perform, it *will not* prevent you from setting an attribute value or changing to a software or firmware release that puts the element into a never desirable configuration or renders it unmanageable, even unreachable, by Prizm. This is the cost of the flexibility that Prizm affords to the operator and is similar to the cost of flexibility that exists within the elements. For example, they can be deliberately or inadvertently configured such that Prizm cannot communicate with them. They can also be configured to drop a wireless link that then requires a truck roll and physical access to restore.

To use this flexibility to advantage, the operator must continue to be thoroughly informed of element features and incompatibilities that evolve from release to release. Hence, the Canopy system and/or element-specific user guides are as essential to success in management by Prizm as is this Prizm user guide. Be sure to retain all issues of those user guides that support the software releases that are running in your elements, and use resources like tagging and the limitless number of custom configuration templates supported to avoid sending debilitating, or even just undesirable, values to some of your elements.

The following is a case in point. Canopy System Release 8.2 supports as many ten accessing subnet ranges (IP masks), and Release 8.1 only one range. If you have elements that run 8.2 and have more than one configured range, and then you downgrade them to 8.1, only the first configured range remains. If this is not the range for SNMP access from Prizm, then Prizm loses the ability to discover and manage these elements, and properly associates them with the element type unknown icon  in your network browser.

Although you can overcome the problem in this case by changing the range and rediscovering elements, you probably prefer to have avoided or at least anticipated this problem. Being mindful of element software and firmware release limitations, including differences in the supported ranges of values for an attribute, is worth the extra attention that it requires.

² Prizm accepts global position user entries in only WGS84 format. The user should enter altitude in meters.

3.1.4 Licenses Requested by Prizm

As needed, Prizm requests floating licenses from Canopy License Manager. These licenses are described in [Table 5](#).

Table 5: Floating licenses that Prizm requests from License Manager

License	Purpose
Prizm server	Authorizes the runtime usage of EMS features on a single server. These include updating element firmware of software. For elements that are provisioned for only BAM management, this license does not authorize Prizm to perform any active monitoring or management. It also does not authorize Prizm to BAM-manage accepted elements. That capability is authorized by only the BAM server license.
BAM server	Authorizes the runtime usage of BAM features on the Prizm server. For elements that are provisioned for only BAM management, this license does not authorize Prizm to perform any active monitoring or management, or to update their firmware or software.
BAM packs	Authorizes an AP, Canopy 400 Access Point (CAPxx400), or Powerline MU/Gateway to authenticate slave devices.
EMS packs	Authorizes Prizm for EMS functionality in an AP sector or a backhaul link.
No cap	Enables unlimited bandwidth on a classic Canopy SM. This is an Advantage SM Floating Upgrade.
<i>CanopyLiteSM</i>	Upgrades a Canopy Lite SM to a greater level of bandwidth. The name of each license indicates the bandwidth <i>from</i> and <i>to</i> amounts of upgrade.

Prizm displays current usage of licenses when you select **Edit→Show Licensing** from the main menu. See [Viewing License Counts](#) on Page 133.

3.1.5 BAM Server-licensed Operations

BAM server-licensed operations include and are limited to authentication, service plans, and VLAN profiles for provisioned elements. One difference between a service plan (or VLAN profile) and a configuration template that has the identical set of attributes is that the former is a long-term association whereas the latter is a one-time push to the element. When a service plan or VLAN profile is modified, the change is automatically applied to all elements that have the association.

Moving elements into or out of BAM-only provisioning is described under

- [Accepting Elements into a Network for BAM-only Operations](#) on Page 139.
- [Changing an Element from BAM-only to All Management Functions](#) on Page 145.

The **Management State** read-only attribute indicates whether an element is

- **Managed**—is currently managed by all Prizm functionality.
- **Provisioned**—is currently only BAM controlled.
- **Suspended (Management)**—was managed by all Prizm functionality but that management has been suspended. In this state, no automated EMS management occurs, but registration and BAM provisioning can.

- **Suspended (Authentication)**—was only BAM provisioned but that has been suspended. In this state, the element cannot authenticate in Prizm.
- **Accepting**—was only BAM provisioned, was BAM rejected and then provisioned, or was allowed into the network as a previously unknown device, but upon its next registration, will be managed by all Prizm functionality (will be in the **Managed** state).
- **Quarantine**—was unlisted across the Prizm Discovered, Network, and Ignored Elements lists, then automatically allowed to authenticate for only an operator-defined period of time and assigned to an operator-specified bandwidth service plan and VLAN profile. See [Quarantining Elements Discovered in Authentication Attempts](#) on Page 118.

3.1.6 Element Data Storage

Any of the following configurations for element data storage have been successfully tested:

- all data stored in a Microsoft® SQL Server Version 2000 Enterprise Edition database
- all data stored in a MySQL Database Server
- all data stored in a PostgreSQL database
- authentication and bandwidth (CIR, MIR, and high-priority channel) data stored on a RADIUS server and all other data stored in one of the above listed databases.

RADIUS and Database Comparison for BAM Functions

Where RADIUS is used, Prizm receives from RADIUS (and passes to the AP) the authentication and bandwidth configuration of the SM. Although neither the Prizm GUI nor the AP can view or change the configuration on the RADIUS server, Prizm is essential (cannot be bypassed) for the proxy role, and displays values that RADIUS sends to it. However, the possibility exists for Prizm to send a desired VLAN profile and the bandwidth service plan, which is based on *outdated* input, to the SM. This is preventable. See [Managing VLANs](#) on Page 317.

A comparison of RADIUS against databases in Prizm operations is provided in [Table 6](#).

Table 6: Comparison of RADIUS against non-RADIUS configurations

Operation in Prizm	RADIUS Deployed		RADIUS Not Deployed
	RADIUS	Relational Database	Only a Relational Database
Manage Authentication	•		•
Manage Bandwidth	•		•
Define a Bandwidth Service Plan	Note 1	•	•
Manage VLAN	Note 2	•	•
Define a VLAN Profile	Note 2	•	•
Request a Canopy Lite Floating License	•		•
NOTES: 1. If a service plan exists, you cannot apply it to elements. 2. You can maintain and apply VLAN profiles in Prizm, even though RADIUS does not support them.			

During a successful authentication attempt, Prizm creates an element record (or modifies its existing record) and copies the bandwidth and authentication data into the relational (Prizm) database. However, during an *unsuccessful RADIUS* authentication attempt, Prizm may or may not create/modify the element, may or may not copy its data, and may or may not log a corresponding alert. These behaviors depend on the reason for the authentication failure, as described in [Table 7](#).

Table 7: RADIUS authentication failure scenarios

Reason for Failure	Element Created or Modified	Bandwidth and Authentication Data Copied into Prizm	Alert Logged
BAM packs license unavailable	No	No	Yes
Record absent in RADIUS	Yes. Provisioned in the Suspended (Authentication) management state.	No	Yes
Motorola-Canopy-Enable value set to 0 in RADIUS	Yes. Provisioned in the Suspended (Authentication) management state.	No	Yes
Mismatch between Authentication Key in the element and Motorola-Canopy-Shared-Secret in RADIUS	Yes. Provisioned in the Provisioned management state.	Yes	Yes
RADIUS server not operating	No	No	No

3.1.7 Northbound Interface

Prizm provides three interfaces to higher-level systems:

- a Simple Network Management Protocol (SNMP) agent for integration with a network management system (NMS). In Prizm Release 3.0, the northbound interface supports SNMP Version 3.0.
- a Simple Object Access Protocol (SOAP) XML-based application programming interface (API) for web services that supports integration with an operations support systems (OSS) such as a customer relationship management (CRM), billing, or provisioning system.
- console automation that allows such higher-level systems to launch and appropriately display the Prizm management console in a GUI that is custom developed, using the *Prizm™ Software Development Kit (SDK)*, which Canopy provides for this purpose.

Together these interfaces constitute the Northbound Interface feature. Prizm server administrator tasks and GUI developer information are provided in the *Prizm™ Software Development Kit (SDK)*. This SDK also describes how to define new element types and customize the Details views.

3.1.8 Resources Consumed for Polls and Refreshes

The various types of element polling and view refreshing that Prizm performs consume different levels of

- bandwidth resources in elements as they respond to polls.
- processing resources in Prizm.

These levels are generalized as shown in [Table 8](#).

Table 8: Levels of resources consumed for polls and refreshes

Generalization	Where Poll or Refresh is Performed		
	Define Networks	Network Views	Performance Logging
Poll or refresh	Refresh	Poll	Poll
Trigger	Deliberate or the result of a deliberate or scheduled poll	Deliberate	Scheduled
Expense of resources	GREATEST	MODERATE	LEAST
Reason for poll or refresh	To gather element identities ¹ or is the result of configuring elements	The result of configuring elements	The result of gathering element statistics
Protocol(s) used	SNMP always ² and HTTP sometimes	SNMP ²	SNMP ³
NOTES: 1. To gather elements types, SNMP community strings, and passwords, for example. 2. To write to the elements during element configuration and read from the elements for statistics. 3. To only read from the elements.			

These generalizations are based on the concept that

- gathering element identities consumes the most resources, since it involves HTTP communications, a refresh of the link, and discovery of linked elements. For example, refreshing an AP includes the discovery of all of its registered SMs.
- configuring elements consumes a moderate level of resources, since it involves writing attribute values to the elements.
- performance logging consumes the least resources of these three operations, since it involves only reading SNMP responses.

Deliberate polls and refreshes are available in the main menu

- from a network browser view at **Edit→Poll Selected Element(s)**.
- from the Define Networks tab at
 - **Edit→Network Element Operations→Poll Selected Element(s)**.
 - **Edit→Refresh Network Element(s)**.
- at the Tools submenu by selecting **Tools→Task Scheduler→Auto Refresh Elements**, then defining a task that refreshes a specified batch of elements on a specified schedule. (See [Refreshing Elements on Schedule](#) on Page 27.)

Prizm supports 64-bit as well as 32-bit SNMP counters. The 64-bit support reduces the risk of multiple counter rollovers occurring between polls in high-bandwidth applications. To conserve bandwidth for consumer traffic, Prizm itself uses 32-bit counters, except for four current OIDs per element. The result is polling that is sufficient to detect failures and prevention of data loss from counter rollovers.

Prizm provides a snapshot of overall network traffic in the status bar at the bottom of the application console. In Release 3.0, the summary is always displayed, as shown in [Figure 24](#) on Page 90. In Release 3.1 and later, the summary is available through a click of the  icon, which causes Prizm to open the Network Activity window. An example of this window is shown in [Figure 1](#).

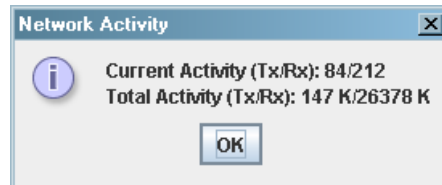


Figure 1: Example Network Activity window

3.2 SOFTWARE COMPATIBILITY

Prizm Release 3.0 has been tested with and supports the following other Canopy products/software releases:

- CMMmicro on Release 2.2.1
- PTP 100 (Canopy Backhaul Mast Module and Canopy Backhaul Slave Module) on Canopy System Release 8.x
- PTP 400 (High-Speed Backhaul Master Module 30/60-Mbps and High-Speed Backhaul Slave Module 30/60-Mbps) on Release 5845-07-00
- PTP 600 (High-Speed Backhaul Master Module 150/300-Mbps and High-Speed Backhaul Slave Module 150/300-Mbps) on Release 58200
- Powerline MU/Gateway
- Powerline Modem on Release 1.1.7
- Canopy AP, SM, Canopy Advantage AP and SM, and Canopy Lite SM on Canopy System Release 8.x
- Canopy 400 Access Point (CAPxx400) and Canopy 400 Subscriber Module (CSMxx400)

Prizm Release 3.0 is designed to work properly with Canopy System Release 8.x and later. Basic monitoring, configuration, and authentication functions should work with Release 7.2.9 and later. However, these older system releases were not designed to support some of the Prizm features and element attributes that Prizm Release 3.0 introduces.

Exceptions, such as a feature in the latest Canopy system release that is not supported in the latest Prizm release, or unexpected behaviors, would be acknowledged in [Current Problems](#) on Page 397 and in the release notes.

3.3 SUPPORTED PLATFORMS AND REQUIREMENTS

3.3.1 Operating Systems

The Prizm client application is supported on only the 32-bit versions of any of the following operating systems:

- Red Hat Enterprise Linux Version 4
- Windows XP Professional
- Windows Vista

The client application is not supported on Windows 2000 after Prizm Release 3.0.

3.3.2 Dependencies

Although a client computer requires no proprietary code for access to the Prizm server, the following dependencies exist for successful operation of the Prizm client application:

- Java must be loaded and enabled on the computer and in the browser that is used to access the main Prizm web page. If an appropriate version of Java is not found on the client computer, Prizm admonishes the user to download and install Java. See [Starting Prizm Client Without JRE Installed](#) on Page 57.
- The browser must support JNLP mime types for Java Web Start. By default for most browsers, this is automatically set in the Java installation.

For Mozilla Firefox, the following example procedure may be helpful for this process in Linux:

1. In Firefox, select **Edit→Preferences→Web Features** or **Tools→Options**, then click the Content tab.
2. Check the checkbox for **Enable Java**.
3. In the URL bar of a Firefox browser window, enter **about:plugins**.
4. If Java is listed on the resulting Installed plug-ins page, stop.
(The browser is properly configured for Java.)
If Java is not listed, continue with this procedure.
5. Access a Linux command prompt.
6. Enter **locate libjavaplugin_oji.so**.
RESULT: The system returns the path to the plugin.
7. Access your home directory.
8. Enter **ls ~/.mozilla/plugins**.
9. If the plugins directory is not found, create it.

10. Enter with no line break

```
ln -s Path/libjavaplugin_oji.so>/libjavaplugin_oji.so  
libjavaplugin_oji.so
```

where ***Path*** is the path that the system returned in Step 6.

RESULT: A soft link is created from the default Firefox plugin directory to the JRE plugin libjavaplugin_oji.so.

11. Restart Firefox.

12. In the URL bar of a Firefox browser window, enter **about:plugins**.

13. Verify that Java Plug-in is shown on the Installed plug-ins list page.

For Netscape, you may need to configure the JNLP helper application settings within the browser preferences panel.

For another browser, you may need to explicitly set up the support through the Java Control Panel (activate Java for that browser).

- Java Version 1.4.2 or later is strongly recommended because, with earlier versions, auto discovery is very slow. Most systems work fine with Java JRE Version 1.4.2_02 or newer. If it does not work with your browser-OS combination, use Version 1.5.0_01 or later.
- The Prizm client computer must have port-level communication with Prizm server. If the user is accessing Prizm from a corporate intranet, or is behind another firewall, proxy, or NAT based device, then port access may be problematic. For example, in these cases, the access attempt may result in the following error message from Java:

```
An error occurred while launching/running the application.  
Title: Prizm@IPaddress  
Vendor: Motorola Canopy Wireless Broadband Platform  
Category: Download Error  
Unable to load resource: http://IPaddress:80/prizm/mmc.jar
```

The ports that are required for communication with the Prizm server include

- the general communication ports (80 and 12800, by default)
- the HTTPS port for Proxy support (8489, by default)
- the RMI command ports (12801 to 12900, by default).
- Consider where Java Web Start is obtaining its network settings, such as proxy configuration. In Windows If this is set to Browser, then the Internet Explorer application controls the proxy settings, even when you use a different browser to launch Prizm.
- Where Red Hat Enterprise Linux Version 4 is the operating system for the client device, upgrades to that system that are made via the up2date tool *must* upgrade *all* of the packages.

3.3.3 Web Browsers

The following web browsers have been tested and approved for use with Prizm:

- MS-Internet Explorer Version 6.0 or greater
- Netscape® Version 7.*n* or greater
- Mozilla Version 1.4 or greater
- Firefox Version 1.5.*n* or greater
- Konqueror Version 3.3.1-5

Most other browsers that recognize and support the following can partially or fully work with the Prizm interface:

- Java Applets with Java Plug-in 1.4.*x*, where *x* is 2 or greater, and Plug-in 1.5
- Java Web Start (JNLP), mime type: application/x-java-jnlp-file

If you experience a nuance with one of these other browsers, please send a description to technical-documentation@canopywireless.com.

3.3.4 Screen Recommendation

The minimum screen size recommended for the Prizm client is 800 x 600 pixels. This accommodates the largest default modal dialog size (640 x 480) that the Prizm client may open.

3.4 SUPPORTED NETWORK ELEMENTS

For a Canopy Advantage AP or SM, Canopy Advantage Lite SM, Canopy AP, SM, PTP 100 master or slave, or CMMmicro, CMM4, CMM4 Switch, PTP 400 master or slave, PTP 600 master or slave, Powerline MU/Gateway, Powerline Modem, AP 100, or CPEo 200, Prizm

- auto discovers the element to the extent possible.
- includes the element in the network tree.
- shows general information.
- shows Canopy information.
- supports Canopy-specific operations.³

For a generic element, Prizm

- auto discovers the element as only a generic network element.
- includes the element in the network tree.
- shows general information.

³ For CMMmicro Release 2.2.x, Prizm supports both monitoring and management. For earlier CMMmicro releases, Prizm supports full monitoring but *does not* support management.

- shows events and alerts.
- charts port activity.

Generic (non-Canopy) switches and devices must support the following SNMP requirements for Prizm to monitor them:

- RFC 1213 - *Management Information Base for Network Management of TCP/IP-based internets:MIB-II (or SNMPv2 and IF-MIB)*
- Device information including sysName, sysLocation, and sysUpTime
- A sequential⁴ port statistics table, including ifInOctets and ifOutOctets

Prizm treats the Cluster Management Module-4 Switch as a generic switch, but identifies its element type after discovery as Cluster Management Module-4 Switch. However, for Prizm to correctly associate each CMM4 Switch with the CMM4 that the switch serves

- before installing the CMM4, read and note the MAC address of both the module and its switch from the physical units.
- after discovering a CMM4 and its switch, use these MAC addresses for moving the switch to the place in your Prizm network where the CMM4 was discovered.
- always maintain a record that associates these two MAC addresses.

Further, because of the limited SNMP response capabilities of the CMM4 Switch, Prizm is not able to distinguish whether such a switch that it discovers in your network

- is connected to a CMM4.
- was procured from other than Motorola and is deployed for a purpose other than serving a CMM4.

Thus, an element that Prizm identifies as a Cluster Management Module-4 Switch *may or may not* be a connected to a CMM4. Here again, the pair of MAC addresses copied directly from the unit before installation is your only means to recognize the CMM4 switch as such in Prizm.

For passive elements (such as CMM2 or a non-manageable switch or hub), Prizm allows you to enter into the network tree a folder/group with name, asset/owner information, and descriptive information.

Selectable element types are

- Canopy 400 Access Point (CAPxx400)
- Canopy 400 Subscriber Module (CSMxx400)
- Canopy Access Point Module
- Canopy Prizm EMS
- Canopy Subscriber Module
- Cluster Management Module micro

⁴ Where index 1 = Port 1, index 2 = Port 2, and so forth.

- Cluster Management Module-4
- Cluster Management Module-4 Switch
- Generic Group
- Generic SNMP Device
- Generic SNMP Device (08 Port)
- Generic SNMP Device (16 Port)
- Generic SNMP Device (24 Port)
- Generic SNMP Device (26 Port)
- PTP 100 Master (Canopy Backhaul Master Module)
- PTP 100 Slave (Canopy Backhaul Slave Module)
- PTP 400 Master (High-Speed Backhaul Master Module 30/60 Mbps)
- PTP 400 Slave (High-Speed Backhaul Slave Module 30/60 Mbps)
- PTP 600 Master (High-Speed Backhaul Master Module 150/300 Mbps)
- PTP 600 Slave (High-Speed Backhaul Slave Module 150/300 Mbps)
- Powerline MU/Gateway
- Powerline Modem
- Canopy 400 Access Point (CAPxx400)
- Canopy 400 Subscriber Module (CSMxx400)

4 STARTING WORK IN THE Prizm CLIENT APPLICATION

4.1 KNOWING WHAT SERVER TO ACCESS IN A REDUNDANT SERVER CONFIGURATION

Either of the following modes is available for the server, subject to licensing:

- BAM-only, with a BAM server license, which manages only
 - authentication, bandwidth service plans, and VLAN profiles of SMs.
 - authentication of Powerline modems.
- Prizm EMS, with an Prizm EMS server license, which manages attributes and data for all elements, but does not manage authentication, bandwidth service plans, or VLAN profiles.

4.1.1 Server Redundancy

Redundancy typically takes one of two forms:

- Full Prizm functionality with redundant BAM functionality. This is achieved by using one Prizm EMS server license and one, two, or three BAM server licenses.
- Only BAM functionality with redundancy. This is achieved by using two or three BAM server licenses.

If you use full Prizm functionality, you should *always* access the GUI of the server that holds the Prizm EMS server license. This server logs the performance statistics files and defaults to its local directory. However, since this mode is enabled by a floating license, if all servers are configured to request an Prizm EMS server license (as they do by default), and if only one such license is available, then the first server that requests it is granted the only such license. Your server administrator can control which server is granted the license, so that you always know what GUI to access.

4.2 LAUNCHING THE Prizm CLIENT

Perform the following steps for a Prizm client.

Procedure 1: Launching the client

1. Identify the computer.
2. Add the IP address of the Prizm server to the local `hosts` file of the client.
NOTE: If your Prizm client is on a Windows OS, the path including the `hosts` file is typically at `\windows(varies by OS)\system32\drivers\etc\hosts`; for example `\WINNT\system32\drivers\etc\hosts`. However, you may need to perform an Explorer search to find the `hosts` file. If your Prizm client is on a Linux OS, the path including the `hosts` file is always at `/etc/hosts`.
3. From the client device, launch the current browser.

4. In the URL field, enter **`http://www.PrizmServerIPAddress/prizm`** (if you have kept the default port for the server, Port 80) or **`http://www.PrizmServerIPAddress:PortNumber /prizm`** (if you specified a non-default port).

5. If this attempt is successful and no error messages are displayed, you can end this procedure here.

If this attempt is not successful, or a message complains about your Java version, then perform the remaining steps of this procedure.

6. Install or upgrade the browser as needed.

NOTE: The list of supported browsers is provided under [Web Browsers](#) on Page 50. See also [Dependencies](#) on Page 48.

7. Configure your browser for the Java JRE plug-in.

EXAMPLES:

- In Mozilla Firefox, you may need to activate Java and create a symbolic link from your Firefox plug-in directory to the JRE plug-in. To do this, perform the following steps:

- (1) In the Firefox main menu, navigate to **Edit→Preferences→Web Features**.

NOTE: If this menu item is not present, proceed directly to Step (3).

- (2) Check **Enable Java**.

- (3) Open another Firefox browser window.

- (4) In the URL bar, enter **`about:plugins`**.

RESULT: The Installed plug-in list page opens.

- (5) If Java is listed, the browser is properly configured for Java, and no further steps are required.

If Java is *not* listed, continue.

- (6) Open a terminal/console.

- (7) Enter **`locate libjavaplugin_oji.so`**.

RESULT: If the java plug-in exists, the system returns its location; for example:

```
/usr/java/jdk1.5.0_09/jre/plugin/i386/ns7/libjavaplugin_oji.so
```

- (8) Enter **`ls ~/.mozilla`**.

- (9) If the system response *does not* show a `plugins` directory, enter **`mkdir ~/.mozilla/plugins`**.

- (10) If the system response *does* show a `plugins` directory at this location, continue.

- (11) Enter **`cd ~/.mozilla/plugins`**.

- (12) Enter

```
ln -s PathFromStep(7)/libjavaplugin_oji.so libjavaplugin_oji.so
```

IMPORTANT!

The instance of Java in *PathFromStep(7)*, along with the MIME configuration in Step 9 below, determine the version that the client will use.

If you have upgraded the JVM and have been using a desktop shortcut to launch the Prizm client, then you may need to delete the shortcut, launch Prizm through your web browser (this time), and allow the shortcut to automatically be replaced by one that points to your new Java version.

Either of two links work. The link

http://PrizmServer/prizm/webstart_mgmtconsole_acp.jsp?ACPPort=LocalPort works and does not override the desktop shortcut or submenu. The link

http://PrizmServer/prizm/webstart_mgmtconsole.jsp?ACPPort=LocalPort works, but overrides the desktop shortcut and deletes the submenu

Program→Canopy→Prizm@Server.

- (13) In the URL bar, enter **about:plugins**.

RESULT: The Installed plug-in list page opens.

- (14) Ensure that Java is listed.

- In Netscape, you may need to configure the JNLP helper application settings in the browser preferences panel.
- In another browser, you may need to explicitly set up the support through the Java Control Panel (activate Java for that browser). See also [Web Browsers](#) on Page 50.

IMPORTANT!

On a Windows platform, the web browser that opens element web pages and shows on-line help is determined by your computer configuration and may not be the same one you used to launch the Prizm client. This behavior is controlled by your personal web environment, Java, and other Internet settings. Prizm can neither override nor pre-determine this behavior.

On a Linux platform however, you *must* configure the web browser that Prizm will be launching. Do this by performing the next step.

8. If on a Linux platform, perform the following steps:
 - a. Close all open browser windows.
 - b. Execute `javaws` with its full path.
EXAMPLE: Enter `/usr/java/jre1.5.0_09/javaws/javaws`.
 - c. When the Java Application Cache Viewer window opens, select **Edit→Preferences**.
 - d. In the Advanced tab of the Java Control Panel, click the **Command to launch default browser** drop-down.

- e. If the path listed in the dialog box does not point to your web browser, enter the path at which your browser is installed.
EXAMPLE: Enter **/usr/bin/firefox**.
- f. Click **Apply**.
- g. Click **OK**.
- h. In the Java Application Cache Viewer window, select **File→Exit**.
9. Configure your browser to use Java Network Launching Protocol (JNLP), if your Java installation did not automatically do so:
 - a. Consult your browser documentation for how to configure your browser to associate file name extensions with MIME types.
NOTE: The following steps provide an example. Your browser may differ.
 - b. Select **Edit→Preferences**.
 - c. Click **Helper Applications** under Navigator.
 - d. Look for an entry of application/x-java-jnlp-file.
 - e. If it is present
 - (1) Click this entry.
 - (2) Click **Edit**.

If it is not present, click **New Type**.
 - f. In the resultant dialog box, perform the following steps:
 - (1) For MIME Type, type in **application/x-java-jnlp-file**.
 - (2) For Description, type in **Java Web Start**.
 - (3) For Extension, type in **jnlp**.
 - (4) Click the **Open it with:** radio button.
 - (5) Click **Choose**.
 - (6) In the file selector, choose the **javaws** application.
NOTE: This application exists in your Java installation directory.
For example, if you installed Java Version 1.5.0_09, the javaws file may be at /usr/java/jdk1.5.0_09/bin/javaws.

===== end of procedure =====

4.2.1 Identifying the Installed JRE Version

For non-U.S. clients, a minimum of Java 2 Platform Standard Edition (J2SE) Runtime Environment (JRE) 5.0 Update 8 is recommended. File names for this version of Java begin with the characters jre-1_5_0_08-. If your device already has Java installed, you can identify the version by accessing the command line prompt and entering **java -version**. Java returns a response similar to the following:

```
java version "1.5.0_08"  
Java™ 2 Runtime Environment, Standard Edition (build 1.5.0_08-...)  
Java HotSpot™ Client VM (build 1.5.0_08-..., mixed mode, sharing)
```

In this example, the format *1.version_update* is consistently applied.

4.2.2 Minimum Required JRE Version for Clients in U.S.A. Time Zones

For U.S. clients, JRE 5.0 Update 8 has the limitation of not accounting for the shifts in start and end dates of daylight saving time, based on legislation that took effect in the year 2007. During certain date brackets, this would result in the time on the Prizm console being out of sync with the time on the local device by one hour.

JRE 5.0 Update 9 and later account for the new dates and, therefore, Update 9 is the minimum version for U.S. clients.

4.2.3 Starting Prizm Client Without JRE Installed

When a user starts Prizm for the first time where JRE is not installed, the Management Server (startup) page displays the following error message:

```
Java is not available
Unable to detect your version of Java.
Please Install the appropriate Java Version before Proceeding
    ◦ Download from Java Web Site (recommended)
```

However, you as an administrator can host Java Virtual Machine (VM) installers by setting up a folder on the Prizm server as described in Step 1 below. This sets up the server to provide Java installations to client devices that attempt server access with an unsupported or no Java version. When this occurs, the main Prizm page provides links to

- Download from [Java Web Site](#) (recommended)
- Download Virtual Machine X (as hosted on the Prizm server)

This makes it easier to isolate the Prizm server to a private network-only environment, without stranding clients that do not already have Java and do not have access to the Internet. The procedure for hosting a client Java runtime installer on the Prizm server is provided in *Motorola Canopy® Prizm Release 3 Setup Guide for Windows Platforms* and *Motorola Canopy® Prizm Release 3 Setup Guide for Linux Platforms*.

4.3 POSSIBLE CLIENT LAUNCH ERROR CASES

At some point in the future, you may see either of the following problems.

4.3.1 Version-checking Applet Not Launching

The Management Server (startup) page may contain links for downloading the appropriate version(s) of Java Runtime Environment (JRE) from Prizm:

- Download from Java Web Site (recommended)
- Download JRE from PrizmEMS for Linux (Installation Note)
- Download JRE from PrizmEMS for Solaris 32bit (Installation Note)
- Download JRE from PrizmEMS for Solaris 64bit (Installation Note)
- Download JRE from PrizmEMS for Solaris x86 (Installation Note)
- Download JRE from PrizmEMS for Windows (Installation Note)

This can result from an applet being unable to launch and confirm that a supported JRE version is installed. However, the startup window includes a **START** button (see [Figure 2](#) on Page 60). If a supported version is installed, and if you click the **START** button, then Prizm opens without further error indication.

In such a case, the indication is that your browser is not correctly configured to support the applet. You may be able to enable the applet by updating the file `index.jsp` to a later version and rebuilding.

4.3.2 Prizm GUI Not Launching

The Prizm startup web page includes a link to a Java Web Start object that loads the Prizm Web Start application. If your OS is Linux, you may need to configure your browser to match the jnlp link on this web page for the proper path to where the Java Web Start application resides in your file system. If you click the **START** button, and your browser prompts for a path to an executable for it to associate with jnlp, then you should enter the path `/usr/local/Canopy/Prizm/_jvm/javaws/javaws`. This is where the Prizm setup tool deposited the Web Start executable on the Prizm server.

To avoid having to key in this path whenever you want to launch Prizm, you may need to perform one of the following procedures.

Procedure 2: Configuring Konqueror for jnlp

1. Launch Konqueror.
2. From the main menu, select **Settings→Configure Konqueror**.
3. Select **File Associations**.
4. Under application type `x-java-jnlp-file`, add the following two lines:
Filename patterns : `*.jnlp`
Application : `/usr/local/Canopy/Prizm/_jvm/javaws/javaws`
5. Click **OK**.

===== end of procedure =====

Procedure 3: Configuring Mozilla Firefox Version 1.5.n for jnlp

1. Launch Firefox.
2. From the main menu, select **Edit→Preferences**.
3. Select **Downloads**.
4. Under Download Actions, click the **View & Edit Actions** button.
5. Highlight the row that has JNLP in the Extension column.
6. Click the **Change Action** button.
7. Check the checkbox for **Open them with this application**.
8. Specify the path `/usr/local/Canopy/Prizm/_jvm/javaws/javaws`.

===== end of procedure =====

Procedure 4: Configuring Mozilla Firefox Version 2.0.n for jnlp

1. Launch Firefox.
2. From the main menu, select **Tools→Options**.
3. Select **Content**.
4. Under File Types, click the **Manage** button.
5. For JNLP, update the path as
/usr/local/Canopy/Prizm/_jvm/javaws/javaws.

===== end of procedure =====

4.4 LOGGING IN

For a remote session, you may need to accept a Motorola security certificate. This certificate provides information about the application so that you can decide whether to trust that the other end of the connection is a valid Prizm server. The Prizm remote application runs in a secure communication session through the Secure Sockets Layer (SSL) encryption protocol. See [Checking Whether Secure Client Access is Enabled](#) on Page 417.

When either the local administration console is started on the Prizm server or the home page is brought up in a remote Prizm session, Prizm opens as shown in [Figure 2](#).

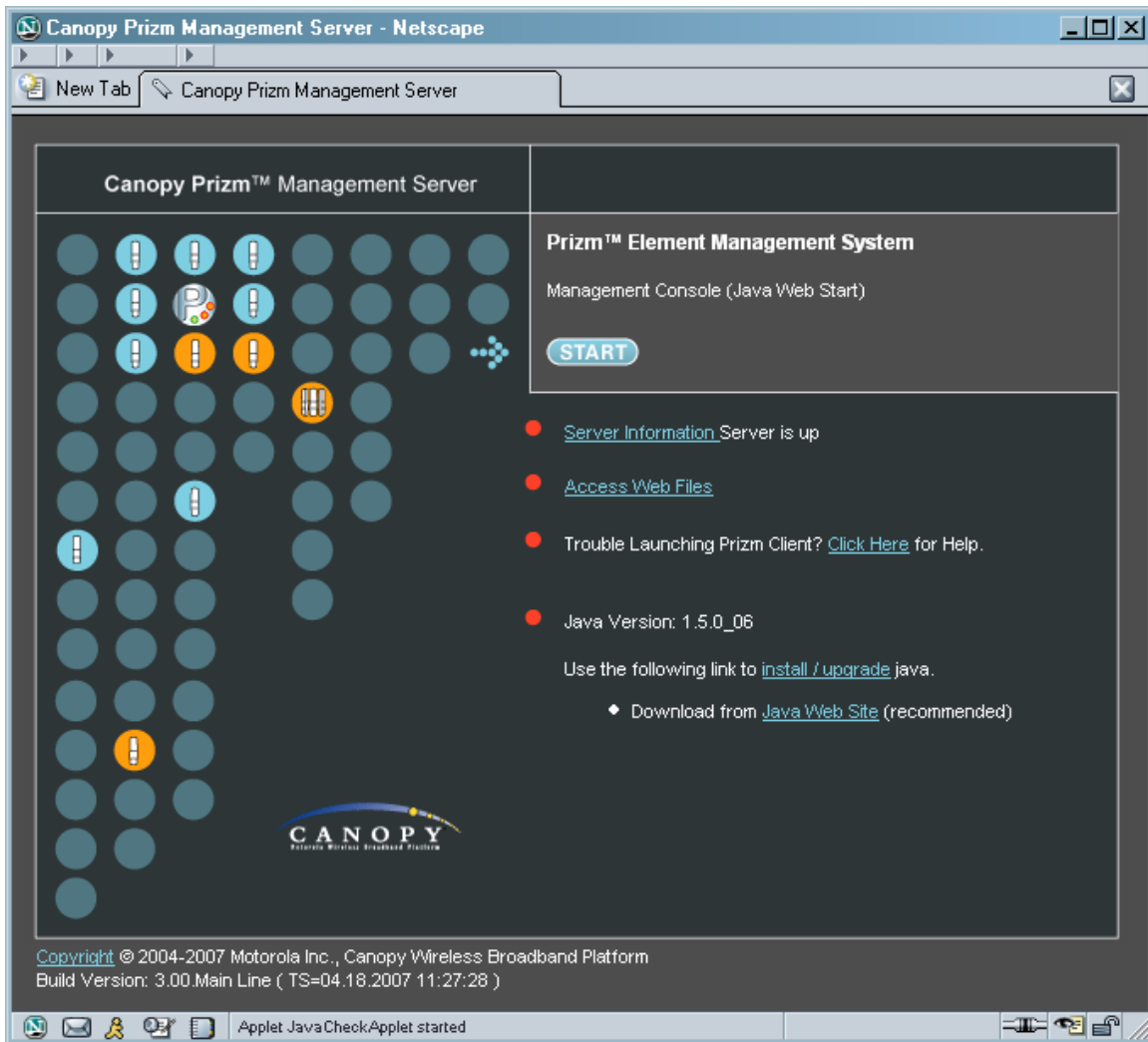


Figure 2: Prizm startup web page

The **Server information** line indicates either **Server is up** or **SERVER IS DOWN**. When the server is up, the **Server information** link provides access to server environment information, as shown in Figure 3.

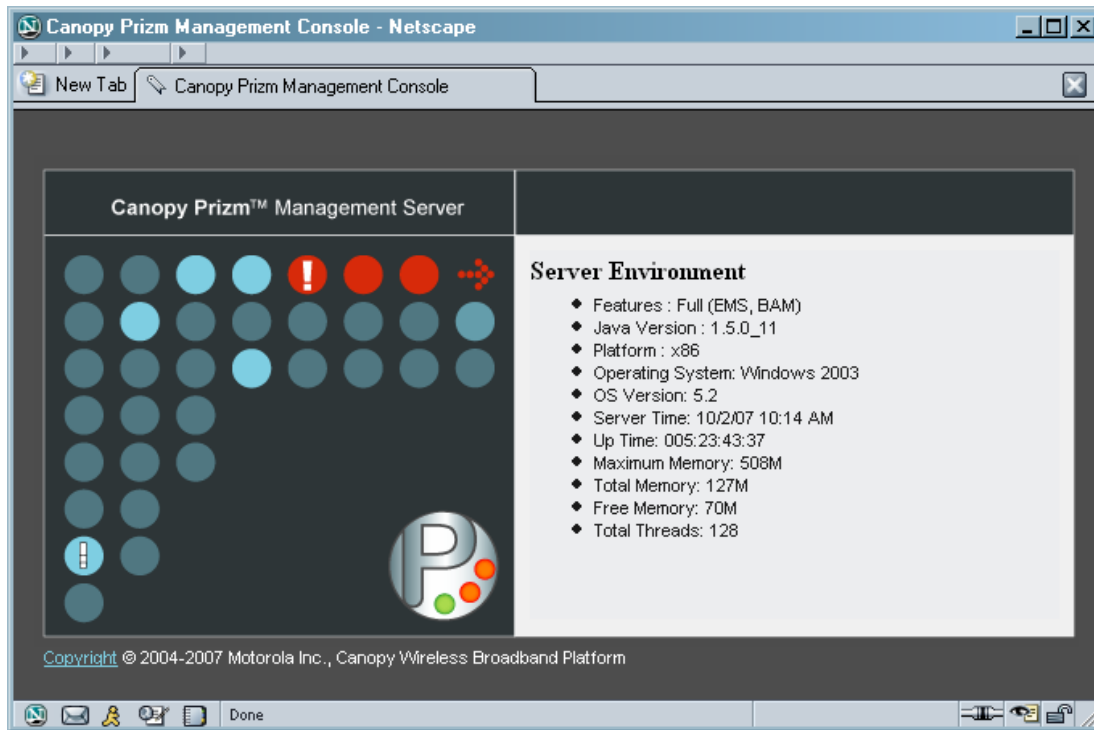


Figure 3: Server information panel from startup web page

This web page includes an [Access Web Files](#) link. Clicking this link causes a Prompt window to open, as shown in [Figure 4](#).

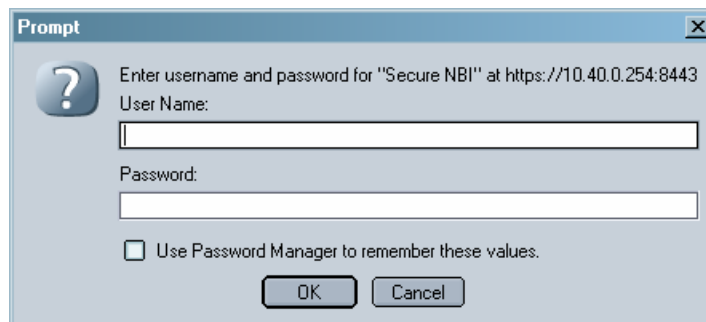


Figure 4: Prompt window for accessing the northbound interface

Following a successful log in attempt, you can browse to and upload unlisted files, use the links in the File Name column to open listed files, or use checkboxes and the **Delete Selected Files** button to selectively remove them. An example of the Available Files page is shown in [Figure 5](#).

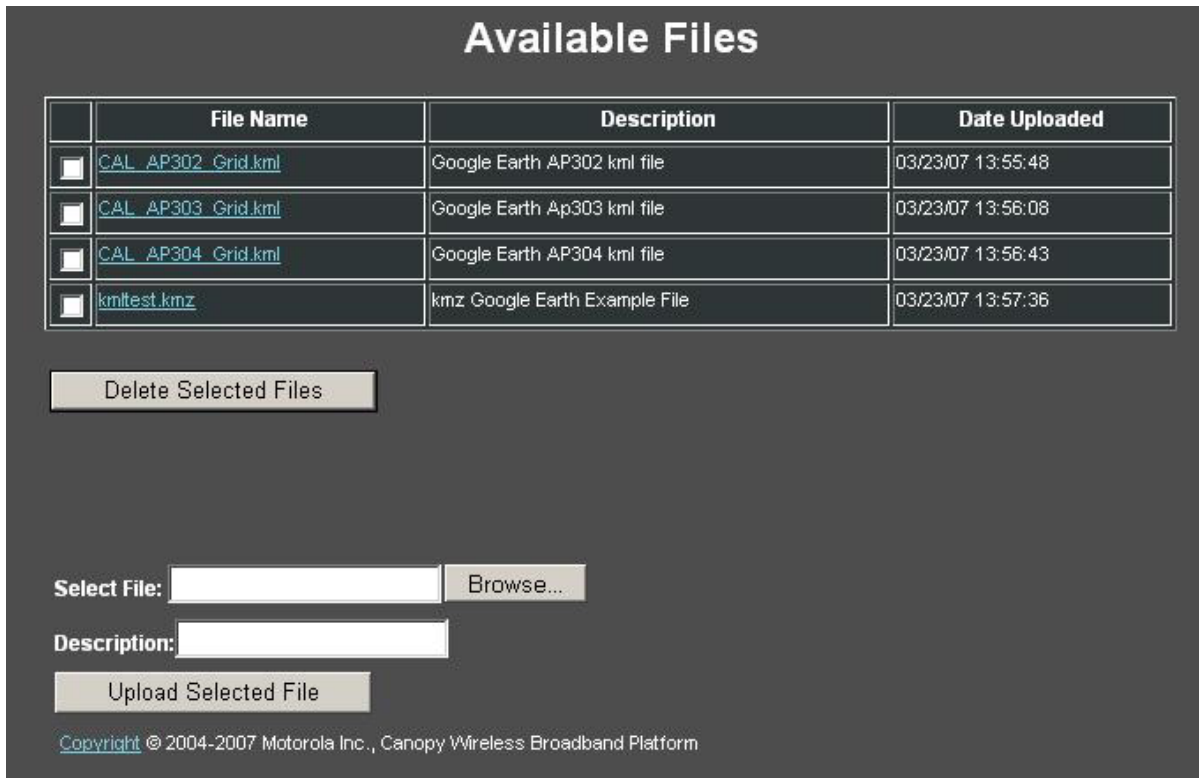


Figure 5: Example Available Files web page

If the server is up, and you click the **START** button in the Canopy Prizm Management Server web page, the system opens the Java Web Start window with its progress bar, as shown in [Figure 6](#).

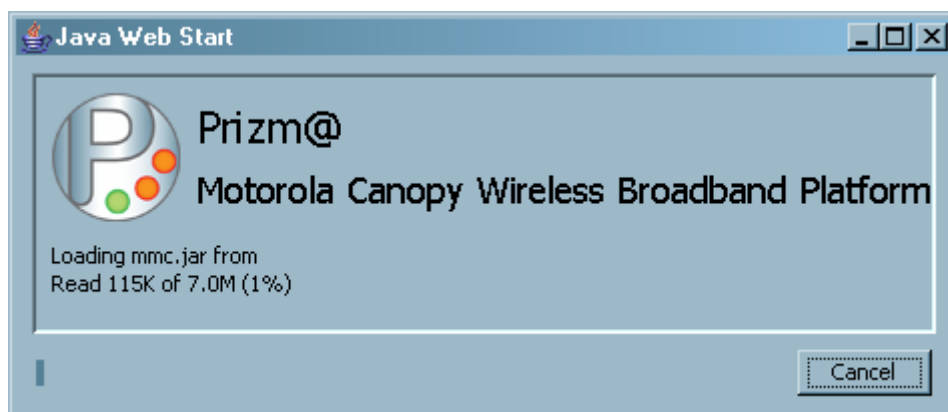


Figure 6: Java Web Start window

Shortly thereafter, the Warning – Security window prompts for whether you want to accept the Motorola security certificate, as shown in [Figure 7](#).



Figure 7: Warning – Security window

If you click **Yes** or **Always**, the Login to Prizm Server window opens, as shown in [Figure 8](#).

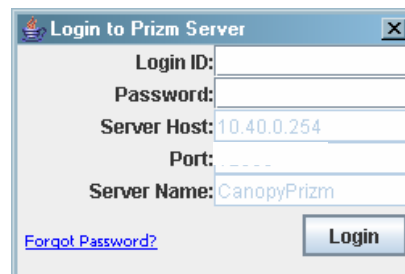


Figure 8: Example Login to Prizm Server window

If the application instead fails to launch and returns the error message Unable to connect to the Prizm Server, restart the computer and access the initial web page again.

After a successful login, Prizm checks for optimal communications between the client and server. Depending on the versions of the operating system and Java that are running on the client device, a DNS or host file entry may be required on the client to achieve optimal communications. In this case, Prizm displays a Warning window that includes instructions for the administrator of the client device. An example of this window is shown in [Figure 9](#).

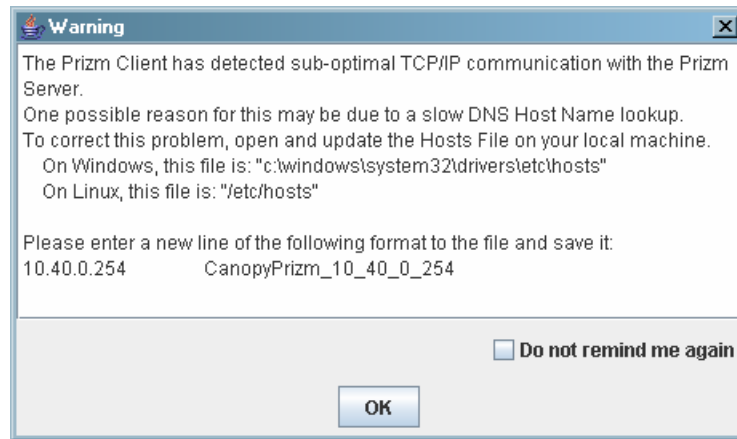


Figure 9: Warning window to suggest faster client-server communications

The following caveats apply:

- If the IP address of your Prizm server is 127.0.0.1, for example, then the Warning window line beneath the line "Please enter a new line of the following format to the file and save it" contains

127.0.0.1 CanopyPrizm_127_0_0_1.

The number of spaces that separate the two strings on this line is inconsequential, but at least one is required.

- Your hosts file may be at a slightly different path. For example, it may be at c:\WINNT\system32\drivers\etc\hosts.
- Depending on what editing utilities are available, you may need to
 - (1) temporarily rename your hosts file to hosts.txt, for example.
 - (2) add the line.
 - (3) save the file as plain text.
 - (4) rename the file back to hosts.

The system provides an already provisioned default administrator account with a default password for the first access to Prizm. This account is described under [Provisioning an Administrator for Prizm Privileges](#) on Page 65. Thereafter in this window, the system populates the **Server Host** (IP address), **Port**, and **Server Name** fields for only information sake. The system populates the **Login ID** (username) field with the last previous ID used on Prizm when your PC was the client. This occurs also if you start an additional instance of the Prizm client on the same PC.

The system allows you to change this field. For example, if you have multiple IDs, each with a special window/tab configuration fit to the task you want to accomplish with the ID, you might frequently highlight and overwrite the Login ID when you launch a session. Although Prizm populates this field, the system *does not* maintain any record that associates your ID with your PC. Your PC provides this information to the system when you launch the new session. Prizm does, however, maintain the correlation between your ID and your password.

Prizm never echoes your password to the screen. Instead, the system represents each character of your password with an asterisk. To ensure that the correct password will be associated with your login, Prizm requires that you identically repeat your original password entry.

**IMPORTANT!**

Login IDs in Prizm are case sensitive. If you enter your Login ID correctly except for case, Prizm responds to your login attempt with a message that indicates unknown or invalid user.

If you ever forget your password, you can type in your Login ID and select the [Forgot Password?](#) link. If more than one email address is associated in Prizm with your account, Prizm prompts you to select the account to which Prizm will send your password. In this case, the system resets your password and sends the new password to the specified email account. If no email address is associated with your account and you forget your password, you must contact your Prizm administrator to re-establish your access.

When you have successfully logged in, Prizm provides menu selections that correspond to the features and functionalities that you are authorized to access. An administrator can change the permissions for an individual user to permit access to more or fewer functionalities.

4.5 PROVISIONING Prizm ACCOUNTS

4.5.1 Provisioning an Administrator for Prizm Privileges

A permanent default administrator account is provisioned in Prizm to ensure that at least one administrator account always exists. The default Login ID of this account is `prizmadmin` unless it is changed in the Prizm configuration controlled on the Prizm server. The default password is blank (null). Simply click **OK** the first time you are prompted for it. The system will then provide the opportunity to change the password before the session continues.

No administrator or user can change this Login ID or its account type. However, another administrator can change any other information that is associated with the default administrator.

**RECOMMENDATION:**

Provision multiple administrator accounts.

Any administrator can create, update, or delete an account for another administrator. To create an administrator, perform the following steps.

Procedure 5: Adding an administrator

1. Select **Tools→Administrator→User Manager**.
2. Click **Add User**.

RESULT: The Add User Account window opens. An example of the General tab of the Add User Account window is shown in [Figure 10](#).

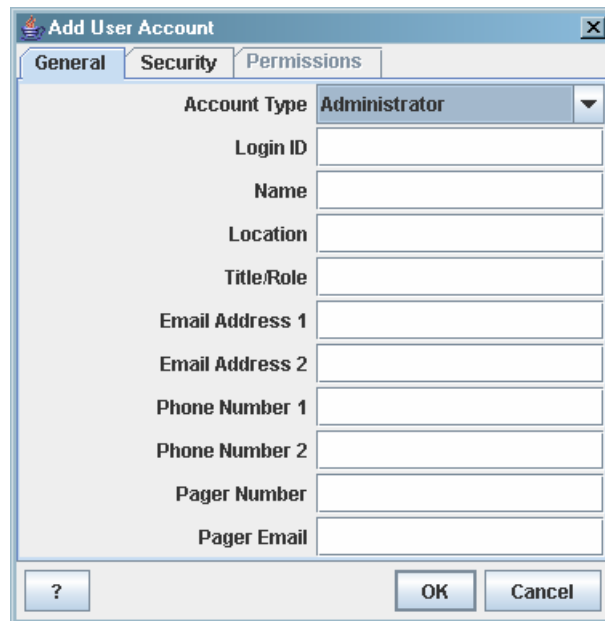
The image shows a screenshot of the 'Add User Account' dialog box. The 'General' tab is selected, showing fields for 'Account Type' (set to 'Administrator'), 'Login ID', 'Name', 'Location', 'Title/Role', 'Email Address 1', 'Email Address 2', 'Phone Number 1', 'Phone Number 2', 'Pager Number', and 'Pager Email'. The 'Security' and 'Permissions' tabs are also visible. At the bottom are buttons for '?', 'OK', and 'Cancel'.

Figure 10: Example General tab for adding an administrator

3. In the General tab, for **Account Type**, select **Administrator**.
 4. Populate the account information, which includes
 - the login ID
 - the name
 - a location
 - the role of the new administrator
 - one or two email addresses
 - one or two phone numbers
 - a pager voice number
 - a pager email address
 5. Click the Security tab.
- NOTE:** An example of the Security tab is shown in [Figure 11](#).

Figure 11: Example Security tab for adding an administrator

6. In the Security tab, perform the following steps:
 - a. If you want Prizm to lock out anyone who unsuccessfully attempts for a certain number of consecutive times to log into this account, then
 - (1) at **Limit Login Attempts**, select **Yes** from the **<Use Policy>** drop-down list.
 - (2) at **Login Attempts Allowed**, type in the maximum number of attempts that Prizm should allow.
 - b. If you want Prizm to no longer accept the password of this administrator after it has aged to a certain number of days, then
 - (1) at **Password Expires**, select **Yes** from the **<Use Policy>** drop-down list.
 - (2) at **Maximum Password Age (days)**, type in the number of days after which Prizm should no longer accept this password.
 - c. If you want Prizm to terminate a session of this administrator after a certain period of no activity, then
 - (1) at **Restrict Session Inactivity**, select **Yes** from the **<Use Policy>** drop-down list.
 - (2) at **Session Inactivity (minutes)**, type in the maximum number of consecutive inactive minutes that Prizm should allow.
 - d. If you want to assign an initial password or later change the existing one for this administrator, then
 - (1) at **Password**, type in the new password.
NOTE: In this and the following field, Prizm *does not* echo your entry to the screen, but instead represents each character with an asterisk.
 - (2) at **Confirm Password**, retype the new password.

- e. If you want Prizm to force this administrator to enter a new password after the first successful login attempt with the password specified in this tab, then select the checkbox of **User must change password**.
NOTE: If this administrator changes the password, then the age limit specified earlier on this tab applies to the new password.
7. If you are satisfied with the entries in the Security and General tabs, click the **OK** button.



NOTE:

The permissions tab is grey and not selectable because the account that is being provisioned is an administrator. An administrator account has full permissions.

RESULT: Whenever the administrator logs into Prizm, the dynamic management console will provide access to all areas and selections of the system.

===== end of procedure =====

After an administrator account is provisioned, the User Manager permits that administrator to update the account. In this case, *update* means change any provisioned variable except the Login ID for that administrator.

4.5.2 Provisionable Areas in Prizm

Prizm has high-level areas of functionality and tools for which you separately assign permissions in the User Manager of Prizm:

- Alert Manager
- Controlled Tags
- Controlled View
- Customer Manager
- Dashboard
- Event Viewer
- IP/MAC Tracking
- Network Manager
- Northbound Interface
- Notification Manager
- Task Scheduler

In each area, a user can be granted read (**R**), write (**W**), or administration (**A**) level of access. The capability allowed for read access and write access varies from area to area. In general, a user who has write access also has read access, and a user who has administration access has full read and write access to all options and data that are associated with that area.

In some areas, permissions can be set at a lower layer. For example, the Network Manager allows permissions to be set on either each individual network or all current and future networks. If you want the user to have access to all current and future components (such as defining a new network), then set this permission at the area (Network Manager) level. If you want the access to vary for the user from one network to another, then do not set any permissions at the Network Manager level. Similarly, Controlled View allows permissions to be set each controlled view, all current and future views in a category (submenu), or simply all current and future controlled views (the default case).

The permissions settings for the Network Manager area affect the extent to which a user can operate in the other areas. For example, in Events Viewer, a user can view only those events that occur in networks where the user has permissions.

Prizm access supports two types of user:

- Administrator. An administrator has automatic access to all functionalities in Prizm. For this reason, no direct permission settings are performed for an administrator account (the **Permissions** tab is not accessible). Administrators are also the only users who can access the User Manager tab. See [Provisioning an Administrator for Prizm Privileges](#) on Page 65.
- User. A user has access only as provisioned by an administrator. See [Provisioning a User for Prizm Privileges](#) on Page 72.



RECOMMENDATION:

Prizm provides the option to enter email addresses while users and administrators are provisioned. These fields are not required, but each user should have at least one. Users who forget their original passwords can select one of their predefined email accounts (**Email 1**, **Email 2**, or **Pager Email**) to request that Prizm send the password to that account.

4.5.3 Configuring a Security Policy

For consistency and efficiency, Prizm allows administrators to configure a general security policy that covers access attempts by users, user password rules, and user session rules. To do so, select **File→Settings→Edit Settings** from the main menu. Prizm opens the Settings window. Highlight **Security Policy** in the left pane. Then Prizm provides security options in the right pane.

Figure 12: Settings window, Security Policy pane

Some of the values that you specify in this pane become defaults for the Security pane fields in the Add User window in User Manager (shown in [Figure 11](#) on Page 67). Others regulate all users:

- The values of the following fields become defaults:
 - **Login Attempts Allowed**
 - **Password Maximum Age (days)**
 - **Inactivity Period (minutes)**

Numeric values in these fields appear by default in the corresponding fields of the Add User window if you select **Yes** in the parent field (**Limit Login Attempts**, **Password Expires**, or **Session Expires After Inactivity**). They are directly applied to the user if you select **<Use Policy>** in the parent field. These values from the security policy are ignored if you select **No** in the parent field.

The **Login Attempts Allowed** value in the security policy is the maximum number of failed attempts for Prizm to allow before locking the user out of further attempts.

- The values of **Account Expires After Inactivity** and **Inactivity Period (days)** apply to all users that you create. You cannot revisit these in the course of adding or modifying an individual user.
- The values of **Restrict Minimum Length**, **Minimum Length**, **Digits Required**, and **Mixed Caps Required** set the rules for all passwords that users would configure for themselves. You cannot revisit these in the course of adding or modifying an individual user.

4.5.4 Ensuring that Prizm Does Not Lock Out Administrators

It is possible for all account type Administrator IDs to suddenly become locked out of logging into Prizm by the **Limit Login Attempts** field of the Security Policy described under [Configuring a Security Policy](#) on Page 69, since the value in the associated **Login Attempts Allowed** field becomes default for administrators added in the User Manager of Prizm. The simplest way to keep this from becoming a lockout factor for administrator accounts is to not check the **Limit Login Attempts** checkbox as part of the Security Policy and not add not restrain login attempts (or at least allow a liberal number of attempts) for individual administrators when their accounts are added, as described under [Provisioning an Administrator for Prizm Privileges](#) on Page 65.

Nevertheless even forgotten passwords, where no email reminder was configured, or access lulls that last longer than **Inactivity Period (Days)**, set solid in the Security Policy, can be causes of administrator lockouts.

4.5.5 Re-establishing (Unlocking) an Administrator Account

If for any combination of reasons, all administrators are ever simultaneously locked out, which would render Prizm unmanageable, you need to perform the following steps.

Procedure 6: Restoring the prizmadmin account

1. Exit the Prizm client application.
2. Ask your Prizm server administrator to change the user name of the default Prizm administrator from prizmadmin to a temporary name with a null password.
3. When the server administrator has accomplished that, launch the Prizm client application.
4. Log in with *temporaryname* of the default administrator and null password.
5. From the main menu, select **Tools→Administrator→User Manager**.
6. Click the row of the prizmadmin user in the User Manager tab.
7. Click **Update User**.
RESULT: Prizm opens the Update User Account window for prizmadmin.
8. Click the Security tab.
9. For **Set Limit Login Attempts**, use the drop-down list to select **No**.
10. Click **OK**.
11. From the main menu, select **File→Log Off temporaryname**.
12. In the Log Off window, click the **Yes** button.
13. In the Login to Prizm Server window, log in as **prizmadmin** with null password.
14. Select **Tools→Administrator →User Manager**.
15. In the User Manager tab, highlight the *temporaryname*.
16. From the main menu, select **Edit→Delete User**.
17. Ask your Prizm server administrator to change the user name of the default Prizm administrator from *temporaryname* back to prizmadmin.
18. Resume the activities of the prizmadmin user, which may include unlocking the accounts of other administrators, including the one that you typically use.

===== end of procedure =====

4.5.6 Provisioning a User for Prizm Privileges

Only an administrator can add, update, or delete a user from Prizm. The activities that Prizm allows per permission level in a management area are summarized in [Table 9](#). A permuted list of functions and the permissions required to perform them is provided in [Server and Client Functions and Permissions](#) on Page 391.

Table 9: Allowed activities per permission level

Management Area	Activity Allowed for Permission Level		
	R[ead]	W[rite] ¹	A[dmin] ²
Network Manager	View networks and elements. Define and save private filter views. Use already specified management passwords for access to element information. View BAM-related information.	View networks and elements. Define and save private or shared filter views and make them public. View and use controlled views for which such permission has been assigned. Use already specified management passwords for access to element information. View BAM-related information.	Define networks. Update any configurable parameter on the element. In column attributes, read passwords as plain text rather than see asterisks representing characters. Perform BAM configurations. View, apply, or remove a service plan or VLAN profile association. ³
Customer Manager	View customer contact data.	Add and modify customer contact data.	Import customer contact data.
Event Viewer	View system and their own private events. Define and save private filter views.	Define and save private or shared filter views.	Define system events. View shared and their own private events and notes.
IP/MAC Tracking	Search on a network.	Search on a network.	Specify a network router address, community string, or other input for look-up.
Alert Manager	View system, public, and their own alert definitions. Add private alerts. Define private alerts and notes. Acknowledge and clear their own private alerts.	Add shared alerts. Define public alerts and notes. Acknowledge and clear system, public, and their own private alerts.	View, modify, and change ownership for any alerts. Acknowledge and clear any alert. Set high-priority polling (tight interval) for alerts.
Northbound Interface			Access Prizm through the Northbound Interface. ⁴
Notification Manager	View and modify their own notifications.	View and modify their own notifications.	View, modify, and suspend any notifications. Set high-priority polling (tight interval) for notifications.
Dashboard	Enable and configure the specific dashboard.	Enable and configure the specific dashboard.	Enable and configure the specific dashboard.

Management Area	Activity Allowed for Permission Level		
	R[ead]	W[rite] ¹	A[dmin] ²
Task Scheduler	View tasks that they own. View shared tasks that other users or the system created.	Create tasks, and view and modify or remove these. View and modify shared tasks that other users created, except cannot modify scope or ownership. View shared tasks that the system created.	Create tasks, and view and modify or remove these. View and modify shared tasks that other users created, including modify scope or ownership. View shared tasks that the system created.
Controlled Tags	See the tag in filter criteria.	See the tag in filter criteria.	Assign the tag to, or remove the tag from, any element for which the user has W or A permission in Network Manager.
Controlled View	View the controlled view of elements. Exercise Edit menu options other than configure or edit the elements.	View the controlled view of elements. Exercise Edit menu options other than configure or edit the elements.	View the controlled view and configure or edit the elements in it.
NOTES: 1. The user with Write permission is also allowed to perform the activities that are shown in the Read column entry. 2. The user with Admin permission is also allowed to perform the activities that are shown in the Read and Write column entries. 3. Other functions, such as adding, editing, duplicating, and deleting service plan or VLAN profile associations, require Administrator permission for <i>all</i> of Network Manager. See also Server and Client Functions and Permissions on Page 391. 4. SNMP access to the agent in Prizm requires authentication by community string.			

4.5.7 Adding a User

To add a user, perform the following steps.

Procedure 7: Adding a user account

1. Select **Tools→Administrator→User Manager**.
2. Click **Add User**.
3. In the General tab, for **Account Type**, select **User**.

NOTE: An example of the General tab in the Add User Account window is shown in [Figure 13](#).

The screenshot shows a Windows-style dialog box titled "Add User Account". It has three tabs: "General", "Security", and "Permissions". The "General" tab is selected. Inside the dialog, there is a list of fields for user information. The "Account Type" is set to "User" in a dropdown menu. Below it are text boxes for "Login ID", "Name", "Location", "Title/Role", "Email Address 1", "Email Address 2", "Phone Number 1", "Phone Number 2", "Pager Number", and "Pager Email". At the bottom of the dialog are three buttons: a help button with a question mark, an "OK" button, and a "Cancel" button.

Figure 13: Example Add User Account window, General tab

4. Populate the account information, which includes
 - the login ID
 - the name
 - a location
 - the role of the new administrator
 - one or two email addresses
 - one or two phone numbers
 - a pager voice number
 - a pager email address
5. Click the Security tab.
NOTE: An example of the Security tab is shown in [Figure 14](#).

Figure 14: Example Add User Account window, Security tab

6. In the Security tab, perform the following steps:
 - a. If you want Prizm to lock out anyone who unsuccessfully attempts for a certain number of consecutive times to log into this account, then
 - (1) at **Limit Login Attempts**, select **Yes** from the **<Use Policy>** drop-down list.
 - (2) at **Login Attempts Allowed**, type in the maximum number of attempts that Prizm should allow.
 - b. If you want Prizm to no longer accept the password of this user after it has aged to a certain number of days, then
 - (1) at **Password Expires**, select **Yes** from the **<Use Policy>** drop-down list.
 - (2) at **Maximum Password Age (days)**, type in the number of days after which Prizm should no longer accept this password.
 - c. If you want Prizm to terminate a session of this user after a certain period of no activity, then
 - (1) at **Restrict Session Inactivity**, select **Yes** from the **<Use Policy>** drop-down list.
 - (2) at **Session Inactivity (minutes)**, type in the maximum number of consecutive inactive minutes that Prizm should allow.
 - d. If you want to assign an initial password or later change the existing one for this user, then
 - (1) at **Password**, type in the new password.
NOTE: In this and the following field, Prizm *does not* echo your entry to the screen, but instead represents each character with an asterisk.
 - (2) at **Confirm Password**, retype the new password.

- e. If you want Prizm to force this user to enter a new password after the first successful login attempt with the password specified in this tab, then select the checkbox of **User must change password**.
NOTE: If this user changes the password, then the age limit specified earlier on this tab applies to the new password.
7. Click the Permissions tab.
NOTE: An example of the Permissions tab for a user is shown in [Figure 15](#).

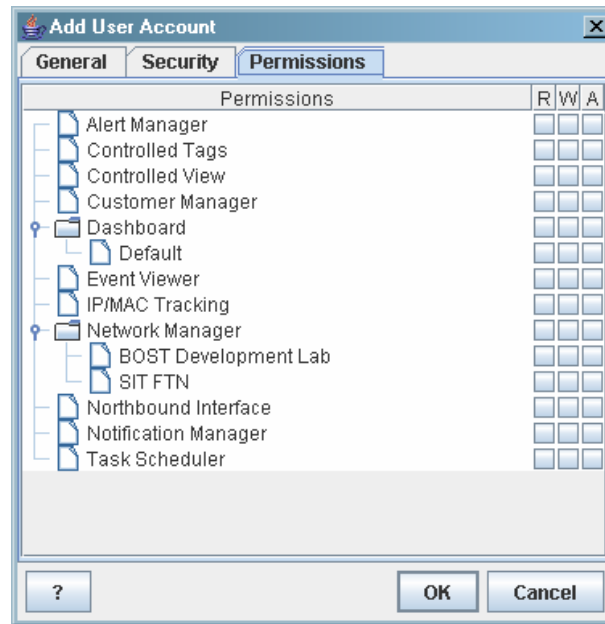


Figure 15: Example Add User Account window, Permissions tab

8. In the Permissions tab, for the area or for each lower layer of the area, select **R** to assign read access, **W** to assign write access, and/or **A** to assign administration access.
9. If you are satisfied with all of the entries in the General, Security, and Permissions tabs, click the **OK** button.
RESULT: Whenever the user logs into Prizm, the dynamic management console will provide access to those areas and selections for which the user has permissions assigned. All other areas and selections in the console will be grey and not selectable.

===== **end of procedure** =====

After a user account is provisioned, the User Manager permits that user to update the account. In this case, update means change any provisioned variable except the Login ID and the permissions set for that user.

4.5.8 Updating a User

To change any user account information except the Login ID, perform the following steps.

Procedure 8: Changing account information and permissions for a user

1. Select **Tools→Administrator→User Manager**.
2. Click the row of the user in the User Manager tab.
3. Click **Update User**.

RESULT: Prizm opens the Update User Account window for that user, which provides tabs of settable fields as shown in [Figure 16](#).

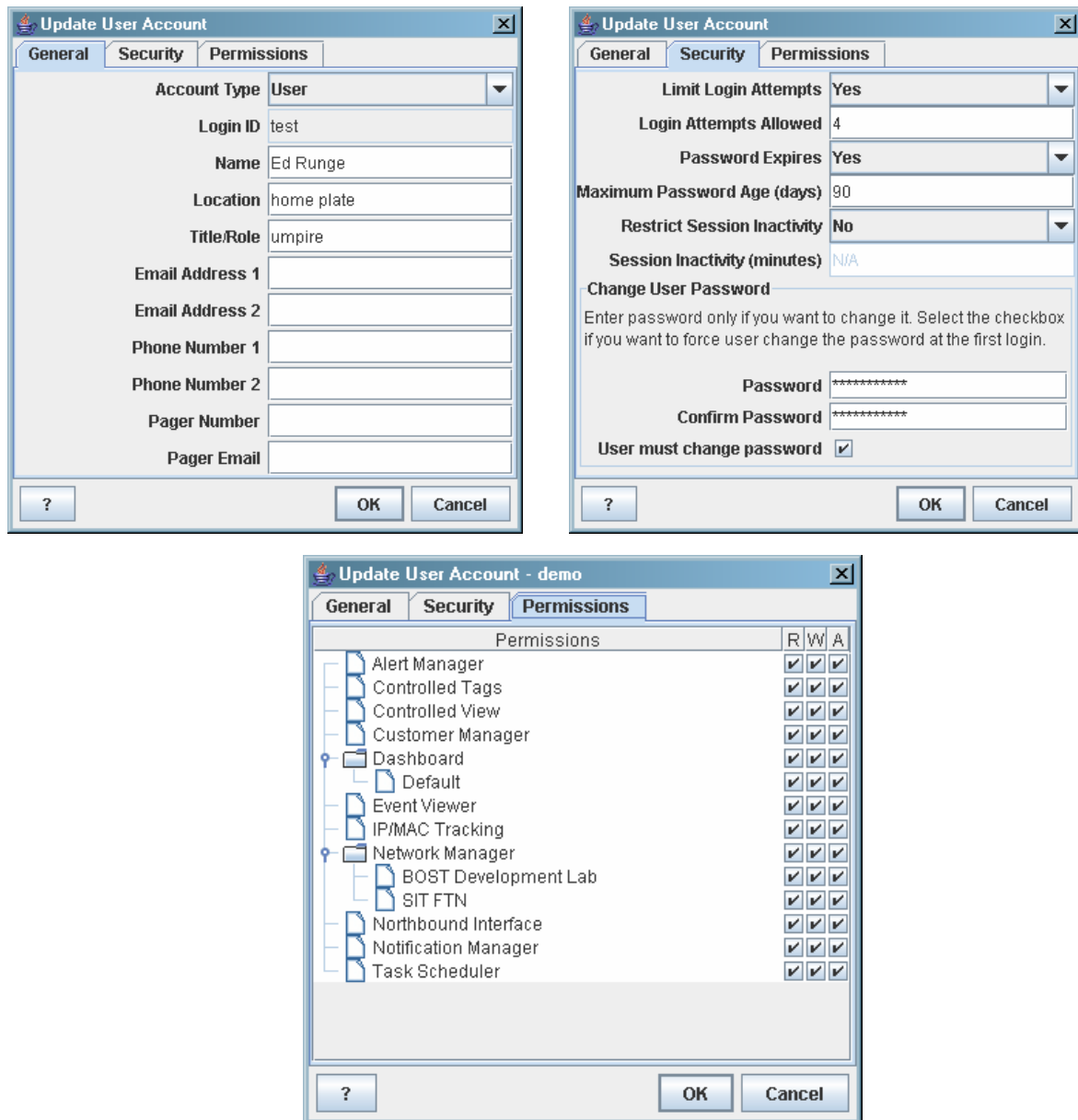


Figure 16: Example Update User Account window

NOTE: The General tab is identical to, and has the identical effects of, the General tab of the Update Login window, which opens *for your own* account if you select to **File→Update Login Account**.

4. Update the account information.
NOTE: Only an administrator can access the Security and Permissions tabs. A user for whom **A** is checked for *all* areas has every capability that an administrator has, except access to the System Log and User Manager tabs.

5. Click **OK**.

RESULT: All changes take effect when the user next logs in. (For a current session of the user, previous permissions govern until logoff, except that changes in read permission for a network immediately affect whether user-defined alerts are processed for that network.)

===== end of procedure =====

4.5.9 Deleting a User

An administrator can delete any user except the current user and the default administrator. Deleting a user from Prizm is an irreversible operation. To delete any user from Prizm access, perform the following steps.

Procedure 9: Deleting a user account

1. Select **Tools→Administrator→User Manager**.
2. Click the row of the user in the User Manager tab.
3. Click **Delete User**.
RESULT: Prizm opens a Confirm Delete window.
4. To confirm and execute the delete operation, click **Yes**.

===== end of procedure =====

4.6 USING THE Prizm INTERFACE

4.6.1 Changing Your User Password

At any time, regardless of what tab is active, you can select **File→Change Password** from the main menu. When you do, Prizm opens the Change Password window. An example is shown in [Figure 17](#).



Figure 17: Change Password window

Prizm *does not* echo the passwords that you enter in this window back to the display. For this reason, it requires you to type the new password a second time to assure accuracy.

4.6.2 Tab and Window Operations

A tab in the Prizm console window looks and behaves similar to a tab in a typical graphical user interface (GUI). However, in Prizm you can undock a tab from the console window. This results in an independent window that you can move, minimize, maximize, or restore like any other window and can dock back into the console window.



NOTE:

You can also close an undocked window. However, this *does not* automatically result in docking the tab.

For a docked tab, the color of the upper (tab) area of the tab distinguishes the active tab. For an undocked tab, the color of the title bar distinguishes the active tab as the focus window. Only one tab is active at any time. This is the tab to which all user inputs are directed. The **Window** main menu item provides

- selections for docking/undocking and closing the active tab or window.
- a selection for renaming a tab.

The selection for renaming a tab results in Prizm opening an Input window, as shown in [Figure 18](#).

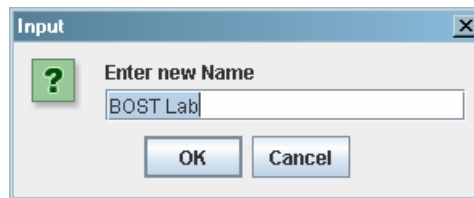


Figure 18: Input window for renaming a tab

However, the effect is transitory as follows:

- When you rename a tab and later undock the tab, the resulting window has the original tab name in the title bar. Then if you dock this window, the resulting tab has the original tab name.
- When you log off and later log back in, the tab has the original tab name, even if you are prompted for a console configuration and select **Last Session Configuration**.

Some undocked tabs provide a **Cancel** button that enables you to stop the current operation. This also closes the tab. These results are identical to those of selecting **Window→Close** or clicking  in the upper right corner of the tab or window.

When you attempt to close a Prizm window, Prizm prompts you by default to confirm that you want to close it. However, you can quickly adjust Prizm to omit the confirmation prompt. To do so, select **File→Settings→Edit Settings**. With **General** selected in the left pane of the resulting Settings window, uncheck the box associated with **Prompt to Close Window/Tab**. Then at any later time, to restore the default confirmation prompt, you can check this box. Leaving Prizm configured to prompt you is generally safer because all of the data, configuration, and results in the tab or window is lost when you close it, unless you saved the contents or its configuration.

This toggle has no effect on whether Prizm prompts you to confirm that you want to end a Prizm session when you have selected **File→Exit**. Prizm always prompts you to confirm your intention to exit.

Many Prizm tabs and windows also contain either or both

- a refresh button: . Typically, this simply refreshes the current view. However, this may also refresh data that you are not currently viewing. See [Managing Views](#) on Page 209.
- a help button: . This opens context-sensitive help.

When the refresh button is clicked for a Network Browser view, Prizm responds as follows:

- If the current view is a filter view, Prizm immediately queries the database to update the filter view contents.
- If any elements are selected (checked), Prizm immediately polls for the SNMP attributes and status of these elements, regardless of the set SNMP polling intervals.
- If any branches are selected, Prizm immediately polls for the SNMP attributes and status of top-most checked elements, regardless of the set SNMP polling intervals.
- If no element is selected but one is highlighted, Prizm immediately polls for the SNMP attributes and status of this element, regardless of the set SNMP polling interval.

Collection of the poll values from the elements into the Prizm database may require a couple of seconds. Thus, these values may be not yet available when the display is refreshed. To see all of the new poll response values in the General tab of the Details pane may require two refreshes, with a delay of a couple of seconds between them.

During a refresh, Prizm detects if an IP address points to a different MAC address, as in a replacement module. How Prizm responds to this detection is the same as if it detects this during auto discovery. See [Subnet Configurations](#) on Page 100.

4.6.3 Menu Operations

The Prizm menu tree is context sensitive. The set of selections that are present and the set, if any, that are grey (not currently selectable) depends on what tab is active. Most dynamic selections are under the **Edit** main menu item.

4.6.4 Column Operations

In tabs that have multiple data columns, you can

- drag a column sideways to change the order of the columns.
- click on the heading of a column to cause Prizm to sort the contents of the tab by the values in that column. (The first click yields ascending order, the second click yields descending order, and so forth.)
- click on the divider between two columns to auto-size the width of the left column of the two to improve viewing particularly wide content. This is effective in windows/tabs of the following types:
 - Network browsing/viewing
 - Notification Manager
 - Event Viewer
 - Customer Contact Manager
 - Alert Manager
 - User Manager

4.6.5 Screen Operations

When you exit Prizm through either the **File→Log Off** menu selection or a click of the  in the upper right corner of the main console window, Prizm maintains and will reopen to the current screen settings, including

- what tabs are open.
- the order of columns.
- how the tabs are sized.
- the sorted order of the data.
- what columns are present.
- what elements are selected (checked).

Periodically the Prizm client requests new data from the Prizm server over the network and refreshes the active tab or window with the new data. This also occurs whenever a tab or window becomes active. At any time in certain views (especially the Event Viewer and the Network Browser), you can click the refresh button to force Prizm to immediately request and display new data: 

Prizm delivers error messages to the user typically in dialog boxes. These messages are specific to the context in which the error occurred. They typically are system responses to an action by the user. All other messages are displayed in the System Log.

In table views, Prizm uses mouse-over tooltips to provide information, including status information in a network view and complete message text in the Event Viewer, for example. An example of a tooltip pop-up is shown in [Figure 19](#).

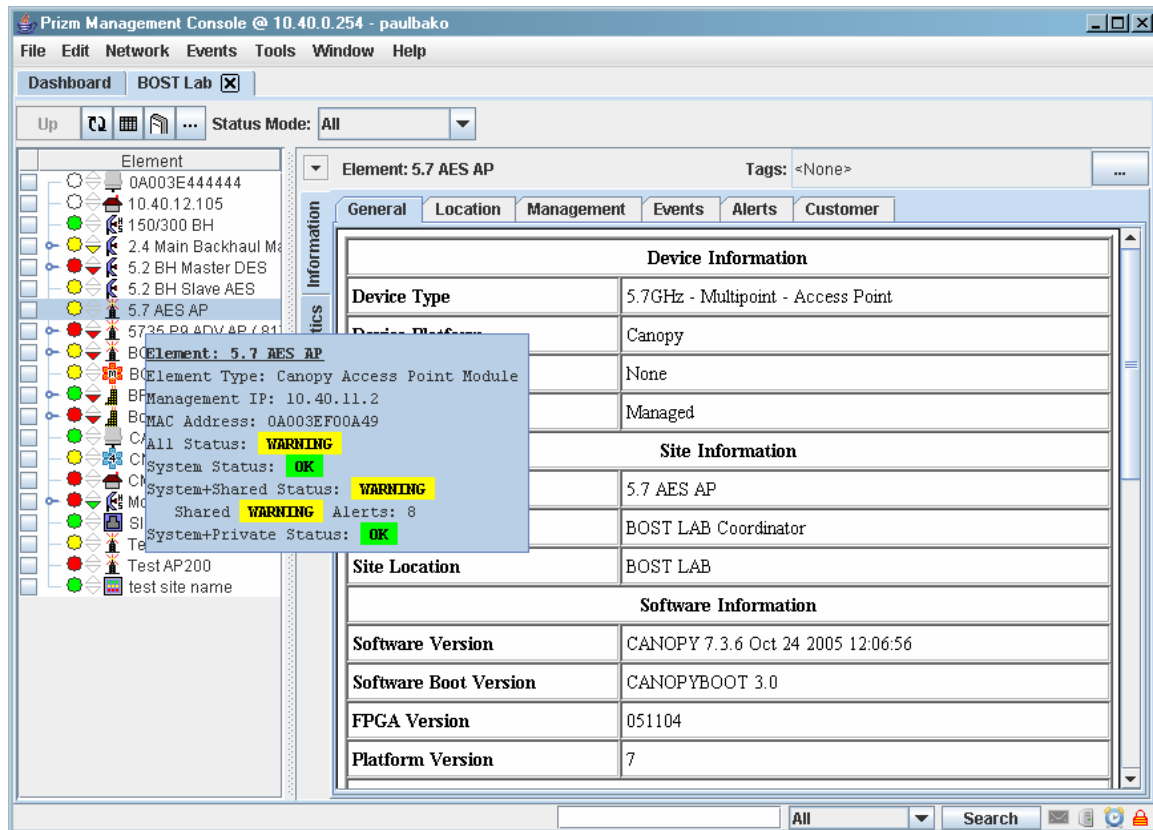


Figure 19: Network view with tooltip providing status information

You have control over when tooltip displays pop up and for how long they continue to appear. To adjust these settings, select **File→Settings→Edit Settings**. With **General** selected in the left pane of the resulting Settings window, adjust the **Tooltip Display Delay (seconds)** and the **Tooltip Display Period (seconds)** settings.

In situations where you want to update something that you have defined in Prizm, you can either

- highlight the item, then use the Edit menu. For example, select **Edit→Update the Alert**.
- double-click on the item.

Either action results in Prizm opening an appropriate update operation window. However, neither action works where the other does not, and Prizm returns no error indication if they do not. This can occur where Prizm does not associate the item with any one update window and where Prizm does, but the user lacks permission to update the item.

4.6.6 Menu Selections Limited in RADIUS Mode

Certain command options in the Prizm GUI are not available where Prizm is configured to allow RADIUS to manage authentication and bandwidth. These functions are assumed by RADIUS. These are

- in a network view
 - **Edit→Configure→Bandwidth Service Plan→Default Bandwidth Service Plan**
 - **Edit→Authentication Account State→Activate**
 - **Edit→Authentication Account State→Suspend**
- in the Define Networks tab
 - **File→Import/Export→Import Network Element(s)**
 - **Edit→Accept Element(s) to BAM**
 - **Edit→Add Element(s) for BAM Provision**
 - **Edit→Update Element(s) for BAM Provision**
 - **Edit→Network Element Operations→Configure→Bandwidth Service Plan→Default Bandwidth Service Plan**
 - **Edit→Network Element Operations→Authentication Account State→Activate**
 - **Edit→Network Element Operations→Authentication Account State→Suspend**

4.6.7 Help Resources

The **Help** main menu item provides access to various forms of help as follows:

- When you select **Help→Help**, Prizm opens a new window that contains context-sensitive on-line help that you can view while you also view the tab or window for which you want help.
- When you select **Help→Index**, Prizm opens a new window that contains all of the Prizm help that is available. This option also provides a link to an HTML document that describes the element attributes that Prizm manages. See [Defining Template Attributes](#) on Page 262.
- When you select **Help→User Guide**, Prizm opens the PDF file of this user guide document.
- When you select **Help→Show Licensing**, Prizm opens the Licensing Information window. See [Viewing License Counts](#) on Page 133.



RECOMMENDATION:

If the Prizm server is on a Windows® platform, and if Prizm seems to hang rather than promptly display the Licensing Information window (more than a minute passes), you are seeing a problem that Canopy is tracking under Item ID 0001225. A potential remedy for this problem is published for Prizm servers on Windows in the section titled "Querying Licenses on Windows 2000/XP/Server 2003" in the *Motorola Canopy® Prizm Release 3 Administration Guide*.

If the server administrator tries the remedy, then retry **Help→Show Licensing**.

The Help main menu includes a **Help→Debug Output** selection. See [Obtaining Technical Support](#) on Page 420.

The **Help** main menu items also provides access to information about the run-time version of Prizm that you are accessing and a verification of the user account for the current session. You can access this information by selecting **Help→About Prizm**. Customer support may ask a user to provide information from this screen.

4.6.8 User Manager Operations

You can access the User Manager tab in the console is by selecting **Tools→Administrator→User Manager** from the main menu. An example of this tab is shown in [Figure 20](#).

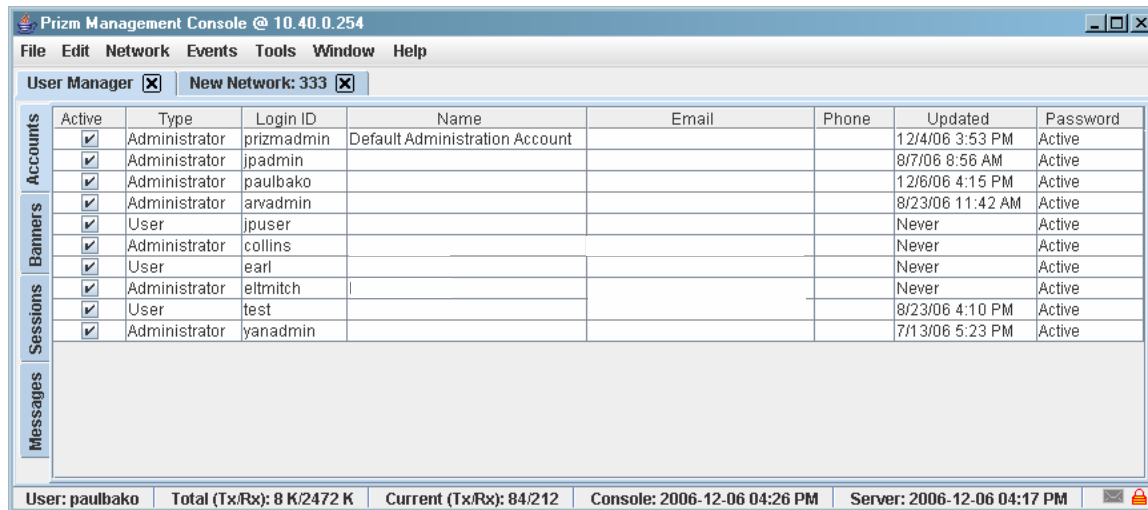


Figure 20: Example User Manager tab

The User Manager tab contains side tabs for various operations. In [Figure 20](#), the Accounts side tab is selected. This gives access to the following **Edit** menu commands for user management:

- **Add User**
- **Update User**
- **Delete User**
- **Activate User**
- **Deactivate User**
- **Send Email to User**

Adding, updating, and deleting a user are discussed earlier in this chapter. Activating and deactivating a user are performed by highlighting the row of the user in the User Manager tab and then selecting the command from the **Edit** menu. The action is immediately reflected in the Active column. The command **Edit→Send Email to User** opens a Compose Email window with the **From** line populated by the contents of the Email Address field at **File→Settings→Edit Settings (Configure Email Service pane)** and the **Email To** line populated by the email address of the currently highlighted user (unless the Email column is blank for that user). All of the **Edit** menu commands use as input the currently highlighted row.

Banners Side Tab

If you click the Banners side tab, you can define a message that Prizm will pop up for each user to read when they log in. Prizm refers to this type of message as a banner. To define a banner, perform the following steps.

Procedure 10: Adding a banner

1. With the Banners side tab selected in the User Manager tab, select **Edit→Add Banner**.
RESULT: Prizm opens the Add Banner window. This generic window is shown in [Figure 21](#).

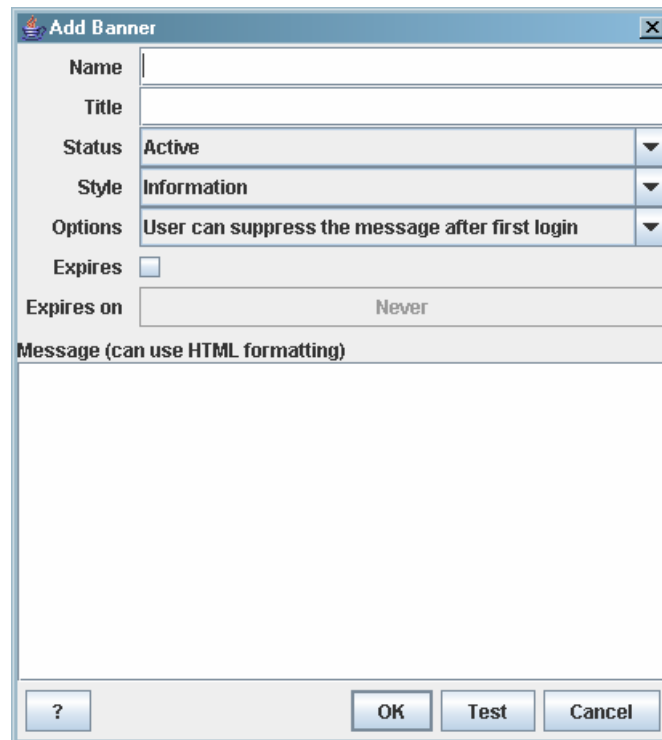


Figure 21: Add Banner window

2. In the **Name** dialog, type in a designation for User Manager to display in the list of current banners.
3. In the **Title** dialog, type in a name for Prizm to put in the title bar of the banner pop-up window.
4. In the **Status** field, if you are defining this banner for only future use, use the down arrow to select **Inactive**.
5. In the **Style** field, use the down arrow to associate this banner with one of the following banner styles:
 - **Information**
 - **Warning**
 - **Question**
 - **Error**
 - **Plain**

6. In the **Options** field, if you want users to be unable to suppress the banner from appearing, use the down arrow to select **User is forced to read the message on each login**.
7. If you want the banner to be suppressed by expiration
 - a. check the box for **Expires**.
 - b. at **Expires On**, click in the dialog area.
RESULT: Prizm opens the Choose Start Date window.
 - c. In the calendar portion of that window, select the day when this banner should expire.
 - d. In the drop-down lists, select the month, year, hour, and minute when this banner should expire.
 - e. Also in the Choose Start Date window, click **OK**.
RESULT: In the Expires On dialog, Prizm displays the date and time when this banner will expire.
8. In the Message dialog, type in the message of this banner as either
 - plain text; for example

Maintenance

Please be advised of upcoming maintenance taking affect from July 5, 2006 till July 6, 2006

Administrator

- html; for example

```
<html>
<h2>Maintenance</h2>
<p>Please be advised of upcoming maintenance taking affect from July
5, 2006 till July 6, 2006</p>
<p>
<b>Administrator</b>
</p>
</html>
```

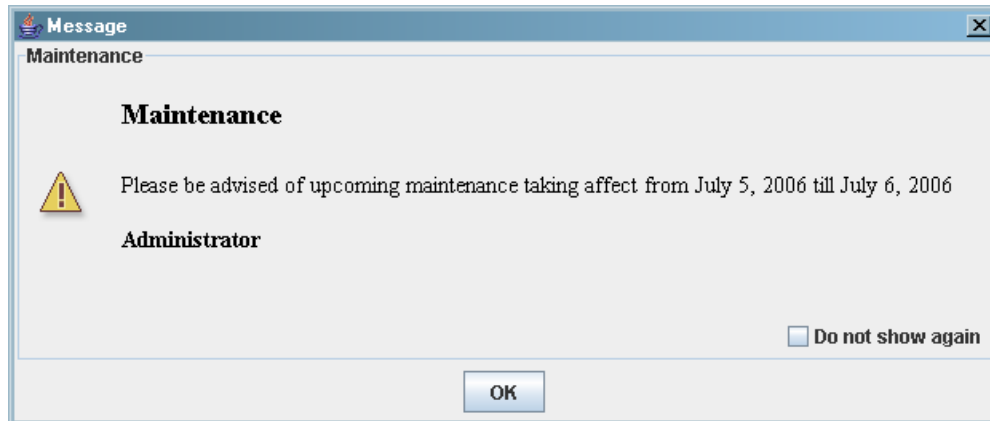
9. In the Add Banner window, click **OK**.
RESULT: The banner is added to the list.

===== end of procedure =====

When a banner is highlighted in the list, the **Edit** menu provides the following commands:

- **Add Banner**
- **Update Banner**
- **Delete Banner**
- **Deactivate Banner**
- **Move Up**
- **Move Down**
- **Test Banner**

With **Test Banner**, you command Prizm to immediately display the banner just as it will to users when they log in. For example, the example banner above coded in html will display as follows:



In the example shown above, **Warning** was selected as the banner style; hence, the symbol on the left side of the banner. If you select the **Do not show again** checkbox, then this banner will not display for you when you log in, but it will for each other user until they select this checkbox.

The **Update Banner** command gives you access to all of the Add Banner window fields, but in an Update Banner window. Prizm *will not* remove an expired banner from the list, remove its configuration from the banner, or switch its status from active to inactive. Prizm will simply no longer display the banner when anyone logs in. So, if you have a periodic need for identical banners, you can update the same banner right before you want it to begin appearing again and set a new appropriate expiration date.

Sessions Side Tab

If you click the Sessions side tab, the **Edit** menu provides the following commands:

- **Refresh Sessions**
- **Select All Sessions**
- **Unselect All Sessions**
- **Send Message to User(s)**
- **Terminate Session(s)**

The **Refresh Sessions** command refreshes the sessions list in this tab.

The **Send Message to User(s)** command requires advance selection of user(s) in the sessions list. This command opens the Message to *LoginID* window for you to populate with an unformatted note and then click **Send**. *LoginID* is that of the last user whose checkbox was selected in the sessions list. If all sessions are selected, then *LoginID* is that of the user whose session row is highlighted. You cannot use this command to send a message to a user who is not currently logged in or to attach data.

A recipient can only either reply to or close the message. All messages sent by this command and all responses are logged in the Messages side tab. After a recipient sends a reply or closes the message, that message is no longer available to that user. However, Prizm maintains a history of the messages that are exchanged between each pair of messaging users and includes this history in a scrollable area of the message pop-up window, above the incoming message, as shown in [Figure 22](#).

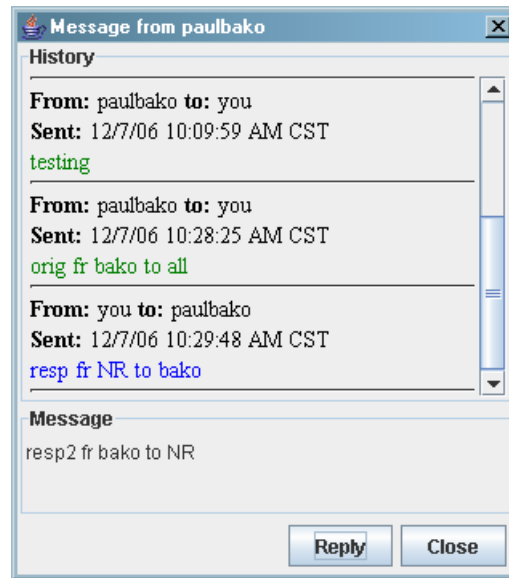


Figure 22: Example incoming message window

Messages Side Tab

If you click the Messages side tab, the Edit menu provides the following commands:

- **Show Message**
- **Reply Message**
- **Delete Selected Messages**
- **Select All Messages**
- **Unselect All Messages**

In the messages log, where the Type column entry is Outgoing, the User column entry is the To User, with the *LoginID* as described above in the section titled [Sessions Side Tab](#). Where the Type column entry is Incoming, the User column entry is the From User.

Regardless of checkboxes selected, the **Show Message** command opens only the message that is highlighted. When this command opens any message, the resulting Message to *LoginID* or Message from *LoginID* window contains only the message, not also the history. When you view a message that you have sent, the **Reply** button in the message window is gray and disabled.

Similar to the **Show Message** command, the **Reply Message** command applies to the currently highlighted message, with no regard for checkboxes. However, when this command opens any message, the Reply to *LoginID* window contains both the message and the history. So, although you can use either command when you want to reply, if you want to see or refer to the history of exchanges while you compose the response, then the **Reply Message** command will provide that convenience.

The **Delete Selected Messages** command removes all messages whose checkboxes are checked from the messages log.

For the convenience of the account type Administrator, the Prizm application includes a message icon in the status bar at the bottom of the console. For account type User, this icon is always dark (✉). For account type Administrator, this icon is bright (✉) when an unread incoming message has been stored. When no more unread messages for the administrator exist, the icon returns to dark.

Account type User receives the message in a pop-up window rather than an icon indication of the message. Account type Administrator receives the pop-up as well, but only if the Messages side tab is open when the message is processed.

4.7 SYNCING TIME

Appropriately interpreting trends and reports can depend on time being in sync across the network elements and the Prizm server and clients. For example, event time stamps can be unreliable for comparison where the time difference between the client and server is greater than the polling interval. Moreover, all servers that together constitute a redundant setup of at least one server under an Prizm EMS server license and a BAM server license, and at least one server under a BAM server license, must all be synchronized by Network Time Protocol (NTP) for proper interactions among each other.

The server allows the clients to see the server time. This is displayed in the About Prizm window, which opens when you select **Help→About Prizm** from the main menu. Be careful to read from the line Server Time (not from the time and date shown as TS=, which is the time when the server was last started).

Further, at log in time on the client, if the client and server are out of sync, the client pops up a warning window as shown in [Figure 23](#).

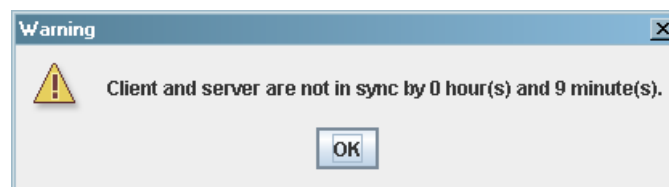


Figure 23: Example out of sync Warning window

In Release 3.0, the out of sync condition is also evident in the times that are in the status bar shown at the bottom of the main console window. This is shown in [Figure 24](#).



Figure 24: Status bar in Release 3.0

In Release 3.1 and later, these times are available through a click of the clock icon in the status bar, which causes a Current Time window to open. This is shown in [Figure 25](#).

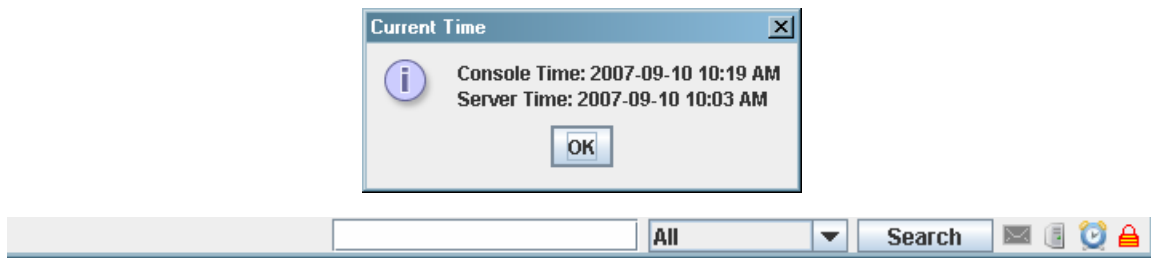


Figure 25: Status bar in Release 3.1 and later

You can use an NTP server (in CMMmicro, for example) to provide time to not only network elements, but also your Prizm server and clients. To start NTP time on a Windows OS, perform the following steps.

Procedure 11: Setting the server or client to receive NTP

1. Access the command prompt. (For example, this may be available through **Start→All Programs→Accessories→Command Prompt.**)
2. Enter **net stop w32time.**
3. Enter **net time /setsntp:<IP address of NTP server>.**
4. Enter **net start w32time.**

===== end of procedure =====

Any change of the time on the device(s) where License Manager resides can cause problems in the interaction between License Manager and Prizm. If this occurs, perform the following steps:

1. Stop Prizm server.
2. Stop License Manager.
3. Start License Manager.
4. Start Prizm server.

5 SETTING UP VIEWS

Through Canopy System Release 7.3.6, no firewall mechanism that could block access from Prizm was present in the modules. In Release 8.x and later, the Security tab of the Configuration web page in the AP, SM, and BH includes the **IP Access Control** parameter, as shown in [Figure 26](#).

IP Access Filtering	
IP Access Control :	☐ IP Access Filtering Enabled - Only allow access from IP addresses specified below ☒ IP Access Filtering Disabled - Allow access from all IP addresses
Allowed Source IP 1 :	0.0.0.0
Allowed Source IP 2 :	0.0.0.0
Allowed Source IP 3 :	0.0.0.0

Figure 26: IP Access Filtering area of Security tab in module GUI

This parameter provides an optional high-level firewall in the module as follows:

- When **IP Access Filtering Disabled** is selected, Prizm can manage the module without being inhibited by the firewall.
- When **IP Access Filtering Enabled** is selected, the IP address of the Prizm server must be entered into one of the **Allowed Source IP** parameters. Otherwise, the firewall prevents Prizm from managing the module.

5.1 INITIATING AUTO DISCOVERY OF ELEMENTS

Prizm creates default hierarchical layouts of individual networks that you define. When you initiate auto discovery of elements in a network, Prizm

- examines all known master elements for any slave elements that are associated with them.
- scans all IP addresses that are not already associated with elements that Prizm has discovered in the IP auto discovery ranges, including all responding SNMPv1 and SNMPv2 generic (non-Canopy) elements.
- adds any new elements to the Discovered Elements list.



IMPORTANT!

For any CMM4 in your network, read and record the MAC address of both the module and its switch from the physical units before or when you install the module. This is your only way to correctly associate the switch with the module.

Prizm performs auto discovery as a result of adding elements to a network and as SMs register on the network, sending a registration trap. To define the network, either

- specify at least one range of IP addresses for the Network Manager to scan
- enter the IP address(es) of the master elements beneath which you want the Network Manager to find the slave elements.

The procedure for specifying IP addresses is described below, under [Defining Networks for the EMS](#) on Page 100.

Auto discovery is associated with normal network polling. Thus, you do not need to command Prizm to initiate auto discovery, although you can as described under [Procedure 14](#) on Page 109. When an element has been either added or discovered and accepted into a network, Prizm *will not* remove the element for being unregistered during a later auto discovery.

5.1.1 Identifying Element Types by Symbol

Prizm uses graphic symbols to distinguish element types, as shown in [Table 10](#).

Table 10: Symbols representing element types

Symbol	Element Type	Symbol	Element Type
	PTP 200		Powerline Modem
	PTP 400 or PTP 600		Canopy 400 Access Point (CAPxx400)
	CMM4		Canopy 400 Subscriber Module (CSMxx400)
	CMMmicro		generic SNMP switch ²
	AP ¹		generic SNMP device
	SM		folder (e.g., for CMM2)
	Powerline MU/Gateway		Prizm NBI
NOTES: 1. An AP identifies itself to Prizm as an AP, regardless of whether it has been temporarily transformed into an SM to use the Spectrum Analyzer feature. 2. Including Cluster Management Module-4 Switch.			

On the immediate left of the symbol in the network tree view are two status indicators. These are described under [Interpreting Element and Link Status](#) on Page 175.

5.1.2 Disabling Discovery of SMs in a Network

By default, Prizm is set to auto discover SMs. Auto discovery of SMs can be disabled for either

- all new networks that will be added. This can be done by only the Prizm server administrator.
- only networks for which this is specified. This can be done by one who has any of the following permission levels:
 - account type User with **A** for the network.
 - account type User with **A** for Network Manager (referred to elsewhere in this guide as **NMA**).
 - account type Administrator (referred to elsewhere in this guide as **ATA**).

To specify this for an individual network, or to toggle SM auto discovery back to re-enabled for a network, perform the following steps.

Procedure 12: Disabling or re-enabling SM auto discovery

1. Select **Network→Define Networks**.
2. In the left pane, select (highlight) the name of the network.
3. In the right pane, check or uncheck the checkbox of **Enable SM Auto-Discovery**.
4. Click the **Apply Changes** button.

NOTE: This parameter is shown in [Figure 30](#) on Page 101.

===== end of procedure =====

To specify this for all new networks that will be added, see the section titled "Disabling or Re-enabling SM Auto Discovery for New Networks" in the *Motorola Canopy® Prizm Release 3 Administration Guide*.

5.2 SETTING UP NETWORK VIEWS

5.2.1 Using the SNMP Proxy Feature

Prizm can communicate with SMs or Powerline modems in either of two ways:

- by routing the communication to an IP address.
- by SNMP proxy, with requests sent through the proxy in the master device and responses sent directly from the slave device to Prizm.

Prizm always checks first for a routable IP address and, finding one, communicates in that way, regardless of whether the **Use SNMP Proxy If Available** option is checked when the network is defined. However, the system falls back to SNMP proxy if all of the following conditions are met:

- The **Use SNMP Proxy If Available** option is checked when the network is defined.
- The AP is capable of SNMP proxy (requires Canopy System Release 8.x or later).
- No routable IP address is associated with the SM.

This feature is useful for an operator who wants to manage slave devices without managing IP address allocation schemes. Where SNMP proxy is used, it uses Port 61002 on the AP. So, outbound communication from Prizm on that port must be enabled. No configuration steps are required on the master device, which is (if SNMP proxy-capable) always enabled for it. However, the following caveats apply to the slave devices:

- The slave device must be configured to send traps directly to Prizm, because the proxy in the master device *does not* forward traps.
- The community string for SNMP requests is that of the slave device.



IMPORTANT!

Although Canopy radios that operate on Canopy System Release 8.x support community strings that contain spaces, Prizm *does not*. A space prevents SNMP discovery and all non-BAM management from Prizm. Canopy will track this problem under Item ID 0004614.

Until this problem is resolved, review the strings and remove their spaces through direct access to the radios.

- The SNMP subnet configuration (security) is configured such that the SM will respond to the IP address of the EMS for SNMP requests. The private IP address (associated with the Ethernet port of the slave device) must not be in the same subnet space as Prizm, because if it is, then the slave device sends its responses to Prizm through that port, and those responses never arrive at the EMS. Compare [Figure 27](#) against [Figure 28](#).

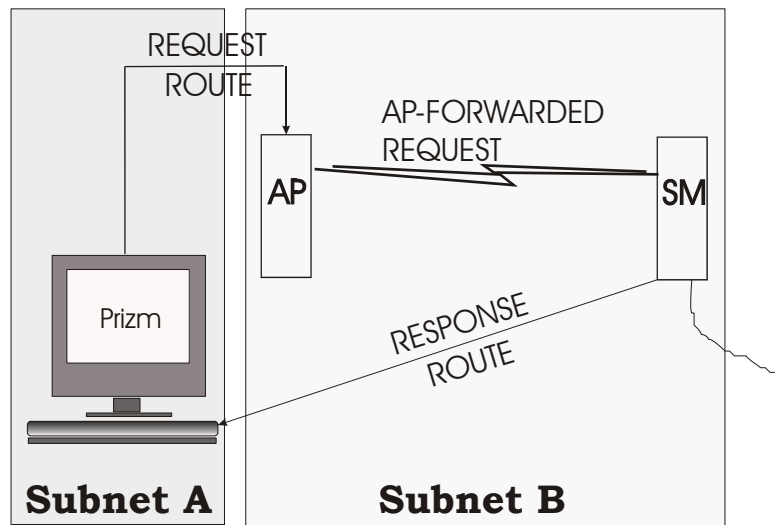


Figure 27: Proper subnet configuration for SNMP proxy communications

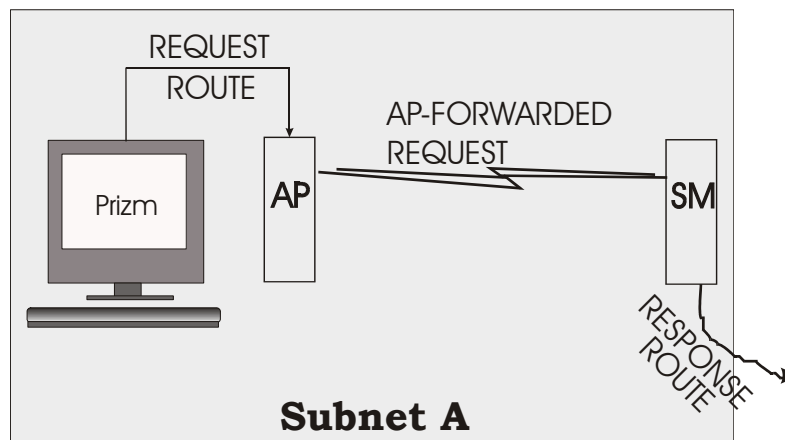


Figure 28: Improper subnet configuration for SNMP proxy communications

This feature also permits a user to quickly change an element from

- SNMP Proxy management to direct management by
 - (1) selecting the element in the Network Elements pane of the Define Networks tab.
 - (2) selecting **Edit→Modify Element IP and MAC**.
 - (3) populating the null **New IP** address field with a valid IP address that Prizm can access.
 - (4) clicking **OK**.

- direct management to SNMP Proxy management by
 - (1) ensuring that **Use SNMP Proxy If Available** is selected in the network folder pane of the Define Networks tab.
 - (2) selecting the element in the Network Elements pane.
 - (3) selecting **Edit→Modify Element IP and MAC**.
 - (4) removing the IP address in the Prizm record of the element (making the **New IP** field null).
NOTE: See [Figure 165: Example Modify Element IP and MAC window](#) on Page 284.
 - (5) selecting **Edit→Move Element(s) to Ignore List**.
NOTE: This step is necessary so that Prizm retains historical data about the device when you accept it again for management.
 - (6) selecting the element in the Ignored Elements pane.
 - (7) selecting **Edit→Accept and Manage Network Element(s)**.

5.2.2 Specifying Tags for Element Type(s)

Prizm allows you to specify in advance of element discovery any tags that you want applied to any element type or group of element types. The intent of this feature is to let you simplify operations like configuration or data collection, where common treatment for multiple element types is practical. For example, the following automatic tags are recommended for you to add:

- **Infrastructure**
- **CPE**
- **Point-to-point Links**
- **Canopy Devices**
- **PLV Devices**

The element type list for each of these recommended automatic tags is provided in [Procedure 15: Specifying default network settings](#) on Page 115.

How you add tags determines whether Prizm will apply them only for a particular network or for all of your networks:

- **Edit→Add a Network** or highlighting a network name in the left pane of the Define Networks tab allows you to define automatic tags that Prizm will apply only for that network. You can do this only if your permission level is
 - **A** (administrator) for all of Network Manager, if you are adding a new network. This level is referred to elsewhere in this guide as **NMA**.
 - **A** for that network, if you are editing the properties of a pre-existing network.
- **Edit→Default Network Settings** allows you to define automatic tags that Prizm will apply for all networks. You can do this only if your permission level is **A** (administrator) for all of Network Manager. This level is referred to elsewhere in this guide as **NMA**.

Prizm automatically applies these tags whenever you execute any of the following commands:

- **Edit→Accept and Manage Network Element(s)**
- **Edit→Accept Element(s) to BAM**
- **Edit→Add Element(s) for BAM Provision**
- **File→Import/Export→Import Network Element(s)**

When you execute one of these, Prizm opens a window that contains an Automatic Tags tab, where you can view the automatic tags and add custom tags that Prizm will apply during the operation. An example of this tab is shown in [Figure 29](#).

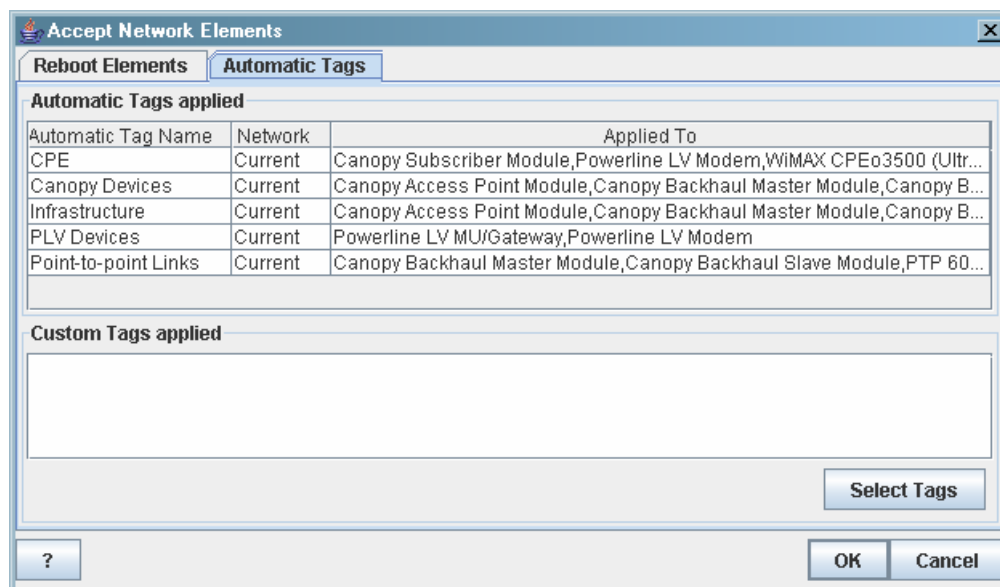


Figure 29: Example Accept Network Elements window, Automatic Tags tab

If you click the **Select Tags** button, Prizm opens the Update Tags window, which gives you allows you to apply, or add and apply, other tags. An example of the Update Tags window is shown in [Figure 88](#) on Page 194.

Prizm applies automatic tags during only these operations. For elements that already exist in the network or are already accepted to BAM or added for BAM provisioned, if you want them tagged according to the same scheme that you are establishing for automatic tagging, then you must directly tag them. (See [Tagging an Element](#) on Page 193.)

If you are later in the network folder or the Default Network Settings for Auto Discovered Elements window and click the **Modify** button and make changes, be aware that the changes *will not* apply to any elements to which the selected automatic tag has already been applied. If the change is a new name for the tag, these elements retain the previous tag. If the change is in the list of element types, then

- member elements whose types are no longer in the list retain the tag, unless you directly remove it from them.
- member elements whose types are added to the list continue *to not* have this tag applied, unless you directly apply it to them.

If you click the **Delete** button and stop automatically applying the tag, be aware that the any elements to which the selected tag has already been applied will continue to be tagged with it, unless you directly remove it from them.

Specifying Automatic Tags for an Individual Network

Specify these tags in the course of adding the network, as described in [Defining Networks for the EMS](#) on Page 100. For a network that already exists, highlight the network name in the left pane of the Define Networks tab, then use the automatic tags portion of [Procedure 13: Configuring the subnet for Prizm to apply](#) on Page 101.

Specifying Automatic Tags for All Networks

Specify these tags in the course of configuring default settings (what you want Prizm to do with elements that it discovers when you are not working within an individual network). Use [Directing Non-triggered Discovery Elements into a Network](#) on Page 115.

5.2.3 Defining Networks for the EMS

Creating a network in Prizm includes

1. defining the network by specifying the subnet configuration(s) that Prizm should apply to elements in the network.
2. triggering auto discovery of elements that match search criteria that you specify.
3. confirming which auto discovered elements Prizm should accept for management into the new network.

During tasks in the Define Networks area of Prizm (which include discovering elements and accepting elements), the active window displays the latest task. To keep intact the window of a previous task, dock the window in the console. If the window is undocked, then the window of the subsequent task overwrites its contents.

Subnet Configurations

Whether you specify non-default subnet configuration(s) in the following procedure depends on whether your network is currently segmented (for address space planning, address conservation, or security reasons, for example):

- If your network is segmented, use multiple instances of the Subnet Configuration pane (shown in [Figure 32](#) below).
- If your network *is not* segmented, select **Default** as the **Server Route IP Address** in Step 4.

In the segmented network, when you later accept elements into the network, Prizm identifies which of the Prizm server IP addresses can access the element and configures the IP address of the element based on that address.

To define a network, perform the following steps.

Procedure 13: Configuring the subnet for Prizm to apply

1. Browse to **Network→Define Networks**.
2. Select **Edit→Add a Network**.
RESULT: Prizm adds context for the new network to the left-hand pane of the Define Networks tab.
3. From that context, select **New Network** (the folder).
RESULT: Prizm opens the Network folder pane. An example of this pane is shown in [Figure 30](#).

Prizm Management Console @ 10.40.0.254

File Edit Network Events Tools Window Help

Define Networks [X]

Category Filter: [v]

Network: BOST Lab

Network Name: BOST Lab

Category: [v]

(Use ; to separate Categories and structure Menu Hierarchy)

Menu: Network->Browse a Network->BOST Lab

Network Description: [Text Area]

Enable SM Auto-Discovery ☒

Use SNMP Proxy If Available ☒

Re-Discover Un-Managed NE ☐

Automatic Tags

Tag Name	Network	Assigned Element Types
CPE	Current	Canopy Subscriber Module, Powerline LV Modem, WiMAX CPEo3500 (Ultra Light Outdoor Subscriber Unit)
Canopy Devices	Current	Canopy Access Point Module, Canopy Backhaul Master Module, Canopy Backhaul Slave Module, Canopy Subscri...
Infrastructure	Current	Canopy Access Point Module, Canopy Backhaul Master Module, Canopy Backhaul Slave Module, Cluster Manage...
PLV Devices	Current	Powerline LV MU/Gateway, Powerline LV Modem
Point-to-point Links	Current	Canopy Backhaul Master Module, Canopy Backhaul Slave Module, PTP 600 (High-Speed Backhaul Master Module...

Add Modify Delete

Apply Changes Discard Changes

User: paulbako Total (Tx/Rx): 31 K/2938 K Current (Tx/Rx): 126/3 K Console: 2007-02-21 08:35 AM Server: 2007-02-21 08:23 AM

Figure 30: Example Network folder pane

4. For **Network Name**, type in a name by which you will recognize this set of elements in the future.
5. For **Network Description**, optionally type in any information, such as can further help to identify this network.

6. If you want Prizm to auto discover SMs, leave the **Enable SM Auto-Discovery** box checked.
If you want Prizm to not auto discover the SMs, uncheck it.
7. If you want Prizm to use SNMP proxy in this network whenever it cannot communicate directly with the SM using a routable IP address, leave the **Use SNMP Proxy If Available** box checked.
If you want Prizm to communicate with SMs through only IP addresses, uncheck it.
8. If you want Prizm to rediscover currently unmanaged elements (those that are discovered, ignored, or provision-rejected from other networks in Prizm), check the **Re-Discover Un-Managed NE** box.
If you want Prizm to not rediscover those elements, uncheck it.
9. If you want to define automatically applied tags for element types in this network, perform the following steps:
 - a. Click the **Add** button.
RESULT: Prizm opens the Add / Modify Automatic Tags window. An example of this window is shown in [Figure 31](#).

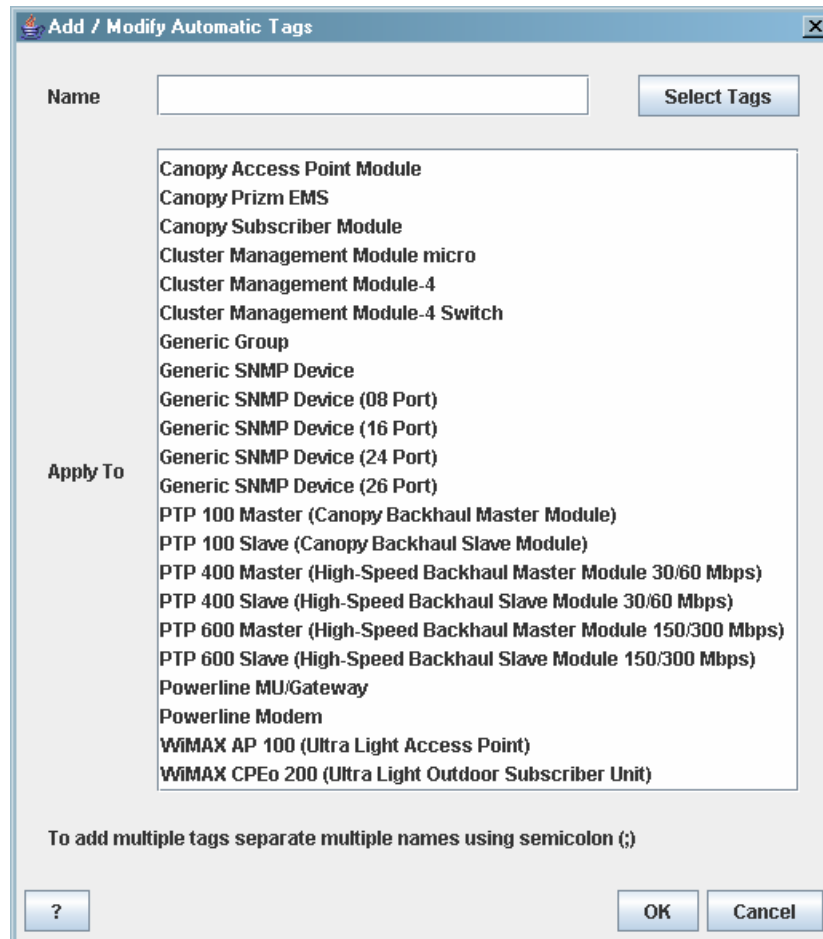


Figure 31: Add / Modify Automatic Tags window

- b. Either
 - type in the tag name(s) that you want to add for element type(s) that you will be specifying.
NOTE: You can add more than one name to apply to the element type(s), if you insert semicolon(s) between the names.
 - perform the following steps:
 - (1) Click the **Select Tags** button.
RESULT: Prizm opens the Update Tags window. An example of this window is shown in [Figure 88](#) on Page 194.
 - (2) Use [Procedure 45](#) on Page 193 to select and/or add tags.
- c. For **Apply To**, click an element type from the scroll list.
- d. If you want the tag to apply to multiple element types, press and hold the **Ctrl** key while you click to select them.
- e. Click **OK**.

10. Back in the right pane of the Define Networks tab, ensure that the options together are what you want Prizm to apply to elements that it discovers for this network.
11. Change any that are not.
12. When satisfied, click the **Apply Changes** button.
13. In the left pane of the tab, select **NEW* Subnet**.

RESULT: The Subnet Configuration pane opens in the right-hand area of the Define Networks tab. An example of the Subnet Configuration pane is shown in [Figure 32](#).

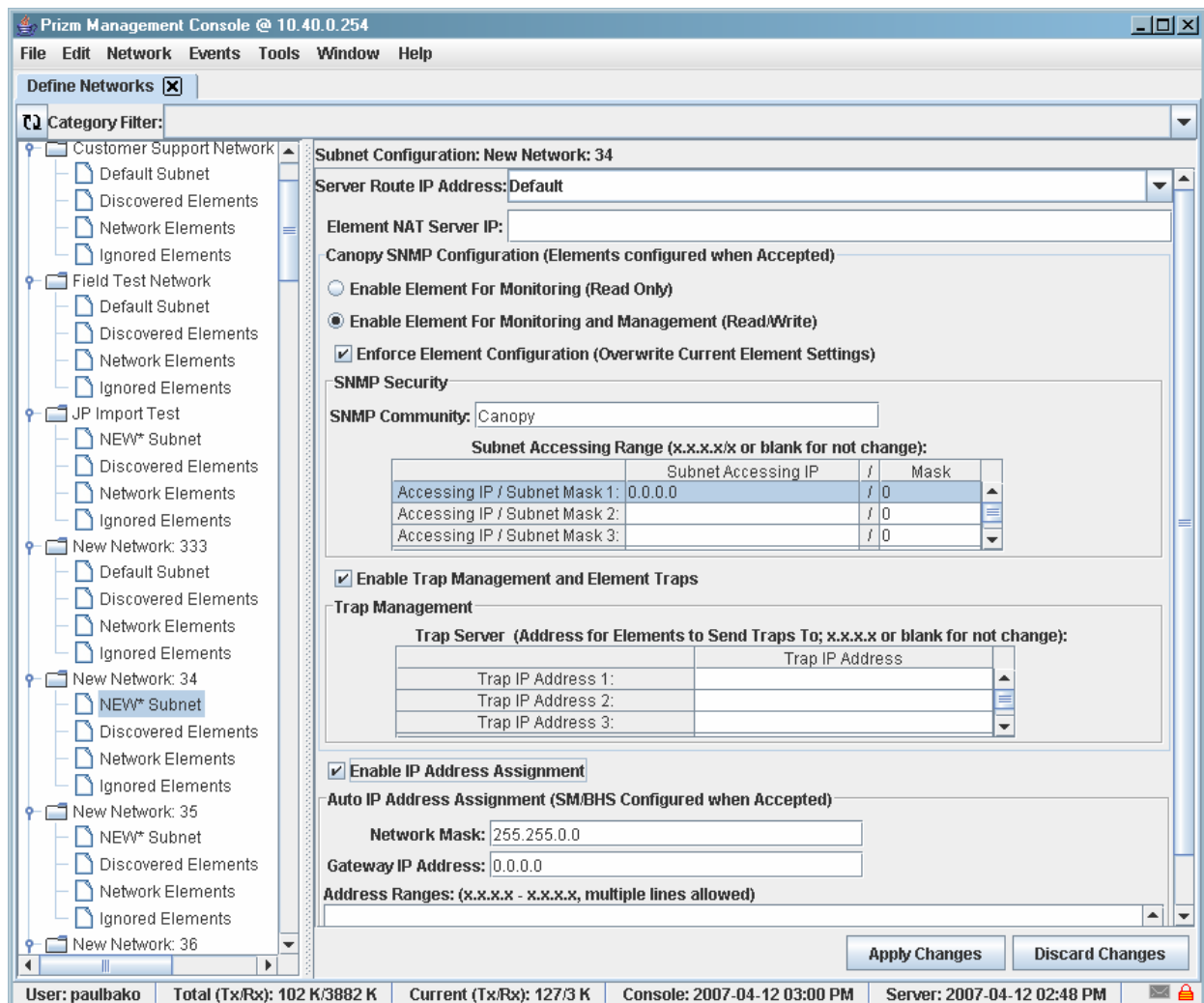


Figure 32: Example Subnet Configuration pane

14. In the **Server Route IP Address** field, either
 - leave **Default** if you do not wish to specify multiple IP route-based configurations. This is the appropriate selection for auto discovery in a network that *is not* segmented.
 - type in the IP address that elements in the subnet that you are configuring in this window should use to reach the Prizm server. For a segmented network, use multiple instances of this Subnet Configuration form—one for each network segment—via **Edit→Network Configuration→Add a Network Subnet Configuration**. See [Subnet Configurations](#) on Page 100.

NOTE: Even where no network interface has been defined with an IPv6 address, the drop-down in this field may include IPv6 addresses (for example, fe80:0:0:0:203:ffff:feb9:1a44%2) as well as IPv4 addresses (for example, 169.254.1.239). If you are selecting a pre-existing interface, simply ignore the IPv6 addresses and select from among the IPv4 addresses.
15. If your Prizm server is behind a network address translation (NAT) device, then in the **Element NAT Server IP** address field, type in the IP address of the NAT server.
16. Select **Edit→Network Configuration→Update Default Management Password List**.
RESULT: Prizm opens an Update Default Password List window.
NOTE: These management passwords for this window and other Prizm purposes are the read-write access passwords on the Canopy modules. An example of the Update Default Password List window is shown in [Figure 33](#).



Figure 33: Example Update Default Password List window

17. To add any read-write management password that you want Prizm to attempt during auto discovery, click **Add**.
RESULT: Prizm opens an Input window.
NOTE: An example of the Input window for adding a management password is shown in [Figure 34](#).

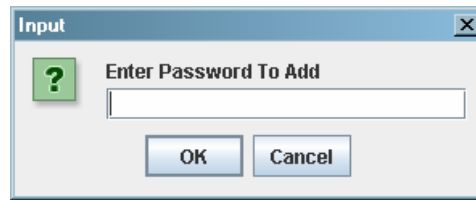


Figure 34: Example Input window to add a password for auto discovery

18. In this Input window, type the most frequently used management password in the network.
19. Click **OK**.
20. Repeat the previous three steps for any other management password, in order of frequency of use.
21. When you are finished, click **OK**.
22. Select **Edit→Network Configuration→Update Default SNMP Community List**.
RESULT: Prizm opens an Update Default Community List window.
NOTE: An example of the Update Default Community List window is shown in [Figure 35](#).

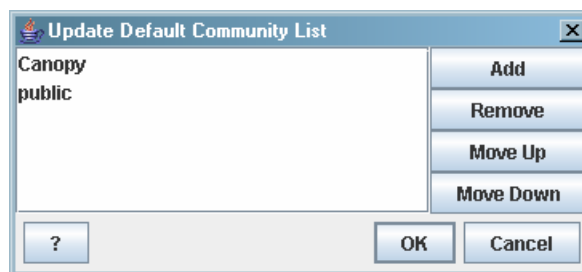


Figure 35: Example Update Default Community List window

23. To add any **SNMP Community String** that you want Prizm to attempt during auto discovery, click **Add**.
RESULT: Prizm opens an Input window.
NOTE: An example Input window for adding an **SNMP Community String** is shown in [Figure 36](#).

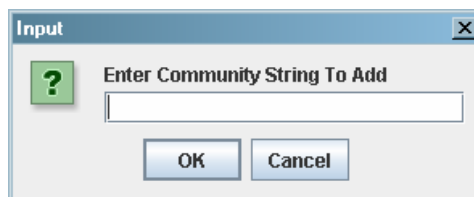


Figure 36: Example Input window to add an SNMP Community String for auto discovery

**IMPORTANT!**

Although Canopy radios that operate on Canopy System Release 8.x support community strings that contain spaces, Prizm *does not*. A space prevents SNMP discovery and all non-BAM management from Prizm. Canopy will track this problem under Item ID 0004614.

Until this problem is resolved, review the strings and remove their spaces through direct access to the radios.

24. In this Input window, type the most frequently used **SNMP Community String** in the network.
25. Click **OK**.
26. Repeat the previous two steps for each other **SNMP Community String**, in order of frequency of use.
27. When you are finished, click **OK**.
NOTE: For the purpose of element parameter display in columns, Prizm provides both an **SNMP Read Community** and an **SNMP Write Community** selection. Until Canopy modules support both, the value in both columns is identical, and only a flag on the module specifies whether operations are limited to reading.
28. Under **Canopy SNMP Configuration (Elements configured when Accepted)**, select from among the following:
 - If you select **Enable Element for Monitoring (Read Only)**, Prizm checks whether it can read SNMP from the element.
 - If so, the current SNMP settings remain on the element and no reboot of the element is required.
 - If not, Prizm pushes the default SNMP configuration onto the element, and a reboot of the element is required.
 - If you select **Enable Element for Monitoring and Management (Read/Write)**, Prizm checks whether it can read SNMP from the element (as above) and whether it can write to the element.
 - If so, the current permission settings remain on the element and no reboot of the element is required.
 - If not, Prizm pushes write permission onto the element, and a reboot of the element is required.
 - If you select **Enforce Element Configuration (Overwrite Current Element Settings)**, Prizm pushes all of its default configurable parameters onto the element, and a reboot of the element is required.

29. If you selected **Enforce Element Configuration**, then under **SNMP Security**
- in the **SNMP Community** field, specify the default community string for Prizm to apply.



IMPORTANT!

Although Canopy radios that operate on Canopy System Release 8.x support community strings that contain spaces, Prizm *does not*. A space prevents SNMP discovery and all non-BAM management from Prizm. Canopy will track this problem under Item ID 0004614.

Until this problem is resolved, review the strings and remove their spaces through direct access to the radios.

- under **Accessing Subnet/Range**, in the Subnet Accessing IP column, specify up to ten Classless Internet Domain Routing (CIDR) address blocks for Prizm to apply.
IMPORTANT: Ensure that you convert any IPv6 format (hex) strings into IPv4 format (dotted decimal) strings. See [Dotted Decimal IP Addresses Required for Subnets and Trap Servers](#) on Page 400.
 - in the Mask column, specify the number of CIDR supernet mask bits (the number of bits, from the left side of the addresses, that Prizm should identically assign to all devices in this subnet).
30. Under **Trap Management**, select **Enable Trap Management and Element Traps** if you wish to have Prizm overwrite the current SNMP trap settings in the element.
31. If you selected **Enable Trap Management and Element Traps**, then under Trap Management specify up to ten IP addresses of servers to which the elements should send traps.
IMPORTANT: Ensure that you convert any IPv6 format (hex) strings into IPv4 format (dotted decimal) strings. See [Dotted Decimal IP Addresses Required for Subnets and Trap Servers](#) on Page 400.
32. Under **Auto IP Address Assignment (SM/BHS Configured when Accepted)**, if you wish to have Prizm automatically assign IP addresses to each slave element (based on the master) that is accepted into the network and does not already have a routable IP address, then
- check the **Enable IP Address Assignment** selection.
 - type in the **Network Mask**.
 - type in the **Gateway IP Address**.
 - type in all of the **IP Address Ranges** for this network.
NOTE: Multiple networks can use IP allocation ranges that are the same or overlap, but any specific auto discover IP range can be associated with only one network. In ranges that you specify, Prizm will discover all devices except those that are currently accepted or ignored. You can enter either of the two (higher or lower) bracketing addresses before the dash.

33. If for any reason you wish remove all of those changes and restore the tab display to the content that was present before you specified changes, click **Discard Changes**. If you wish to implement the changes as planned, click **Apply Changes**.



IMPORTANT!

The **Discard Changes** operation does not remove changes that have been applied by any previous **Apply Changes** operation.

34. To define additional subnet configurations for a segmented network, select **Edit→Network Configuration→Add a Network Subnet Configuration**.
RESULT: These will be separately available under the name of your new network in the left-hand pane of the Define Networks tab.
NOTE: See [Subnet Configurations](#) on Page 100.

===== end of procedure =====

To trigger Prizm to auto discover elements for your new network, perform the following steps.

Procedure 14: Triggering auto discovery

1. By means of other than Prizm (local records or module GUIs), find and note the Admin community strings of all Powerline MU/Gateways that are within the range of the network being defined.
NOTE: The Powerline LV Bridge stores three community strings: **Get String**, **Get/Set String**, and **Admin String**. An example of the SNMP web page of the Powerline LV Bridge is shown in [Figure 37](#).

Powerline LV

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SNMP

Device Information	
Device type	Bridge 0A:00:3E:B0:01:3F

Information	
System Contact	Mei
System Location	Mei Location
System Name	New Name

Communities	
Get String	public
Get / Set String	private
Admin String	Canopy.BOST

Figure 37: Example of partial SNMP web page of Powerline LV Bridge

2. In the left-hand pane of the Define Networks tab, select **Discovered Elements**.
3. Select **Edit→Discover Network Element(s)**.
RESULT: The Discover Network Elements window opens. An example of this window is shown in [Figure 38](#).

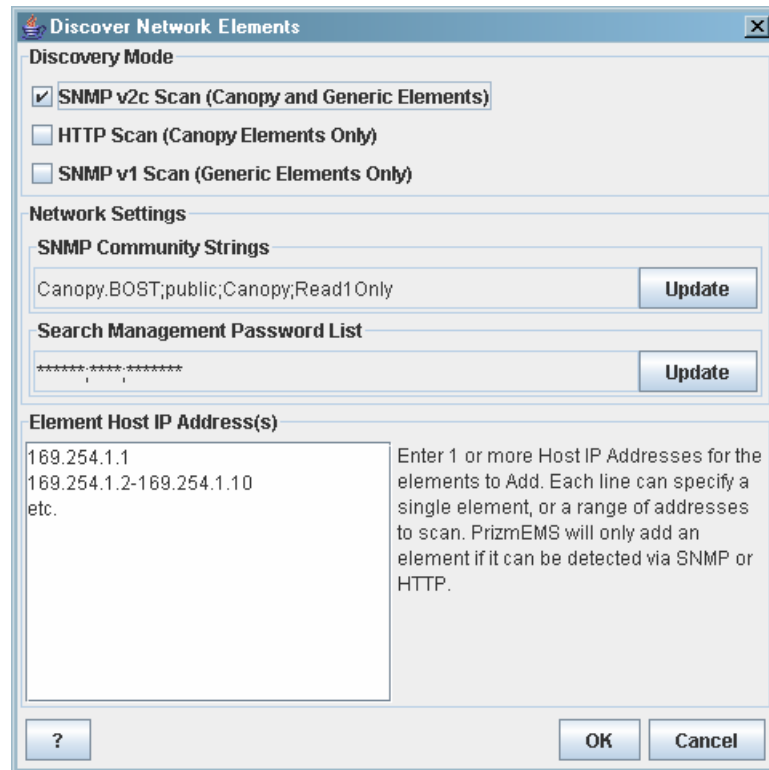


Figure 38: Example Discover Network Elements window

4. In the **Element Host IP Address(s)** field of the Discover Network Elements window, specify line-delimited host IP addresses, each entered as single address or a range of addresses, for Prizm to examine.
5. For **Discovery Mode**, select the type(s) of scan for Prizm to use.
NOTE: Each protocol that you check for Discovery Mode increases the amount of time required for discovery. Also, see the caveat in [Nonexistent Elements Being Discovered](#) on Page 408.
6. If you know of any SNMP community string(s) that are both
 - not already specified from [Procedure 13](#) on Page 101.
 - already configured in elements whose IP addresses match those you specified in the Subnet Configuration pane.

then for any such string, perform the following steps:

- a. In the **SNMP Community Strings** field, click **Update**.
RESULT: Prizm opens the Update Default Community List window.
NOTE: An example of this window is shown in [Figure 35](#) on Page 106.
- b. in the Update Default Community List window, click **Add**.
RESULT: Prizm opens an Input window for entering an **SNMP Community String**.

NOTE: An example of this Input window is shown in [Figure 36](#) on Page [106](#).



IMPORTANT!

Although Canopy radios that operate on Canopy System Release 8.x support community strings that contain spaces, Prizm *does not*. A space prevents SNMP discovery and all non-BAM management from Prizm. Canopy will track this problem under Item ID 0004614.

Until this problem is resolved, review the strings and remove their spaces through direct access to the radios.

- c. In this Input window, type the community string you are adding.
IMPORTANT: Add the community string(s) of any generic (non-Canopy) SNMP switches and/or devices that you want Prizm to monitor in the group, and configure these elements to accept SNMP requests from the Prizm server. Also add every Admin String that you noted in Step 1 for Powerline MU/Gateways that are within the discovery range. These are required because Prizm can later reboot the Bridge if SNMP access to the Bridge is by the Admin string, but not if access is by the Get String or Get/Set String.
 - d. Click **OK**.
7. If you know of any management password(s) that are both
- not already specified from [Procedure 13](#) on Page [101](#).
 - already configured in elements whose IP addresses match those you specified in the Subnet Configuration pane.

then for any such password, perform the following steps:

- a. In the **Search Password List** field, click **Update**.
RESULT: Prizm opens the Update Default Password List window.
NOTE: An example of the Update Default Password List window is shown in [Figure 33](#) on Page [105](#).
- b. in the Update Default Password List window, click **Add**.
RESULT: Prizm opens an Input window for entering a password.
NOTE: An example of this Input window is shown in [Figure 34](#) on Page [106](#).
- c. In this Input window, type the management password you are adding.
- d. Click **OK**.

8. Back in the Discover Network Elements window, click **OK**.

RESULT: Prizm

- opens a Discovering Network Elements window, which displays a progress bar for this operation.
- discovers all elements that match these parameters and can be detected by SNMP or HTTP, then scans for any slave elements attached to discovered masters whose IP addresses were not already discovered. Prizm places all of these elements into the Discovered Elements list. An example of a Discovered Elements list is shown in [Figure 39](#).

Element	Management	MAC Address	Site Name	Site L...	Site Cont...	Registered To	Mode
900 on 1299		0A003E900073	900 on 1299 ...			0A003E900071	Discovered HTTP
Mark Libner's		0A003E900076	Mark Libner's ...			0A003E90008D	Discovered Linked
Ray Savich H		0A003E900095	Ray Savich Ho...			0A003E900071	Discovered Linked

Total Bytes (Tx/Rx): 66 K/2170 K Current Bytes (Tx/Rx): 42/23

Figure 39: Example Discovered Elements list

NOTE: This list includes a Mode column, where the system displays how the element was discovered this time. The possible values are defined in [Table 11](#).

Table 11: Mode Column of Discovered Elements List, possible values

Mode Column Value	Meaning
Authentication Rejected	BAM has rejected this element. Now it must be provisioned into the network.
Discovered Linked	Discovered through its relationship with a master device (AP or Powerline MU/Gateway).
Discovered SNMP	Discovered with accessible SNMP. A reboot is required to manage this element, but not required to monitor it.
Discovered HTTP	Discovered by HTTP. SNMP <i>is not</i> set up on this element. A reboot is required to monitor or manage it.
Quarantined	Permitted temporary service and full management subject to a predefined bandwidth service plan, VLAN profile, and duration. (See Quarantining Elements Discovered in Authentication Attempts on Page 118.)

- opens a Discovering Network Elements window, which displays events that are associated with the auto discovery operation.

NOTE: An example of this window is shown in [Figure 40](#).

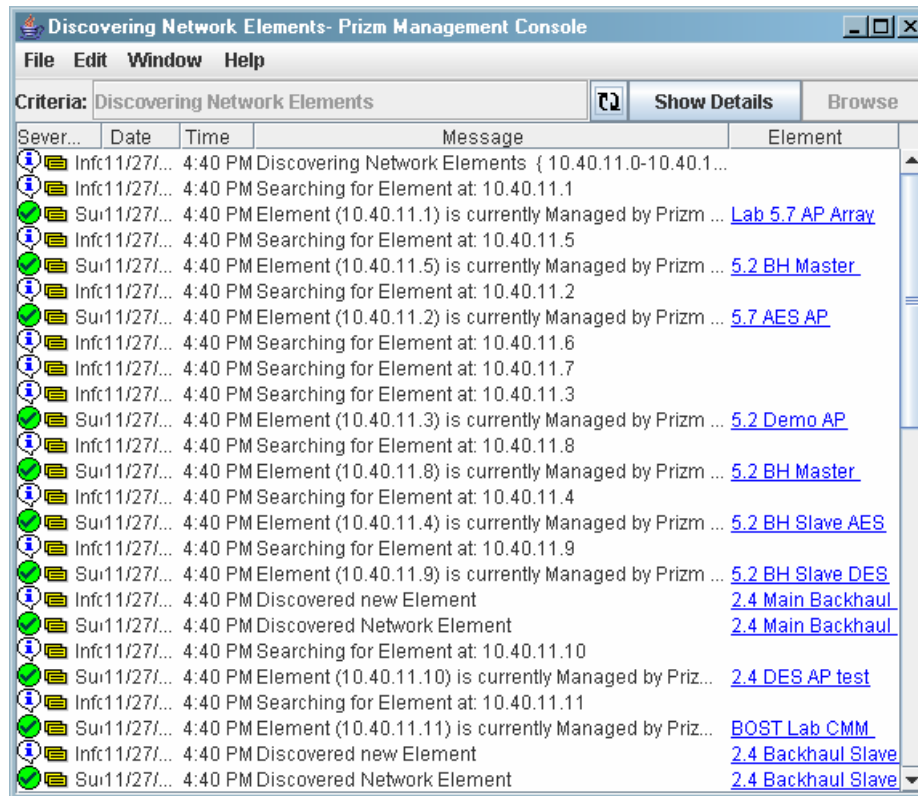


Figure 40: Example Discovering Network Elements window

NOTE: The time required to open this window and display all of the associated events is variable and depends on how many elements are being auto discovered.

IMPORTANT: After this window opens, if you find that any Powerline MU/Gateway within the discovery range was discovered by Prizm using its Get String or Get/Set String for the community string, you *cannot* change the string to its Admin String. You must delete the element and rediscover it, this time adding its Admin String to the SNMP Community Strings field.

9. If the Discovering Network Elements window hangs, as it sometimes does when a relatively large number of elements are discovered, log off and back in.
10. If any element in the Discovered Elements list is identified by the generic element icon (🔍), investigate whether this is in fact a generic element.
NOTE: If the quality of communication between Prizm and the element was marginal during the discovery, then even if the element was not generic, Prizm may have identified it as such. You *cannot* change the element type in Prizm.
11. If a non-generic element is shown as generic, perform the following steps:
 - a. Delete the element.
 - b. Troubleshoot the communications problem.

- c. Rediscover the element.
- d. In the Discovered Elements list, verify that this time the element appears next to the icon of its true element type.

===== end of procedure =====

During discovery, Prizm detects if an IP address points to a different MAC address, as in a replacement module. For these cases, Prizm

- assigns a new IP address to the element that has the new MAC address.
- removes the IP address from the element that has the original MAC address (if it was discovered, as in a move rather than a removal from service).
- suspends Prizm management of the element that has the original MAC address.
- logs two alerts:
 - one to encourage the user to manually intervene to fix the element that has the original MAC address.
 - one to announce that an IP address change has occurred to the element that has the new MAC address.

5.2.4 Directing Non-triggered Discovery Elements into a Network

When a slave device attempts to register to a master device that is set to require authentication, Prizm discovers the slave device if it is not already accepted in a network or listed as ignore. For these cases, you can select one of your defined networks for Prizm to either

- always place such elements into.
- place such elements into only if the parent element is not found in any defined network, or into the network of the parent if it is found.

To make that specification, perform the following steps.

Procedure 15: Specifying default network settings

1. With the Define Networks tab open, from the main menu, select **Edit→Default Network Settings**.

RESULT: If no network is currently specified as the default network, then Prizm opens a Warning window as shown in [Figure 41](#).

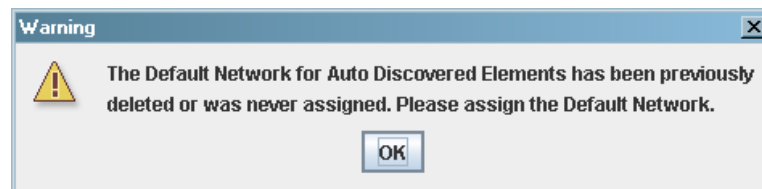


Figure 41: Warning window to assign a default network

If you click **OK** in this window, or if a network is currently specified as the default network, then Prizm opens the Default Network Settings for Auto Discovered Elements window as shown in [Figure 42](#).

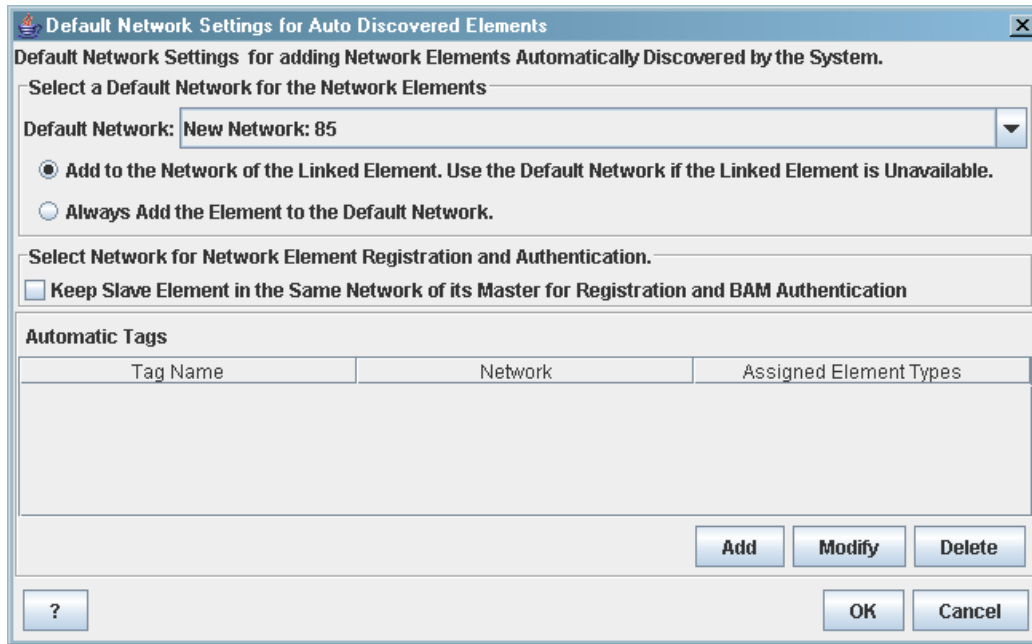


Figure 42: Example Default Network Settings for Auto Discovered Elements window

2. Use the drop-down dialog to select from your defined networks.
3. Use a checkbox to specify when Prizm should place its discovered elements into that network.
4. Use the checkbox to specify whether to put discovered slave elements into the network that contains the master element to which they are registered.
5. If you want Prizm to apply automatic tags for element types, perform the following steps:

NOTE: See [Specifying Tags for Element Type\(s\)](#) on Page 98.

- a. Click the **Add** button.
RESULT: Prizm opens the Add / Modify Automatic Tags window. An example of this window is shown in [Figure 31](#) on Page 103.
- b. Either
 - type in the tag name(s) that you want to add for element type(s) that you will be specifying.
NOTE: You can add more than one name to apply to the element type(s), if you insert semicolon(s) between the names.
 - perform the following steps:
 - (1) Click the **Select Tags** button.
RESULT: Prizm opens the Update Tags window. An example of this window is shown in [Figure 88](#) on Page 194.

- (2) Use [Procedure 45](#) on Page [193](#) to select and/or add tags.
- c. For **Apply To**, click an element type from the scroll list.
- d. If you want the tag to apply to multiple element types, press and hold the **Ctrl** key while you click to select them.
- e. Click **OK**.
- f. Back in the right pane of the Default Network Settings for Auto Discovered Elements window, ensure that the options together are what you want Prizm to apply to elements that it discovers for this network.
- g. Change any that are not.

NOTE: The following automatic tags are suggested for efficiency in Prizm:

- **Infrastructure**, applied to
 - Canopy 400 Access Point (CAPxx400)
 - Canopy Access Point Module
 - Cluster Management Module micro
 - Cluster Management Module-4
 - PTP 100 Master (Canopy Backhaul Master Module 10/20 Mbps)
 - PTP 100 Slave (Canopy Backhaul Slave Module 10/20 Mbps)
 - PTP 400 Master (High-Speed Backhaul Master Module 30/60 Mbps)
 - PTP 400 Slave (High-Speed Backhaul Slave Module 30/60 Mbps)
 - PTP 600 Master (High-Speed Backhaul Master Module 150/300 Mbps)
 - PTP 600 Slave (High-Speed Backhaul Slave Module 150/300 Mbps)
 - Canopy 400 Access Point (CAPxx400)
- **CPE**, applied to
 - Canopy 400 Subscriber Module (CSMxx400)
 - Canopy Subscriber Module
 - Powerline Modem
 - Canopy 400 Subscriber Module (CSMxx400)
- **Point-to-point Links**, applied to
 - PTP 100 Master (Canopy Backhaul Master Module 10/20 Mbps)
 - PTP 100 Slave (Canopy Backhaul Slave Module 10/20 Mbps)
 - PTP 400 Master (High-Speed Backhaul Master Module 30/60 Mbps)
 - PTP 400 Slave (High-Speed Backhaul Slave Module 30/60 Mbps)
 - PTP 600 Master (High-Speed Backhaul Master Module 150/300 Mbps)
 - PTP 600 Slave (High-Speed Backhaul Slave Module 150/300 Mbps)
- **Canopy Devices**, applied to
 - Canopy 400 Access Point (CAPxx400)
 - Canopy 400 Subscriber Module (CSMxx400)
 - Canopy Access Point Module
 - Canopy Subscriber Module
 - PTP 100 Master (Canopy Backhaul Master Module 10/20 Mbps)
 - PTP 100 Slave (Canopy Backhaul Slave Module 10/20 Mbps)

- **PLV Devices**, applied to
Powerline MU/Gateway
Powerline Modem

6. When satisfied, click the **OK** button.

===== end of procedure =====

5.2.5 Quarantining Elements Discovered in Authentication Attempts

In Release 3.0, when a device that was not listed among the Discovered Elements, Network Elements, or Ignored Elements of any network tried to authenticate, Prizm rejected the attempt. The result was that the device, by design, then prevented itself from repeating the attempt until 15 minutes later. This lockout feature keeps rogue devices from consuming resources with constant attempts, but also keeps proper, newly installed devices off of the network, except those that were provisioned in Prizm before their installation. The Prizm operator would see the failed authentication event and provision the device, so that its next attempt would succeed.

Release 3.1 and later releases allow the operator to configure Prizm to let that first authentication attempt from an unlisted device succeed, but only under operator-specified conditions and only when all of the following assumptions are true:

- RADIUS server *is not* deployed.
- If a BAM-only server is processing the authentication request, it uses the same database as the EMS server uses.
- The master element holds a BAM packs license. See [Master Device Authentication License Handling in Prizm](#) on Page 302.
- The operator has not reconfigured the authentication key in the slave element. (**Use Default Key** is still selected in the element.)

This feature establishes how all attempts from all unlisted devices will be handled: rejected, quarantined for time-bound and limited access, or accepted for limited access.

As you use this feature, you should be aware of the following caveats:

- Even where a VLAN profile is applied to quarantined devices, a denial of service attack on a network is feasible if sustained bandwidth rates are not significantly lower than the aggregate throughput of the master elements. A generous bandwidth service plan for quarantined devices may allow packets to flood the VLAN.
- Where an RF neighbor (competing company) has nearby slave devices, they may be able to authenticate in your network if you have not tuned the color code and frequency parameters to differentiate yours from theirs. This is the hazard that exists in a network without BAM control.

However, with BAM control and the selection of either **Quarantine**, your Prizm server temporarily adds these devices into your network (because of the default authentication key), instead of immediately rejecting them. The result is that they do not immediately register in their own, appropriate master element. Until your own configured expiration, until the device reboots, or until the device re-registers—whichever comes first—the device will not attempt to register in the appropriate master. Your competitor's end customers who are connected to these devices would have no service in your network after this occurs.

With BAM control and the selection of **Accept**, your competitor's end customers who are connected to these devices *would have service* for as long as these devices exist in your network (until you deliberately delete, suspend, or ignore them).

To set the operator-specified conditions, perform the following steps.

Procedure 16: Setting authentication options for unlisted devices

1. From the main menu in the application console, select **File→Settings→Edit Settings**.
RESULT: A Settings window opens.
2. In the left panel of the Settings window, select **Authentication**.
RESULT: Authentication options appear in the right panel. An example of this panel is shown in [Figure 43](#).

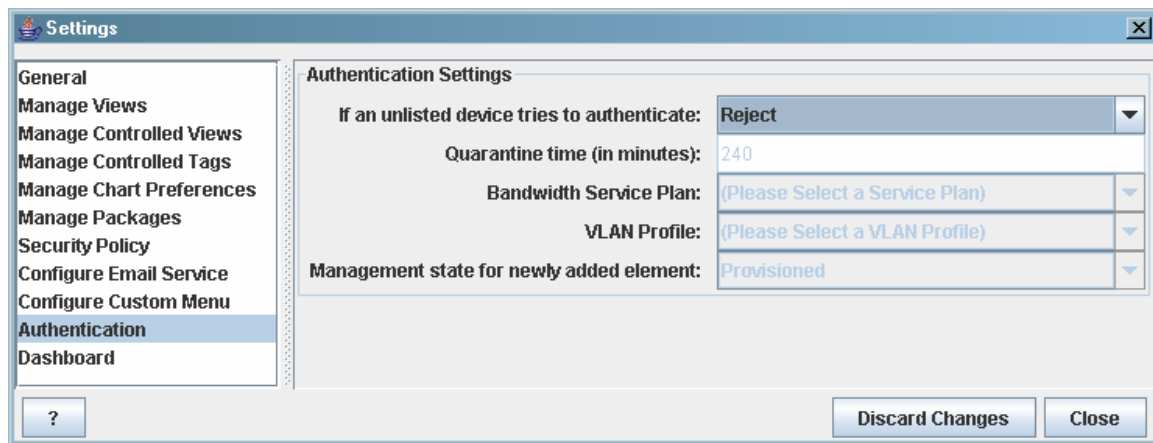


Figure 43: Authentication options for unlisted devices

3. For the **If an unlisted device tries to authenticate** field, select one of the following options from the drop-down list:
 - **Reject**. This option is the default setting from the Prizm installation and specifies that no unlisted device will succeed in authenticating. This is the same treatment that applied to *all* unlisted devices in Release 3.0.
 - **Quarantine**. This option will allow you to specify
 - a length of time during which unlisted devices that authenticate can remain on the network.
 - the bandwidth service plan and VLAN profile that apply during that time.
 - **Accept**. This carries the greatest risk. This option will allow you to specify
 - the bandwidth service plan and VLAN profile that will apply *indefinitely* to unlisted devices that authenticate.
 - the management state into which Prizm should place the new element.. See [BAM Server-licensed Operations](#) on Page 42.

4. If you selected **Quarantine** in the previous step, type a number into the **Quarantine Time (in minutes)** dialog.
NOTE: This is the period of time during which you will probably want to change both the **Authentication Key** parameter on the element and the corresponding **Authentication Key** attribute in Prizm, so the quarantine period you specify should be long enough to accomplish that in most cases.
5. If you selected either **Quarantine** or **Accept**, select a **Bandwidth Service Plan**.
RECOMMENDATION: Ensure that the service plan that you select has
 - sustained bandwidth rates that are significantly lower than the aggregate throughput of the master elements in your network.
 - committed information rate (CIR) values set to 0.
6. If you selected **Quarantine** or **Accept**, select a VLAN Profile.
7. If you selected **Accept**, select one of the two following options for the **Management state for newly added element** field:
 - **Provisioned**. This puts the element under only BAM control (no EMS management).
 - **Accepting**. Upon its next registration, the element will be managed by all Prizm functionality (will be moved to the Managed state).

===== end of procedure =====

When a quarantined element is authenticated, Prizm generates an alert and adds the element to the Network Elements list, where the Management State column value is Quarantined. When a quarantine expires before an element is authenticated, Prizm automatically moves the element to the Ignored Elements list. The results of various user actions are described in [Table 12](#).

Table 12: Effects of user actions with the flexible authentication feature

If you do this...	then Prizm reacts as follows
Select a different service plan or a VLAN profile in the Authentication Settings for quarantined elements	Prizm applies the new service plan or VLAN profile to all elements that are subsequently quarantined. To apply a different service plan or VLAN profile to elements that are already marked as quarantined in your network, you must open a network view to apply it.
Attempt to reconfigure (other than service plan or VLAN profile) or perform other EMS operations on a quarantined element	Prizm will not perform the operation.
Change the value of Quarantine Time in the Authentication Settings panel	Timers for existing quarantined elements are unaffected.
Change the values of a service plan or a VLAN profile	The new values are imposed for all elements – provisioned and quarantined—to which the service plan is applied.

If you do this...	then Prizm reacts as follows
Attempt to remove a service plan or VLAN profile that is currently applied to quarantined or automatically accepted elements	The service plan or VLAN profile is not removed for elements that <i>will be</i> quarantined or auto-accepting. However, the association between the plan or profile and <i>already</i> quarantined and auto-accepting elements will be removed only if it is not part of current Authentication Settings.
Specify a quarantine period of greater than 24 hours	A warning window pops up to warn of the inherent security risk.
Select Accept (and select either Provisioned or Accepting)	
Attempt to reconfigure or perform other EMS operations on an automatically accepted element	No warning pops up, and the action is treated the same as if the element entered the accepting state via other than the Authentication Settings.
Switch the option from Quarantine to Accept	Already quarantined elements will remain quarantined and their timers will continue to run.
Switch the option from Accept to Quarantine	Elements that were accepted through this feature will remain as they are (Accepting, Provisioned, or Managed).
Highlight a quarantined element and select Accept and Manage Network Element(s) , Accept Element(s) to BAM , or Move Element(s) to Ignore List	Prizm moves the element according to the request.
Delete a quarantined element from the Discovered Elements and Network Elements lists	The registration of the element is dropped, and Prizm stops maintaining the quarantine timer. If the element attempts to re-register, Prizm applies the current Authentication Settings, which may have the effect of restarting the quarantine timer for this element. You can prevent this by moving the element to the Ignored Elements list, rather than deleting the element.

5.2.6 Viewing Discovered Elements

Prizm generates a flat Discovered Elements list of all auto discovered elements that you have not yet accepted into your network. So that Prizm does not inappropriately begin to manage transient elements such as test equipment or an element that an installer is configuring or adding, Prizm manages only the elements that you have accepted into the network (none of the elements that remain in the Discovered Elements list).

5.2.7 Adding an Element Group

Prizm organizes the manageable elements that you accept into a Prizm network. Prizm allows you to organize non-manageable elements as you wish, and will not reorganize them. For example, you may wish to

- add a CMM2 into the hierarchy of a network where it logically is deployed.
- have Prizm display a group of network elements to reflect their regional distribution.

You can accomplish either of these, or any other element organizing scheme, by adding an element group. To add an element group to a network in the Prizm system, perform the following steps.

Procedure 17: Adding an element group

1. Browse to **Network→Define Network**.
RESULT: Prizm opens the Define Networks tab.
2. In the network into which you want to add the element group, click **Network Elements**.
RESULT: Prizm displays the elements that have been accepted into the network.
3. Select **Edit→Add Element Group**.
RESULT: Prizm opens the Add Element Group window, as shown in [Figure 44](#).

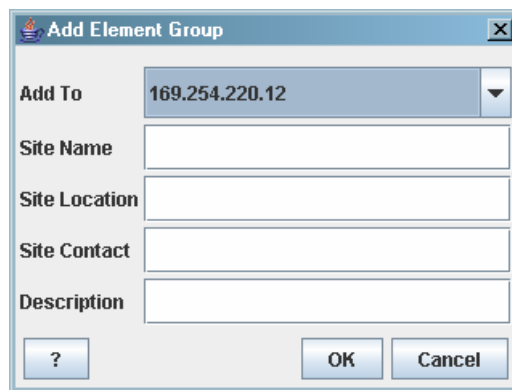


Figure 44: Add Element Group window

4. Optionally, populate the fields of this window, particularly **Site Name**, **Site Location**, and **Site Contact** as you want Prizm to display them.
5. Click **OK**.
RESULT: Prizm adds the new element group (folder) to the Network Element pane of the Define Networks tab.
6. Optionally, move the element group or managed element(s) to achieve the hierarchy that you want Prizm to display, as described in [Procedure 26](#) on Page [146](#).

===== end of procedure =====

At any time after you have added an element group, you can modify its attributes (**Site Name**, **Site Location**, **Site Contact**, and/or **Description**) in the same way that you would modify those of an individual element. See [Editing an Individual Template](#) on Page [264](#).

5.2.8 Importing Elements with Hierarchy from a CNUT File

The Canopy Network Updater Tool (CNUT), external to the Prizm system, can generate a network archive file that includes infrastructure elements, network hierarchy, and any IP information that was defined in CNUT. Thus, importing this file can provide the advantage of passing the hierarchy for the subnet to Prizm, which otherwise requires the user to sort Prizm-discovered elements into the proper hierarchy in the Network Elements pane. You must be an Administrator in Network Manager to do this.

To import the data from the CNUT archive file, perform the following steps.

Procedure 18: Importing data from CNUT

1. Ensure that the Prizm client device has a CNUT-generated .net file in its directory structure.
NOTE: For the procedure to generate the .net file, see the Help documentation that is distributed with the CNUT software.
2. Select **Network→Define Networks**.
RESULT: The Define Networks tab opens.
3. Select **Edit→Add a Network**.
4. In the left-hand pane of the Define Networks tab and under **NEW* Subnet**, select **Discovered Elements**.
5. Select **File→Import/Export→Import Network Element(s)**.
RESULT: The Open window opens.
6. Browse to and select the desired .net file.
7. Click **Open**.
RESULT: Prizm verifies that the elements from the .net file are on the network, then places those that are on the network into the Discovered Elements pane, from where you must accept any of them that you want Prizm to manage into the network. Prizm further copies folders or other non-elements from the .net file directly into the accepted Network Elements list at the proper level of hierarchy.

===== end of procedure =====

5.2.9 Migrating BAM Data to Prizm

You can migrate element data that you used in BAM Release 2.x into Prizm in a two-step process:

1. Create a .bam file. To do this, you must have access to the BAM database and have the migration tool `dumptool.sh` downloaded and extracted onto your current BAM server. This step is documented in an appendix of the *Motorola Canopy® Prizm Release 3 Setup Guide for Windows Platforms* and the *Motorola Canopy® Prizm Release 3 Setup Guide for Linux Platforms*.
2. Import elements from the .bam file. To do this, you must be an Administrator (A) in Network Manager in the client application.

To import elements from BAM, perform the following steps.

Procedure 19: Importing elements from BAM

1. Ensure that the Prizm client application has a BAM-generated .bam file in its directory structure.
2. Select **Network→Define Networks**.
RESULT: The Define Networks tab opens.
3. Select **Edit→Add a Network**.
4. In the left-hand pane of the Define Networks tab and under **NEW* Subnet**, select **Discovered Elements**.
5. Select **File→Import/Export→Import Network Element(s)**.
RESULT: The Open window opens. An example of this window is shown in [Figure 45](#).

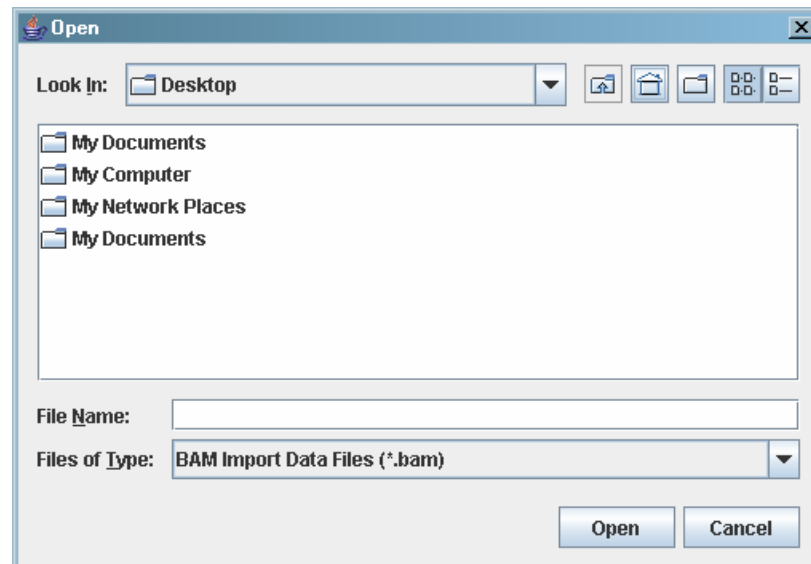


Figure 45: Example Open window for BAM data import

NOTE: The meanings of the icons in this window are as follows:

	Navigate Up 1 Level
	Home Folder/Desktop Folder
	Create New Folder
	View Iconic Display
	View Detailed List

6. Browse to and select the .bam file.

7. Click **Open**.

RESULT: Prizm opens the Import Provisioned Elements window. An example of this window is shown in [Figure 46](#).

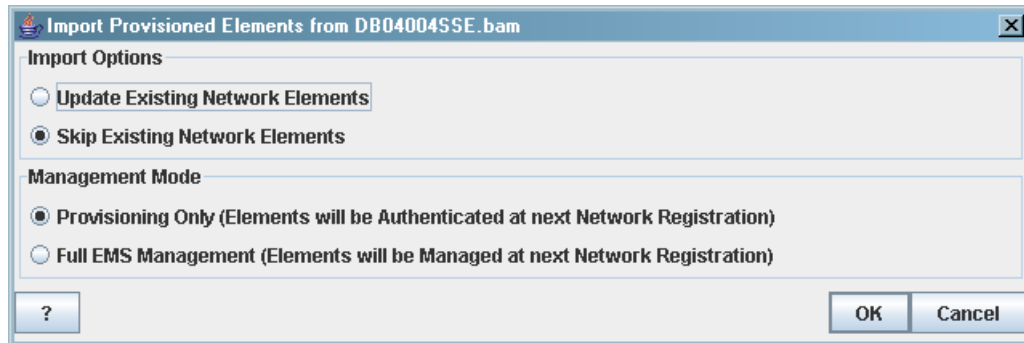


Figure 46: Example Import Provisioned Elements window

8. Select either **Skip Existing Network Elements** or **Update Existing Network Elements**.
9. For **Management Mode**
 - if you want to only provision the elements, select **Provisioning Only**.
RESULT: The elements are added for BAM-only operations and must authenticate when they next register.
 - if you want Prizm to perform full management on the elements, select **Full EMS Management**.
RESULT: Prizm will manage the elements when they next register.
10. Click **OK**.
RESULT: Prizm opens the Importing BAM Network Elements window. An example of this window is shown in [Figure 47](#).

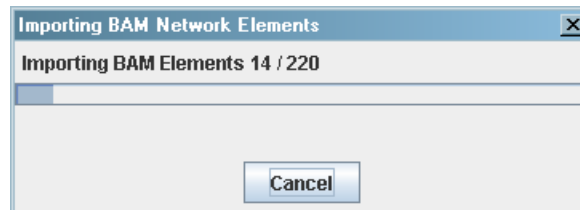


Figure 47: Example Importing BAM Network Elements window

This window displays a progress bar with the number of elements imported and the total number being imported.

Prizm places the elements from the .bam file into the Network Elements pane, regardless of whether they are currently on the network. Brought forward from BAM are

- SM MAC addresses
- authentication keys
- authentication account state
- MIR values
- CIR values
- VLAN information
- AP MAC addresses
- IP addresses
- description

At the same time, Prizm attempts to find and associate a service plan and VLAN profile whose values are identical to those brought forward by this operation. If it cannot find one, it creates one and names it in the format **Service Plan (Imported) *N*** [or **VLAN Profile (Imported) *N***], where *N* is the next sequential number yet unused by such automatically created service plan (or VLAN profile). At any time later, you can rename these service plans using the **Edit→Update the Configuration** command when the Define Configurations tab is open.

The list of service plans and VLAN profiles that Prizm examines is a composite of those that it has automatically created and those that you have created. See [Procedure 75: Defining a service plan](#) on Page 308 and [Procedure 81: Defining a VLAN profile](#) on Page 320.

Prizm opens the Importing BAM Network Elements window to display events that are associated with the import. An example of this window is shown in [Figure 48](#).

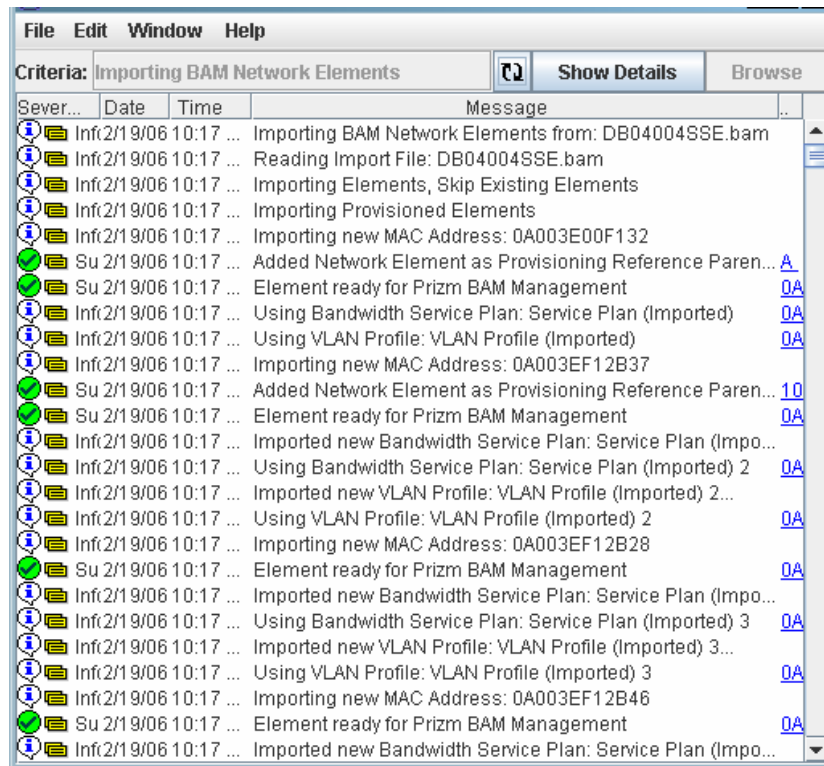


Figure 48: Example Importing BAM Network Elements window in the console

11. In the left pane, select Network Elements associated with the network into which you imported the elements from BAM.
RESULT: In the right pane, the elements are shown as accepted into the network for BAM-only operations. Their icons are white.

===== end of procedure =====

5.2.10 Accepting Elements into a Network for All Management Functions



NOTE:

If you perform an **Accept and Manage Network Element(s)** for an element that BAM has locked out, Prizm puts the element into the Management State **Accepting**. From that state, it will be accepted only after its next successful registration.

During discovery, Prizm proceeds according to how you populate the Subnet Configuration pane, as described in [Procedure 13: Configuring the subnet for Prizm to apply](#) on Page 101. This includes the **Canopy SNMP Configuration (Elements configured when Accepted)** field, where you specified the type of accept operation:

- If you selected **Enable Element for Monitoring (Read Only)** in this field, then Prizm will reboot the elements only if necessary (to effect the IP address assignment, for example). See [Ensuring That Prizm Will Not Force a Reboot](#) below.
- If you selected **Enable Element for Monitoring and Management (Read/Write)** in this field, then Prizm will always reboot the elements to clear the SNMP read only flag so that it can later write to the elements via SNMP.

Ensuring That Prizm Will Not Force a Reboot

For a network where continuity of service is essential for SMs, a workaround allows you to prevent Prizm from rebooting an SM. The following are the conditions that together allow Prizm to not force a reboot as part of the Accept operation. Where any of the conditions is not true, a reboot *can* occur:

- **Enable Element for Monitoring (Read Only)** is selected in the Subnet Configuration pane in Prizm.
- The SNMP subnet mask of the SM is such that Prizm can communicate with the SM.
- The SNMP community string configured on the SM either is the default or is present in the default list in Prizm.
- The IP address of the SM is assigned.
- **Enforce Element Configuration (Overwrite Current Element Settings)** *is not* selected in the Subnet Configuration pane in Prizm.
- **Enable Trap Management and Element Traps** *is not* selected in the Subnet Configuration pane in Prizm.

Accepting Elements from the Discovered Elements List

For any elements that Prizm discovers or are imported from the CNUT .net file, and that you also want Prizm to manage, you *must accept* those elements into your new network. When you do, Prizm

- deletes the element from the Discovered Elements list.
- attempts to make changes that are required for setup of management interfaces to the element. For example, Prizm may add or alter the following parameters:
 - **SNMP Community String**
 - **SNMP Allowable Subnet Mask**
 - **SNMP Read/Write Flag**
 - **SNMP Trap Address**
 - **Management IP Address**

The time that the system requires to complete an accept operation can be considerable. However, when an accept operation has begun, it cannot be interrupted despite that a **Cancel** button is available. This is designed behavior that prevents elements from being left in an unknown state. For further information about this, see [Accept Operation Appearing to Hang](#) on Page 415.

If, for any reason, you click the **Cancel** button during an accept operation, the Cancel dialog will appear and persist, giving the impression that the system is hung, although it is not. In this situation, you may

- ignore the Cancel dialog and close the Define Networks tab. The Cancel dialog remains because it represents a lost communication thread.
- open a new Define Networks tab and start new activities or operations, as you continue to ignore the orphaned Cancel dialog.
- ultimately exit from the Prizm console. The Cancel dialog will not be carried forward into your next session.

**IMPORTANT!**

After Prizm has begun to manage the element, *do not* change any of the above parameters. Doing so can cause Prizm to stop managing the element or to falsely report issues with the element.

To accept discovered elements into a network, perform the following steps.

Procedure 20: Accepting elements from the Discovered Elements list

1. Browse to **Network→Define Networks**.
2. In the left-hand pane and under the desired network, click **Discovered Elements**.
3. In the right-hand pane, select (check the far left-column box for) any element(s) you wish to accept.
4. From the main menu, select **Edit→Accept and Manage Network Element(s)**.
RESULT: Prizm opens the Accept Network Elements window. An example of this window is shown in [Figure 49](#).

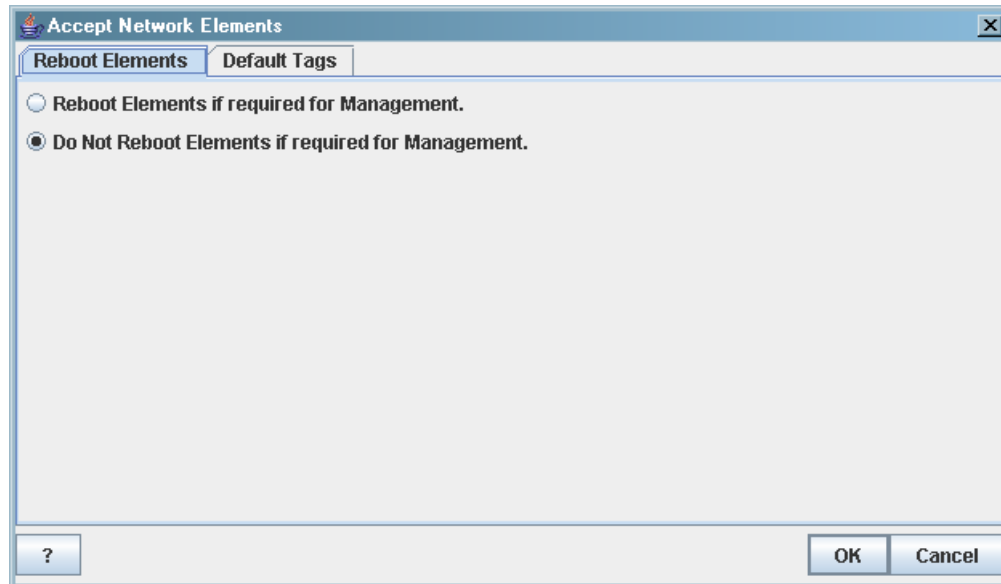


Figure 49: Example Accept Network Elements window, Reboot Elements tab

5. Select either **Reboot Elements if required for Management** or **Do Not Reboot Elements if required for Management**.
NOTE: The latter specifies that, under no circumstances, will Prizm reboot the element and presumes that the element is already fully set up for Prizm management. If **Do Not...** is selected, and a reboot is required to change the **Management State** of the element, then Prizm will skip the element, and its state will not be changed. This prevents a temporary outage. You will need to accept the element again, at a later time, with the option **Reboot Elements if required for Management** selected.
6. Click **OK**.
RESULT: Prizm
 - opens an Accepting Network Elements window, which displays a progress bar for this operation. An example of this window is shown in [Figure 50](#).

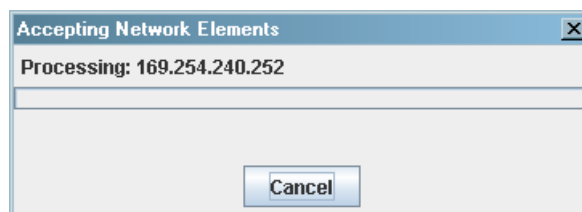


Figure 50: Example Accepting Network Elements window

- moves the selected element(s) from the Discovered Elements list to immediately beneath the root in the Network Elements list.

- opens an Accepting Network Elements window, which displays events that are associated with the accept operation. For example, these events may include the following messages:

```
Accepting Network Element
Element Management Parameters Set. Waiting for Reboot
Element ready for Prizm Management
Element Accept Cancelled by User
```

Unlike the Accepting Network Elements window, which overlays the original pane, this console may open behind the normal system console window. An example of the Accepting Network Elements window is shown in [Figure 51](#).

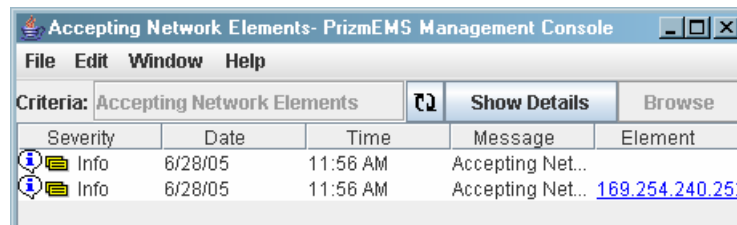


Figure 51: Example Accepting Network Elements window in the management console

NOTE: The time required to open this window and display all of the associated events is variable and depends on how many elements are being accepted into the network.

IMPORTANT: When an element is accepted without authentication being required, Prizm does not prompt you to associate the element with a bandwidth service plan. However, at the time of the Accept, Prizm creates a record with values identical to those of the default bandwidth service plan. These may be inappropriate for the element or even entirely out of scope for your network. It is strongly recommended that you follow up the Accept operation by searching for SMs whose values for the **Bandwidth Service Plan** attribute = "" and then applying a service plan that you consider appropriate. See the following elements of this user guide:

- [Defining an Advanced View Filter](#) on Page 198.
- [Procedure 76: Applying a service plan](#) on Page 311

===== end of procedure =====

Effect of Licensed Element Counts on Accepting a Discovered Element

Prizm is licensed on a server basis and a network size basis. The network size component of the licensing model restricts the number of Canopy elements that can be added to the network. This restriction is based on the type of elements being added and apply the following licensing rules:

- Operators purchase EMS packs, which License Manager then manages as an element pack pool.
- An element pack can be used for a Canopy backhaul link and covers both the BH Master and the BH Slave.
- An EMS packs license can be used for a multi-point sector and covers the AP and up to 200 SMs.
- Elements in either the Ignored Elements list or the Discovered Elements list, which are not yet accepted into the network, do not count against the available element pack pool.
- Generic (non-Canopy) elements do not count against the available element pack pool.
- Canopy CMMs that are manageable (such as the CMMmicro) do not count against the available element pack pool.
- Prizm automatically assigns and tracks the used element packs according to the definition of the networks within the system.



NOTE:

With an Prizm EMS server license, Canopy provides the equivalent of 10 element packs. For example, a network of 10 or fewer APs (and 2000 or fewer associated SMs) requires only the Prizm EMS server license, and no additional element packs.

If an attempt to accept an element from the Discovered Elements list or the Ignored Elements list causes the licensed managed elements count for Prizm to be exceeded, then Prizm rejects the accept operation until either other managed elements are deleted from the network or additional licenses are added. Prizm displays the Additional Element Licenses Required window, as shown in [Figure 52](#).

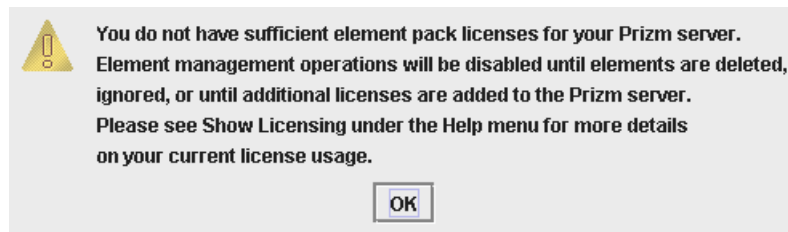


Figure 52: Additional Element Licenses Required window

Then, if you click **OK** but attempt to open a view that includes unlicensed elements, Prizm responds by displaying the Insufficient Element Licenses window, as shown in [Figure 53](#).

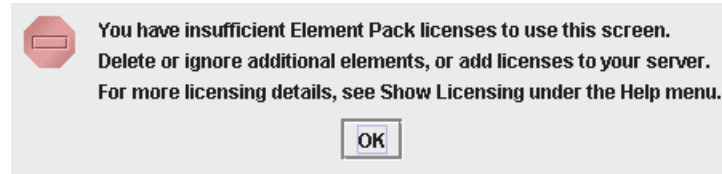


Figure 53: Insufficient Element Licenses window

Viewing License Counts

At any time, you can view information about Canopy licenses that Prizm detects. To do so, browse to **Help→Show Licensing**. Prizm opens the Licensing Information window, shown in [Figure 54](#).



RECOMMENDATION:

If the Prizm server is on a Windows® platform, and if Prizm seems to hang rather than promptly display the Licensing Information window (more than a minute passes), you are seeing a problem that Canopy is tracking under Item ID 0001225. A potential remedy for this problem is published for Prizm servers on Windows in the section titled "Querying Licenses on Windows 2000/XP/Server 2003" in the *Motorola Canopy® Prizm Release 3 Administration Guide*.

If the server administrator tries the remedy, then retry **Help→Show Licensing**.

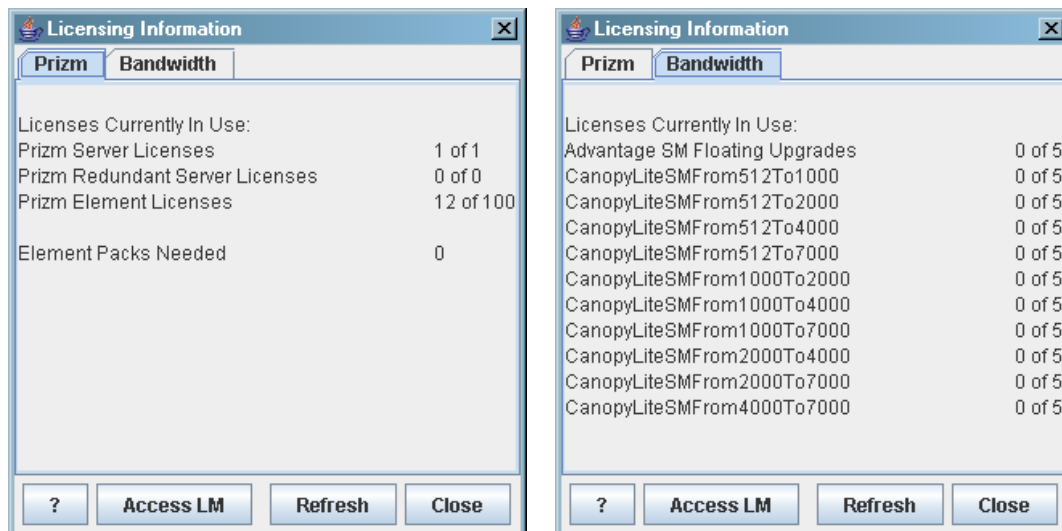


Figure 54: Example Licensing Information window, both tabs

The numeric data in this window is provided in the format
LicenseType NumberCurrentlyUsed of NumberManagedInLicensePool

The meanings of the various totals are as follows:

The row labeled...	reports on...
Prizm Server Licenses	the number of matched pairs of Prizm server and BAM server licenses.
Prizm Redundant Server Licenses	the number of additional BAM server licenses.
Prizm Element Licenses	the number of matched pairs of EMS packs licenses and BAM packs licenses.
Element Packs Needed	the total of AP (with 200 or fewer registered subscriber radios), Canopy 400 Access Point (CAPxx400), and Powerline MU/Gateway minus the number of EMS packs licenses in the pool.
EMS-only Licenses	the number of BAM packs licenses that is needed to equal the number of EMS packs licenses in the pool.
BAM-only Licenses	the number of EMS packs licenses that is needed to equal the number of BAM packs licenses in the pool.
Advantage SM Floating Upgrades	the number of No cap licenses (to upgrade a 7-Mbps Canopy SM to an Advantage SM).
<i>CanopyLiteSMFrom... To...</i>	the number of each iteration of upgrade licenses for Canopy Lite SMs.

If there are no partial licenses, then the last three lines (Partial Element Licenses, EMS-only Licenses, and BAM-only licenses) shown in the Prizm tab are omitted.



NOTE:

In some cases, the displayed number may be wrong. See [Licensing Information Window Sometimes Showing 0 for Available Licenses](#) on Page 406.

Reaching License Manager from the Prizm Client Application

In Release 3.1 and later, the Licensing Information window includes the **Access LM** button, which opens a browser to the proper port on the original⁵ primary licensing server. However, since this relies on the URL being obtained from the Prizm server, this feature works only where the Prizm server is local to the Prizm client device. It does not depend on any licensing server being local.

When the Access LM button invokes the web-based License Manager Administrator Tool, the interface of the tool appears as shown in [Figure 55](#).

⁵ If the original primary server goes down, the **Access LM** operation stills tries to connect to it and *does not* try to connect to the second (now acting primary) server, which has relieved it.



Figure 55: License Manager Administrator Tool, opening web page

The buttons in the right panel invoke the same commands as do the corresponding links in the left. Access from the Prizm client can be useful as described in [Table 13](#).

Table 13: Usefulness of Access LM for various actions

Action (button)	Licensing Server	Useful
Status ¹	Single	for viewing all of the licensing data.
	Redundant	for viewing all of the licensing data.
Configure	Single	only if repeated in the License Manager area of the Prizm Administrator Tool.
	Redundant	not available.
Upload	Single	for auto-configuring and installing a new license key.
	Redundant	not available.
Start	Single	for starting the licensing server.
	Redundant	for starting only the primary licensing server.
Restart	Single	for restarting the licensing server.
	Redundant	for restarting only the primary licensing server.

Action (button)	Licensing Server	Useful
Stop	Single	for stopping the licensing server.
	Redundant	for stopping only the primary licensing server.
Password	Single	for access to the licensing server.
	Redundant	for access to only the primary licensing server.
1. IMPORTANT: See the caveat titled License Status Commands Not Triggering Status Display on Page 404, where Item ID 0006890 is described.		

The administration guide and setup guides contain more detailed information for all of the actions.

Checking the status of License Manager and current licensing in your system is efficient to do from the client application, regardless of whether your licensing configuration is redundant. When you click the Status button, the tool opens a Licensing Status panel. An example is shown in [Figure 56](#).

Licensing Status:

Imutil - Copyright (c) 1989-2004 by Macrovision Corporation. All rights reserved.
Flexible License Manager status on Wed 10/10/2007 16:59

[Detecting lmgrd processes...]

License server status: 27000@bost-4xc7c3o4mx

License file(s) on bost-4xc7c3o4mx: C:\Program

Files\Motorola\Canopy\FLEXnet\license_files\bam-prizm-advantage.00111106b695_Prizm30.

bost-4xc7c3o4mx: license server UP (MASTER) v10.0

Vendor daemon status (on bost-4xc7c3o4mx):

motocnpy: UP v10.0

Feature usage info:

Users of BAMServerV3: (Total of 1 license issued; Total of 1 license in use)

"BAMServerV3" v3.0, vendor: motocnpy
floating license

SYSTEM bost-4xc7c3o4mx bost-4xc7c3o4mx (v3.0) (bost-4xc7c3o4mx/27000 102), start Tue

Users of BAMPacksV3: (Total of 100 licenses issued; Total of 0 licenses in use)

Users of PrizmEMSServerV3: (Total of 1 license issued; Total of 1 license in use)

"PrizmEMSServerV3" v3.0, vendor: motocnpy
floating license

SYSTEM bost-4xc7c3o4mx bost-4xc7c3o4mx (v3.0) (bost-4xc7c3o4mx/27000 202), start Tue

Users of EMSPacksV3: (Total of 100 licenses issued; Total of 13 licenses in use)

"EMSPacksV3" v3.0, vendor: motocnpy
floating license

SYSTEM bost-4xc7c3o4mx bost-4xc7c3o4mx (v3.0) (bost-4xc7c3o4mx/27000 304), start Tue

Users of NoCapV3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom512To1000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom512To2000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom512To4000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom512To7000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom1000To2000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom1000To4000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom1000To7000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom2000To4000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom2000To7000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom2000To7000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Users of CanopyLiteSMFrom4000To7000V3: (Total of 5 licenses issued; Total of 0 licenses in use)

Figure 56: Example Licensing Status panel

Accepting an Element from the Ignored Elements List

You can accept elements into your new network from the Ignored Elements list. When you do, Prizm

- deletes the element from the Ignored Elements list.
- attempts to make changes that are required for setup of management interfaces to the element. For example, Prizm may
 - change settings such as the community string or SNMP control address.
 - assign an IP address if the device has none assigned.

To accept an element from the Ignored Elements List, perform the following steps.

Procedure 21: Accepting an element from the Ignored Elements list

1. Browse to **Network→Define Networks**.
RESULT: Prizm opens the Define Networks tab.
2. In the left-hand pane and under the desired network, select **Ignored Elements**.
3. In the right-hand pane, select any element(s) you wish to accept.
4. Select **Edit→Accept and Manage Network Element(s)**.
RESULT: Prizm
 - opens an Accepting Network Elements window, which displays a progress bar for this operation.
 - moves the selected element(s) from the Discovered Elements list to immediately beneath the root in the Network Elements list.
 - opens an Accepting Network Elements window, which displays events that are associated with the accept operation. For example, these events may include the following messages:

Accepting Network Element
Element Management Parameters Set. Waiting for Reboot
Element ready for Prizm Management
Element Accept Cancelled by User

NOTE: The time required to open this window and display all of the associated events is variable and depends on how many elements are being accepted into the network.

===== end of procedure =====

5.2.11 Accepting Elements into a Network for BAM-only Operations



NOTE:

This section does not apply to networks where RADIUS maintains the authentication and bandwidth settings. The only Accept operation supported for those cases is **Accept and Manage Network Element(s)**, as described in [Accepting Elements into a Network for All Management Functions](#) on Page 127.

An SM or Powerline client can be accepted into a network and set up for BAM-only operations in any of the following sequences.



NOTE:

The web proxy feature *is not* supported in systems that are only BAM server licensed (not also Prizm EMS server licensed). This is because the BAM subsystem in Prizm does not have access to Canopy module passwords.

In the first scenario, the element is initially not a member of the Network Elements list.

Procedure 22: Accepting an installed but undiscovered element for BAM-only operations

1. Set the AP or Powerline MU/Gateway to not require authentication.
2. Perform SNMP discovery of all SMs in the sector.
RESULT: Prizm adds those that are in neither the Ignored Elements list nor the Network Elements list to the Discovered Elements list.
3. Browse to **Network→Define Networks**.
RESULT: Prizm opens the Define Networks tab.
4. In the left-hand pane and under the desired network, select **Discovered Elements**.
5. In the Discovered Elements pane, check the box associated with the element.
6. From the main menu, select **Edit→Accept Elements to BAM**.
RESULT: Prizm opens the Provision Network Elements window. An example of this window is shown in [Figure 57](#) on Page 140.
7. Perform [Procedure 24: Using the Accept Elements to BAM command](#) on Page 140.
8. Set the AP or Powerline MU/Gateway to authenticate against Prizm.
RESULT: Upon the next registration attempt, Prizm allows the element into the network for BAM-only operations.

===== end of procedure =====

In the next scenario, the element is not yet installed, but you know the MAC address and the BAM-provisionable values that you want to apply to it.

Procedure 23: Accepting an uninstalled element for BAM-only operations

1. Browse to **Network→Define Networks**.
RESULT: Prizm opens the Define Networks tab.
2. In the left-hand pane and under the desired network, select **Network Elements**.
3. From the main menu, select **Edit→Add Element(s) for BAM Provision**.
RESULT: Prizm opens the Provision Network Elements window. An example of this window is shown in [Figure 57](#) on Page 140.
4. Type in the MAC address of the uninstalled element you are provisioning.
5. Perform [Procedure 24: Using the Accept Elements to BAM command](#) on Page 140.
RESULT: Prizm adds the element to the Network Elements pane for BAM-only operations. Later, when the element is installed and registers, Prizm successfully authenticates it and applies the specified BAM values.

===== end of procedure =====

Procedure 24: Using the Accept Elements to BAM command

1. In the Network Elements tab of the Provision Network Elements window, populate the dialog fields as desired.
NOTE: An example of this window is shown in [Figure 57](#).

The screenshot shows the 'Provision Network Elements' dialog box. It features three tabs: 'Network Elements', 'Bandwidth Service Plan', and 'VLAN Profile'. The 'Network Elements' tab is selected, displaying several input fields: 'MAC Address' with the value '0A003E022F1C', 'Authentication Key' with a long string of zeros, 'Site Name' with 'Settler's Hill', 'Site Location' with 'Northeast Q by Seneca Road', and 'Site Contact' with 'Brian T.'. An 'Add Multiple' button is located to the right of the 'Site Contact' field. Below these fields is a section titled 'Configuration Options' containing two dropdown menus: 'Bandwidth Service Plan' set to 'Basic Service Plan' and 'VLAN Profile' set to '(No VLAN)'. At the bottom of the dialog is a 'Management Mode' section with two radio buttons: 'Provisioning Only (Elements will be Authenticated at next Network Registration)' (which is selected) and 'Full EMS Management (Elements will be Managed at next Network Registration)'. The dialog box includes a help icon (question mark) on the bottom left and 'OK' and 'Cancel' buttons on the bottom right.

Figure 57: Example Provision Network Elements window

2. Optionally, if you want to also create BAM provisioning records for other elements, using the same bandwidth service plan and VLAN profile options, perform the following steps:
 - a. Click the **Add Multiple** button.
RESULT: Prizm opens the Provision Multiple Elements window. An example of this window is shown in [Figure 58](#).

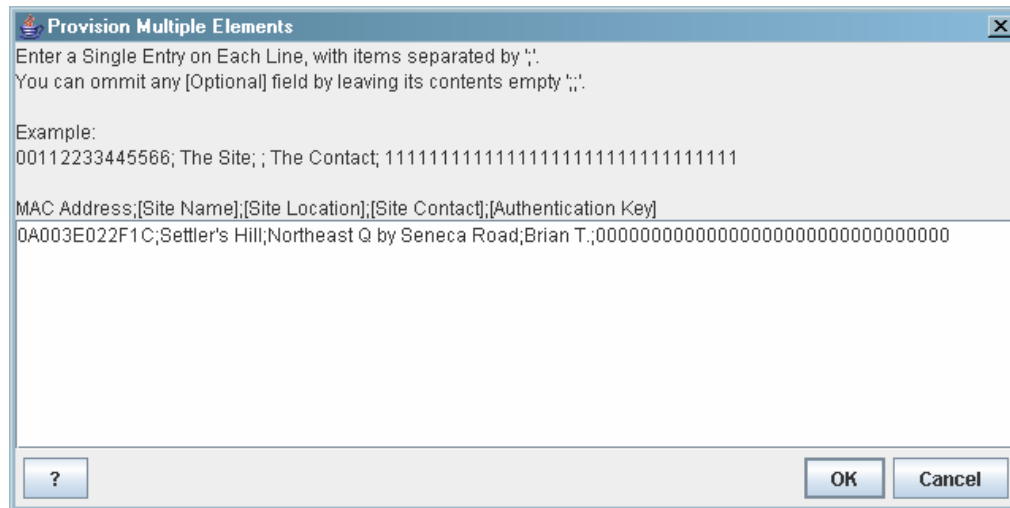


Figure 58: Example Provision Multiple Elements window

- Populate the additional records according to the instructions in the window.
- When you are satisfied with all additional records, click **OK**.

RESULT: Prizm opens the Provision Selection confirmation window. An example of this window is shown in [Figure 59](#).

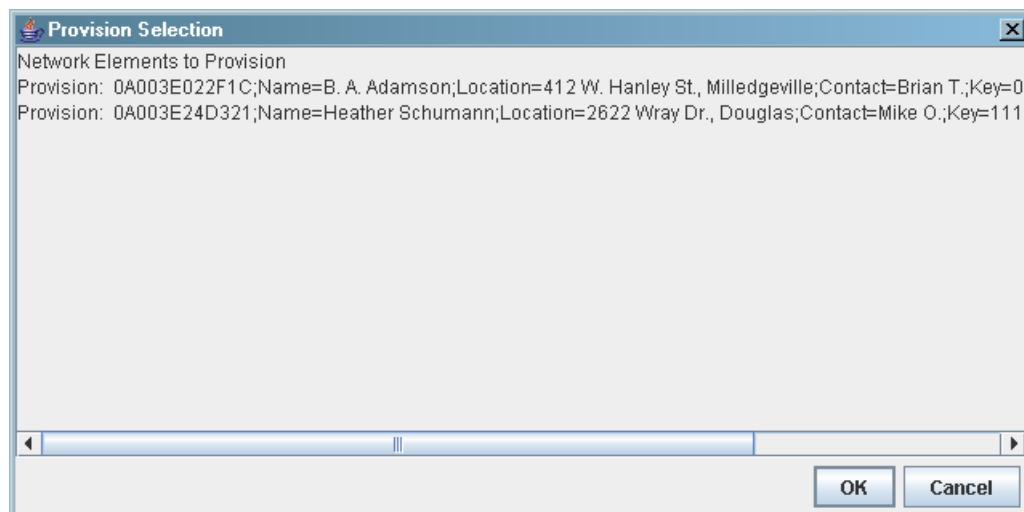


Figure 59: Example Provision Selection confirmation window

- d. If you are not satisfied with the records of the elements that you will be provisioning, click **Cancel**.
RESULT: Prizm reopens the Provision Multiple Elements window for you to make adjustments to the records that you input.
- e. When you are satisfied with the records shown in the Provision Multiple Elements window, click **OK**.
RESULT: Prizm reopens the Provision Network Elements window, this time with the multiple records displayed. An example is shown in [Figure 60](#).

The screenshot shows the 'Provision Network Elements' dialog box. It features three tabs: 'Network Elements', 'Bandwidth Service Plan', and 'VLAN Profile'. The 'Network Elements' tab is selected, displaying a list of network elements with the following details: MAC Address (0A003E022F1C;0A003E24D321), Authentication Key (a long alphanumeric string), Site Name (B. A. Adamson;Heather Schumann), Site Location (412 W. Hanley St., Milledgeville;2622 Wray Dr., Douglas), and Site Contact (Brian T.;Mike O.). There are 'Entries: 2' and an 'Add Multiple' button. Below this is the 'Configuration Options' section with 'Bandwidth Service Plan' set to 'Basic Service Plan' and 'VLAN Profile' set to '(No VLAN)'. The 'Management Mode' section has two radio buttons: 'Provisioning Only (Elements will be Authenticated at next Network Registration)' (selected) and 'Full EMS Management (Elements will be Managed at next Network Registration)'. At the bottom are buttons for '?', 'OK', and 'Cancel'.

Figure 60: Example Provision Network Elements window with multiple records

3. For **Bandwidth Service Plan**, either
 - click ▼ to select an already defined service plan by name.
 - click the Bandwidth Service Plan tab to see the values that are provisioned by any or all of the already defined service plans before you select one by name.

NOTE: To see the meanings of the attributes that the service plans provision, see [Procedure 75: Defining a service plan](#) on Page 308.

Although you cannot add an element for BAM provisioning without initially associating it with a selected service plan, you can later

- break the association as described in [Procedure 78: Removing a bandwidth service plan association](#) on Page 314. This may be useful where you want to manage the element for only authentication.
- associate the element with a different defined service plan as described in [Procedure 63: Pushing a configuration to an element](#) on Page 274.

4. For **VLAN Profile**, do one of the following:

- Leave the default **(No VLAN)** selection.
- Click  to select an already defined VLAN profile by name.
- Click the VLAN Profile tab to see the values that are provisioned by any or all of the already defined profiles before you select one by name.

NOTE: To see the meanings of the attributes that the profiles provision, see [Procedure 81: Defining a VLAN profile](#) on Page 320.

You can add an element for BAM provisioning without initially associating it with a VLAN profile. If you select a profile, you can later

- break the association as described in [Procedure 84: Removing a VLAN profile association](#) on Page 327. This may be useful where you want to manage the element for only authentication.
- associate the element with a different defined VLAN profile as described in [Procedure 63: Pushing a configuration to an element](#) on Page 274.

5. For **Management Mode**

- if you want to only provision the elements, select **Provisioning Only**.
RESULT: The elements are added for BAM-only operations and must authenticate when they next register.
- if you want Prizm to perform full management on the elements, select **Full EMS Management**.
RESULT: Prizm will manage the elements when they next register.

6. When you are satisfied with all entries in the Provision Network Elements window, click **OK**.

RESULT: Prizm reopens the Provision Selection confirmation window, which allows you to click Cancel to return to the Provision Network Elements window and adjust your input. An example of this Provision Selection window is shown in [Figure 61](#).

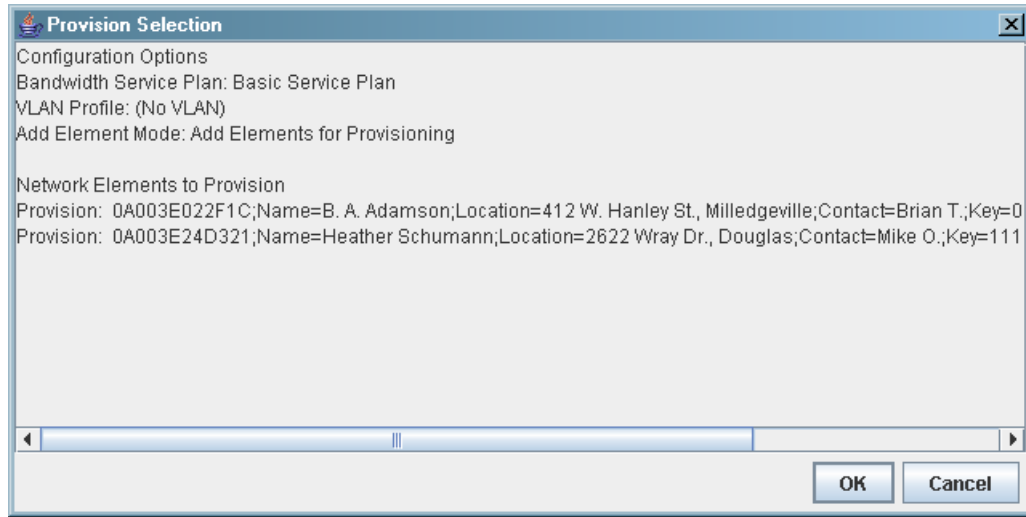


Figure 61: Example Provision Selection window showing BAM options and elements

7. When you are satisfied with all entries in the Provision Selection window, click **OK**.

RESULT: Prizm opens the Provision Network Elements window, where it displays events associated with allowing the element(s) into the network for BAM-only operations. An example of this window is shown in [Figure 62](#).

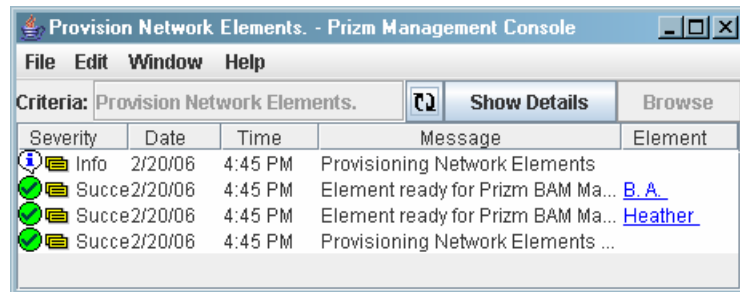


Figure 62: Example Provision Network Elements window in the management console

Prizm removes the element from the Discovered Elements pane. Approximately 15 minutes later, when the element again attempts to register, Prizm allows the element into the network for BAM-only operations, and inserts the element into the Network Elements pane of the Define Networks tab, where it is shown as a *provisioned* element.

===== end of procedure =====

5.2.12 Changing an Element from BAM-only to All Management Functions

Subject to licensing, you can change an element at any time from BAM-only operations to all of the management functions of Prizm. To do so, perform the following steps.

Procedure 25: Changing an element from BAM-only to all management functions



1. In a network browser view of the network in which the element exists, click .
2. Select (check the checkbox of) **Management State**.
3. Select the element in the network.
4. Read the associated value in the Management State column.
5. If the value is **Suspended (Authentication)**, select **Edit→Authentication Account State→Activate**.
6. Browse to **Network→Define Networks**.
RESULT: Prizm opens the Define Networks tab.
7. In the left-hand pane and under the desired network, select **Network Elements**.
8. In the Network Elements pane, check the box(es) associated with the element(s).
9. From the main menu, select **Edit→Accept and Manage BAM Provisioned Element(s)**.
RESULT: Prizm opens the Accept Network Elements window. An example of this window is shown in [Figure 49](#) on Page 130.
10. Select either **Reboot Elements if required for Management** or **Do Not Reboot Elements if required for Management**.
NOTE: The latter specifies that, under no circumstances, will Prizm reboot the element and presumes that the element is already fully set up for Prizm management. If **Do Not...** is selected, and a reboot is required to change the **Management State** of the element, then Prizm will skip the element, and its state will not be changed. This prevents a temporary outage. You will need to accept the element again, at a later time, with the option **Reboot Elements if required for Management** selected.
11. Click **OK**.

RESULT: Prizm

- opens an Accepting BAM Network Elements for Fully Managing window, which displays a progress bar for this operation. An example of this window is shown in [Figure 63](#).

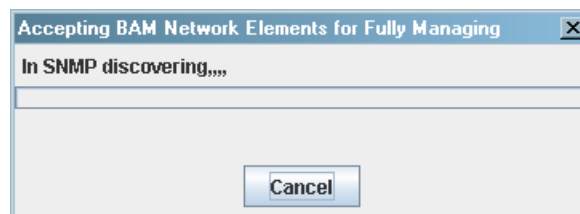


Figure 63: Accepting BAM Network Elements for Fully Managing window

- opens an Accepting Network Elements window, which displays events that are associated with the accept operation. For example, these events may include the following messages:

```
Accepting Network Element
Element Management Parameters Set. Waiting for Reboot
Element ready for Prizm Management
Element Accept Cancelled by User
```

Unlike the Accepting Network Elements window, which overlays the original pane, this console may open behind the normal system console window. An example of the Accepting Network Elements window is shown in [Figure 51](#) on Page [131](#).

NOTE: The time required to open this window and display all of the associated events is variable and depends on how many elements are being accepted into the network.

===== end of procedure =====

5.2.13 Moving an Element within the Hierarchy

Prizm places elements that you accept into a network immediately beneath the root of that network. This is by design, so that if Prizm later pushes configuration changes to the elements, it will do so in the proper sequence to avoid irretrievably dropping communications. For example, radio frequency (a configuration value that Prizm can push out) should *never* be changed on the near end of a link before it is changed on the far end.

Since Prizm places the accepted elements immediately beneath root, typically you will move the element to the proper location in the network topology. To do so, perform the following steps.

Procedure 26: Moving elements to their places in the network hierarchy

1. Select **Network Elements** in the left-hand pane.
2. Select the element(s) in the right-hand pane.
3. Select **Edit→Move Network Element(s)**.

RESULT: Prizm opens a Move (x) To window, which displays the element tree, with the elements that you selected now in gray (not selectable in this window).

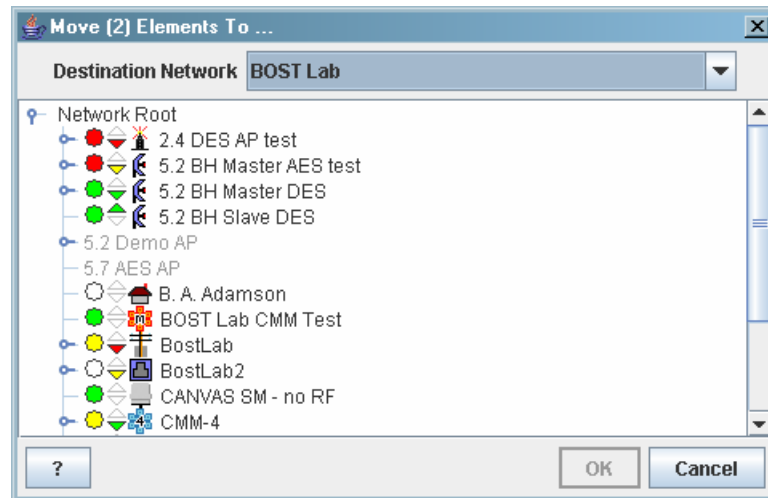


Figure 64: Example Move (n) Elements To window

4. In this window
 - a. select the destination network from the drop-down list.
 - b. select what should be the parent element of those that you are moving into this network.
5. Click **OK**.
RESULT: After the move, the system deselects the moved elements, but may display them in their original places as well as in their new places in the hierarchy. If it does, this *is not* an indication that the move operation failed or that Prizm continues to associate them with their former location.
6. Optionally, click **Ignored Elements** in the left-hand pane, then **Network Elements** in the left-hand pane, to see the refreshed display with the elements in only their new location.

===== end of procedure =====

5.2.14 Rejecting a Discovered Element

You can eliminate an element from *all* network views, Prizm functions, and event generation by either

- instructing Prizm to indefinitely ignore the element.
- deleting the element from the current list.

However, the latter action (deleting the element) does not prevent Prizm from adding the element into the Discovered Elements list when the next auto discover occurs.

Adding an Element to the Ignored Elements List

You can move an element to the Ignored Elements list from either the Discovered Elements list (not yet accepted elements) or the Network Elements list (already accepted elements). If you do, and later want Prizm to discover and/or manage the element, you can delete the element or accept and manage the element from the Ignored Elements list at that later time.

To add an element into the Ignored Elements list, perform the following steps.

Procedure 27: Moving an element to the Ignored Elements list

1. Browse to **Network→Define Networks**.
2. In the left-hand pane and under the desired network, click the list where the element that you want to instruct Prizm to ignore exists (**Discovered Elements** or **Network Elements**).
3. In the right-hand pane, select the row for any element(s) you wish to have Prizm ignore.
4. Select **Edit→Move Element(s) to Ignore List**.

NOTE: If the element was under BAM control and was in session, then

- the session is immediately dropped, if the server you are on is listed in the master device (AP or Powerline MU/Gateway) as an authentication server.
- the session will not drop until the element is rebooted or re-registers, if the server you are on *is not* listed in the master device as an authentication server.

===== end of procedure =====

Deleting an Element

If you want an element removed from either the Discovered Elements list or the Network Elements list, but also want Prizm to be able to subsequently discover that element, you should delete the element rather than move it to the Ignored Elements list.

To delete an element, perform the following steps.

Procedure 28: Deleting an element

1. If the element is provisioned in RADIUS, delete the element from RADIUS.
NOTE: If you instead delete the element in Prizm first, the action triggers a drop session that results in a re-authentication, after which the element reappears in Prizm.
2. In Prizm, browse to **Network→Define Networks**.
3. In the left-hand pane and under the desired network, click the list where the element that you want Prizm to ignore exists (**Discovered Elements** or **Network Elements**).
4. In the right-hand pane, select the row for any element(s) you wish to reject.

5. Select **Edit→Delete Network Element(s)**.

NOTE: If the element was under BAM control and was in session, then

- the session is immediately dropped, if the server you are on is listed in the master device (AP or Powerline MU/Gateway) as an authentication server.
- the session will not drop until the element is rebooted or re-registers, if the server you are on *is not* listed in the master device as an authentication server.

===== end of procedure =====

5.3 SETTING UP ALERT HANDLING

If your Prizm client application connects to a full Prizm server, you can define alerts that cause Prizm to make a record for you to view and act upon. These alerts will then be displayed in the Event Viewer tab with Prizm system-level alerts and other alerts that are predefined by an alert generator. You can also specify whether you should be automatically notified when the event occurs.

5.3.1 Filtering Events

Any user can create filters to derive a private user-defined event set to view. The event set can be seen by only the user who created it and administrators (either system administrators or users with administration access to the Events area). You may create a filtered view to view once and close, view repeatedly throughout the current session (as in an undocked tab, for example), or view in this and future sessions (as in a *saved* filtered view).

For each filtered view, you must define the criteria that establish when to trigger the event and on what element(s). When an event that matches the criteria occurs, Prizm places an entry into the Event Viewer tab. This entry includes the network element that triggered the event.

To filter events, perform the following steps.

Procedure 29: Filtering an event set

1. Browse to **Events→Open a View→New**.
2. Click  associated with **Criteria**.

RESULT: Prizm opens the Event Filter window. An example of the Event Filter window is shown in [Figure 65](#).

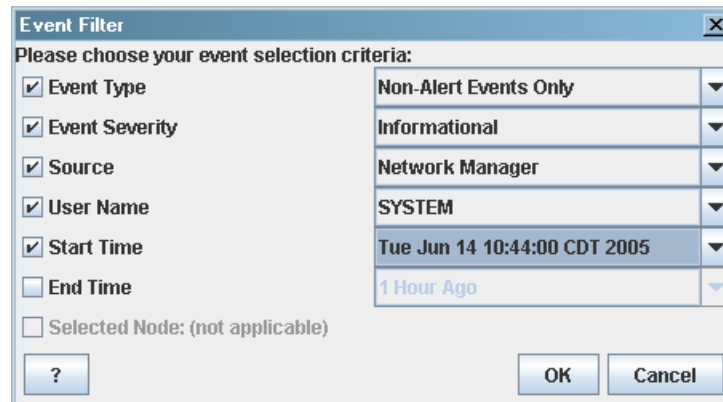


Figure 65: Example Event Filter window

3. Specify the event selection criteria.
NOTE: In the example above, only events that are classified as Informational and occur after 10:44 a.m. on Tuesday are filtered into the new Event Viewer tab.
4. Click **OK**.
RESULT: Prizm displays the newly specified event set.

===== end of procedure =====

5.3.2 Defining Alerts

For each user-defined alert, you must choose to either

- be required to clear the alert whenever it is triggered
- have Prizm automatically clear the alert whenever it is triggered.

Further, for each user-defined alert, you can specify whether a status indicator color change should occur on the associated element. The element status color can change to either

- yellow, to indicate that performance is degraded or attention is required
- orange, to indicate a minor problem
- reddish orange, to indicate a major problem
- red, to indicate that the element essentially is down.

This change in status can manifest a problem to an operator who observes it in the Network Browser tab. To define an alert, perform the following steps.

Procedure 30: Defining an alert

1. Select **Events→Define Alerts**.

RESULT: The Define Alerts tab opens. An example of the Define Alerts tab is shown in [Figure 66](#).

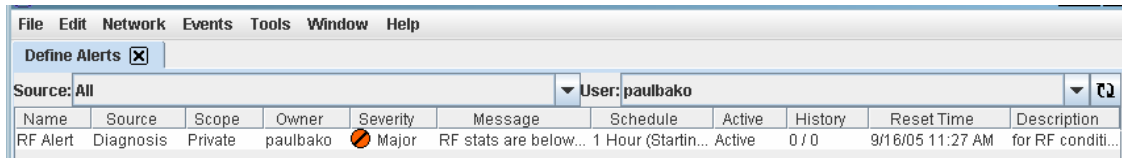


Figure 66: Example Define Alerts tab

2. Select **Edit→Add an Alert**.

RESULT: The Define Alert window opens. An example of the Define Alert window is shown in [Figure 67](#).

Define Alert

Name: No Name

Source: [Dropdown]

Description: No Description

Scope: Private

Owner: paulbako

Severity: Cleared

Message: [Text Field]

Criteria: No Criteria Specified

Results: > 0

Generate: Per Element

Interval: 1 Hour (Starting Midnight)

Mode: Require Clearing

Clearing Interval: 0 (minutes)

Active: Active

[?] [OK] [Cancel]

Figure 67: Example Define Alert window

3. For **Name**, optionally specify a textual identifier that will help you recognize this particular alert in the future.
4. For **Source**, either specify any expression in the provided field or, in the drop down list, select a source that you have previously entered or **All**.
5. For **Description**, optionally include descriptive text that will further help you recognize this particular alert in the future.

6. For **Scope**, if you are an administrator, select from among **Private**, **Shared**, and **Public**.
NOTE: If you are a user (not an administrator), Private is preselected.
7. For **Owner**, specify an owner for the alert.
NOTE: This can be a person of higher permission level than yourself.
8. Click ☐ associated with **Severity** and specify **Cleared**, **Success**, **Info**, **Warning**, **Minor**, **Major**, or **Critical**.
NOTE: For information on how this setting, combined with the status detected by Prizm, determines the color of the displayed status symbol in network views, see [Table 15](#) on Page 177.
NOTE: The values that you enter in Define Alert windows for Source and Severity will be used in the Event Viewer in Prizm and for alert notifications.
9. In the **Message** field, enter the text of the message that you wish to be logged when the event occurs.
10. Click ☐ associated with **Criteria**.
RESULT: The Specify Element Criteria window opens. See [Figure 91](#) on Page 198.
11. If you want this alert to be limited to elements of a particular element type, perform the following steps:
 - a. On the Basic tab of this window, click ☐ associated with **Element Type**.
 - b. Select the type of element for Prizm to alert you about.



IMPORTANT!

If the type of element is an OFDM Series Backhaul, be careful to select **High-Speed Backhaul Master** (or **Slave**) **Module**. However, not all selectable criteria for alert definition are supported by the BHs in this series.

12. If you want to limit this alert to elements that have a particular tag, perform the following steps:
 - a. Click ☐ associated with **Element Tag**.
 - b. Select the tag of the elements for which you want to be alerted.
13. If you want to limit this alert to an element attribute value that you will define, perform the following steps:
 - a. Click ☐ associated with **Element Attribute**.
 - b. Select the attribute for which you want to specify a value.
EXAMPLE: If you wish to confine this alert to elements for which you have been specified in the **Site Contact** parameter of the element configuration web page, select **Site Contact** here. Leave the associated relational operator set to = and enter the syntax that identifies you in the parameter.
 - c. Type in the threshold attribute value.

- d. Click  associated with the relational operator (=, for example).
- e. Select the relational operator.
*NOTE: != represents **unequal to**. !~ represents **unlike**.*
14. If you want to limit this alert to an element statistical value that you will define, perform the following steps:
 - a. Click  associated with **Element Statistics**.
 - b. Select the parameter whose value you want to be alerted about.
*EXAMPLE: For a CMMmicro, you may select **GPS Satellites Tracked**, select the relational operator <=, and specify **4** in the associated text box.*
 - c. Type in the threshold statistic value.
 - d. Click  associated with the relational operator.
 - e. Select the relational operator.
15. When you are satisfied with the criteria, click **OK**.
RESULT: The Specify Element Criteria window closes.
16. Back in the Define Alert window, use the relational operator and value text box for **Results** to specify how many elements must meet the criteria you just selected before Prizm sends an alert to you.
17. In the **Generate** field, specify either
 - **Per Element** to ensure that one alert is in the Event Viewer not cleared for each element that triggers this alert during the interval.
 - **Consolidated Summary** to generate one of this alert (if triggered) for the entire interval and to append the count of elements that triggered the alert.
18. In the **Interval** field, specify how often Prizm should check the database for matches of your criteria.
NOTE: The available intervals are

◦ 5 Minutes (From Start of the Hour)	◦ 4 Hours (Starting Midnight)
◦ 10 Minutes (From Start of the Hour)	◦ 6 Hours (Starting Midnight)
◦ 15 Minutes (From Start of the Hour)	◦ 8 Hours (Starting Midnight)
◦ 30 Minutes (From Start of the Hour)	◦ 12 Hours (Starting Midnight)
◦ 1 Hour (Starting Midnight)	◦ 24 Hours (At Midnight)
◦ 2 Hours (Starting Midnight)	

IMPORTANT: All of the above intervals are selectable for the administrator. However, in the Alert Manager Configuration XML file on the Prizm server, the administrator can separately set the minimum interval that a user or an administrator can specify for an alert. By default, intervals of less than one hour are not selectable for a user (non-administrator). This default treatment and the administrator control over user alerts limit the frequency so that overall Prizm performance does not degrade.

19. For **Mode**, use the drop-down list to select one of the following conditions under which this type of alert should be moved to the state of cleared:

- **Require Clearing**
- **Log as Cleared**
- **Clear Automatically**

NOTE: With this selection, the system moves the alert to the cleared state only after at least the number of minutes that you specify in the next dialog (**Clearing Interval**) has elapsed since the triggering event.

NOTE: Regardless of your selection in this field, this alert will be posted in the Event Viewer, where the Ack column entry will be kept current.

20. For **Clearing Interval**, type in the number of minutes after which the system should clear the alert automatically if a per-**Interval** check on elements in the database whose criteria had matched this alert definition (and triggered this alert) has found that the criteria are no longer present.

NOTE: The following example shows that the time when the system clears an alert automatically can be long after the **Clearing Interval** has expired.

Triggering event occurs at	Alert is logged in Viewer at	Clearing Interval is set to	System clears alert at	Amount of time that the alert spent as new	Amount of time elapsed between trigger and clearing
2:05 pm	2:30 pm	10	3:00 pm	:30	:55
		35	3:30 pm	1:00	1:25

21. If you want to preserve your alert definition but delay implementing the alert, select **Inactive**.

22. When you are satisfied with the alert, click **OK**.

RESULT: The Define Alert window closes.

===== **end of procedure** =====

5.3.3 Adding a Predefined Alert

For the general convenience of network operators, Prizm from the distribution includes

- an automatic *Configuration has changed* alert from the Configuration Manager functionality. For example, this alert is generated if
 - the software release on a module has changed.
 - the module has changed from 2X to 1X operation (or 1X to 2X).
 - the value of any other configurable parameter has changed.

You cannot suppress this alert. The system adds, in addition to the alert generated for these configuration change events, a record that reflects the event in the History tab of the Details pane.

- a set of manageable predefined alerts, any of which you can
 - suppress by not adding, keeping it in the list that the Select Predefined Alert window (Figure 68 on Page 159) displays.

- add from the Select Predefined Alert window.
- add (as above) and then customize to more appropriate for your network.

If you try to add a predefined alert that has the same name as an already added alert, Prizm returns the following Java exception error:

```
java.rmi.ServerException: RemoteException occurred in server thread; nested exception is:
java.rmi.RemoteException: addAlert:org.postgresql.util.PSQLException: ERROR: duplicate key
violates unique constraint "alert_manager_01_10_00_pkey"
```

This behavior is by design so that, as you manage the alerts that you have added, you can distinguish one from another in every case.

The manageable predefined alerts are described in the following list.

Access Point – Unregistered Unit

Source/Category	RF Monitor
Description	Access Points with 0 registered Subscriber Modules
Scope	Shared
Severity	Warning
Message	Access Points has 0 registered subscriber modules
Generate	Per Element
Interval	10 Minutes
Mode	Automatically Cleared
Criteria	Element Type: Canopy Access Point Module Element Statistics: Registered Slave Count = 0.0

Backhaul – Unpaired Master

Source/Category	RF Monitor
Description	Backhaul Master with no registered Backhaul Slave
Scope	Shared
Severity	Warning
Message	Backhaul Master has no registered Backhaul Slave
Generate	Per Element
Interval	10 Minutes
Mode	Automatically Cleared
Criteria	Element Type: Canopy Backhaul Master Module Element Statistics: Registered Slave Count = 0.0

Backhaul – Unpaired Slave

Source/Category	RF Monitor
Description	Backhaul Slave with no registered Backhaul Master
Scope	Shared
Severity	Warning
Message	Backhaul Slave with no registered Backhaul Master
Generate	Per Element
Interval	10 Minutes
Mode	Automatically Cleared
Criteria	Element Type: Canopy Backhaul Slave Module Element Attribute: Registered To =

Element – Ethernet Down

Source/Category	Network
Description	Checks the Ethernet Port Status of Network Elements. Typically limited to Infrastructure Elements to check for hardware failure.
Scope	Shared
Severity	Critical
Message	Ethernet Port is Down
Generate	Per Element
Interval	10 Minutes
Mode	Requires Clearing
Criteria	Element Tag: Shared – Infrastructure Element Statistics: Ethernet Status != 1.0

Element – Invalid Software Version

Source/Category	Configuration Manager
Description	Checks for Invalid Software Versions. Must be customized to specify the Software Version to search against. (Example = 7.1.4)
Scope	Shared
Severity	Warning
Message	Software Version not current
Generate	Per Element
Interval	1 Hour
Mode	Automatically Cleared
Criteria	Element Attribute: Software Version != 7.1.4%

Element – Poll Failed

Source/Category	Network
Description	Failed to Poll a Network Element. Checks for: Poll Status != OK
Scope	Shared
Severity	Critical
Message	Failed to poll Network Element
Generate	Per Element
Interval	10 Minutes
Mode	Automatically Cleared
Criteria	Element Attribute: Poll Status !=OK

Element – Recently Rebooted

Source/Category	Network
Description	Checks the Uptime of Elements to find recently rebooted ones. Based on Uptime Definition of DDD:HH:mm:ss Customize with desired reboot period Default = 10 minutes
Scope	Shared
Severity	Warning
Message	Element was recently rebooted
Generate	Per Element
Interval	10 Minutes
Mode	Automatically Cleared
Criteria	Element Attribute: Up Time <= 000:00:10:00

Element – SNMP Management Disabled

Source/Category	Configuration Manager
Description	SNMP Management is currently disabled on the element. SNMP Permission set to Read Only
Scope	Shared
Severity	Info
Message	SNMP Management is not enabled
Generate	Per Element
Interval	1 Hour
Mode	Automatically Cleared
Criteria	Element Attribute: SNMP Permission = Read Only

RF – dBm Threshold Monitor

Source/Category	RF Monitor
Description	Checks Radio Signal Power Level (dBm) Values for nominal performance
Scope	Shared
Severity	Warning
Message	RF Signal Power Level at threshold value
Generate	Per Element
Interval	10 Minutes
Mode	Automatically Cleared
Criteria	Element Statistics: Radio Power Level < -80.0

For the above manageable predefined alerts that you find practical to add by the **Edit→Add a Predefined Alert** option (in the Define Alerts tab), as well as for any alerts that you define, you may also find it helpful to create a corresponding *view*. You can do this by selecting the **Network→Open a View→New** option in the console, selecting and/or entering criteria that match those of the alert, and saving the view through the **File→Save View Criteria As** menu option in the console. This allows you to see at any time a list of all elements that meet the criteria you considered important enough to be alerted about through the Alert Manager.

Prizm also allows you to retrieve an alert that you have previously defined so that you can use it as the basis of a somewhat different alert you are creating. In another case, you may want to simply restore an original System alert that was deleted or modified over time.

To add any of these predefined alerts to the list in the Define Alerts tab, perform the following steps.

Procedure 31: Restoring a predefined alert

1. Browse to **Events→Define Alerts**.
RESULT: Prizm opens the Define Alerts tab. An example of this tab is shown in [Figure 66](#) on Page 151.
2. Select **Edit→Add Predefined Alert**.
RESULT: Prizm opens the Select Predefined Alert window. An example of this window is shown in [Figure 68](#).

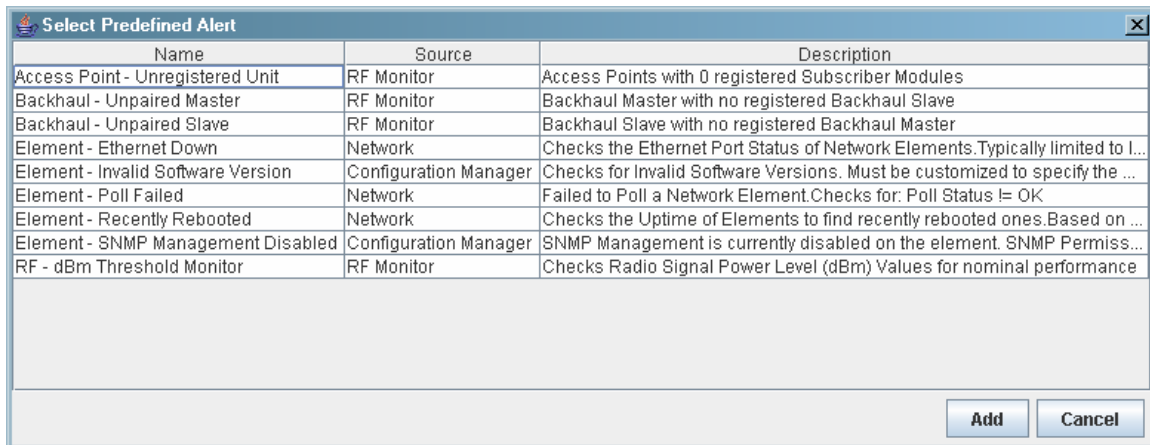


Figure 68: Example Select Predefined Alert window

3. Select (highlight) the alert that you want to restore.
4. Click the **Add** button.
RESULT: Prizm opens the Define Alert window for editing. This window displays the predefined criteria, with the possible exception that, by default, the scope of this alert is designated as Private (regardless of its previous scope).
5. In the Define Alert window, modify any criteria as desired. Particularly, if you want the scope to be other than Private, change the value of **Scope**.
6. Click **OK**.
RESULT: Prizm adds the alert to the Define Alerts tab.

===== end of procedure =====

5.3.4 Modifying the Configuration of an Alert

For any alert that you have previously configured, you can change the configuration. To do so, perform the following steps.

Procedure 32: Modifying an alert

1. Select **Events→Define Alerts**.
RESULT: The Define Alerts tab opens. An example of the Define Alerts tab is shown in [Figure 66](#) on Page 151.
NOTE: The History column indicates how many times the alert was generated/processed since the time that is indicated in the Reset Time column.
2. From the list of alerts displayed in this tab, highlight the row for the alert you wish to modify.
3. Select **Edit→Update the Alert**.
RESULT: The Define Alert window opens to the desired alert. An example of the Define Alert window is shown in [Figure 67](#) on Page 151.
4. Refer to Steps 3 through 20 of [Procedure 30: Defining an alert](#) on Page 151.

===== end of procedure =====

5.3.5 Activating an Alert

You can activate an inactive alert without opening the Define Alert window. To do so, perform the following steps.

Procedure 33: Activating an inactive alert

1. Select **Events→Define Alerts**.
RESULT: The Define Alerts tab opens. An example of the Define Alerts tab is shown in [Figure 66](#) on Page 151.
NOTE: The Active column indicates the active or inactive state of each alert.
2. From the list of alerts displayed in this tab, highlight the row for the alert you wish to activate.
3. Select **Edit→Activate the Alert**.
RESULT: The indication in the Active column toggles to Active, and this alert will remain active until you deactivate it.

===== end of procedure =====

5.3.6 Triggering an Alert to Immediately Run

You can trigger any alert to immediately run. This does not cause the alert to omit running in its configured time slots. To trigger the alert, highlight the alert in the Define Alerts tab and select **Edit→Run Alert Now**.

5.3.7 Creating and Reloading an Alert Definition File in XML

Prizm allows you to create and, later or on a different Prizm server, reload an XML file that contains the definition of an alert. You can edit this XML file to modify the alert configuration, or extract portions of it, as you wish. You may find this process helpful for

- saving the alert.
- transferring the alert to another Prizm instance.
- adding criteria from a Private or Shared alert to a System alert (as an administrator).

To export the configuration into XML, highlight the alert in the Define Alerts tab and select **File→Import/Export→Dump Alert to XML File**. Prizm opens a Save window, in which you can name the XML file and specify its path.

An example of the output in XML is shown in [Figure 69](#).


```

<alertdef active="true" description="" name="" reporttype="0" triggercount="0"
triggeroperator="5">
<schedule intervalminutes="30"/>
<event ackrequired="true" message="A jitter problem (&gt;= 4) exists for these SMs!" severity="3"
source="ReceiverDoctor"/>
<FILTER description="Type=Canopy Subscriber Module and Jitter &gt;= 4.0" name="Basic"
operationID="3">
<operation childoperator="0" nextoperator="7" operationID="4" operationType="1" operator="1">
<operand columnname="ignore_me" tablename="nodemgr_network_element" type="3"
value="nodemgr_network_element.ignore_me"/>
<operand type="0" value="0"/>
</operation>
<operation childoperator="0" nextoperator="7" operationID="5" operationType="1" operator="1">
<operand columnname="element_type" tablename="nodemgr_network_element" type="3"
value="nodemgr_network_element.element_type"/>
<operand type="1" value="Canopy.SM"/>
</operation>
<operation childoperator="0" nextoperator="0" operationID="6" operationType="3" operator="0">
<operation childoperator="0" nextoperator="7" operationID="7" operationType="2" operator="1">
<operand columnname="element_id" tablename="nodemgr_network_element" type="3"
value="nodemgr_network_element.element_id"/>
<operand columnname="element_id" tablename="nodemgr_element_performance" type="3"
value="nodemgr_element_performance.element_id"/>
</operation>
<operation childoperator="0" nextoperator="0" operationID="8" operationType="1" operator="3">
<operand columnname="Jitter" tablename="nodemgr_element_performance" type="3"
value="nodemgr_element_performance.jitter"/>
<operand type="2" value="4.0"/>
</operation>
</operation>
</FILTER>
</alertdef>

```

Figure 69: Example alert dumped into XML file

To reload a configuration from XML, select **File→Import/Export→Load Alert From XML File**. Prizm opens an Open window, in which you can specify the path and the file you want to load into Prizm. Then before you save or activate the alert, you can modify its definition.

5.3.8 Deactivating an Alert

You can deactivate an active alert without opening the Define Alert window. To do so, perform the following steps.

Procedure 34: Deactivating an active alert

1. Select **Events→Define Alerts**.
RESULT: The Define Alerts tab opens. An example of the Define Alerts tab is shown in [Figure 66](#) on Page 151.
NOTE: The Active column indicates the active or inactive state of each alert.
2. From the list of alerts displayed in this tab, highlight the row for the alert you wish to deactivate.
3. Select **Edit→Deactivate the Alert**.
RESULT: The indication in the Active column toggles to Inactive, and this alert will remain inactive until you activate it.

===== end of procedure =====

5.3.9 Removing a Configured Alert

You can remove any alert. To do so, perform the following steps.

Procedure 35: Removing an alert

1. Select **Events→Define Alerts**.
RESULT: The Define Alerts tab opens. An example of the Define Alerts tab is shown in [Figure 66](#) on Page 151.
2. From the list of alerts displayed in this tab, highlight the row for the alert you wish to remove.
3. Select **Edit→Delete the Alert**.
RESULT: The alert is permanently removed. The configuration of this alert cannot be recalled, except by defining an identical new alert.

===== end of procedure =====

5.3.10 Resetting the History of an Alert

You can reset the history of any alert. The History column indicates how many times the alert was generated/processed since the time that is indicated in the Reset Time column. To reset the history, perform the following steps.

Procedure 36: Resetting history for an alert

1. Select **Events→Define Alerts**.
RESULT: The Define Alerts tab opens. An example of the Define Alerts tab is shown in [Figure 66](#) on Page 151.
2. From the list of alerts displayed in this tab, highlight the row for the alert on which you wish to reset history.

3. Select **Edit→Reset Selected Alert History**.

RESULT: The entry for this alert in the History column resets to 0/0, and the entry for this alert in the Reset Time column resets to the date and time of this latest history reset. However, this action *does not* remove any of the selected alerts from the Event Viewer.

===== end of procedure =====

5.3.11 Resetting All History

You can remove all of the stored alert history through a single action and cause Prizm to restart collection of alert instances. To do so, perform the following steps.

Procedure 37: Resetting all alert history

1. Select **Events→Define Alerts**.

RESULT: The Define Alerts tab opens. An example of the Define Alerts tab is shown in [Figure 66](#) on Page 151.

2. Select **Edit→Reset All Alert History**.

RESULT: All entries in the History column of this tab reset to 0/0, and all entries in the Reset Time column reset to the date and time of this latest history reset. However, this action *does not* remove any alerts from the Event Viewer.

===== end of procedure =====

5.3.12 Subscribing to Alert Notifications

You can instruct Prizm to notify you in an email message whenever an event triggers an alert that matches certain criteria. Alert generators include Prizm system-level event-generators, some predefined alert generators, and classes of user-defined alerts. Prizm allows you to

- add any notification.
- review any notification.
- edit any notification.
- temporarily suspend any or all notifications.
- reinstate any or all suspended notifications.
- delete a notification.

To add a notification, perform the following steps.

Procedure 38: Defining an alert notification

1. Select **Events→Define Notifications**.

RESULT: Prizm opens the Define Notifications tab. An example of this tab is shown in [Figure 70](#).

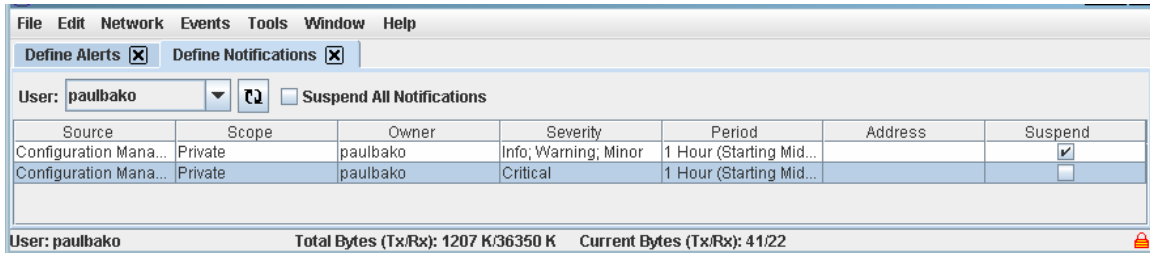


Figure 70: Example Define Notifications tab

2. Select **Edit→Add Notification**.

RESULT: Prizm opens a Define Notification window. An example of the Define Notification window is shown in [Figure 71](#).

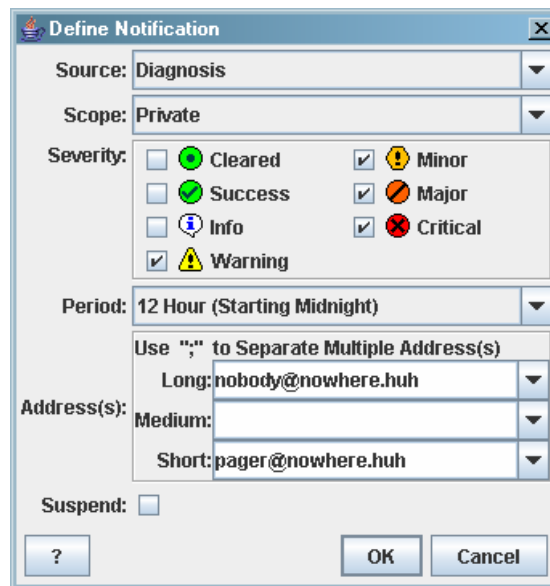


Figure 71: Example Define Notification window

3. For **Source**, select from among **Log Event Manager**, **Network Manager**, **Note**, **Session Manager**, **SNMP Service**, **User Manager**, and any that you have entered in association with an alert that you have defined.

NOTE: These sources are alternatively called alert generators. You *must* select at least one source.

4. For **Scope**, select
 - **Private**, if you wish to be notified of alerts that are generated by *User* (user-defined alerts). With this selection, the alert user ID must be that of the User who created the notification.
 - **All**, if you wish to be notified of both user-defined and Shared alerts. With this selection, the alert user ID must be either PUBLIC or the login ID of the user who created the notification.
5. For **Severity**, check (select) the severity levels to be included in this notification as **Cleared**, **Success**, **Info**, **Warning**, **Minor**, **Major**, and/or **Critical**.

NOTE: You *must* select at least one severity level.

6. For **Period**, specify how frequently Prizm should notify you for alarms that are as specified in the above fields.

NOTE: The available frequencies are

- 5 Minutes (From Start of the Hour)
- 10 Minutes (From Start of the Hour)
- 15 Minutes (From Start of the Hour)
- 30 Minutes (From Start of the Hour)
- 1 Hour (Starting Midnight)
- 2 Hours (Starting Midnight)
- 4 Hours (Starting Midnight)
- 6 Hours (Starting Midnight)
- 8 Hours (Starting Midnight)
- 12 Hours (Starting Midnight)
- 24 Hours (At Midnight)

RESULT: Prizm executes the notification once during the notification period, and the notification includes all alerts that match the **Source**, **Scope**, and **Severity** specification and occur at any time during the period.

IMPORTANT: All of the above intervals are selectable for the administrator. However, in the Notification Manager Configuration XML file on the Prizm server, the administrator can separately set the minimum interval that a user or an administrator can specify for a notification. By default, intervals of less than one hour are not selectable for a user (non-administrator). This default treatment and the administrator control over user alerts limit the frequency so that overall Prizm performance does not degrade.

NOTE: Although your selection for this field specifies an on-the-hour notification, processing of the notification is always delayed until 1 minute after the hour. This avoids conflict with other hourly processes, which occur on the hour.

7. For each of the **Address(s)** fields, specify where Prizm should send the notification. You *must* either
 - select a registered email address from the drop-down box.
 - enter one or more semi-colon delimited email addresses.

NOTE: **Long**, **Medium**, and **Short** represent the length of the message that Prizm sends to the corresponding address(es). The default administrator can reset these lengths in the Notification Manager Configuration XML file. The default lengths are as follows:

Long	more than 1,024 characters
Medium	truncated to between 256 and 1,024 characters
Short	truncated to not more than 255 characters

IMPORTANT: Some text messages may contain less-than-complete data. Test and verify that your notifications are effective.

8. If you want to temporarily delay activating the alert, check the checkbox associated with **Suspend**.
9. When you are satisfied with the criteria, click **OK**.

===== **end of procedure** =====

The email notification includes the sender and subject line. The contents of the email notification message includes at least

- the source of the notification.
- the number of alerts that matched the notification criteria.
- the number of elements for whom the alert was detected.
- the severity levels of the alerts.
- the time represented by the notification period.

5.3.13 Suspending and Reinstating Alert Notifications

You can temporarily suspend an individual notification. Alternatively, you can temporarily suspend *all* notifications, even when some are already suspended. In this latter case, when you later remove the overall suspension, Prizm maintains the individual suspensions that were in effect immediately before you ordered the overall suspension. You can also reinstate any individual notification that currently is suspended.

To suspend or reinstate an individual notification, perform the following steps.

Procedure 39: Suspending or reinstating an individual notification

1. Browse to **Events→Define Notifications**.
RESULT: Prizm opens the Define Notifications tab. An example of this tab is shown in [Figure 70](#) on Page 164.
2. From the list of notifications displayed in this tab, highlight the row for the notification you wish to suspend or reinstate.
3. Select **Edit→Update Notification**.
RESULT: The Define Notification window opens to the desired notification.
NOTE: An example of the Define Notification window is shown in [Figure 71](#) on Page 164.
4. At the bottom of this window, either
 - check **Suspend** to suppress the notification until you check it at some later time.
 - uncheck **Suspend** to reinstate this notification.
RECOMMENDATION: If you unchecked **Suspend**, review the configuration of this notification.
5. Click **OK**.

===== **end of procedure** =====

5.3.14 Modifying the Configuration of an Alert Notification

For any notification that you have previously configured, you can change the configuration. To do so, perform the following steps.

Procedure 40: Modifying an alert notification

1. Browse to **Events→Define Notifications**.
RESULT: Prizm opens the Define Notifications tab. An example of this tab is shown in [Figure 70](#) on Page 164.
2. From the list of notifications displayed in this tab, highlight the row for the notification you wish to modify.
3. Select **Edit→Update Notification**.
RESULT: The Define Notification window opens to the desired notification. An example of the Define Notification window is shown in [Figure 71](#) on Page 164.
4. Refer to Steps 3 through 9 of [Procedure 38: Defining an alert notification](#) on Page 164.

===== end of procedure =====

5.3.15 Removing a Configured Alert Notification

In the case where you want to remove rather than suspend a notification, perform the following steps.

Procedure 41: Removing an alert notification

1. Browse to **Events→Define Notifications**.
RESULT: Prizm opens the Define Notifications tab. An example of this tab is shown in [Figure 70](#) on Page 164.
2. From the list of notifications displayed in this tab, highlight the row for the notification you wish to remove.
NOTE: After the next step, the notification definition cannot be retrieved, even for reference.
3. Select **Edit→Delete Notification**.
RESULT: Prizm ceases all notifications that were based on this definition.

===== end of procedure =====

5.3.16 Managing Notifications as an Administrator

Beside having the ability to set the minimum period that a user and an administrator can specify for a notification, an administrator can

- use the drop-down box to view the notification list for any user.
- suspend or un-suspend an individual notification for any user.
- suspend all notifications for any user or clear all suspensions of notifications for any user.

However, an administrator *cannot* add, update, or delete a notification for any user. (Where the drop-down box is for another user, the menu selections to add, update, and delete a notification are grey and disabled.)

6 VIEWING NETWORK INFORMATION

6.1 VIEWING NETWORKS AND ELEMENTS

6.1.1 Selecting the Network or Element to View

For each network that you want to view or manipulate, Prizm opens a new tab. If you want to simultaneously view a network in different ways or focus on different parts of the same network, you can open multiple panes for that network.

To open a network tab, select **Network→Browse a Network** and select the name of the predefined network. After a slight delay, Prizm opens a tab labeled with the network name. This tab displays the network elements in a hierarchical tree based on how the hierarchy is defined in the Network Manager and displays associated data based on the columns that you select for display.

Whenever you return to this view later in the same session, you will not encounter the delay again. However, you will encounter this delay the first time that you select this view after the Prizm server restarts.

6.1.2 Selecting the Data to View

To specify the columns for Prizm to view and to hide, open the network tab as described above. Click . The Select Columns window opens. By checking or unchecking the boxes to the left of the column types listed in this window, you can configure any combination of data to display about the elements in the selected network. Data column choices are shown in [Figure 73](#), [Figure 74](#), and [Figure 75](#).



NOTE:

Most of the attributes shown correspond to configurable parameters in the Canopy modules. However in some cases, the syntax is not identical to that of the corresponding parameter. See [Defining Template Attributes](#) on Page 262.

Filtering the Columns View

The Select Columns window includes a **Search** dialog that accepts a string of partial or whole attribute/statistic name and returns a list of all that contain matches, as shown in [Figure 72](#).

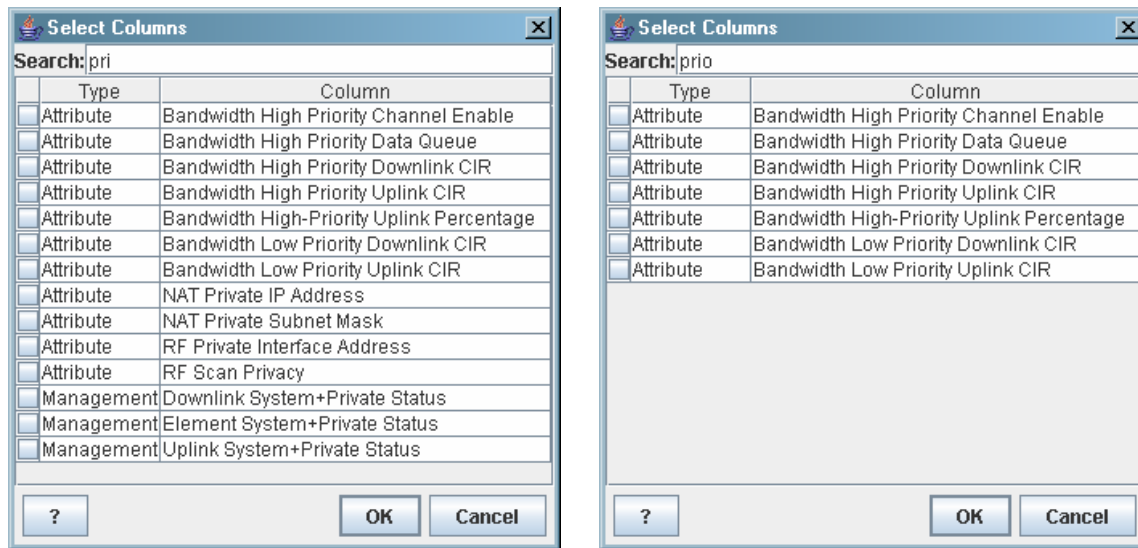


Figure 72: Example search results from Select Columns operation

As you type into the **Search** dialog, the list immediately becomes shorter, with only matches continuing to appear. However, items in the resulting shorter list are not automatically *selected*. You still need to check the checkbox of any attribute/statistic whose column you want included in the network view. The search feature is simply a convenience that makes it unnecessary to scroll through the full list to get to the column names that you want.

Some checked items can become unchecked. If you check any (either in the full list or in the short list returned by a search) and/or any were already selected before you clicked the  button, and then you do a new search and select more, afterward be sure to use  or  keys to remove the contents of the **Search** dialog *before* you click the **OK** button. Otherwise (if contents remain), selections from only the current short list will be effective when you click **OK**. This caveat is repeated in [Column Selections Discarded If Search Dialog is Not Cleared](#) on Page 410, where the tracked Item ID 0005259 is described.

Column Manipulation

When all of the desired columns are displayed, you can rearrange the left-to-right order of the columns by dragging any column to a new location. You can click on the head of any column to cause Prizm to sort the contents in ascending order, based on the contents of that column. You can click on the head of the column again to have Prizm reverse the sort to descending order.

Authentication Account State	Filter User 1 to 3 Port#	RF Background BER Mode
Authentication Key	Filter User 1 to 3 TCP	RF Broadcast Repeat Count
Authentication Mode	Filter User 1 to 3 UDP	RF Cable Loss
Authentication Occurred	FPGA/HW Version	RF Color Code
Authentication Server 1 to 3	GPS Altitude	RF DFS Alternate Channel 1 Status
Auto Update Server	GPS Antenna Connection Status	RF DFS Alternate Channel 2 Status
Bandwidth Actual Uplink Index	GPS Invalid Message Number	RF DFS Primary Channel Status
Bandwidth Allow License Use	GPS Latitude	RF DFS Status
Bandwidth Broadcast MIR	GPS Longitude	RF Encrypt Downlink Broadcast
Bandwidth DACKs Reserved High	GPS Receiver Info	RF Encryption
Bandwidth Downlink Burst Allocation	GPS Timing Pulse	RF Frame Timing Pulse Gated
Bandwidth Downlink Sustained Rate	GPS Tracking Mode	RF Frequency
Bandwidth Hard Cap	Last Poll Time	RF Frequency Alternate 1 to 2
Bandwidth High Priority Channel Enable	MAC Address	RF Frequency Band
Bandwidth High Priority Data Queue	Management IP	RF Frequency List
Bandwidth High Priority Downlink CIR	Management IP Mode	RF Frequency Variant
Bandwidth High Priority Uplink CIR	Management State	RF HW Control Slot Number
Bandwidth High Priority Uplink Percentage	Management Subnet Mask	RF Max Transmit Power
Bandwidth Low Priority Downlink CIR	NAT ARP Cache Timeout	RF Max Modulation Mode
Bandwidth Low Priority Uplink CIR	NAT DHCP Client Enabled	RF Maximum Range
Bandwidth Max Uplink Index	NAT DHCP Server Enabled	RF Private Interface Address
Bandwidth Percent Downlink	NAT DHCP Server Lease IP addresses	RF PTP Antenna Gain
Bandwidth Service Plan	NAT DHCP Server Lease Timeout	RF PTP Encryption
Bandwidth Soft Cap	NAT DHCP Start IP	RF Ranging Mode
Bandwidth Total NumCtlSlots	NAT DMZ Enabled	RF Rate
Bandwidth Total NumCtlSlots Reserved High	NAT DMZ IP Address	RF Region Code
Bandwidth Total NumDACKSlots	NAT DNS Alternate IP Address	RF Scan Privacy
Bandwidth Total NumUACKSlots	NAT DNS IP Address	RF Schedule Whitening
Bandwidth UACKs Reserved High	NAT DNS Preferred IP Address	RF Scheduler Type
Bandwidth Uplink Burst Allocation	NAT Enabled	RF Sector ID
Bandwidth Uplink Sustained Rate	NAT Private IP Address	RF Target Range
Boot Version	NAT Private Subnet Mask	RF Transmit Frame Spreading
Description	NAT Public Gateway Address	RF Transmit Output Power Level
Device Active Region	NAT RF Public Gateway Address	RF Transmitter Output Power
Device Asymmetric TDD	NAT TCP Session Garbage Timeout	Signal Strength Ratio
Device Bridge Entry Timeout	NAT UDP Session Garbage Timeout	Site Contact
Device Configuration Source	Network Allowed IP Access 1 to 3	Site Location
Device Default Plug Mode	Network Daylight Saving Enable	Site Name
Device Ethernet Auto Mdix Enable	Network Default Gateway Address	SMTP Alert Enable
Device Ethernet Auto Negotiation Enable	Network IP Access Filter	SMTP Server IP
Device Ethernet Fibre Support	Network MAC Layer Filtering Enable	SMTP Server Port
Device Ethernet Link Drop Enable	Network NTP Enable	SMTP Source Email
Device Ethernet Link Negotiation Speeds	Network NTP Poll Interval	SMTP Destination Email
Device LLDP Message Mode	Network NTP Server Address	SNMP Accessing IP 1 to 10
Device Platform	Network NTP Server Port	SNMP Accessing Subnet Mask 1 to 10
Device Power Up Mode	Network Time Zone	SNMP Permission
Device Product Variant	Poll Interval	SNMP Port
Device Reboot Required	Poll Status	SNMP Trap Community 1 to 10
Device Region Category	Port 1 to 8 Description	SNMP TrapIP 1 to 10
Device Region Code	Port 1 to 8 Device Type	SNMP Version
Device Secondary Software Version	Port 1 to 8 Duplex Data Transmission	Software Version
Device SM Isolation	Port 1 to 8 Link Speed Configuration	TSL Bridging
Device Synch Mode	Port 1 to 8 Network Connectivity	Untranslated ARP
Device Wireless Rate Cap Enable	Port 1 to 8 Power Status	Up Time
Diff Service Code Point 0 to 63	Port 1 to 8 Uplink	VLAN Aging Timeout
Filter All Other IPv4	Port 1 to 8 Uplink Status	VLAN Allow Only Tagged Frames
Filter All Others	Port 1 to 8 VLAN Configuration	VLAN Dynamic Learning
Filter ARP	Port 9 Description	VLAN Enable
Filter Bootp Client	Port Map 1 to 10 Application Port Number	VLAN Management Priority
Filter Bootp Server	Port Map 1 to 10 Local Host IP	VLAN Management VID
Filter IPv4 Multicast	Port Map 1 to 10 Protocol Type	VLAN Membership
Filter PPPoE	Registered To	VLAN Priority Traffic Threshold
Filter SMB	RF 6.0 Compatibility	VLAN Profile
Filter SNMP	RF Antenna Gain	VLAN Untagged Ingress VID
Filter User 1 to 3	RF Antenna Polarization	Web Auto Update
		Web, Telnet, FTP Session Timeout

Figure 73: Select Columns Attribute scroll selections

Notes About Attributes

You cannot configure by custom template the attributes that are listed above in *italic* font and you can affect, by other operations, the value of only some of them. You can configure those shown in plain font. However, you can view the values of any of them, except when their values are null or their columns are not selectable because the feature they support is not being used.

The following characteristics apply to individual attributes:

- The **Authentication Key** attribute, as previously in BAM, does not set the parameter of the same name in the SM. Instead, it only sets the key in the Prizm database. This is by design, to avoid sending the key via SNMP.
- The **Auto Update** attribute is selectable only if the Auto Update feature is turned on in the AP template xml file on the Prizm server.
- The **Device LLDP Message Mode** is the messaging mode for the Layer 2 discovery destination address. Values have the following meanings:
 - 0** multicast
 - 1** broadcast
- The **Device Active Region** is the read-only attribute in the slave element , set by the master element.
- The **Device Ethernet Auto Mdx Enable** attribute enables or disables the MDI/MDIX capability.
- The **Device Ethernet Auto Negotiation Enable** attribute controls whether the local Ethernet interface configuration is automatically negotiated or forced.
- The **Device Ethernet Link Drop Enable** attribute, if enabled, causes the Ethernet link to briefly drop when the wireless link drops.
- The **Device Region Category** attribute sets the AP to comply with Russian regulations relative to population in the area in which the radio is deployed. Values have the following meanings:
 - 1** cities of more than 1 million people
 - 2** cities of 250,000 to 1 million people
 - 3** cities of 100,000 to 250,000 people
 - 4** territories of the Russian Federation, except cities of more than 250,000 people

- The **Device Region Code** attribute value is the setting in Canopy, PTP 200, and WiMAX elements to align master or slave radio operation with applicable regulations. Values have the following meanings:

0	none	4	Europe
1	other ⁶	5	Brazil
2	U.S.A.	6	Australia
3	Canada	7	Russia

Before the August 2007 Update to Release 3.0, this attribute was named RF Region Code and had a different set of meanings for the values.

- The **Device Wireless Rate Cap Enable** attribute is the cap on the wireless link data rate based on the Ethernet link maximum rate.
- The **GPS Altitude** attribute value expresses its value in meters.
- The **GPS Latitude** and **GPS Longitude** attributes express their values in decimal.
- The **Management IP Mode** attribute allows you to set all SMs to their LAN DHCP mode in a single task, or remove that setting, in a single task if you wish. Values have the following meanings:

0	use the static management IP address
1	obtain the management IP address via DHCP
- The **Network Allowed IP Access 1 to 3** attributes are where you specify the IP addresses from which access to AP management should be allowed.
- The **Network Daylight Saving Enable** attribute specifies whether to apply Daylight Saving Time. This supports PTP Release 05-04.
- The **Network MAC Lay Filtering Enable** attribute is for packet filtering/bridging at the MAC layer.
- The **Network NTP Enable** attribute is the SNTP control state that was added in PTP Release 05-04.
- The **Network NTP Poll Interval** attribute specifies the polling interval for the SNTP server, supporting PTP Release 05-04.
- The **Network NTP Server Port** attribute is the IP port number of the SNTP server. This supports PTP Release 05-04. The default value is **123**.
- The **Network Time Zone** attribute specifies time zone offsets from GMT. This supports PTP Release 05-04.
- The **Registered To** attribute points to the element with which the current element is associated, and is populated even when the link is *not active*. Although that may be counterintuitive, it can be helpful in troubleshooting network problems. For example, if an SM loses connection with an AP that is attempting to serve more than the maximum number of SMs, having a value for this attribute is advantageous.

⁶ This is both the default value and the value that Prizm displays for any device that is either new and not configured yet or running software that is earlier than Release 8.2 Build 9.

- The **RF Antenna Gain** parameter allows you to configure the gain in units of dBi for radios that use either an external antenna or the DFS feature.
- The **RF Antenna Polarization** attribute indicates the vertical or horizontal disposition of the antenna associated with the radio. Prizm gets its value from the element. This value must match among the master element and all of its slaves.
- The **RF Cable Loss** attribute is the loss in the cable between the ODU and the antenna, in tenth dB.
- The **RF Max Modulation Mode** attribute controls the MAX mode used for adaptive modulation.
- The **RF PTP Antenna Gain** attribute is the gain value, in tenth dBi.
- The **RF Rate** attribute specifies 1X or 2X operations for access point modules and subscriber modules that support variable operation. Earlier Prizm releases labeled this attribute RF 2X Rate.
- The **RF Schedule Whitening** attribute allows you to instruct the element to spread its transmitted signal power to avoid peaks of power that could be interpreted as radar. Values have the following meanings:
 - 0** disable the Schedule Whitening feature
 - 1** enable the Schedule Whitening feature
- The **RF Transmit Output Power Level** attribute specifies the low or high power level that is defined in the Canopy element.
- The **RF Transmitter Output Power** attribute specifies an adjustable value for power, on an infinite scale within the power range of the radio.
- The **SMTP Alert Enable** attribute, if enabled, causes equipment alerts to be sent via email with the Simple Mail Transfer Protocol to a specified email address.
- The **SMTP Destination Email** attribute is the *To* address to use for constructing automatically generated e-mail messages.
- The **SMTP Server IP** attribute is the IP address of the SMTP server.
- The **SMTP Server Port** attribute is the port number of the SMTP server.
- The **SMTP Source Email** attribute is the *From* address to use as the source for constructing automatically generated e-mail messages.
- The **VLAN Management Priority** attribute is the 802.1Q VLAN priority to include in packets that the management interfaces generate. The range of values is **0** through **7**.
- The **VLAN Priority Traffic Threshold** attribute, if enabled, sets the 802.1Q VLAN user priority threshold at which to treat bridged traffic as high priority.

Air Delay	Port 1 to 8 Tx Multicast	RF Receive Modulation Mode
Ethernet Rx Broadcast	Powerline Rx Bytes	RF Receive Power
Ethernet Rx Bytes	Powerline Rx Discards	RF Receive Power Dbm
Ethernet Rx Discards	Powerline Rx Errors	RF Rx Broadcast
Ethernet Rx Errors	Powerline Rx NUCast	RF Rx Bytes
Ethernet Rx Multicast	Powerline Rx Ucast	RF Rx Discards
Ethernet Rx NUCast	Powerline Status	RF Rx Errors
Ethernet Rx Ucast	Powerline Tx Bytes	RF Rx Multicast
Ethernet Status	Powerline Tx Discards	RF Rx NUCast
Ethernet Tx Broadcast	Powerline Tx Errors	RF Rx Ucast
Ethernet Tx Bytes	Powerline Tx NUCast	RF Signal Strength Ratio
Ethernet Tx Discards	Powerline Tx Ucast	RF Status
Ethernet Tx Errors	Radio Power Level	RF Transmit Channel
Ethernet Tx Multicast	Radio Signal Strength Index	RF Transmit Data Rate
Ethernet Tx NUCast	Radio Slicing Value	RF Transmit Frequency
Ethernet Tx Ucast	Registered Slave Count	RF Transmit Modulation Mode
GPS Satellites Tracked	RF Aggregate Data Rate	RF Transmit Power
GPS Satellites Visible	RF Distance	RF Transmit Power Dbm
Jitter	RF Distance Km	RF Tx Broadcast
Num Ports	RF Distance Mi	RF Tx Bytes
Port 1 to 8 Rx Broadcast	RF Link Avg. Distance Km	RF Tx Discards
Port 1 to 9 Rx Bytes	RF Link Avg. Distance Mi	RF Tx Errors
Port 1 to 9 Rx Discards	RF Link Distance Km	RF Tx Multicast
Port 1 to 9 Rx Errors	RF Link Distance Mi	RF Tx NUCast
Port 1 to 8 Rx Multicast	RF Link Loss	RF Tx Ucast
Port 1 to 9 Status	RF Link Loss Db	RF Vector Error
Port 1 to 8 Tx Broadcast	RF Receive Channel	RF Vector Error Db
Port 1 to 9 Tx Bytes	RF Receive Data Rate	Temperature C
Port 1 to 9 Tx Discards	RF Receive Frequency	Temperature F
Port 1 to 9 Tx Errors		

Figure 74: Select Columns Statistics scroll selections

The Temperature Statistics

The **Temperature** statistics shown above do not accurately reflect the temperature inside the module (for comparison with the operating range in specifications). However, the value can be helpful as one of many troubleshooting indicators, particularly where it significantly changes for the individual module.

Downlink All Status	Element All Status	Uplink All Status
Downlink System Status	Element System Status	Uplink System Status
Downlink System+Private Status	Element System+Private Status	Uplink System+Private Status
Downlink System+Shared Status	Element System+Shared Status	Uplink System+Shared Status

Figure 75: Select Columns Management scroll selections

6.1.3 Interpreting Element and Link Status Indicators

Next to each element in the Network Browser are colored status indicators. The left-hand indicator represents the status of the element. The right-hand indicators represent the status of the downlink and uplink in which the element is involved. Green indicates normal operational characteristics. Yellow indicates that performance is degraded or attention is required. Red indicates that the element essentially is down.

The symbols that Prizm uses to display element status are defined in [Table 14](#).

Table 14: Symbols representing element status

Symbol	Meaning
	The full poll/alert status of this element.
	The composite status of this element and of the linked element that is immediately above it.
	The composite status of this element and of the linked element that is immediately beneath it.
	Either BAM provisioning or EMS management of the element, depending on how the element was accepted, is suspended.
NOTES: The default state of this symbol is green. This is because Prizm does not add an element to a network unless it successfully polls the element. The colors represent various severities that are aligned with ITU definitions: ◦ white, none ◦ green, success ◦ yellow, warning ◦ orange, minor ◦ reddish orange, major ◦ red, critical If an element is red and its uplink is green, then the element has a problem. If the element is red and its uplink is red, then the parent element has a problem. White indicates either BAM-only provisioning of the element or that the element is on the other end of a link with an element for which BAM provisioning or Prizm management is suspended. Poll status and alert status are both factors in the displayed status. See Table 15 on Page 177.	

The color of an element status indicator may derive from

- whether Prizm was able to communicate with the element upon the last polling attempt. This directly corresponds to the Poll Status attribute in Prizm. For example, when the Poll Status column entry displays OK, the status indicator for the element is green; when the entry is FAIL, the indicator is red.
- any open (new or acknowledged) user-defined alerts.

Through a drop-down menu labeled **Status Mode**, the interface allows you to decide whether Prizm should consider the severity of

- private alarms (**System+Private**) for Column 2 above, along with what the system detects
- shared alarms (**System+Shared**) for Column 2 above, along with what the system detects
- all alarms (**All**) for Column 2 above, along with what the system detects
- only what the system detects for Column 1 above (**System**).

Where **System+Private** or **System+Shared** is selected, the color of the element status indicator reflects the consideration of both what was detected by the system and what was specified in the alarm definition, as shown in [Table 15](#).

Table 15: Element status indicator determination

Status Detected by System	Severity Set by User for User-defined Alert	Displayed Status
Green	Warning	Yellow
Green	Minor	Orange
Green	Major	Reddish Orange
Green	Critical	Red
Yellow	Warning	Yellow
Yellow	Minor	Orange
Yellow	Major	Reddish Orange
Yellow	Critical	Red
Red	Warning	Red
Red	Minor	Red
Red	Major	Red
Red	Critical	Red

Where **All** is selected, the higher severity alarm is considered, and the lower severity alarm is ignored, regardless of whether the alarm was defined as private or shared. Where **System** is selected, the severity specified in the alarm definition is ignored.

To exercise some control over what color results from certain events that Prizm detects, you can strategically define alerts. See [Defining Alerts](#) on Page 150.

6.1.4 Refreshing Elements on Schedule

A refresh of elements consumes more server resources than a deliberate poll from a network view and much more than a scheduled poll to gather information for the performance log. For this reason, you may want to set up regularly scheduled refresh(es) of elements.

You can trigger deliberate polls and refreshes from the main menu at any time from a network browser view or the Define Networks tab. These deliberate polls and their effects on resources are described in [Resources Consumed for Polls and Refreshes](#) on Page 45. This present section describes how to schedule refreshes.

To schedule a batch refresh, perform the following steps.

Procedure 42: Scheduling batch refreshes

1. From the main menu, select **Tools→Task Scheduler**.
RESULT: Prizm opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#) on Page 381.
2. Select **Edit→Add New Task**.
RESULT: Prizm opens the Select Task Category window. An example of this window is shown in [Figure 232](#) on Page 382.
3. Highlight **Auto Refresh Elements**.
4. Click **OK**.
RESULT: Prizm opens a Task Configuration window. An example of this window is shown in [Figure 76](#).

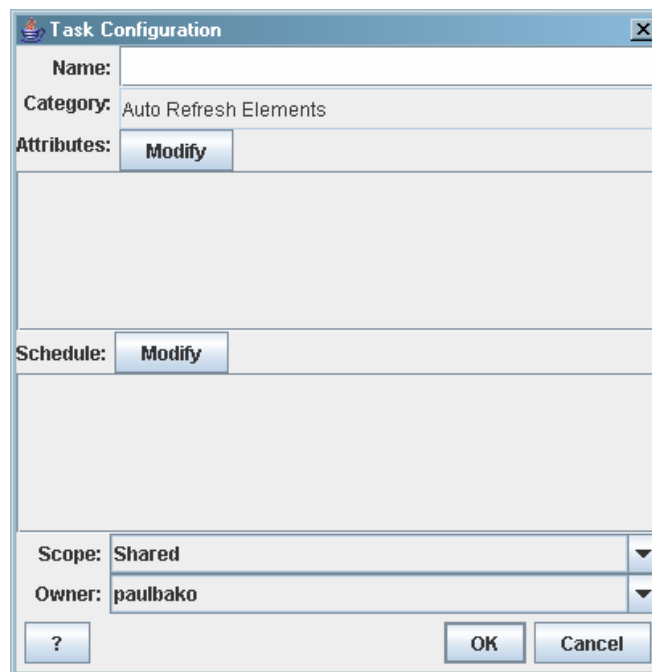


Figure 76: Example Task Configuration window, Auto Refresh Elements task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this kind of Task Attributes window is shown in [Figure 77](#).

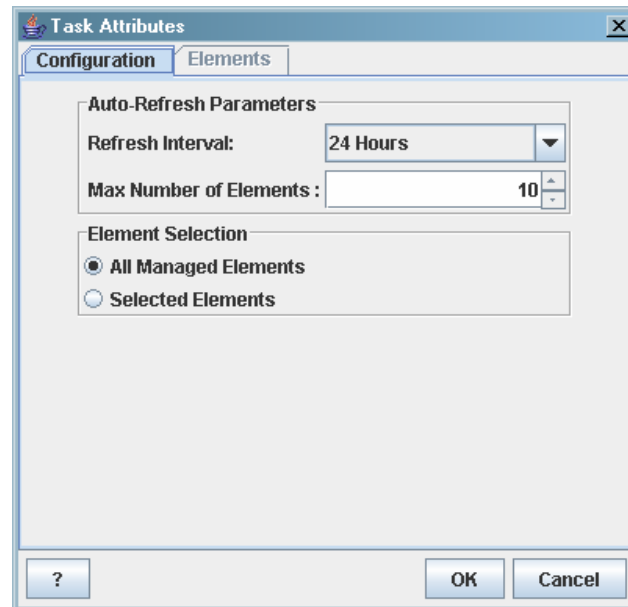


Figure 77: Example Task Attributes window, Auto Refresh Elements task

7. For **Auto Refresh Parameters**, perform the following steps:
 - a. Use the drop-down menu to select the **Refresh Interval** between **One Hour** and **One Week**.
 - b. Use the drop down menu to set the **Max Number of Elements**, specifying that no simultaneous refresh should include more elements than this.
8. If you want this refresh task to involve only a subset of all managed elements, perform the following steps.
 - a. For **Element Selection**, click **Selected Elements**.
 - b. Click the Elements tab.
 - c. Select the elements that are to be affected by this task.
NOTE: The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
 - d. Click **OK**.

If you instead want this refresh task to involve all managed elements, perform the following steps:

- a. For **Element Selection**, ensure that **All Managed Elements** is selected.
- b. Click **OK**.

9. Back in the Task Configuration window, click the **Modify** button associated with **Schedule**.
10. Schedule the task.
NOTE: Task scheduling is defined under [Scheduling Prizm Tasks](#) on Page 381.
11. Back in the Task Configuration window, use the drop-down menu to select the **Scope** of the task **Shared** (can be modified or run by any other user) or **Private** (can be modified or run by only the **Owner** specified in the next field).
12. Use the drop-down menu to select a user who will own (be allowed to modify or run) this task.
13. Click **OK**.
RESULT: The list in the Define Tasks tab includes the new Auto Refresh Elements task.
14. Highlight the task.
15. From the main menu, select **Edit→View Task**.
16. Review the description in the Task Configuration window.
17. When finished, click the **Close** button.
18. If you want this task to run on its defined schedule, select **Edit→Activate Task**.
If you want Prizm to indefinitely delay implementing the schedule, then select **Edit→Deactivate Task**.
NOTE: If a task is active, a check appears in the checkbox adjacent to the task name in the Define Tasks tab.

===== end of procedure =====

6.1.5 Viewing Full Details on a Selected Element

Prizm collects and stores detailed information about every element that you have accepted into a network. However, the amount and type of information that Prizm has depends on both the element type and what information has been available to Prizm. Prizm displays this information as a combination of data values and performance charts.

To view detailed information about any element in the network tree, highlight the element, then click . The tab vertically splits such that the left pane continues to display the network tree with user-selected configuration/performance columns, and the right pane displays the details of the selected element.

An example of this split screen for a Canopy element is shown in [Figure 19](#) on Page 83. Examples of this split screen for generic (non-Canopy) element are shown in [Figure 78](#) and [Figure 79](#).

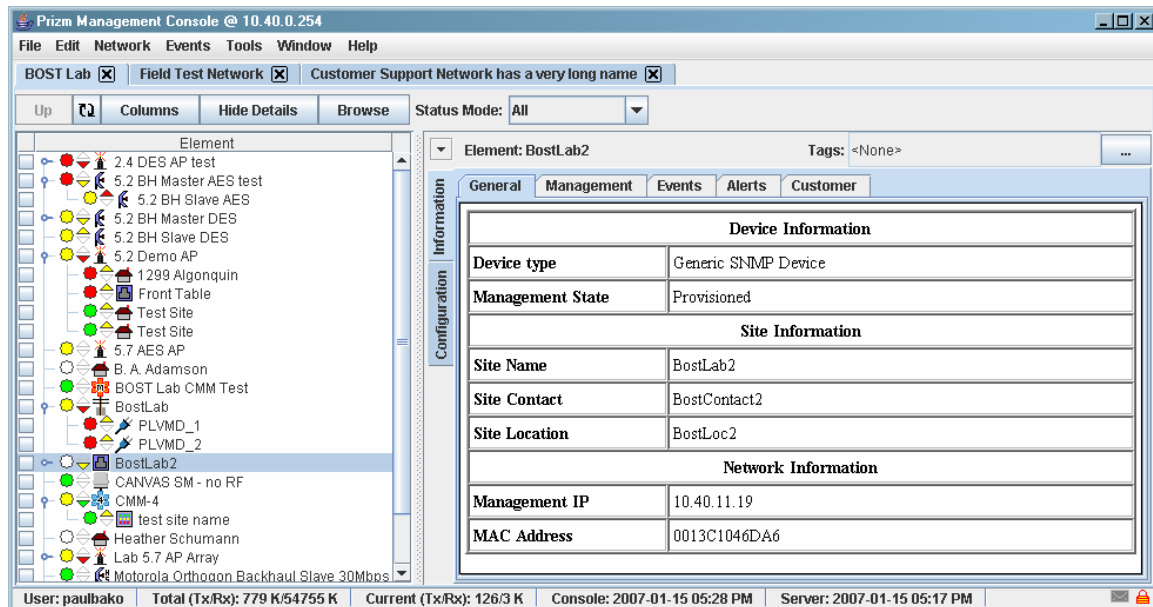


Figure 78: Example generic element Details pane without poll information

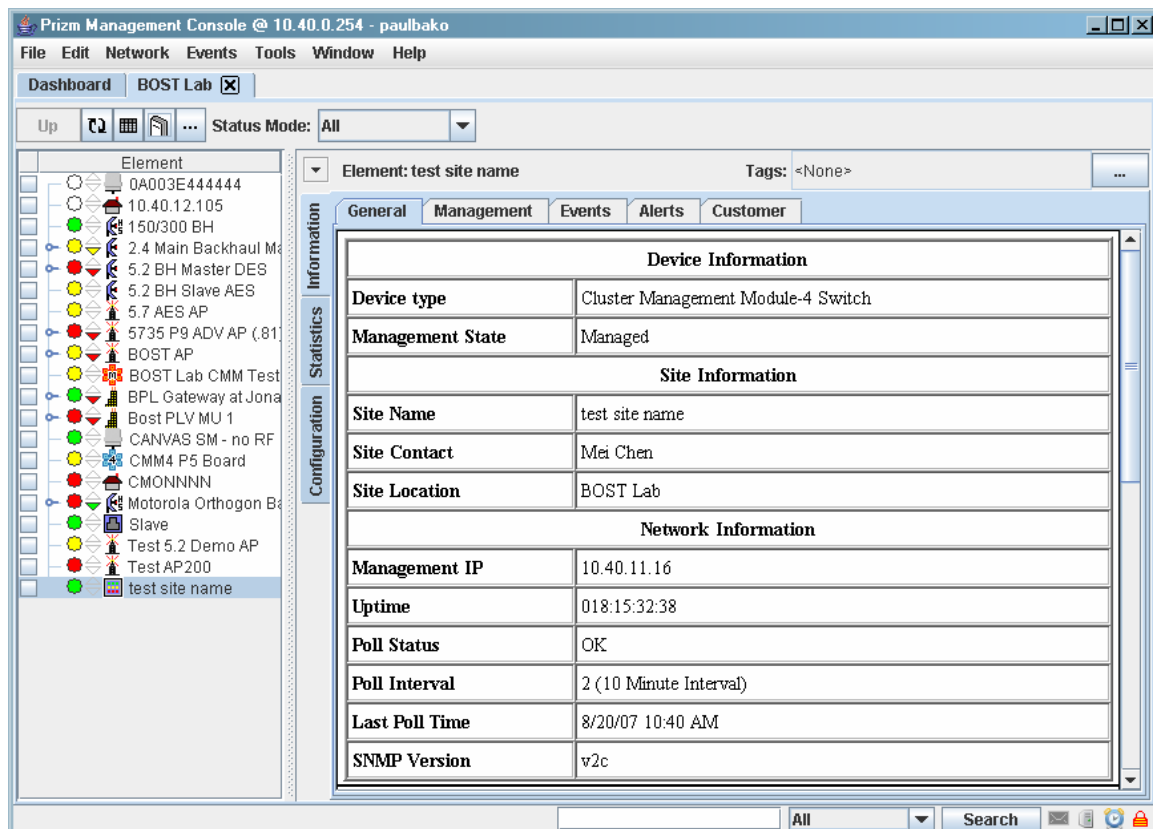


Figure 79: Example generic element Details pane with poll information



NOTE:

In addition to the objects that [Table 16](#) lists as displayed in the Details pane, an Events tab provides an Event Viewer and an Alerts tab provides a list of all Alerts for the selected element, regardless of element type. Each of these tabs provides a Criteria field that opens an Event Filter window where you can broaden or narrow the time frame that the view reflects. For Canopy elements, the Details pane also provides current configuration values and template configuration values for comparison.

Table 16: Typically available details per element type

Folder or Element	Tab in Details Pane	Attributes and Statistics ¹
PTP 400 master, PTP 600 master	RF Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards Receive/Transmit Ucast Receive/Transmit NUCast
PTP 400 slave, PTP 600 slave	RF Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards Receive/Transmit Ucast Receive/Transmit NUCast
PTP 200 master	RF Link	Registered BH Slave Radio Slicing Value Radio Temperature
	RF Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards
	Ethernet Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards
PTP 200 slave	RF Link	Radio Signal Strength Index Jitter Value Radio Slicing Value Air Delay (100-ns increments) Radio Power Level Radio Temperature
	RF Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards
	Ethernet Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards
CMM2	no Details available	none supported

Folder or Element	Tab in Details Pane	Attributes and Statistics ¹
CMMmicro	GPS Satellites	GPS Satellites (tracked and visible)
	Port Traffic	Receive/Transmit Bytes per port (8 ports)
	Port Discards	Receive/Transmit Discards per port (8 ports)
	Broadcast Traffic	Receive/Transmit Broadcast Packets per port (8 ports)
	Multicast Traffic	Receive/Transmit Multicast Packets per port (8 ports)
CMM4	GPS Satellites	GPS Satellites (tracked and visible)
CMM4 Switch	General	Device Type Management State Site Name Site Contact Site Location Software Revision Hardware Revision Management IP Uptime Poll Status Poll Interval Last Poll Time SNMP Version GPS Latitude GPS Longitude GPS Altitude Community String SNMP Trap IP 1 to 5 SNMP Trap Community 1 to 5 VLAN Allow Only Tagged Frames Description (speed and duplex) for each of 9 ports Receive/Transmit Octets for each of 9 ports Receive/Transmit Discards for each of 9 ports Receive/Transmit Errors for each of 9 ports Status for each of 9 ports
	Port Traffic	Receive/Transmit Octets per port (9 ports)
	Port Discards	Receive/Transmit Discards per port (9 ports)
	Port Errors	Receive/Transmit Errors per port (9 ports)
Folder	no Details available	none supported

Folder or Element	Tab in Details Pane	Attributes and Statistics ¹
Canopy AP, Canopy Advantage AP, Canopy 400 Access Point (CAPxx400)	RF Link	Registered Slave Count Radio Slicing Value Maximum Distance Average Distance Radio Temperature
	RF Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards
	Ethernet Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards
Canopy SM, Canopy Advantage SM, Canopy Lite SM, Canopy 400 Subscriber Module (CSMxx400)	RF Link	Radio Signal Strength Index Jitter Value Radio Slicing Value Air Delay (100-ns increments) Distance Radio Power Level Radio Temperature
	RF Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards
	Ethernet Traffic	Receive/Transmit Bytes Receive/Transmit Errors Receive/Transmit Discards
Powerline MU/ Gateway	RF Link	Registered Modems Radio Temperature
	Ethernet Traffic	Port 1 Receive/Transmit Bytes Port 1 Receive/Transmit Discards Port 1 Receive/Transmit Ucast Packets Port 1 Receive/Transmit NUcast Packets Port 1 Receive/Transmit Errors
	PowerLine Traffic	Port 2 Receive/Transmit Bytes Port 2 Receive/Transmit Discards Port 2 Receive/Transmit Ucast Packets Port 2 Receive/Transmit NUcast Packets Port 2 Receive/Transmit Errors
Powerline Modem	Ethernet Traffic	Port 1 Receive/Transmit Bytes Port 1 Receive/Transmit Discards Port 1 Receive/Transmit Ucast Packets Port 1 Receive/Transmit NUcast Packets Port 1 Receive/Transmit Errors

Folder or Element	Tab in Details Pane	Attributes and Statistics ¹
Generic element	General	Device Type Site Name Site Location Site Contact Management IP Up Time Poll Status Last Poll Time SNMP Version Num Ports
Canopy Prizm		See <i>Prizm™ Software Development Kit (SDK)</i>
NOTES: 1. For element performance, details are limited to read-only statistics. Device Reboot Required in Prizm design is a read-write attribute, and therefore is not displayed in the element details pane.		

For Canopy, Canopy Advantage, Canopy 400 Access Point (CAPxx400), and Canopy 400 Subscriber Module (CSMxx400) radios, the General tab

- includes device, site, software, network, and location information.
- provides totals of bytes, discards, and errors for both received and transmitted traffic.
- states the radio slicing value, radio temperature, and synch mode of the radio.
- displays configurations for authentication, bandwidth, RF, network, SNMP, NAT, filters, VLAN, and differentiated services.
- may provide the number of registered elements, synch mode, and coverage information (in terms of maximum and average distance) for timing masters.

The RF Link, RF Traffic, and Ethernet Traffic tabs of the Details pane allow customizing of the scale of the data shown and an optional view of the data in tabular form. An example of a Details pane for an SM is shown in [Figure 80](#).

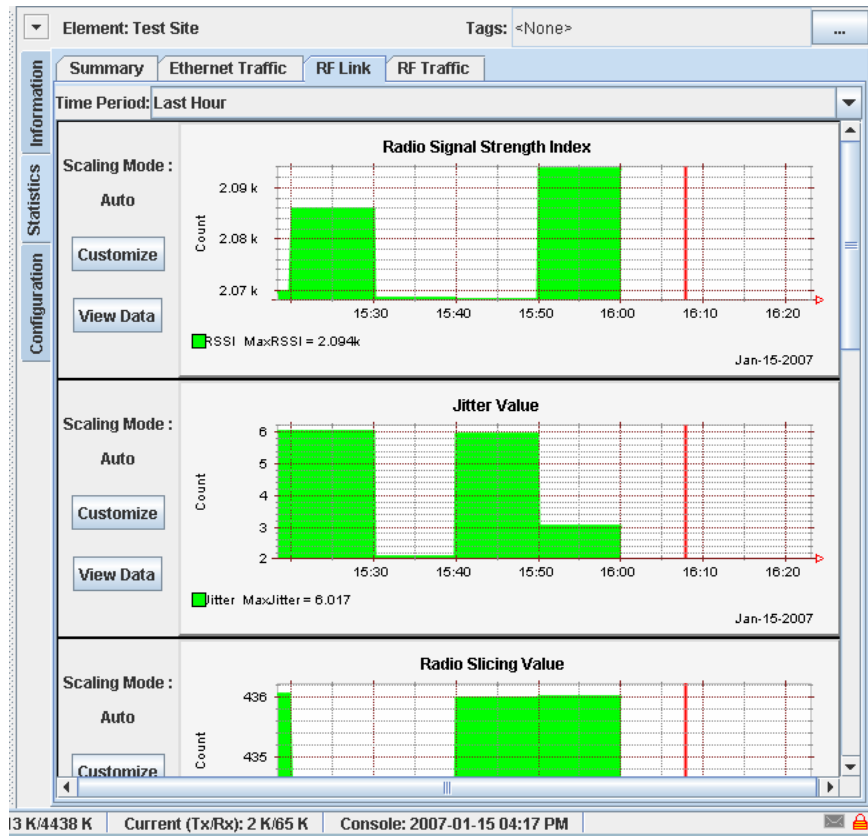


Figure 80: Example Link Information tab of the Details pane for an SM

In the General tab of the Information side tab, if you click on the down arrow associated with the element name, Prizm opens the Select Report window, where you can order the specific report that you want to see.

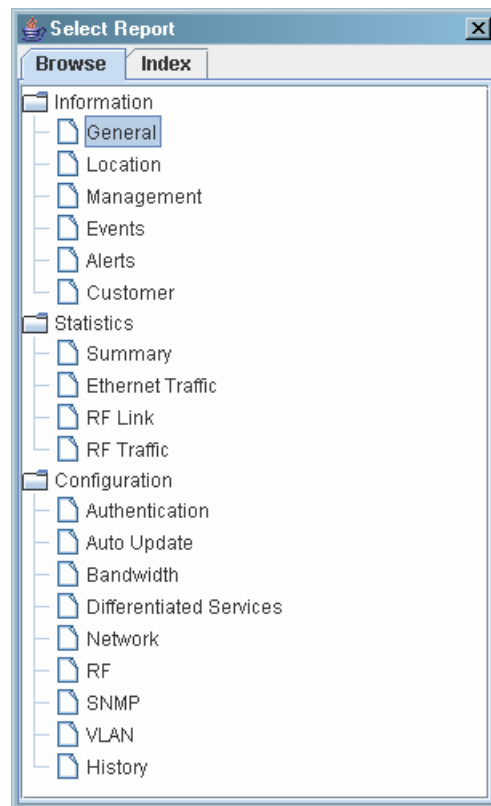


Figure 81: Example Select Report window, Browse tab

If you click on the report name in the Browse tab, Prizm posts that report in the Details pane.

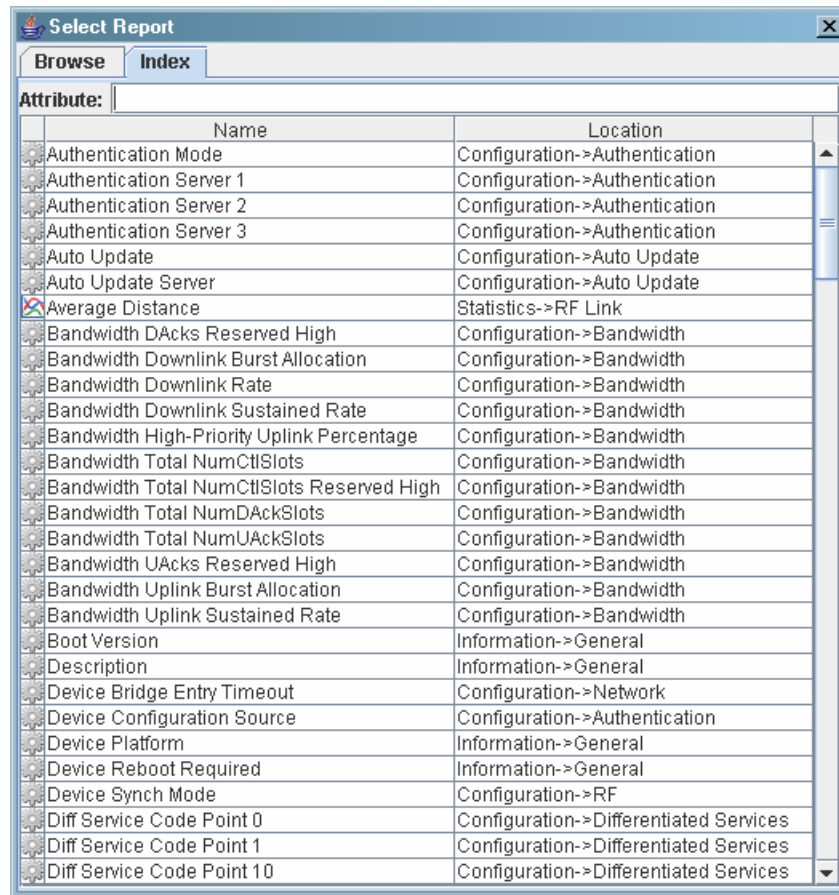


Figure 82: Example Select Report window, Index tab

If you enter an attribute name in the Index tab, Prizm posts in the Details pane the report that shows the value of that attribute. For example, in [Figure 82](#) above, if you either enter Bandwidth Downlink Burst Allocation in the Attributes dialog or you click on Bandwidth Downlink Burst Allocation in the attribute list of the Index tab, Prizm posts the Bandwidth report for the element.

To customize the scale for the data that Prizm presents for an attribute, perform the following steps.

Procedure 43: Customizing the scale for attribute data

1. If you are satisfied with the current scale, leave the Scaling Mode set to auto and *do not* perform this procedure.
2. Click the **Customize** button.

RESULT: Prizm opens the Customize Scale window. An example of this window is shown in [Figure 83](#).

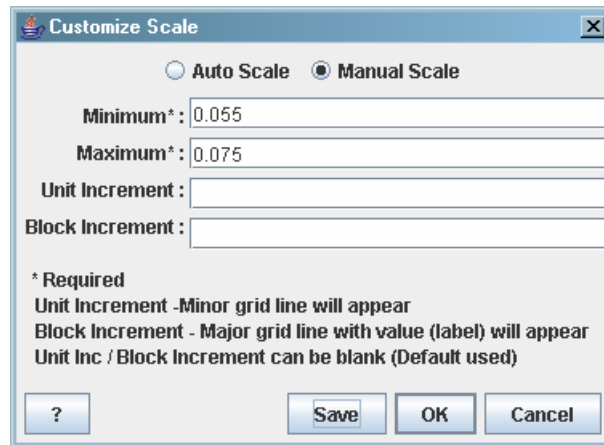


Figure 83: Example Customize Scale window

NOTE: If the view was restored from the last saved session, then the **Save** button is gray and disabled, and hence no changes that you make in this window are permanent.

3. For **Minimum**, type in the low-end value for the new scale.
NOTE: The system will not use a minimum value that is greater than the default minimum for the graph. This is because of a known bug in the third-party API. Until this problem is resolved, Canopy will continue to track it under Item ID 0003068.
4. For **Maximum**, type in the high-end value for the new scale.
NOTE: The system will not use a maximum value that is less than the default maximum for the graph. This is because of a known bug in the third-party API.
5. Optionally, for **Unit Increment**, type in the increment at which the faint grid lines in the graphical representation should appear.
NOTE: If you leave this field null, then the system continues to use the current (default) increment.
6. Optionally, for **Block Increment**, type in the increment at which the bold grid lines in the graphical representation should appear.
NOTE: If you leave this field null, then the system continues to use the current (default) increment.
7. Ensure that **Manual Scale** is still selected at the top of the window.
8. When you are satisfied with your entries, click **Save**.
RESULT: Prizm opens a Save Selection window.

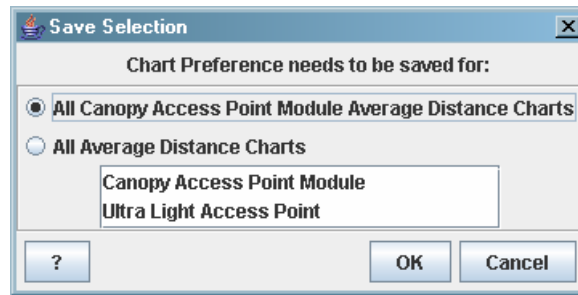


Figure 84: Example Save Selection window

9. Select the charts types to which you want your scale preference to apply.
 10. Highlight the element type to which you want your scale preference to apply.
 11. Click **OK**.
 12. If you ever want to remove this preference and have the chart returned to its default scale, perform the following steps:
 - a. From the main menu, select **File→Settings→Edit Settings**.
 - b. In the left pane of the resulting Settings window, highlight **Manage Chart Preferences**.
- RESULT:* Prizm displays your saved chart preferences in the right pane of the Settings window. An example of this is shown in [Figure 85](#).

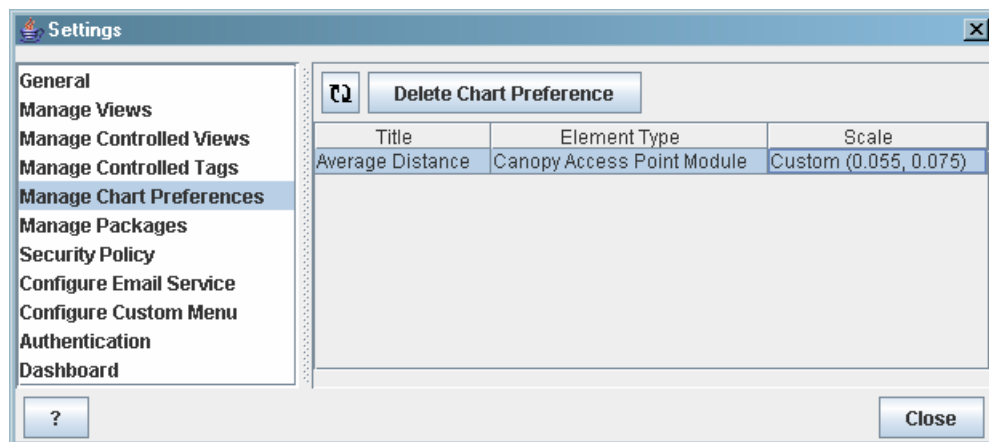


Figure 85: Example Settings window, Manage Chart Preferences pane

- c. In the right pane, highlight the scale preference that you had saved.
- d. Click the **Delete Chart Preference** button.

===== end of procedure =====

Prizm uses available information about active air links to provide distance information that allows you to view link distances and overall sector coverage. On the SM side of a link, the General tab shows the calculated distance in both miles and kilometers. These are calculated values that measure the total distance traveled by the strongest signal associated with the link, based on air delay, in some cases influenced by RF interference and reflections in the RF path. The values *are not* meant to use instead of precise measurements, such as those calculated through GPS coordinate comparisons.

The distance information for an SM is also tracked over time in the Link Information tab. During a link session, the distance value does not change. So, the performance charts typically are flat. Any significant change may indicate that an SM re-registered to a different AP (with a different link distance). If that is the case, then the event log of the element reflects it.

On the AP side, Prizm uses the ranging information to show the maximum distance of any link with the AP, as well as the average distance of all links. These provide important information about the dynamics of the sector and may help you optimize the sector for better performance.

To view the data in tabular form, click the **View Data** button (see [Figure 80: Example Link Information tab of the Details pane for an SM](#) on Page 186). The result is that Prizm opens the Tabular Data window, overlaying the graphical representation. An example of this window is shown in [Figure 86](#).

TimeStamp	Jitter
February 20 2006 3:50:00 PM CST	4.0
February 20 2006 3:55:00 PM CST	4.0
February 20 2006 4:00:00 PM CST	4.0
February 20 2006 4:05:00 PM CST	5.0
February 20 2006 4:10:00 PM CST	5.0
February 20 2006 4:15:00 PM CST	5.0
February 20 2006 4:20:00 PM CST	5.0
February 20 2006 4:25:00 PM CST	4.0
February 20 2006 4:30:00 PM CST	4.0
February 20 2006 4:35:00 PM CST	6.0
February 20 2006 4:40:00 PM CST	6.0
February 20 2006 4:45:00 PM CST	5.0
February 20 2006 4:50:00 PM CST	5.0
February 20 2006 4:55:00 PM CST	No Data
February 20 2006 5:00:00 PM CST	No Data

Figure 86: Example Tabular Data window

To export the data specific to the selected element, click the **Export Data** button. The Save window opens, with the file type **Export Chart Data(*.csv)** preselected.

To export all performance data for a time interval that you specify, perform the following steps.

Procedure 44: Exporting performance data

1. In the Network Browser, select one or more elements whose data you want to export.
2. From the main menu, select **File→Import/Export→Export Performance Data**.
RESULT: Prizm opens the Export Options window. An example of this window is shown in [Figure 87](#).

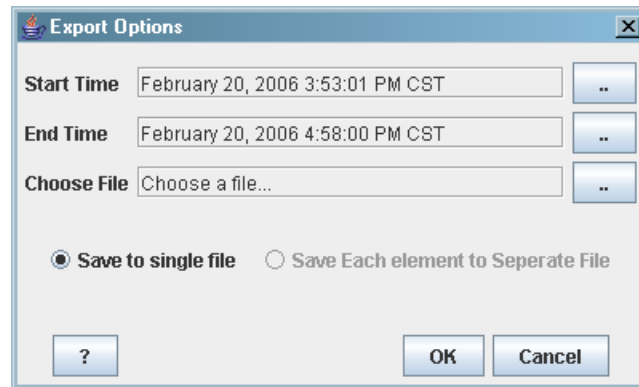


Figure 87: Example Export Options window

3. For **Start Time**, click the button.
RESULT: Prizm opens the Set Start Time window.
4. In the Set Start Time window
 - a. use the drop down menus to set the year, month, hour, and minute for the start of the interval.
 - b. click in the calendar to set the date for the start of the interval.
5. Click **OK**.
6. For **End Time**, click the button.
RESULT: Prizm opens the Set End Time window.
7. In the Set End Time window
 - a. use the drop down menus to set the year, month, hour, and minute for the end of the interval.
 - b. click in the calendar to set the date for the end of the interval.
8. Click **OK**.
9. For **Choose File**, click the button.
RESULT: Prizm opens the Save window with the file type **Export Chart Data(*.csv)** preselected.
10. Save the file to your desired file name and folder.

===== end of procedure =====

For each object in the Details pane, you can specify the **Time Period** that you want the display to represent. Select from among the following intervals:

- **Last Hour**, to the end of the current 5-minute interval
- **Last 24 Hours**, to the end of the current hour
- **Last 7 Days**, to the end of the current day
- **Last Month**, to the end of the current week
- **Last 12 Months**, to the end of the current month



NOTE:

Prizm charts render the Receive/Transmit statistics in bytes (not bits).

An example of a network view with a Details pane is shown in [Figure 19](#) on [Page 83](#). To close the Details pane at any time, click the  (closed book icon) button.

6.1.6 Tagging an Element

You can apply one or more textual tags (labels) to an element. Alert definitions or views may then filter element selections by tags. Only Prizm maintains the associations between an element and its tags and *does not* pass these associations to the element or to any other Canopy device.

You can also designate a new tag, when you define it, to be controlled (neither private nor shared). Each user can be provisioned in the Permissions tab of the User Manager to have **R**, **W**, or **A** permissions for controlled tags, current and future. The level **R** allows a user to see controlled tags while defining a filter. The levels **W** and **A** allow a user to see these tags and assign any set of controlled tags to, or remove any set of controlled tags from, elements for which the user has network permission. Account type Administrators (**ATAs**) can create controlled tags and then see, assign, and remove them.

After a tag has been applied to an element, the tag is shown at the top of the Details pane of the network tab as you browse the network in which the element has been accepted.

To apply a tag to an element, perform the following steps.

Procedure 45: Applying a tag to an element or elements

1. In the element list on the network browsing tab, click the checkbox associated with the element(s).
2. Select **Edit→Edit Element Tag(s)**.

NOTE: In the Define Networks tab, this option is available at **Edit→Network Element Operations**.

RESULT: Prizm opens the Update Tags window, which displays all tags that are currently applied in the network.

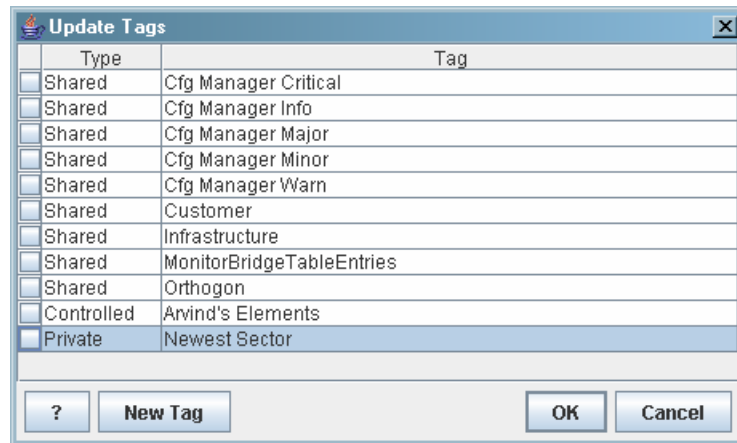


Figure 88: Example Update Tags window

3. Select one or more of the pre-existing tags that are listed and/or click **New Tag** and, in the resulting Add New Tag window
 - a. select **Private**, **Shared**, or **Controlled** from the drop-down list.
 - b. type in the tag as you wish Prizm to display it.
4. In the Add New Tag window, click **OK**.
5. If you want to create and apply another tag
 - a. click **New Tag**.
 - b. repeat Steps 3a and 3b.
6. Repeat Step 5 as many times as necessary to apply all the tags that you want to apply.
7. In the Update Tags window, click **OK**.
8. If you created any new tags as controlled, perform the following steps:
 - a. From the main menu, select **File→Settings→Edit Settings**.
 - b. In the left pane, highlight **Manage Controlled Tags**.
 - c. Click the refresh button () to cause the client to refresh the list of tags so that it includes tags that were created by other users and excludes any that they deleted.
 - d. In the right pane, highlight the new controlled tag.
 - e. Click the **Assign Permissions** button.

RESULT: Prizm opens the Controlled Tag Permissions window, listing all users who are not account type Administrator. An example of this window is shown in [Figure 89](#).

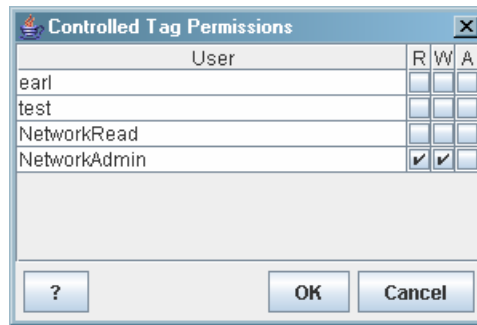


Figure 89: Example Controlled Tag Permissions window

9. Grant permissions as appropriate.
10. Click **OK**.

===== end of procedure =====

You can also use this procedure to change a pre-existing tag. In this case, the Update Tags window opens without the pre-applied tags checked, as if the element has no current tags.

The usage of an applied tag in defining an alert is described in [Procedure 30](#) on Page 151.

6.1.7 Summoning a Preconfigured View

To view a public saved view, browse to **Network→Open a View→Shared** and select from among any user-defined shared views.

To view a private saved view, browse to **Scope→Sub-MenuItem→ViewName**.

6.1.8 Generating a Tree View

You can generate a hierarchical network tree that spans from a specified element downward. To do so, select the element and click the  button. The tree tab functions like other Network Browser windows, except that you can push the logical root of the tab upward one level in the current network hierarchy if you click the **Up** button.



NOTE:

The **Up** button is grey and not selectable in any filtered (flat) list or when a highest level branch of the network is highlighted.

6.1.9 Constructing a Custom View

You can construct a network view in any of the following ways:

- defining a filter of basic criteria. This type of filter builds a list of elements that match any combination of
 - no or one element type
 - no or one element tag
 - no or one element attribute value or range of values
 - no or one element statistic value or range of values
- defining a filter of advanced criteria. This type of filter builds a list of elements that match any logical AND or OR rules combination of
 - no, one, or more element attribute value(s) or range(s) of values
 - no, one, or more element performance value(s) or range(s) of values
 - no, one, or more element tag(s)
 - no, one, or more element type(s)
- deliberately selecting the network elements or network branches whose latest associated information in the database matches a set of basic or advanced criteria that you define.

When a user summons a view of one of the first two types, Prizm newly searches the database to find matches, and the resulting view can be a list of elements that is very different from the list you saw when you constructed the view. This *is not* the case with the third type of view—Prizm does not search the database for criteria other than the element names. Instead, it presents the fixed list of elements, omitting only those that no longer exist.

Your access to each of these three custom view definition areas is via a common window (Select Elements), and your access to each of the two filtered view types is via a common window (Specify Element Criteria), but Prizm *will not* pipe the output of one of these filters through the other to produce a single view. This may not be immediately apparent in the GUI, which does not prevent or discourage you from using all three view-building approaches in a single Select Elements window and even stores your work in each of the areas for as long as that window is open, but Prizm will ultimately accept the definition from only one of the approaches.

So, when you want to construct a view, choose a basic filter, advanced filter, or filter-then-pare approach before you begin to define the view. If you choose the last, then also be advised that you *must* get to the filter definition area by checking **Element List** and clicking the **Add** button in the Select Elements window, *not* by leaving **Selection Criteria** checked and clicking  at **No Criteria Specified**. Both of these sequences cause identical Specify Element Criteria windows to open, but your filter work will be lost if you want to build an element list but you defined the filter via the second sequence.

Proper procedures for the three types of view definitions are provided in the following separate sections:

- [Defining a Basic View Filter](#) (next)
- [Defining an Advanced View Filter](#) on Page 198
- [Defining a View of Directly Selected Elements](#) on Page 205

6.1.10 Defining a Basic View Filter

A basic view filter builds a list of elements that match any combination of

- no or one element type
- no or one element tag
- no or one element attribute value or range of values
- no or one element statistic value or range of values

Prizm filters the latest set of data in the database at the time that you define the view and at any later time that a user summons the view. To define this type of filter, perform the following steps.

Procedure 46: Defining a view in the Basic tab

1. Select **Network→Open a View→New**.

RESULT: Prizm opens the Select Elements window. An example of this window is shown in [Figure 90](#).

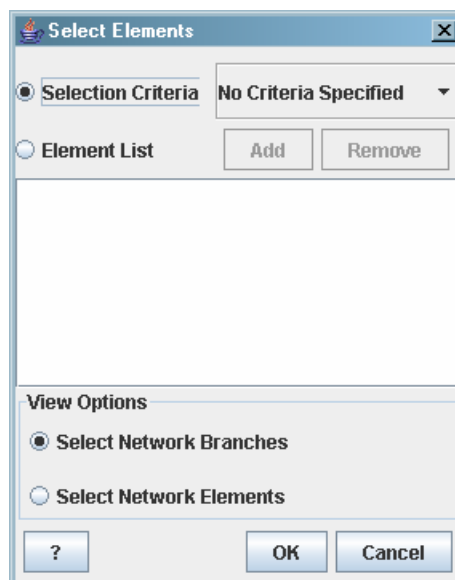


Figure 90: Example Select Elements window

2. Check the checkbox for **Selection Criteria**.

3. At **No Criteria Specified**, click .
RESULT: Prizm opens the Specify Element Criteria window. An example of the Basic tab of this window is shown in [Figure 91](#).

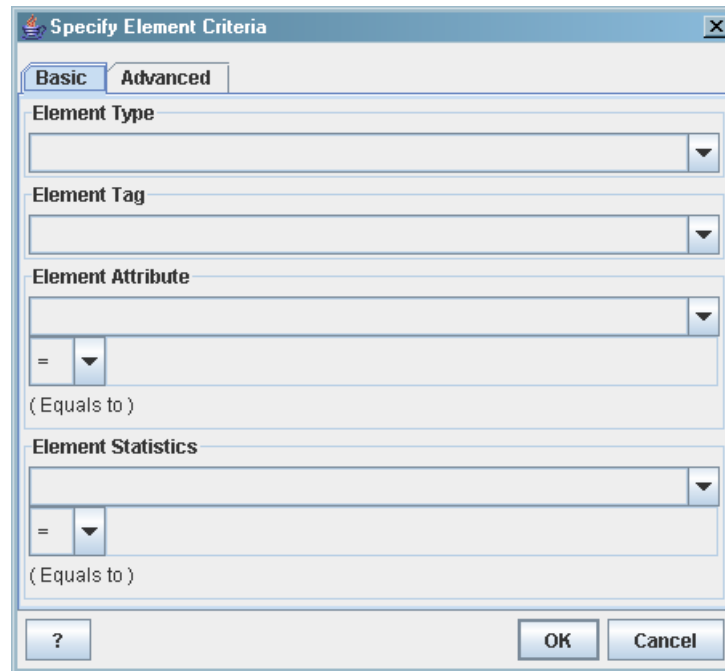


Figure 91: Example Specify Element Criteria window, Basic tab

4. Specify a set of filters for element type, attributes, and performance statistics.
NOTE: For attributes and statistics, you can specify an exact value sought (=), a disqualifying value (!= for *unequal to* or !~ for *not matching the specified string*), or a range of qualifying values (~ for *matching the specified string*, >, >=, <, <=). The selectable element types are listed under [Supported Network Elements](#) on [Page 50](#). The list of selectable element attributes and statistics is identical to the list in the Select Columns window (see also [Pages 171 through 175](#)).
5. When all conditions are correct in the Specify Element Criteria window, click **OK**.
RESULT: The Select Elements window becomes the top Prizm window.
6. For View Options, select either **Select Network Branches** (the default) or **Select Network Elements**.
7. In the Select Elements window, click **OK**.

===== end of procedure =====

6.1.11 Defining an Advanced View Filter

An advanced view filter builds a list of elements that match any logical AND or OR rules combination of

- no, one, or more element attribute value(s) or range(s) of values
- no, one, or more element performance value(s) or range(s) of values

- no, one, or more element tag(s)
- no, one, or more element type(s)

Prizm filters the latest set of data in the database at the time that you define the view and at any later time that a user summons the view. To define this type of filter, perform the following steps.

Procedure 47: Defining a view in the Advanced tab

1. Select **Network→Open a View→New**.
RESULT: Prizm opens the Select Elements window. An example of this window is shown in [Figure 90](#) on Page 197.
2. Check the checkbox for **Selection Criteria**.
3. At **No Criteria Specified**, click .
RESULT: Prizm opens the Specify Element Criteria window. An example of the Basic tab of this window is shown in [Figure 91](#) on Page 198.
4. Click the Advanced tab.
RESULT: Prizm opens the Advanced tab. An example is shown in [Figure 92](#).

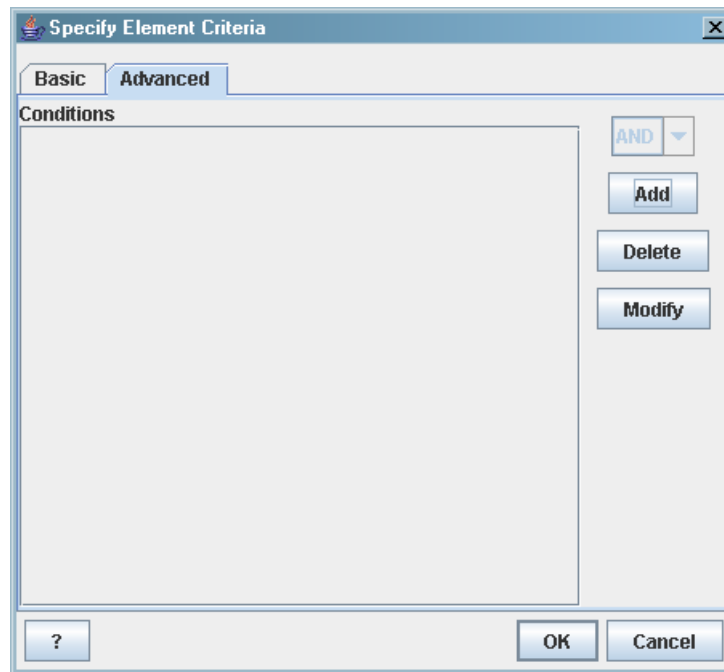


Figure 92: Example Specify Element Criteria window, Advanced tab

5. Click the **Add** button.
RESULT: Prizm opens the Condition window. An example of this window is shown in [Figure 93](#).

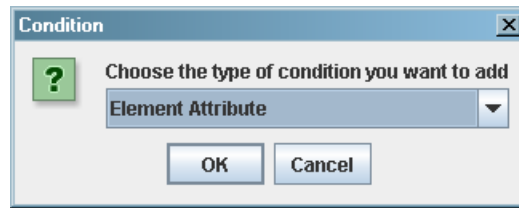


Figure 93: Example Condition window

6. Click .
7. If you want the filter to apply one or more attribute conditions, perform the following steps:
 - a. From the drop-down list, select **Element Attribute**.
 - b. In the Condition window, click **OK**.

RESULT: Prizm opens the Element Attributes window. An example of this window is shown in [Figure 94](#).

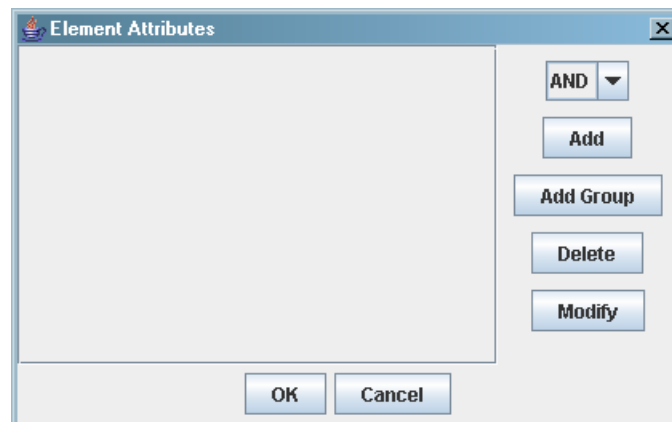


Figure 94: Example Element Attributes window

- c. If you want to add only a single attribute, click the **Add** button and skip to beneath [Figure 96: Example Element Filter Condition window](#) on Page 201.
If you want to add more than one attribute to the criteria, click the **Add Group** button.
RESULT: Prizm opens the Element Attributes Group window. An example of this window is shown in [Figure 95](#).

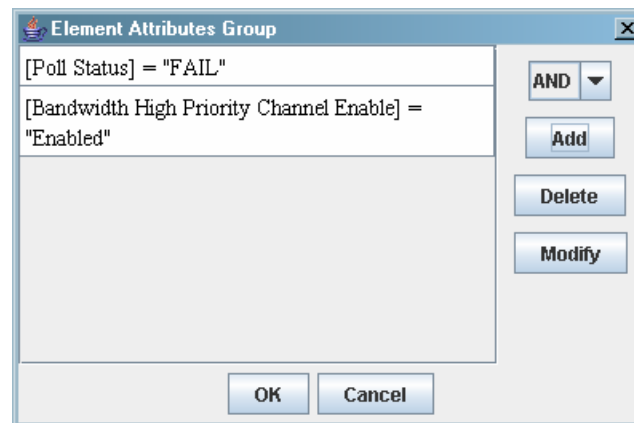


Figure 95: Example Element Attributes Group window

- d. Select **AND** or **OR** as you would for any other search that should use multiple criteria.
- e. Click the **Add** button.
RESULT: Prizm opens the Element Filter Condition window. An example of this window is shown in [Figure 96](#).

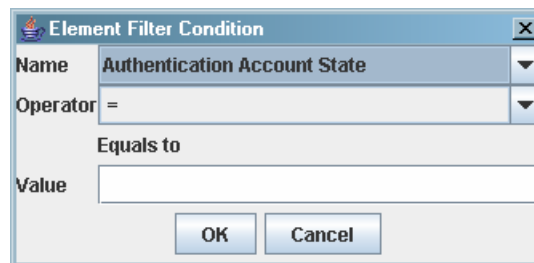
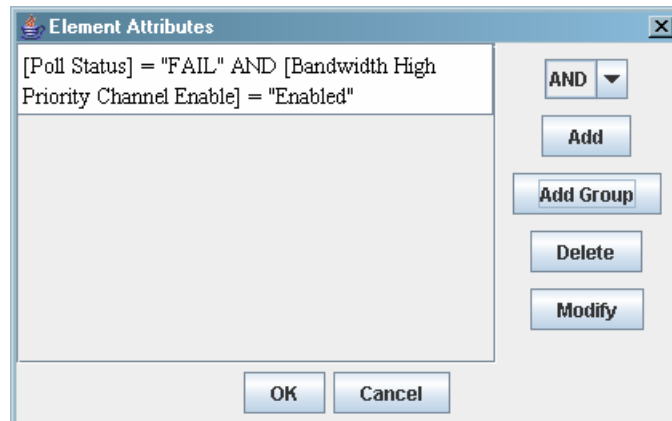


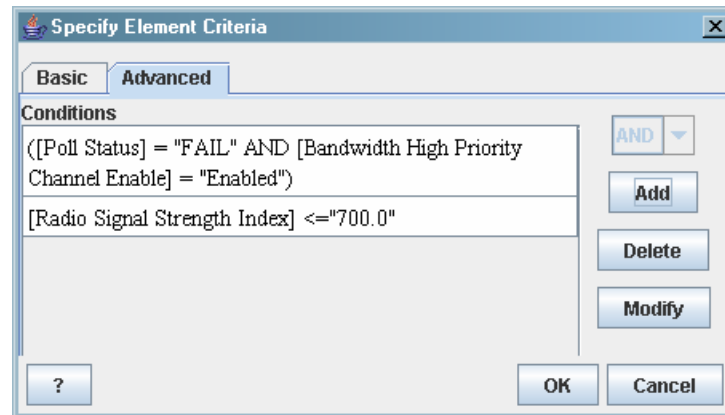
Figure 96: Example Element Filter Condition window

- f. For **Name**, use the down arrow to select the attribute for which you want to impose a value (or range of values) as a criterion.
- g. For **Operator**, use the down arrow to select the operator for an exact value sought (=), a disqualifying value (!= for *unequal to* or !~ for *not matching the specified string*), or a range of qualifying values (~ for *matching the specified string*, >, >=, <, <=).
- h. For **Value**, type in the value to use with the operator.
- i. In the Element Filter Condition window, click **OK**.
RESULT: The Element Attributes window becomes the top window again.
- j. Add other attribute conditions as you wish.
RESULT: The Element Attributes window displays all of the additional attribute conditions; for example



- k. In the Element Attributes window, click **OK**.
RESULT: The Specify Element Criteria window (the Advanced tab) becomes the top window again.
NOTE: Now if you click the **Add** button, Prizm opens the Condition window, but its drop-down list contains only the **Element Performance**, **Element Tag**, and **Element Type** selections (omits the **Element Attribute** selection).
8. If you want to apply one or more performance conditions, perform the following steps:
 - a. From the drop-down list, select **Element Performance**.
 - b. In the Condition window, click **OK**.
RESULT: Prizm opens the Element Performance window.
 - c. If you want to add only a single performance statistic, click the **Add** button and skip to Step f below.
If you want to add more than one performance statistic to the criteria, click the **Add Group** button.
RESULT: Prizm opens the Element Performance Group window.
 - d. Select **AND** or **OR** as you would for any other search that should applies multiple criteria.
 - e. Click the **Add** button.
RESULT: Prizm opens the Element Filter Condition window.
 - f. For **Name**, use the down arrow to select the performance statistic for which you want to impose a value (or range of values) as a criterion.
 - g. For **Operator**, use the down arrow to select the operator for an exact value sought (=), a disqualifying value (!= for *unequal to* or !~ for *not matching the specified string*), or a range of qualifying values (~ for *matching the specified string*, >, >=, <, <=).
 - h. For **Value**, type in the value to use with the operator.
 - i. In the Element Filter Condition window, click **OK**.
RESULT: The Element Performance window becomes the top window again.

- j. Add other performance conditions as you wish.
RESULT: The Element Performance window displays all of the additional performance conditions.
- k. In the Element Performance window, click **OK**.
NOTE: When you are finished with the performance condition(s), the Advanced tab of the Specify Element Criteria window displays all of the advanced filter conditions that you have specified; for example



NOTE: Now if you click the **Add** button, Prizm opens the Condition window, but its drop-down list contains only the **Element Tag** and **Element Type** selections (omits the **Element Attribute** and **Element Performance** selections).

- 9. If you want to add a tag condition or set of them, perform the following steps:
 - a. From the drop-down list, select **Element Tag**.
 - b. Click **OK**.
RESULT: Prizm opens the Element Tag window. An example of this window is shown in [Figure 97](#).

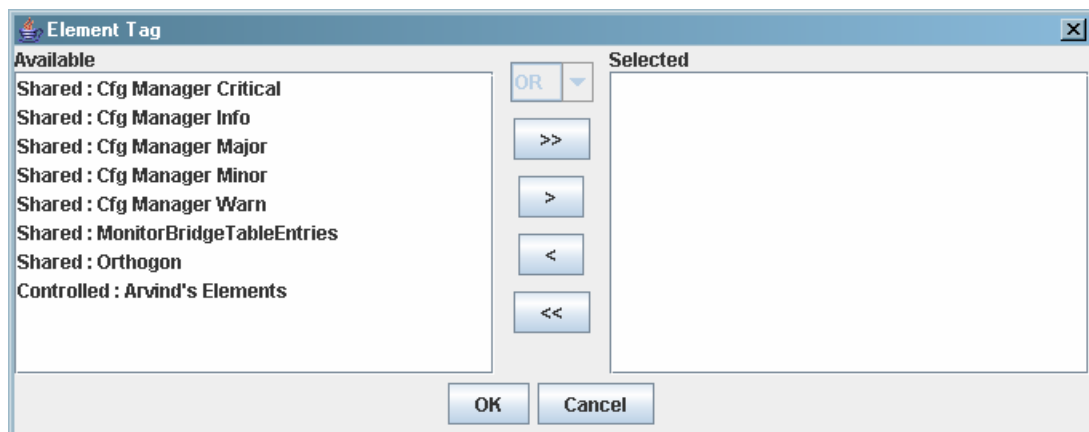
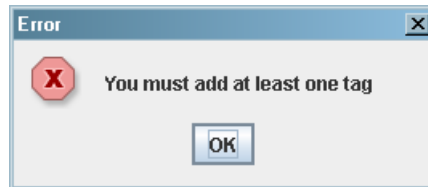


Figure 97: Example Element Tag window

- c. Use highlighting and the arrow buttons to move the tag(s) you want the filter to include into the **Selected** column.
- d. Click **OK**.

NOTE: If you want to leave this window without selecting a tag, exit the window () instead of clicking **OK**. If you click **OK** when no tag is selected, Prizm returns the following error:



10. If you want to add an element type condition or set of them, perform the following steps:
 - a. From the drop-down list, select **Element Type**.
 - b. Click **OK**.

RESULT: Prizm opens the Element Type window. An example of this window is shown in [Figure 98](#).

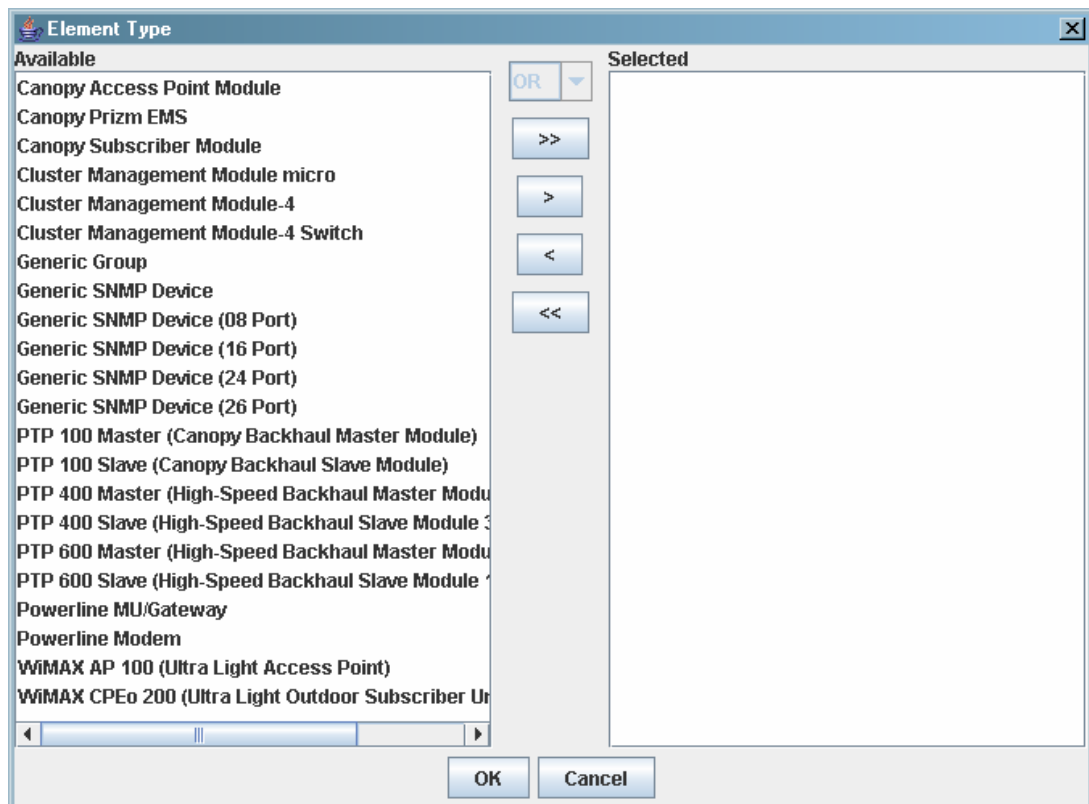
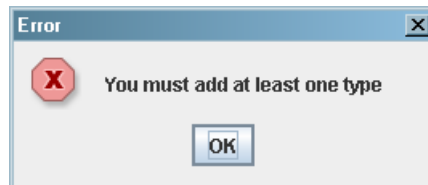


Figure 98: Example Element Type window

- c. Use highlighting and the arrow buttons to move the element type(s) you want the filter to include into the **Selected** column, then click **OK**.

NOTE: If you want to leave this window without selecting an element type, exit the window () instead of clicking **OK**. If you click **OK** when no element type is selected, Prizm returns the following error:



11. Review the Advanced tab contents to ensure that it correctly reflects the filtering that you want for this view.
12. If it does not, highlight the wrong condition, then click the **Modify** button and adjust/correct the condition.
13. When all conditions are correct in the Specify Element Criteria window, click **OK**.
RESULT: The Select Elements window becomes the top Prizm window.
14. For View Options, select either **Select Network Branches** (the default) or **Select Network Elements**.
15. In the Select Elements window, click **OK**.

===== end of procedure =====

6.1.12 Defining a View of Directly Selected Elements

You can construct a view that begins with elements that match either basic or advanced filter criteria that you define and ends with either

- the same list
- a shorter list, consisting of only the matching elements whose checkboxes you deliberately check.

In either case, Prizm will display the finally listed elements (minus any that no longer exist in the database) every time that a user summons this view. Prizm *will not* reapply the filter with which you began to construct the view.

To define a view of only elements that you select, perform the following steps.

Procedure 48: Defining a view of selected elements

1. Select **Network→Open a View→New**.
RESULT: Prizm opens the Select Elements window. An example of this window is shown in [Figure 90](#) on [Page 197](#).
2. Check the checkbox for **Element List**.
3. Click the **Add** button.
RESULT: Prizm opens the Select Network Elements window.

4. Specify filter criteria for elements from which you will select some or all for the view.
IMPORTANT: Generally use the steps in [Procedure 46: Defining a view in the Basic tab](#) on Page 197 or [Procedure 47: Defining a view in the Advanced tab](#) on Page 199, but *do not* define your filter with **Selection Criteria** checked. (Leave **Element List** checked in the Select Elements window.)
5. In the Specify Element Criteria window, click **OK**.
RESULT: The Select Network Elements window displays a list of the elements that match your criteria.
6. In the Select Network Elements window, select (check the checkbox of) any element that you want added to the view.
7. In the Select Network Elements window, click **OK**.
8. For View Options, select either **Select Network Branches** (the default) or **Select Network Elements**.
9. In the Select Elements window, click **OK**.

===== end of procedure =====

6.1.13 Saving the Criteria of a Generated View

When you finish creating a network view of any type (basic filtered, advanced filtered, or element selected) by clicking **OK** in the Selected Elements window, Prizm opens a tab titled New that displays a list all of the elements that currently match the view definition. If **Select Network Elements** was checked, then this is a flat list. If **Select Network Branches** was checked, then this list is expandable downward to elements that are beneath those that qualified.

You can select an element and click  to see the details of that element, or  to see particular attribute and statistic values, but you cannot use the view itself to browse upward or downward from a flat list or upward from any view. However, you can generate a hierarchical network tree from a specified element in a flat list downward. To do so, select (highlight) the element and click the  button. Prizm opens a new tab. For a flat or branch list, the tree pane in this tab functions like other network browser windows, except that you can push the logical root of the pane upward one level in the current network hierarchy if you click the **Up** button.

NOTE:



The new network window that opens when you click  can include elements that are not members of the filtered view. For example, if the filtered view is of the type **Canopy Subscriber Module**, and you browse and select an SM from the hierarchical view and then click **Up**, the resulting view includes the AP to which the SM registers and all other SMs in the current network that register to the AP.

The process for saving the criteria by which you built a view allows you to categorize the view to set the type of access that will be permitted for other users. The categories are **Private**, **Shared**, and **Controlled**.

Any user or administrator can save criteria to a **Private** view. No user except you can summon, modify, or delete a view that you save the criteria for as **Private**.

If you are an administrator of the *network*, you can save criteria to a **Shared network** view. Similarly, if you are an administrator of the *Event Viewer*, you can save criteria to a **Shared event** view. For either of these cases, any other user in Prizm can summon the view, but only you can modify or delete it.

If you are an account type Administrator (referred to elsewhere in this guide as **ATA**), you can create a *network* view that only users whom you specify can see and that only you can later modify or delete. This involves building the view as you would in any other case (by filtering or selecting elements), optionally aligning the view into a pre-existing or new submenu of such **Controlled** views, and assigning permission levels to only the users who should have them. By default for any user beneath the **ATA** level, the **R**, **W**, and **A** levels for a controlled view that you create are all initially set to null in the User Manager.

The purpose of a controlled view is more to regulate the configure/edit access to the elements that compose the view than to make the view not viewable, although you can restrict the view by not assigning to individual user(s) any permissions for it. The effect of permissions on element access is described in [Table 9](#) on Page 72.

A user who has the **A** permission level for a controlled view can use that view to edit and/or configure any element in it. However, an element can be a member of more than one controlled view. So, a user may be able to configure an element in one view but not in another, in which the same element is a member but the user's permission level is lower. Knowing this can help you avoid giving unintended access or help you temporarily assign element responsibilities to backfill during the absence of a trusted element manager, for example.

The view tab contains a **Max Rows** dialog box in which you can either allow the default 200 limitation or specify a greater or lesser number. However, the number of rows that you specify applies to only the current view tab. It does not become the default for future views that you construct or open, and it does not apply again if you close and reopen the view. The **Max Rows** dialog is present in all New and Private views, and also in any Controlled view that you own, but not in any Controlled view that another user owns.

To save any view that you have generated, perform the following steps.



NOTE:

You can save (change the name of or path to) any saved view as well as any newly defined view. To save a Private or Shared saved view, use the following procedure. To save a System saved view, first reopen the Event Filter window and click the **OK** button, then use the following procedure.

Procedure 49: Saving a set of view criteria

1. When the view that you have generated is open in the current tab, select **File→Save View Criteria As**.
RESULT: Prizm opens the Save View Criteria window. An example of this window is shown in [Figure 99](#).

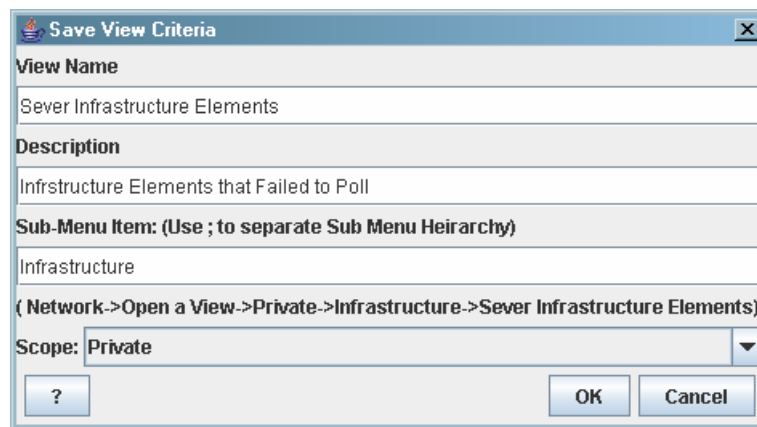


Figure 99: Example Save View Criteria window

2. In the **View Name** field, type in the name that you want Prizm to use for recalling this view and labeling the tab/window of this view.
3. In the **Description** field, if you want Prizm to display descriptive text in a tool top pop-up window where this view is a menu item, type in the tooltip text.
4. In the **Sub-Menu Item** field, type in the name(s) of the menu item that you want to be immediately above the menu item (**View Name**) that you specified in Step 2. Use semicolons to delimit between multiple menu item names.
RESULT: Prizm displays the current menu path immediately beneath the **Sub-Menu Item** field.

RECOMMENDATION: For the case where the path is too lengthy to be entirely displayed, Prizm allows you to horizontally stretch the Save View Criteria window.

5. For **Scope**, make a selection according to the following view criteria saving rules:
 - Any user or administrator can save criteria to a **Private** view.
 - Only an administrator of the *network* can save criteria to a **Shared network** view.
 - Only an administrator of the *Event Viewer* can save criteria to a **Shared event** view.
 - Only an account type Administrator can create a **Controlled** view.

6. Click **OK**.

RESULT: The system saves the criteria you used to initially set up the view, along with the associated sub-menu item, view name, and description attached by this procedure, to the Prizm database.

===== end of procedure =====

6.1.14 Managing Views

Prizm allows you to open or delete any saved criteria view for which your permissions are appropriate. To see a list of the views to which you have access, to delete any of them, or to change who can access them (for controlled views), browse to

File→Settings→Edit Settings. Prizm opens the Settings window. An example of this window is shown in [Figure 100](#).

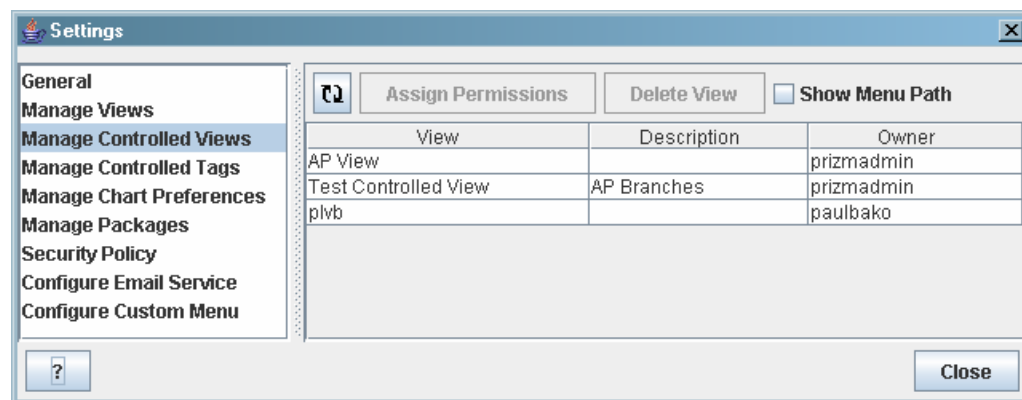


Figure 100: Example Settings window, Manage Controlled Views selected

In the Settings window, select (highlight) **Manage Views** or **Manage Controlled Views**. In the right-hand pane, Prizm displays the views for which you have permissions. The refresh button () causes the client to refresh the list of views from the Prizm server so that it includes views that were created by other users and excludes any that they deleted.

For any controlled view, the **R**, **W**, and **A** levels for all users beneath **ATA** (account type Administrator) are all initially set to null in the User Manager. So, for any user(s) who you want to have access to a view that you saved as **Controlled**, you must update the user account. To update one account at a time, you can use [Procedure 8](#) on Page 77, but the Settings window provides a quicker way to set permissions for multiple users on a view. You can either double click the row of the view or highlight the row and click the **Assign Permissions** button. Then Prizm opens the Controlled View Permissions window. An example is shown in [Figure 101](#).

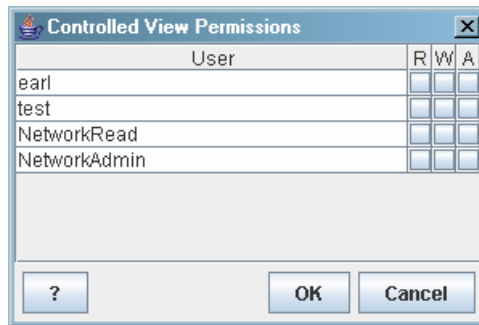
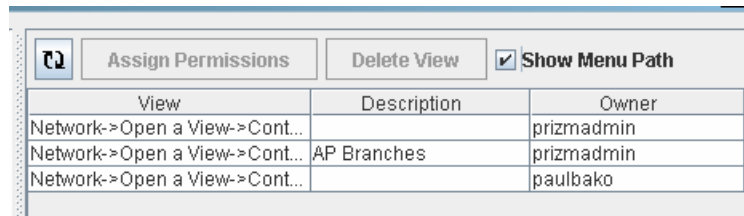


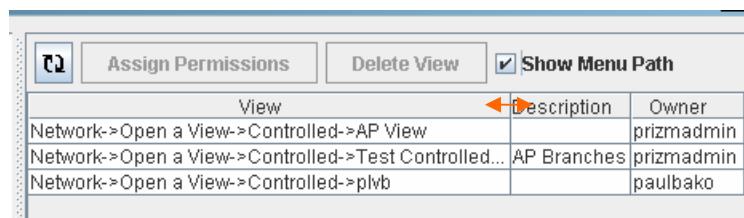
Figure 101: Example Controlled View Permissions window

This window automatically lists all users who are not of account type Administrator, so there is never a need to access the User Manager in Prizm to update permissions for a controlled view. However, any changes that you make in the Controlled View Permissions window are also reflected in the Permissions tabs of the Update User Account window and can be undone there, as shown in [Figure 16](#) on Page 78. To assign view permissions to a user who does not exist yet, you must use the Add User Account window (through **Edit→Add User** in the User Manager). This forces you to fully configure every user.

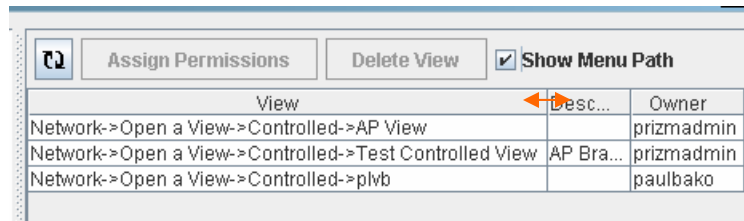
By default, the Settings window shows view names. The fully qualified path to the view—although also available in a tooltip pop-up—is alternatively available for the view column. To see this, select **Show Menu Path**.



If the column width is insufficient to display the full path, double click the column border between View and Description. Then Prizm will attempt to make the View column wide enough to display all of its contents, but will not truncate the contents of the other two columns in doing so:



However, you can widen it further by a click and drag of the border:



If you want to change the menu path to a view, perform the following steps.

Procedure 50: Changing the menu path to a saved view

1. Browse to **Network→Open a View→Scope→Sub-MenuItem→ViewName**.
2. Select **File→Save View Criteria As**.
RESULT: Prizm opens the Save View Criteria window. An example of this window is shown in [Figure 99](#) on Page 208.
3. Populate the Save View Criteria window as described under [Saving the Criteria of a Generated View](#) on Page 206.
4. Click **OK**.
RESULT: The system saves the criteria you used to initially set up the view, along with the associated sub-menu item, view name, and description attached by this procedure, to the Prizm database.
5. Browse to **File→Settings→Edit Settings**. Prizm opens the Settings window. An example of this window is shown in [Figure 100](#).
6. Click **Show Menu Path**.
7. Click to highlight the view that has the undesired menu path.
8. Click the **Delete View** button.

===== end of procedure =====

Users can delete their own private views from the list in the Settings window. Administrators can delete shared system-level views. Account type Administrators can delete controlled views.

When a user saves a view, that user can immediately see the view listed in either the Settings window or the view menu. However, other users cannot see this new view until they either

- log off and log back into Prizm.
- select **File→Settings→Edit Settings**, select (highlight) **Manage Views**, and click the refresh button:

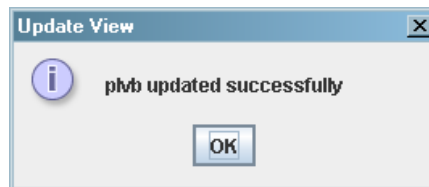


This adds any newly defined view to both

- the list in the Settings window.
- the menu that is available through **Network→Open a View→Scope→Sub-Menultem**, where **Scope** is **Private**, **Shared**, or **Controlled**.

When you recall a view, Prizm opens a new tab in which it applies the saved criteria to the latest received polling data and traps from elements. To display the saved view, browse to **Network→Open a View→Scope→Sub-Menultem→ViewName**.

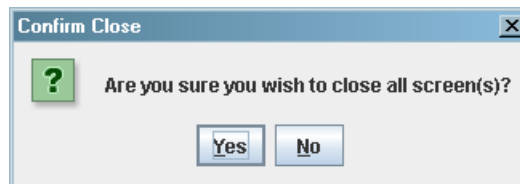
The owner of a view can update it at any time by opening the view, changing its criteria, and then selecting **File→Update View** from the main menu. The system responds as in the following message:



6.1.15 Returning to a Home or Empty Configuration of Views

At any time, you can abandon all currently displayed views in your Prizm session in favor of recalling all of the views of your Home configuration. This includes all docked and undocked windows in their saved positions and the application of criteria from the time when the Home configuration was saved. To do this, select **File→Settings→Go To Home Configuration**.

Similarly at any time, you can clear the console by selecting **File→Settings→Go To Empty Configuration**. This is quicker than closing several tabs that you will no longer need in the current session. It is especially quicker if the system is set to require confirmation before closing them (**Prompt to Close Window/Tab** is checked in the General panel at **File→Settings→Edit Settings**). If you have confirmation required and you select **Go To Empty Configuration**, then the system requires a single confirmation as shown in the following prompt:



This also closes windows that Prizm opened as you undocked tabs.

6.2 VIEWING EVENTS AND ALERTS

6.2.1 Viewing Events

Prizm can display events from the core Prizm system or any application or area of the Prizm management suite. The Events tab provides a sequential list of all events and alerts that occur within the Prizm system. For each event, this tab includes:

- type of event
- time of occurrence
- active user
- source of event
- description of event
- whether the event constitutes an alert
- whether the event requires clearing
- any associated network element

To view events, browse to **Events**→**Open a View**, then choose from among **New** and any that are listed in [Figure 103](#) on [Page 215](#).

The type of event may be Cleared, Success, Info, Warning, Minor, Major, or Critical. The source for the event is the name of the event generator. The user associated with the event is the user who created the user-defined event.

Events that are associated with each are grouped as a flat list in the Event Viewer tab. The symbols that Prizm uses for event logging, alert definition, and notification definition are described in [Table 17](#).

Table 17: Symbols representing events

Symbol	Meaning	Description
	Cleared	An event that has been resolved.
	Success	A success event or alert is being reported. Typically, this is an operation that succeeded.
	Info	An informational event or alert is being reported.
	Warning	A potential or impending service-affecting fault has been detected, and further diagnosis may be required to prevent a more serious condition.
	Minor	A non-service affecting fault condition has developed, and corrective action should be taken to prevent a more serious condition.
	Major	A service-affecting condition has developed, and urgent corrective action is required.
	Critical	A service-affecting condition has occurred, and immediate corrective action is required.
	Associated	The event is part of an associated set of events. See Responding to an Event on Page 216 .
	Alert	The event constitutes an alert. If not already cleared, this alert can be cleared.

The Event Viewer contains separate columns for time and date, among other data columns. By default, events are displayed in descending order of date and time. As in a network view, you can click on the head of any column to cause Prizm to sort the Event Viewer contents in ascending order, based on the contents of that column. You can click on the head of the column again to have Prizm reverse the sort to descending order. However, sorting by the Time column is somewhat different by design:

- When you sort by Date, the primary sort string is the value in the Date column, and the secondary sort string is the value in the Time column. The result is that the events are arranged in chronological order.
- When you sort by Time, the only sort string is the value if the Time column. The value in the Date column is ignored. The result is that the events are arranged by the time of day that they occurred. This type of search is useful when you look for similar events that occur around the same time on different days.

A commented-out explanation of the format of a **trap** element precedes the contents of a trap. This explanation also indicates that, if the value of the **text** attribute in the **message** element is left null, then the trap *will not* generate an alert or an entry in the Event Log or System Log. This allows you to suppress unwanted messages for redundant or frequently received traps.

6.2.2 Finding Events

In the Event Viewer tab, to search for a string that may be present in any field of the view, select **Edit→Find Event**. Prizm opens the Find Event window, as shown in [Figure 102](#).

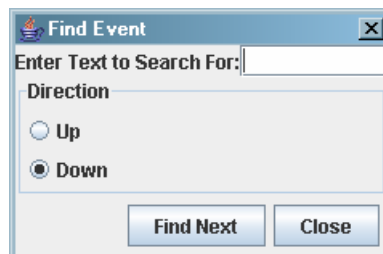


Figure 102: Find Event window

This window supports up and down non case-sensitive searches, repeat searches, and Restart From Beginning searches. The search engine recognizes no character as wild card or special in any other way.

6.2.3 Filtering Events

You can filter the event set based on your own criteria, and view the filtered list in a separate tab. To filter events, at **Event Criteria:**..., click . Prizm then opens the Event Filter dialog box, which allows you to select criteria as follows:

- **Event Type**
 - **All Alerts**
 - **Acknowledged Alerts**
 - **New Alerts**
 - **Open Alerts** (New and Acknowledged)
 - **Cleared Alerts**
 - **Non-Alert Events Only**
- **Event Severity**
 - **Critical**
 - **Major**
 - **Major and higher**
 - **Minor**
 - **Minor and higher**
 - **Warning**
 - **Warning and higher**
 - **Informational**
 - **Informational and higher**
 - **Success**
 - **Cleared**
- **Source**
- **User Name**
- **Start Time**
- **End Time**
- **Selected Element** (If you highlight an event before you open the Event Filter dialog box and if the event is associated with an element, then you can check this item to filter on the element that is associated with the highlighted event. Otherwise, this item is grey and not selectable.)

Further, predefined filtered views are available. To open any of them, browse to **Events→Open a View**, then select from those shown in [Figure 103](#).



Figure 103: Predefined views for Event Viewer

6.2.4 Saving a Filtered Event View

The procedure for saving a filtered event view is identical to that of saving a filtered network view. See [Saving the Criteria of a Generated View](#) on Page 206.

6.2.5 Refreshing the Event Set

Prizm refreshes the event set in any active Event Viewer tab approximately every 30 seconds. To refresh the event set at any time between automatic refreshes, click the button: 

6.2.6 Responding to an Event

As you view the event set, you can click on an individual event in the list to select it and then click the  button. This causes Prizm to open a new event window that lists only those elements that were associated with the selected event. You can select any element from this list and read element details and/or manipulate the element.

To view element details in a pane to the right of the event set, click the  button. This is especially advantageous for viewing lengthy details, such as the descriptive text of messages.

6.2.7 Resolving an Alert

Every alert must be either deliberately or automatically cleared. However, your user permission settings for the Events area determine whether you are capable to resolve an alert. The effects of these permissions are shown in [Table 18](#).

Table 18: Alert resolution capabilities based on permissions

Type of Alert	Access to Events Area	
	Read Only	Read and Write
private, defined by you	you can resolve	you can resolve
private, defined by another user	you cannot resolve	you cannot resolve unless you have administration access to the Events area
public	you cannot resolve	you can resolve
system	you cannot resolve	you can resolve

States of an Alert

Acknowledged is an intermediate state that you can use for informational purposes to indicate that the alert is actively being investigated, for example. When an alert is in the acknowledged state, the system does not generate new (redundant) alerts for events of the same criteria. When you select **Open Alerts** from the Event Type drop-down menu ([Figure 104](#)) in the Event Filter window, the list that the system returns consists of both acknowledged and new alerts.

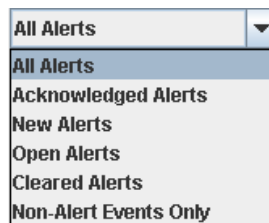


Figure 104: Event Type selections

Cleared is the resolved state. When an alert is in the cleared state, the system does not include it in the list of open alerts and does generate new alerts for events of the same criteria. To change the state of an alert, click to highlight the alert in the Event Viewer tab, then select **Edit** and choose from among the four acknowledge and clear selections shown in [Figure 105](#).

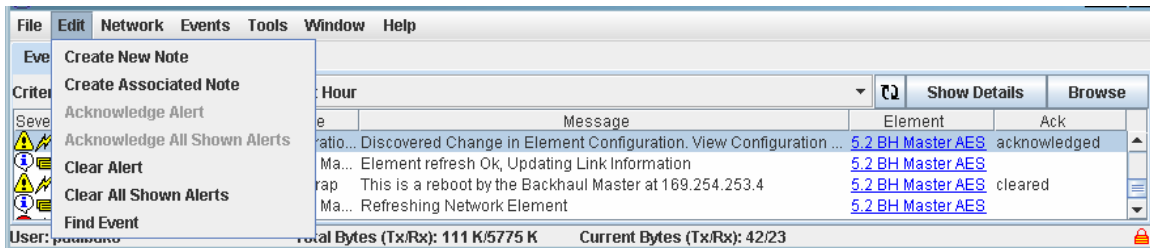


Figure 105: Alert state selections

The progression of states from new to acknowledged to cleared (or new to cleared, directly) cannot be reversed. For example, if you clear an alert because you see that a problem is fixed, you cannot return the alert to the acknowledged state if later you discover that the problem is not fixed. In most cases like this, the problem will cause a new alert to be generated anyway, and you can acknowledge the new alert at any time.

6.2.8 Appending a Note to the Event Log Entry

You can add a note to the Event log. You can associate this note with an event or leave the note unassociated with any specific event. When you have done so

- the Time is when you added the note.
- the Source indicates Note.
- the User is your login ID.
- the Severity is what you select from among **Cleared**, **Informational**, **Warning**, **Minor**, **Major**, or **Severe**.

To create a note associated with an event, select the event with which you want to associate a note. Then select **Edit**→**Create Associated Note**.

To create a note that is not associated with any event, select **Edit**→**Create New Note**.

6.2.9 Browsing from an Element Selected in the Event Viewer

From the Event Viewer, you can click on a link in the Element column to cause Prizm to open a network browser window for the selected element and any elements beneath it. An example with element links is shown in [Figure 106](#).

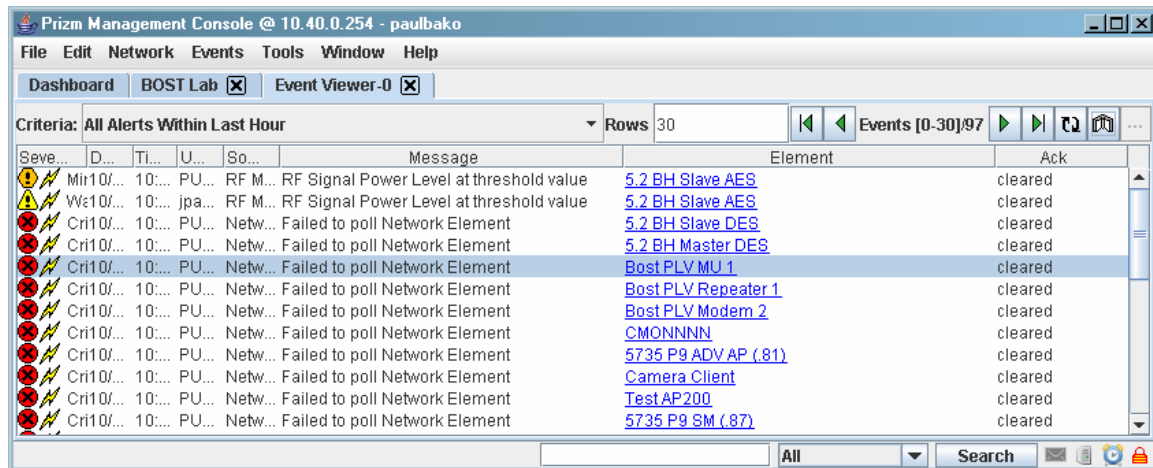


Figure 106: Example Event Viewer tab with element links

Similarly, you can click on a link in the Details pane of the Event Viewer tab to open the network browser for the selected element. An example of a Details pane with an element link is shown on the right side of the screen in Figure 107.

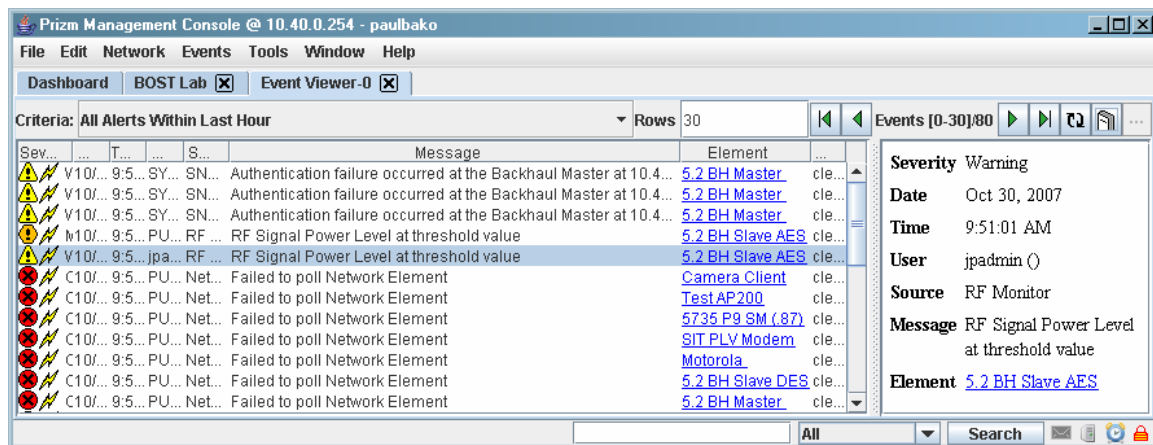


Figure 107: Example Event Viewer Details pane with element link

6.2.10 Interpreting Email Notifications

Prizm formats email notifications as follows.

Subject Line

The subject line is formatted as

Subject: *Severity: n Source Alerts.*

Severity is the highest level of severity in this notification. The possible levels, in order of greater severity, are as follows: **Critical**, **Major**, **Minor**, **Warning**, **Info**, **Success**, and **Cleared**.

n represents how many alerts are of that severity.

Source is the source of the alerts, as from Step 3 of [Procedure 30: Defining an alert](#) on Page 151.

The following are examples of Prizm email notification subject lines:

Warning: 5 Diagnostic Alerts

Severe: 2 Network Element Alerts

Summary Header

Each Prizm notification has two sections—a summary header and, beneath it, a block of expanded and unabbreviated information. The summary header is formatted as

Source
Begin date and time - End date and time
Highest severity (n), EI (x)
 .
 .
 .
Lowest severity (n), EI (z)
Total Elements (t)

The summary header indicated the severity by the initial of the severity class (S for Severe, W for Warning, I for Info, and S for Success). EI introduces the number of elements in the alert of that severity. Total Elements introduces the number of all elements involved in alerts within this email notification.

The following is an example of a notification summary header:

Diagnostics
 10/28/2004 12:00 am – 10/28/2004 12:00 pm
 S (10), EI (4)
 W (5), EI (2)
 Total Elements (4)

This example indicates the following:

- Diagnostics was the source of the defined notification.
- This notification contains alerts that were collected for 12 hours, beginning at midnight.
- 10 alerts that were defined as Severe were collected on 4 elements during that time frame.
- 5 alerts that were defined as Warning were collected on 2 elements during that time frame.
- The alerts are limited to only 4 elements.

Expanded Information

The expanded information is formatted as

Diagnostics
 Severe, Message 1, Element Information

Severe, Message 2, Element Information
.
.
.
Severe, Message 10, Element Information
Warning, Message 1, Element Information
Warning, Message 2, Element Information
.
.
.
Warning, Message 5, Element Information

The expanded information lists the messages in order of severity, from most to least severe. Some messages may be truncated, but all are stored in full within the Prizm Event Viewer.

If **Consolidated Summary** was selected, rather than **Per Element**, when the alert was defined, then the message includes a value after the expression Count. This value indicates how many elements generated the alert. If Per Element was selected, then Count is not included in the message.

An example of the full contents of a notification is shown in [Figure 108](#).

```
ReceiverDoctor
03/30/05 14:31:00 - 03/30/05 15:01:00
W(36), EI(36)
S(16), EI(16)
Total Elements (52)

ReceiverDoctor
Severe, A jitter problem (>= 4) exists for these SMs! 1, Sector4-121
Severe, A jitter problem (>= 4) exists for these SMs! 2, Sector4-053
Severe, A jitter problem (>= 4) exists for these SMs! 3, Sector4-088
.
.
.
Severe, A jitter problem (>= 4) exists for these SMs! 14, Sector4-017
Severe, A jitter problem (>= 4) exists for these SMs! 15, Sector4-190
Severe, A jitter problem (>= 4) exists for these SMs! 16, Sector4-089
Warning, A radio power level problem (< -96) exists for these SMs! 1, Sector6-022
Warning, A radio power level problem (< -96) exists for these SMs! 2, Sector3-113
Warning, A radio power level problem (< -96) exists for these SMs! 3, Sector5-014
.
.
.
Warning, A radio power level problem (< -96) exists for these SMs! 34, Sector2-094
Warning, A radio power level problem (< -96) exists for these SMs! 35, Sector4-056
Warning, A radio power level problem (< -96) exists for these SMs! 36, Sector1-106
```

Figure 108: Example notification

7 HANDLING DATA

7.1 REQUESTING THE MAC/IP ADDRESS OF A CUSTOMER DEVICE

Prizm provides a MAC/IP Address Identification Tool that a service provider can invoke to possibly identify the Canopy SM or Canopy 400 Subscriber Module (CSMxx400) that a known MAC or IP address is behind.⁷ This accomplishes what pre-existing tools such as Tracert do, but extends further to identify equipment even when it is not active in the network.

Using this tool to identify owners of equipment that has sent and received traffic in your network is especially helpful for

- troubleshooting a problem in the network (for example, tracing a worm to the source).
- detecting that Type of Service (ToS)⁸ limitations are being violated (for example, hosting or point-to-point downloads).
- seeing a list of all equipment detected on a subscriber radio.
- deriving customer contact information when the MAC or IP address is known.
- using a time frame to filter a list of subscriber radios where the known MAC or IP address was registered.



NOTE:

You can selectively instruct Prizm to *not poll* a PTP slave element for its bridge table of MAC addresses. You may want to do this for those that are part of your infrastructure, but allow Prizm to poll PTP slave elements that are deployed for customers.

The Prizm GUI provides a shared system tag (**MonitorBridgeTableEntries**, by default) to specify whether the system should query a PTP slave element for bridge table information. However, this tag is installation specific. To find the tag that activates this capability on a PTP element in your network, ask your Prizm administrator to identify it.

⁷ This is possible when Prizm obtains the information from a slave element, and a reporting router provides the translation of MAC to IP address. Under some conditions, it is not (for example, when the device behind the element is in your network, but not in your Canopy network).

⁸ The ToS byte of the IP header specifies delay as low or normal, throughput as high or normal, and reliability as high or normal.

7.1.1 IP Address Search Requirements

Canopy SMS, Canopy 400 Subscriber Module (CSMxx400)s, and PTP slave elements are Layer 2 switches that maintain bridge tables, which allow MAC addresses behind them to be found, but are unaware of the IP address in the higher protocol layer. Thus, searching for an IP address requires that

- access is available to network routers, which can translate MAC addresses to IP addresses through Address Resolution Protocol (ARP)
- the network routers support the `ipNetToMediaTable` MIB.

7.1.2 Setting Up Prizm to Get Current Data for an IP/MAC Address Lookup

A router configuration dialog in Prizm allows you to specify how to communicate with routers in the network to receive ARP data from them. To configure communication with routers, perform the following steps.

Procedure 51: Configuring communication with a router

1. With the IP/MAC Address Lookup tab active, select **Edit→Configure Routers**.
RESULT: Prizm opens the Configure Routers window. An example of this window is shown in [Figure 109](#).
NOTE: In typical operation, you would have multiple routers configured and, hence, multiple rows in this window.

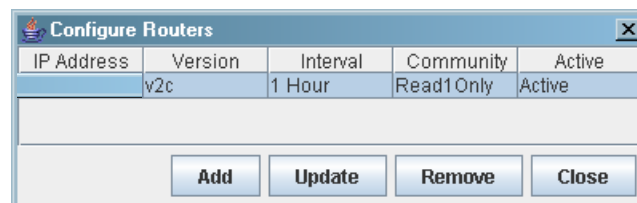


Figure 109: Example Configure Routers window

2. Either click **Add** to insert a new router record or highlight a configured router in this window and click **Update**.
RESULT: In either case, Prizm opens the Router Configuration window. An example of this window is shown in [Figure 110](#).
IMPORTANT: The Configure Routers windows provides a **Remove** button to delete the router configuration in Prizm. If you click this button, you will also simultaneously delete all historical data that Prizm has obtained from the router. So, before you click this button, be certain that you want to remove both the configuration and the data. For example, the data may help you in performing a trace of IP addresses.
Alternatively, you can stop Prizm from polling the router by simply clicking **Update**, then unchecking **Active** in the Router Configuration window.

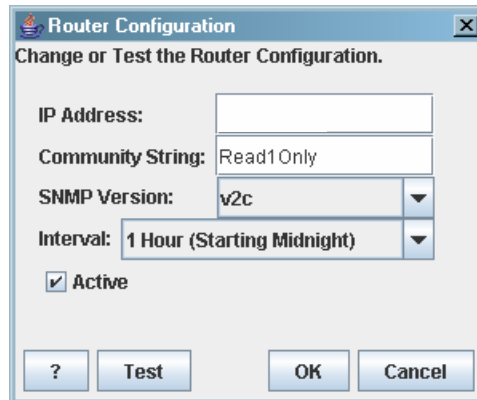


Figure 110: Example Router Configuration window

3. Insert, verify, or change the values for communication with the router.
4. Check **Active**.
IMPORTANT: If you do not check **Active**, then Prizm will not poll the router for its ARP data.
5. Click **Test**.
RESULT: Prizm opens the Testing Router Configuration window and displays the results of the communication test. An example of this window is shown in [Figure 111](#).

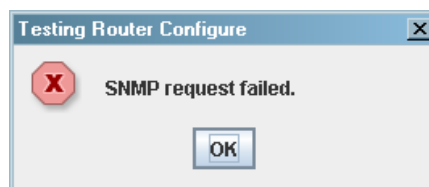


Figure 111: Example Testing Router Configuration window

6. Click **OK**.
7. If the test failed, change the **Community String** and/or **SNMP Version** value(s) and click **Test**.
8. Repeat Steps 5 and 6 until the test succeeds.
9. Click **OK**.

===== end of procedure =====

Away from their specified intervals

- Prizm *does not* query SMs, Canopy 400 Subscriber Module (CSMxx400)s, or PTP slave elements for their bridge tables of customer MAC addresses. To trigger Prizm to immediately query them, with the IP/MAC Address Lookup tab active, select **Edit→Refresh SM/BH Data Now**. You may encounter a delay as the large number of elements are queried.

- the routers *do not* provide new ARP information to Prizm. To refresh the ARP data, with the IP/MAC Address Lookup tab active, select **Edit→Refresh Router Data Now**, then either **Refresh All Routers** or the IP address of a specific router.

These steps may be especially helpful for tracking suspected devices in real time.

7.1.3 IP/MAC Address Searches

To use this tool, perform the following steps.

Procedure 52: Identifying the element that a known IP/MAC address is behind

1. Select **Tools→Find IP/MAC Address**.
2. Click  associated with **Lookup Criteria**.
RESULT: Prizm opens the IP/MAC Search Filter window. This window is shown in [Figure 112](#).

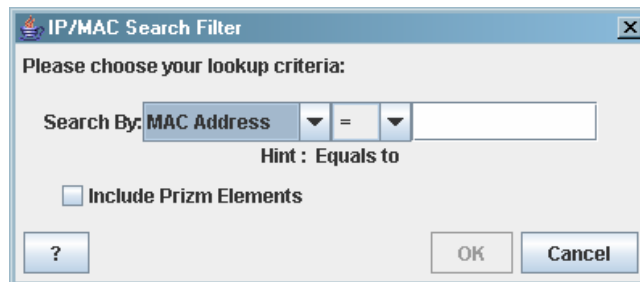


Figure 112: IP/MAC Search Filter window

3. In the **Search By** field of the IP/MAC Search Filter window
 - a. Select either **MAC Address** or **IP_Address**.
 - b. Click  associated with the relational operator (=, for example).
 - c. Select the relational operator.
NOTE: != represents *unequal to*. !~ represents *unlike*.
 - d. Enter the MAC or IP address of the computer that is behind the subscriber radio.
NOTE: Prizm performs no validity check on the content of the search string, so ensure that you are specifying a proper IP or MAC address.
4. Leave **Include Prizm Elements** unchecked.
5. Click **OK**.
RESULT: Prizm opens a table in the IP/MAC Address Lookup tab. The fields of this table are as defined in [Table 19](#) below.

===== end of procedure =====

7.1.4 IP/MAC Address Lookup Results

Prizm displays the filter results in table format as follows.

Table 19: IP/MAC address lookup results table

Column Heading	Column Contents	Description
IP Address	Dotted IP address	IP address of the device behind the subscriber radio, if found
MAC Address	MAC address	MAC address of the device behind the subscriber radio, if found
Source	Link to the source router	Prizm obtained the IP or MAC address of the device behind the subscriber radio from the router that Prizm knows by this name
	Link to Prizm information on the source element	Prizm obtained the IP or MAC address of the device behind the subscriber radio from a managed SM that Prizm knows by this name or IP or MAC address
	Link to the source element	Prizm obtained the IP or MAC address of the device behind the subscriber radio from the Prizm core database
Source Type	Router	Prizm obtained the IP or MAC address of the device behind the subscriber radio from a router
	SM [or] BHS	Prizm obtained the IP or MAC address of the device behind the subscriber radio from an SM or PTP slave element
	Prizm	Prizm obtained the IP or MAC address of the device behind the subscriber radio from the Prizm core database
First Seen	Date and time	When the Source first detected the IP address of the device behind the subscriber radio
Last Seen	Date and time	When the Source most recently detected the IP address of the device behind the subscriber radio
NOTE: In this table, subscriber radio means SM, Canopy 400 Subscriber Module (CSMxx400), or non-infrastructure PTP slave element.		

7.1.5 Associating the IP/MAC Address with Customer Information

The results table in the IP/MAC Address Lookup tab contains links in the Source column for elements whose attached customer devices match your search criteria. If you click on one of these links, Prizm opens a network browser window with the selected SM at the top. In this network browser window, if you highlight the SM and click , Prizm opens a details pane on the right side of the console. An example of the details pane is shown in [Figure 113](#).

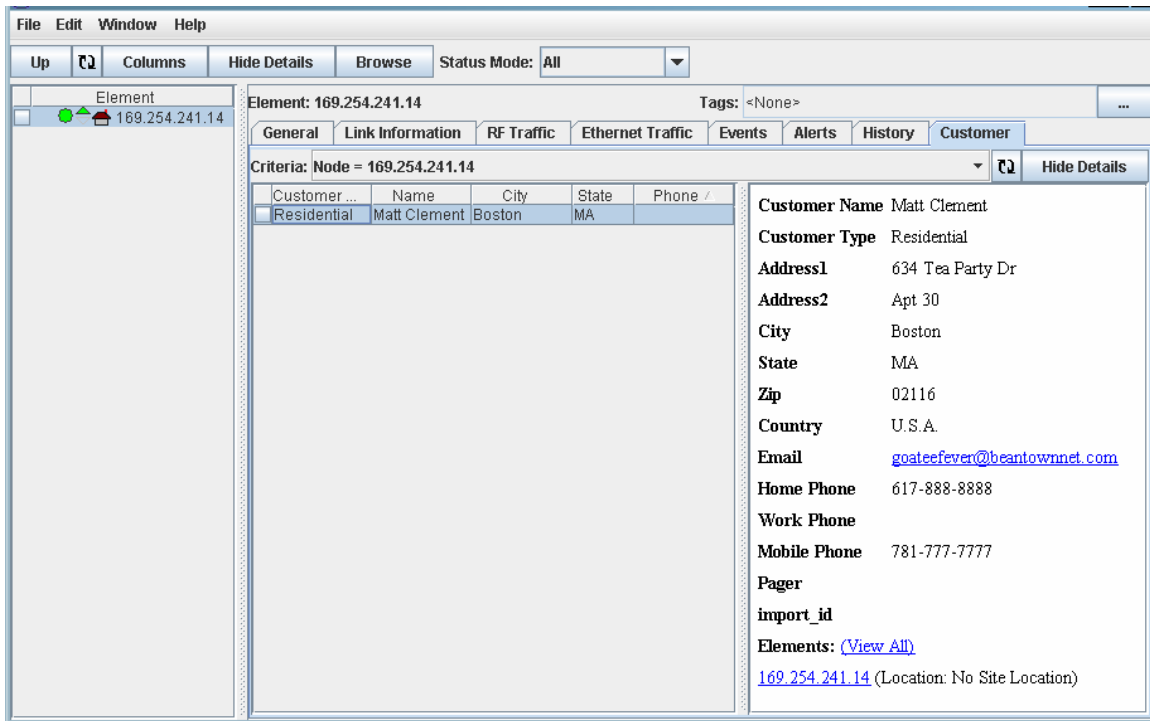


Figure 113: Example Customer tab in details pane for an SM

The Customer tab of the details pane includes customer contact information.

7.2 EXPORTING REPORT DATA TO ANOTHER PLATFORM

From most views in Prizm, you can select **File→Save View Results As** to export the viewed data to a file. You browse to any target location in your directory structure, type in a file name as in any other file save operation, and select from the file types that are shown in [Figure 114](#).

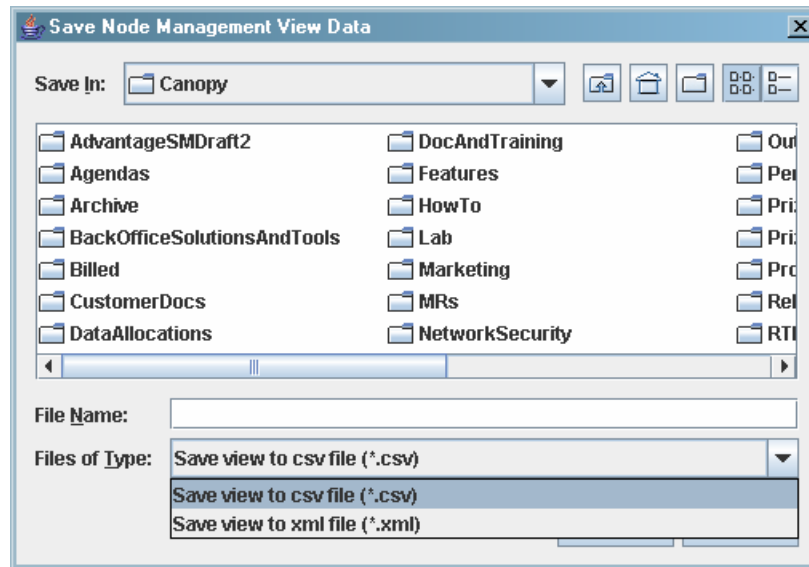


Figure 114: File types for exporting view results

The exported data may be helpful to use with a non-Prizm utility or process to produce

- external reports.
- files that can be searched for defined configurations or performance criteria.
- data to be stored or manipulated in another system.



IMPORTANT!

Appropriately interpreting trends and reports can depend on time being in sync across the network elements and the Prizm server and clients. See [Syncing Time](#) on Page 90.

A summary of supported output formats per Prizm areas is provided in [Table 20](#).

Table 20: Output formats from Prizm areas

Area	Formats
Define Networks	.csv .xml .net
Network Browser	.csv .xml
Event Viewer	
Define Alerts	
Define Notifications	
User Manager	
Customer Contact Manager	
System Log	.txt

Although print-to-file capabilities described in the following sections yield similar files, file export may be preferable for external manipulation of Excel or CSV formatted data. This is because export sends only the data to the output, whereas print to file sends additional content that enhances the viewing experience.



NOTE:

The **Save View Results As** menu option is available only where you have permission to view.

Exports from the Event Viewer can be directed to only XML or CSV output.

Only a Prizm administrator can export a network view to a .net format. This option is available from the **File→Import/Export→Export Network Element(s)** selection when **Network Elements** is selected (highlighted) under a network in the Define Networks tab. (The selection **Network→Define Networks** opens this tab.) As with any other save or export operation, the Save window that results allows you to name the file as you wish and save the .net file into any directory you specify in the local file system.

This export operation saves the hierarchy that the contents of the Define Networks tab represents, regardless of whether elements and folders are collapsed or expanded and whether they are selected (checked). For a .net export, Prizm saves the network tree view in the form that was most useful to CNUT. For this reason, some elements, folders, and aspects of your hierarchy that CNUT was not intended to handle may be absent from the file. Thus, even though you can also import a .net file into Prizm, the export from Prizm feature *is not* supported for migrating network data from Prizm to Prizm. Moreover, the integration of network updater functionality into Prizm obviates .net exports to CNUT.

7.3 PRINTING REPORT DATA TO A PRINTER OR FILE

From most views in Prizm, you can either

- select **File→Print** to send the viewed data to a printer of your choice, as with an ordinary operation.
- select **File→Print Preview** to
 - preview the data in print-friendly format.
 - perform page setup alterations.
 - print the data to a printer or a file.
 - export the data to a zipped or unzipped file with selected output specifications.

These operations cause Prizm to build a report from the current data. The report may include additional content such as column heads or row labels that make the data easier to view. Based on the amount of data, Prizm independently determines whether to build the report as tabular profile, record profile, or tabular landscape.

When you select Print Preview, the data used to build the report depends on what you have selected in, and for, the current display as follows:

- If an element is highlighted and Details for the element are displayed, then Prizm opens the Select Report dialog window, shown in [Figure 115](#).

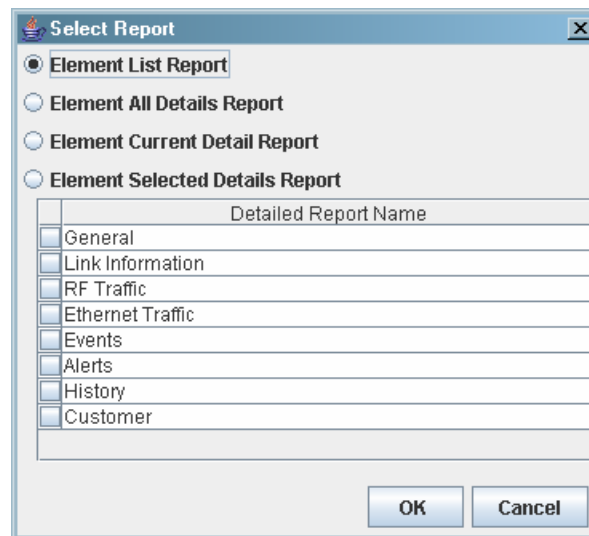


Figure 115: Select Report window

- If Details are displayed but the element is no longer highlighted, then Prizm opens the Prizm Event Report – Print Preview window. This preview shows in formatted form the list of events from the left-hand pane (not the details from the right). An example is shown in [Figure 117](#) on [Page 231](#).

- If Details are not displayed, regardless of whether an element is highlighted, then Prizm directly opens the preview, showing how the entire element list will be printed. An example is shown in [Figure 116](#).

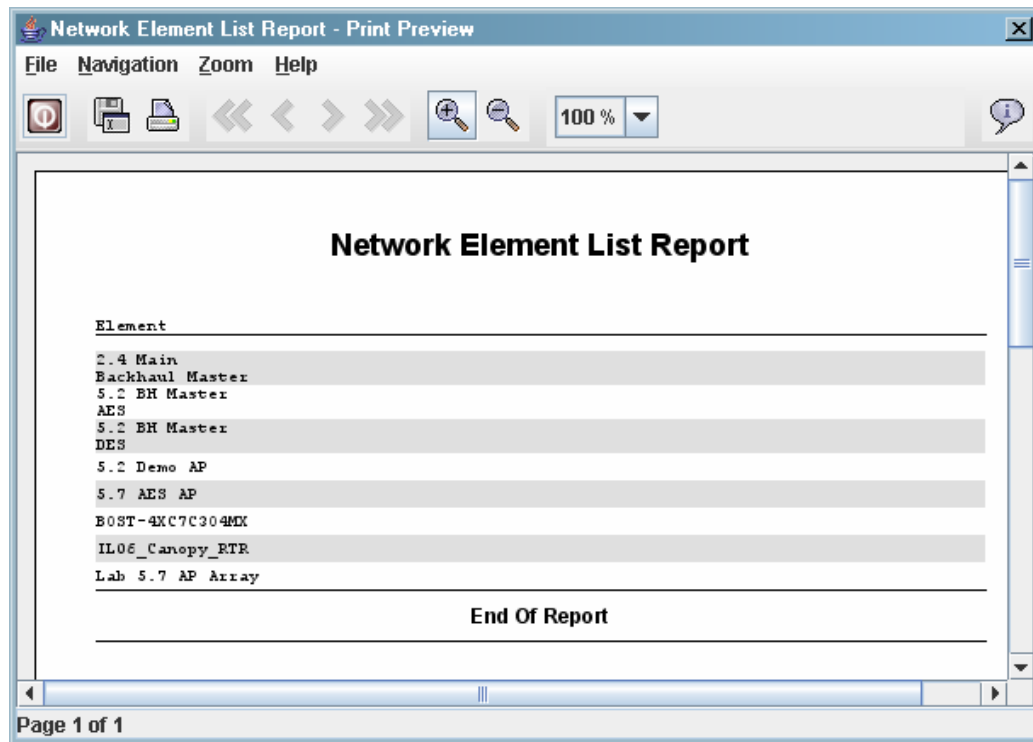


Figure 116: Example Network Element List Report

- In an Event view, Prizm rotates the data for print, such that column heads in the Prizm interface introduce the data rows in the Prizm Event Report, as shown in [Figure 117](#).

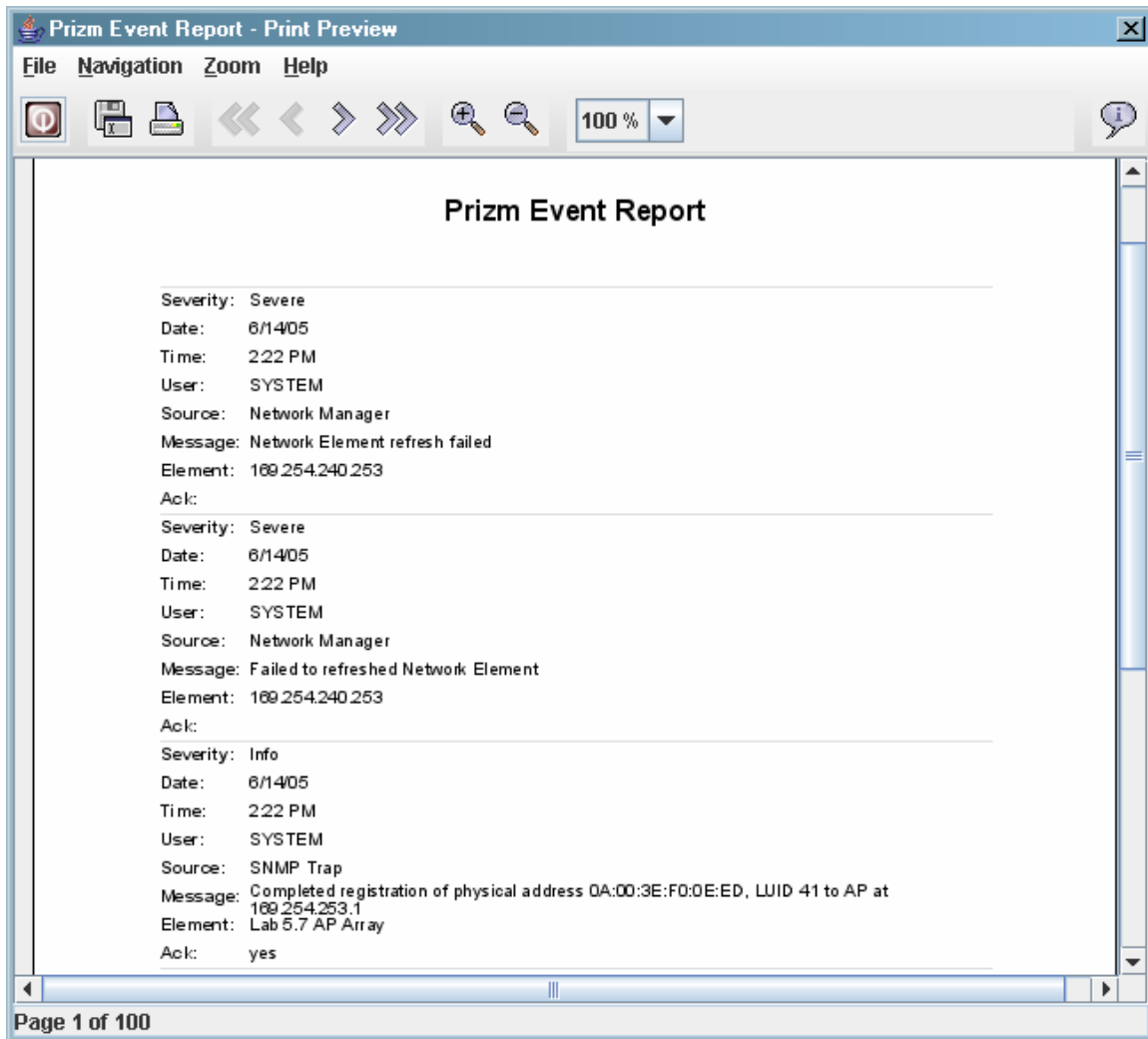


Figure 117: Example Prizm Event Report

7.3.1 Printing Report Data to PDF

The Print Preview window in Prizm allows you to select **File→Save As PDF** to direct the output as seen in the window to a PDF file. This selection presents PDF options as shown in [Figure 118](#).

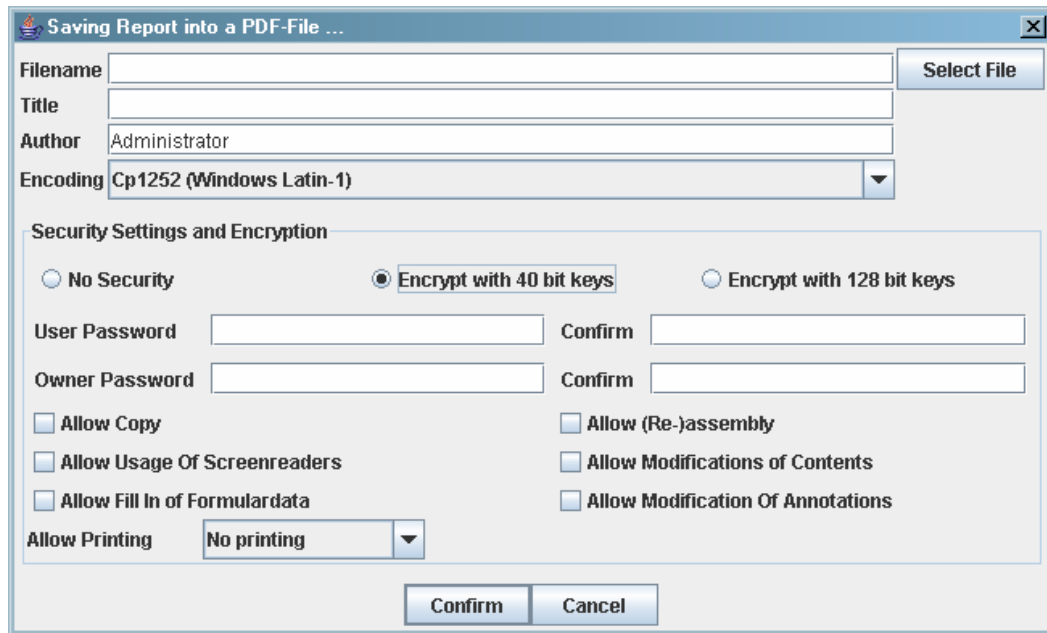


Figure 118: Saving Report into a PDF File window

7.3.2 Printing Report Data to Plain Text

The Print Preview window in Prizm allows you to select **File→Save as text file** to direct the output into a plain, Epson-compatible, or IBM-compatible text file. This selection presents text options as shown in [Figure 119](#).

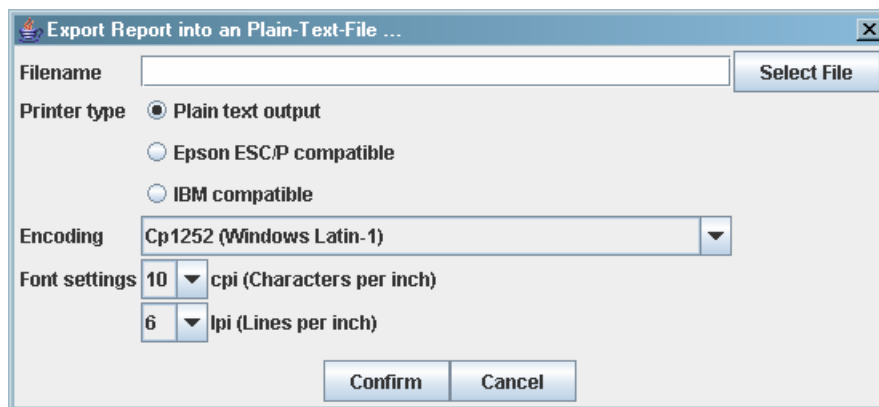


Figure 119: Export Report into a Plain-Text File window

7.3.3 Printing Report Data to Excel

The Print Preview window in Prizm allows you to select **File→Export to Excel** to direct the output into an Excel file. This selection presents table and file options as shown in [Figure 120](#).

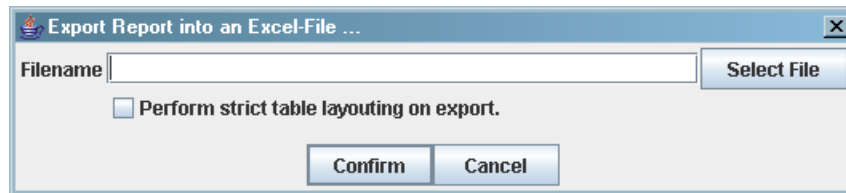


Figure 120: Export Report into an Excel File window

7.3.4 Printing Report Data to HTML

The Print Preview window in Prizm allows you to select **File→Export to HTML** to direct the output into an html file. This selection presents HTML, table, and file options as shown in [Figure 121](#).

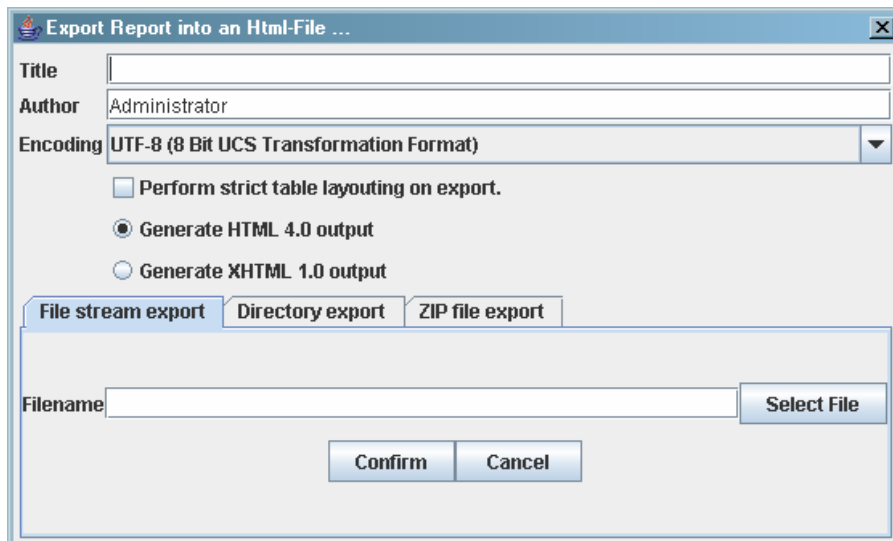


Figure 121: Export Report into an HTML File window

7.3.5 Printing Report Data to CSV

The Print Preview window in Prizm allows you to select **File→Export to CSV** to direct the output into delimiter-separated values file. This selection presents options as shown in [Figure 122](#).

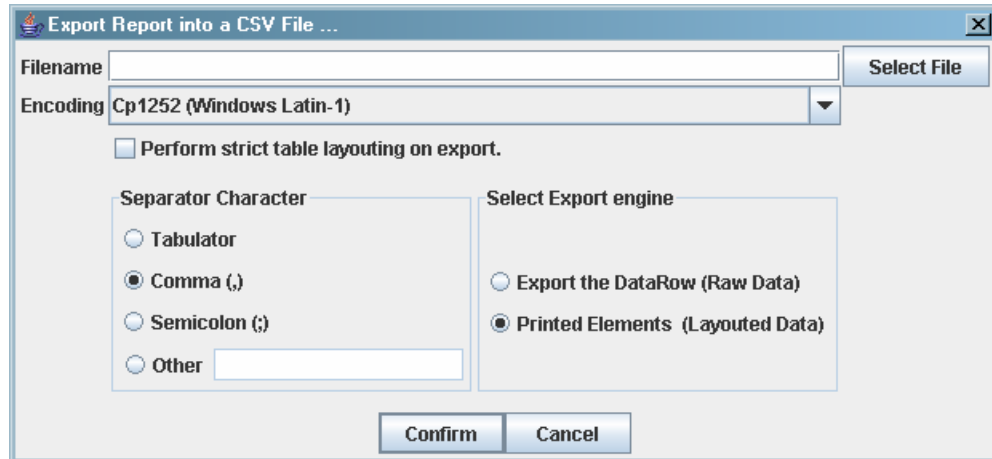


Figure 122: Export Report into a CSV File window

7.4 USING THE CUSTOMER CONTACT DATABASE MANAGER

Prizm allows the operator to associate customer information with the managed elements. This facilitates sending email to customers about the service they receive. These can be groups or individuals whom you select in the Customer Manager tab or whose associated elements you select in a network browser or in the Define Networks tab. The behavior of the email commands is to send to only selected customers in Customer Manager and send to all customers associated with the selected element(s) in the network views.

You can add customer records in either or both of two ways:

- import them from an external database. See [Preparing the Customer Contact Database](#) (next) and [Importing Customer Contact Data](#) on Page 236. This operation overwrites the entire pre-existing customer record, including all of its associated element MAC addresses.
- compose the record in Prizm. See [Adding a Customer Contact Data Record](#) on Page 237. This operation allows the user to essentially edit the record and even leave fields null.

The customer database in Prizm also facilitates correlation of data in Prizm with data in external management, billing, and other operations systems. If you choose to periodically import customer contact information from an authoritative external source, use restrictive permissions in Customer Manager, so that those who have access will all remember that changes made in Customer Manager will be overwritten by the next import.

7.4.1 Preparing the Customer Contact Database

Prizm supports a comma-separated values (. csv) file in which all of the following headings and some or all of these fields are populated for any customer you wish to include in the contact database:

1. unique id ⁹	6. City	11. Home Phone
2. Customer Name	7. State	12. Work Phone
3. Customer Type	8. Zip	13. Mobile Phone
4. Address1	9. Country	14. Pager
5. Address2	10. Email	15. MAC Address ¹⁰

The user has the discretion of how to populate these fields. For example, the Customer Type field may be populated by Residential or Commercial, or by any other set of values. Each line stores the data for one customer. The population rules are as follows:

- The headings in the above syntax must occupy the first row of the . csv file.
- A comma must not be used within a values field (because the comma is the field delimiter).

Additional Optional Fields

Prizm supports and accepts data from optional fields that you enter as additional columns in your external database. Prizm adds these fields and their values to both the Update Customer window and the details pane of the Customer Manager tab.

Customers with More Than One Asset

Prizm creates a single customer record for each unique `id` in the imported file. For a customer who has more than one network element (asset), repeat the unique `id` value in one row per additional asset (MAC address). You *do not* need to repeat the other data associated with the customer—**Customer Name** through **Pager**. (Blank fields in the successive rows of the same import operation *do not* cause Prizm to ignore or erase the populated values of those fields from previous rows that have the same unique `id` value. However, an import of a customer record overwrites the MAC address associations.)

When you trigger an email message, Prizm avoids sending more than one copy of the message to any customer, regardless of the number of assets that are associated with the unique `id` of the customer.

⁹ Prizm will display this field as `import_id`. For Prizm to accept any data into a Prizm record, this field must be populated. In a typical case, the entry in this field is the designator that other Customer Relationship Management systems use to identify this customer. The same unique ID in multiple systems facilitates updates of the customer record across the systems. See also [Assets Assigned to More Than One Customer](#) on Page 236.

¹⁰ All alpha characters in the MAC address *must be* uppercase, and the address must contain *no* separators. Prizm will display this field as Elements.

Assets Assigned to More Than One Customer

For an asset that is shared by more than one customer, enter each customer on an individual row with an unique ID in the unique id field, but also with the same MAC address in the MAC Address field. Prizm then allows you to trigger an email message to all customers who are associated with that MAC address.

7.4.2 Importing Customer Contact Data

To import customer contact data, perform the following steps.

Procedure 53: Importing customer contact data into Prizm

1. Browse to **Tools→Customer Contact Manager**.

RESULT: Prizm opens the Customer Manager tab, as shown in [Figure 123](#).

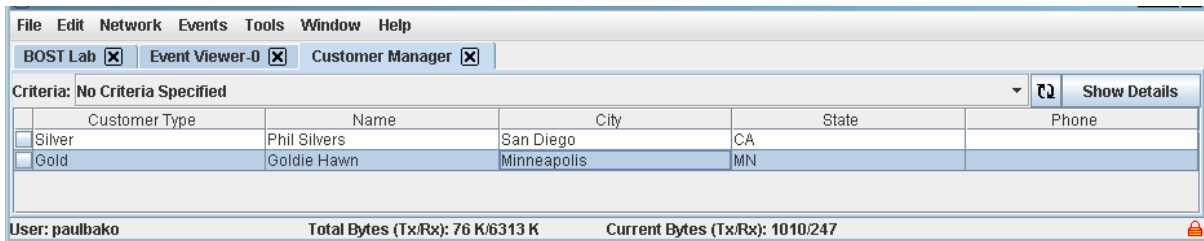


Figure 123: Example Customer Manager tab

2. Select **Edit→Import Customer(s)**.

RESULT: Prizm opens the Open window, with the Files of Type field preset to Customer Import File (*.csv), as shown in [Figure 124](#).

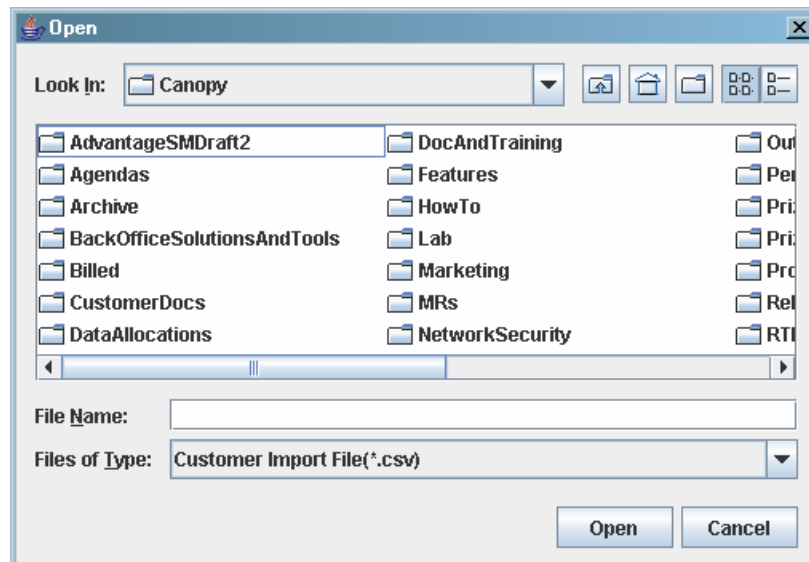


Figure 124: Example Open window for file type .csv

NOTE: The meanings of the icons in this window are provided in [Procedure 19](#) on Page [124](#).

3. Browse to and select the .csv file that contains the master set of customer contact data.
4. Click the **Open** button.
RESULT: Prizm imports all of the data and displays a portion of the data (Customer Type, Name, City, State, Phone) in the Customer Manager tab, as shown in [Figure 123](#) above.

===== end of procedure =====



IMPORTANT!

In any subsequent import of a .csv file into Prizm, overwriting a record or adding a new record occurs on a whole record-by-whole record basis in Prizm:

- Prizm overwrites the contact data for any customer whose unique id identically matches the unique id in a previously stored record.
- Prizm accepts the contact data for any customer whose unique id was not previously stored.
- Prizm keeps the contact data for any customer whose unique id was previously stored and is not included in the current import.

7.4.3 Adding a Customer Contact Data Record

At any time, you can add a customer contact record in Prizm. To add a record, perform the following steps.

Procedure 54: Adding customer contact data into Prizm

1. Browse to **Tools→Customer Contact Manager**.
RESULT: Prizm opens the Customer Manager tab, as shown in [Figure 123](#) above.
2. Select **Edit→Add Customer**.
RESULT: Prizm opens the Create New Customer window, as shown in [Figure 125](#).

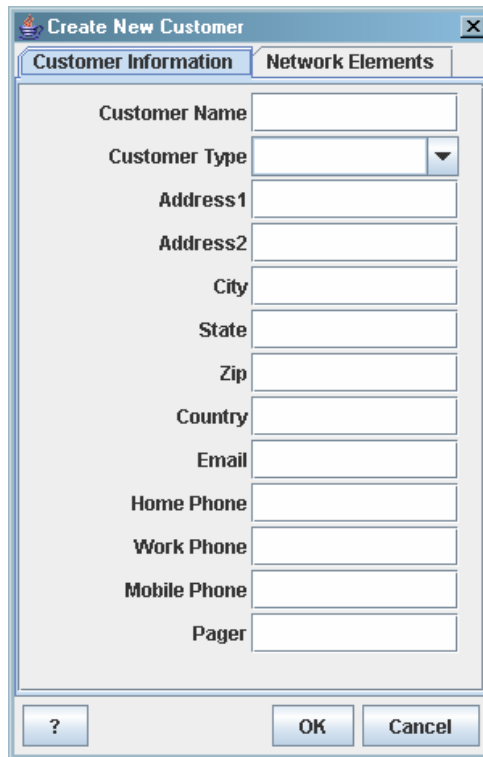


Figure 125: Example Create New Customer window

3. Populate the fields of the Customer Information tab (**Customer Name** through **Pager**) consistent with either
 - practices that were used in creating the .csv file.
 - population rules for this data in your network.
4. Verify the entire record in this tab.
5. Click the Network Elements tab of the Create New Customer window.
6. In the Network Elements tab, click **Add**.
RESULT: Prizm opens a Select Network Elements window.
7. Specify filter criteria that encompass the element(s) that should be associated with this customer.
EXAMPLE: Select **Management IP** for **Element Attribute**, then input the IP address at =.
8. In the Specify Element Criteria window, click **OK**.
RESULT: The Select Network Elements window displays a list of the elements that match your criteria.
9. In the Select Network Elements window, select (check the checkbox of) any element that you want Prizm to associate with this customer, as shown in [Figure 126](#).

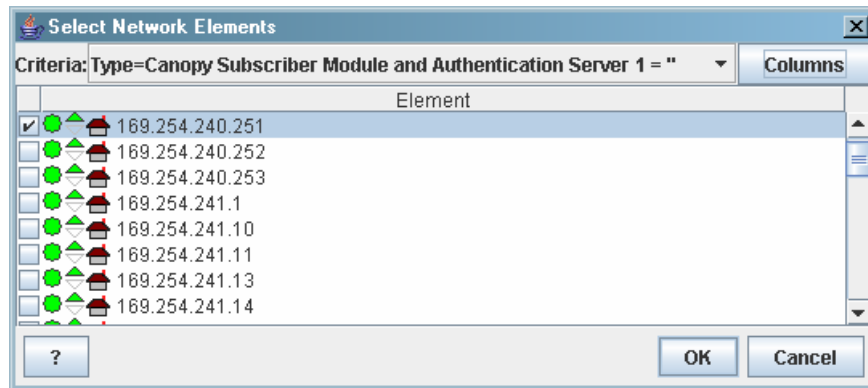


Figure 126: Example Select Network Elements window with selected (checked) element

10. In the Select Network Elements window, click **OK**.

11. In the Create New Customer window, click **OK**.

===== end of procedure =====

7.4.4 Viewing Contact Data for a Customer

When a record is stored in Prizm, you can view the record at any later time. To view a record, perform the following steps.

Procedure 55: Viewing customer contact data in Prizm

1. Browse to **Tools→Customer Contact Manager**.
RESULT: Prizm opens the Customer Manager tab, as shown in [Figure 123](#) above.
2. In the list of customers that the Customer Manager tab displays, highlight the row of the customer whose contact data you wish to view.
3. At the top of the tab, click the  button.
RESULT: Prizm opens a new pane that displays the stored contact data for that customer, as shown in [Figure 127](#).

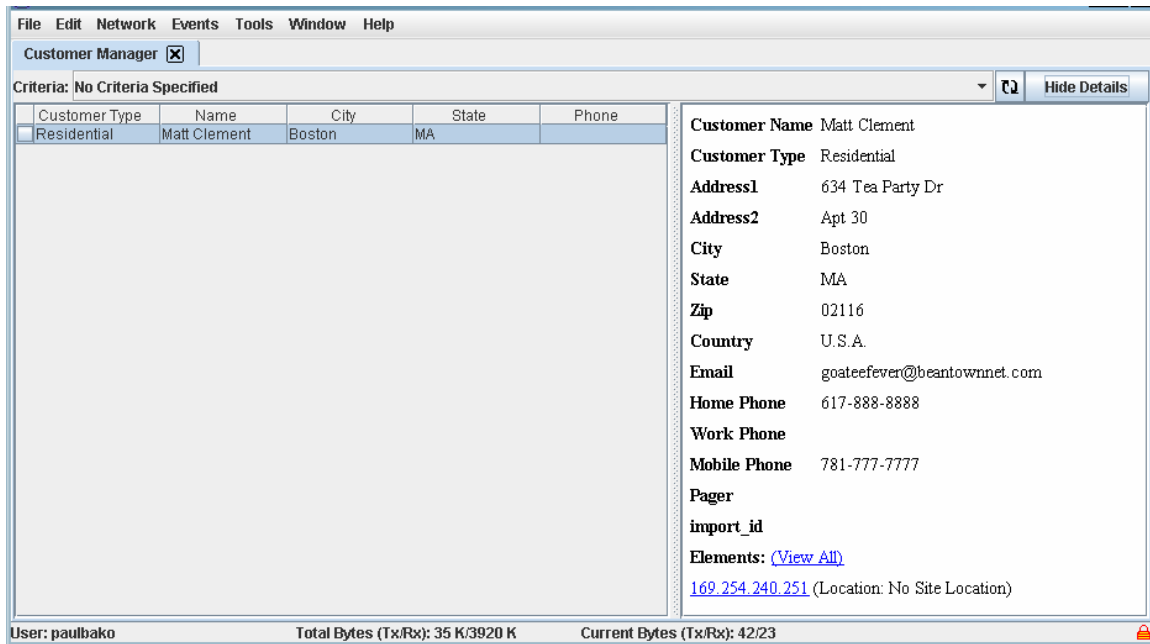


Figure 127: Example customer contact data details pane in Customer Manager tab

4. View the details.
NOTE: The import_id field in the details pane corresponds to the unique id field in the .csv file.

===== end of procedure =====

7.4.5 Modifying Customer Contact Data in Prizm

When a record is stored in Prizm, you can modify the record at any later time. To modify a record, perform the following steps.

Procedure 56: Modifying customer contact data in Prizm

1. Browse to **Tools→Customer Contact Manager**.
RESULT: Prizm opens the Customer Manager tab, as shown in [Figure 123](#) above.
2. In the list of customers that the Customer Manager tab displays, highlight the row of the customer whose contact data you wish to modify.
3. Select **Edit→Update Customer**.
RESULT: Prizm opens the Update Customer window, as shown in [Figure 128](#).

Update Customer

Customer Information | **Network Elements**

Customer Name Matt Clement

Customer Type Residential

Address1 634 Tea Party Dr

Address2 Apt 30

City Boston

State MA

Zip 02116

Country U.S.A.

Email goateefever@beantownnet.com

Home Phone 617-888-8888

Work Phone

Mobile Phone 781-777-7777

Pager

? OK Cancel

Figure 128: Example Update Customer window

4. Modify the fields of the Customer Information tab (**Customer Name** through **Pager**) consistent with either
 - practices that were used in creating the .csv file.
 - population rules for this data in your network.
5. Verify the entire record in this tab.
6. Click the Network Elements tab of the Update Customer window.
7. Modify and/or verify the element(s) associated with this customer.
NOTE: If you need to modify the list of elements, see [Procedure 54](#) on Page 237.
8. In the Update Customer window, click **OK**.

===== **end of procedure** =====

7.4.6 Deleting a Customer Contact Data Record

To delete a customer contact record, perform the following steps.

Procedure 57: Deleting customer contact data from Prizm

1. Browse to **Tools→Customer Contact Manager**.
RESULT: Prizm opens the Customer Manager tab, as shown in [Figure 123](#) above.
2. In the list of customers that the Customer Manager tab displays, highlight the row of the customer whose data you wish to delete.
3. Select **Edit→Delete Customer**.

===== end of procedure =====

7.4.7 Correlating Customers with Elements

At the bottom of the details pane of the Customer Manager tab (shown in [Figure 127](#) above), the Elements field contains the value of MAC address field from the .csv file. The import_id (derived from the unique id field of the .csv file) and the Elements value together correlate the customer with the network element that the customer uses.

From a network browser window, you can correlate an element with a customer through the **Edit→Assign Customers to Selected Element(s)** option. This opens the Assign Customers window, which provides a down arrow to click and summon the Customer Filter window. An example of this window is shown in [Figure 129](#).

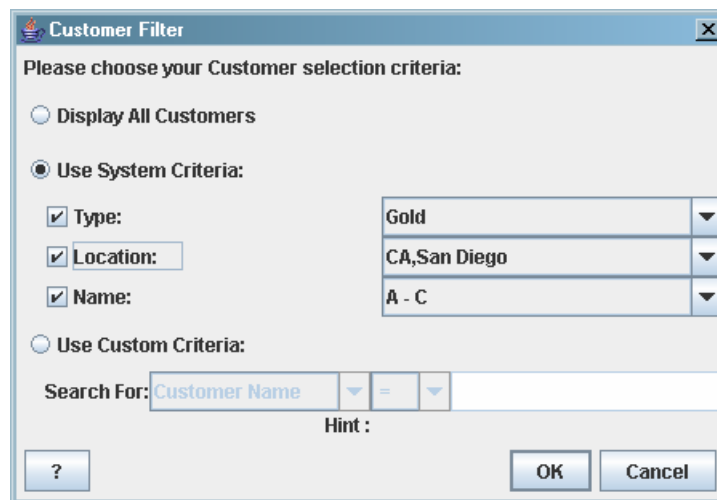


Figure 129: Example Customer Filter window

Type here lists the values of the **Customer Type** field in the database, taken from the Create New Customer or Update Customer window, where the user entered a type, selected a type that had previously been entered for another customer, or left the field blank. **Location** here lists the values of **State** and **City**, also taken from input in those windows, and **Name** here lists the values of **Customer Name**. See [Figure 128: Example Update Customer window](#) on Page 241.

If you select **Use Custom Criteria**, you can filter for equal to, not equal to, like, or unlike a value that Prizm will search against strings taken from any field that you select from a list of all fields in the Customer Information tab of those windows. Like and unlike searches accept wild card characters. An underscore represents the place of any single character. The percent sign represents any number of characters. **Use Custom Criteria** is most useful for fields like Customer Name, where the number of unique entries in the database are great.

7.4.8 Setting Permissions for Customer Contact Information

User permissions for the Customer Manager in Prizm are separately assignable in the Permissions tabs of the Add User Account and the Update User Account windows. In the same way that you can specify read (**R**), write (**W**), or administrator (**A**) level permissions for Alert Manager, Event Viewer, *Network* Manager, and Notification Manager, you can also specify them for Customer Manager as you add or update a user.

An example of the Permissions tab is shown in [Figure 15](#) on Page 76.

7.4.9 Sending Email to Customers

You can use Prizm to send email to an individual customer or to any size group of customers when you need to deliver pertinent information about the network or their services. The ways that you can do this are listed in [Table 21](#).

Table 21: Sending email messages to customers

To send email from this view...	Select customer(s), then select...
Network browser tab	Edit→Send Email to Customers of Selected Element(s)
Define Networks tab	Edit→Network Element Operations→ Send Email to Customers of Selected Element(s)
Customer Manager tab	Edit→Email to Selected Customer(s)
Customer tab of Details pane	

In any case, the selection causes Prizm to open the Customer Email Editor window. An example of this window is shown in [Figure 130](#). This window allows you to use the default From address or select another, alter the Email To address, compose the Subject line as well as all of the contents of the message.

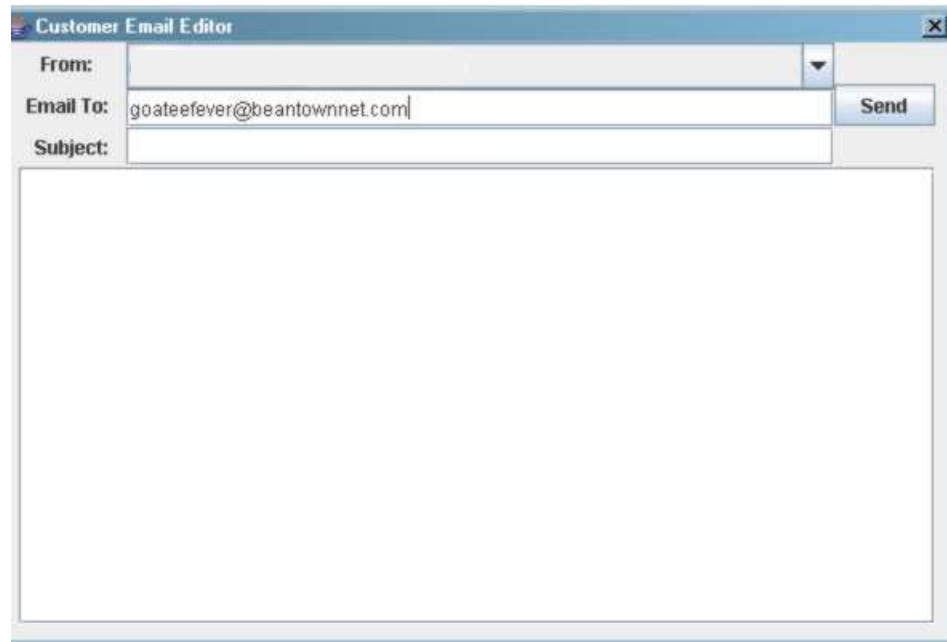


Figure 130: Example Customer Email Editor window

To send email from the Customer Manager tab, you can specify criteria that identify a customer or group of customers. Click  associated with **Criteria**. Prizm opens the Customer Filter window. An example of this window is shown in [Figure 129](#) on [Page 242](#).

7.5 SEARCHING THE Prizm DATABASE

In Release 3.1 and later, the status bar at the bottom of the Prizm application console provides a drop-down menu to specify a category to search in, a dialog to type in a search string, and a **Search** button to click to initiate a search. The available categories are

- **Prizm Element** to search for a site name, site contact, or site location
- **Customer** to search for a name
- **Event** to search for a message string
- **Alert** to search for a message string
- **User Device** to search for an IP address or a MAC address
- **All**

When Prizm returns the results in a new window, you can click on an element in it to open a network browser that contains the selected element(s). An example of the status bar with the Search utility is shown in [Figure 25](#) on [Page 91](#).

8 MANIPULATING NETWORKS AND ELEMENTS

8.1 DEVICE SECURITY IN RELEASE 3.1 AND LATER

Release 3.1 introduces two dimensions of increased security to the interaction between Prizm users and the devices in Prizm networks:

- user access defined by one of the tiered access levels that align with the user access parameters that Canopy Releases 7.x and 8.x provide:
 - **Admin**, always present, with full read-write permission on the elements.
 - **Installer** or **Guest**, optional, with read-only permission on the elements.¹¹
- Prizm access to the element through SNMP v3, which adds the option to set new conditions on access from Prizm, beyond the community string, for checksum algorithm (authentication) and encryption (privacy):
 - one of the following authentication protocols to use:
 - **MD5** (Message Digest 5), RFC 1321.
See <http://www.faqs.org/rfcs/rfc1321.html>.
 - **SHA** (Secure Hash Algorithm), FIPS 180.
See <http://www.itl.nist.gov/fipspubs/fip180-1.htm>.
 - one of the following privacy protocols to use
 - **AES** (Advanced Encryption Standard), FIPS 197.
See <http://csrc.nist.gov/publications/fips/fips197/fips-197.pdf>.
 - **DES** (Digital Encryption Standard), FIPS 46-3.
See <http://csrc.nist.gov/publications/fips/fips46-3/fips46-3.pdf>.
 - AES 128, 192, and 256 reserved for future use
 - whether to enforce
 - both authentication and privacy
 - authentication without privacy
 - no authentication or privacy
 - a password for authentication and a password for privacy

The user access-to-element feature supplants the single access tier that Release 3.0 supported: root. The Prizm access-to-element feature adds to the SNMP security options that Release 3.0 supported: community string and SNMP version (v1 or v2). These features take advantage of all of the device security capabilities that Canopy Release 8.x provides. If you do not upgrade to Prizm Release 3.1, use [Device Security in Release 3.0](#) on Page [257](#) and its subsections for guidance.

¹¹ This differs from Installer privileges on the element, which are read-write except that the Installer on the element cannot add or delete other users.

In Release 3.1, device passwords are no longer configurable attributes. Instead, the security fields are settable within security profiles while you are working in the Define Networks tab. An example of this tab, with its Device Security pane open, is shown in [Figure 142](#).

Device security profiles apply to the network in which you create them. Each network must have at least one valid profile to manage the elements in the network. Each profile must have at least one read-write user account and one read-write SNMP account to be valid. By the time you are finished building all the profiles in a network, there should be as many profiles as there are *distinct pairs* of network element password (formerly, the **Management Password** attribute, associated with the Administrator account on an element) and SNMP community string in that network.

During auto discovery, when Prizm finds a profile that works on one or more elements, it uses that profile. When it finds an element for which no configured profile exists, it automatically creates an appropriate profile.

To add a profile, perform the following steps.

Procedure 58: Adding device security profiles

1. In the left pane of the Define Networks tab, click to highlight **Device Security**.
2. From the main menu, select **Edit→Network Configuration→Update Default User Accounts**.
RESULT: Prizm opens the All User Accounts for Network window. An example of this window is shown in [Figure 131](#).

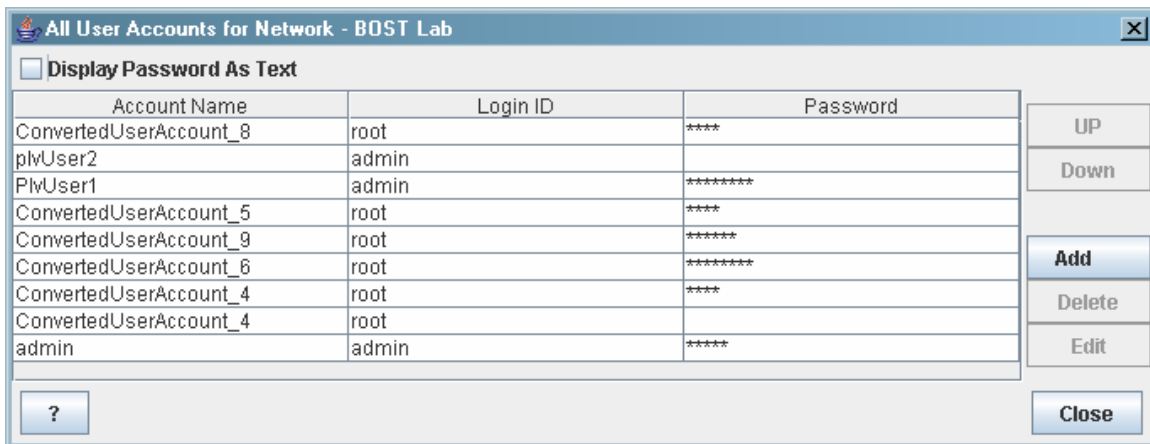


Figure 131: Example All User Accounts for Network window

3. In this window, click the **Add** button.
RESULT: Prizm opens the Add New User Login Account window. An example of this window is shown in [Figure 132](#).



Figure 132: Example Add New User Login Account window

4. For **Account Name**, type a descriptive string that will help you later distinguish this user account from others.
5. For **Login ID**, type in a string.
NOTE: The default login ID is root. This can be highlighted and overwritten.
6. For **Password**, type in a string that the operators who use this account will need to remember in order to manage networks that have this EMS User Account in one of their profiles.
7. For **Confirm Password**, repeat the string.
8. Click **OK**.
NOTE: If you omitted any required information or are trying to create an account that is identical to one that already exists, an error message will indicate this.
9. Add other user accounts as you wish.
10. When all user accounts have been added, perform the following steps:
 - a. Check the checkbox for **Display Password As Text**.
 - b. Click to highlight various accounts and use the **Up** and **Down** buttons until the accounts are in order, top to bottom, of most-used to least-used password in the network.
NOTE: This will make the auto discovery process as efficient as possible. The process tries
 - the most-used first, on all unlisted elements.
 - the second most-used second, on all unlisted elements that did not respond to the first, and so forth.
 - c. Uncheck the checkbox for **Display Password As Text**.
11. In the main menu, select **Edit→Network Configuration→Update Default SNMP Accounts**.
RESULT: Prizm opens the All SNMP Account for Network window. An example of this window is shown in [Figure 133](#).

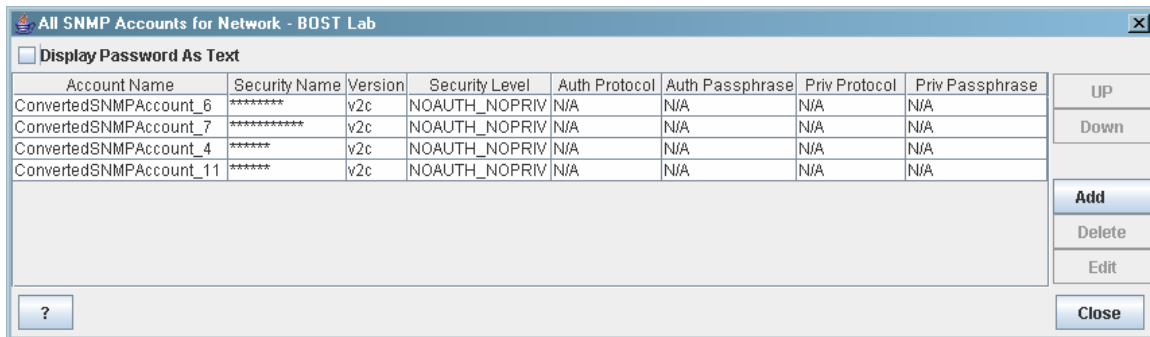


Figure 133: Example All SNMP Account for Network window

12. In this window, click the **Add** button.

RESULT: Prizm opens the SNMP Account window. An example of this window is shown in [Figure 134](#).



Figure 134: Example SNMP Account window

NOTE: The availability of the various settings is shown in [Table 22](#).

Table 22: Availability of SNMP Account settings

Field	Settable in SNMP Version	Not Settable in SNMP Version
Account Name	v1, v2c, v3	
Security Name	v1, v2c, v3	
Security Level	v3	v1, v2c
Auth Protocol	v3 ¹	v1, v2c
Auth Password	v3 ¹	v1, v2c
Privacy Protocol	v3 ²	v1, v2c
Privacy Password	v3 ²	v1, v2c
NOTES: 1. Only if Security Level is set to either AUTH_NOPRIV or AUTH_PRIV . 2. Only if Security Level is set to AUTH_PRIV .		

13. For **Account Name**, type a descriptive string that will help you later distinguish this SNMP account from others.
14. For **Security Name**, type the community string of the elements that you want the operators who use this SNMP account to be able to manage.
15. For **SNMP Version**, select the version number from the drop-down list.
16. If you selected **v3** above, select a **Security Level** from the drop-down list.
NOTE: This list presents the alternatives for checksum algorithm (authentication) and encryption (privacy):
 - **NOAUTH_NOPRIV** for no authentication and no privacy
 - **AUTH_NOPRIV** for authentication without privacy
 - **AUTH_PRIV** for authentication and privacy
17. If **Security Level** above was set to either **AUTH_NOPRIV** or **AUTH_PRIV**, perform the following steps:
 - a. For **Auth Protocol**, select either **MD5** or **SHA**.
 - b. For **Auth Password**, type a string that operators who use this SNMP account will need to remember.
18. If **Security Level** above was set to **AUTH_PRIV**, perform the following steps:
 - a. For **Privacy Protocol**, select either **DES** or **AES**.
 - b. For **Privacy Password**, type a string that operators who use this SNMP account will need to remember.
19. Click the **OK** button.
NOTE: If you omitted any required information or are trying to create an account that is identical to one that already exists, an error message will indicate this.

20. Add other SNMP accounts as you wish.
21. When all SNMP accounts have been added, perform the following steps:
 - a. Check the checkbox for **Display Password As Text**.
 - b. Click to highlight various accounts and use the **Up** and **Down** buttons until the accounts are in order, top to bottom, of most-used to least-used **Security Name** (community string) in the network.
NOTE: This will make the auto discovery process as efficient as possible. The process tries
 - the most-used **Security Name** first, on all unlisted elements.
 - the second most-used second, on all unlisted elements that did not respond to the first, and so forth.
 - c. Uncheck the checkbox for **Display Password As Text**.
22. From the main menu, select **Edit→Add Profile**.
RESULT: Prizm opens the Add New Profile window. This window is shown in [Figure 135](#).

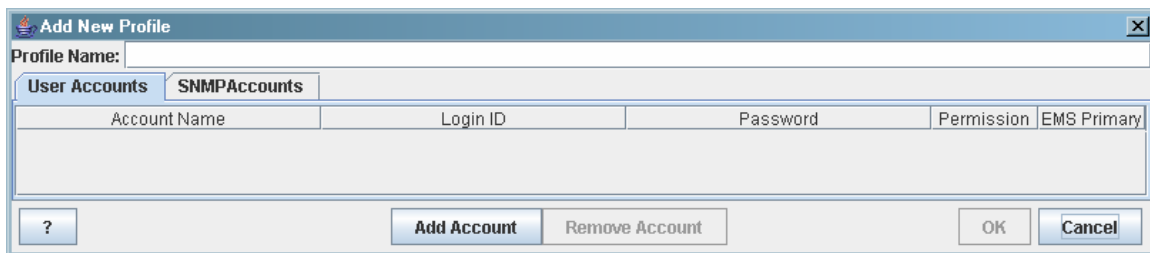


Figure 135: Add New Profile window

23. For **Profile Name**, type in a string that will help you distinguish this profile from others that you create.
24. In the User Accounts tab, click the **Add Account** button.
RESULT: Prizm opens the Available User Accounts for Network window. An example of this window is shown in [Figure 136](#).

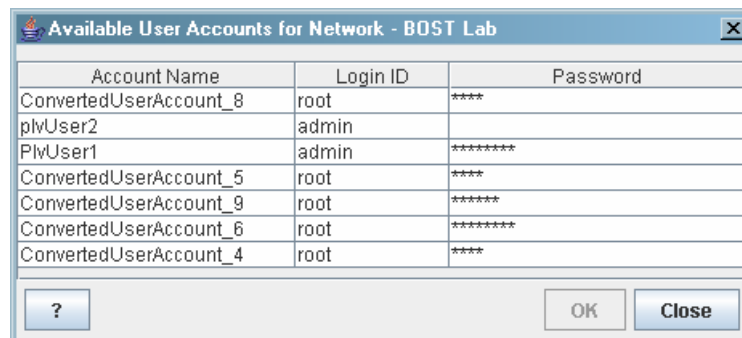


Figure 136: Example Available User Accounts for Network window

25. Click to highlight one of the user accounts that you created.

26. Click the **OK** button.

RESULT: Prizm adds the device user account to the User Accounts tab, as shown in [Figure 137](#).

Account Name	Login ID	Password	Permission	EMS Primary
plvUser1	admin	*****	Admin	☐
plvUser2	admin		Admin	☐

Buttons: ? Add Account Remove Account OK Cancel

Figure 137: User Accounts tab with accounts added

27. In the Permission column, click the device access level for the account, to reveal the access level drop-down menu.

NOTE: This is a left click. A right click *will not* reveal the menu. This menu is shown in [Figure 138](#).

Account Name	Login ID	Password	Permission	EMS Primary
plvUser1	admin	*****	Admin	☐
plvUser2	admin		Admin	☐

Buttons: ? Add Account Remove Account OK Cancel

Figure 138: User Accounts tab with Permission menu revealed

28. Select a level from among **Admin**, **Installer**, and **Guest**.

IMPORTANT: Each profile must contain at least one account that has the **Admin** access level.

29. Repeat this sequence for any other user accounts that you want to include in this profile.
30. For one or more of the accounts, check the EMS Primary checkbox so that Prizm will use the account(s) for element management.
31. Click the SNMP Accounts tab.
32. Click the **Add Account** button.

RESULT: Prizm opens the Available SNMP Accounts for Network window. An example of this window is shown in [Figure 139](#).

Account Name	Security Name	Version	Security Level	Auth Protocol	Auth Passphrase	Priv Protocol	Priv Passphrase
ConvertedSNMPAccount_0	*****	v2c	NOAUTH_NOPRIV	N/A	N/A	N/A	N/A
ConvertedSNMPAccount_1	*****	v2c	NOAUTH_NOPRIV	N/A	N/A	N/A	N/A
ConvertedSNMPAccount_1	*****	v2c	NOAUTH_NOPRIV	N/A	N/A	N/A	N/A

Figure 139: Example Available SNMP Accounts for Network window

33. Click to highlight one of the SNMP accounts that you created.
34. Click the **OK** button.

RESULT: Prizm adds the account to the SNMP Accounts tab, as shown in [Figure 140](#).

Account Name	Security Name	Version	Security Level	Auth Protocol	Auth Passph...	Priv Protocol	Priv Passphr...	Permission	EMS Primary
ConvertedS...	*****	v2c	NOAUTH_N...	N/A	N/A	N/A	N/A	Read/Write	☐

Figure 140: SNMP Accounts tab with account added

35. In the Permission column, click the SNMP access level for the account, to reveal the access level drop-down menu.

NOTE: This is a left click. A right click *will not* reveal the menu. This menu is shown in [Figure 141](#).

Account Name	Security Name	Version	Security Level	Auth Protocol	Auth Passph...	Priv Protocol	Priv Passphr...	Permission	EMS Primary
ConvertedS...	*****	v2c	NOAUTH_N...	N/A	N/A	N/A	N/A	Read/Write	☐
ConvertedS...	*****	v2c	NOAUTH_N...	N/A	N/A	N/A	N/A	Read/...	☐

Figure 141: SNMP Accounts tab with Permission menu revealed

36. Select either **Read/Write** or **Read Only**.

IMPORTANT: Each profile must contain at least one SNMP account that has the Read/Write access level.

37. Repeat this sequence for any other SNMP accounts that you want to include in this profile.
 38. For one or more of the accounts, check the EMS Primary checkbox so that Prizm will use the account(s) for element management.
 39. Use this procedure to create any additional profiles for this network.
 40. To review and adjust any or all of the profiles, perform the following steps:
 - a. In the Device Security panel, click to highlight the profile.
- NOTE:** An example of this panel is shown in [Figure 142](#).

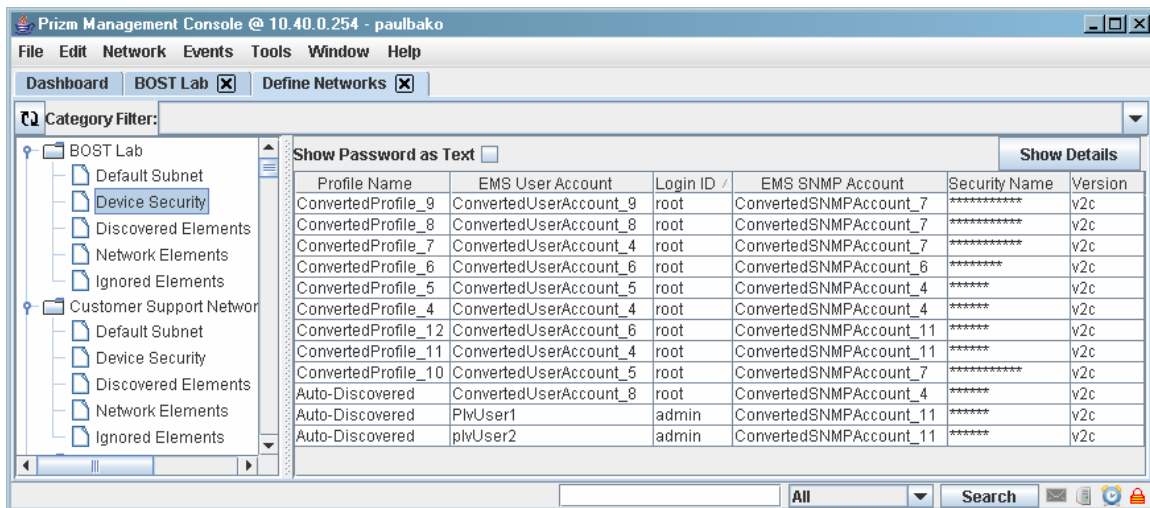


Figure 142: Example Device Security pane

If you click the  button in this pane, the panel displays a summary like the one shown in [Figure 143](#).

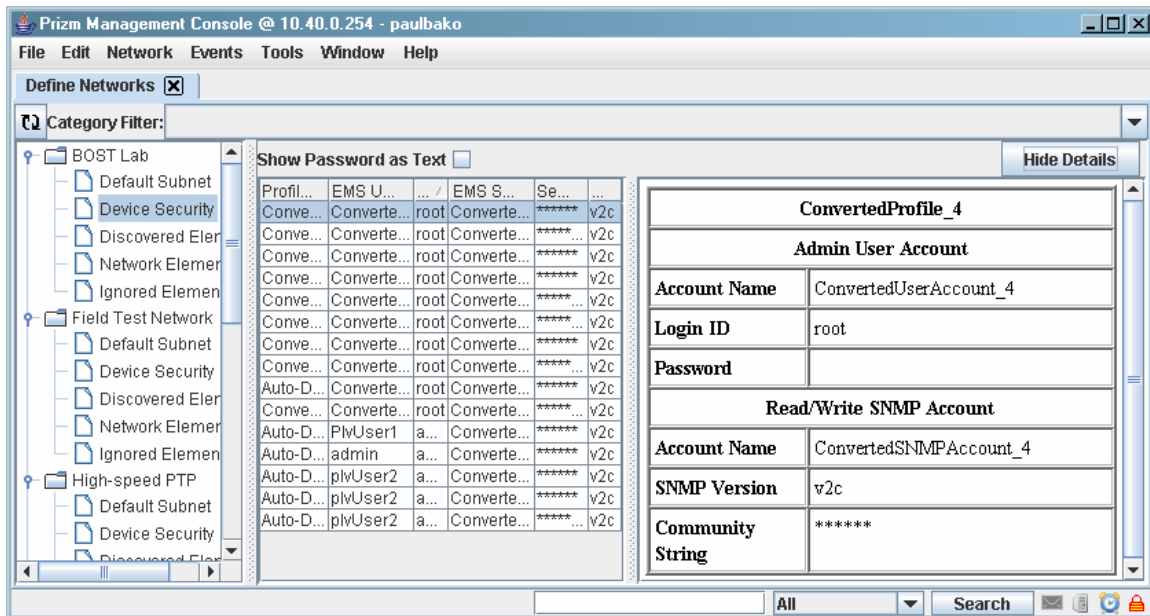


Figure 143: Example Device Security pane with Details

- b. From the main menu, select **Edit→Update Profile**.
RESULT: Prizm opens the Update Profile window. An example of this window is shown in Figure 144.

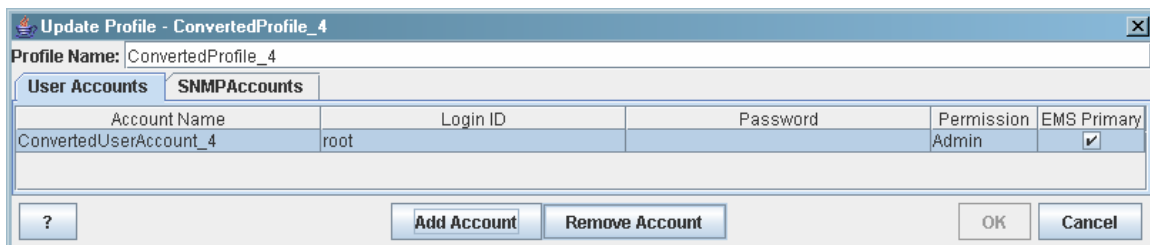


Figure 144: Example Update Profile window for device security, User Accounts tab

- c. Review the User Accounts summary.
d. If you want to add another user account, perform the following steps:
(1) Click the **Add Account** button.
RESULT: Prizm opens the Available User Accounts for Network window. An example of this window is shown in Figure 136 on Page 250.
(2) Click to highlight the user account that you want to add to the profile.
(3) Click the **OK** button.

- e. If you want to remove a user account from the profile, perform the following steps:
 - (1) Click to highlight the user account that you want to remove.
 - (2) Click the **Remove Account** button.

NOTE: This action removes the user account from the profile, but *does not* delete the account from Prizm. If you remove an account by mistake, you can simply use the Add Account button and the previous set of steps to bring the account back into the profile.
 - f. Click the SNMP Accounts tab.
- RESULT:** All SNMP accounts that this profile includes are displayed. An example of this tab is shown in [Figure 145](#).

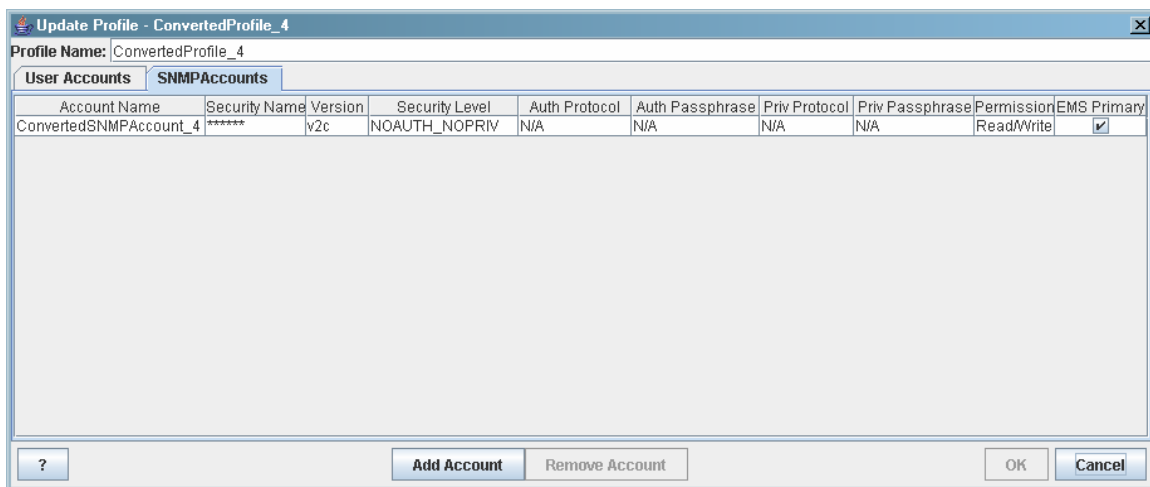


Figure 145: Example Update Profile window for device security, SNMP Accounts tab

- g. Review the SNMP Accounts summary.
- h. If you want to add another SNMP account, perform the following steps:
 - (1) Click the **Add Account** button.

RESULT: Prizm opens the Available SNMP Accounts for Network window. An example of this window is shown in [Figure 139](#) on [Page 252](#).

 - (2) Click to highlight the SNMP account that you want to add to the profile.
 - (3) Click the **OK** button.
- i. If you want to remove an SNMP account from the profile, perform the following steps:
 - (1) Click to highlight the SNMP account that you want to remove.
 - (2) Click the **Remove Account** button.

NOTE: This action removes the SNMP account from the profile, but *does not* delete the account from Prizm. If you remove an account by mistake, you can simply use the Add Account button and the previous set of steps to bring the account back into the profile.

- j. When you are satisfied with changes made in the Update Profile window, click the **OK** button.
- Alternatively, if you made no changes in the Update Profile window, click the **Cancel** button.

===== end of procedure =====

To apply a configured profile to elements, perform the following steps.

Procedure 59: Applying a device security profile to selected elements

1. In the left pane of the Define Networks tab, click to highlight Network Elements.
2. In the Network Elements panel, check the checkbox of all elements that should be assigned the same device security profile.
3. From the main menu, select **Edit→Apply Security Profile**.

RESULT: Prizm opens the Select Security Profile window. An example of this window is shown in [Figure 146](#).

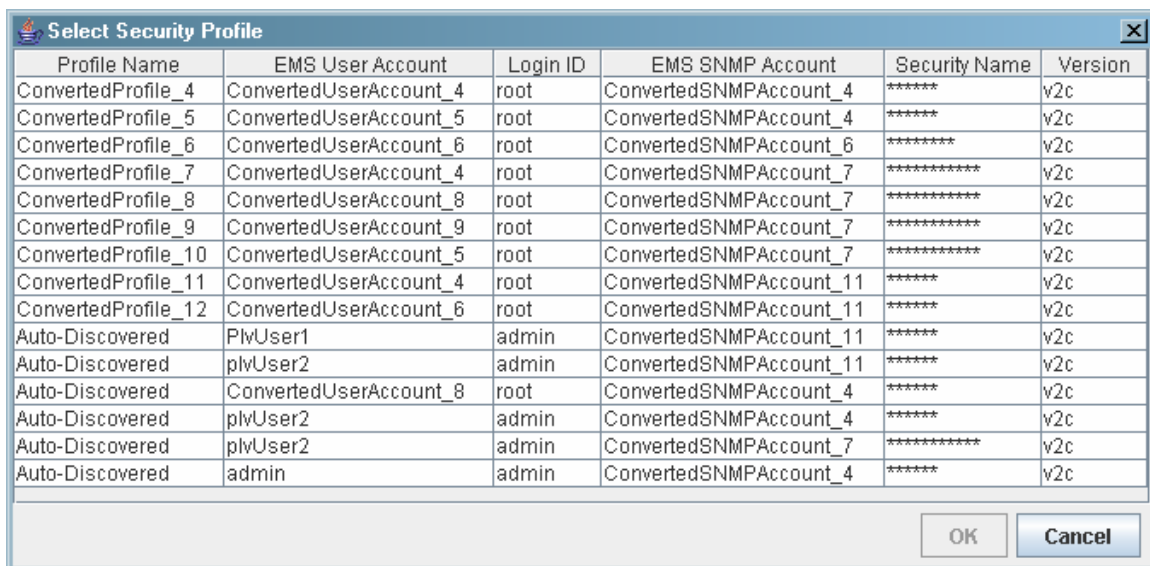


Figure 146: Example Select Security Profile window

4. Click to highlight the profile that you want to apply.
5. Click the **OK** button.

===== end of procedure =====

Create and apply profiles in each of your other Prizm networks. If you later update a device security profile, the update is imposed on all elements that have the profile applied.

8.2 DEVICE SECURITY IN RELEASE 3.0

For device security, Release 3.0 allows you to effectively set up your group of authorized Prizm users as only the root user (with full privileges) on every network element and provides complete SNMP exchange between the EMS and each element through only the community string. These features align with the device security capabilities of the Canopy devices in their earlier releases. However, Release 3.0 *does not* support the configurable tiered access that later Canopy devices allow and *does not* communicate with the elements by SNMP v3, which provides a rich set of security conditions for users where implemented.

Those conditions and tiered access are introduced in Release 3.1. If you want those features, upgrade to Release 3.1 and refer to [Device Security in Release 3.1 and Later](#) on Page 245.

If you continue to use Release 3.0, the following sections of this guide apply to all device security operations in Prizm:

- [Maintaining Passwords and Community Strings for Auto Discovery](#) below
- [Updating Element Passwords](#) on Page 259

8.2.1 Maintaining Passwords and Community Strings for Auto Discovery

From time to time, you may want to update the list of management passwords and/or community strings that Prizm uses in the attempt to contact network elements during the auto discovery operation. The update may involve adding to or removing from the list, or changing the order in which the strings are attempted. Removing unused management passwords and reordering the list can be particularly helpful in speeding the discovery process.

Prizm tries the strings in the order in which Prizm displays them in the list window. For fastest discovery, the top-to-bottom order should be from most-to-least frequently used in the network. With this order, the number of communication attempts is the fewest possible. To edit the management password and/or community string list, perform the following steps.

Procedure 60: Editing a password or SNMP community string list

1. Browse to **Network→Define Networks**.
RESULT: Prizm opens the Define Networks tab.
2. In the left-hand pane, under the network whose default string list you want to change, click **Network Elements**.
3. If you want to change the default management password list, perform the following steps:
 - a. Select **Edit→Update Default Password List**.
RESULT: Prizm opens an Update Default Password List window.
NOTE: An example of the Update Default Password List window is shown in [Figure 33](#) on Page 105.
 - b. To add any management password that you want Prizm to attempt during auto discovery, perform the following steps:
 - (1) Click **Add**.
RESULT: Prizm opens an Input window.

NOTE: An example of the Input window for adding a management password is shown in [Figure 34](#) on Page 106.

- (2) In this Input window, type the additional management password(s) that you want Prizm to attempt during the auto discovery operation.
 - (3) Click **OK**.
 - c. Repeat the previous three steps for any other management password you wish to add.
 - d. To remove any management password from the list, perform the following steps:
 - (1) Click the management password to highlight it.
 - (2) Click **Remove**.
 - e. To change the sequential order of the management passwords in the list, perform the following steps until you are satisfied with the order.
 - (1) Click to highlight the management password you want to move.
 - (2) Click **Move Up** or **Move Down** as needed to move it to the desired position.
 - f. When you are finished, click **OK**.
4. If you want to change the default SNMP community string list, perform the following steps:
- a. Select **Edit→Network Configuration→Update Default SNMP Community List**.
RESULT: Prizm opens an Update Default Community List window.
NOTE: An example of the Update Default Community List window is shown in [Figure 35](#) on Page 106.
 - b. To add any **SNMP Community String** that you want Prizm to attempt during auto discovery, perform the following steps:
 - (1) click **Add**.
RESULT: Prizm opens an Input window.
NOTE: An example Input window for adding an **SNMP Community String** is shown in [Figure 36](#) on Page 106.



IMPORTANT!

Although Canopy radios that operate on Canopy System Release 8.x support community strings that contain spaces, Prizm *does not*. A space prevents SNMP discovery and all non-BAM management from Prizm. Canopy will track this problem under Item ID 0004614.

Until this problem is resolved, review the strings and remove their spaces through direct access to the radios.

- (2) In this Input window, type the additional **SNMP Community String** that you want Prizm to attempt during the auto discovery operation.
- (3) Click **OK**.

- c. Repeat the previous three steps for each other **SNMP Community String** you wish to add.
- d. To remove any **SNMP Community String** from the list, perform the following steps:
 - (1) Click the string to highlight it.
 - (2) Click **Remove**.
- e. To change the sequential order of the strings in the list, perform the following steps until you are satisfied with the order.
 - (1) Click to highlight the string you want to move.
 - (2) Click **Move Up** or **Move Down** as needed to move it to the desired position.
- f. When you are finished, click **OK**.

===== end of procedure =====

8.2.2 Updating Element Passwords

If you are a user account type who has **A** (administrator-level) or **ATA** (account type Administrator) Prizm permission in the network, then Prizm allows you to set, change, and remove the passwords that provide access to display and manage elements.

The password configuration tabs are available through a command from the main menu in any network browser: **Edit→Configure→Security→Clear Passwords**.

Prizm responds by opening a Task Attributes window, in which you cannot select an element configuration template, but you can specify everything else that the Task Manager allows you to specify: any of three ways to develop the list of elements that will be affected (two filtering methods and an element selection method), clearing or setting each of the two passwords in the element(s), whether to reboot the element(s), and whether to show this activity in the configuration history of the element(s).

This window consists of two tabs:

- General, shown in [Figure 147](#) below.
- Elements, shown and described under
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.

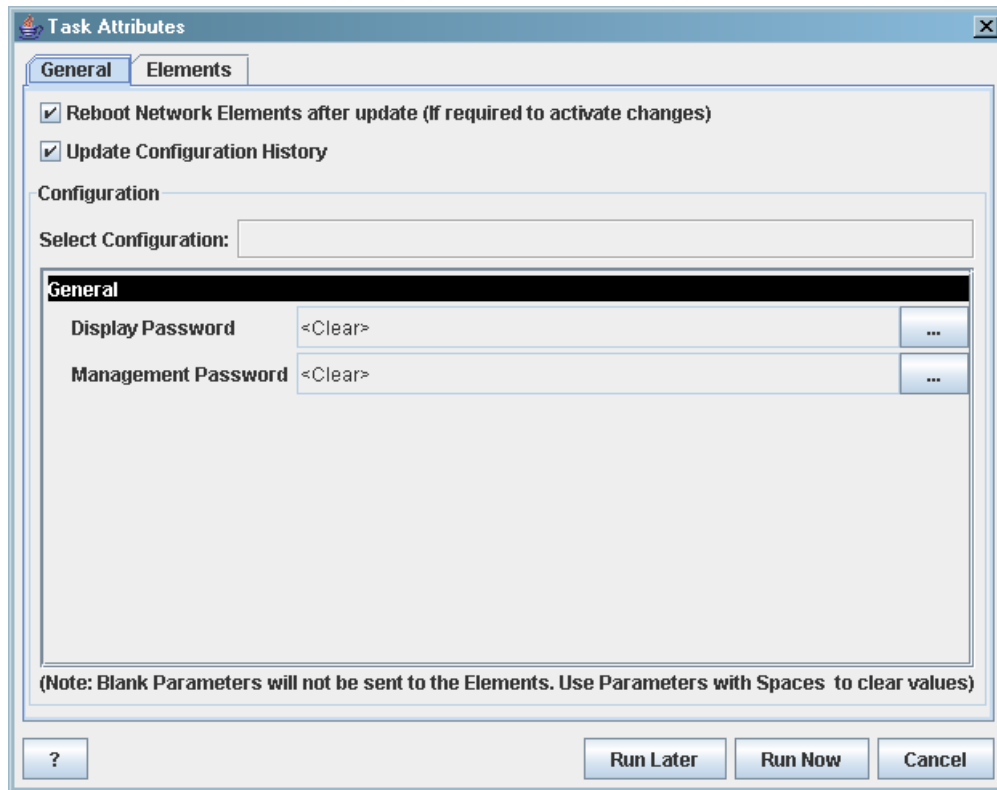


Figure 147: General tab of Task Attributes window from Clear Passwords command

In the password section of the General tab,

- the indication is **<Clear>**, regardless of whether one or both passwords are already configured.
- the two ellipsis buttons summon the Display Password and Management Password windows ([Figure 148](#) and [Figure 149](#)), where you can type in two matching strings to specify a new password.

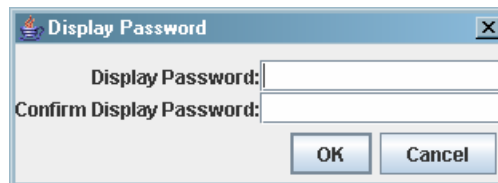


Figure 148: Display Password window

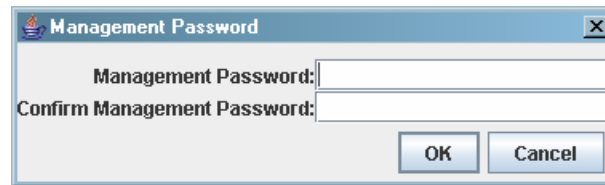


Figure 149: Management Password window

Initially, the white block associated with **Element List** in the Elements tab contains the names of all elements that were selected when you launched the **Clear Passwords** command (or none, if none were), but this does not limit you from creating a basic or advanced filter (through **Selection Criteria**) to use alone or with deliberate element selections in generating the list of elements that will have this password configuration applied. The filtering capabilities available through the Elements tab are identical to those in any task definition in Task Manager and in any network view construction (through **Network→Open a View→New**).

From either tab, you can set this password activity to **Run Now** or **Run Later**. As in Task Manager, clicking the **Run Later** button causes Prizm to open the Schedule Configuration window, with which you can specify when the password change should be implemented.

8.3 USING CANOPY ELEMENT CONFIGURATION TEMPLATES

Prizm includes the following predefined configurations from network views for user convenience:

- **Edit→Configure→Performance Logging→Disable Polling**
- **Edit→Configure→Performance Logging→Set Poll Interval to 15 Minutes**
- **Edit→Configure→Performance Logging→Set Poll Interval to 30 Minutes**
- **Edit→Configure→Trap Config**
- **Edit→Configure→General→Set Site/Element Information**
- **Edit→Configure→Authentication Settings→AP Authentication**
- **Edit→Configure→Authentication Settings→AP Authentication Disabled**
- **Edit→Configure→Authentication Settings→PLV Bridge Authentication**

Each of these included configurations is also available from the Define Networks tab at **Edit→Network Element Operations→Configure→Category**. These configurations are subject to control of the server administrator.

For each Canopy element type and/or for any mix of elements or element types, you can create a template

- into which you can save element configuration settings to implement at some later time.
- that you can apply to either specified elements or entire branches of a network tree.

- that you can also use to verify that the settings in an element match those in the template.



IMPORTANT!

Configuration management in Prizm neither displays nor enforces the valid ranges for Canopy attributes. Be mindful of these ranges or keep a reference source at hand as you create configuration templates. Moreover in some cases, Prizm may not prevent you from sending an invalid attribute, yet may not return an error message for it. This is the case if you attempt to send a Broadcast Repeat Count value to an AP with hardware scheduling.

Invalid attributes and values, case by case, may be adjusted in the element to within valid range or ignored, without indication back to Prizm about how they were resolved.

Each element configuration template *must* have a unique name.

8.3.1 Defining Template Attributes

Prizm uses the SNMP object identifiers (oid) to map the template attributes that you define, as described in this section, in one-to-one relationships to the Canopy element parameters. In several cases, the attribute has a different syntax from that of the parameter. This can be because the parameter name itself differs, from one element type to another or from one software release to another.

For example, the **RF Transmitter Output Power** attribute in Prizm corresponds to both

- the **Power Control** parameter in Canopy modules operating Release 7.2.9
- the **RF Transmitter Output Power** parameter in later releases.

In another example, the percentage of bandwidth that a module dedicates to the downlink is the **Bandwidth Percent Downlink** attribute in Prizm and the **Downlink Data** parameter in Canopy modules.

In other cases, the syntax of the attribute differs to more visibly associate it with other attributes of the same type. For example, the names of ten or more attributes begin with each of the following expressions:

- Bandwidth
- Filter
- NAT
- RF
- SNMP

An HTML document that describes each attribute is available from the main menu at **Help→Index**. When the Element Management System On-Line Help, click the link [Element Configuration Attributes Viewer](#) in the left pane to open this document. This link is shown in [Figure 150](#).

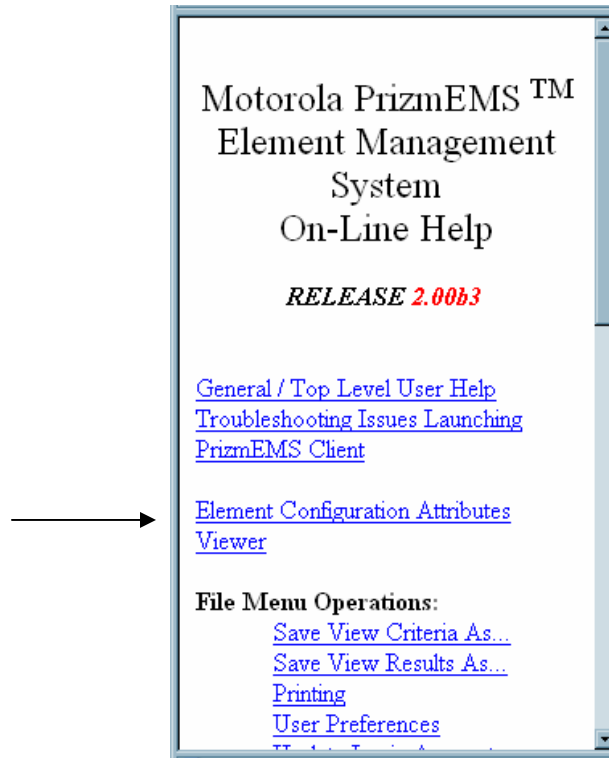


Figure 150: On-line Help links

An example portion of this help document, with links for device type to narrow the set of attributes displayed, is shown in [Figure 151](#).

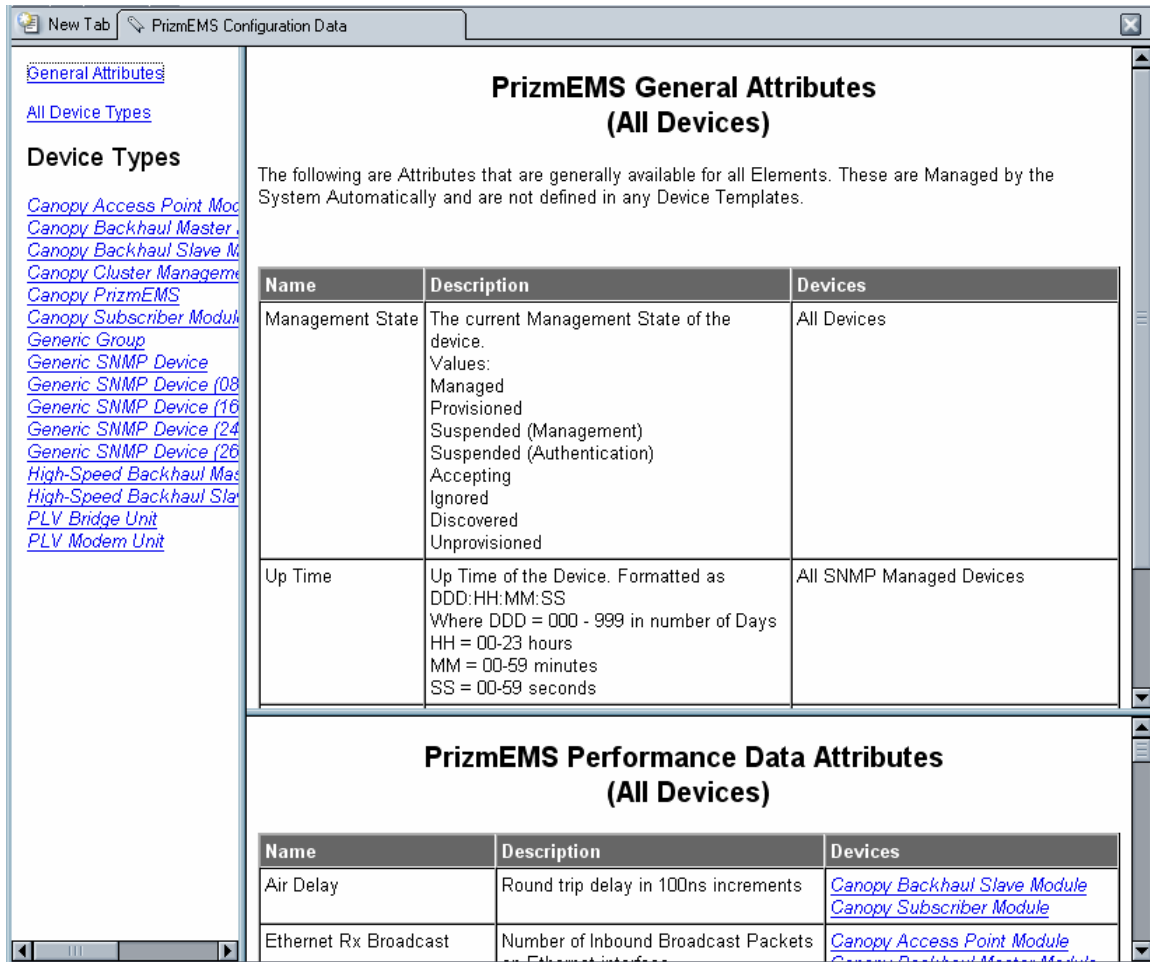


Figure 151: Example element configuration and performance attributes help document

The right portion of the tab is vertically split, with performance data definitions in the bottom pane.

8.3.2 Editing Templates

Editing an Individual Template

To define a configuration template, perform the following steps.

Procedure 61: Defining an element configuration

1. Select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab, in which the left pane lists all previously defined configurations by name, and the right pane displays the parameters of whatever configuration is highlighted in the left pane.
NOTE: A click of the refresh icon in this tab refreshes the list in the left pane. An example of this tab is shown in [Figure 155](#) on Page 272.

2. If you want Prizm to construct a current report on either all defined configurations or only one, perform the following steps:
 - a. If you want the report to include only one configuration, select that configuration in the left panel of the Define Configuration tab.
 - b. Select **File→Print** from the main menu.
RESULT: Prizm opens the Configuration Template window. An example of this window is shown in [Figure 152](#).

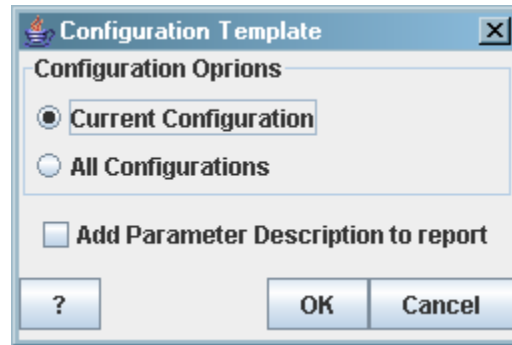


Figure 152: Configuration Template window

- c. Select either **Current Configuration** or **All Configurations**.
 - d. If you want parameter descriptions included, check the checkbox for **Add Parameter Description to report**.
NOTE: These are the blocks of text in the Description column of the Configuration Parameter Selection window. See [Figure 153](#).
 - e. Click **OK**.
3. Either
 - select **Edit→Add a Configuration→Custom Configuration**.
RESULT: Prizm opens a Configuration Parameter Selection window. An example of this window is shown in [Figure 153](#). This window includes text strings about each attribute and tooltip pop-up displays of the strings in longer format.
 - highlight a defined configuration in the left pane and select **Edit→Update the Configuration**.
RESULT: Prizm opens the Configuration Parameter Selection window with parameters that were previously set now checked.
NOTE: The menu path that this window displays indicates where you will find this configuration template when you want to apply the profile to selected SMs.

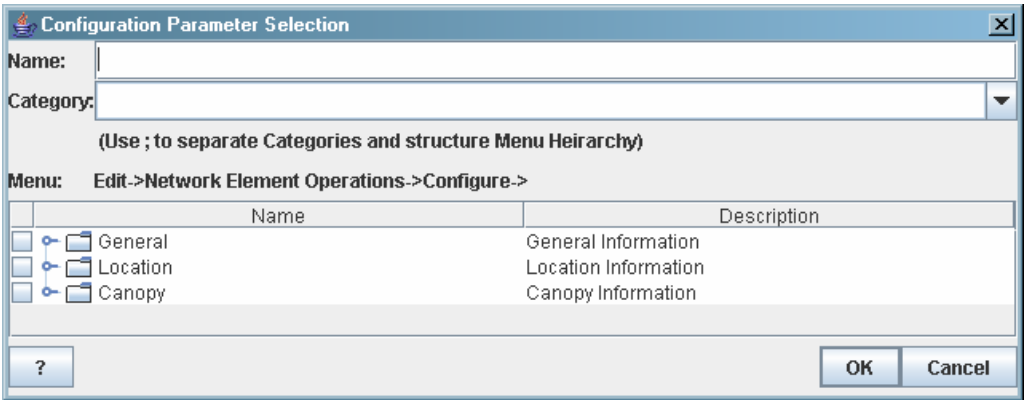


Figure 153: Example Configuration Parameter Selection window

In tree style, this window presents the selectable attributes that listed in [Table 23](#).

Table 23: Selectable attribute tree

Tree Position				Attribute
General				Site Name Site Contact Site Location Description Device Region Code Device Region Category Poll Interval ¹² Device Default Plug Mode Device Synch Mode RF Frame Timing Pulse Gated Web Auto Update
Location				GPS Latitude GPS Longitude GPS Altitude
Canopy	Radio	RF Settings	Frequency Selection	RF Frequency RF Frequency List RF Frequency Alternate 1 to 2
		RF Settings		RF 6.0 Compatibility RF Color Code RF Transmit Frame Spreading RF Broadcast Repeat Count RF Maximum Range RF Sector ID RF Transmitter Output Power RF Transmit Output Power Level RF Rate ¹³ RF HW Control Slot Number RF Antenna Gain RF Schedule Whitening RF PTP Antenna Gain RF Cable Loss RF Max Modulation Mode
		RF Security		RF Encrypt Downlink Broadcast RF Background BER Mode RF Scan Privacy

¹² The Poll Interval that you set for logging performance data is based on a first poll at midnight. So, Prizm will perform a 25-minute interval poll at 0:25, 0:50, 1:15, 1:40, 2:05, 2:30, and so forth. You can see more regular minute marks (0:20, 0:40, 1:00, 1:20, 1:40, 2:00... or 0:30, 1:00, 1:30, 2:00...) by setting this attribute to 20 or 30 minutes.

¹³ The RF Rate attribute is settable in only modules that operate on a software release that supports the 1X/2X operation parameter. In addition, four of the Bandwidth Control attributes are not settable from Prizm in earlier Canopy system releases, but are settable in Release 7.2.9 and later. Formerly RF 2X Rate.

Tree Position			Attribute
Canopy	Radio	Authentication Control	Authentication Mode Authentication Key Device Configuration Source Authentication Server 1 to 3 Web, Telnet, FTP Session Timeout
		Bandwidth Control ¹⁴	Bandwidth Allow License Use ¹⁵ Bandwidth Percent Downlink Bandwidth High-Priority Uplink Percentage Bandwidth Total NumUAckSlots Bandwidth UAckS Reserved High Bandwidth Total NumDAckSlots Bandwidth DACKS Reserved High Bandwidth Max Uplink Index Bandwidth Actual Uplink Index Bandwidth Total NumCtlSlots Bandwidth Total NumCtlSlots Reserved High Bandwidth High Priority Data Queue
		Bandwidth Control	Maximum Information Rate Bandwidth Uplink Sustained Rate Bandwidth Uplink Burst Allocation Bandwidth Downlink Sustained Rate Bandwidth Downlink Burst Allocation Bandwidth Broadcast MIR
			Committed Information Rate Bandwidth Low Priority Uplink CIR Bandwidth Low Priority Downlink CIR Bandwidth High Priority Channel Enable Bandwidth High Priority Uplink CIR Bandwidth High Priority Downlink CIR
		Device Link Configuration	Device Bridge Entry Timeout Device Ethernet Link Negotiation Speeds Device Power Up Mode Device Wireless Rate Cap Enable Device Ethernet Auto Negotiation Enable Device Ethernet Auto Mdx Enable Device Ethernet Link Drop Enable
		SMTP Configuration	SMTP Alert Enable SMTP Server IP SMTP Server Port SMTP Source Email SMTP Destination Email
		Software Update Configuration	Auto Update Server

¹⁴ The set of Canopy Bandwidth Control attributes is the same as the set that you can configure in a service plan. See [Figure 180: Configurable parameters in a service plan](#) on Page 309.

¹⁵ Where a RADIUS server maintains the authentication and bandwidth settings, the parameter **Bandwidth Allow License Use** is absent from this list.

Tree Position			Attribute
Canopy	Network Configuration		Management IP Mode RF Private Interface Address Network Default Gateway Address Network NTP Server Address TSL Bridging Untranslated ARP Device SM Isolation Network IP Access Filter Network Allowed IP Access 1 to 3 Device LLDP Message Mode Network MAC Layer Filtering Enable Network NTP Enable Network NTP Server Port Network NTP Poll Interval Network Time Zone Network Daylight Saving Enable
	Filter Configuration		Filter PPPoE Filter ARP Filter All Others
	Filter Configuration	Filter IPv4 Traffic	Filter SMB Filter SNMP Filter Bootp Client Filter Bootp Server Filter IPv4 Multicast Filter All Other IPv4
		Filter User Defined Ports	Filter User 1 to 3 Filter User 1 to 3 Port# Filter User 1 to 3 TCP Filter User 1 to 3 UDP
	VLAN Configuration		VLAN Enable VLAN Dynamic Learning VLAN Allow Only Tagged Frames VLAN Aging Timeout VLAN Management VID VLAN Untagged Ingress VID VLAN Membership VLAN Management Priority VLAN Priority Traffic Threshold
	NAT Configuration ¹⁶		NAT Enabled
	NAT Configuration	Generic NAT parameters	NAT ARP Cache Timeout NAT TCP Session Garbage Timeout NAT UDP Session Garbage Timeout
		NAT Port Mapping	Port Map 1 to 10 Protocol Type Port Map 1 to 10 Application Port number Port Map 1 to 10 Local Host IP

¹⁶ Some values for NAT attributes are settable in only modules that operate on a software release that supports those values.

Tree Position			Attribute	
Canopy	NAT Configuration	NAT DHCP Server Configuration		NAT DHCP Client Enabled NAT DHCP Server Enabled NAT DHCP Server Lease Timeout NAT DHCP Start IP NAT DHCP Server Lease IP addresses NAT DNS IP Address NAT DNS Preferred IP Address NAT DNS Alternate IP Address
		NAT DHCP Server Configuration	NAT Private Interface Configuration	NAT Private IP Address NAT Private Subnet Mask NAT DMZ Enabled NAT DMZ IP Address
			NAT Public Interface Configuration	NAT Public Gateway Address NAT RF Public Gateway Address
		General SNMP Configuration		
	Differentiated Services			Diff Service Code Point 1 to 63
	CMM Configuration ¹⁸			GPS Timing Pulse Port 1 to 8 Link Speed Configuration Port 1 to 8 Description Port 1 to 8 Uplink Port 1 to 8 VLAN Configuration Port 1 to 8 Power Status Port 1 to 8 Device Type

Prizm manages the VLAN switching mask for each uplink port in CMMmicro by accepting a decimal integer value for the **Port N VLAN Configuration** attribute and mapping that to a mask for the port. In this scheme, the value 255 (the decimal equivalent of 11111111) for this attribute has the effect of checking all checkboxes in the **VLAN Port Configuration** vertical list (associated with the desired port) on the Configuration page of the CMMmicro GUI, as shown for each port in [Figure 154](#). The value 0 (the decimal equivalent of 00000000) has the effect of checking none of the checkboxes.

¹⁷ Setting the IP address of the Prizm server as one of the trap IP addresses can avoid problems. For example, if you do not configure this and you disable authentication in an AP that had authentication enabled, then Prizm identifies its SMs as still being BAM controlled, and the **Authentication Occurred** attribute has the value **True**. See [AP Authentication Setup](#) on Page 291.

¹⁸ CMMmicro Release 2.2.x or later and CMM4 are configurable in Prizm Release 3.0. No earlier CMMmicro release is.

802.1Q ☒

Tagging

802.1Q

VLAN ID

1-4095

Uplink/VLAN Port Configuration

	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8
Uplink Port	☒	☒	☒	☒	☒	☒	☒	☒
VLAN Port configuration	N/A	Port 1 ☒	Port 1 ☒	Port 1 ☒	Port 1 ☒	Port 1 ☒	Port 1 ☒	Port 1 ☒
	Port 2 ☒	N/A	Port 2 ☒	Port 2 ☒	Port 2 ☒	Port 2 ☒	Port 2 ☒	Port 2 ☒
	Port 3 ☒	Port 3 ☒	N/A	Port 3 ☒	Port 3 ☒	Port 3 ☒	Port 3 ☒	Port 3 ☒
	Port 4 ☒	Port 4 ☒	Port 4 ☒	N/A	Port 4 ☒	Port 4 ☒	Port 4 ☒	Port 4 ☒
	Port 5 ☒	Port 5 ☒	Port 5 ☒	Port 5 ☒	N/A	Port 5 ☒	Port 5 ☒	Port 5 ☒
	Port 6 ☒	Port 6 ☒	Port 6 ☒	Port 6 ☒	Port 6 ☒	N/A	Port 6 ☒	Port 6 ☒
	Port 7 ☒	Port 7 ☒	Port 7 ☒	Port 7 ☒	Port 7 ☒	Port 7 ☒	N/A	Port 7 ☒
	Port 8 ☒	Port 8 ☒	Port 8 ☒	Port 8 ☒	Port 8 ☒	Port 8 ☒	Port 8 ☒	N/A

Note: This is NOT 802.1Q VLAN tagging. This is port based VLAN switching only.

Clear Default Clear Default Clear Default Clear Default Clear Default Clear Default Clear Default

Clear All Default All

Figure 154: Example Configuration page of CMMmicro Release 2.2.1, VLAN parameters

Procedure 61: Defining an element configuration, continued

4. If you are defining a new configuration, then
 - a. For **Name**, type in a designation that you will associate with this template that you will soon define.
 - b. at **Category**, optionally type in a category in which Prizm should show this configuration as being sorted.
NOTE: The category can be multilevel, in order of higher to lower, with semicolons delimiting between the levels. This is similar to inputting the submenu hierarchy for saved view criteria.
5. Check the checkbox of any parameter you wish to configure in this template.

6. Click **OK**.

RESULT: Prizm opens a right-side pane in the Define Configurations tab, displaying all of the parameters that you checked. An example of this pane is shown in [Figure 155](#).

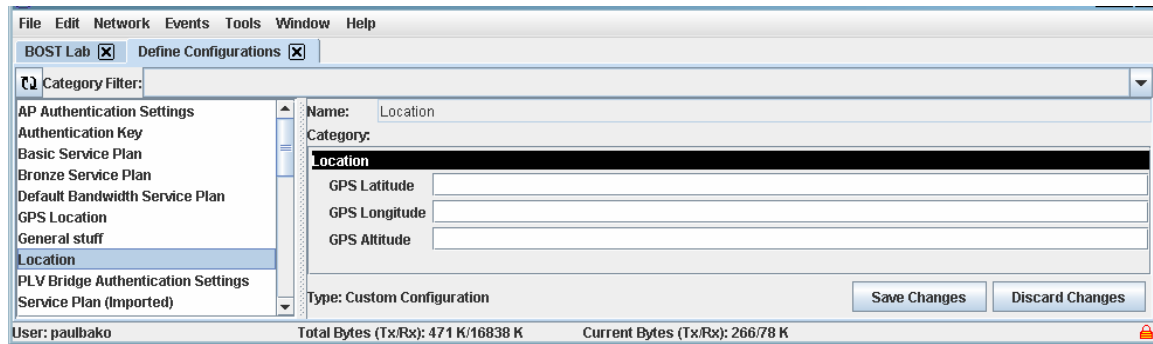


Figure 155: Example Define Configurations tab

7. To see the full definition of any parameter and the consequences of various settings for it, see *Canopy System Release 8 User Guide*.
NOTE: Parameter names in the Prizm GUI are not necessarily identical to those in the module GUIs.
To see a full description of an attribute in the right pane, mouse over the attribute for the length of time set (in **Preferences**) for tooltip pop-ups.
8. Set or change any parameter(s) as desired.
NOTE: Prizm will apply every non-blank value to the element(s), even in the case where the current value that Prizm detects is identical to the value you are specifying. This is by design so that, if the detection is wrong, the desired value is still enforced.
9. Review all of the parameters as a precaution.
10. If for any reason you want to reset the configuration to the settings that it had before you began to edit them, click **Discard Changes**.
If you are satisfied with all of the changes, click **Save Changes**.
RESULT: The configuration has been modified but, until you deliberately push the modified configuration to elements, Prizm will not push the changes out to them, even if the elements were previously configured by it.

===== end of procedure =====

Generating Similar Templates

Prizm allows you to copy a configuration to another while preserving the original. This can be helpful where

- you want to push an identical set of parameter values to elements of different element types, but you have your templates named such that they indicate the element types for which you created them.

- you have a core set of parameter values that you want to push to all or many elements, and you want to use this set as a building block for other discrete templates.

To copy a configuration to another, perform the following steps.

Procedure 62: Copying an element configuration

1. Select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab, in which the left pane lists all previously defined configurations by name, and the right pane displays the parameters of whatever configuration is highlighted in the left pane.
2. In the left pane, highlight the defined configuration that you want to copy.
3. Select **Edit→Create a Duplicate Configuration**.
RESULT: Prizm opens an Input window and prompts for the name to which you want the original configuration copied.
4. Enter a name in the Input window.
5. Click **OK**.
6. If you want to edit the new configuration to change some parameters, use [Procedure 61](#) on Page 264.

===== end of procedure =====

8.3.3 Configuring Network Elements

The network browser provides **Edit** menu commands for you to apply a configuration template to a selected element or batch of elements. This section documents the use of these commands. If you prefer instead to perform a batch configuration on a schedule, use the section titled [Scheduling Network Element Configuration](#) on Page 277. Regardless of the method that you use, configuring an element requires

- that its **Management State** attribute is **Managed**. See [BAM Server-licensed Operations](#) on Page 42.
- that it has the correct value for the **SNMP Accessing Subnet Mask** attribute. See [Procedure 13: Configuring the subnet for Prizm to apply](#) on Page 101.

To configure an element from a template, perform the following steps.



IMPORTANT!

Any values that you push for parameters that Prizm categorizes as General (**Site Name**, **Site Location**, and **Site Contact**) do not require a reboot of the Canopy element in order to take effect. *All other changes do.* See [Moving an Element within the Hierarchy](#) on Page 146.

Procedure 63: Pushing a configuration to an element

1. In the network browser, select (check the checkbox of) the element(s) that you want to configure either as a single element or along with all Canopy elements that are lower in the branch of the network tree in Prizm.

IMPORTANT: The following are the conditions that Prizm applies to whether an element is selected:

- If any elements are checked, Prizm considers these to be the only selected elements. (In this case, an element that is highlighted but not checked *is not* considered to be also selected.)
- If any branches are selected, Prizm considers the top-most checked element as selected.
- If no element is checked but one is highlighted, Prizm considers the highlighted element as selected.

Prizm applies these conditions consistently, regardless of the purpose for which elements are being selected.

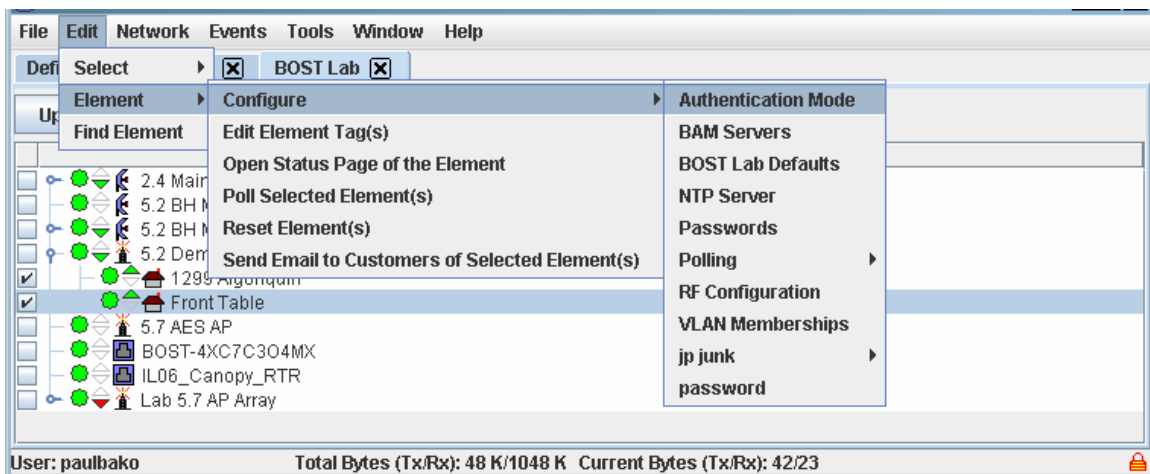


Figure 156: Example selection of configuration for selected element(s)

2. Select **Edit→Element→Configure→NameOfDefinedConfiguration** (as shown above).

RESULT: Prizm opens the Apply Configuration window. And example of this window is shown in [Figure 157](#).

Apply Configuration: BAM Servers

Configuration Mode

☒ **Selected Network Branches (Configures downlink Elements first)**

☐ **Selected Network Elements**

☒ **Reboot Network Elements after update (If required to activate changes)**

Attribute	Value
Authentication Server 1	169.254.253.98
Authentication Server 2	0.0.0.0
Authentication Server 3	0.0.0.0

(Note: Blank Parameters will not be sent to the Elements. Use Parameters with Spaces to clear values)

? OK Cancel

Figure 157: Example Apply Configuration window

3. For Configuration Mode, select either
 - **Selected Network Elements**
 - **Selected Network Branches (Configures downward Elements first)**
NOTE: If you select this option, then Prizm configures the elements in the order of furthest to nearest in the network branch.
4. If you want the element(s) to immediately reboot after these parameter values are written to the element(s), check **Reboot Network Elements after update**.
RESULT: If all parameters written to the element(s) are immediately effective without a reboot, then Prizm *will not* attempt to reboot the element(s). If any parameter other than those that Prizm categorizes as General has been written to the element(s), then Prizm will reboot the element.
 However, if some of the value settings are settable and others are not, then *none* will be set and the element(s) *will not* be rebooted.

If you want to reboot at a later time to apply the changes, leave this box unchecked.

RESULT: Prizm logs a message as a reminder that changes will not take effect until the reboot. If all parameters written to the element(s) are immediately effective without a reboot, then Prizm *will not* attempt to reboot the element(s). If any parameter other than those that Prizm categorizes as General has been written to the element(s), then the web page(s) of the element(s) will prominently display **Reboot Required**.

NOTE: At any later time (for example, after of series of configurations from various templates have been pushed onto the selected elements) you can reboot them in batch by

- (1) ensuring that the desired set of elements are still or again selected (checked).
- (2) selecting **Edit→Element→Reset Elements**.

5. Review the parameter values as a precaution.
6. Change any value that is not desired.
7. Click **OK**.

RESULT: Prizm opens the Configure window with a prompt to confirm your intent to proceed. An example of this window is shown in [Figure 158](#).

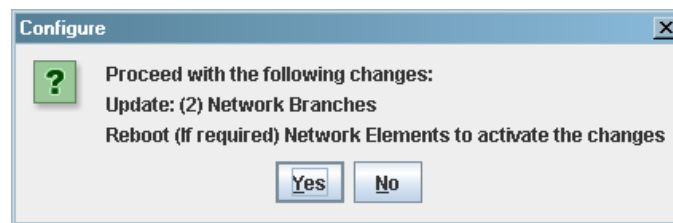


Figure 158: Example Configure window

8. Either
 - click **No** to abort the element update.

RESULT: The Apply Configuration window is still available for you to modify.
 - click **Yes** to proceed.

RESULT: Prizm begins to push all parameters that are set in the configuration, except any that the element does not support, and opens the Applying Configuration window. An example of this window is shown in [Figure 159](#).

NOTE: If you have multiple configurations being simultaneously applied, Prizm opens a separate Applying Configuration window for each.

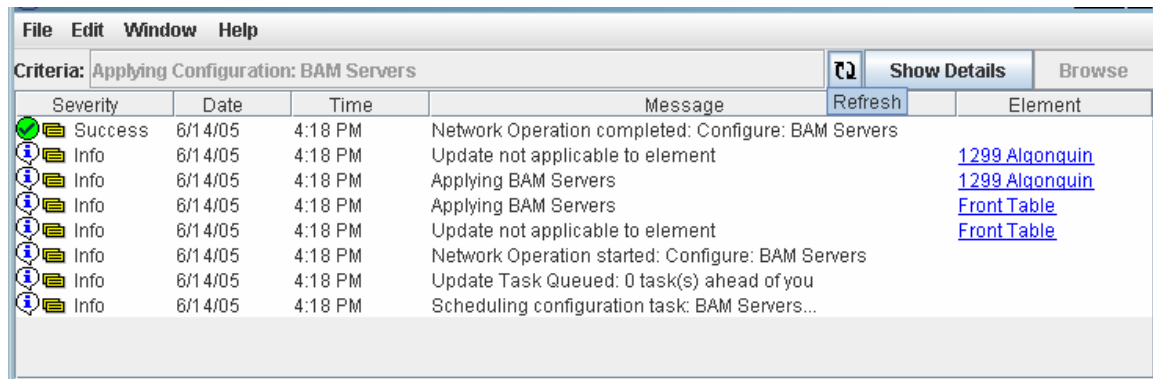


Figure 159: Example Applying Configuration window

9. If for any reason you want to abort the element update at this point, close the Applying Configuration window.
RESULT: Prizm opens a Confirm Close window, prompting you for whether you are sure.
 - a. If you are sure, click **Yes**.
 - b. If you are *not* sure, click **No**.
10. If you want to continue the element update, leave the Applying Configuration window open.

===== end of procedure =====

8.3.4 Scheduling Network Element Configuration

The Prizm console provides a **Tools** menu command for you to apply a configuration template to a selected element or batch of elements on demand, once at a specified time, or repeatedly on a schedule. This section documents the use of that command. If you prefer instead to perform a configuration from the Network Browser, use the section titled [Configuring Network Elements](#) on Page 273. Regardless of the method that you use, configuring an element requires

- that its **Management State** attribute is **Managed**. See [BAM Server-licensed Operations](#) on Page 42.
- that it has the correct value for the **SNMP Accessing Subnet Mask** attribute. See [Procedure 13: Configuring the subnet for Prizm to apply](#) on Page 101.

You can set up an element configuration task in the Task Scheduler of Prizm. As with any other task in the Task Scheduler, you specify a dynamic element list to be built anew (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. Further, you can expressly include only those elements or their full branches. The elements can be of Canopy, PTP, Powerline, or Ultra-Light branding and each must have a valid IP address. To define a configuration task, perform the following steps.

Procedure 64: Defining an element configuration task

1. From the main menu, select **Tools→Task Scheduler**.
RESULT: Prizm opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#) on Page 381.
2. Select **Edit→Add New Task**.
RESULT: Prizm opens the Select Task Category window. An example of this window is shown in [Figure 232](#) on Page 382.
3. Highlight **Configure Network Element**.
4. Click **OK**.
RESULT: Prizm opens a Task Configuration window. An example of this window is shown in [Figure 160](#).

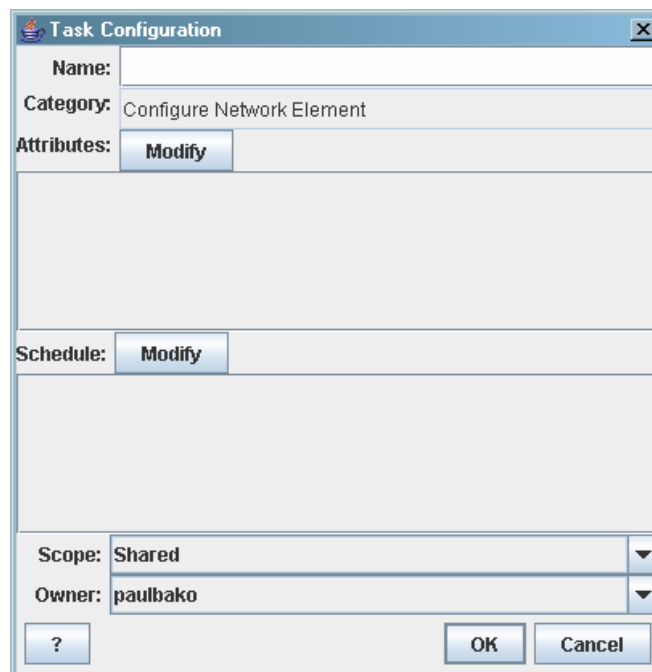


Figure 160: Example Task Configuration window, Configure Network Element task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this window is shown in [Figure 161](#).

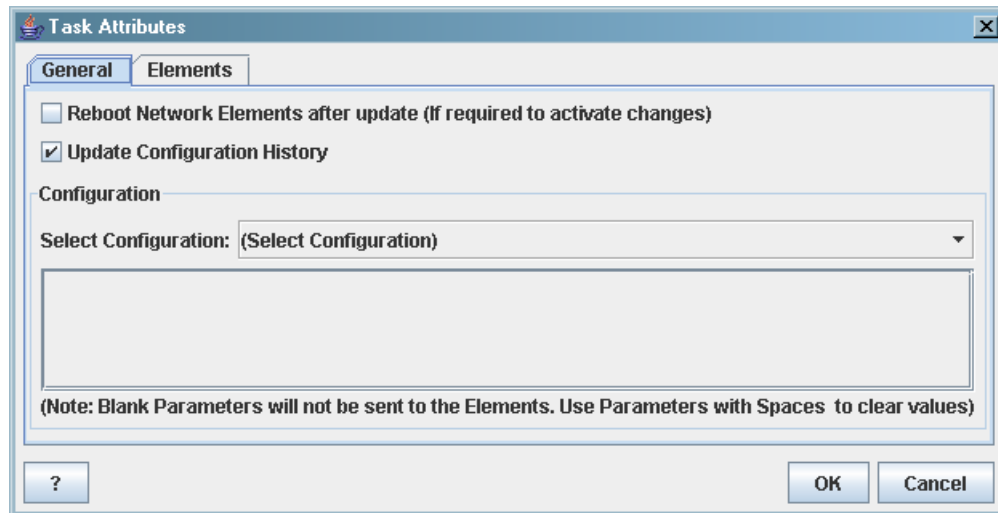


Figure 161: Example Task Attributes window, Configure Network Element task

7. If you want Prizm to reboot elements after configuring them, select **Reboot Network Elements after update (if required to activate changes)**.
NOTE: If all parameters written to the element(s) are immediately effective without a reboot, then Prizm *will not* attempt to reboot the element(s). If any parameter other than those that Prizm categorizes as General has been written to the element(s), then Prizm will reboot the element. However, if some of the value settings are settable and others are not, then *none* will be set and the element(s) *will not* be rebooted.
 If you want to reboot at a later time to apply the changes, leave this box unchecked. At any later time (for example, after of series of configurations from various templates have been pushed onto the selected elements) you can reboot them in batch by scheduling a reboot task for them (see [Rebooting Network Elements](#) on Page 285).
8. If you want Prizm to *not add* a record of this activity to the configuration history of the element(s), then *uncheck* **Update Configuration History**.
9. For **Select Configuration**, click the associated down arrow.
RESULT: Prizm opens a Select Configuration window with template categories expanded. An example of this kind of window is shown in [Figure 162](#).

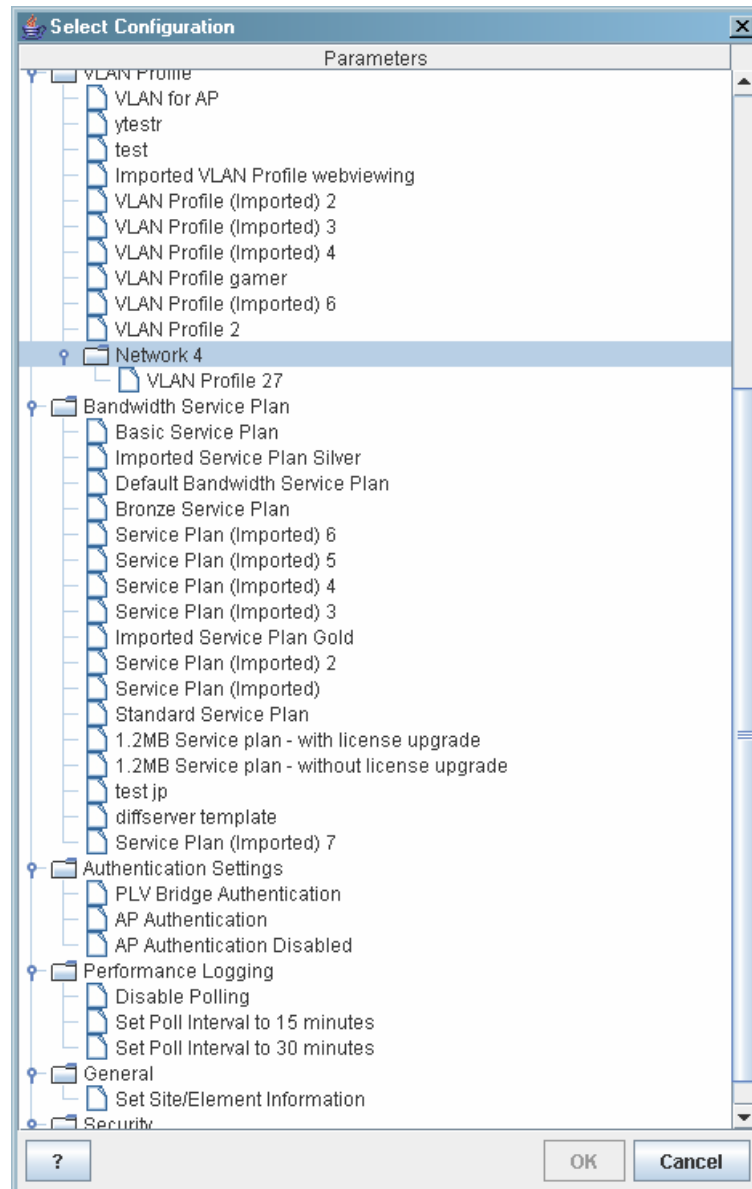


Figure 162: Example Select Configuration window

10. Highlight a configuration.

11. Click **OK**.

NOTE: If you highlight a category, then the OK button is gray and not selectable. You can attach only one template to this task. If you want to apply more than one configuration template to the same group of elements, you must define another or more tasks, each with a different template selected, and each with the same group of elements specified.

RESULT: Prizm adds the configuration to the Task Attributes window. An example is shown in [Figure 163](#).

Task Attributes

General | **Elements**

☐ Reboot Network Elements after update (If required to activate changes)

☒ Update Configuration History

Configuration

Select Configuration: Basic Service Plan

Bandwidth Control

Bandwidth Allow License Use: Disabled

Maximum Information Rate (MIR)

Bandwidth Uplink Sustained Rate	11000
Bandwidth Uplink Burst Allocation	300000
Bandwidth Downlink Sustained Rate	11000
Bandwidth Downlink Burst Allocation	300000

Committed Information Rate (CIR)

Bandwidth Low Priority Uplink CIR	0
Bandwidth Low Priority Downlink CIR	0
Bandwidth High Priority Channel Enable	Disabled
Bandwidth High Priority Uplink CIR	0
Bandwidth High Priority Downlink CIR	0

(Note: Blank Parameters will not be sent to the Elements. Use Parameters with Spaces to clear values)

? OK Cancel

Figure 163: Example Task Attributes window, selected configuration added

12. Click the Elements tab.
13. Select the elements that are to be configured by this task.
NOTE: The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
14. Click **OK**.
15. Back in the Task Configuration window, click the **Modify** button associated with **Schedule**.
16. Schedule the task.
NOTE: Task scheduling is defined under [Scheduling Prizm Tasks](#) on Page 381.

17. Back in the Task Configuration window, use the drop-down menu to select the **Scope** of the task **Shared** (can be modified or run by any other user) or **Private** (can be modified or run by only the **Owner** specified in the next field).
18. Use the drop-down menu to select a user who will own (be allowed to modify or run) this task.
19. Click **OK**.
RESULT: The list in the Define Tasks tab includes the new Configure Network Element task.
20. Highlight the task.
21. From the main menu, select **Edit→View Task**.
22. Review the description in the Task Configuration window.
23. When finished, click the **Close** button.
24. If you want this task to run on its defined schedule, select **Edit→Activate Task**.
If you want Prizm to indefinitely delay implementing the schedule, then select **Edit→Deactivate Task**.
NOTE: If a task is active, a check appears in the checkbox adjacent to the task name in the Define Tasks tab.

===== end of procedure =====

8.3.5 Removing a Defined Configuration

From time to time, you may want to remove, rather than edit and reuse, a defined configuration. For example, where inadvertently pushing the values in the configuration to elements would be particularly dangerous to network operations, but another already defined configuration obviates editing the first. To remove a configuration, perform the following steps.

Procedure 65: Deleting a defined configuration

1. Select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab, in which the left pane lists all previously defined configurations by name, and the right pane displays the parameters of whatever configuration is highlighted in the left pane.
2. In the left pane, highlight the defined configuration that you want to delete.
3. Select **Edit→Delete the Configuration**.
RESULT: Prizm removes its record of the configuration, and consequently the configuration no longer is included in the list in the left pane of the Define Configurations tab. Moreover, this configuration cannot be recalled in Prizm, but can be replicated, in case you ever want to define a new identical one.

===== end of procedure =====

8.4 DETECTING CHANGES IN CANOPY PARAMETER VALUES

For each parameter that Prizm has configured on an element, Prizm provides a record of both the last previous detected value and the value that Prizm pushed to the element. The detection occurs when the element is accepted into its network and also whenever Prizm receives a reboot trap from the element. Prizm places this record in the History tab of the element details pane. An example of this tab is shown in [Figure 164](#).

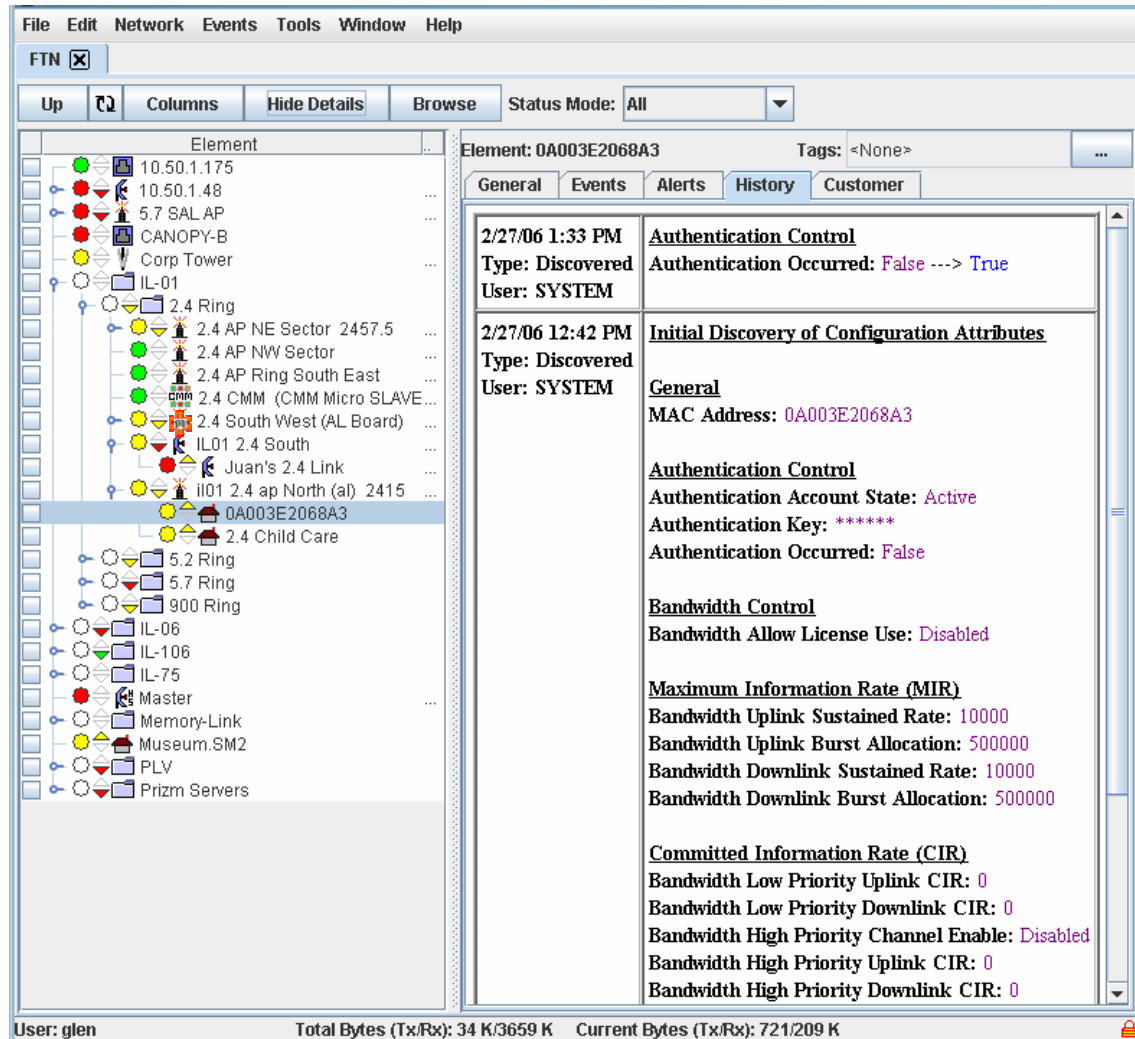


Figure 164: Example History tab in element Details pane

Check these records after pushing a configuration, particularly where having some of the values set and others ignored (because they were not settable) could have a harmful effect on the network, on customers, or even on how you interpret the network data that you monitor.

For Canopy elements, Prizm can

- monitor specially tagged elements for any changes in parameter values.
- generate an alert that informs you that a value from the last previous configuration through Prizm has changed, identifying the element but not the specific parameter.

When you see such an alert, you can access the History tab of the element Details pane to see the parameter and its previous and present values. This will help you decide whether to take any further action. You can apply a system tag to the element, instructing Prizm on the severity of the alert to generate when a parameter value has been changed: **Cfg Manager Critical**, **Cfg Manager Info**, **Cfg Manager Major**, **Cfg Manager Minor**, and/or **Cfg Manager Warn** (among other tags).

However, these tags are installation specific. To find the tag that activates this capability on an element in your network, ask your Prizm server administrator to identify it.

8.5 HANDLING EQUIPMENT REPLACEMENTS AND REDEPLOYMENTS

During a refresh, Prizm detects if an IP address points to a different MAC address, as in a replacement module. How Prizm responds to this detection is the same as if it detects this during auto discovery. See [Subnet Configurations](#) on Page 100.

Prizm allows you to change the MAC address or IP address of an element without having any other part of the EMS record changed. If this is a better alternative than the default treatment that Prizm applies when it detects a MAC address change, perform the following steps when you replace an element.

Procedure 66: Handling an element replacement and redeployment

1. From the main menu, select **Network→Define Networks**.
2. In the right pane, select (highlight) the individual replacement element.
3. From the main menu, select **Edit→Modify Element IP and MAC**.

RESULT: Prizm opens the Modify Element IP and MAC window. An example of this window is shown in [Figure 165](#).

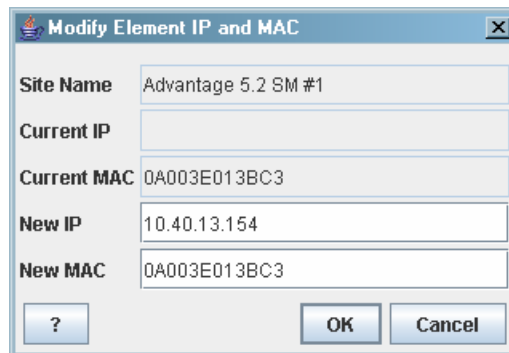


Figure 165: Example Modify Element IP and MAC window

4. Update the MAC address to that of the replacement element.
5. If necessary, update the IP address of the replacement element.
6. Click **OK**.
RESULT: Prizm associates the replacement device with the original element ID and retains the historical information for the original deployment site. Address changes are effective in only Prizm, not in the device also.
7. If the replacement element needs to be accepted for management, use [Procedure 20](#) on Page 129.
8. If the replacement element needs to authenticate in the BAM subsystem of Prizm, configure its **Authentication Key** attribute accordingly.
9. If you are using RADIUS to maintain authentication and bandwidth settings, update the MAC address in the RADIUS database as well.

===== end of procedure =====

8.6 REBOOTING NETWORK ELEMENTS

To reboot (reset) an element, in the Network Browser view, check the far-left box that is associated with the row of the element. Then select **Edit→Reboot Element(s)**.

NOTE: In the Define Networks tab, this option is available at

Edit→Network Element Operations.

RESULT: Prizm resets the checked elements in the sequence of lowest to highest in the hierarchy. Prizm executes resets concurrently on elements that are not within the same tree path.

Alternatively, you can set up a task in the Task Scheduler of Prizm to reboot all elements that you specify for the task. To do so, perform the following steps.

Procedure 67: Rebooting network elements on schedule

1. From the main menu, select **Tools→Task Scheduler**.
RESULT: Prizm opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#) on Page 381.
2. Select **Edit→Add New Task**.
RESULT: Prizm opens the Select Task Category window. An example of this window is shown in [Figure 232](#) on Page 382.
3. Highlight **Reboot Network Element**.
4. Click **OK**.
RESULT: Prizm opens a Task Configuration window. An example of this window is shown in [Figure 166](#).

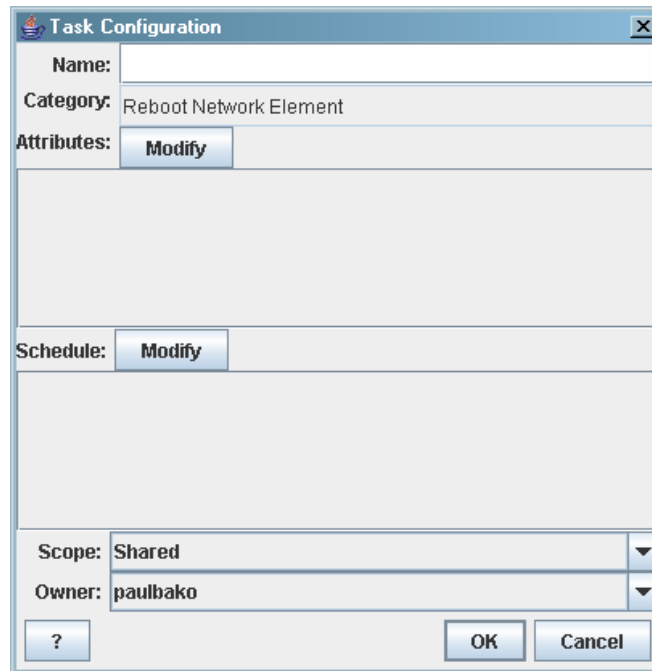


Figure 166: Task Configuration window, Reboot Network Element task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this kind of Task Attributes window is shown in [Figure 167](#).



Figure 167: Example Task Attributes window, Reboot Network Element task

7. If you want the element(s) rebooted only if a reboot is required for implementing a change, check the checkbox of **Reboot only if Device Reboot is Required**.
8. Click the Elements tab.

9. Select the elements that are to be affected by this task.
NOTE: The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
10. Click **OK**.
11. Back in the Task Configuration window, click the **Modify** button associated with **Schedule**.
12. Schedule the task.
NOTE: Task scheduling is defined under [Scheduling Prizm Tasks](#) on Page 381.
13. Back in the Task Configuration window, use the drop-down menu to select the **Scope** of the task **Shared** (can be modified or run by any other user) or **Private** (can be modified or run by only the **Owner** specified in the next field).
14. Use the drop-down menu to select a user who will own (be allowed to modify or run) this task.
15. Click **OK**.
RESULT: The list in the Define Tasks tab includes the new Reboot Network Element task.
16. Highlight the task.
17. From the main menu, select **Edit→View Task**.
18. Review the description in the Task Configuration window.
19. When finished, click the **Close** button.
20. If you want this task to run on its defined schedule, select **Edit→Activate Task**.
 If you want Prizm to indefinitely delay implementing the schedule, then select **Edit→Deactivate Task**.
NOTE: If a task is active, a check appears in the checkbox adjacent to the task name in the Define Tasks tab.

===== end of procedure =====

8.7 ACCESSING ELEMENT WEB PAGES

At any time, a Prizm network administrator can access element web pages to view data and change element configuration parameters, even where the element is not directly accessible from the client machine. This access is secure through the Secure Sockets Layer (SSL) protocol and the HTTPS standard, which supports certificates for the Prizm server web proxy functionality.

For security, the following controls affect whether you can use this feature:

- This feature must be enabled on the Prizm server.
- You must have admin (**A**) access to the network in which the element is accepted. See [Figure 15](#) on Page 76.



NOTE:

The web proxy feature *is not* supported in systems that are only BAM server licensed (not also Prizm EMS server licensed). This is because the BAM subsystem in Prizm does not have access to Canopy module passwords.

To access the element GUI from a network view, perform the following steps.

Procedure 68: Accessing web pages from a network view

1. Select (highlight) the element rows or check the checkboxes of the elements in the view.
2. Select **Edit→Open Status Page of the Element**.

===== end of procedure =====

To access an element GUI from an event view, perform the following steps.

Procedure 69: Accessing a web page from an event view

1. In the Element column of the Event Viewer, click the link for the element.
RESULT: Prizm opens a network browser window that contains and highlights that element.
2. In that network browser window, select **Edit→Open Status Page of the Element**.

===== end of procedure =====

To access an element GUI from the Define Networks tab, perform the following steps.

Procedure 70: Accessing web pages from the Define Networks tab

1. Select (highlight) the element rows or check the checkboxes of the elements in the tab.
2. Select **Edit→Network Element Operations→Open Status Page of the Element**.

===== end of procedure =====

From the Status web page or General Status tab of the element, you can access any other web page, including configuration pages, of that element by clicking on the corresponding navigation button on the left side of the web page, as if your access were direct. An example element General Status tab is shown in [Figure 168](#).

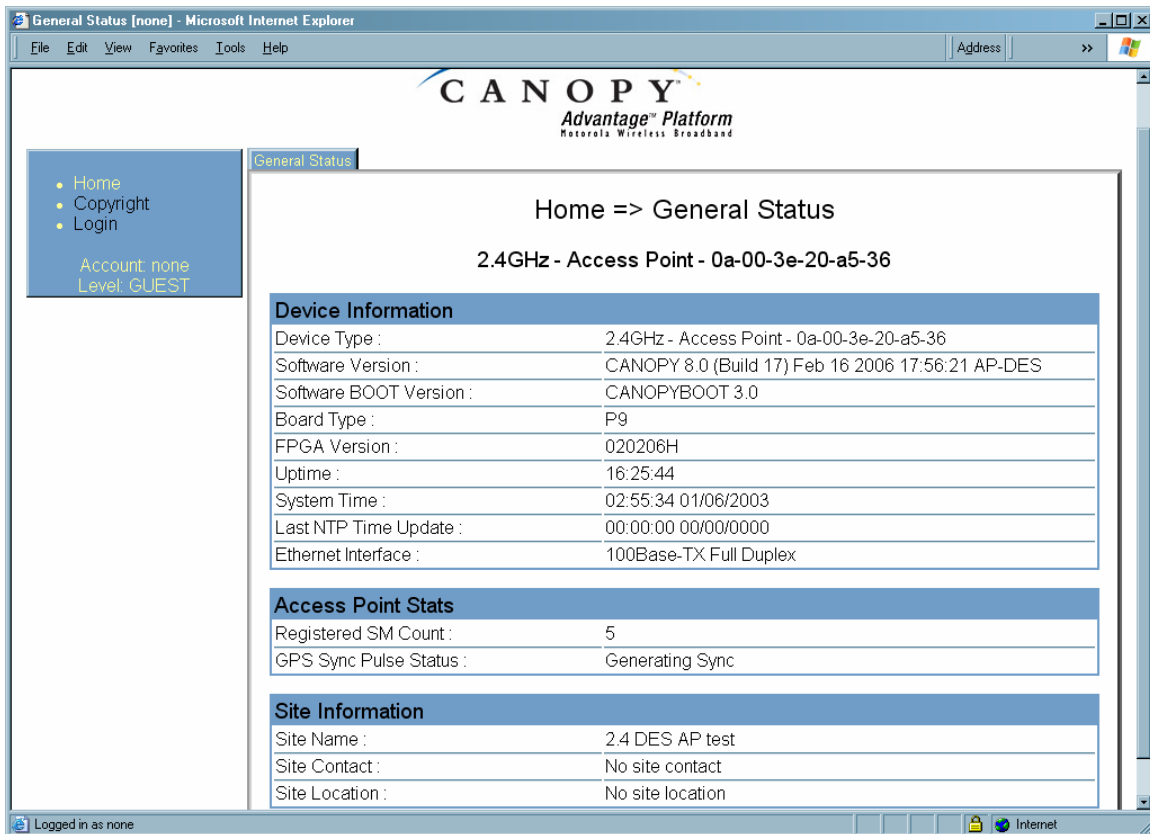


Figure 168: Example General Status tab, AP GUI

For more information about the web pages of Canopy modules, see *Canopy System Release 8 User Guide*.

CAUTION!



A risk is inherent wherever more than one user can access the web interface of an AP. This is because only one LUID can be viewed at a time through an AP. If User 1 makes changes in the Configuration page of an SM through its AP, then—unknown to User 1—User 2 changes the LUID on the AP before User 1 implements the changes, the changes are implemented on the SM that User 2 chose. Neither user is aware that this has occurred. Using the Double Proxy feature without controls against this is *not recommended*.

If an error occurs when you try to open a successive page, then Prizm returns an error message, as shown in [Figure 169](#).

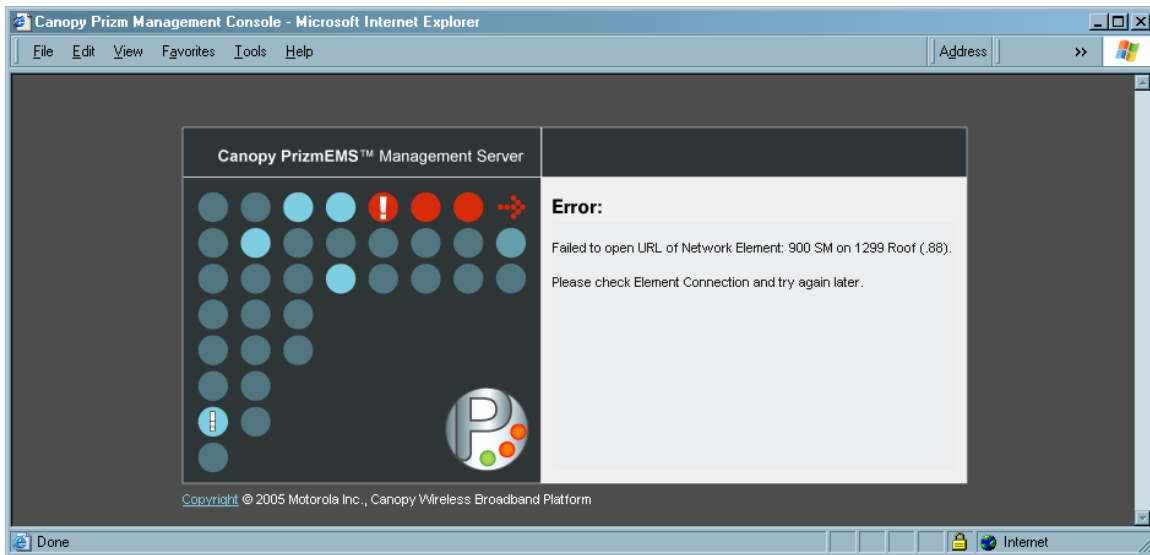


Figure 169: Element connection error message



RECOMMENDATION:
If the connection error message displays even though you believe that you should have been granted access, close all of your browser sessions including the one in which you launched Prizm, then retry. This may be necessary to purge security information where a browser does not automatically do so after each successful access attempt.

This connection error can occur in *at least* the following situations:

- opening your first (only) element web page through Netscape, Firefox, or the Linux Mozilla browser.
- opening a web page of a second element while a web page of the first element is still open.

These errors result from how various browsers handle security certificates and when those certificates are valid or invalid. You may be able to simultaneously gain web access to the GUIs of two or more elements if you check the checkboxes of the elements in the view and then select **Edit→Open Status Page of the Element**.

8.8 MANAGING AUTHENTICATION

What was Canopy Bandwidth and Authentication Manager (BAM) functionality is included in Prizm, with certain notable differences. Prizm provides two predefined authentication templates, one for configuring APs and the other for configuring Powerline MU/Gateways. The former template also configures Canopy 400 Access Point (CAPxx400) elements.

8.8.1 AP Authentication Setup

Setting up a Canopy Access Point or a Canopy 400 Access Point (CAPxx400) element for authentication includes identifying one, two, or three authentication servers by their IP addresses. Where you identify more than one, these can be any mix of servers that operate on Prizm EMS server and BAM server licenses. If you have a server that is licensed as Prizm EMS server, then you would typically perform all of your management operations, including BAM, in the GUI of that server as Canopy recommends. Thus, that server would hold a BAM server license as well.

Your other server(s) in a redundant configuration can hold BAM server license(s). However, the AP ignores any drop session request, or service plan or VLAN profile change, sent from an IP address that is not in its list of authentication servers. Since it does, you should observe the following admonitions:

- *Do not* insert only some authentication server IP address(es) into some APs and only others into other APs, which you may have been inclined to do for load balancing.
- For BAM operations, ensure that the server in which you execute the operation (your Prizm EMS server-licensed server) is in the list of authentication servers in all APs.

Whether the server in which you make an SM management change is in the list in the AP determines when that change becomes effective, as described in [Table 24](#).

Table 24: When BAM changes for subscribers are effective

Operation Performed in the Server	Effect of the Change	
	If Server Is Listed in the AP	If Server Is Not Listed in the AP
Delete a BAM-managed SM or CPEo that is currently on the network	Causes the current SM or CPEo session to drop.	Session remains up until SM or CPEo reboots or re-registers.
Move a BAM-managed SM or CPEo that is currently on the network to the Ignored Elements list		
Suspend Authentication Account State for an SM or CPEo that is currently on the network		
Change value of any attribute in a service plan or a VLAN profile	New attribute values are effective immediately.	Old attribute values remain effective until SM or CPEo reboots or re-registers, despite that the operation is shown as successful and the General and History panes indicate the changes.
Apply a different service plan or VLAN profile		

In a single window, you can configure any or all APs in a network to require or cease to require authentication. To do so, perform the following steps.

Procedure 71: Configuring APs for authentication management

1. In a network view, select the Canopy Access Point or Canopy 400 Access Point (CAPxx400) in one of the following ways:
 - Highlight a single AP.
 - Check the boxes of multiple APs that you want identically configured for authentication management.
 - Highlight an element under which you want all APs identically configured for authentication management.

2. From the main menu, select **Edit→Configure→Authentication Settings→AP Authentication**.

NOTE: In the Define Networks tab, this configuration is available at

Edit→Network Element Operations→Configure→Authentication Settings.

RESULT: Prizm opens a Task Attributes window. An example of this window is shown in [Figure 170](#).

The screenshot shows the 'Task Attributes' window with the 'General' tab selected. It contains several checkboxes for 'Reboot Network Elements after update' and 'Update Configuration History'. Below these is a 'Configuration' section with a 'Select Configuration' dropdown set to 'AP Authentication'. A table titled 'Authentication Control' lists settings for 'Authentication Mode' (set to 'Authentication Enabled'), 'Device Configuration Source' (set to 'BAM'), and three 'Authentication Server' IP addresses (10.40.0.254, 0.0.0.0, and 0.0.0.0). A note at the bottom states: '(Note: Blank Parameters will not be sent to the Elements. Use Parameters with Spaces to clear values)'. At the bottom right are buttons for '?', 'Run Later', 'Run Now', and 'Cancel'.

Authentication Control	
Authentication Mode	Authentication Enabled
Device Configuration Source	BAM
Authentication Server 1	10.40.0.254
Authentication Server 2	0.0.0.0
Authentication Server 3	0.0.0.0

Figure 170: Example Task Attributes window, General tab for authentication

3. Click the Elements tab.
4. If you selected the AP(s) for which you want to configure authentication settings, check **Selected Network Elements**.

If you selected an element under which you want to configure the authentication settings of all APs, check **Selected Network Branches**.

5. Click the General tab.
6. If you want the AP(s) to immediately reboot after the values in this window are written to them, check **Reboot Network Elements after update**.
If you want to reboot at a later time to apply the changes, leave this box unchecked.
RESULT: After you have finished the configuration in this window, Prizm logs a message as a reminder that changes will not take effect until the reboot. The web pages of the AP(s) will prominently display **Reboot Required**.
NOTE: At any later time (for example, after of series of configurations from various templates have been pushed onto the selected elements) you can reboot them in batch by
 - a. ensuring that the desired set of elements are still or again selected (checked).
 - b. selecting **Edit→Reboot Element(s)** from a network browser view or **Edit→Network Element Operations→Reboot Element(s)** from the Define Networks tab.
7. For **Authentication Mode**, click ☐ and select either **Authentication Enabled** or **Authentication Disabled**.
NOTE: The **Authentication Enabled** attribute corresponds to the Authentication Required value in the Authentication Mode parameter of Canopy modules. A case where you should disable authentication is whenever all authentication servers whose IP addresses are listed in this window will be removed from service (for example, for a software update).
8. For **Device Configuration Source**, click ☐ and select from among **SM**, **BAM**, and **BAM+SM**.
NOTE: See [Appendix C: Device Configuration Source Attribute](#) on Page 451.
9. If your authentication data is kept on a single server, enter the IP address of that server in any of the **Authentication Server** lines.
If your authentication data is kept on two servers, enter their IP addresses in any two of the **Authentication Server** lines.

If your authentication data is kept on three servers, enter their IP addresses in the three **Authentication Server** lines.

IMPORTANT: Ensure that these addresses are in the accessible range for the AP(s). *NOTE:* If you are clearing a previously entered address, replace it with a space. If you are adding or replacing an address and do not want to overwrite any other previously added address, enter the new address and make no entry, not even a space, in the other lines. Unlike BAM, Prizm *does not* send null attribute values, except where a space is entered.
10. When you are satisfied with the attribute values in this window, click **OK**.
RESULT: If you checked **Reboot Network Elements after update**, then your configuration changes immediately take effect. If you did not, then your changes are delayed until the next reboot of the AP(s).

===== end of procedure =====

If the Prizm server is not listed as one of the SNMP trap IP addresses, and you disable authentication in an AP that had authentication enabled, then Prizm identifies its SMs as still being BAM controlled, and the **Authentication Occurred** attribute has the value **True**. If this happens, reboot the SMs and then poll them. (Both polls are required—the poll that results from the reboot and the deliberate poll.)

8.8.2 Powerline MU/Gateway Authentication Setup

Setting up a Powerline MU/Gateway for authentication includes identifying one, two, or three authentication servers by their IP addresses. Where you identify more than one, these can be any mix of servers that operate on Prizm EMS server and BAM server licenses. If you have a server that is licensed as Prizm EMS server, then you would typically perform all of your management operations, including BAM, in the GUI of that server as Canopy recommends. Thus, that server would hold a BAM server license as well.

Your other server(s) in a redundant configuration can hold BAM server license(s). However, the Powerline MU/Gateway ignores any drop session request, or service plan or VLAN profile change, sent from an IP address that is not in its list of authentication servers. Since it does, you should observe the following admonitions:

- *Do not* insert only some authentication server IP address(es) into some MU/Gateways and only others into other MU/Gateways, which you may have been inclined to do for load balancing.
- For BAM operations, ensure that the server in which you execute the operation (your Prizm EMS server-licensed server) is in the list of authentication servers in all Powerline MU/Gateways.

Whether the server in which you make a Powerline Modem management change is in the list in the MU/Gateway determines when that change becomes effective, as described in [Table 25](#).

Table 25: When BAM changes for Powerline Modems are effective

Operation Performed in the Server	Effect of the Change	
	If Server Is Listed in the Gateway	If Server Is Not Listed in the Gateway
Delete of a BAM-managed Powerline Modem that is currently on the network	Causes the current Powerline Modem session to drop.	Session remains up until Powerline Modem reboots or re-registers.
Move of a BAM-managed Powerline Modem that is currently on the network to the Ignored Elements list		
Suspend of Authentication Account State for a Powerline Modem that is currently on the network		

In a single window, you can configure any or all Powerline MU/Gateways in a network to require or cease to require authentication. To do so, perform the following steps.

Procedure 72: Configuring Powerline MU/Gateways for authentication management

1. In a network view, select the Powerline MU/Gateway(s) in one of the following ways:
 - Highlight a single MU/Gateway.
 - Check the boxes of multiple MU/Gateways that you want identically configured for authentication management.
 - Highlight an element under which you want all MU/Gateways identically configured for authentication management.

2. From the main menu, select

Edit→Configure→Authentication Settings→PLV Bridge Authentication.

NOTE: In the Define Networks tab, this configuration is available at

Edit→Network Element Operations→Configure→Authentication Settings.

RESULT: Prizm opens the Apply Configuration: PLV Bridge Authentication Settings window. An example of this window is shown in [Figure 171](#).

Figure 171: Example Apply Configuration: PLV Bridge Authentication window

3. If you selected the Powerline MU/Gateway(s) for which you want to configure authentication settings, check **Selected Network Elements**.
If you selected an element under which you want to configure the authentication settings of all Powerline MU/Gateways, check **Selected Network Branches**.

4. If you want the Powerline MU/Gateway(s) to immediately reboot after the values in this window are written to them, check **Reboot Network Elements after update**.

If you want to reboot at a later time to apply the changes, leave this box unchecked.

RESULT: After you have finished the configuration in this window, Prizm logs a message as a reminder that changes will not take effect until the reboot. The web pages of the Powerline MU/Gateway(s) will prominently display **Reboot Required**.

NOTE: At any later time (for example, after of series of configurations from various templates have been pushed onto the selected elements) you can reboot them in batch by

- a. ensuring that the desired set of elements are still or again selected (checked).
- b. selecting **Edit→Reboot Element(s)** from a network browser view or **Edit→Network Element Operations→Reboot Element(s)** from the Define Networks tab.

5. For **Authentication Mode**, click ☐ and select either **Authentication Enabled** or **Authentication Disabled**.

NOTE: A case where you should disable authentication is whenever all authentication servers whose IP addresses are listed in this window will be removed from service (for example, for a software update).

6. If your authentication data is kept on a single server, enter the IP address of that server in any of the **Authentication Server** lines.

If your authentication data is kept on two servers, enter their IP addresses in any two of the **Authentication Server** lines.

If your authentication data is kept on three servers, enter their IP addresses in the three **Authentication Server** lines.

IMPORTANT: Ensure that these addresses are in the accessible range for the Powerline MU/Gateway(s).

NOTE: If you are clearing a previously entered address, replace it with a space. If you are adding or replacing an address and do not want to overwrite any other previously added address, enter the new address and make no entry, not even a space, in the other lines. Unlike BAM, Prizm *does not* send null attribute values, except where a space is entered.

7. When you are satisfied with the attribute values in this window, click **OK**.

RESULT: If you checked Reboot Network Elements after update, then your configuration changes immediately take effect. If you did not, then your changes are delayed until the next reboot of the Powerline MU/Gateway(s).

===== end of procedure =====

8.8.3 Authentication Occurred Attribute

An **Authentication Occurred** read-only attribute indicates how the BAM-provisioned element (SM, Canopy 400 Subscriber Module (CSMxx400), or Powerline Modem) last registered onto the network following a valid BAM authentication check. A slave device can switch links from a master device that requires authentication to one that does not. This attribute reflects whether BAM was involved in authorizing the slave device to enter the network.

Possible values are **True** and **False**. You can view these values by selecting the Authentication Occurred column in a network view. You can also filter on these values to find exceptions (**False**), for example. When you define such a filter, True and False are strings that you must type in correctly next to the = relational operator.

You may see an incorrect value of **True**. This happens if the Prizm server is not among the configured trap IP addresses, and you disable authentication in an AP that had authentication enabled. This scenario is addressed under [AP Authentication Setup](#) on Page 291.

8.8.4 Account States

From a network browser, you can simultaneously change the account state of all selected SMS, Canopy 400 Subscriber Module (CSMxx400)s, or Powerline Modems or all in a network branch without changing any other attribute. To change the account state in this way, perform the following steps. (To change the account states of specified elements in batch on a schedule, see [Activating or Suspending a Batch of Customer Accounts on Schedule](#) on Page 299).

Procedure 73: Activating or suspending customers from a network view

1. In a network view, select the SM(s), Canopy 400 Subscriber Module (CSMxx400)(s), or Powerline Modem(s) in one of the three following ways:
 - Highlight a single element.
 - Check the boxes of multiple elements.
 - Highlight an element under which you want the account states of all elements changed.
2. From the main menu, select **Edit→Authentication Account State→Activate or Suspend**.

NOTE: In the Define Networks tab, these options are available at

Edit→Network Element Operations→Authentication Account State.

RESULT: Prizm opens a Task Attributes window, whose General tab includes **Activate** and **Suspend** (both options, regardless of which you selected from the **Edit** menu), where you specify the elements. The process of specifying them is the same as for building a network view. The Elements tab is shown and described under

- [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
3. In the General tab, select either **Activate** or **Suspend**.
 4. In the Elements tab, select the elements to be affected.

5. If you selected the element(s) for which you want to change the account state, check **Selected Network Elements**.
If you instead selected an element above all for which you want to change the account state, check **Selected Network Branches**.
6. Click **OK**.
RESULT: Prizm opens the Suspend Network Elements confirmation window. The text in this window indicates whether a network branch or selected elements will be affected.

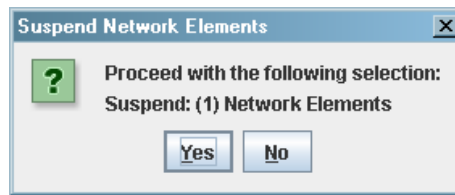


Figure 172: Example Suspend Network Elements window

NOTE: If you try to change an element to an account state that it is already in, the system does not return any error message to indicate that.

7. If you want to proceed with the change, click **Yes**.
RESULT: The Event Viewer logs an Info message about the activity in progress and Success messages that indicate the parameter change and the successful operation.
If you want to abort the change, click **No**.
RESULT: No activity is logged and the Suspend Network Element(s) Account window remains open.

NOTE: If the element was under BAM control and was in session, and you suspended it in this procedure, then

- the session is immediately dropped, if the server you are on is listed in the master device (AP, Canopy 400 Access Point (CAPxx400), or Powerline MU/Gateway) as an authentication server.
- the session will not drop until the element is rebooted or re-registers, if the server you are on *is not* listed in the master device as an authentication server.

===== **end of procedure** =====

Prizm logs an alert whenever

- an unsuccessful attempt to check out a BAM packs license from License Manager occurs.
- an unsuccessful attempt to authenticate occurs (for example, because the attempting element has not been provisioned or because of a mismatch of authentication keys).

However, by design, Prizm *does not* log an alert for the unsuccessful attempt to authenticate having resulted from the inability to check out a BAM packs license. This design prevents the rapid generation of large numbers of alerts that flag what the unsuccessful license checkout alert already flags.

8.8.5 Activating or Suspending a Batch of Customer Accounts on Schedule

From a network browser, you can simultaneously change the account state of all selected SMs, Canopy 400 Subscriber Module (CSMxx400)s, or Powerline Modems or all in a network branch without changing any other attribute. To change the account state in this way, see [Account States](#) on Page 297.

To change the account states of specified elements in batch on a schedule, perform the following steps.

Procedure 74: Activating or suspending customers as a scheduled task

1. From the main menu, select **Tools→Task Scheduler**.
RESULT: Prizm opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#) on Page 381.
2. Select **Edit→Add New Task**.
RESULT: Prizm opens the Select Task Category window. An example of this window is shown in [Figure 232](#) on Page 382.
3. Highlight **Authentication Account**.
4. Click **OK**.
RESULT: Prizm opens a Task Configuration window. An example of this window is shown in [Figure 173](#).

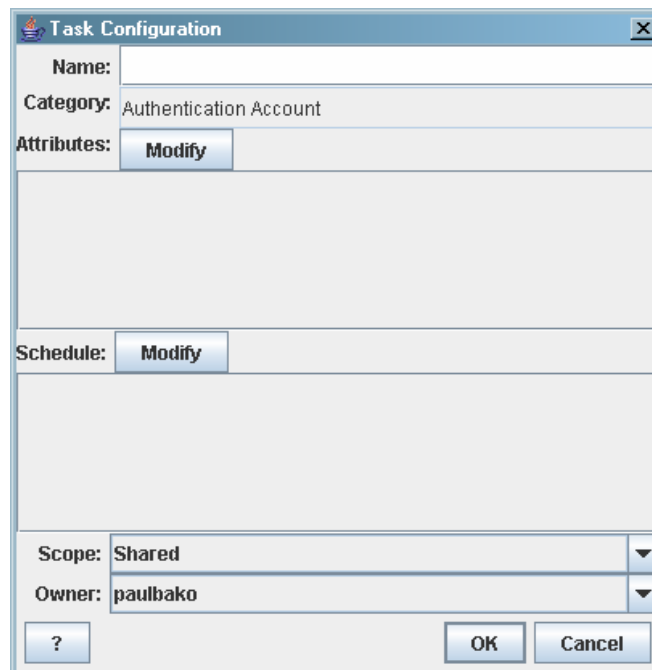


Figure 173: Example Task Configuration window, Authentication Account task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this kind of Task Attributes window is shown in [Figure 174](#).

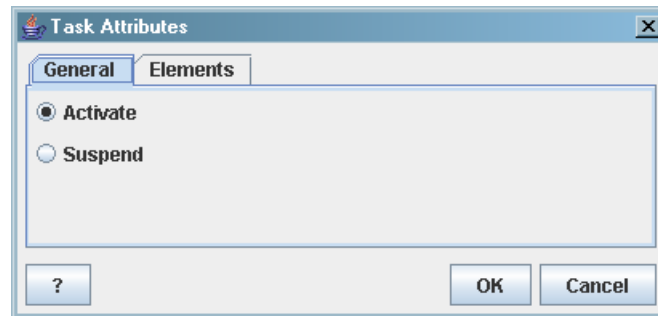


Figure 174: Example Task Attributes window, Authentication Account task

7. If you want this task to suspend the authentication account of the batch of elements that you will specify, select **Suspend**.
8. Click the Elements tab.
9. Select the elements that are to be affected by this task.
NOTE: The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
10. Click **OK**.
11. Back in the Task Configuration window, click the **Modify** button associated with **Schedule**.
12. Schedule the task.
NOTE: Task scheduling is defined under [Scheduling Prizm Tasks](#) on Page 381.
13. Back in the Task Configuration window, use the drop-down menu to select the **Scope** of the task **Shared** (can be modified or run by any other user) or **Private** (can be modified or run by only the **Owner** specified in the next field).
14. Use the drop-down menu to select a user who will own (be allowed to modify or run) this task.
15. Click **OK**.
RESULT: The list in the Define Tasks tab includes the new Authentication Account task.
16. Highlight the task.
17. From the main menu, select **Edit→View Task**.

18. Review the description in the Task Configuration window.
19. When finished, click the **Close** button.
20. If you want this task to run on its defined schedule, select **Edit→Activate Task**.
If you want Prizm to indefinitely delay implementing the schedule, then select **Edit→Deactivate Task**.
NOTE: If a task is active, a check appears in the checkbox adjacent to the task name in the Define Tasks tab.

===== end of procedure =====

8.9 MANAGING BANDWIDTH

Canopy Bandwidth and Authentication Manager (BAM) managed authentication, bandwidth provisioning, and the VLAN profiles of SMs. Prizm includes these management functionalities. For each BAM parameter, the corresponding attribute and function in Prizm are identified [Table 26](#).

Table 26: Element attributes per Prizm management area

BAM Parameter	Prizm Attribute	Function in Prizm
Authentication Key	Authentication Key	The hexadecimal string stored in both the database and the subscriber radio. This string is 32 or fewer characters, prepended with zeros if needed when the system reads it. The radio interface contains a toggle to Use This Key or Use Default Key .
Sustained Uplink Data Rate	Bandwidth Uplink Sustained Rate	The rate that the subscriber radio(s) are replenished with credits for transmission. This imposes no restriction on the uplink.
Sustained Downlink Data Rate	Bandwidth Downlink Sustained Rate	The rate at which the AP should be replenished with credits (tokens) for transmission to the subscriber radio(s). This imposes no restriction on the uplink.
Uplink Burst Allocation	Bandwidth Uplink Burst Allocation	The maximum amount of data to allow the subscriber radio to transmit before being recharged at the Sustained Uplink Data Rate with credits to transmit more.
Downlink Burst Allocation	Bandwidth Downlink Burst Allocation	The maximum amount of data to allow the AP to transmit to the subscriber radio(s) before the AP is replenished at the Sustained Downlink Data Rate with transmission credits.
Allow Higher Bandwidth	Bandwidth Allow License Use	Toggles whether Prizm should ask License Manager for floating Cap 2 licenses for the selected subscriber radio(s), to the extent that the licenses are available.
Low Priority Uplink CIR	Bandwidth Low Priority Uplink CIR	The committed information rate for transmissions from the selected subscriber radio(s) on the low-priority channel.
Low Priority Downlink CIR	Bandwidth Low Priority Downlink CIR	The committed information rate for AP transmissions to the selected subscriber radio(s) on the low-priority channel.
Is High Priority Channel Enabled	Bandwidth High Priority Channel Enable	Toggles whether the high-priority channel is enabled for all subscriber radios that are configured to the particular service plan.

BAM Parameter	Prizm Attribute	Function in Prizm
High Priority Uplink CIR	Bandwidth High Priority Uplink CIR	The committed information rate for transmissions from the selected subscriber radio(s) on the high-priority channel.
High Priority Downlink CIR	Bandwidth High Priority Downlink CIR	The committed information rate for AP transmissions to the selected subscriber radio(s) on the high-priority channel.
Is CIR Feature Enabled	<i>NONE</i> ¹	
Is Dynamic Learning Allowed	VLAN Dynamic Learning	Toggles whether the subscriber radio(s) to which the profile is applied should (Enabled) or should not (Disabled) add to the VID table the VLAN IDs of upstream frames, which enter the subscriber radio(s) through the wired Ethernet interface.
Are Tagged Only Frames Allowed	VLAN Allow Only Tagged Frames	The type of arriving frames that the subscriber radio(s) to which the profile is applied should tag, using the VLAN ID that is stored in the Untagged Ingress VID parameter.
VLAN Ageing Timeout	VLAN Aging Timeout	How long the subscriber radio(s) to which the profile is applied should keep dynamically learned VLAN IDs.
Untagged Ingress VID	VLAN Untagged Ingress VID	The VLAN ID that the subscriber radio(s) to which the profile is applied should use to tag frames that arrive at the subscriber radio(s) untagged.
Management VID	VLAN Management VID	The VLAN ID that the subscriber radio(s) to which the profile is applied should share with the AP.
Is VLAN Feature Enabled	VLAN Enable	Toggles whether Prizm sends to the selected subscriber radio(s) the VLAN feature values from the particular profile.
VLAN Ids	VLAN Membership	All IDs of the VLANs in which the selected subscriber radio(s) should be considered a member.
NOTES: 1. To have the BAM effect of the Is CIR Feature Enabled parameter set to No, you can set the Bandwidth Low Priority Uplink CIR and Bandwidth Low Priority Downlink CIR attributes to 0 and set the High Priority Channel Enable to Disabled .		

8.9.1 Master Device Authentication License Handling in Prizm

The process of master device authentication license management is as follows:

1. The operator
 - a. identifies the maximum number of APs, Canopy 400 Access Point (CAPxx400)s, and Powerline MU/Gateways that will need to simultaneously use BAM packs floating licenses.
 - b. orders and receives the floating licenses.
 - c. installs the license keys into each designated License Manager server.
NOTE: Although the run-time use of these licenses is floating in the network, these licenses are node locked to the hostID (MAC address) of the License Manager server(s).

2. BAM server-licensed Prizm tracks the licenses that are assigned to APs, Canopy 400 Access Point (CAPxx400)s, and Powerline MU/Gateways that it manages.
3. At regular intervals, Prizm polls each AP, Canopy 400 Access Point (CAPxx400), and Powerline MU/Gateway in each network. If one that holds a floating BAM packs license fails to respond to a poll, then Prizm returns that license to the License Manager server.
 - If the failure to respond is a symptom of the master device being out of service, then no slave device for it is being served.
 - If the master device is not out of service and is still set to require authentication, then slave devices cannot authenticate. When authentication fails, the slave device locks out of any other attempt to register to same master in the next 15 minutes.
 - If the number of master device floating licenses is greater than or equal to the number of devices that simultaneously are set to require authentication, then a floating license is available in the License Manager for the device that forfeited one by failing to respond to the poll.

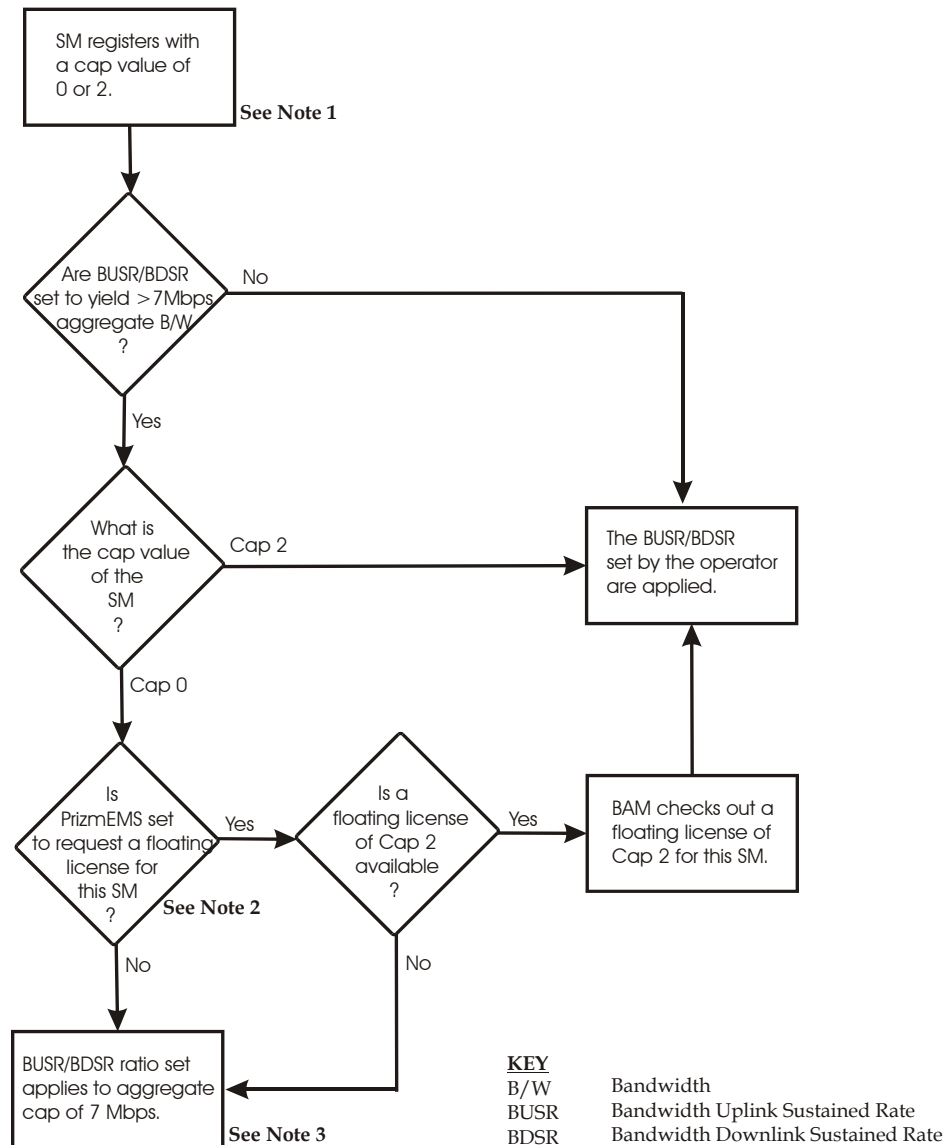
8.9.2 SM Bandwidth License Handling in Prizm

The process of bandwidth license management is as follows:

1. The operator
 - a. identifies the number of slave devices that will simultaneously require the type of bandwidth license.
IMPORTANT: This is the number of devices that simultaneously need to use the bandwidth feature minus the number of those devices that already hold a permanent license for that bandwidth feature. Prizm never checks out a floating license for a feature that is already licensed in the SM.
 - b. orders and receives the floating licenses.
 - c. installs the floating licenses into each designated license management server.
NOTE: Although the run-time use of these licenses is floating in the network, these licenses are node locked to the hostID (MAC address) of the license management server.
2. BAM server-licensed Prizm checks out bandwidth licenses from License Manager as slave devices authenticate and as the operator makes bandwidth configuration changes that require licenses.
3. When a slave device authenticates, Prizm identifies the licensable features that the SM supports and, for each such feature, whether the device has a permanent license key installed.
4. If Prizm has configuration data to provision a licensed feature for the device, but the device does not hold a permanent license for the feature, then Prizm checks out a floating license if one is available.
5. At the interval set in the License Retrieval Timeout parameter, Prizm sends to all of its APs a message instructing each to report all registered devices.
6. Further messages are exchanged, during which Prizm returns to License Manager floating licenses that are no longer in use.

8.9.3 Cap Licenses for Canopy and Canopy Advantage SMs

Caps are administered as shown in [Figure 175](#)



NOTES

1. A Canopy SM without floating license has Cap 0.
An Advantage SM has Cap 2.
A Canopy SM with floating license has Cap 2.
2. Yes, if **Bandwidth Allow License Use** is set to **Yes**.
No, if **Bandwidth Allow License Use** is set to **No**.
3. SULDR and SDLDR are automatically recalculated as shown in [Figure 176](#) on Page 305.

Figure 175: Bandwidth capping logic for Canopy and Canopy Advantage SMs

The uplink and downlink data rate caps are calculated as shown in [Figure 176](#).



NOTE:

In these figures, *entry* refers to the setting in the data rate attribute, not the burst allocation attribute.

$$\text{uplink cap enforced} = \frac{\text{uplink entry} \times \text{aggregate cap for the SM}}{\text{uplink entry} + \text{downlink entry}}$$

$$\text{downlink cap enforced} = \frac{\text{downlink entry} \times \text{aggregate cap for the SM}}{\text{uplink entry} + \text{downlink entry}}$$

Figure 176: Uplink and downlink rate caps adjusted to apply aggregate cap

For example, in the Canopy SM, if you set the **Bandwidth Uplink Sustained Rate** attribute to 2,000 kbps and the **Bandwidth Downlink Sustained Rate** attribute to 10,000 kbps, then the uplink and downlink caps that will be enforced for the SM can be calculated as shown in [Figure 177](#). This presumes that either you do not have Prizm set to request a floating Cap 2 license for the SM or you do, but none is available.

$$\text{uplink cap enforced} = \frac{2,000 \text{ kbps} \times 7,000 \text{ kbps}}{2,000 \text{ kbps} + 10,000 \text{ kbps}} = 1,167 \text{ kbps}$$

$$\text{downlink cap enforced} = \frac{10,000 \text{ kbps} \times 7,000 \text{ kbps}}{2,000 \text{ kbps} + 10,000 \text{ kbps}} = 5,833 \text{ kbps}$$

Figure 177: Uplink and downlink rate cap adjustment example

In this example case, the derived 1,167-kbps uplink and 5,833-kbps downlink caps sum to the fixed 7,000-kbps aggregate cap of the Canopy SM.

Current bandwidth license usage is listed in the Licensing Information window, which you can access from the main menu at **Help→Show Licensing**. An example of this window is shown in [Figure 178](#).

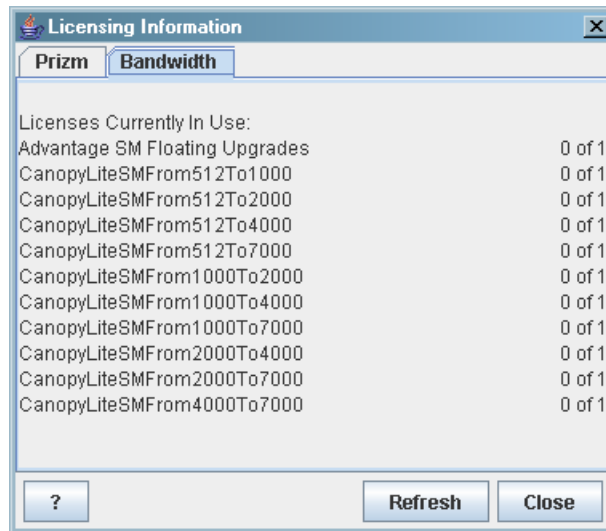


Figure 178: Example Licensing Information window, Bandwidth tab



NOTE:

In some cases, the displayed number may be wrong. See [Licensing Information Window Sometimes Showing 0 for Available Licenses](#) on Page 406.

8.9.4 Bandwidth Licenses for Canopy Lite SMs

Prizm also supports license management for Canopy Lite SMs. When shipped, each of these SMs is licensed to one of five levels of bandwidth service. These levels are defined in [Table 27](#).

Table 27: Canopy Lite levels of bandwidth service

Level	MIR ¹ (kbps)	CIR ² (kbps)	Burst ³ (kb)
1	512	100	768
2	1000	100	1500
3	2000	200	3000
4	4000	200	6000
5	7000	200	7000
NOTES: 1. Aggregate. 2. Each direction, each priority. 3. Each direction.			

A network operator can purchase floating upgrade licenses for Canopy Lite SMs that were purchased in any level of 1 through 4. The operator can then

- use these licenses, when they are available, to provide greater bandwidth to customers.
- under-utilize them to meet a temporary business need, setting bandwidth values on the elements to lower than the licensed cap.
- prevent their use for specified Canopy Lite SMs by setting **Bandwidth Allow License Use** to **No** for them.

No licenses are sold for downgrading the bandwidth level of Canopy Lite SMs. Current Canopy Lite license usage is listed in the Licensing Information window, which you can access from the main menu at **Help→Show Licensing**. An example of this window is shown in [Figure 178](#) on [Page 306](#).

How Prizm Applies Lite Licenses

For any Lite SM for which the **Bandwidth Allow License Use** is set to **Yes**, whenever you set the bandwidth to higher than currently licensed, Prizm checks out from License Manager the lowest of the unused higher bandwidth licenses that will support the bandwidth you set. Surrendering a license for use by another Lite SM is similarly in response to a bandwidth setting that you make in Prizm: if you either set the **Bandwidth Allow License Use** attribute to **No** or decrease a licensed, elevated setting to the original bandwidth, then Prizm returns the Lite license to License Manager.

After you apply a Lite license to an element, the MIR, CIR, and burst are what you have set in Prizm, not necessarily as high as the license allows. So for example, if you set MIR to 7000 to get a Lite license out of the pool, you may want to set CIR to 200 and burst to 7000, since the newly applied license allows these levels. See [Table 27](#) (above).

8.9.5 Managing Bandwidth by Service Plans

One important distinction in how BAM and Prizm send values is the capability in Prizm to avoid sending/overwriting a value for an attribute while sending values for the others. In BAM by contrast, you needed to send all or none of the values in a set. Prizm allows you to be entirely selective. To avoid sending an attribute value, leave the contents of the value in Prizm null (backspace over the default value, if necessary). To overwrite the attribute value to null, type in a forward space as you compose or update the service plan.

To configure any of the MIR and CIR attributes, you can

- configure them as you would any other set of configurable attributes, by defining and applying a configuration template. This approach is good for an adjustment to an individual subscriber radio, for example.
- set up a service plan to be applied to a group of subscriber radios that you designate. This approach is good for establishing tiered levels of service and
 - adjusting those tiers over time to have bandwidth automatically added to each.
 - protecting your set values from being overwritten by values in a configuration template.
- use either of the above approaches from an external network manager through the Northbound Interface to Prizm.

When you import elements from BAM, Prizm creates any service plans that were required to match the BAM configurations in those elements. You can rename these at any time and use them to apply to new elements that you accept. See [Procedure 19: Importing elements from BAM](#) on Page 124.

To define a service plan, perform the following steps.

Procedure 75: Defining a service plan

1. From the main menu, select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab. An example of this tab is shown in [Figure 155](#) on Page 272.
2. Select **Edit→Add a Configuration→Bandwidth Service Plan**.
RESULT: Prizm opens the Configuration Parameter Selection window. This window is shown in [Figure 179](#).
NOTE: The menu path that this window displays indicates where you will find this service plan when you want to apply it to selected subscriber radio(s).



Figure 179: Example Configuration Parameter Selection window for a service plan

3. For **Name**, type in a designation that you will associate with the level of service that you will later define.
4. For **Category**, optionally type in a category in which Prizm should show this service plan as being sorted.
NOTE: The category can be multilevel, in order of higher to lower, with semicolons delimiting between the levels. This is similar to inputting the submenu hierarchy for saved view criteria.
5. When you are satisfied with your entries, click **OK**.
RESULT: The configurable bandwidth parameters appear with their default values in the Define Configurations tab. An example is shown in [Figure 180](#).

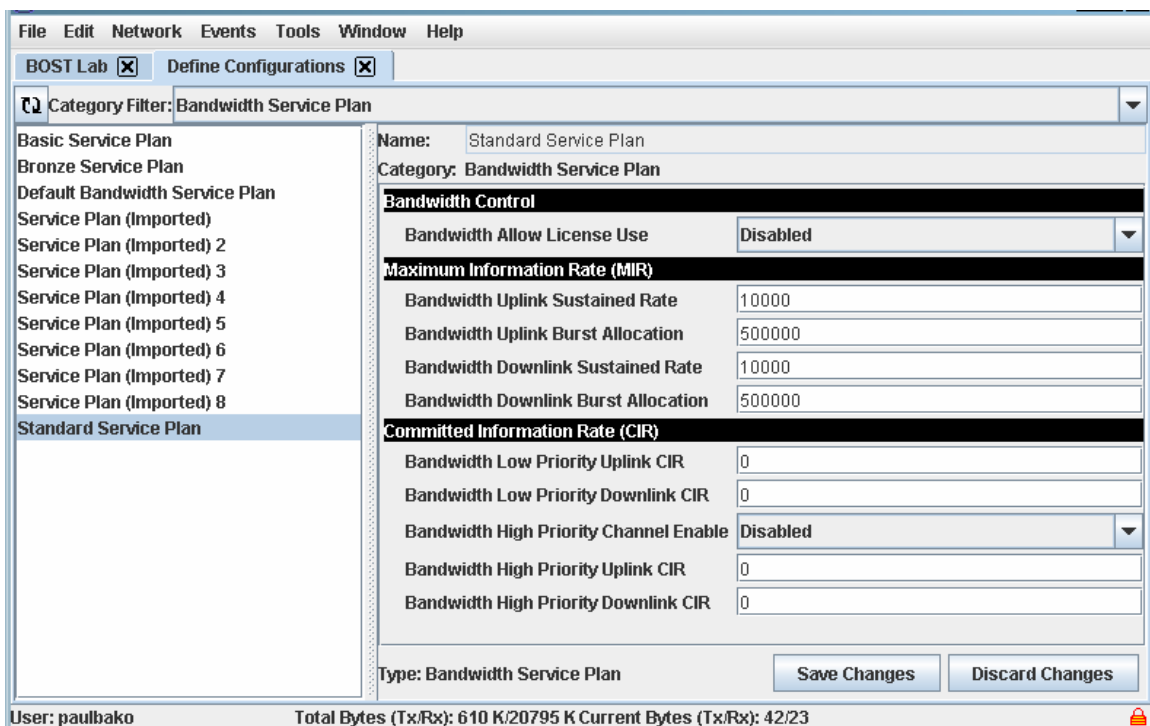


Figure 180: Configurable parameters in a service plan

6. For **Bandwidth Allow License Use**, if you want Prizm to ask License Manager for floating Cap 2 licenses for SMs that are configured to this service plan, select **Enabled**.
7. For **Bandwidth Uplink Sustained Rate**, type in the rate at which to replenish the selected subscriber radio(s) with credits for transmission.
8. For **Bandwidth Uplink Burst Allocation**, type in the maximum amount of data to allow the selected subscriber radio(s) to transmit before being recharged with credits to transmit more at the **Bandwidth Uplink Sustained Rate**.
9. For **Bandwidth Downlink Sustained Rate**, type in the rate at which the AP should be replenished with credits (tokens) for transmission to the selected subscriber radio(s).
10. For **Bandwidth Downlink Burst Allocation**, type in the maximum amount of data to allow the AP to transmit to the selected subscriber radio(s) before the AP is replenished with transmission credits at the **Bandwidth Downlink Sustained Rate**.
11. For **Bandwidth Low Priority Uplink CIR**, type in the desired committed information rate for transmissions on the low-priority channel by the selected subscriber radio(s).
12. For **Bandwidth Low Priority Downlink CIR**, type in the desired committed information rate for AP transmissions on the low-priority channel to the selected subscriber radio(s).
13. For **Bandwidth High Priority Channel Enable**, if you want the high-priority channel enabled for all subscriber radios that are configured to the particular service plan, select **Enabled**.
14. For **Bandwidth High Priority Uplink CIR**, type in the committed information rate for subscriber radio transmissions on the high-priority channel.
15. For **Bandwidth High Priority Downlink CIR**, type in the committed information rate for AP transmissions to the subscriber radio(s) on the high-priority channel.
16. When you are satisfied with the profile, click the **Save Changes** button.
RESULT: Prizm opens the Confirm Update window. An example of this window is shown in [Figure 181](#).

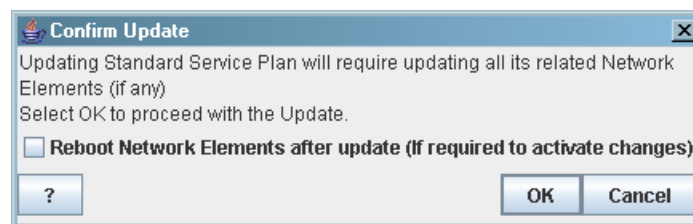


Figure 181: Example Confirm Update window for bandwidth service plan

17. If you want the subscriber radio(s) to immediately reboot after the values in this window are written to them, check **Reboot Network Elements after update**.
IMPORTANT: A reboot or re-registration is not required for pushing the bandwidth values for the attributes shown in [Figure 180](#) to an element, *only if* the server in which you are making these changes is listed as an authentication server in the AP. This is because Prizm uses a special BAM protocol, not SNMP, to push these values from either a service plan or a custom configuration template. However, you will not see SNMP attribute values change for the element. Once you have associated a service plan with an element, no parameter for which the service plan imposes a value can have its value overwritten by a custom configuration template.
- If you want to reboot at a later time to apply the changes, leave this box unchecked.
18. Click **OK**.
RESULT: Prizm opens the Updating Configuration window, where it documents the associated events. An example of this window is shown in [Figure 182](#).

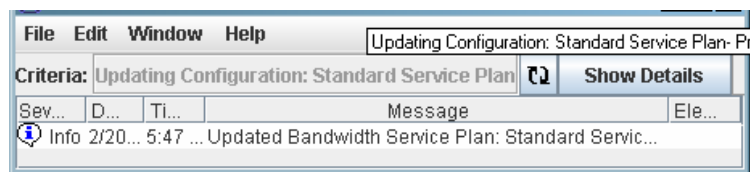


Figure 182: Example Updating Configuration window for a new service plan

The service plan is now available to apply to selected elements.

NOTE: You can close this window without consequence.

===== end of procedure =====

To apply a defined service plan, perform the following steps.

Procedure 76: Applying a service plan

1. In a network view, select the subscriber radio(s) in one of the three following ways:
 - Highlight a single element.
 - Check the boxes of multiple elements.
 - Highlight an element under which you want the service plan applied to all subscriber radio(s).
2. From the main menu, select **Edit→Configure→Bandwidth Service Plan→Service Plan Name**.
RESULT: Prizm opens a Task Attributes window. An example of this window is shown in [Figure 183](#).

Figure 183: Example Task Attributes window for a service plan

3. Click the Elements tab.
4. If you selected the element(s) for which you want to configure bandwidth settings, check **Selected Network Elements**.
If you selected an element under which you want to configure the bandwidth settings of all subscriber radio(s), check **Selected Network Branches**.
5. Click the General tab.
6. If you want the element(s) to immediately reboot after the values in this window are written to them, check **Reboot Network Elements after update**.
IMPORTANT: Reboot or re-registration is not required for pushing the bandwidth values for the attributes shown in Figure 183 to an element, *only if* the server in which you are making these changes is listed as an authentication server in the AP. This is because Prizm uses a special BAM protocol, not SNMP, to push these values from either a service plan or a custom configuration template. However, you will not see SNMP attribute values change for the element. Once you have associated a service plan with an element, no parameter for which the service plan imposes a value can have its value overwritten by a custom configuration template.

If you want to reboot at a later time to apply the changes, leave this box unchecked.

7. Click the **Run Now** button.

RESULT: If you selected **Reboot Network Elements after update**, the elements are rebooted, and the changes are activated. If you did not select that option, the changes are not activated until the elements are later rebooted. In either case, Prizm opens a Configure Element(s)- Prizm Management Console window, where it documents the associated events. An example of this window is shown in [Figure 184](#).

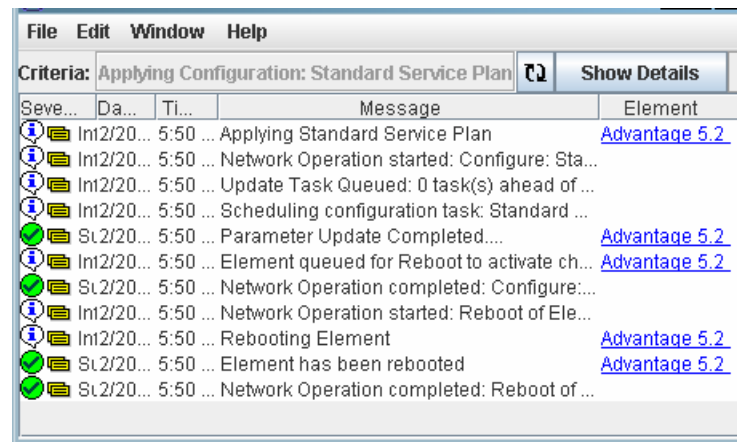


Figure 184: Example Configure Element(s) window for applying a service plan

NOTE: You can close this window without consequence.

8. If intended licensed upgrades are failing to occur as a result of the service plan being applied, repeat this procedure but, as you do, set the attribute **Bandwidth Allow License Use** in the General tab to **Enabled**.

===== end of procedure =====

To modify the definition of an existing service plan, perform the following steps.

Procedure 77: Updating a service plan

1. From the main menu, select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab. An example of this tab is shown in [Figure 155](#) on Page 272.
2. In the left pane, select (highlight) the service plan that you want to update.
RESULT: Prizm opens the service plan in the right pane.
3. Change the values of any attribute(s) as desired.
NOTE: For the meanings of the various attributes, see [Procedure 75: Defining a service plan](#) on Page 308.
4. When you are satisfied with the changes, click **Save Changes**.
RESULT: Prizm opens the Confirm Update window. An example of this window is shown in [Figure 181](#) on Page 310.

5. If you want the element(s) to immediately reboot after the values in this window are written to them, check **Reboot Network Elements after update**.
IMPORTANT: Reboot or re-registration is not required for pushing the bandwidth values for the attributes shown in [Figure 183](#) to an element, *only if* the server in which you are making these changes is listed as an authentication server in the AP. This is because Prizm uses a special BAM protocol, not SNMP, to push these values from either a service plan or a custom configuration template. However, you will not see SNMP attribute values change for the element. Once you have associated a service plan with an element, no parameter for which the service plan imposes a value can have its value overwritten by a custom configuration template.

If you want to reboot at a later time to apply the changes, leave this box unchecked.

6. Click **OK**.
RESULT: Prizm opens an Updating Configuration window, where it documents the associated events.
NOTE: You can close this window without consequence.

===== end of procedure =====

At any time, you can dissociate an element or group of elements from a service plan. To do so, perform the following steps.

Procedure 78: Removing a bandwidth service plan association

1. In a Network Browser view, select the elements for which you want to cancel the service plan association.
2. From the main menu, select
Edit→Configure→Bandwidth Service Plan→Remove Bandwidth Service Plan Association.

NOTE: In the Define Networks tab, this option is available at
Edit→Network Element Operations→Configure→Bandwidth Service Plan.

RESULT: The element retains the last bandwidth values that were applied by the service plan, but no future changes in the service plan will change the bandwidth values in the element.

===== end of procedure =====

If you ever want to completely remove a service plan from Prizm, perform the following steps.

Procedure 79: Removing a service plan

1. From the main menu, select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab. An example of this tab is shown in [Figure 155](#) on Page 272.
2. In the left pane, select (highlight) the service plan that you want to delete.
RESULT: Prizm opens the service plan in the right pane.

3. From the main menu, select **Edit→Delete the Configuration**.

RESULT: The element retains the last bandwidth values that were applied by the service plan.

===== end of procedure =====

8.10 ACTIVATING OR SUSPENDING ELEMENT MANAGEMENT

From a network browser, you can activate or suspend full management for the selected element(s) at any time. To do so, select **Edit→Management by Prizm** from the main menu, and then **Activate** or **Suspend**.

Alternatively, you can use the **Tools** menu to define a task that activates or suspends full management on a specified schedule for a batch of selected elements. To do so, perform the following steps.

Procedure 80: Activating or suspending full management as a scheduled task

1. From the main menu, select **Tools→Task Scheduler**.

RESULT: Prizm opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#) on Page 381.

2. Select **Edit→Add New Task**.

RESULT: Prizm opens the Select Task Category window. An example of this window is shown in [Figure 232](#) on Page 382.

3. Highlight **Prizm Management**.

4. Click **OK**.

RESULT: Prizm opens a Task Configuration window. An example of this window is shown in [Figure 185](#).

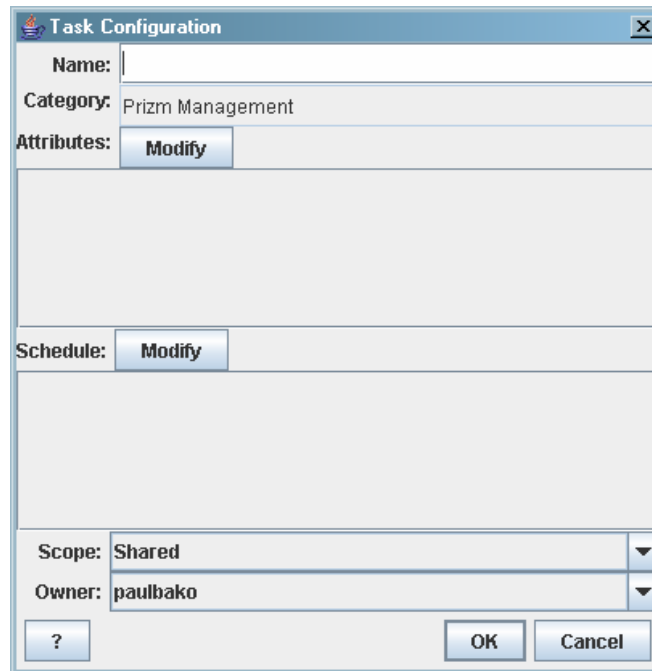


Figure 185: Example Task Configuration window, Prizm Management task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this kind of Task Attributes window is shown in [Figure 186](#).

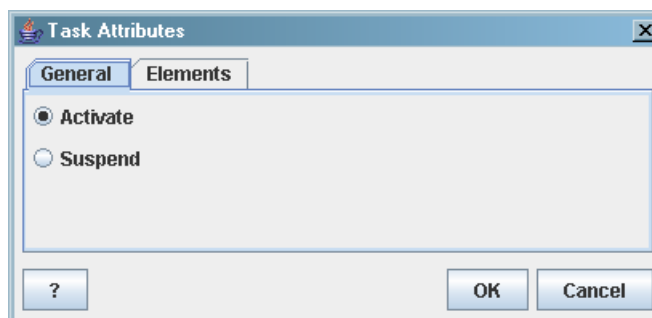


Figure 186: Example Task Attributes window, Prizm Management task

7. If you want this task to suspend Prizm management for the batch of elements that you will specify, select **Suspend**.
8. Click the Elements tab.

9. Select the elements that are to be affected by this task.
NOTE: The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
10. Click **OK**.
11. Back in the Task Configuration window, click the **Modify** button associated with **Schedule**.
12. Schedule the task.
NOTE: Task scheduling is defined under [Scheduling Prizm Tasks](#) on Page 381.
13. Back in the Task Configuration window, use the drop-down menu to select the **Scope** of the task **Shared** (can be modified or run by any other user) or **Private** (can be modified or run by only the **Owner** specified in the next field).
14. Use the drop-down menu to select a user who will own (be allowed to modify or run) this task.
15. Click **OK**.
RESULT: The list in the Define Tasks tab includes the new Prizm Management task.
16. Highlight the task.
17. From the main menu, select **Edit→View Task**.
18. Review the description in the Task Configuration window.
19. When finished, click the **Close** button.
20. If you want this task to run on its defined schedule, select **Edit→Activate Task**.
 If you want Prizm to indefinitely delay implementing the schedule, then select **Edit→Deactivate Task**.
NOTE: If a task is active, a check appears in the checkbox adjacent to the task name in the Define Tasks tab.

===== end of procedure =====

8.11 MANAGING VLANS

One important distinction in how BAM and Prizm send values is the capability in Prizm to avoid sending/overwriting a value for an attribute while sending values for the others. In BAM by contrast, you needed to send all or none of the values in a set. Prizm allows you to be entirely selective. To avoid sending an attribute value, leave the contents of the value in Prizm null (backspace over the default value, if necessary). To overwrite the attribute value to null, type in a forward space as you compose or update the VLAN profile.

To configure any of the VLAN attributes, you can

- configure them as you would any other set of configurable attributes, by defining and applying a configuration template. This approach is good for an adjustment to an individual SM or Canopy 400 Subscriber Module (CSMxx400), for example.
- set up a VLAN profile to be applied to a group of SMs or Canopy 400 Subscriber Module (CSMxx400)s that you designate. This approach is good for establishing VLANs and protecting your set values from being overwritten by values in a configuration template.
- use either of the above approaches from an external network manager through the Northbound Interface to Prizm.

When you import elements from BAM, Prizm creates any VLAN profiles that were required to match the BAM configurations in those elements. See [Procedure 19: Importing elements from BAM](#) on Page 124. You can rename these profiles at any time and use them to apply to new elements that you accept.

At any time, you can dissociate an element or group of elements from a VLAN profile. The element retains the last VLAN values that were applied by the profile, but no future changes in the profile will change the VLAN values in the element. Similarly, if you remove a VLAN profile, the elements to which the profile was currently applied retain the values until or unless those are changed by a custom configuration template or another VLAN profile that is applied to them.

The following caveats apply to managing VLANs from Prizm:

- VLAN must be enabled in the AP or Canopy 400 Access Point (CAPxx400). Otherwise, applying a VLAN profile or setting VLAN values from a custom configuration template has no effect.
- In a VLAN profile, the **VLAN Enable** attribute is ignored unless the SM or Canopy 400 Subscriber Module (CSMxx400) authenticated through the BAM subsystem. The value of the **Authentication Occurred** attribute must be **True**.
- If **VLAN Enable** is set to **Enabled** in a VLAN profile or custom configuration template, and you switch this attribute to **Disabled**, this action *does not* turn off the VLAN feature in the subscriber radio. To do so, you must reboot the element and allow it to re-authenticate, at which time BAM ceases to send the VLAN values that are stored in the profile or configuration.
- When you apply VLAN values, what set of values become effective depends on how the subscriber radio entered the network, as described in [Table 28](#).

Table 28: How VLAN profile settings are applied to an SM

Entry into the Network	Updated VLAN Settings				Corrective Action
	From	Immediate	Through Protocol	Requires Reboot	
Entered via BAM (Authentication Occurred has value of True)	Prizm VLAN profile	Yes	Proprietary	No	Re-apply the VLAN profile (this time via SNMP). <i>This will require a reboot.</i> ³
Later re-entered through AP that does not require authentication	Configuration Source ¹ set in new AP	Yes	SNMP	No ²	
Entered without BAM authentication (Authentication Occurred has value of False)	Prizm VLAN attributes	No	SNMP	Yes	Remember that the original values remain in the subscriber radio, even if BAM later manages it with new values.
Re-entered via BAM (Authentication Occurred has value of True)	Prizm VLAN profile that initially matches the original settings	Yes	Proprietary	No	

NOTES:

- See [Appendix C: Device Configuration Source Attribute](#) on Page 451.
- In this case, the SM or Canopy 400 Subscriber Module (CSMxx400) re-entered the network by registering in a new AP.
- If this action is unacceptable for your network, either
 - initially apply all VLAN profiles to only elements that are behind non-authenticating APs. This may require that you temporarily disable authentication in some APs, reboot them, apply the profile, re-enable authentication in them, and reboot them again. Then the subscriber radios will store the values that they received from Prizm through SNMP.
 - deploy a sufficient number of BAM packs licenses so that all of your APs hold them.

When you apply a VLAN profile, Prizm computes bandwidth based on both the values stored in the relational database and the number of SM bandwidth licenses, and sends the bandwidth service plan along with the VLAN profile to the subscriber radio(s). Operators who use only a relational database (not RADIUS also) find that the bandwidth values applied are as expected.

However, operators who use both a relational database and RADIUS can sometimes find unexpected—and far from desired—values applied. This can occur in the following sequence:

1. The relational database is storing the values from the last previous authentication.
2. The operator changes the values in RADIUS, but does not reboot the involved SM or Canopy 400 Subscriber Module (CSMxx400).
3. The operator applies a VLAN profile to the element.

4. Prizm computes bandwidth for the element, based on the *original* values (from Step 1), not the *new* values (from Step 2).
5. Prizm sends the desired VLAN profile and bandwidth service plan, which is based on outdated RADIUS input, to the element.

Prizm cannot poll the RADIUS server to detect whether any change has been made since the last authentication. By one of the following means, you can ensure that outdated input is never used in the bandwidth calculation:

- Discontinue using RADIUS.
- Reboot the involved element(s) soon after every change in RADIUS.
- Use the Northbound Interface of Prizm to trigger either a drop session or a reboot. Drop session forces the involved SM(s) to reregister, just as a reboot would. See the *Prizm™ Software Development Kit (SDK)*.

For each BAM parameter, the corresponding attribute and function in Prizm are identified in [Table 26](#) on [Page 301](#). To define a VLAN profile, perform the following steps.

Procedure 81: Defining a VLAN profile

1. From the main menu, select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab. An example of this tab is shown in [Figure 155](#) on [Page 272](#).
2. Select **Edit→Add a Configuration→VLAN Profile**.
RESULT: Prizm opens the Configuration Parameter Selection window. This window is shown in [Figure 187](#).
NOTE: The menu path that this window displays indicates where you will find this profile when you want to apply the profile to selected elements.

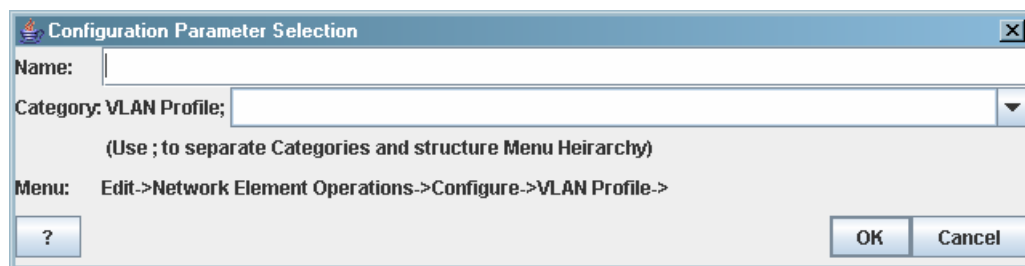


Figure 187: Example Configuration Parameter Selection window for a VLAN profile

3. For **Name**, type in a designation that you will associate with the VLAN profile that you will later define.
4. For **Category**, optionally type in a category in which Prizm should show this VLAN profile as being sorted.
NOTE: The category can be multilevel, in order of higher to lower, with semicolons delimiting between the levels. This is similar to inputting the submenu hierarchy for saved view criteria.

5. When you are satisfied with your entries, click **OK**.

RESULT: The configurable bandwidth parameters appear with their default values in the Define Configurations tab. An example is shown in [Figure 188](#).

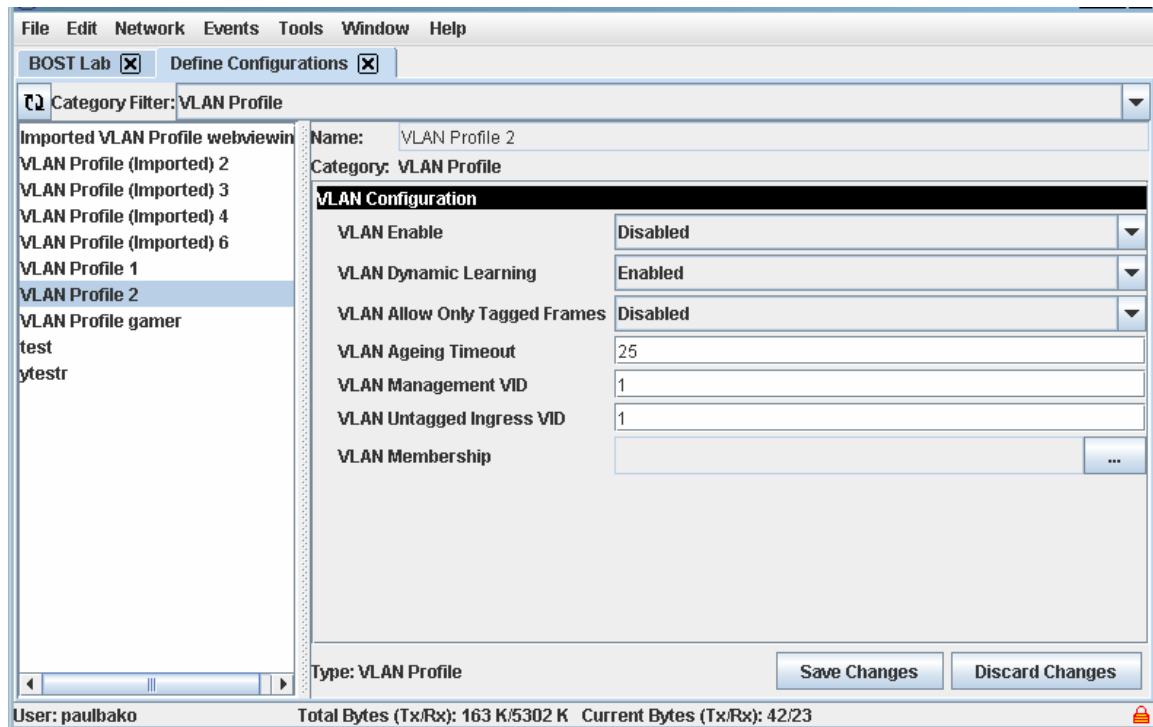


Figure 188: Configurable parameters in a VLAN profile

6. For **VLAN Enable**, specify whether Prizm should (**Enabled**) or should not (**Disabled**) send to the selected subscriber radio(s) the VLAN feature values from the particular profile.
7. For **VLAN Dynamic Learning**, specify whether the element(s) to which the profile is applied should (**Enabled**) or should not (**Disabled**) add to the VID table the VLAN IDs of upstream frames, which enter the subscriber radio through the wired Ethernet interface.
8. For **VLAN Allow Only Tagged Frames**, select the type of arriving frames that the subscriber radio(s) to which the profile is applied should tag, using the VLAN ID that is stored in the **Untagged Ingress VID** parameter.
9. For **VLAN Aging Timeout**, specify how long in minutes the subscriber radio(s) to which the profile is applied should keep dynamically learned VLAN IDs.
10. For **VLAN Management VID**, type in the VLAN ID that the subscriber radio(s) to which the profile is applied should share with the AP.
11. For **VLAN Untagged Ingress VID**, type in the VLAN ID that the subscriber radio(s) to which the profile is applied should use to tag frames that arrive at the element(s) untagged.

12. For **VLAN Membership**, click the ellipsis button.

RESULT: Prizm opens the Edit VLAN Membership window. An example of this window is shown in [Figure 189](#).

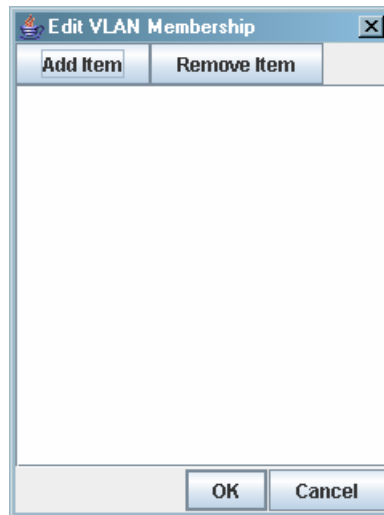


Figure 189: Example Edit VLAN Membership window

13. Click the **Add Item** button.

RESULT: Prizm opens the Add Entry window. An example of this window is shown in [Figure 190](#).

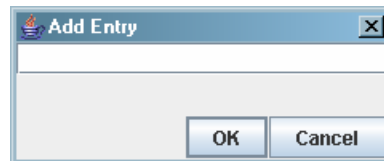


Figure 190: Example Add Entry window

14. For each VLAN in which you want the subscriber radio(s) that have this VLAN profile to be member(s), type in the VLAN ID and click **OK**.

RESULT: The Add Entry window is removed and the Edit VLAN Membership window displays all current entries.

NOTE: Some limitations govern how many VLANs in which Prizm can assign membership for the element. The number of digits that Prizm handles, or the number of characters that the database stores, for this attribute may be limited. However, handling and storage capabilities are sufficient for even the most complex of networks. Entries of 255 or fewer characters are supported. Larger entries can result in the BAM subsystem applying incorrect VLAN IDs.

15. If any ID was mistakenly entered, highlight the entry and click the **Remove Item** button.
16. When you are finished adding VLAN membership IDs, click **OK** in the Edit VLAN Membership window.

RESULT: The membership IDs for this profile are listed in the profile pane as display-only data opposite **VLAN Membership**.

17. If you need to make further edits to VLAN membership, click the  ellipsis button and repeat the above steps.
18. When you are satisfied with the profile, click the **Save Changes** button.
RESULT: Prizm opens the Confirm Update window. An example of this window is shown in [Figure 191](#).

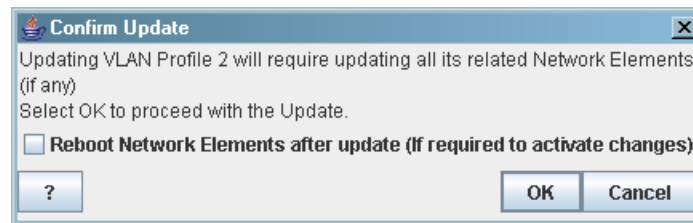


Figure 191: Example Confirm Update window for VLAN profile

19. If you want the element(s) to immediately reboot after the values in this window are written to them, check **Reboot Network Elements after update**.
IMPORTANT: Reboot or re-registration is not required for pushing the VLAN values for the attributes shown in [Figure 188](#) to an element, *only if* the server in which you are making these changes is listed as an authentication server in the subscriber radio or Powerline Modem. This is because Prizm uses a special BAM protocol, not SNMP, to push these values from either a VLAN profile or a custom configuration template. However, you will not see SNMP attribute values change for the element. Once you have associated a VLAN profile with an element, no parameter for which the profile imposes a value can have its value overwritten by a custom configuration template.
 If you want to reboot at a later time to apply the changes, leave this box unchecked.
20. Click **OK**.
RESULT: Prizm opens the Updating Configuration window, where it documents the associated events. An example of this window is shown in [Figure 192](#) on [Page 323](#).

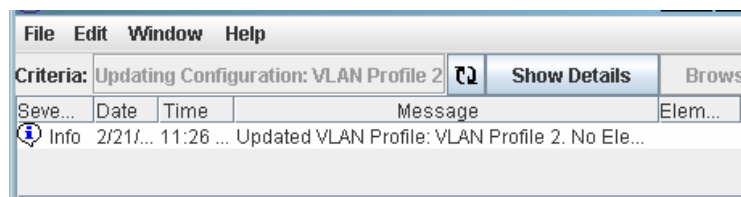


Figure 192: Example Updating Configuration window for VLAN profile

The profile is now available to apply to selected elements.

NOTE: You can close this window without consequence.

===== end of procedure =====

To apply a defined VLAN profile, perform the following steps.

Procedure 82: Applying a VLAN profile

1. In a network view, select the subscriber radio(s) in one of the three following ways:
 - Highlight a single element.
 - Check the boxes of multiple elements.
 - Highlight an element under which you want the VLAN profile applied to all subscriber radios.

2. From the main menu, select
Edit→Configure→VLAN Profile→VLAN Profile Name.

RESULT: Prizm opens a Task Attributes window. An example of this window is shown in [Figure 193](#).

The screenshot shows the 'Task Attributes' window with the 'General' tab selected. It contains several configuration options and a table for VLAN settings.

Task Attributes

General | Elements

☒ Reboot Network Elements after update (If required to activate changes)

☒ Update Configuration History

Configuration

Select Configuration: GHTestVP

VLAN Configuration	
VLAN Enable	Disabled
VLAN Dynamic Learning	Enabled
VLAN Allow Only Tagged Frames	Disabled
VLAN Aging Timeout	20
VLAN Management VID	1
VLAN Untagged Ingress VID	1
VLAN Membership	

(Note: Blank Parameters will not be sent to the Elements. Use Parameters with Spaces to clear values)

? Run Later Run Now Cancel

Figure 193: Example Task Attributes window for applying a VLAN profile

3. Click the Elements tab.

4. If you selected the element(s) to which you want to apply the VLAN profile, check **Selected Network Elements**.

If you selected an element under which you want the VLAN profile to apply to all subscriber radios, check **Selected Network Branches**.

5. Click the General tab.

6. If you want the element(s) to immediately reboot after the VLAN profile is associated with them, check **Reboot Network Elements after update**.

IMPORTANT: Reboot or re-registration is not required for pushing the VLAN values for the attributes shown in [Figure 193](#) to an element, *only if* the server in which you are making these changes is listed as an authentication server in the subscriber radio or Powerline Modem. This is because Prizm uses a special BAM protocol, not SNMP, to push these values from either a VLAN profile or a custom configuration template. However, you will not see SNMP attribute values change for the element. Once you have associated a VLAN profile with an element, no parameter for which the profile imposes a value can have its value overwritten by a custom configuration template.

If you want to reboot at a later time to apply the changes, leave this box unchecked.

7. Click the **Run Now** button.

RESULT: Prizm opens a Configure Element(s) window. An example of this window is shown in [Figure 194](#).

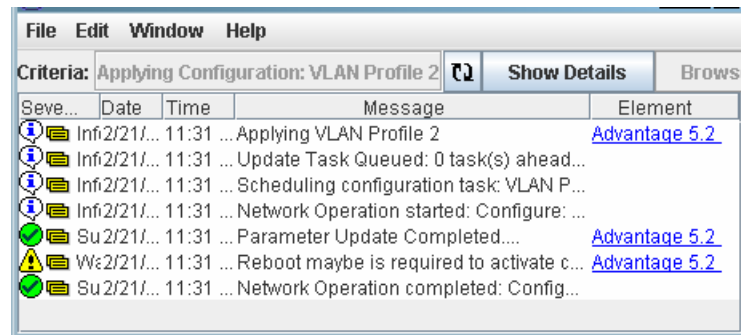


Figure 194: Example Configure Element(s) window for applying a VLAN profile

NOTE: You can close this window without consequence.

===== end of procedure =====

To modify the definition of an existing VLAN profile, perform the following steps.

Procedure 83: Updating a VLAN profile

1. From the main menu, select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab. An example of this tab is shown in [Figure 155](#) on Page 272.
2. In the left pane, select (highlight) the VLAN profile that you want to update.
RESULT: Prizm open the Configuration Parameter Selection window. An example of this window is shown in [Figure 187](#) on Page 320.
3. Change the values of any attribute(s) as desired.
NOTE: For the meanings of the various attributes, see [Procedure 81: Defining a VLAN profile](#) on Page 320.
IMPORTANT: For the **VLAN Membership** attribute, if you remove all IDs, Prizm *does not* send this change to the subscriber radio in run time. If you want the radio to immediately be a member of no VLANs, remove all IDs and then either
 - use the Northbound Interface of Prizm to trigger either a drop session or a reboot. Drop session forces the involved element(s) to re-register, just as a reboot would. See the *Prizm™ Software Development Kit (SDK)*.
 - directly reboot the element. (Checking **Reboot Network Elements after update** will not work because Prizm *does not* consider a change in VLAN membership as requiring a reboot.)
4. When you are satisfied with the changes, click **Save Changes**.
RESULT: Prizm opens the Confirm Update window. An example of this window is shown in [Figure 191](#) on Page 323.
5. If you want the element(s) to immediately reboot after the values in this window are written to them, check **Reboot Network Elements after update**.
IMPORTANT: Reboot or re-registration is not required for pushing the VLAN values for the attributes shown in [Figure 193](#) to an element, *only if* the server in which you are making these changes is listed as an authentication server in the subscriber radio or Powerline Modem. This is because Prizm uses a special BAM protocol, not SNMP, to push these values from either a VLAN profile or a custom configuration template. However, you will not see SNMP attribute values change for the element. Once you have associated a VLAN profile with an element, no parameter for which the profile imposes a value can have its value overwritten by a custom configuration template.

If you want to reboot at a later time to apply the changes, leave this box unchecked.
6. Click **OK**.
RESULT: Prizm opens the Updating Configuration window, where it documents the associated events.
NOTE: You can close this window without consequence.

===== end of procedure =====

At any time, you can dissociate an element or group of elements from a VLAN profile. To do so, perform the following steps.

Procedure 84: Removing a VLAN profile association

1. In a Network Browser view, select the elements for which you want to cancel the VLAN profile association.
2. From the main menu, select **Edit→Configure→VLAN Profile→Remove VLAN Profile Association**.

NOTE: In the Define Networks tab, this option is available at

Edit→Network Element Operations→Configure→VLAN Profile.

RESULT: The element retains the last VLAN values that were applied by the VLAN profile, but no future changes in the VLAN profile will change the VLAN values in the element.

===== end of procedure =====

If you ever want to completely remove a VLAN profile from Prizm, perform the following steps.

Procedure 85: Removing a VLAN profile

1. From the main menu, select **Network→Define Configurations**.
RESULT: Prizm opens the Define Configurations tab. An example of this tab is shown in [Figure 155](#) on Page 272.
2. In the left pane, select (highlight) the VLAN profile that you want to delete.
RESULT: Prizm opens the VLAN profile in the right pane.
3. From the main menu, select **Edit→Delete the Configuration**.
RESULT: The element retains the last VLAN values that were applied by the profile.

===== end of procedure =====

8.12 UPDATING ELEMENT FIRMWARE OR SOFTWARE

If your server holds a Prizm server license, then Prizm allows you to specify how and when the elements in your networks should be updated to a new firmware or software package.¹⁹ You can optionally set Prizm to force master elements to update all registered slave elements (even any that are not represented in the Prizm database). Otherwise, Prizm updates only elements whose state is either Discovered or Managed.

As with any other task in the Task Scheduler, you can specify a dynamic element list to be built anew (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. Further, you can expressly include only those elements or their full branches. The elements can be of Canopy, PTP, Powerline, or Ultra-Light branding and each must have a valid IP address.

¹⁹ A BAM server license does not authorize Prizm to perform firmware or software updates on elements.

8.12.1 Importance of Sequence in an Update Operation

A typical Canopy network consists of multiple layers in which some devices are effectively behind (receiving network connection through) another device. In this context, commonly an access point module is behind a backhaul module, and a sector of subscriber modules are behind an access point module. Accurately reflecting these layers in a Prizm network hierarchy can be critical for an update task to update elements in a sequence that avoids losing connection to an access point module during an update (one that is behind another subscriber/access point tandem in a Remote AP deployment).

As the *only* exception, the hierarchical position of high-speed backhaul modules (PTP 400 and PTP 600) must be juxtaposed, so that the task first updates the element that is behind the other in the pair. Take the following steps to ensure these updates succeed:

1. In the network browser hierarchy, move the parent to beneath (behind) the child.
2. In the task definition, perform the following steps:
 - In the Configuration tab of the Task Attributes window, select **Continue updating child elements if parent element fails to update.**
 - In the Elements tab of the Task Attributes window, include both the parent and the child.
3. Ignore the failure message that displays after the parent is updated.
NOTE: This occurs because the verification detects that the link dropped during the update task. However, it is normal for the link to drop after the first (parent) update and be restored after the second (child) update. Verification detects this second update also and responds by displaying a success message.
4. After the task has completed, perform the following steps:
 - a. Select (check the checkbox of) the parent element(s) in either a network browser or an event viewer.
 - b. Select **Edit→Poll Selected Element(s).**
RESULT: Prizm populates the database with current data from the parent element(s).

8.12.2 SM Auto Update Feature

In Canopy point-to-multipoint links, the SM Auto Update feature directs the access point module to

1. discover the versions of software and firmware that are operating on each of its registered subscriber modules.
2. determine, from these versions, whether an update is appropriate.

When an update is appropriate, the access point module instructs the subscriber module on where to obtain the update: either from a TFTP server (if it exists on the same computer as the Prizm server) or from the access point module itself.

This feature can be fast and efficient. Moreover, for auto discovered subscriber modules, it is the only means to automatically update software or firmware. Without knowing their IP addresses, Prizm cannot directly communicate with them. Thus, the virtual proxy capability in the access point module with the SM Auto Update feature enabled must trigger their updates.

As a Prizm user defining an update task, you optionally enable SM Auto Update, and then the task

1. sets the Update Application Address parameter in General tab of the access point module Configuration page to the IP address of the Prizm server, so that Prizm is the only source who can enable the feature in the access point module.
2. sends the UDP command on Port 2501 to enable the feature, whereupon only a reboot or a deliberate user action can disable it.

Prizm provides a monitor that allows you to see an update task in progress and interrupt it if necessary; for example, if the access point module reboots during the task. This monitor accurately reflects the activity. However, the access point module itself does not, if you use telnet to query for status of the task. In this case, the module considers only SM Auto Update activity that resulted from a command issued via telnet on Port 23, not also via UDP on Port 2501.

Where Subscriber Modules Obtain Update Files

The update task requires you to select whether subscriber modules get their update files from their access point module or from a network TFTP server. Typically, if the subscriber modules are configured for public accessibility, then using the TFTP server to transport files can allow a greater number of subscriber modules to be simultaneously updated. By default in this scenario, the TFTP server simultaneously updates 20 subscriber modules for every access point module included in the task definition. However, if you think that there is a chance of the TFTP server overloading, you can optionally reduce this number.

The CMMmicro device requires the TFTP service for updates. However, you should ensure that no router or firewall that exists between Prizm and a CMMmicro denies communication in either direction on the TFTP port (Port 69), because this would prevent the transfer of the update files to the element.

If you have and select a TFTP server, then you must also provide information about access to it: the IP address that can reach the slave devices by TFTP and the root directory for TFTP on the server. Configure these as follows:

- The drop-down list consists of only IP addresses for the Prizm server device. The appropriate one to choose is the one in which the Canopy network resides.
- You are responsible for configuration of the TFTP server, which includes
 - properly setting up its root directory.
 - ensuring that it is on the network so that all subscriber modules can access it.

After configuring these, if you click the **Test TFTP Server** button, then Prizm detects any error that you imposed and displays an error message or indicates success. However, success represents that the TFTP configuration is proper, not also that it will work for SM Auto Update. For example, the test can indicate success where the TFTP server is external, but subscriber modules have an IP configuration for only local network access. Where you may have doubts based on this, use telnet connections with the subscriber modules to ping the TFTP server. For any subscriber module whose ping fails, select **Use Access Point as File Server** in a separate task.

For element security that transcends having the TFTP server predictably transmit the update files on Port 20, select **Use Passive FTP for Transferring Files to Network Elements**.

If SM Auto Update is selected, the task automatically finishes all *direct* updates (where Prizm is the source of the files), including those on subscriber modules that you deliberately selected in the Elements tab, before it enables the SM Auto Update feature on the access point modules. After the network update, you should

1. run a task to disable SM Auto Update.
2. use direct update on elements for which special conditions prevented an update during the main task.

This can avoid the following kinds of problems. If SM Auto Update is left enabled, then

- the traffic of Prizm constantly switching software images on the access point consumes bandwidth for no good reason.
- subscriber modules that have scheduling settable to either hardware or software (those that do not require a firmware upgrade for hardware scheduling) may continuously seek an unneeded update.
- an access point module can downgrade brand new subscriber modules that are added to its sector.

How Many Concurrent Updates to Allow

Part of the update task definition is setting a maximum number for devices of any type that the Prizm server will *directly* and concurrently update. Base this number upon

- the processing power and available RAM on the Prizm server device.
- whether subscriber modules are getting their files from
 - Prizm (**Use TFTP File Server on Prizm server machine** is selected and the subscriber modules are deliberately selected in the Elements tab)
 - their access point module (**Use Access Point as File Server** is selected, the subscriber modules *do not* have routable IP addresses, or the subscriber modules are not deliberately selected in the Elements tab).

Knowing thus how many elements Prizm will directly update during the task, you can apply the following generalization to generate a maximum number for concurrent updates: one per 20 MB RAM. For example, if the Prizm server device has 256 MB RAM, then about 13 concurrent updates may be a practical maximum. Consider other factors as well. Concurrent updates from both Prizm and the access point modules in the network together diminish available bandwidth as they transport files to the elements. So, you may benefit from setting a lower than calculated maximum, setting the update task to run when your customers use the least amount of bandwidth, or both.

Subscriber Module Platform and Software Compatibility

Although a sector can contain subscriber modules of various firmware versions, and the software images that are compatible with P7/P8/P9 platform differ from those that are compatible with P10 platform, the access point module can broker only one set of software images at a time. During SM Auto Update, the update package tries to identify what image is best to load first onto the access point module. If this attempt fails to identify one, then the package uses the selection that you make, either

Auto Update Canopy P7/P8/P9 First or **Auto Update Canopy P10 First**. If your network is entirely P7/P8/P9 platform or entirely P10 platform, then your selection can avoid the delay inherent in the package trying to decide.

Whether to Continue Child Updates When the Parent Fails

Some operators do not need to be concerned about software releases on parent elements failing to match those on child elements. Some do. So, Prizm provides the option to have the task stop or continue updating child elements where an update of the parent element did not succeed. A parent element may fail to update in any of the following cases:

- The IP address of the parent element is
 - not routable.
 - incorrectly specified.
- The `hosts` file contains no host value.
- The packages that the task specifies contain no image appropriate for the device type of the parent element.
- The parent element is not active on the network.

Since these are all likely fixable conditions, you may want to have them not prevent updates to the child elements if a temporary mismatch in software release will not render the child elements unreachable from the parent. If this is true, select

Continue updating child elements if parent element fails to update.

8.12.3 Downgrades That Fail

An attempted Canopy radio system downgrade from Release 8.x to 7.x may fail for either of the following reasons:

- Scheduling must be consistent from the later release to the earlier. Since Release 8.x supports only hardware scheduling, you can downgrade an element that is operating on Release 8.0 to only a 7.x release that supports hardware scheduling. If your access point module is not an Advantage AP, then the only downgrade possible is to Release 7.3.6. After a successful downgrade to Release 7.x, you can switch your elements from hardware scheduling to software scheduling, if you want to.
- Licensing restrictions imposed by third parties prevent Canopy radios that are shipped with Release 8.x or later from ever being downgraded to earlier than Release 8.x. If you run an update task to do so, then Prizm displays the message `Can not downgrade below 8.0` in both the history log.

8.12.4 Time Consumed by Update Task Execution

The following factors together (generally ordered from most impacting to least) affect how long Prizm requires to complete an update task:

1. the performance speed of the Prizm server device relative to how many simultaneous update tasks are running
2. whether or not SM Auto Update is selected for the task
3. how many elements the task is updating
4. the hierarchy in the network
5. the device types that compose the selected element list for the task.

In a typical case, the update of a Canopy network element requires about 4.5 minutes, including the software *and* firmware transfer to the element, programming as new files are burned into it, and the necessary reboot. The update requires less time if the task updates only the software *or* the firmware. Approximate intervals for these stages of the update are as follows:

- software *and* FPGA transfer: 30 seconds
- programming with the FPGA load: 60 seconds
- programming with the software: 130 seconds
- reboot: 30 seconds

The following assumptions are made for projected update time intervals that are shown in [Table 29](#):

- a new software release *and* new firmware release for each element listed
- even distribution of subscriber modules across all access point modules listed
- all subscriber modules listed being registered and available for update.

The layer number indicates the number of hops that exist between Prizm and the element(s) in that column.

Table 29: Estimates of time required for network updates

Layer						Total Elements	Minutes	Notes
1	2	3	4	5	6			
1 BH	1 BH	6 AP	200 SM			208	59	1, 3, 5
							23	2, 4, 5
3 BH 6 AP	3 BH 100 SM	36 AP	2,000 SM			2,148	122	1, 3, 5
							41	2, 4, 5
3 BH 12 AP	3 BH 1,000 SM	2 BH 36 AP	2 BH 3,000 SM	24 AP	2,000 SM	6,082	189	1, 3, 5
							68	2, 4, 5
NOTES: 1. Using the access point module as the file transfer server for SM Auto Update. 2. Using an external TFTP server for SM Auto Update, assuming the TFTP server can handle all connection requests and that network bandwidth is not a limiting factor between the TFTP server and the subscriber modules. 3. Using the default value of not more than 4 simultaneous updates from Prizm. 4. Increasing the number to not more than 10 simultaneous updates from Prizm. 5. Not accounting for the time to switch SM Auto Update image types on an access point module. (Assuming only one subscriber module image type exists on any individual access point module.)								

The overall patterns in this table reflect that the Prizm server processing power and the depth of the network tree are the most significant factors in the time required for the update of the network. Although the majority of elements are included as breadth of the tree reached outward, it does not greatly affect the update time where the task is configured to fully use the SM Auto Update capability.

8.12.5 Update Package Loading

An update package can be loaded (made available for the update task) in either of two ways:

- The server administrator can mount the package file on the server, in a directory to which an XML file on the server points. This is documented in the *Motorola Canopy® Prizm Release 3 Administration Guide*.
- You can perform the following steps on the Prizm client device.

Procedure 86: Loading an update package file from the client side

1. Mount the package anywhere on the client machine.
2. From the main menu in the client application, select **File→Settings→Edit Settings**.
3. In the left pane of the resulting Settings window, highlight **Manage Packages**.
RESULT: The right pane displays information about loaded packages, as shown in [Figure 195](#).

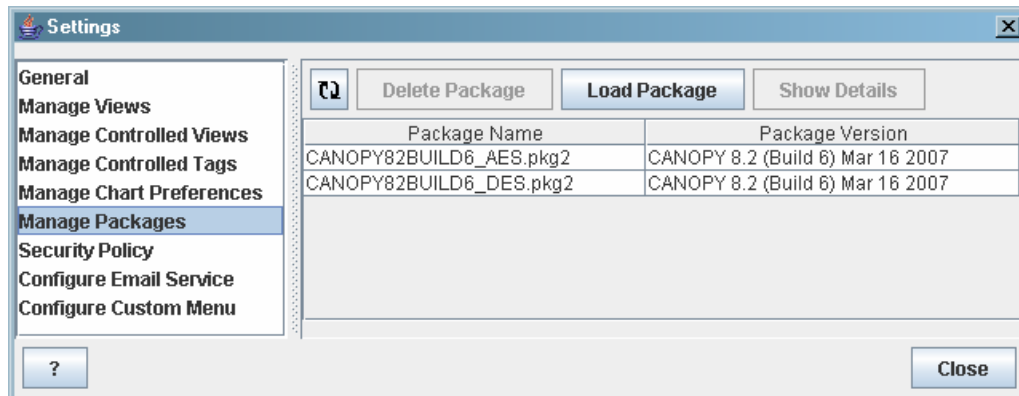


Figure 195: Example Settings window, Manage Packages pane

4. Click the refresh button () to cause the client to refresh the list of packages from the Prizm server.
5. Click the **Load Package** button.
6. In the Open window, browse to the folder where the package file is stored.
7. Double click the package file.
RESULT: Prizm adds the package to the repository on the Prizm server and to the Manage Packages pane, where any packages that have been directly loaded onto the Prizm server also are listed.
8. Highlight the package.
9. Click the  button.
RESULT: The right pane displays full information about the loaded package, as shown in [Figure 196](#).

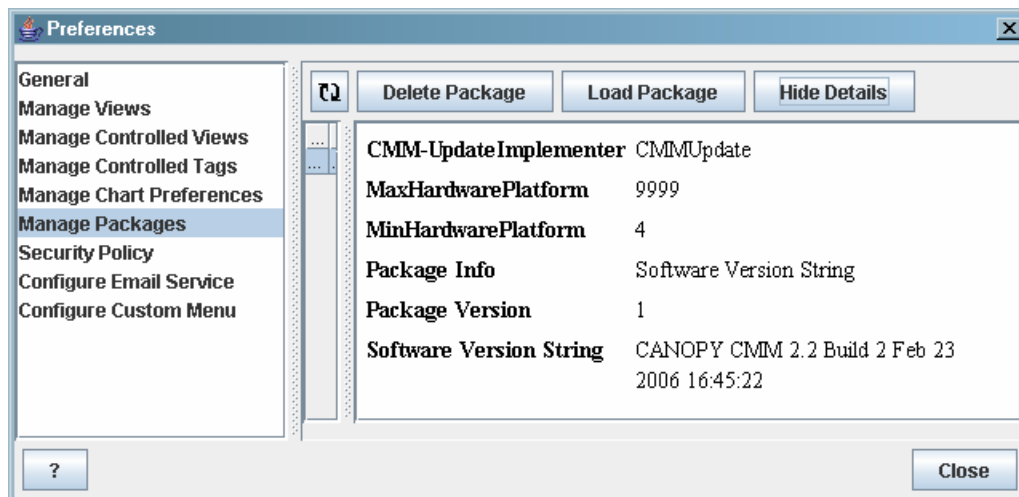


Figure 196: Example package details

10. Review the details to ensure that this is the package that you want to apply to elements in an upcoming task.

===== end of procedure =====

8.12.6 Update Task Process

An update task uses the following sequence:

1. checks the release of the package against the release on the element.
2. continues if the update is appropriate, based on those releases.
3. transfers the package by the protocol you selected (FTP or TFTP) in the task definition.
4. reprograms the master element by the telnet protocol.
5. if the **Enable Auto Update Slave** feature is selected in the task definition
 - a. enables the SM Auto Update feature on the master device.
 - b. reprograms the next master element, while the master reprograms all of its registered slave elements.
 if the **Enable Auto Update Slave** feature is not selected in the task definition
 - and **Select Network Branches** is selected
 - a. then directly reprograms all slave elements that are registered to the master.
 - b. reprograms the next master element, and so forth
 - and **Select Network Elements** is selected, then reprograms the next element.
6. verifies the software updates.
7. refreshes the successfully updated elements in the database.

Prizm can configure and display as a Prizm attribute the element parameter Auto Update Server. This is the server IP address for the auto update operation.

8.12.7 Update Device Firmware or Enable Auto Update Slave Task Definition

To define one of these tasks, perform the following steps.

Procedure 87: Adding a task to update element firmware or software

1. From the main menu, select **Tools→Task Scheduler**.
RESULT: Prizm opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#) on Page 381.
2. Select **Edit→Add New Task**.
RESULT: Prizm opens the Select Task Category window. An example of this window is shown in [Figure 232](#) on Page 382.
3. Highlight **Update Device Firmware** or **Enable Auto Update Slave**.
4. Click **OK**.
RESULT: Prizm opens a Task Configuration window. An example of this window is shown in [Figure 197](#).

The image shows a 'Task Configuration' dialog box. It has a title bar with a Prizm icon and a close button. The dialog is divided into several sections. The 'Name' field is empty. The 'Category' field is set to 'Enable Auto Update Slave'. Below 'Category' is the 'Attributes' section, which contains a 'Modify' button and a large empty text area. Below that is the 'Schedule' section, also containing a 'Modify' button and a large empty text area. At the bottom, there are two dropdown menus: 'Scope' is set to 'Shared' and 'Owner' is set to 'paulbako'. At the very bottom are three buttons: a help button with a question mark, an 'OK' button, and a 'Cancel' button.

Figure 197: Example Task Configuration window, Enable Auto Update Slave task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this window is shown in [Figure 198](#).

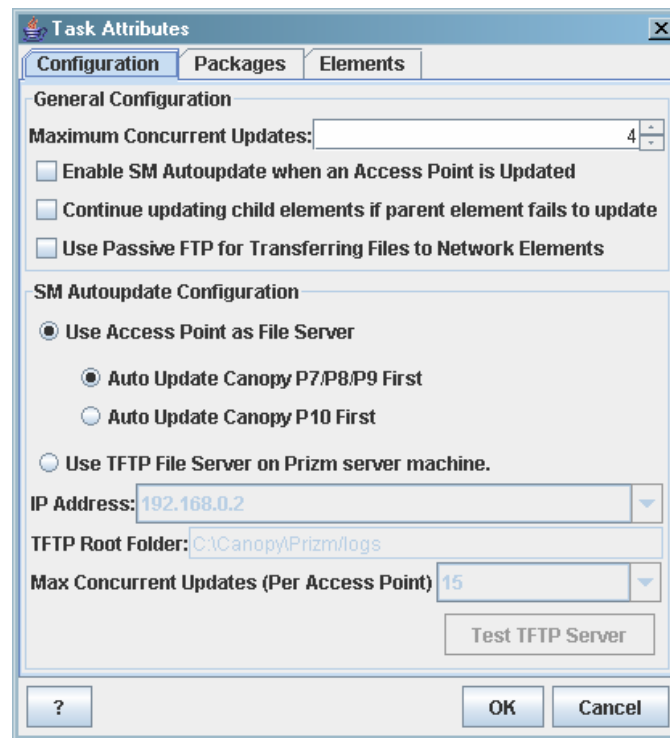


Figure 198: Example Task Attributes window, Update Device Firmware or Enable Auto Update Slave task

7. In the Configuration tab, perform the following steps:
 - Set the General Configuration attributes for the task, based on your local preferences.
IMPORTANT: A master element should always be updated before its registered slave elements are. A slave element that runs a later release than its master may drop and be unable to re-establish its registration and therefore require a truck roll to downgrade it to its previous release. Hence, the safer course for the second setting is to leave the **Continue updating child elements if parent element fails to update** *unchecked*. For element security that transcends having the TFTP server transmit the update files on Port 20, select **Use Passive FTP for Transferring Files to Network Elements**.
 - For the SM Auto Update Configuration attributes, select whether the slave elements should be programmed from
 - the master element(s) (**Use Access Point as File Server**).
NOTE: If your network is entirely P7/P8/P9 platform or entirely P10 platform, select your platform to be updated "first":
Auto Update Canopy P7/P8/P9 First or
Auto Update Canopy P10 First. This will avoid a delay for the package to consider elements of the other platform.

- the Prizm server (**Use TFTP File Server on Prizm Server Machine**).
In this case, you must select from the drop-down list the server machine IP address that can reach the slave devices by TFTP and identify the root folder for TFTP on the server.
- If you configured the TFTP file server, then
 - a. set a maximum for the number of concurrent updates
(Max Concurrent Updates (Per Access Point)).
 - b. click the **Test TFTP Server** button to ensure that the IP address and root folder specified are correct.
RESULT: If a connection cannot be completed, then Prizm provides an error indication as follows:



Figure 199: Test TFTP Server window, Test Failed indication

- c. diagnose and fix the connection problem.
 - d. repeat the test.
- 8. Click the Packages tab.
RESULT: The Packages tab displays a list of the currently loaded packages. An example of this tab is shown in [Figure 200](#).

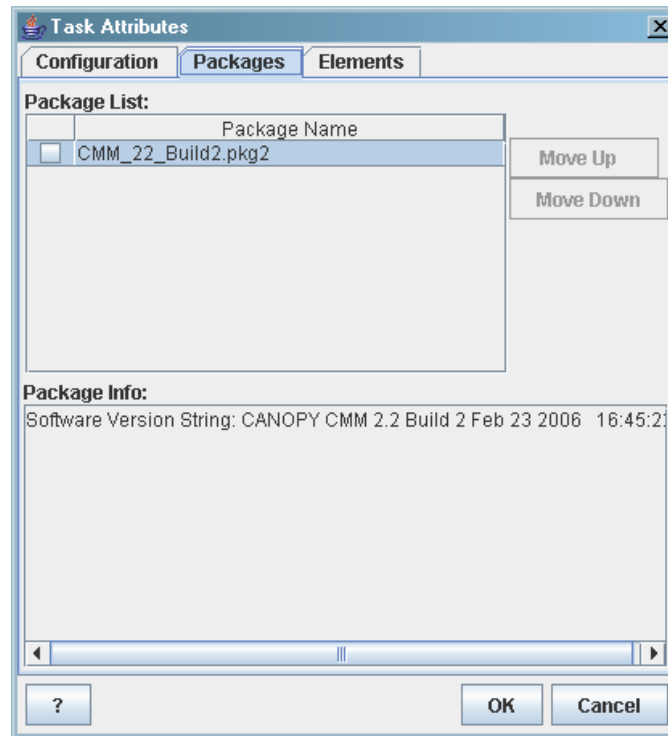


Figure 200: Example Packages tab, Update Device Firmware or Enable Auto Update Slave task

9. Select (check) the appropriate package name for the task you are defining.
10. Click the Elements tab.
11. Select the elements that are to be affected by this task.

NOTE: The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under

 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
12. Click **OK**.
13. Back in the Task Configuration window, click the **Modify** button associated with **Schedule**.
14. Schedule the task.

NOTE: Task scheduling is defined under [Scheduling Prizm Tasks](#) on Page 381.
15. Back in the Task Configuration window, use the drop-down menu to select the **Scope** of the task **Shared** (can be modified or run by any other user) or **Private** (can be modified or run by only the **Owner** specified in the next field).

16. Use the drop-down menu to select a user who will own (be allowed to modify or run) this task.
17. Click **OK**.
RESULT: The list in the Define Tasks tab includes the new Update Device Firmware or Enable Auto Update Slave task.
18. Highlight the task.
19. From the main menu, select **Edit→View Task**.
20. Review the description in the Task Configuration window.
21. When finished, click the **Close** button.
22. If you want this task to run on its defined schedule, select **Edit→Activate Task**.
If you want Prizm to indefinitely delay implementing the schedule, then select **Edit→Deactivate Task**.
NOTE: If a task is active, a check appears in the checkbox adjacent to the task name in the Define Tasks tab.

===== end of procedure =====

From a network view, you can initiate an update task definition by selecting **Edit→Software Update** and then one of the three update tasks:

- **Disable Auto Update Slave**
- **Enable Auto Update Slave**
- **Update Device Firmware**

The result is the same as if you access the Task Scheduler from the **Tools** menu and select one of these three tasks, except that in the Elements tab of the Task Attributes window, the elements that are the object of the task are those that are already selected in the network browser that is the top tab in the console. You cannot add any elements to or delete any from the list by filtering or selecting individual elements. However, you can select whether the task should be limited to the expressly selected elements or broadened to include their branches. An example of this kind of Elements tab is shown in [Figure 201](#).

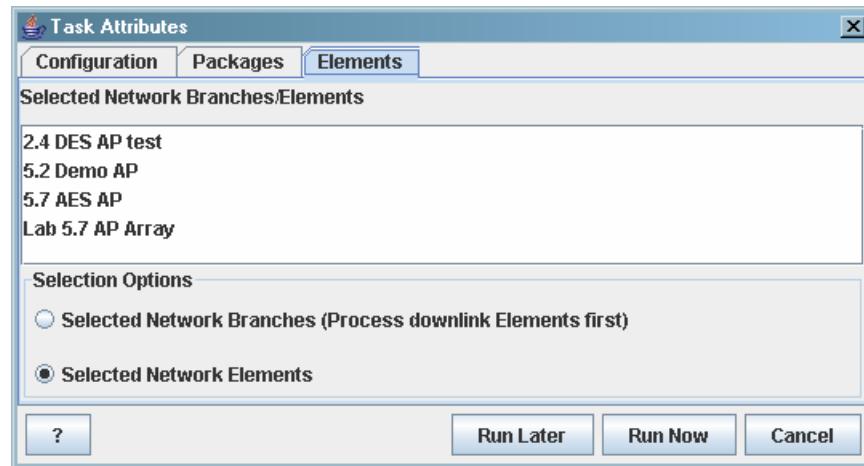


Figure 201: Example Task Attributes window Elements tab, with elements selected in network browser

8.12.8 Auto Update Task Monitor

During an update task that involves the Auto Update Slave feature in Prizm, you can monitor the update process and, when the process reaches an individual master element on which you selectively want to disable the SM Auto Update feature, you can do so.

From the main menu, select **Tools→Auto Update Monitor**. Prizm opens the Auto-Update Tasks tab in the console. If you click the **Show Events** button, then Prizm splits the tab into two panes: the left, which shows the status for each task and element involved in it; and the right, which shows events correlated to element names.

If Prizm receives a trap that indicates the reboot of a master element that is involved in an auto update process, then

- if the Auto Update Monitor is open, Prizm attempts to re-enable auto update on the master element.
- if the Auto Update Monitor is not open, Prizm switches the Auto Update attribute value of the master element to Disabled.

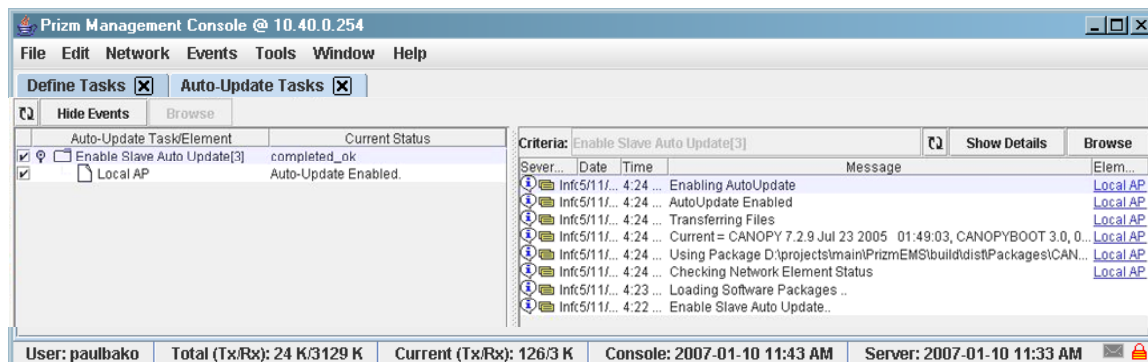


Figure 202: Example Auto-Update Tasks tab

As this tab dynamically shows the progress of an Auto Update task, you can select either the whole current process or an individual element affected by it and then, from the main menu, select **Edit→Disable Auto-Update** to stop update from the master element(s) to the slave element(s). Other commands available from the **Edit** menu while this tab is open include **Create New Note** and **Find Event**. These commands behave as they do in Event Viewer tabs of the Prizm console. (See [Appending a Note to the Event Log Entry](#) on Page 217 and [Finding Events](#) on Page 214.)

When the update task has finished, use a network browser or filtered view to verify that all elements are now operating with the desired firmware, boot, and software versions. If any updates were unsuccessful, this may be because of one of the conditions (that are listed for parent elements) in [Whether to Continue Child Updates When the Parent Fails](#) on Page 331.

8.12.9 Disable Auto Update Task Definition

To define a Disable Auto Update task, perform the following steps.

Procedure 88: Adding a task to disable the Auto Update Slave feature

1. From the main menu, select **Tools→Task Scheduler**.
RESULT: Prizm opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#) on Page 381.
2. Select **Edit→Add New Task**.
RESULT: Prizm opens the Select Task Category window. An example of this window is shown in [Figure 232](#) on Page 382.
3. Highlight **Disable Auto Update Slave**.
4. Click **OK**.
RESULT: Prizm opens a Task Configuration window. An example of this window is shown in [Figure 203](#).

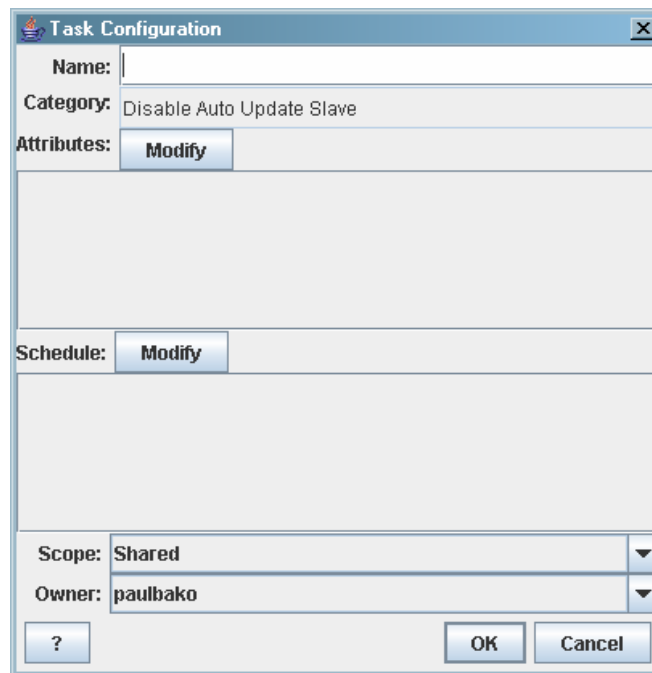


Figure 203: Example Task Configuration window, Disable Auto Update Slave task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this kind of Task Attributes window is shown in [Figure 204](#).

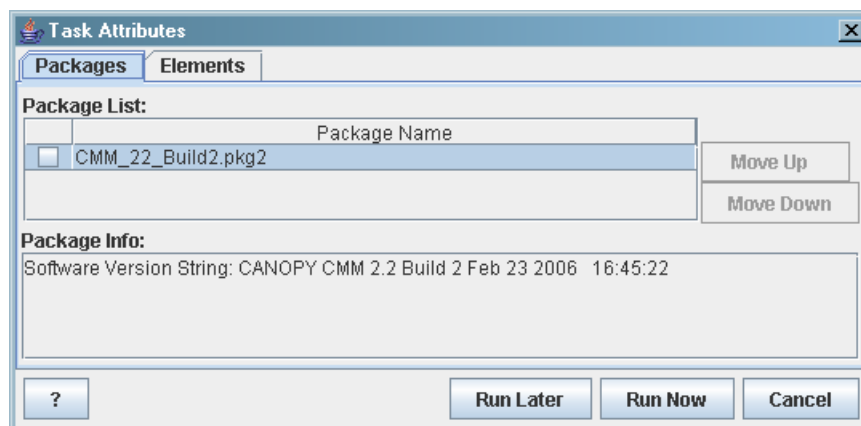


Figure 204: Example Packages tab, Disable Auto Update Slave task

7. Select (check) the appropriate package name for the task you are defining.
8. Click the Elements tab.

9. Select the elements that are to be affected by this task.
NOTE: The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
10. Click **OK**.
11. Back in the Task Configuration window, click the **Modify** button associated with **Schedule**.
12. Schedule the task.
NOTE: Task scheduling is defined under [Scheduling Prizm Tasks](#) on Page 381.
13. Back in the Task Configuration window, use the drop-down menu to select the **Scope** of the task **Shared** (can be modified or run by any other user) or **Private** (can be modified or run by only the **Owner** specified in the next field).
14. Use the drop-down menu to select a user who will own (be allowed to modify or run) this task.
15. Click **OK**.
RESULT: The list in the Define Tasks tab includes the new Disable Auto Update Slave task.
16. Highlight the task.
17. From the main menu, select **Edit→View Task**.
18. Review the description in the Task Configuration window.
19. When finished, click the **Close** button.
20. If you want this task to run on its defined schedule, select **Edit→Activate Task**.
If you want Prizm to indefinitely delay implementing the schedule, then select **Edit→Deactivate Task**.
NOTE: If a task is active, a check appears in the checkbox adjacent to the task name in the Define Tasks tab.

===== end of procedure =====

From a network view, you can initiate an update task definition by selecting **Edit→Software Update** and then one of the three update tasks:

- **Disable Auto Update Slave**
- **Enable Auto Update Slave**
- **Update Device Firmware**

The result is the same as if you access the Task Scheduler from the **Tools** menu and select one of these three tasks, except that in the Elements tab of the Task Attributes window, the elements that are the object of the task are those that are already selected in the network browser that is the top tab in the console. You cannot add any elements to or delete any from the list by filtering or selecting individual elements. However, you can select whether the task should be limited to the expressly selected elements or broadened to include their branches.

8.13 CLEARING ELEMENT LOGS

Prizm facilitates clearing the event logs of any set of elements either on demand or on schedule. To clear element logs, perform the following steps.

Procedure 89: Clearing element event logs

1. From the main menu, select **Tools→Task Scheduler**.
RESULT: Prizm opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#) on Page 381.
2. Select **Edit→Add New Task**.
RESULT: Prizm opens the Select Task Category window. An example of this window is shown in [Figure 232](#) on Page 382.
3. Highlight **Clear Element Log**.
4. Click **OK**.
RESULT: Prizm opens a Task Configuration window. An example of this window is shown in [Figure 205](#).

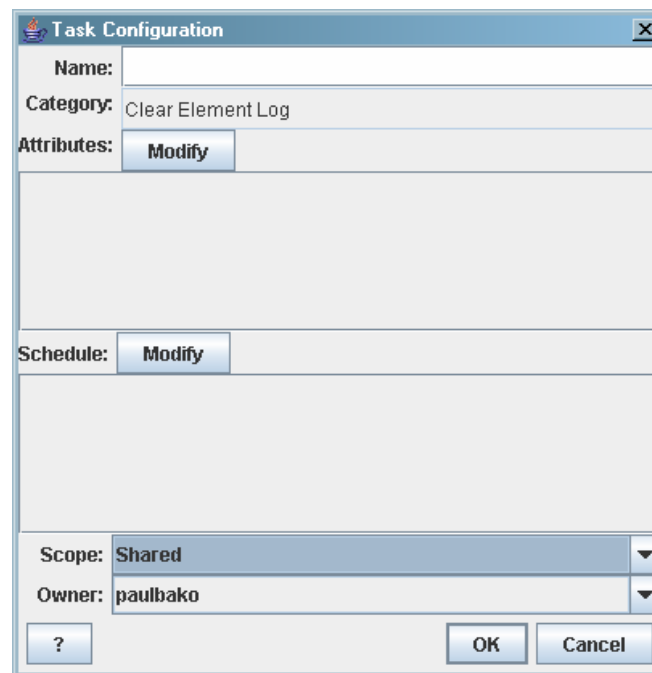


Figure 205: Example Task Configuration window, Clear Element Log task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this kind of Task Attributes window is shown in [Figure 206](#).

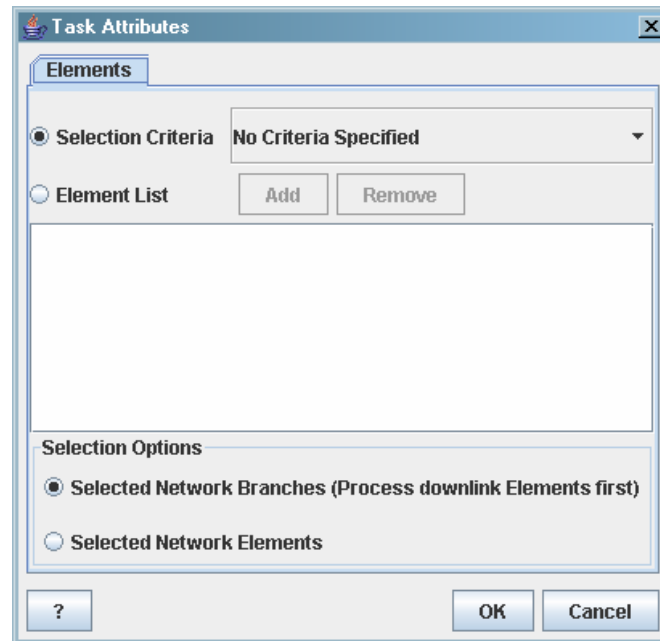


Figure 206: Example Task Attributes window, Clear Element Log task

7. Select the elements that are to be affected by this task.
NOTE: The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under
 - [Constructing a Custom View](#) on Page 196
 - [Defining a Basic View Filter](#) on Page 197
 - [Defining an Advanced View Filter](#) on Page 198
 - [Defining a View of Directly Selected Elements](#) on Page 205.
8. Click **OK**.
9. Back in the Task Configuration window, click the **Modify** button associated with **Schedule**.
10. Schedule the task.
NOTE: Task scheduling is defined under [Scheduling Prizm Tasks](#) on Page 381.
11. Back in the Task Configuration window, use the drop-down menu to select the **Scope** of the task **Shared** (can be modified or run by any other user) or **Private** (can be modified or run by only the **Owner** specified in the next field).

12. Use the drop-down menu to select a user who will own (be allowed to modify or run) this task.
13. Click **OK**.
RESULT: The list in the Define Tasks tab includes the new Clear Element Log task.
14. Highlight the task.
15. From the main menu, select **Edit→View Task**.
16. Review the description in the Task Configuration window.
17. When finished, click the **Close** button.
18. If you want this task to run on its defined schedule, select **Edit→Activate Task**.
If you want Prizm to indefinitely delay implementing the schedule, then select **Edit→Deactivate Task**.
NOTE: If a task is active, a check appears in the checkbox adjacent to the task name in the Define Tasks tab.

===== end of procedure =====

9 SETTING USER PREFERENCES

9.1 GENERAL PREFERENCES

Prizm allows each user to set preferences that affect the display and the behavior of the user interface. These preferences include

- what windows will appear immediately after you log into Prizm, including their docked or undocked states.
- whether Prizm will prompt you to confirm that you want to close a window when you have attempted to close one. See [Tab and Window Operations](#) on Page 80.
- when tooltip displays pop up and for how long they continue to appear. See [Screen Operations](#) on Page 82.

All of these preferences are settable when you select **File→Settings→Edit Settings** and Prizm opens the Settings window. An example of the Settings window is shown in [Figure 207](#).

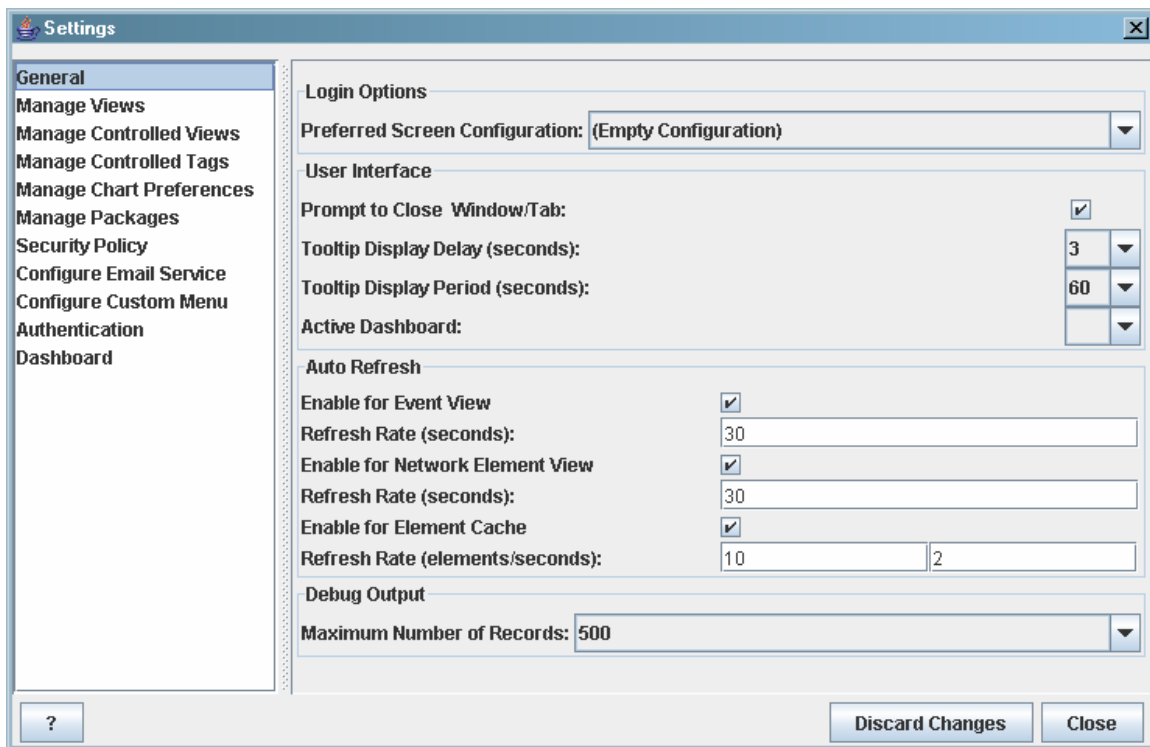


Figure 207: Example Settings window, General selected

The **Preferred Screen Configuration** selection sets what Prizm displays whenever you log in. The selectable options are **(Empty Configuration)**, **(Prompt on Login)**, and **Last Session Configuration**.

When **General** is selected in the left pane of the Settings window, you can, at any time after having made changes, restore the full set of options to those that were in effect when you opened the Settings window. To do so, click **Discard Changes**.

The following examples describe Prizm behavior based on the **Preferred Screen Configuration** setting:

- If you have selected **Last Session Configuration**, then when you log in, Prizm restores all views that you had open when your last previous session concluded and arranges them as you had them arranged.
- If you have saved a home configuration and have selected **Home Configuration** as preferred, then when you log in, Prizm restores that saved home configuration.
- If you have selected **(Prompt on Login)**, then when you log in Prizm opens the Screen Configuration window (shown in [Figure 208](#)), which prompts you to select one of the options to begin the new session.

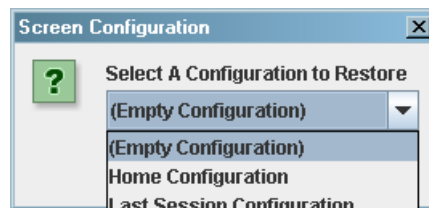


Figure 208: Screen Configuration window

If you click on the question mark in the Screen Configuration window, Prizm opens context-sensitive help.

While Prizm restores the configuration of views, it opens the Progress pop-up window to display the type of configuration that you have selected, the view (in that configuration) that Prizm is restoring at the moment, and a progress bar for the whole restoration. An example of the Progress window is shown in [Figure 209](#).

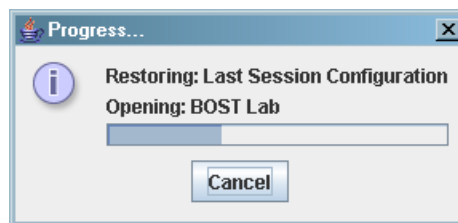


Figure 209: Example Progress window

- If you have either selected **(Empty Configuration)** or not changed the setting from the default, then when you log in, Prizm displays no views.

The **General** options also allow you to set

- the delay and display durations for the tooltip pop-up windows in network browser windows. See [Screen Operations](#) on Page 82.
- how many records should be stored and available for the **Debug Output** option. See [Obtaining Technical Support](#) on Page 420.

Operations in the Settings window with **Manage Views** selected (highlighted) in the left pane are described under [Managing Views](#) on Page 209. When you construct a favorite set of views (one that would be the most useful in future sessions), you can save the entire console appearance. You can also instruct Prizm to open your next and future sessions with either

- this favorite appearance
- the appearance that was displayed before you logged off from your most recent previous session.

To save any appearance as the favorite, select **File→Settings→Save Current as Home Configuration**. The appearance is saved and specified as the console to display when a session begins.

The characteristics of the console that Prizm will restore as your home configuration include

- minimally
 - the position and size of the console.
 - all docked and undocked views.
 - the position, size, and title of each view.
 - the selected tab.
- possibly, depending on the view
 - the filter set.



NOTE:

As with a saved view, a saved appearance opens with *current* data in the saved construction.

- the column configuration.
- the selection or deselection of Details.
- the expanded or collapsed state of items in a tree.
- the selected (highlighted) item in the view.

9.2 CONFIGURE EMAIL SERVICE PREFERENCES

The Preferences area of Prizm allows you to configure how you access your email server and how your outbound email is stamped. To do so, select **File→Settings→Edit Settings** from the main menu. Prizm opens the Settings window. In the left pane, highlight **Configure Email Service**. The access and stamp options appear in the right pane. An example is shown in [Figure 210](#).

The screenshot shows the 'Settings' window with the 'Configure Email Service' option selected in the left-hand menu. The right-hand pane contains the following fields and buttons:

- Test** button
- SMTP Server** section:
 - SMTP Server Host: 127.0.0.1
 - SMTP Server port: 25
- Server Login** section:
 - Login: [empty field]
 - Password: [empty field]
 - Confirm Password: [empty field]
- Email Settings** section:
 - Email Address: prizm@prizmems.com
 - Email Name: Prizm Server

At the bottom right, there are buttons for **Discard Changes** and **Close**. A help icon (?) is located at the bottom left of the window.

Figure 210: Example Settings window, Configure Email Service pane

Under **Email Settings**, the **Email Address** that you type in becomes the From line in the Compose Email window, when you send email to selected user(s). See [User Manager Operations](#) on Page 85. Any recipients of such email will see that address, not your Prizm login ID. You do not need to log off Prizm to make a change of **Email Address** effective.

9.3 CONFIGURE CUSTOM MENU PREFERENCES

The Preferences area allows you to add labels to the Help menu, each linked to a URL that you specify. To do so, select **File→Settings→Edit Settings** from the main menu. Prizm opens the Settings window. In the left pane, highlight **Configure Custom Menu**. Any already configured custom links are listed in the table in the right pane. An example is shown in [Figure 211](#).

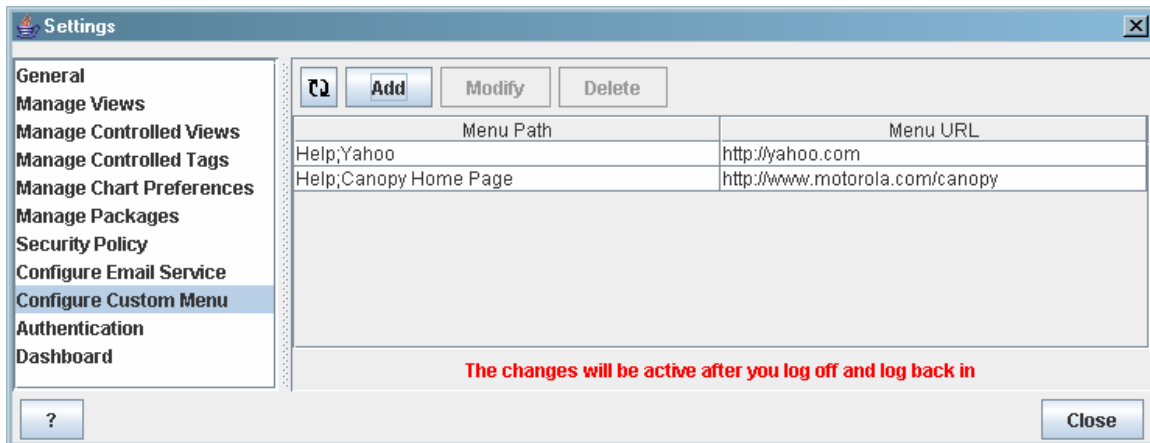


Figure 211: Example Settings window, Configure Custom Menu pane

If you highlight one of the already configured menu items, then Prizm activates the Modify and Delete buttons. If you click the **Add** button, then Prizm opens the Custom Menu Item window. An example of this window is shown in [Figure 212](#).

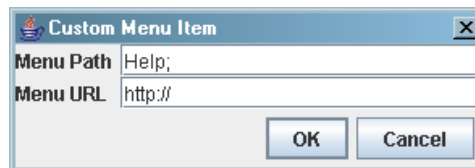


Figure 212: Example Custom Menu Item window

When you add a menu item, the Help menu includes that item only after you have logged off Prizm and then logged back in. (You do not need to fully exit Prizm.)

9.4 DASHBOARD

In Release 3.1 and later, Prizm provides a Dashboard tab that opens in the console after you log in and remains open. You cannot close the Dashboard tab. At the **File→Settings→Edit Settings→Dashboard** menu path, each user can specify subject to permissions set in the User Manager

- whether to display
 - the selected dashboard modules or all of them (**Active Dashboard→Basic**)
 - no dashboard at all (**Active Dashboard→None**)
 - the dashboard in its original state (**Reset to Defaults**), from where no customization can be recalled from memory
- what contents to view in the dashboard.

An example of the Dashboard pane in the Settings window is shown in [Figure 213](#).

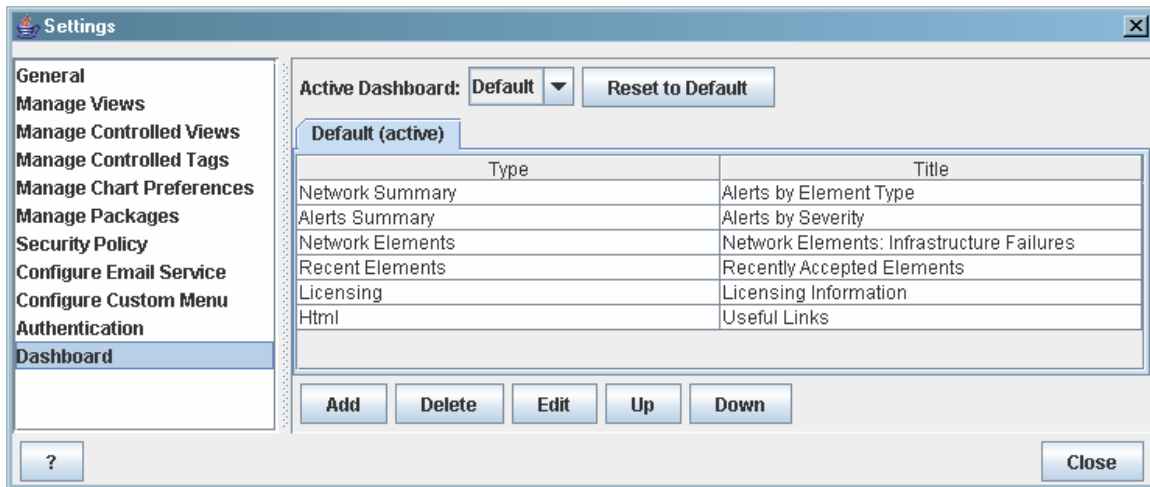


Figure 213: Settings window, Default Active Dashboard pane

The Prizm server administrator maintains the definition of a dashboard profile and can create additional profiles per user types. These profiles specify what modules the dashboard shows by default. The modules can be any from among those provided in the Default (active) tab shown above. More than one module of each type is allowed. In the User Manager of the Prizm application, an administrator-level user can provision another user for permissions to configure dashboards for their own viewing. See

- [Figure 15 on Page 76](#)
- [Figure 16 on Page 78](#)

However, a user who is not granted **A**-level permission for a network cannot see the Alerts by Element Type and Alerts Summary modules, even if those modules are part of a dashboard profile for which the user is granted **A**-level permission. This restriction is because of an access setting on the Prizm server.

9.4.1 Customizing Your Dashboard

To change the contents of the dashboard, you as a user can **Add**, **Delete**, or **Edit** modules (for example, to rename them, make them scrollable, or change how often they are refreshed). The module types that are displayed in the list are limited to those defined in a file on the Prizm server, which your Prizm server administrator can edit to add filtered network views. In the **Active Dashboard** field in the GUI, you must select one dashboard or none to display.

An example of a dashboard with six modules is shown in [Figure 214](#).

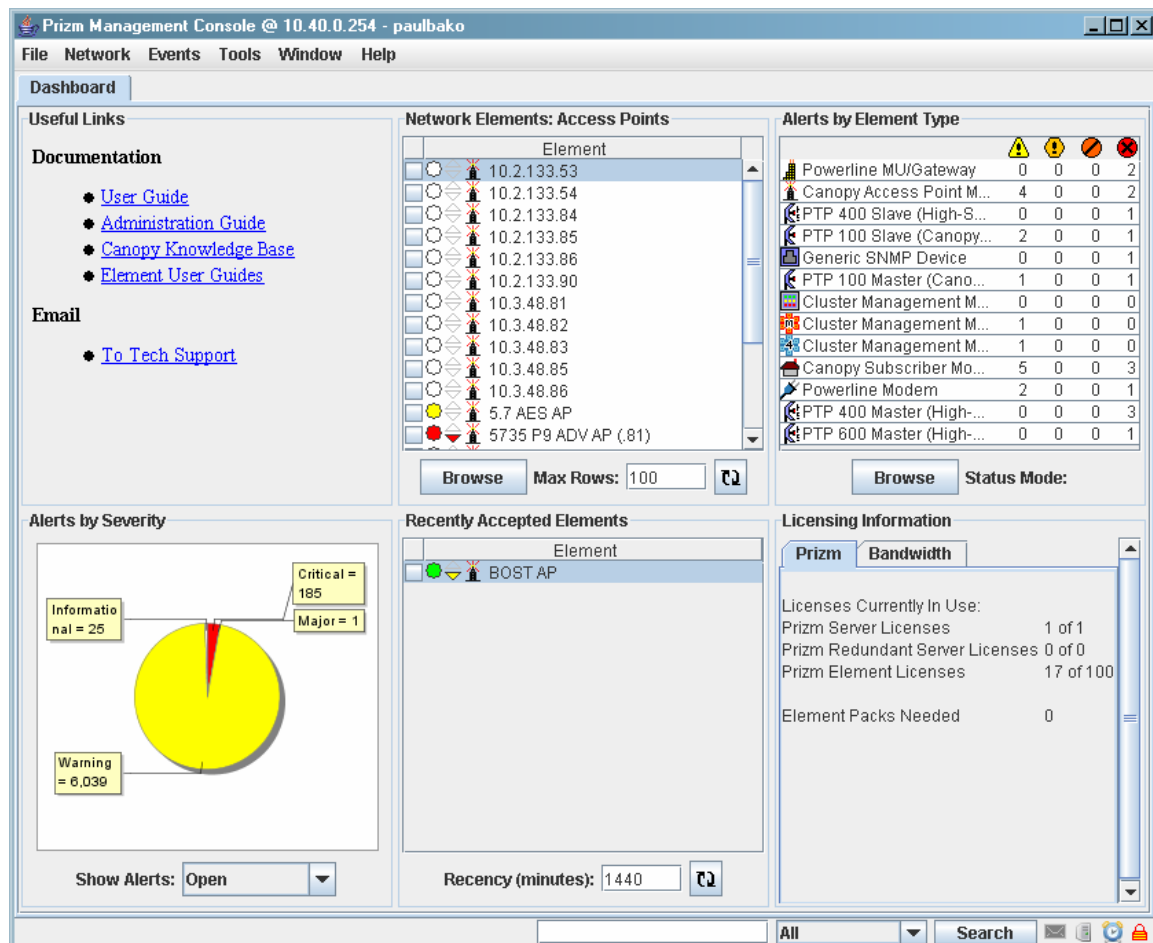


Figure 214: Example dashboard with six modules

You can customize some of these modules to a certain extent. For example, the HTML module titled Useful Links above was edited to include the content that is shown in *constant-width italic* font (without the line breaks) in the following paragraph:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"><html> <head>
<title></title> </head> <body> <b>Documentation</b> <ul> <li><a
href="\prizm\helpfiles\PrizmUserGuide.pdf">User Guide</a></li> <li><a
href="\prizm\helpfiles\PrizmAdministrationGuide.pdf">Administration Guide</a></li>
<li><a href="http://motorola.canopywireless.com/support/knowledge
">Canopy Knowledge Base</a></li> <li> <a href="http://motorola.ca
nopywireless.com/support/library/?region=1&cat=8">Element User
Guides</a></li> </ul> <b>Email</b> <ul> <li> <a href="mailto:
technical-support@canopywireless.com">To Tech Support</a> </li>
</ul> </body></html>
```

If you wish, you can also add a link to the Prizm server as follows:

```
<li><a href="http://%prizmserver%">Prizm Server</a></li>
```

At run time, will be translated to the IP address of your Prizm server and the link to it will display as

- [Prizm Server](#)

You cannot customize modules of the Alerts by Element Type, Alerts Summary, or Licensing type. However, to keep watch on both Prizm licenses and bandwidth licenses, you can add a second Licensing module, this one displaying its Bandwidth tab.

You can customize any copy of the Network Elements module to display filtered output. You would define the filter by using the familiar Specify Element Criteria window, with its Basic and Advanced tabs. To invoke this window, perform the following steps.

Procedure 90: Filtering network elements for a dashboard module

1. Go to **File→Settings→Edit Settings**.
2. In the left panel, click to highlight **Dashboard**.
3. In the right panel, click to highlight **Network Elements**.
4. If you want to modify the current Network Elements module, click the **Edit** button.

RESULT: A Dashboard Module Settings window opens.

If you want to add another filtered Network Elements module, perform the following steps:

- a. Click the **Add** button.
NOTE: See [Figure 213](#) on Page 354.
- b. In the Add new module window, click associated with **Choose the module type to add**.
- c. Select **Network Elements**.
- d. Click the **OK** button.

RESULT: A Dashboard Module Settings window opens.

- e. Click the **Common** tab.
- f. In the **Title** dialog, rename the module so that it is distinct from the current one.
- g. Check or uncheck the **Scroll** options as you wish.
- h. At **Refresh Frequency**, type in the desired number of minutes.
5. Click the **Network Elements** tab.

NOTE: An example of this tab is shown in [Figure 215](#).

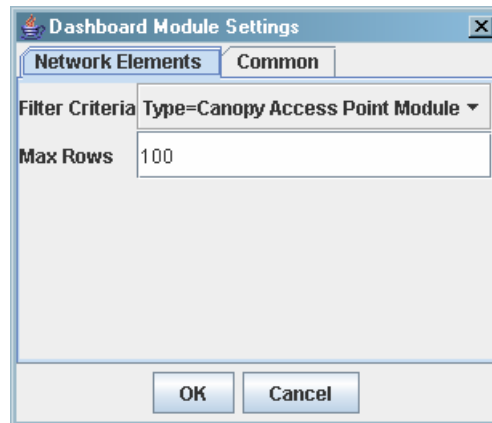


Figure 215: Example Dashboard Module Settings window, Network Elements tab

6. To limit the number of elements that this module will show, highlight and overwrite the value in the **Max Rows** field.
7. Click associated with **Filter Criteria**.
RESULT: The Specify Element Criteria window opens. Examples of this window are shown in [Figure 91](#) on Page 198 and [Figure 92](#) on Page 199.
8. Scan the two alternatives in the next step to decide whether the filter you want to build is basic or advanced.
9. If you want to define a basic filter, perform the following steps:
 - a. Click the Basic tab.
 - b. Specify a set of filters for element type, attributes, and performance statistics.
NOTE: For attributes and statistics, you can specify an exact value sought (=), a disqualifying value (!= for *unequal to* or !~ for *not matching the specified string*), or a range of qualifying values (~ for *matching the specified string*, >, >=, <, <=).
 The selectable element types are listed under [Supported Network Elements](#) on Page 50. The list of selectable element attributes and statistics is identical to the list in the Select Columns window (see also Pages 171 through 175).
 - c. When all conditions are correct in the Specify Element Criteria window, click **OK**.
RESULT: The Select Elements window becomes the top Prizm window.
 - d. For View Options, select either **Select Network Branches** (the default) or **Select Network Elements**.
 - e. In the Select Elements window, click **OK**.

If you want to define an advanced filter, follow [Procedure 47: Defining a view in the Advanced tab](#) on Page 199, beginning with Step 4.

===== end of procedure =====

9.4.2 Interacting With Your Dashboard

When Dashboard is the active tab in the Prizm application console, you can interact with the various modules as follows:

- In the Html module, titled Useful Links by default, you can click on any properly configured link to open the associated file, open the browser to the associated web page, or open an email composition window whose To line is populated by the associated address. You cannot change the contents of the module except through the **File→Settings→Edit Settings** menu path.
- In the Network Elements module, you can temporarily (for only your current logged in session) change how many rows the module displays, by overwriting the number in the **Max Rows** dialog and then clicking the refresh button.
You can also highlight a listed element and then click the  button to open a separate network browser tab that has the highlighted element at the top of its hierarchy and any elements that are behind it. Checking the element checkboxes in this module has no effect.
- In the Alerts by Element Type module, you can temporarily (for only your current logged in session) change the scope of the alerts to display, by clicking associated with **Status Mode** and resetting its value to **All**, **System**, **System+Shared**, or **System+Private**. See [Interpreting Element and Link Status Indicators](#) on Page 175.
You can also highlight one of the rows (one listed element) and then click the  button to open a separate filterable network browser tab that
 - lists all of the elements that Prizm knows of that element type.
 - displays their current element status. See [Table 14: Symbols representing element status](#) on Page 176.
 - allows you to see attribute/statistic columns and or element details.
 - allows you to highlight a single element and open a network browser to it and elements that are behind it in the network.
- In the Licensing module, your only option (and for only your current logged in session) is to select whether the module displays Prizm licenses or Bandwidth licenses.
- In the Recent Elements module, titled Recently Accepted Elements by default, your only option (and for only your current logged in session) is to increase or reduce the time frame to reflect, by overwriting the value in the **Recency** dialog.
- In the Alerts Summary module, you can specify (for only your current logged in session) another type of alert status as the criterion: **New**, **Open**, **Acknowledged**, **Cleared**, or **All**. See [States of an Alert](#) on Page 216.

You can also click on any severity wedge in the pie display to open a filterable event viewer that

- lists all alerts that have both the severity that you clicked on and the alert status (acknowledgement status) that the drop-down selection in the module specifies.
- displays their date, time, user, source, and error message. Displayed times are local to the network.

- includes a link to the associated element.
- allows you to highlight a single alert and view the details panel for it.

To make changes that remain effective longer than the current logged in session, use the **File→Settings→Edit Settings** menu path.

9.5 OTHER PREFERENCES

The following chart provides an index to the portions of this guide that describe various settable preferences.

Preferences	Where Described	Page
General	General Preferences	349
Manage Views	Managing Views	209
Controlled Views		
Controlled Tags	Tagging an Element	193
Chart Preferences	Procedure 43: Customizing the scale for attribute data	188
Packages	Update Package Loading	333
Security Policy	Configuring a Security Policy	69
Configure Email Service	Configure Email Service Preferences	352
Configure Custom Menu	Configure Custom Menu Preferences	352
Authentication	Quarantining Elements Discovered in Authentication Attempts	118

10 CONCLUDING A Prizm SESSION

Regardless of whether you simply close or log off from Prizm, Prizm stores the following information about your console:

- any open tabs and views
- network branches that are expanded and those that are collapsed
- columns that you selected, narrowed, and/or repositioned

Then Prizm uses this information to configure your console screen if you have **Last Session Configuration** selected as a user preference. See [Setting User Preferences](#) on Page 349. This is not specific to the client device on which you log off. The application will restore the configuration regardless of the device that you use for your next login.

To log off as the current user and log in as another, select **File→User Logoff** (instead of **File→Exit**, followed by a restart of the client application). This logoff selection has the advantage of requiring less time to pass the session from user to user.²⁰

To log off and terminate a session, select **File→Exit**. The Prizm server shuts down only after processing all requests. Thus, the number of requests in the system queue at the time that you attempt to log off affects how much time the shutdown requires.

²⁰ However, since the session is continuous, any update that occurs to the application between logoff and login is not available until the application is restarted.

11 CASES OF USING Prizm TO MANAGE NETWORKS

How you can best use Prizm may depend on the size of your Canopy network and the extent to which monitoring is practicable in your network operations center, as well as other factors that are unique for you. This section provides example cases that you may consider.

Although Prizm allows you to watch an entirely expanded network browser tree view, doing this may

- result in an undesirably heavy processing load from continuous polling of all elements for all data (every variable listed in the Select Columns window).
- be less to your advantage than using Prizm to
 - build views based on criteria that you establish.
 - check some or all of the Canopy-provided views.

By design, the downlink indicator of a parent element²¹ in a network browser *does not* reflect the worst status among *all* elements beneath it, however far down. Instead, the indicator reflects the worst status among all elements *immediately* beneath it. Thus, you cannot reliably use the network browser to monitor element status to the bottom of your network, unless you have the whole network expanded in the network browser *and* it all fits in your browser window without you having to scroll. The network browser is intended for configuration and context, not for troubleshooting.

The intended way to detect problems at any level is through filtered views for marginal or intolerable values of specified attributes (for example, poll status failure), alerts, and notifications. You can use an event viewer to click on a problematic element, thereby launching a network view to monitor for immediate indications of related new failures.

However, from time to time you may benefit from monitoring a selected set of elements. For these occasions, Prizm enables you to start such a monitoring period fresh by executing a single command. In a network browser view, check the checkbox of each element that you want to monitor and select **Edit→Clear Element(s) Event Log**. Prizm clears the event log in each selected module, but keep intact the events that are stored in Prizm. In the Define Networks tab, this option is available at **Edit→Network Element Operations**.

11.1 FOCUSING ON CRITERIA

Within your Canopy network, some AP clusters or sectors may be prone to multipath or link distance problems in the received signals. Elsewhere in your network, transient obstructions may cause subscribers to briefly lose their over-the-air connectivity. Prizm allows you to simultaneously watch for indications of both of these, and more, conditions.

For the first case, you can invoke the Network Manager as follows.

²¹ This indicator is shown and defined in [Table 14](#) on Page 176.

Procedure 91: Example case—watching jitter

1. Browse to **Network→Open a View→New**.
2. In the **Criteria** field, click
RESULT: The Specify Element Criteria window opens.
NOTE: An example of the Specify Element Criteria window is shown in [Figure 91](#) on Page 198.
3. For **Element Type**, click and select **Canopy Subscriber Module**.
4. For **Element Statistics**, click and select **Jitter**.
5. Enter a jitter threshold (4, for example) and select the corresponding relational operator **>=**.
6. Click **OK**.
7. Click the **Criteria** field.
8. Select **Window→Undock Tab**.

===== end of procedure =====

For the second case, you can invoke the Events Manager as follows.

Procedure 92: Example case—watching connectivity

1. Browse to **Events→Open a View→All New Alerts**.
2. In the Event Viewer tab, click
RESULT: The Event Filter window opens.
NOTE: An example of the Event Filter window is shown in [Figure 65](#) on Page 150.
3. Check **Event Type**.
4. Click the associated .
5. Select **Open Alerts**.
6. Check **Event Severity**.
7. Click the associated .
8. Select **Warning and higher**.
9. Check **Source**.
10. Click the associated .
11. Select **Network Manager**.
12. Check **User Name**.
13. Click the associated .
14. Select your account ID.
15. Check **Start Time**.
16. Click the associated .
17. Select **Custom....**
18. Click **OK**.
19. In the Event Filter window, click **OK**.

20. Click the **Event Viewer** tab.
21. Select **Window→Undock Tab**.

===== end of procedure =====

You can simultaneously monitor both of these selective views. Ensure that these views will be selectable in future sessions as follows:

1. Click the tab.
2. Select **File→Save View Criteria As**.
3. Follow [Procedure 49](#) on Page 66.

===== end of procedure =====

11.2 FOCUSING ON BRANCHES

The first case above demonstrates how you can isolate a view to a specified part of your total Canopy network but further

- narrows the view to SMs in an IP address range.
- conditions the view on a jitter value of 4 or more.

You may prefer to monitor selected types of data that Prizm collects from all modules in a branch of your network tree. You can define the new network as follows.

Procedure 93: Example case—watching selected data for a portion of the network

1. Browse to **Network→Browse a Network**.
2. Select the predefined network.
3. Navigate to and highlight the row of the highest member of the branch that you wish to monitor.
4. Click the  button.
RESULT: The branch opens in a separate window.
5. Expand this branch to display all lower-level elements.
6. In the tab of the new network, click the  button.
RESULT: The Select Columns window opens.
NOTE: See Pages [171](#) through [175](#).
7. Check the box associated with each field that you wish to monitor for the elements in your new network.
8. Click **OK**.
9. Click the tab of the branch window.
10. Select **Window→Undock Tab**.

===== end of procedure =====

You can simultaneously monitor both of these selective views. Use [Procedure 49: Saving a set of view criteria](#) on Page 208 to ensure that these views will be selectable in future sessions.

11.3 ORDERING PREDEFINED CONFIGURABLE REPORTS

Release 3.1 introduces four types of reports that are available on demand to account type Administrators:

- Bandwidth Usage—daily or monthly received plus transmitted byte sums for selected elements.
- Top Bandwidth Users—daily or monthly received plus transmitted byte sums for the subscribers who use the most data resources.
- Network Inventory—totals of each element type, including the platforms and software versions on which they run.
- Subscriber—list of all subscriber devices known to Prizm, with their management state, poll status, and customer name (as well as other parameters).

The option **Tools→Report Manager** from the main menu provides access to these reports. This option opens the Report Manager tab in the Prizm console.

11.3.1 Bandwidth Usage Report

With the Report Manager tab open, access to the Bandwidth Usage report is available through the **Edit→Generate Report→Bandwidth Usage** option. This option opens a Report Criteria window. An example of this window is shown in [Figure 216](#).

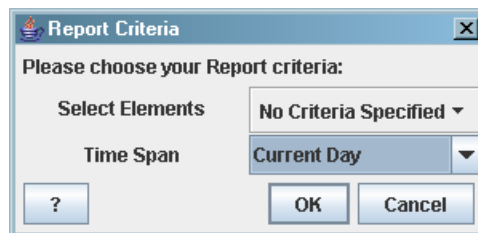


Figure 216: Example Report Criteria window for the Bandwidth Usage report

The **Select Elements** field in this window allows you to filter for element criteria or identify specific elements. You can set the criteria for the report in any of several ways, which are the same as those for constructing a custom view. These are described in detail in the following sections of this guide:

- [Constructing a Custom View](#) on Page 196
- [Defining a Basic View Filter](#) on Page 197
- [Defining an Advanced View Filter](#) on Page 198
- [Defining a View of Directly Selected Elements](#) on Page 205

The **Time Span** field allows you to set the period that the report will cover. The options for this field are

- **Current Day**
- **Current Month**
- **Previous Day**
- **Previous Month**

When you have finished specifying the criteria for your Bandwidth Usage report, click the **OK** button. Prizm immediately begins to build the report. When it is finished, the report name is added to the left panel of the Report Manager tab. To see the report, click to highlight the report name. Prizm then opens the report in the right panel, as shown in [Figure 217](#).

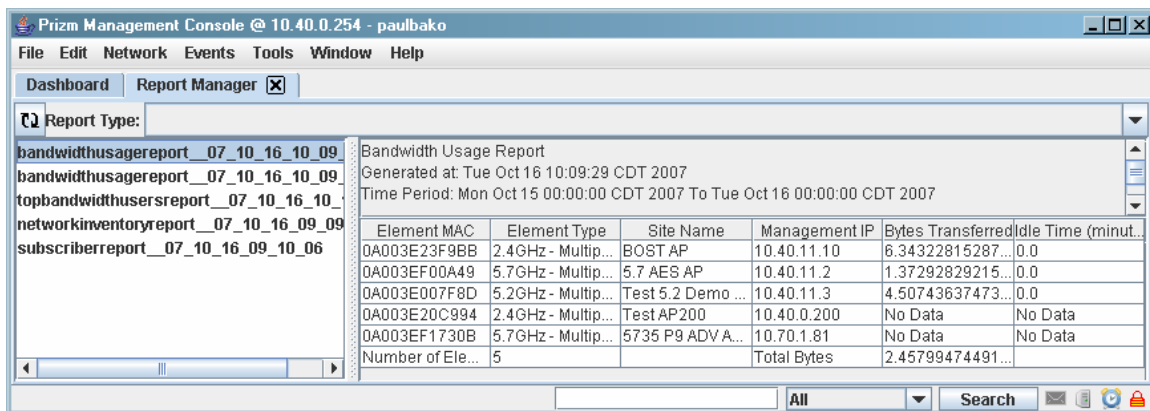


Figure 217: Example Bandwidth Usage Report

The **File→Print Preview** option opens the preview in a new window in which the **File** menu allows you to print the report, save it as either a PDF or a text file, or export it to an Excel, HTML, or CSV file. An example of a previewed Bandwidth Usage report is shown in [Figure 218](#).

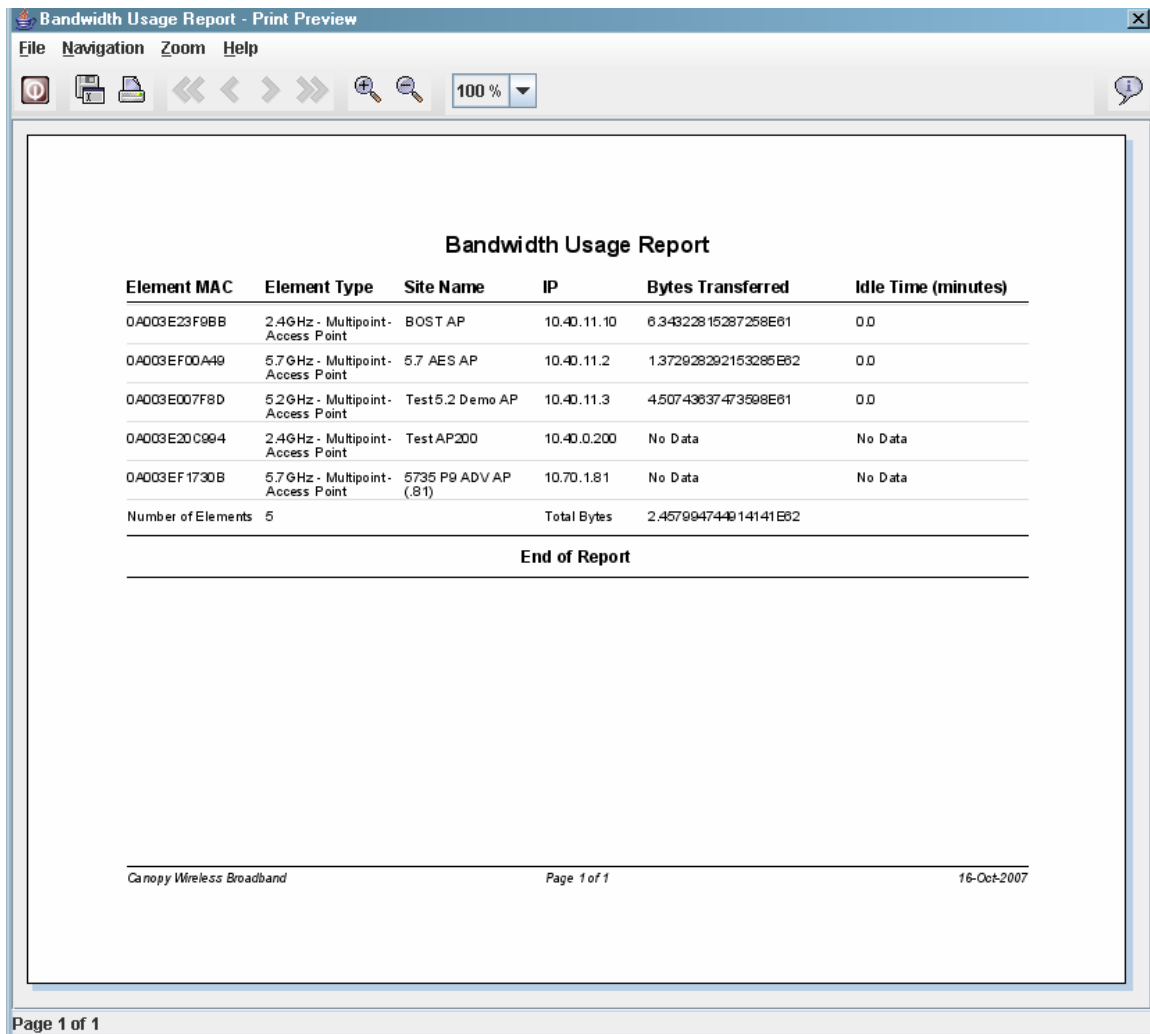


Figure 218: Example print preview of a Bandwidth Usage Report

11.3.2 Top Bandwidth Users Report

With the Report Manager tab open, access to the Top Bandwidth Users report is available through the **Edit→Generate Report→Top Bandwidth Users** option. This option opens a Report Criteria window. An example is shown in [Figure 219](#).

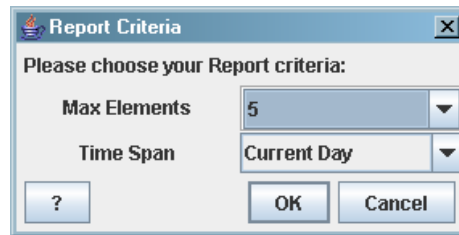


Figure 219: Example Report Criteria window for the Top Bandwidth Users report

The **Max Elements** field in this window allows you to request data on the **5, 10, or 15** customers who use the largest amount of bandwidth.

The **Time Span** field allows you to set the period that the report will cover. The options for this field are

- **Current Day**
- **Current Month**
- **Previous Day**
- **Previous Month**

When you have finished specifying the criteria for your Top Bandwidth Users report, click the **OK** button. Prizm immediately begins to build the report. When it is finished, the report name is added to the left panel of the Report Manager tab. To see the report, click to highlight the report name. Prizm then opens the report in the right panel, as shown in [Figure 220](#).

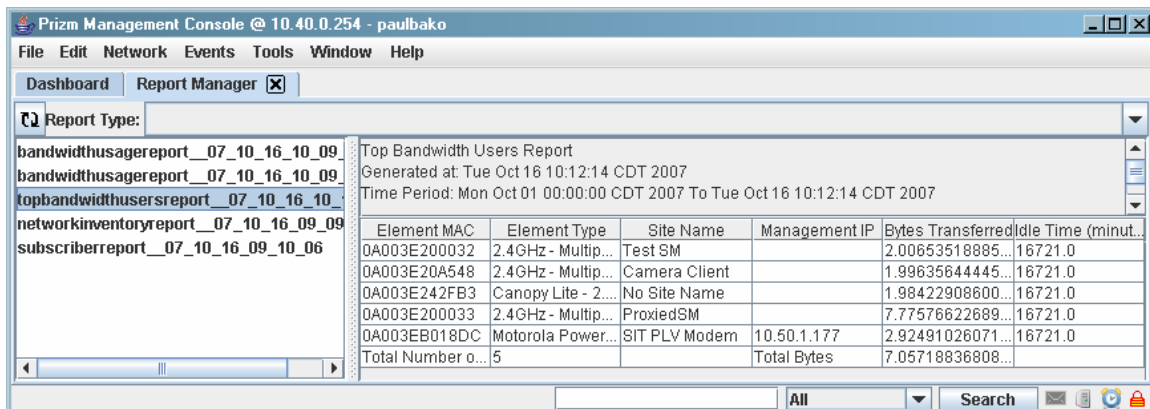


Figure 220: Example Top Bandwidth Users report

The **File→Print Preview** option opens the preview in a new window in which the **File** menu allows you to print the report, save it as either a PDF or a text file, or export it to an Excel, HTML, or CSV file. An example of a previewed Top Bandwidth Users report is shown in [Figure 221](#).

Top Bandwidth Users Report					
Element MAC	Element Type	Site Name	IP	Bytes Transferred	Idle Time (minutes)
0A003E200032	2.4GHz - Multipoint-Subscriber Module	Test SM		2.006535 188859008E123	16721.0
0A003E20A648	2.4GHz - Multipoint-Subscriber Module	Camera Client		1.996356444459453E123	16721.0
0A003E242FB3	Canopy Lite - 2.4GHz - Multipoint-Subscriber Module	No Site Name		1.984229086003604E123	16721.0
0A003E200033	2.4GHz - Multipoint-Subscriber Module	Proxied SM		7.77576622689982E122	16721.0
0A003EB018DC	Motorola Powerline Modem	SIT PLV Modem	10.50.1.177	2.9249 1028071929E122	16721.0
Total Number of Elements	5		Total Bytes	7.057 188368083857 E123	
End of Report					
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Figure 221: Example print preview of a Top Bandwidth Users report

11.3.3 Network Inventory Report

With the Report Manager tab open, access to the Network Inventory report is available through the **Edit→Generate Report→Network Inventory** option. This report is not configurable. When you select this options, Prizm immediately begins to build the report. When it is finished, the report name is added to the left panel of the Report Manager tab, and a success message is delivered in a new window. An example of this message is shown in [Figure 222](#).

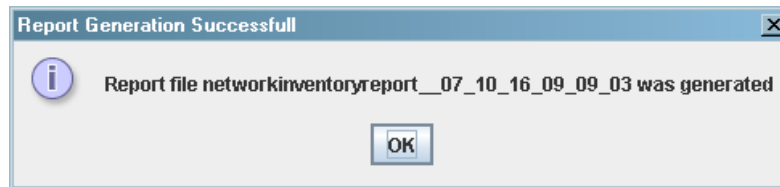


Figure 222: Example success message for a Network Inventory report

Click the **OK** button to close the message window. To see the report, click to highlight the report name. Prizm then opens the report in the right panel, as shown in [Figure 223](#).

Element Type	Count	Platform V...	Software Versions
Powerline MU/Gateway	2	1.01	2.00
Canopy Access Point Module	5	P8;P7;P10	CANOPY 8.2 (Build 1...
PTP 400 Slave (High-Speed Backhaul Slave Module 30/60 Mbps)	1	D04-R01-I	54400-09-00
PTP 100 Slave (Canopy Backhaul Slave Module)	3	P7;P8	CANOPY 7.3.6 Oct 2...
Generic SNMP Device	2	060407	CANOPY 8.2 AP-DES
PTP 100 Master (Canopy Backhaul Master Module)	2	P8	CANOPY 7.3.6 Oct 2...
Cluster Management Module-4 Switch	1		
Cluster Management Module micro	1	5	CANOPY CMM 2.2.1 ...
Cluster Management Module-4	1	070507	Cmm4 2.0 (Build 2)
Canopy Subscriber Module	9	P8;P10;P9	CANOPY 8.2 SM-DE...
Powerline Modem	3	1.01	2.00;1.27
PTP 400 Master (High-Speed Backhaul Master Module 30/60 Mbps)	1	D04-R01-I	54400-09-00
PTP 600 Master (High-Speed Backhaul Master Module 150/300 Mbps)	1	D04-R02-C	58600-04-00
Total Number of Elements	32		

Figure 223: Example Network Inventory report

The **File→Print Preview** option opens the preview in a new window in which the **File** menu allows you to print the report, save it as either a PDF or a text file, or export it to an Excel, HTML, or CSV file. An example of a previewed Network Inventory report is shown in [Figure 224](#).

Element Type	Count	Platform Versions	Software Versions
Powerline MU/Gateway	2	1.01	2.00
Canopy Access Point Module	5	P8;P7;P10	CANOPY 8.2 (Build 17) AP-DES;CANOPY 7.3.6 Oct 24 2005 12:06:56;CANOPY 8.2 (Build 15) AP-DES;CANOPY 8.2.1 (Build 6) AP-AES
PTP 400 Slave (High-Speed Backhaul Slave Module 30/60 Mbps)	1	D04-R01-I	54400-09-00
PTP 100 Slave (Canopy Backhaul Slave Module)	3	P7;P8	CANOPY 7.3.6 Oct 24 2005 12:06:56
Generic SNMP Device	2	060-407	CANOPY 8.2 AP-DES
PTP 100 Master (Canopy Backhaul Master Module)	2	P8	CANOPY 7.3.6 Oct 24 2005 12:06:56
Cluster Management Module-4 Switch	1		
Cluster Management Module micro	1	5	CANOPY CMM 2.2.1 Feb 1 2007 11:21:53
Cluster Management Module-4	1	070507	Cmm42.0 (Build 2)
Canopy Subscriber Module	9	P8;P10;P9	CANOPY 8.2 SM-DES;CANOPY 8.2.1 (Build 6) SM-DES;CANOPY 8.2 SM-AES;CANOPY 8.1 (Build 35P01) SM-DES;CANOPY 8.1.5 SM-DES;CANOPY 8.1.6 SM-DES;CANOPY 8.2 (Build 15) SM-DES
Powerline Modem	3	1.01	2.00;1.27
PTP 400 Master (High-Speed Backhaul Master Module 30/60 Mbps)	1	D04-R01-I	54400-09-00

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Figure 224: Example print preview of a Network Inventory report

11.3.4 Subscriber Report

With the Report Manager tab open, access to the Network Inventory report is available through the **Edit→Generate Report→Subscriber** option. This report is not configurable. When you select this options, Prizm immediately begins to build the report. When it is finished, the report name is added to the left panel of the Report Manager tab, and a success message is delivered in a new window. An example of this message is shown in [Figure 225](#).

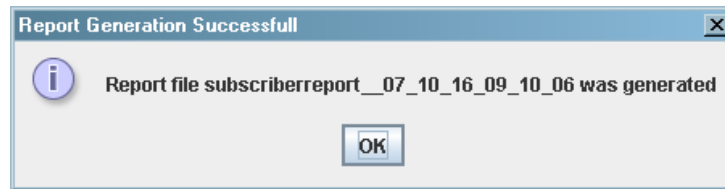


Figure 225: Example success message for a Subscriber report

Click the **OK** button to close the message window. To see the report, click to highlight the report name. Prizm then opens the report in the right panel, as shown in [Figure 226](#).

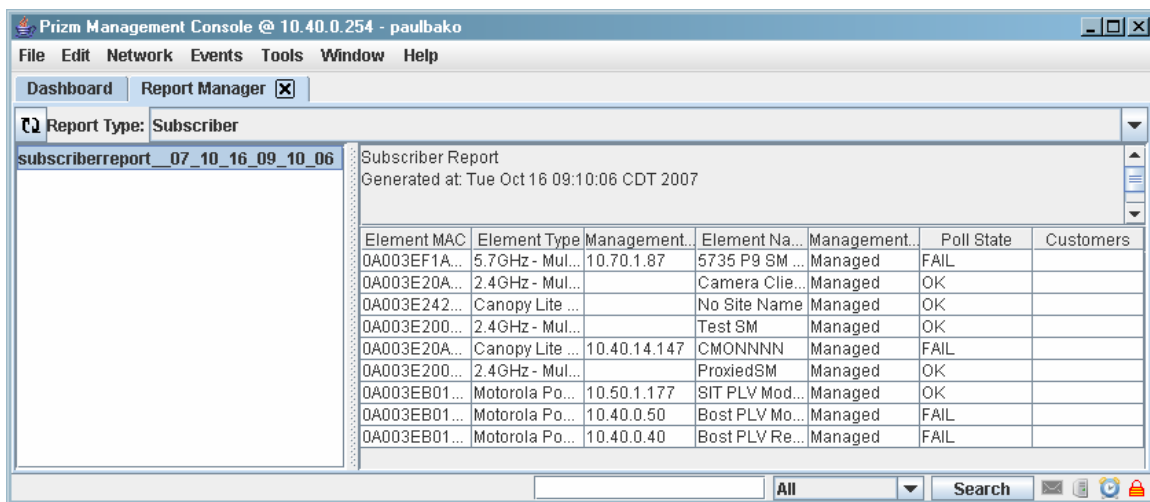


Figure 226: Example Subscriber report

The **File→Print Preview** option opens the preview in a new window in which the **File** menu allows you to print the report, save it as either a PDF or a text file, or export it to an Excel, HTML, or CSV file. An example of a previewed Subscriber report is shown in [Figure 227](#).

Subscriber Report - Print Preview

File Navigation Zoom Help

100 %

Subscriber Report						
Element MAC	Element Type	IP	Element Name	M State	P State	Customers
0A003EF1A184	5.7GHz - Multipoint - Subscriber Module	10.70.1.87	5735 P9 SM (.87)	Managed	FAIL	
0A003E20A548	2.4GHz - Multipoint - Subscriber Module		Camera Client	Managed	OK	
0A003E242FB3	Canopy Lite - 2.4GHz - Multipoint - Subscriber Module		No Site Name	Managed	OK	
0A003E200032	2.4GHz - Multipoint - Subscriber Module		Test SM	Managed	OK	
0A003E20A66F	Canopy Lite - 2.4GHz - Multipoint - Subscriber Module	10.40.14.147	CMONNNN	Managed	FAIL	
0A003E200033	2.4GHz - Multipoint - Subscriber Module		ProxiedSM	Managed	OK	
0A003EB018DC	Motorola Powerline Modem	10.50.1.177	SIT PLV Modem	Managed	OK	
0A003EB0186C	Motorola Powerline Modem	10.40.0.50	Bost PLV Modem 2	Managed	FAIL	
0A003EB018FC	Motorola Powerline Modem	10.40.0.40	Bost PLV Repeater 1	Managed	FAIL	

End of Report

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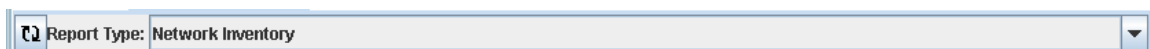
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Figure 227: Example print preview of a Subscriber report

11.3.5 Other Report Manager Operations

Narrowing the List of Report Names

The Report Type field at the top of the Report Manager tab includes a down arrow



that allows you to select a single type of report to list in the left panel. This is helpful when the total number of all reports being stored is large.

Removing Reports

You can remove any report that is listed in the left panel of the Report Manager tab by selecting it and then selecting **Edit→Delete Report** from the main menu.

Obtaining a List of Currently Available Reports

Since multiple clients can simultaneously generate and delete reports, a client may benefit from occasionally synchronizing with the batch of *all* reports on the server. At any time, you can click on the refresh icon (), at the top left corner of the Report Manager tab, to synchronize the available list of reports of all types with the Prizm server.

11.4 DETECTING NEW INTERFERENCE PROBLEMS

From time to time, you may detect a sudden degradation of performance among elements that results from new or transient interference. In this case, you can use Prizm to narrow the field of investigation to help find the source of interference as follows.

Procedure 94: Isolating the source of interference

1. Select **Network**→**Open a View**→**New**.
RESULT: Prizm opens a New tab.
2. In the Criteria field, click .
RESULT: Prizm opens the Specify Element Criteria window.
NOTE: An example of the Specify Element Criteria window is shown in [Figure 91](#) on Page [198](#).
3. For **Element Type**, click  and select **Canopy Subscriber Module**.
4. For **Element Statistics**, click  and select **Jitter**.
5. Enter a jitter threshold (4, for example) and select the corresponding relational operator **>=**.
6. Click **OK**.
RESULT: Prizm displays a list of only those SMs whose jitter is 4 or greater.
7. Click the  button.
RESULT: Prizm opens the Select Columns window.
NOTE: See Pages [171](#) through [175](#).
8. In the Select Columns window, scroll and check the far-left box for
 - **Jitter**.
 - **Radio Power Level**.
 - **Registered To**.
9. In the Select Columns window, click **OK**.
RESULT: Prizm displays these values for each SM in the current view.
10. Click the heading of the Radio Power Level statistic column.
RESULT: Prizm sorts the SMs in the current view by Radio Power Level.
11. Among the SMs whose Radio Power Level value is less than -96, look for a significant number of SMs that have the same Registered To address.
12. Highlight the row of one of these SMs and click the  button.
RESULT: Prizm opens a new tab that contains only the selected SM.
13. Check the far-left column box to select the SM.

14. Click the **Up** button.
RESULT: Prizm displays a view that consists of
 - the AP to which the SM is registered.
 - all other SMs that are registered to this AP.
15. Use this view to distinguish whether the problem exists across the entire sector or only within a subsector (where SMs that are near each other exhibit the problem).
16. If the problem exists across the entire sector, highlight the row of the AP and click the  button. Then explore those details for indications of interference.

If the problem exists in only a subsector, highlight the row of one of the SMs and click the  button. Then explore those details for indications of interference. One by one, highlight the other SMs and explore their details.

17. Use the information you gain from Prizm to narrow the area in which you would otherwise search.
18. Pursue the new source of interference as you ordinarily would, for example by
 - physically looking for new radios.
 - moving around the area while monitoring a spectrum analyzer.
 - using the Spectrum Analyzer in SM feature in selected SMs in the area.

===== end of procedure =====

11.5 BEING NOTIFIED OF EXCEEDED THROUGHPUT LEVELS

Over a period of time, some customers might exceed their aggregate throughput maximums. When this occurs, you may wish to know so that you can take some action (for example, sell a higher-level of service to the customer or impose an overage charge on the customer). Prizm can track and display the information on which to base your action. An example is as follows.

Procedure 95: Detecting and investigating excessive throughput usage

1. Select **Events→Define Alerts**.
RESULT: Prizm opens the Define Alerts tab.
NOTE: An example of the Define Alerts tab is shown in [Figure 66](#) on Page 151.
2. Select **Edit→Add an Alert**.
RESULT: Prizm opens the Define Alert window.
NOTE: An example of the Define Alert window is shown in [Figure 67](#) on Page 151.
3. For **Source**, place the mouse cursor into the text box and type **UsageWatcher**.
4. For **Scope**, click  and select **Private**.
5. For **Severity**, click  and select **Info**.
6. For **Message**, type the text for Prizm to associate with this alert (**Excessive Usage!**, for example).
7. For **Criteria**, click .
RESULT: Prizm opens the Specify Element Criteria window.

NOTE: An example of the Specify Element Criteria window is shown in [Figure 91](#) on Page [198](#).

8. In the Specify Element Criteria window, for **Element Type**, select **Canopy Subscriber Module**.
9. For **Element Statistics**
 - select **Ethernet Rx Bytes**.
 - select the relational operator **>**.
 - type the threshold of excessive throughput usage in the downlink.
10. For **Generate**, click and select **Per Element**.
11. For **Interval**, click and select **24 Hours (Starting Midnight)**.
12. For **Mode**, click and select **Automatically Cleared**.
13. For **Active**, click and select **Active**.
14. Click **OK**.

RESULT: A permanent entry is written into the Event Viewer for each instance of a user exceeding the daily threshold.

15. If you want to receive automatic email notifications of each excessive usage event, perform the following steps:

- a. In the Prizm Management Console window, select **Events→Define Notifications**.

RESULT: Prizm opens the Define Notifications tab.

NOTE: An example of the Define Notifications tab is shown in [Figure 70](#) on Page [164](#).

- b. Select **Edit→Add Notification**.

RESULT: Prizm opens the Define Notification window.

NOTE: An example of the Define Notification window is shown in [Figure 71](#) on Page [164](#).

- c. For **Source**, click and select **UsageWatcher**.
- d. For **Scope**, click and select **Private**.
- e. For **Severity**, check **Info**.
- f. For **Period**, click and select **24 Hours (Starting Midnight)**.
- g. For each of the **Address(s)** fields, specify where Prizm should send the notification. You *must* either
 - select a registered email address from the drop-down box.
 - enter one or more semi-colon delimited email addresses.

NOTE: **Long**, **Medium**, and **Short** represent the length of the message that Prizm sends to the corresponding address(es). The default administrator can reset these lengths in the Notification Manager Configuration XML file. The default lengths are as follows:

Long	more than 1,024 characters
Medium	truncated to between 256 and 1,024 characters
Short	truncated to not more than 255 characters

- h. Ensure that the **Suspend** check box is *unchecked*.
 - i. Click **OK**.
RESULT: You will be notified by email of each excessive usage event.
 - 16. Select **Events→Open a View→New**.
RESULT: Prizm opens the Event Viewer tab.
 - 17. For **Criteria**, click .
RESULT: Prizm opens the Event Filter window.
NOTE: An example of the Event Filter window is shown in [Figure 65](#) on Page [150](#).
 - 18. Check **Event Type**.
 - 19. Click the associated .
 - 20. Select **All Alerts**.
 - 21. Check **Event Severity**.
 - 22. Click the associated .
 - 23. Select **Informational**.
 - 24. Check **Source**.
 - 25. Click the associated .
 - 26. Select **UsageWatcher**.
 - 27. Check **User Name**.
 - 28. Click the associated .
 - 29. Select your account ID.
 - 30. Check **Start Time**.
 - 31. Click the associated .
 - 32. Select **7 Days Ago**.
 - 33. Check **End Time**.
 - 34. Click the associated .
 - 35. Select **1 Hour Ago**.
 - 36. Click **OK**.
 - 37. Select **File→Save View Criteria As** and specify a view name (for example, **Weekly Excessive Users**), and provide other input as described in [Procedure 49](#) on Page [208](#).
 - 38. Select **File→Save View Results As** and specify a file name (for example, **ExcessiveUsers041221**) and path for the data from the past week.
 - 39. Next week
 - a. recall the criteria by selecting (for example) **Events→Open a View→Shared→Weekly Excessive Users**.
 - b. Select **File→Save View Results As** and specify a file name (for example, **ExcessiveUsers041221**) and path for the data from the past week.
 - 40. In each successive week, repeat the previous step.
- ===== end of procedure =====

11.6 USING Prizm IN CUSTOMER RELATIONS

You can use Prizm to specify a block of SMs where customers will receive email notification from your system. For example, with a planned service outage approaching for a sector, you can define a network that consists of only those SMs that register to the affected AP and then announce the outage in email to the affected customers.

To specify the SMs, define the new network as described above. Then browse to **Tools→Customer Contact Manager**.

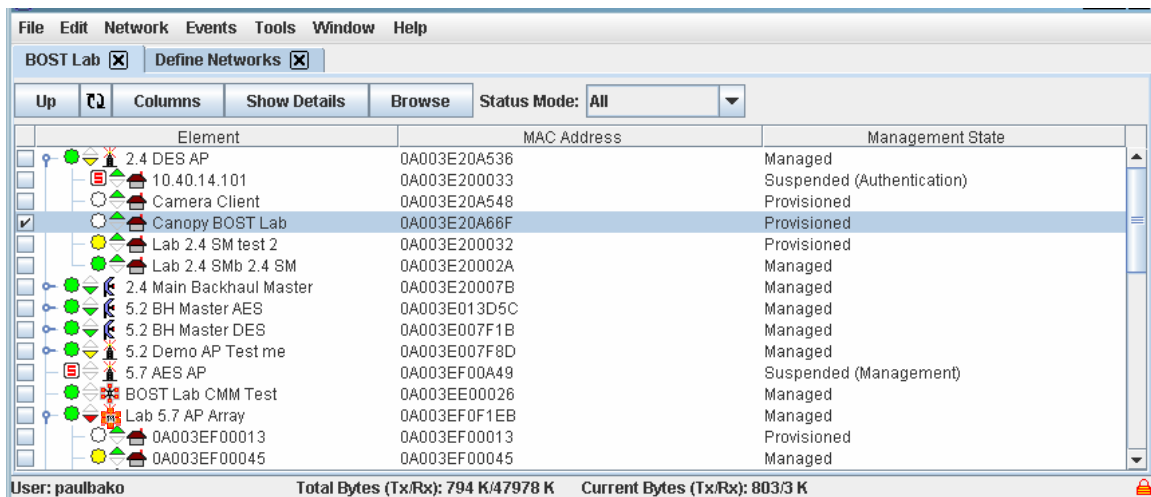
11.7 IDENTIFYING SUSPENDED ELEMENTS

Among the values of the **Management State** attribute are **Suspended (Management)** and **Suspended (Authentication)**. To quickly identify elements that are in one of these states in a small network, perform the following steps.

Procedure 96: Finding suspended elements in a network view

1. Open a browser view of the network in which you want to identify the suspended elements.
 2. Click the  button.
- RESULT:** See Pages 171 through 175.
3. Scroll down to and check the box of the attribute **Management State**.
 4. Click **OK**.

RESULT: Prizm displays a Management State column in the network view, with the value of that attribute for each element in the view (except those that are behind collapsed elements). An example is shown in Figure 228.



Element	MAC Address	Management State
2.4 DES AP	0A003E20A536	Managed
10.40.14.101	0A003E200033	Suspended (Authentication)
Camera Client	0A003E20A548	Provisioned
Canopy BOST Lab	0A003E20A66F	Provisioned
Lab 2.4 SM test 2	0A003E200032	Provisioned
Lab 2.4 Smb 2.4 SM	0A003E20002A	Managed
2.4 Main Backhaul Master	0A003E20007B	Managed
5.2 BH Master AES	0A003E013D5C	Managed
5.2 BH Master DES	0A003E007F1B	Managed
5.2 Demo AP Test me	0A003E007F8D	Managed
5.7 AES AP	0A003EF00A49	Suspended (Management)
BOST Lab CMM Test	0A003EE00026	Managed
Lab 5.7 AP Array	0A003EF0F1EB	Managed
0A003EF00013	0A003EF00013	Provisioned
0A003EF00045	0A003EF00045	Managed

User: paulbako Total Bytes (Tx/Rx): 794 K/47978 K Current Bytes (Tx/Rx): 803/3 K

Figure 228: Example display of Management States of elements

===== end of procedure =====

To quickly identify elements that are in one of these states in a large network, perform the following steps.

Procedure 97: Filtering for suspended elements

1. From the main menu, select **Network→Open a View→New**.
2. For **Criteria**, click .
RESULT: Prizm opens the Specify Element Criteria window. An example of this window is shown in [Figure 91](#) on Page 198.
3. Under **Element Attribute**, click  and select **Management State**.
4. For the relational operator, select **=**.
5. In the associated value dialog, carefully type in **Suspended (Management)**.
6. Click **OK**.
RESULT: Prizm launches a filter operation to find only those elements that match your specified criteria, in this case the same SM that is shown above in the network view, [Figure 228](#).

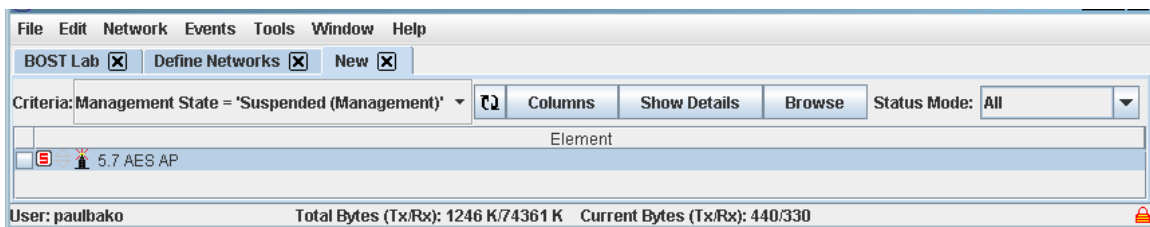


Figure 229: Example filtered view of elements suspended from full management

7. In the value dialog for **Element Attribute**, carefully type in **Suspended (Authentication)**.
8. Click **OK**.
RESULT: The filter finds and displays the other element from [Figure 228](#) as suspended.

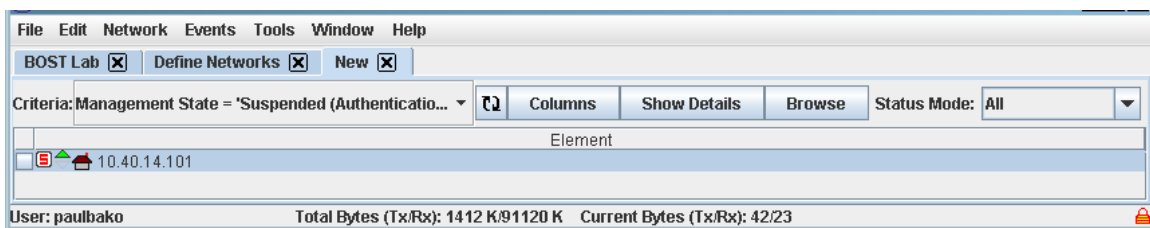


Figure 230: Example filtered view of elements suspended from BAM operations

===== end of procedure =====

You can use these methods to find all Managed or all Provisioned elements as well. However, if you trigger a filtered view, you must type your input carefully because you are entering a search string.

You cannot use these methods to find unprovisioned, discovered, or ignored elements. Filters examine only elements that are currently accepted for BAM-only operations or for full management.

11.8 SCHEDULING Prizm TASKS

Prizm allows you to program when Prizm should launch specified functions. Using this capability can help you to make plans, ensure consistent operations, make the most valid comparisons of performance data, and keep users available to respond to spontaneous developments in the network.

This scheduling tool is launched from the main menu by selecting **Tools→Task Scheduler**. This opens the Define Tasks tab. An example of this tab is shown in [Figure 231](#).

Name	Ac...	Type	Sc...	Owner	Created	Schedule	History	State
nnn	☐	Clear Element Log	shar...	prizma...	2/6/07 2:...	One Time S...	Has not run	Pending: 2/7/07 ...
Daytime Subscribers	☒	Configure Network ...	shar...	prizma...	8/23/06 3...	Recurring S...	(84) 1/31/07 7:00 AM...	Running: 100%
Performance Logging Operation: 1...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(2245) 2/7/07 9:25 A...	Pending: 2/7/07 ...
Performance Logging Operation: 2...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(1122) 2/7/07 9:20 A...	Pending: 2/7/07 ...
Performance Logging Operation: 3...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(748) 2/7/07 9:15 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 4...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(561) 2/7/07 9:20 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 5...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(449) 2/7/07 9:25 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 6...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(374) 2/7/07 9:00 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 9...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(249) 2/7/07 9:01 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 1...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(187) 2/7/07 9:01 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 2...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(93) 2/7/07 8:01 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 3...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(63) 2/7/07 9:01 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 7...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(31) 2/7/07 6:01 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 1...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(15) 2/7/07 12:01 AM...	Pending: 2/7/07 ...
Performance Logging Operation: 2...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(8) 2/7/07 12:02 AM...	Pending: 2/8/07 ...
Access Point - Unregistered Unit	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...	(1114) 2/7/07 9:21 A...	Pending: 2/7/07 ...
Backhaul - Unpaired Master	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...	(1114) 2/7/07 9:21 A...	Pending: 2/7/07 ...
Backhaul - Unpaired Slave	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...	(1114) 2/7/07 9:21 A...	Pending: 2/7/07 ...
Element - Ethernet Down	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...	(1114) 2/7/07 9:21 A...	Pending: 2/7/07 ...
RF - dBm Threshold Monitor	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...	(1114) 2/7/07 9:21 A...	Pending: 2/7/07 ...
RF - dBm Threshold Monitor	☒	Alert Operation	priva...	jpadmin	1/30/07 2...	Recurring S...	(1114) 2/7/07 9:21 A...	Pending: 2/7/07 ...
Bridge Operation	☒	Bridge Operation	priva...	SYSTEM	1/30/07 2...	Recurring S...	(553) 2/7/07 9:22 AM...	Pending: 2/7/07 ...
ARP Operation	☒	ARP Operation	priva...	SYSTEM	1/30/07 2...	Recurring S...	(63) 2/7/07 9:02 AM...	Pending: 2/7/07 ...
System Maintenance Operation	☒	System Maintenanc...	priva...	SYSTEM	1/30/07 2...	Recurring S...	(187) 2/7/07 9:03 AM...	Pending: 2/7/07 ...
Reboot Network Element	☒	Reboot Network El...	priva...	test	2/5/07 4:...	One Time S...	(1) 2/5/07 4:19 PM - ...	Completed
Prizm Management	☒	Prizm Management	priva...	paulba...	2/7/07 9:...	One Time S...	(1) 2/7/07 9:28 AM - ...	Completed

User: paulbako Total (Tx/Rx): 895 K/30485 K Current (Tx/Rx): 7 K/7 K Console: 2007-02-07 09:39 AM

Figure 231: Example Define Tasks tab

From this window, you can select a pre-existing defined task to modify or you can add a new one. The **Edit** menu provides the following selections for task management in Prizm:

- **Add New Task**
- **View Task**
- **Edit Task**
- **Delete Task**
- **Activate Task**
- **Deactivate Task**
- **Run Task Now**
- **Stop Running Task**
- **View Task Events**

The **Add New Task** option allows you to schedule any of the following types of operations:

- in elements:
 - clearing logs
 - configuring and/or rebooting elements
 - updating software or firmware
- in Prizm:
 - activating or suspending accounts
 - activating or suspending management by Prizm
 - refreshing element data
 - sending local information to tech support

Scheduling any Prizm task, except for updating element passwords (see Page 259), begins with the selection of **Edit→Add New Task** from the main menu when Define Tasks is the top tab in the Prizm console. This causes Prizm to open the Select Task Category window. An example of this window is shown in Figure 232.

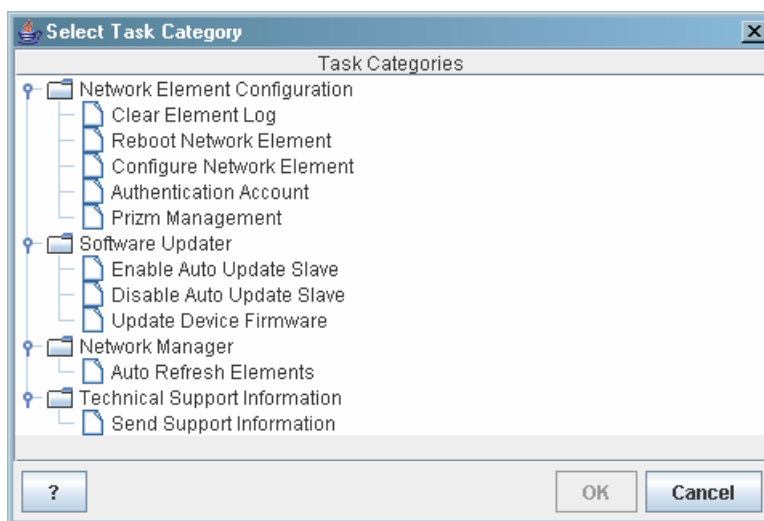


Figure 232: Select Task Category window

When you select a task category in this window, Prizm opens a Task Attributes window that has two or more tabs, each of which provides variables for you to set. These variables are listed in [Table 30](#).

Table 30: Settings available in Task Scheduler

Selected Task	Tab in Task Attributes Window						Settings Available
	Elements	General	Configuration	Packages	General Information	Network Information	
Clear Element Log	•						filter or select elements
Reboot Network Element	•	•					filter or select elements; reboot if required.
Configure Network Element	•	•					filter or select elements; reboot after update, if required; update configuration history; configuration template to apply.
Authentication Account	•	•					filter or select elements; activate or suspend the account.
Prizm Management	•	•					filter or select elements; activate or suspend management by Prizm.
Enable Auto Update Slave	•		•	•			filter or select elements; max concurrent updates; enable SM Auto Update when AP is updated; update child if parent fails to update, use passive FTP; use AP as file server; auto update P7 thru P9 first; auto update P10 first; use TFTP server in Prizm; max concurrent updates per AP.
Update Device Firmware							
Disable Auto Update Slave	•			•			filter or select elements; package list (read only) and package info (read only).
Auto Refresh Elements	•		•				all elements or filter or select elements; refresh interval with max number of elements;
Send Support Information					•	•	email-to address(es) and send now or later; path to file and split or encrypt it; path to more files; composed comments; ticket number; filter or select elements; event and chart intervals.

For each task that you configure, you specify at the bottom of any tab in the Task Attributes window (other than the Elements tab for filtering) at what time(s) you want Prizm to execute the task:

- Click the **Run Now** button to execute without delay and only once.
- Click the **Run Later** button to execute at intervals, only once, or on specific multiple irregular occasions. Prizm opens the Schedule Configuration window. An example of this window is shown in [Figure 233](#).

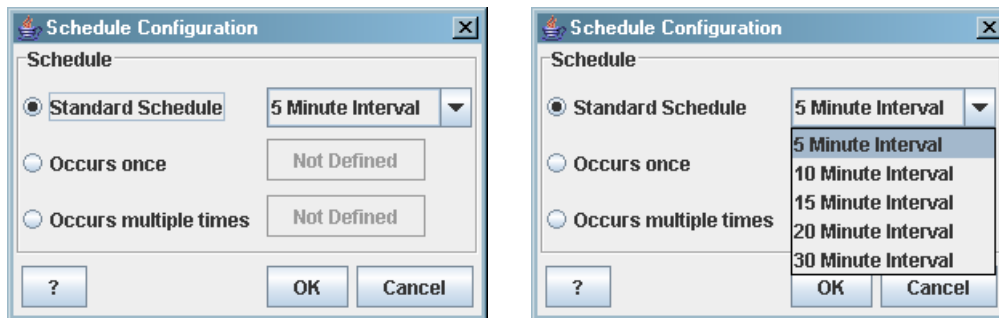


Figure 233: Example Schedule Configuration window

Standard Schedule provides the selectable increments shown in [Figure 233](#). If you select **Occurs once** instead and click the **Not Defined** button, then Prizm opens the Choose Start Date window, in which you select the minute and hour of the day, the month, the day of the month, and the year for Prizm to execute the task. An example of the Choose Start Date window is shown in [Figure 234](#).

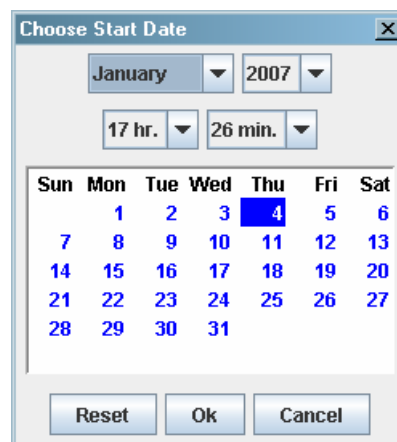


Figure 234: Example Choose Start Date window

If you select **Occurs multiple times** instead and click the **Not Defined** button, then Prizm opens the Schedule Configuration window. An example of this window is shown in [Figure 235](#).

Schedule Configuration

Day Pattern

☒ Reoccurs at these days of the week:

☐ Sunday ☐ Monday ☐ Tuesday
☐ Wednesday ☐ Thursday ☐ Friday
☐ Saturday

☐ Reoccurs at these days of the month:

Time Pattern

☒ Reoccurs at these hours:

☐ 12 AM ☐ 6 AM ☐ 12 PM ☐ 6 PM
☐ 1 AM ☐ 7 AM ☐ 1 PM ☐ 7 PM
☐ 2 AM ☐ 8 AM ☐ 2 PM ☐ 8 PM
☐ 3 AM ☐ 9 AM ☐ 3 PM ☐ 9 PM
☐ 4 AM ☐ 10 AM ☐ 4 PM ☐ 10 PM
☐ 5 AM ☐ 11 AM ☐ 5 PM ☐ 11 PM

At this offset: 0 minutes 0 seconds

☐ Reoccurs with this interval:

5 minutes

At this offset: 0 seconds

Range of Recurrence

☒ Starts now ☒ Never stops

☐ Starts at: Not Defined ☐ Stops after: occurrences

☐ Stops by: Not Defined

? OK Cancel

Figure 235: Example Schedule Configuration window

If you select **Reoccurs at these days of the month**, enter the string of desired dates, separated by commas.

The purpose the **At this offset** number of seconds is to stagger the launches of multiple tasks that are configured for around the same interval. Prizm launches tasks on the hour, at 5 minutes after the hour, and on 5-minutes increments after that. The offset suggests that the task will launch as specified, but it will launch on the 5-minute increment instead. Until this problem is resolved, Canopy will continue to track it under Item ID 0005232.

Scheduling multiple simultaneous tasks is allowed. Tasks run asynchronously in the background.

Each schedulable task requires you to filter or select the elements to which the task applies. The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under

- [Constructing a Custom View](#) on Page 196
- [Defining a Basic View Filter](#) on Page 197
- [Defining an Advanced View Filter](#) on Page 198
- [Defining a View of Directly Selected Elements](#) on Page 205.

The specific tasks that you can define in the Prizm Task Scheduler are described in the following sections of this user guide:

- [Clearing Element Logs](#) on Page 345
- [Rebooting Network Elements](#) on Page 285
- [Scheduling Network Element Configuration](#) on Page 277
- [Activating or Suspending a Batch of Customer Accounts on Schedule](#) on Page 299
- [Activating or Suspending Element Management](#) on Page 315
- [Updating Element Firmware or Software](#) on Page 327
- [Refreshing Elements on Schedule](#) on Page 177
- [Using the Technical Support Information Tool](#) on Page 421

11.9 DEFINING TASKS OUTSIDE OF TASK SCHEDULER

Prizm also supports defining tasks from within a network browser or event viewer (outside of the **Task Scheduler** option/Define Task tab). For example, if you highlight an element in a network browser and then select **Edit→Management by Prizm→Activate**, Prizm opens a Task Attributes window. An example is shown in [Figure 236](#).

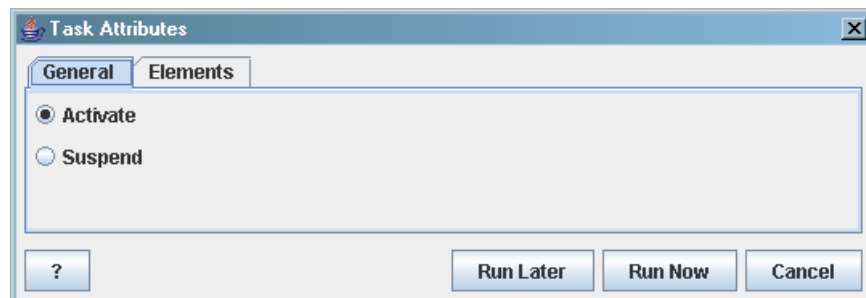


Figure 236: Example Task Attributes window, activate or suspend Prizm management

In the General tab, you define the nature of the task. In the Elements tab, you identify the elements to be affected. The process of identifying these elements is the same as for building a network view. The Elements tab allows you to specify a dynamic element list to be built anew for each of repeated tasks (based on filter criteria that you enter) or a static element list that you generate as either filtered output or a subset of filtered output. The Elements tab is shown and described under

- [Constructing a Custom View](#) on Page 196
- [Defining a Basic View Filter](#) on Page 197
- [Defining an Advanced View Filter](#) on Page 198
- [Defining a View of Directly Selected Elements](#) on Page 205.

The Task Attributes window also allows you to specify how often and when Prizm should perform the task. From either tab, you can select either **Run Now** or **Run Later**. As in Task Manager, clicking the **Run Later** button causes Prizm to open the Schedule Configuration window. Examples of this window are shown in [Figure 233](#) on Page 384.

If you select **Run Now**, Prizm opens an window to communicate the events that are associated with the task. An example is shown in [Figure 237](#).

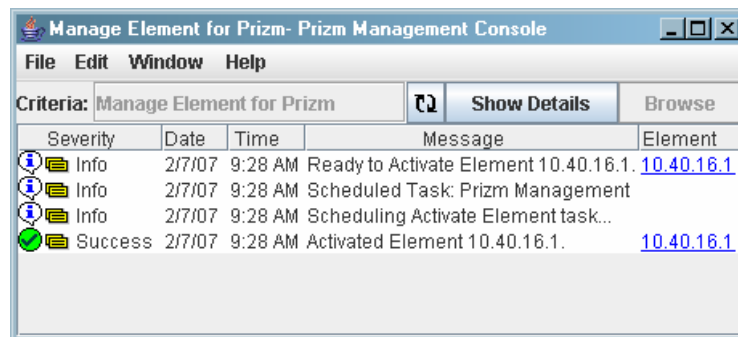


Figure 237: Example list of events associated with a task

11.10 MANAGING CURRENT Prizm TASKS

To view current tasks, select **Tools→Task Scheduler** from the main menu. Prizm opens the Define Tasks tab in the console. This tab provides a list of all current tasks that *User* owns. If you want to see all tasks that are current in Prizm, you must select **All** for User. (By default, this tab opens displaying only tasks that you own.)

If you are account type Administrator (referred to elsewhere in this guide as **ATA**) and select **All**, then the list includes current tasks that

- users created in the Task Scheduler area of Prizm (see [Scheduling Prizm Tasks](#) on Page 381).
- users created when they selected a command option from within a network browser or event viewer and then identified the elements to which Prizm should apply the command and when Prizm should begin to execute it (see [Defining Tasks Outside of Task Scheduler](#) on Page 386).
- Prizm created in connection with its system activities.

An example of data for a variety of tasks is shown in [Figure 238](#).

	Name	Ac...	Type	Sc...	Owner	Created	Schedule
	nnn	☐	Clear Element Log	shar...	prizma...	2/6/07 2:...	One Time S...
	Daytime Subscribers	☒	Configure Network ...	shar...	prizma...	8/23/06 3...	Recurring S...
	Performance Logging Operation: 1...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 2...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 3...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 4...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 5...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 6...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 9...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 1...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 2...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 3...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 7...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 1...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Performance Logging Operation: 2...	☒	Performance Loggi...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Access Point - Unregistered Unit	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...
	Backhaul - Unpaired Master	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...
	Backhaul - Unpaired Slave	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...
	Element - Ethernet Down	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...
	RF - dBm Threshold Monitor	☒	Alert Operation	shar...	PUBLIC	1/30/07 2...	Recurring S...
	RF - dBm Threshold Monitor	☒	Alert Operation	priva...	jpadmin	1/30/07 2...	Recurring S...
	Bridge Operation	☒	Bridge Operation	priva...	SYSTEM	1/30/07 2...	Recurring S...
	ARP Operation	☒	ARP Operation	priva...	SYSTEM	1/30/07 2...	Recurring S...
	System Maintenance Operation	☒	System Maintenanc...	priva...	SYSTEM	1/30/07 2...	Recurring S...
	Reboot Network Element	☒	Reboot Network El...	priva...	test	2/5/07 4:...	One Time S...
	Prizm Management	☒	Prizm Management	priva...	paulba...	2/7/07 9:...	One Time S...

Figure 238: Example task list

The icons in the far left column are defined in [Table 31](#).

Table 31: Icons in Define Tasks tab

Icon	Meaning	Defined In	Set to Run	Owner	In Task Scheduler		
					Can View	Can Edit	Can Delete
	persistent	Task Scheduler	Later	<i>login ID</i>	Yes	Yes	Yes
	immediate	Task Scheduler, Network Browser, or Event Viewer ¹	Now	<i>login ID</i>	Yes	No	Yes
	system	Prizm server ²		SYSTEM	Yes	No	No
		Network Browser or Event Viewer	Later or Now	<i>login ID</i>	Yes	No	No ³

NOTES:

1. Stored in client memory but not server database. Forgotten if Prizm restarts before task launch.
2. May be configurable in xml, such as a maintenance task, or not configurable, such as a performance logging task. These *are not* configurable from the Prizm client application.
3. You can remove one of these tasks by deleting the operation where it was defined. For example, if you see a Notifications Operation listed in the Define Tasks tab and want to cancel the task, you can select **Events→Define Notifications** from the main menu, highlight the operation in the Define Notifications tab, and then select **Edit→Delete the Notification**. All alert and notification operations constitute SYSTEM-owned tasks.

12 SERVER AND CLIENT FUNCTIONS AND PERMISSIONS

Although some overlap exists, many functions are available on only the Prizm server and many others through only the client application. However, many of the latter are available to only an administrator. The availability of each major function in the system is indicated in [Table 32](#). The permission level shown is the minimum level required to perform the function. An Account Type: Administrator (ATA) can perform any function that an Account Type: User can perform.

Another resource for permissions required is [Table 9: Allowed activities per permission level](#) on [Page 72](#), where the available functions are sorted by the management area (such as Network Manager) in Prizm.

Table 32: Where Prizm functions are available and to whom

Function ¹	Where Available		To Whom	
	Server	Client	Admin ² Account Type	User ³ Account Type
accepting an element		•	ATA	
defining an alert		•		R
adding a predefined alert		•		R
modifying the configuration of an alert		•		R
activating an alert		•		R
triggering an alert to immediately run		•		R
creating and reloading an alert definition file in xml	•		SA	
deactivating an alert		•		R
removing a configured alert		•		R
acknowledging an alert		•		R
reconfiguring Prizm for alerts	•		SA	
archiving and removing event history and bridge and ARP tables	•		SA	
setting up a network browsing view		•		A
browsing from an element selected in the event viewer		•		R
configuring Prizm for secure client access	•		SA	
adding or removing CNUT package files	•		SA	
		•	ATA	

Function ¹	Where Available		To Whom	
	Server	Client	Admin ² Account Type	User ³ Account Type
exporting elements with hierarchy to a CNUT file		•		NMA
importing elements with hierarchy from a CNUT file		•		NMA
removing a defined configuration		•		A
detecting changes in configuration of Canopy parameter values		•		R
adding a customer contact data record		•		W
viewing contact data for a customer		•		R
modifying customer contact data in Prizm		•		W
deleting a customer contact data record		•		W
setting permissions for customer contact information		•	ATA	
sending email to customers		•		R
enabling and configuring a dashboard		•		R
configuring Prizm for the database	•		SA	
viewing full details on a selected element		•		R
customizing the details for an element type		•		R
viewing details associated with an event		•		R
viewing discovered elements		•		A
initiating auto discovery of elements		•		A
maintaining passwords and community strings for auto discovery		•		A
viewing events		•		R
finding events		•		R
filtering events		•		R
saving a filtered event view		•		R
refreshing the event set		•		R
exporting elements with hierarchy to a CNUT file		•		NMA
exporting report data (from any area but Configurations) to another platform		•		R

Function ¹	Where Available		To Whom	
	Server	Client	Admin ² Account Type	User ³ Account Type
adding an element group		•	ATA	
resetting the history of an alert		•		R
resetting all history		•		A
substituting icons for element default symbols	•		SA	
importing elements with hierarchy from a CNUT file		•		NMA
importing elements for BAM provision		•		A
importing customer contact data		•		A
installing Prizm	•		SA	
installing postgresql database software	•		SA	
performing IP/MAC address searches		•		R
identifying a customer from viewing the IP/MAC address information		•		R
configuring Prizm for licensing	•		SA	
moving an element within the hierarchy		•		A
creating a network		•		NMA
deleting a network		•		NMA
using the Northbound Interface feature		•		W ⁴
editing the file northboundinterface.xml	•		SA	
appending a note to the event log entry		•		R
subscribing to alert notifications		•		R
reconfiguring Prizm for notifications	•		SA	
suspending and reinstating alert notifications		•		R
modifying the configuration of an alert notification		•		R
removing a configured alert notification		•		R
suspending and reinstating alert notifications for another user		•		A
configuring bridge and ARP table polling intervals	•		SA	
changing the smtp server or port	•		SA	

Function ¹	Where Available		To Whom	
	Server	Client	Admin ² Account Type	User ³ Account Type
managing Prizm ports	•		SA	
provisioning an administrator for Prizm privileges		•	ATA	
provisioning a user for Prizm privileges		•	ATA	
provisioning an element for BAM-only operations		•		A
rejecting a discovered element		•		A
printing report data		•		R
creating/setting generic element report templates	•		SA	
invoking the reboot element tool		•		W
adding a service plan		•	NMA	
applying a service plan		•		A
deleting a service plan		•	NMA	
duplicating a service plan		•	NMA	
editing a service plan		•	NMA	
removing a service plan association		•		A
viewing a service plan		•		A
disabling services	•		SA	
starting Prizm without jvm installed	•		SA	
viewing the system log		•	ATA	
tagging an element		•		W
changing ownership or scope of a task		•		A
creating a task		•		W
viewing a task		•		R
defining template attributes		•		A
editing templates		•		A
implementing the changes made to a template		•		R
configuring trap handling	•		SA	
recalling a preconfigured view		•		R
generating a tree view		•		R

Function ¹	Where Available		To Whom	
	Server	Client	Admin ² Account Type	User ³ Account Type
defining a filtered view		•		R
saving a filtered view		•		R
managing filtered views		•		R
setting user preferences for views		•		R
adding a VLAN profile		•	NMA	
applying a VLAN profile		•		A
deleting a VLAN profile		•	NMA	
duplicating a VLAN profile		•	NMA	
editing a VLAN profile		•	NMA	
removing a VLAN profile association		•		A
viewing a VLAN profile		•		A
accessing element web pages		•		A
administering the network element web proxy feature	•		SA	

NOTES:

1. Functions are more specifically correlated to permission levels in [Table 9: Allowed activities per permission level](#) on Page 72. For example, the permission level required for a function involving an alert can depend on whether the alert is private, shared, or public.
2. Can be one who has write permissions in the file system of the Prizm server (indicated here by **SA** for server administrator) or one whose Account Type is administrator (indicated here by **ATA** for Account Type: Administrator). The Account Type field is shown in [Figure 10](#) on Page 66.
3. In the general area of Prizm, this is the minimum permission level required for an Account Type: User to perform this function. In this context, *area* means Alerts, [Network] Browsers, Configurations, Customers, Events, IP/MAC Address Tool, Northbound Interface, or Notifications. Permission levels can be **A** for administrative, **W** for read/write, or **R** for read only.

For networks, permission levels are assignable (for an Account Type: User) per network, for all networks individually, or with oversight for all networks. **NMA** in this column indicates a user who has administrative permission for Network Manager, not a single network or even all networks. **NMA** includes permission to use the BAM functionality to its fullest extent in Prizm.
4. Except that the SNMP agent in Prizm requires that Northbound Interface access to Prizm data via SNMP be authenticated by community string.

Administrative permission for Network Manager (**NMA**) or **ATA** is required for adding or deleting a network. However, once the **NMA** adds the network, the user with **A** permission for that network can populate and manipulate it. Thus, a typical sequence is

1. The **NMA** adds the network.
2. The **NMA** informs the **ATA** that the network has been created.
3. The **ATA** uses the User Manager to assign **A** permission for that network to a user.
4. The **ATA** informs **A** that the network is ready for **A** to manage.
5. The **A** begins to manage that network.

13 PROBLEMS IN Prizm OPERATION

13.1 CURRENT PROBLEMS

The following problems that may occur during the use of Prizm are acknowledged.

13.1.1 Problems in Core Prizm Functions

You may encounter the following problems as you use the core functions in Prizm.

Firewall in Module Blocking Management by Prizm

In Release 8.x and later, the Security tab of the Configuration web page in the AP, SM, and BH includes the **IP Access Control** parameter, as shown in [Figure 239](#).

IP Access Filtering	
IP Access Control :	☐ IP Access Filtering Enabled - Only allow access from IP addresses specified below ☒ IP Access Filtering Disabled - Allow access from all IP addresses
Allowed Source IP 1 :	0.0.0.0
Allowed Source IP 2 :	0.0.0.0
Allowed Source IP 3 :	0.0.0.0

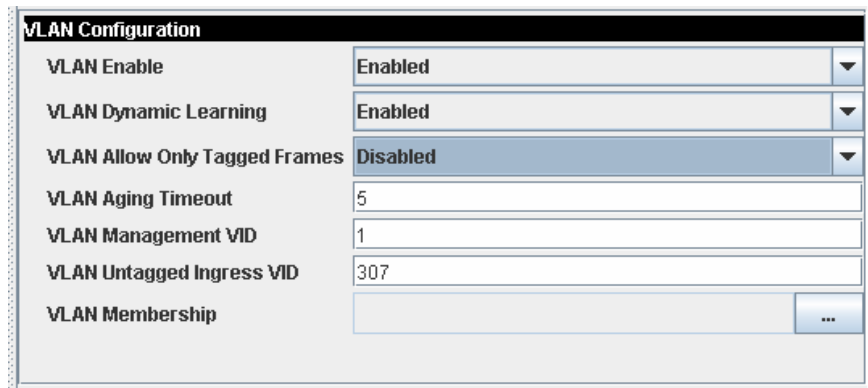
Figure 239: IP Access Filtering area of Security tab in module GUI

This parameter provides an optional high-level firewall in the module as follows:

- When **IP Access Filtering Disabled** is selected, Prizm can manage the module without being inhibited by the firewall.
- When **IP Access Filtering Enabled** is selected, the IP address of the Prizm server must be entered into one of the **Allowed Source IP** parameters. Otherwise, the firewall prevents Prizm from managing the module.

No Setting to Allow Only Untagged Frames

Prizm does not allow you to specify in a VLAN profile anything that corresponds to the Allow Frame Types parameter in the radio, and does not contain an attribute (or selectable column) that corresponds to it. See [Figure 240](#).



VLAN Configuration	
VLAN Enable	Enabled
VLAN Dynamic Learning	Enabled
VLAN Allow Only Tagged Frames	Disabled
VLAN Aging Timeout	5
VLAN Management VID	1
VLAN Untagged Ingress VID	307
VLAN Membership	

Figure 240: Available VLAN configuration attributes

Prizm contains the **VLAN Allow Only Tagged Frames** attribute, which supports only

- allow all frames, if you either select **Disabled** or leave the value blank.
- allow only tagged frames, if you select **Enabled**.

But you cannot allow only untagged frames, because the radio does not support this value in the protocol used for provisioning it from Prizm. Until this problem is resolved, Canopy will continue to track it under Item ID 0004417.

Inability to Clear Release 8.x Passwords from Elements

For elements that run a Canopy system release earlier than 8.x, a Prizm user is able to send a space (for the **Management Password** attribute) to clear a previously set password. Release 8.x does not support this. For a workaround, use proxy to the element and clear the password in the element GUI. Until this problem is resolved, Canopy will continue to track it under Item ID 0002940.

Clearing TrapIP Requires Zeros

In Canopy System Release 7.2 and later, you can configure modules to send their traps to as many as 10 IP addresses. The Prizm configuration attributes that support this capability are shown in [Table 23: Selectable attribute tree](#) on Page 267. This feature is fully functional in Prizm.

Prizm can clear a specific trap address using a blank space but, because the Canopy element translates this to a value of 0.0.0.0, this will also cause Prizm to generate an alert about detecting an unexpected change on the radio (change from blank to 0.0.0.0). To avoid an alert being generated, you can directly set the trap address through Prizm to 0.0.0.0 to clear it.

Until this problem is resolved, Canopy will continue to track it under Item ID 0001767.

Data Export from Print Preview Not Guaranteed

When print preview is active, the export to text, csv, and xml do not work with the current version of JFreeReport. Until this problem is resolved, Canopy will continue to track it under Item ID 0002990.

Printed Report Labeling Only One of Multiple Selected Detail Reports

When you request more than one detailed report at a time, Prizm includes all of the selected reports in the output and distinctively labels each report, but does not use the report category in the title. So, you may see a report titled Detail View: RF Link and another titled Detail View: RF. Until this problem is resolved, Canopy will continue to track it under Item ID 0004309.

Scope of Report Depending on Click of Tabs

When you request a report of all element details, the scope of the details included in the resulting report depends on whether you first clicked on any of the tabs in the Details pane. If you did not, then the report may include data from fewer than all tabs.

The report of all element details is requested as shown in [Figure 241](#).

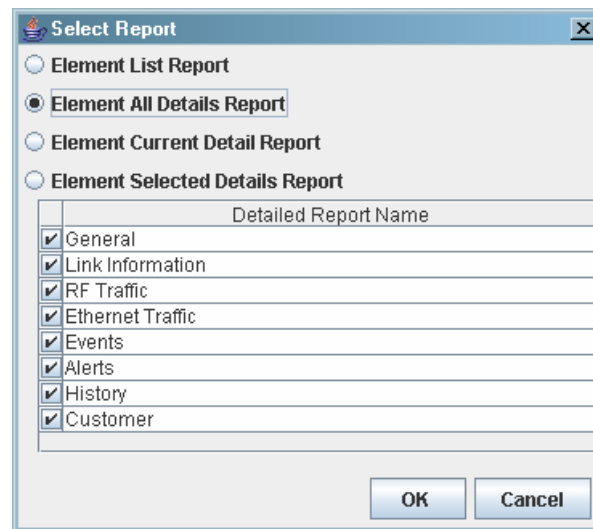


Figure 241: Select Report window with all reports selected

If you instead clicked on *all of the tabs* in the Details pane before requesting the report, then the report includes data from all of the tabs that contain data.

The workaround is to click all tabs in the Details pane before requesting selecting **Element All Details Report** and clicking the **OK** button. Until this problem is resolved, Canopy will continue to track it under Item ID 0004314.

Only One SM Listed in Remote Subscribers Tab via Web Proxy

With the Web Proxy feature in Prizm enabled in the server, but the Double Proxy feature disabled, the Remote Subscribers tab of the Canopy Access Point should list all SMs registered to that element when you view its Home page, having used the **Edit→Open Status Page of the Element** command option. Each registered SM should be listed on a separate line that contains a disabled link including the element name, MAC address, and LUID number of the SM.

However, this tab is currently displaying with only a single SM listed, regardless of whether Prizm manages the SMs directly or through SNMP proxy. Until this problem is resolved, Canopy will continue to track it under Item ID 0005197.

Dotted Decimal IP Addresses Required for Subnets and Trap Servers

Prizm cannot configure elements for subnets or trap servers that are specified by hex strings, such as those shown in [Figure 242](#).

☒ Enforce Element Configuration (Overwrite Current Element Settings)

SNMP Security

SNMP Community:

Subnet Accessing Range (x.x.x.x/x or blank for not change):

Accessing IP / Subnet Mask	Subnet Accessing IP	Mask
Accessing IP / Subnet Mask 1:	fe80:0:0:0:213:20ff:fe2e:dd8b%2	24
Accessing IP / Subnet Mask 2:		0
Accessing IP / Subnet Mask 3:		0
Accessing IP / Subnet Mask 4:		0

☒ Enable Trap Management and Element Traps

Trap Management

Trap Server (Address for Elements to Send Traps To; x.x.x.x or blank for not change):

Trap IP Address
Trap IP Address 1:
Trap IP Address 2:
Trap IP Address 3:
Trap IP Address 4:

Figure 242: Subnet and trap server blocks with hex addresses

You must convert any hex IP addresses in your subnet definition profile to their dotted decimal equivalents. Until this problem is resolved, Canopy will continue to track it under Item ID 0005277.

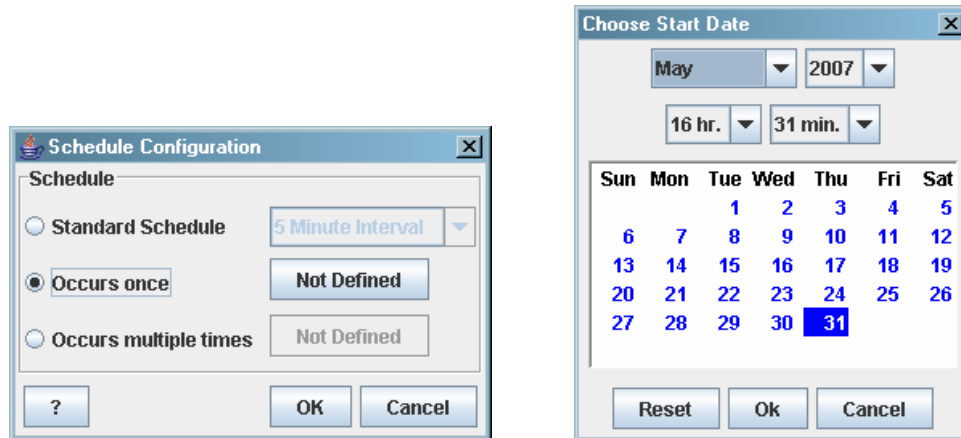
Authentication Occurred Not Updated to False

When authentication is disabled in an AP, Prizm continues to show the value True for the Authentication Occurred attribute for SMs that had authenticated, because it does not receive the authentication disabled traps (even though it consistently receives registration traps). Only if you delete and rediscover those SMs will Prizm show their value as False. Until this problem is resolved, Canopy will continue to track it under Item ID 0005296.

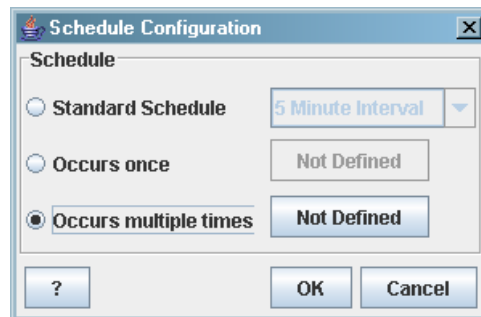
Increments for Task Scheduling and Implementing Vary

Task Manager allows you to precisely select when a task that you are defining should be launched. However, Prizm launches tasks on the hour, at 5 minutes after the hour, and on 5-minutes increments after that.

When you schedule the task, if you select the **Occurs once** option and then click the **Not Defined** button, then the Choose Start Date dialog allows you to specify the launch time to the minute.



If you select instead the **Occurs multiple times** option and click **Not Defined**, then the resulting Schedule Configuration dialog allows you to specify the offset (after the hour) to the second.



Schedule Configuration

Day Pattern

☒ Reoccurs at these days of the week:

☐ Sunday ☐ Monday ☐ Tuesday
☐ Wednesday ☐ Thursday ☐ Friday
☐ Saturday

☐ Reoccurs at these days of the month:

Time Pattern

☒ Reoccurs at these hours:

☐ 12 AM ☐ 6 AM ☐ 12 PM ☐ 6 PM
☐ 1 AM ☐ 7 AM ☐ 1 PM ☐ 7 PM
☐ 2 AM ☐ 8 AM ☐ 2 PM ☐ 8 PM
☐ 3 AM ☐ 9 AM ☐ 3 PM ☐ 9 PM
☐ 4 AM ☐ 10 AM ☐ 4 PM ☐ 10 PM
☐ 5 AM ☐ 11 AM ☐ 5 PM ☐ 11 PM

At this offset: 0 minutes 0 seconds

☐ Reoccurs with this interval: 5 minutes

At this offset: 0 seconds

Range of Recurrence

☒ Starts now ☒ Never stops

☐ Starts at: Not Defined ☐ Stops after: occurrences

☐ Stops by: Not Defined

? OK Cancel

From this precision, you could assume that the task will launch as specified, but it will launch on the 5-minute increment. Until this problem is resolved, Canopy will continue to track it under Item ID 0005232.

RF Airlink Security Attribute Not Supported

In response to the Canopy System Release 8.2 deprecation of the MIB object for air link encryption, Prizm Release 3.0 dropped the RF Airlink Security attribute. Because it did, customers who run one of the earlier system releases can no longer configure that parameter by using this Prizm release. Proper treatment would have been for Prizm to continue to support the attribute so that those customer could use it. Until this problem is resolved, Canopy will continue to track it under Item ID 0005436.

Configuration Functions Not Working in Accepting State

On elements that are in the Accepting management state, you can impose a set of BAM attribute values by using the **Configure** command option in a network browser tab, but you cannot update those elements by using any of the following other means:

- **addProvisionedElement** function in the northbound interface
- **Add Element(s) for BAM Provision** or **Update Element(s) for BAM Provision** command option in the Define Networks tab of the Prizm GUI. If this worked properly, you could configure the BAM settings in the resulting Provision Network Elements window.

You can use any of these three functions to configure elements that are in the Provisioned state, but none of these to configure elements that are in the Accepting state. Until this problem is resolved, Canopy will continue to track it under Item ID 0005485.

Uncertain Behavior Toward Quarantined Elements During Switch to RADIUS

It is not known whether and how Prizm will display elements that were quarantined at the time of a switch from normal database mode to RADIUS mode. For this reason, Canopy recommends that you first delete all quarantined elements before switching. Another alternative would be to add them to RADIUS so that they can authenticate. Until this problem is resolved, Canopy will continue to track it under Item ID 0005915.

Web Proxy Failing if Prizm Launched in HTTP

Where Java Version 1.6 is deployed, if you launch Prizm in HTTP (*http://PrizmServerIPAddress*) and then attempt to use the web proxy feature to access the status page of a network element, an error message indicates that the browser is unable to launch the requested URL. This problem owes to the `jnlp BasicService` class.

The workaround for this problem is to launch Prizm from in the secure protocol (***https://PrizmServerIPAddress:8443***). Until this problem is resolved, Canopy will continue to track it under Item ID 0005754.

Web Proxy Cannot Download Certain Configuration Files

For PLV Generation II and PTP elements, the web proxy feature in Prizm does not download certain configuration files, and for this reason, Prizm cannot operate the following features in those elements:

For PTP elements

Save Configuration File button on the Save and Restore web page

Generate Diagnostics button on the CSV Download web page

For PLV Generation II elements

Backup Settings on the Backup web page under the System tab

Until this problem is resolved, Canopy will continue to track it under Item ID 0005756.

License Status Commands Not Triggering Status Display

When you select **View→License Status** from the main menu of the Prizm Administrator Tool, Prizm should open the License Manager Status window (as in the example shown in [Figure 56](#) on [Page 137](#)), but does not. Similarly, when you either select the **Licensing Status** link or click the **Status** button associated with **Check licensing status** on the opening web page of the License Manager Administrator Tool ([Figure 55](#) on [Page 135](#)), license information should display, but does not. This problem is limited to operators who deploy License Manager on a Windows platform.

The following workaround resolves this problem:

1. On the License Manager server, use Notepad to open the file
C:\Canopy\Prizm\FLEXnet\api\www\config\windows\licensing.properties
for editing.
RESULT: The file displays as follows:

```
# Sample ResourceBundle properties file
licensestatus= cmd.exe;/C;..\..\..\..\..\..\..\lmutil lmstat -a -c
startserver=cmd.exe;/C;net;start;"Canopy License Manager\"
stopserver=cmd.exe;/C;net;stop;"Canopy License Manager\"
GET_IP_MAC_INFO=cmd.exe;/C;ipconfig /all
GET_HOSTNAME=cmd.exe;/C;hostname
SEARCH_IP=IP Address.*\n
SEARCH_MAC=Physical Address.*: .*\n
START_MAC_INDEX=:\
START_IP_INDEX=:\
MAC_SEPARATOR=-
ETH0_START=eth0
ETH0_END=\n\n
```
2. Change the licensestatus value from
cmd.exe;/C;..\..\..\..\..\..\..\lmutil lmstat -a -c
to
cmd.exe;/C;%**LICENSE_HOME**%\..\..\..\..\lmutil lmstat -a -c.
3. Save and close the file.
4. Open a Command Prompt window.
EXAMPLE: Select **Start→All Programs→Accessories→Command Prompt**.
5. At the C:\> prompt, enter
net stop "Canopy License Manager Web Server".
RESULT: The system responds
The Canopy License Manager Web Server service was stopped successfully.
6. Enter **net start "Canopy License Manager Web Server"**.
RESULT: The system responds
The Canopy License Manager Web Server service is starting.
The Canopy License Manager Web Server service was started successfully.
RESULT: The license status commands in the administrator tools are functional.
7. If you want to use the web server on the other License Manager servers (in a redundant configuration), repeat this procedure on each of the others.

Until this problem is resolved, Canopy will continue to track it under Item ID 0006890.

13.1.2 Problems in the Prizm Client Interface

You may encounter the following problems as you use the Prizm GUI.

No License Checkout Error Logged in Applying Configuration Window

If you attempt to apply a bandwidth configuration that requires a floating license, and Prizm requests but cannot obtain a floating license for any of the elements selected for the Configure operation, no error appears in the Applying Configuration window, where events associated with the Configure operation are logged. A workaround for this issue is to open and monitor an Event Viewer, looking for BAM alerts that are Critical, or to monitor the element(s) in a Network Browser view, looking for the Critical indication in the status icon(s). Until this problem is resolved, Canopy will continue to track it under Item ID 0003089.

Database and Prizm GUI Supporting Longer VLAN Entries Than BAM Subsystem Does

The database schema accepts VLAN ID entries of 1,500 or fewer characters. Although Prizm is capable of displaying 1,500 characters and accepts them without indicating an error, the BAM subsystem truncates the entry at 255. Larger entries can result in the BAM subsystem applying incorrect VLAN IDs.

Status Indicator Color Not Red for Unrecognized Trap Alert

When Prizm receives a trap from a device whose custom template either does not define the trap or defines it, but the trap is not automatically acknowledged, Prizm generates the alert *Unknown SNMP Trap Error*. This severity of this alert is Critical. An alert of this severity should cause the element status indicator for this device to be red, but instead *is not* affecting the color. Until this problem is resolved, Canopy will continue to track it under Item ID 0004234.

Prizm Reporting Incorrect Distance for 900-MHz SM

For only the 900-MHz modules, the following distance amounts are exactly half of the correct value:

- Distance shown in the Details pane for the SM
- Max Distance and Average Distance shown in the Details pane for the AP
- distances shown in the following columns:
 - RF Link Distance Km
 - RF Link Distance Mi
 - RF Link Avg. Distance Km
 - RF Link Avg. Distance Mi

Until this problem is resolved, Canopy will continue to track it under Item ID 0004108. Prizm reports correct distances for all other SMs.

Moved Elements Appearing in New and Old Positions

After a move operation to reposition elements in the hierarchy, the system deselects the moved elements, but may display them in their original places as well as in their new places in the hierarchy. If it does, this *is not* an indication that the move operation failed or that Prizm continues to associate them with their former location.

To work around this problem, you can click **Ignored Elements** in the left-hand pane, then **Network Elements** in the left-hand pane, and see the refreshed display that has the elements in only their new location. Until this problem is resolved, Canopy will continue to track it under Item ID 0001303.

Licensing Information Window Sometimes Showing 0 for Available Licenses

Occasionally and regardless of Prizm release, the Licensing Information window may indicate that no licenses other than the default element licenses are available when some are. This results from the interaction between the licensing software and some file contents that are not present in every license file. When this occurs, both the total license count and the checked out license count are wrong. Examples of the license summary displays are provided in

- [Figure 54: Example Licensing Information window](#) on Page 133
- [Figure 178: Example Licensing Information window, Bandwidth tab](#) on Page 306

The workaround for this problem is to execute `lmutil lmstat -a` on the License Manager server. This command always returns the accurate numbers of Canopy licenses and checkouts. Until this problem is resolved, Canopy will continue to track it under Item ID 0004347.

Elements Not Consistently Deselected After Operations

Following some Define Networks operations, such as Move and Refresh, the elements that had been selected for the operation are not all deselected. Until this problem is resolved, Canopy will continue to track it under Item ID 0003265.

Erroneous Numeric Values in Details Graphics

In some instances, labels on an axis of a graph in the details pane for an element may display values that are both incorrect and peculiar. For example, an AP slicing value of 474 has been displayed as 9999999998175. The licensing agreement for the matheval third-party library prevents Canopy from modifying the library to prevent such errors. An example of the erroneous display is shown in [Figure 243](#).

Until this problem is resolved, Canopy will continue to track it under Item ID 0000657.

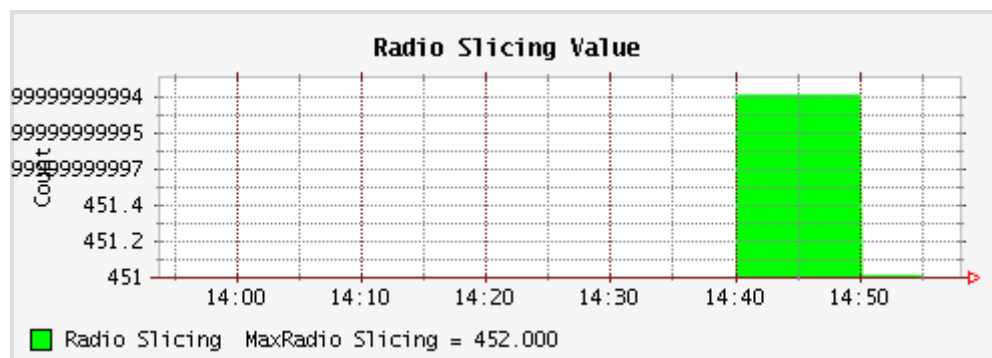


Figure 243: Example erroneous label on graph

Color Key Overlaying Key Text

In some graphical content tabs²² of the details pane for an element, the color box in the key for the graph covers the text of the key. This problem also results from characteristics of the matplotlib third-party library. An example of the erroneous display is shown in [Figure 244](#).

Until this problem is resolved, Canopy will continue to track it under Item ID 0001361.

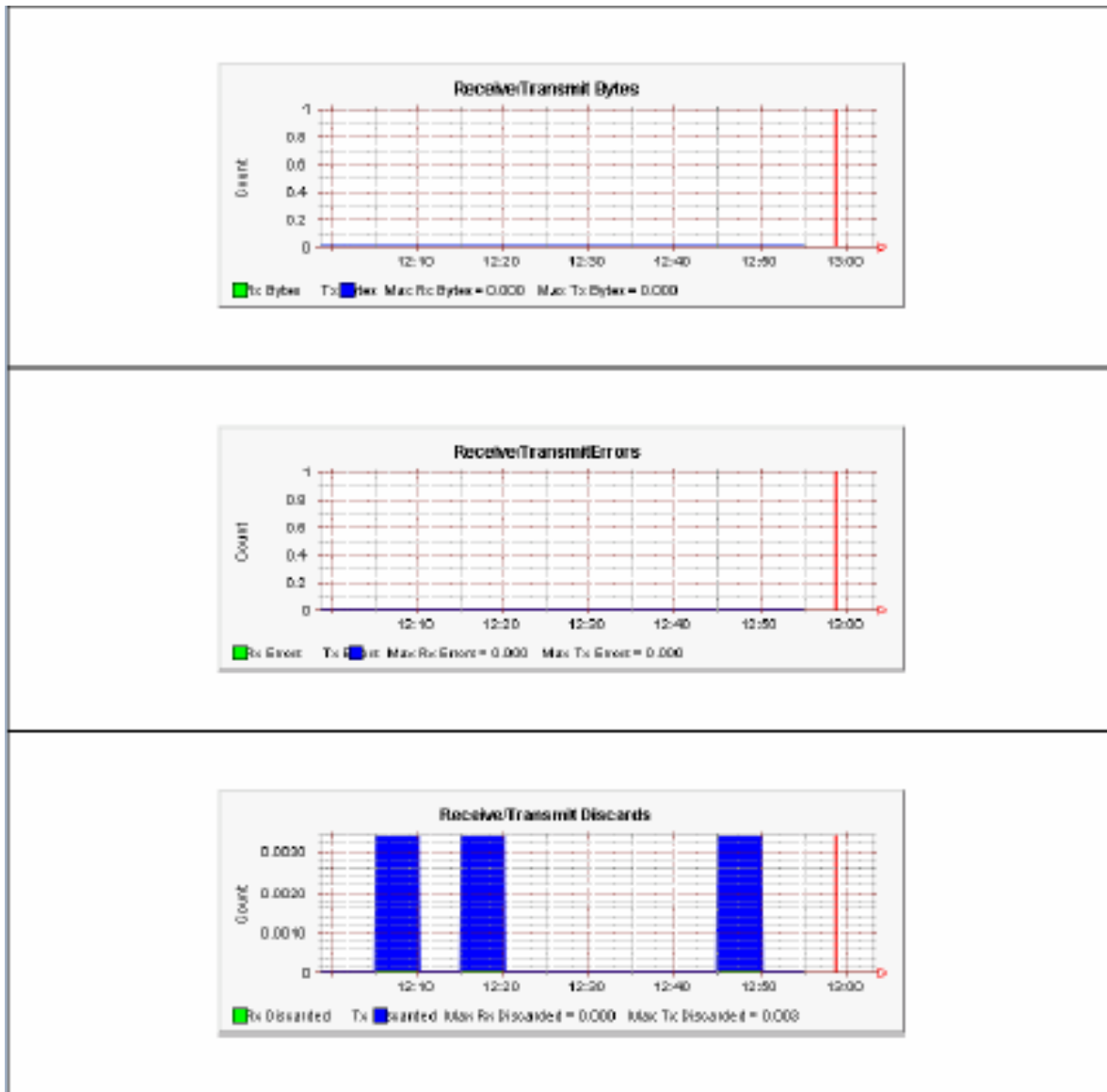


Figure 244: Example color key covering key text

²² The Ethernet Traffic, Link Information, or RF Traffic tabs.

Prizm Console Window Opening Off-screen

If you switch from a multiple-monitor to a single-monitor setup, the Prizm console may open outside the limits of your current screen. In a Windows platform, the workaround is to right click on the Start menu, select Move, and use the arrow keys to move the window back to the primary screen; then exit and launch the Prizm client application again. Until this problem is resolved, Canopy will continue to track it under Item ID 0004685.

Discovering Network Elements Hanging

Where a PostgreSQL or SQL Server database is deployed, the Discovering Network Elements window may hang during the discovery of a relatively large number of elements. This can occur on either a Linux or a Windows platform.

The workaround in this case is to log off and back in. Until this problem is resolved, Canopy will continue to track it under Item ID 0001918.

Duplicate Listing of BAM Provisioned Element

In the Network Elements pane of the Define Networks window, you may see an element that you have BAM provisioned listed twice (identically). Until this problem is resolved, Canopy will continue to track it under Item ID 0002765.

SM Not Reflecting New VLAN Membership Until Reboot

If you use a VLAN profile in Prizm to change the VLAN membership for a Canopy Subscriber Module, the change will not be reflected in the GUI of the SM until the SM has been rebooted. This is an anomaly of the SM. Until this problem is resolved, Canopy will continue to track it under Item ID 0003241.

Nonexistent Elements Being Discovered

Element discovery by HTTP can result in

- nonexistent elements being included in the discovered elements list
- the following error message, posted to the Discovering Network Elements window:
Discovered new Element via HTTP, requires a password that is not in the Default Password List

When this occurs, Prizm marks the elements with a **?** in place of an element type icon in the discovered list and in network browser windows, as shown in [Figure 245](#).

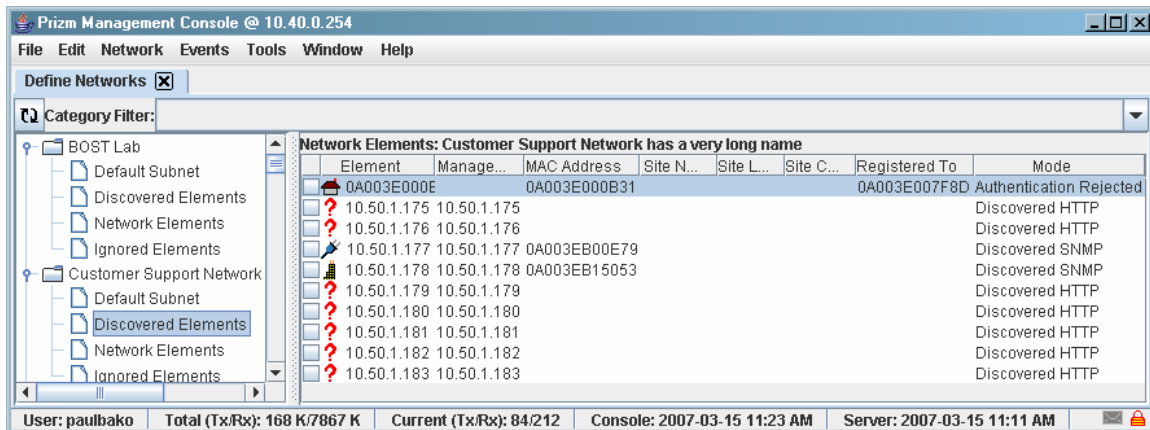


Figure 245: Question mark shown as element type for HTTP-discovered elements

These *elements* are IP addresses that are within the discovery range and valid for the defined subnet but not associated with any discovered or discoverable devices. The workaround is to not check the **HTTP Scan (Canopy Elements Only)** option in the Discover Network Elements window (See [Figure 38](#) on Page 111), except to discover a known device that both has a known IP address and fails to respond to SNMP requests. Until this problem is resolved, Canopy will continue to track it under Item ID 0005087.

Confusing Window Title for Send Message to User Operation

Administrators are able to use the Sessions side tab of the User Manager tab to check the checkbox of each of multiple users (or highlight a single user) with a current session in Prizm, then select an option to send a message to them. This works properly. See [Sessions Side Tab](#) on Page 88.

However, when multiple users and the send option are selected, the title bar of the composition window that results mentions only the last user that was selected; for example, Message to *LoginIDx*, not Message to *LoginIDx*, *LoginIDy*, and *LoginIDz*.

Although Prizm properly delivers the message to all users that were checked before the **Edit→Send Message to User(s)** option was selected, the title bar may imply that only *LoginIDx* would receive it. Until this problem is resolved, Canopy will continue to track it under Item ID 0005045.

Simultaneous User Needs to Refresh for Latest Network Views

When User A makes a change to a network

- the change becomes effective (is made to the database) only when User A either clicks the **Apply Changes** button or logs off.
- User B, who was logged in when the change was made and continues to be, does not see the change even after User A makes the change effective, until User B either clicks the Refresh () button or logs off and then back in.

For as long as this is the case, Canopy will continue to track it under Item ID 0005281. A similar issue was resolved in Release 3.0: see also [Simultaneous User Seeing Different Network Views](#) on Page 414.

Column Selections Discarded If Search Dialog is Not Cleared

If you make any selections in the Select Columns window (either from the full list or from the short list returned by the search feature) and/or any were already selected when you clicked the  button, and then you do a new search and select more, afterward be sure to clear the contents of the Search dialog *before* you click the **OK** button. Otherwise, only the columns selected in the current short list are displayed after you click **OK**.

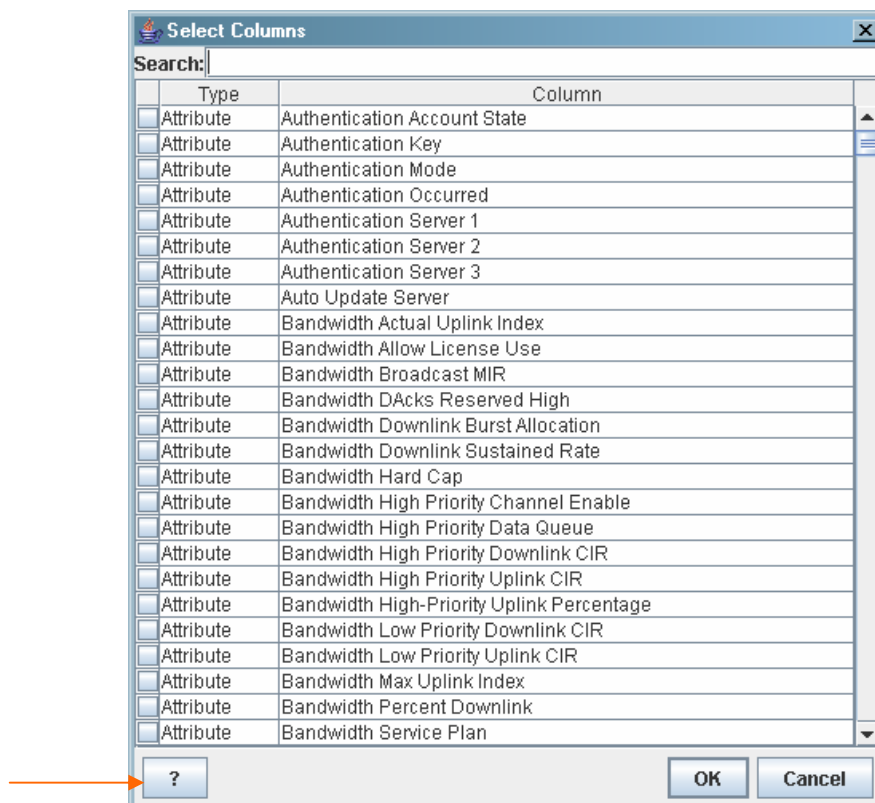
Proper behavior would be for all selected columns to remain selected, except for any whose checkbox you uncheck. Until this problem is resolved, Canopy will continue to track it under Item ID 0000005259.

Buttons Not Visible Unless Window is Enlarged

The Configure Routers windows provides buttons to **Add**, **Update**, or **Remove** a selected Router configuration and to **Close** the window. However, to see these buttons, you may need to enlarge the window. Until this problem is resolved, Canopy will continue to track it under Item ID 0005271.

Help Button Not Functioning

The Select Columns window provides a help button, but clicking this button has no effect.



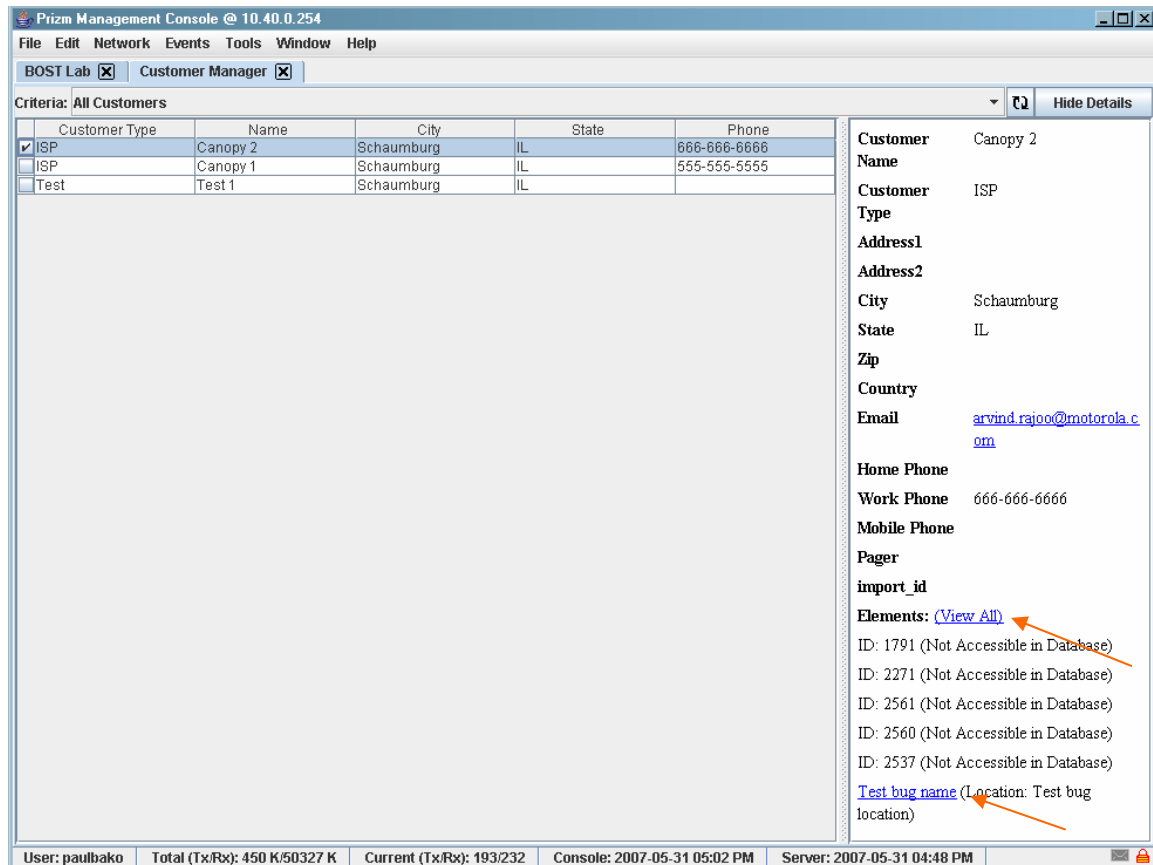
Until this problem is resolved, Canopy will continue to track it under Item ID 0005262.

Element View Links from Customer Manager Not Working Properly

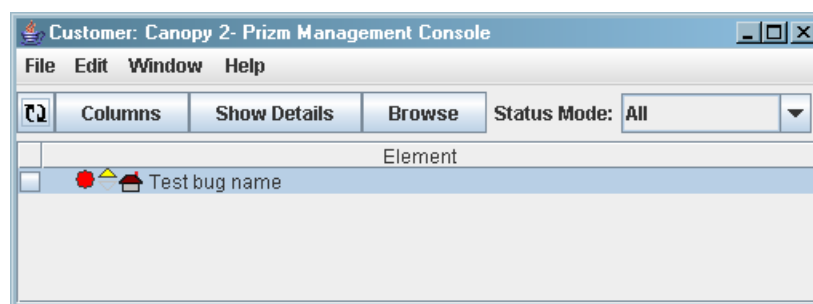
In the Details pane of the Customer Manager tab, Prizm provides links to

- [View All](#) of the elements to which the customer selected in the opposite pane has been assigned
- any particular element to which that customer has been assigned.

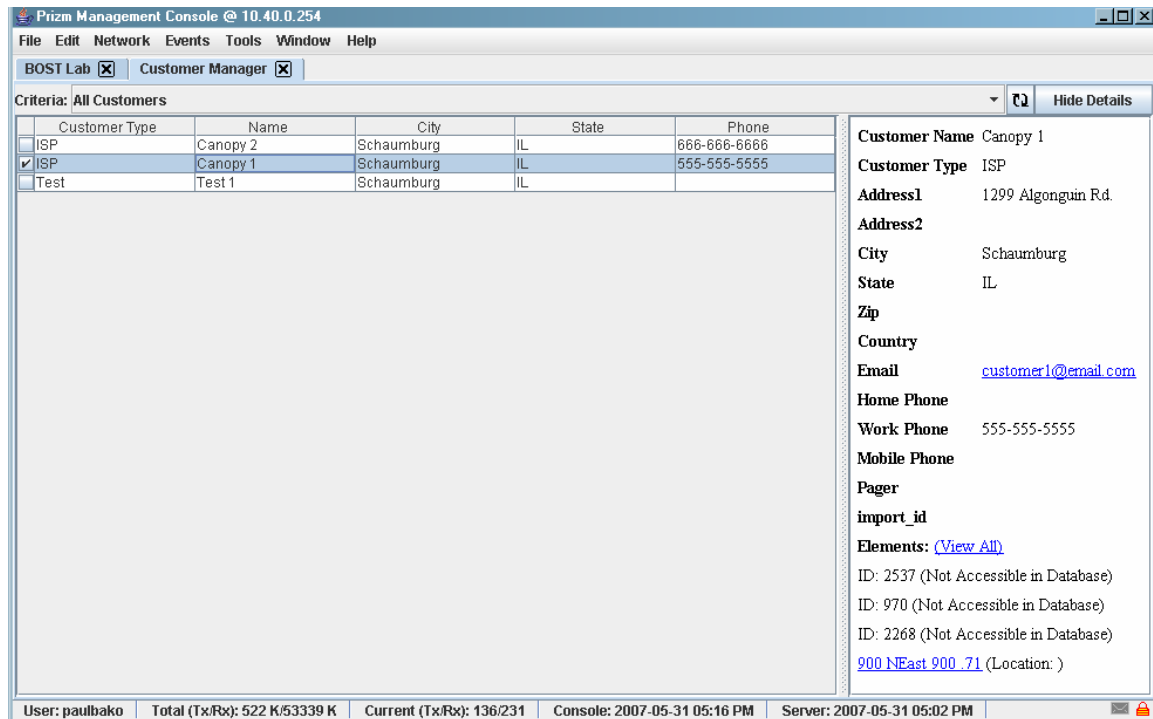
Both of these types of links work properly only the first time that you click one of them.



For example, if you click the [View All](#) link shown above, then Prizm opens the element view as shown below.



But if you close this view and select another customer as shown below,



then clicking the [View All](#) link or the link to one of the associated elements has no effect. To work around this problem, you can either

- leave open the first element view. This view will then be replaced by the next element view, and so on, until you finally close the Customer Manager tab.
- close and reopen the Customer Manager tab.

Until this problem is resolved, Canopy will continue to track it under Item ID 0005490.

Deleted Service Plan or VLAN Profile Can Be Applied

If you begin to provision an element for BAM, and then the bandwidth service plan or VLAN profile that you have selected is deleted (for example, by another user account who is simultaneously logged in) before you finish, Prizm allows you to apply the deleted service plan or profile. Preferable behavior would be to disallow the provisioning and provide an informative error message about the deletion. Until this problem is resolved, Canopy will continue to track it under Item ID 0005832.

Initial Failure of Network Inventory Report

After an upgrade to Prizm Release 3.1, an attempt to generate a network inventory report from the Report Manager area of Prizm fails. It fails because the new **Platform Version** attribute does not exist yet in the database. The workaround for this problem is to refresh at least one Canopy AP, SM, or BH element (PTP 400 and 600 series excepted) before you select the **Edit→Generate Report→Network Inventory** option. This refresh

permanently adds the attribute to the database. Until the problem is resolved, Canopy will continue to track it under Item ID 0006422.

Authentication Account State Not Updated for Slave Removed from RADIUS

If you remove the record of an slave element from the RADIUS server, then Prizm will properly deny future authentication attempts from that element. However, Prizm will fail to update the Authentication Account State attribute and fail to mark the element with the  Suspend icon in network views. The workaround for this problem is to delete the element from Prizm. Until the problem is resolved, Canopy will continue to track it under Item ID 0005914.

Active Dashboard Menu Item Nonfunctional

The drop-down menu associated with **Active Dashboard** in the General panel of the Settings window offers no menu choices. (See [Figure 207](#) on [Page 349](#).) To select a dashboard to be active, or to suppress all dashboards, perform the following steps:

1. From the main menu, select **File→Settings→Edit Settings**.
2. In the left panel, click **Dashboard**.
RESULT: The Dashboard setup panel displays in the right side of the settings window, as shown in [Figure 213](#) on [Page 354](#).
3. At **Active Dashboard** in the right panel, select from among **Default**, **(None)**, and the names of other defined dashboards in the drop-down menu.

Until the problem is resolved, Canopy will continue to track it under Item ID 0005876.

13.2 PROBLEMS RESOLVED IN RELEASE 3.0

Prizm Release 3.0 resolved the following problems.

13.2.1 Data Export Failure for Mixed Selection (BAM-only and Fully Managed)

In earlier releases, when the selection of elements for which you wanted to export chart data included any element that was provisioned for BAM-only operations, the export operation failed. In Release 3.0 and later, Prizm exports data for the fully managed elements and ignores the other element(s). Canopy tracked this problem under Item ID 0003069.

13.2.2 Web Proxy Feature Problems

In earlier releases, the Web Proxy feature was not supported for elements that were

- managed by SNMP proxy.
- provisioned by BAM.

In Release 3.0 and later, Prizm supports these. However, this feature *is not* supported in systems that are only BAM server licensed (not also Prizm EMS server licensed). This is because the BAM subsystem in Prizm does not have access to Canopy module passwords.

Canopy tracked this problem under Item ID 0003083.

13.2.3 SNMPv1 Devices Not Being Discovered

In earlier releases, discovery of SNMPv1 generic devices was not guaranteed. If a device supported v1 and v2, and the operator instructed Prizm to discover as only v1, then Prizm discovered the device as v2. If a device supported only v1, then Prizm *did not* discover the device.

In Release 3.0, this problem is resolved. Canopy tracked it under Item ID 0003769.

13.2.4 Multiple Notifications for Same Event in Redundant BAM Server Case

In earlier releases, the Alert Manager process did not execute on a BAM-only server. So, the BAM-only server had no predefined active or user-defined alerts and thus did not generate such alerts. It did however send notifications of events in the Event Log for which Prizm is automatically programmed to generate alerts, such as received traps and license checkout alerts. Since the full Prizm server also sends notifications for these, these notifications were redundant.

This occurred if both

- the SMTP service, used for Prizm notifications, was configured on the BAM-only server(s).
- the alerts discussed were not set to be automatically cleared.

In Release 3.0, this problem is resolved. Canopy tracked this problem under Item ID 0004235.

13.2.5 Simultaneous User Seeing Different Network Views

In earlier releases, when a user made a change (such as deleting a network), a current user in another console did not see the change even though the database was updated with the change. Network views were based on a cache of the network in the database at the time of login.

Users could have experienced problems such as the following examples:

- If User A deleted a network, that network may still have been displayed on the User B console, but contain no elements there.
- If User B attempted to rename (or change passwords of community strings, or discover or add new elements in) the deleted network, the system returned a Java exception error to User B and refreshed the view with the network removed.
- If User A deleted more than one network, the User B attempt described above did not result in the refreshed view removing any of the other deleted networks.

The refreshed view for User B was based on a database grep of only the network that was the object of the attempted change. If User B logged off and back in, then the view for User B was based on a new cache, but subsequent changes made by User A would cause the same types of problems for User B.

In Release 3.0, this problem is resolved. Canopy tracked this problem under Item ID 0001877.

13.2.6 Accept Operation Appearing to Hang

In earlier releases, the time required in some instances for an Accept operation to accept elements after an AP could appear longer, because of the queue for Accepts. If you accepted an AP and a BH in the same operation, the number of elements refreshed in the Accept operation may not have been apparent, but did affect the time span of the operation, and may have required you to trust that the process was not hanging.

In Release 3.0, this problem is resolved. Canopy tracked this problem under Item ID 0001733.

13.2.7 CMM Details Requiring Pane Size Adjustment

The General tab of the Details pane for a CMMmicro had no horizontal scroll bar that would allow you to view information for all eight ports in the Port Configuration section. For a workaround, the user guide suggested to increase the size of the pane.

In Release 3.0, this problem is resolved. Canopy tracked this problem under Item ID 0002302.

13.3 PROBLEMS RESOLVED IN RELEASE 3.1

Prizm Release 3.1 resolves the following problems.

13.3.1 Problems in Checking Out and Holding Licenses

In previous releases, Prizm sometimes was unable to check out and hold licenses when one in a set of redundant License Manager servers stopped running. Concurrent with Prizm Release 3.1, License Manager uses an upgrade in the third party licensing software.

This upgrade relieves the problem. In the previous releases, Canopy tracked this problem under Item ID 0003795.

13.3.2 All 16 Digits Required for Authentication Key

The Prizm attribute Authentication Key required that the user pad its values with leading zeros to achieve a total key length of 16 digits. (The key parameter in the SM, which has the same name but is not received from Prizm, does not.) This upgrade relieves the problem. In previous releases, Canopy tracked this problem under Item ID 0005443.

13.3.3 Technical Support Tool Attempting to Send Mail When Instructed Not To

In the **Mail Options** section of the Task Attributes window when you are [Using the Technical Support Information Tool](#), if you selected **Save for later** (rather than **Send Mail**), the tool attempted to send mail. You recognized this by an exception message, which complained that the send mail address field (presumably the **Email** dialog box) is empty. An example of the **Mail Options** section is shown in [Figure 250](#) on [Page 422](#). This upgrade relieves the problem. In previous releases, Canopy tracked this problem under Item ID 0004400.

13.3.4 False Authentication Failure Message

For a Canopy Subscriber Module whose Canopy Access Point Module has authentication disabled, you may have seen a message similar to the following in an event viewer:

Authentication failure occurred at the SM.

This upgrade relieves the problem. In previous releases, Canopy tracked this problem under Item ID 0004955.

13.3.5 Changing Element Type List Not Supported for Existing Automatic Tag

The **Modify** function for an automatic tag allows you to change the name of the automatic tag but did not allow you to change the list of element types to which Prizm will apply the tag. This upgrade relieves the problem. In previous releases, Canopy tracked this problem under Item ID 0001729.

For other caveats about modifying automatic tags, see [Specifying Tags for Element Type\(s\)](#) on Page 98.

13.4 CHECKING INFORMATION ABOUT Prizm

13.4.1 Viewing Server Information from the Client

When Prizm has been installed, if a supported web browser is properly configured on the server, the **Help→About Prizm** menu selection on the Prizm client opens the About Prizm window (as shown in [Figure 246](#)) to provide important information.

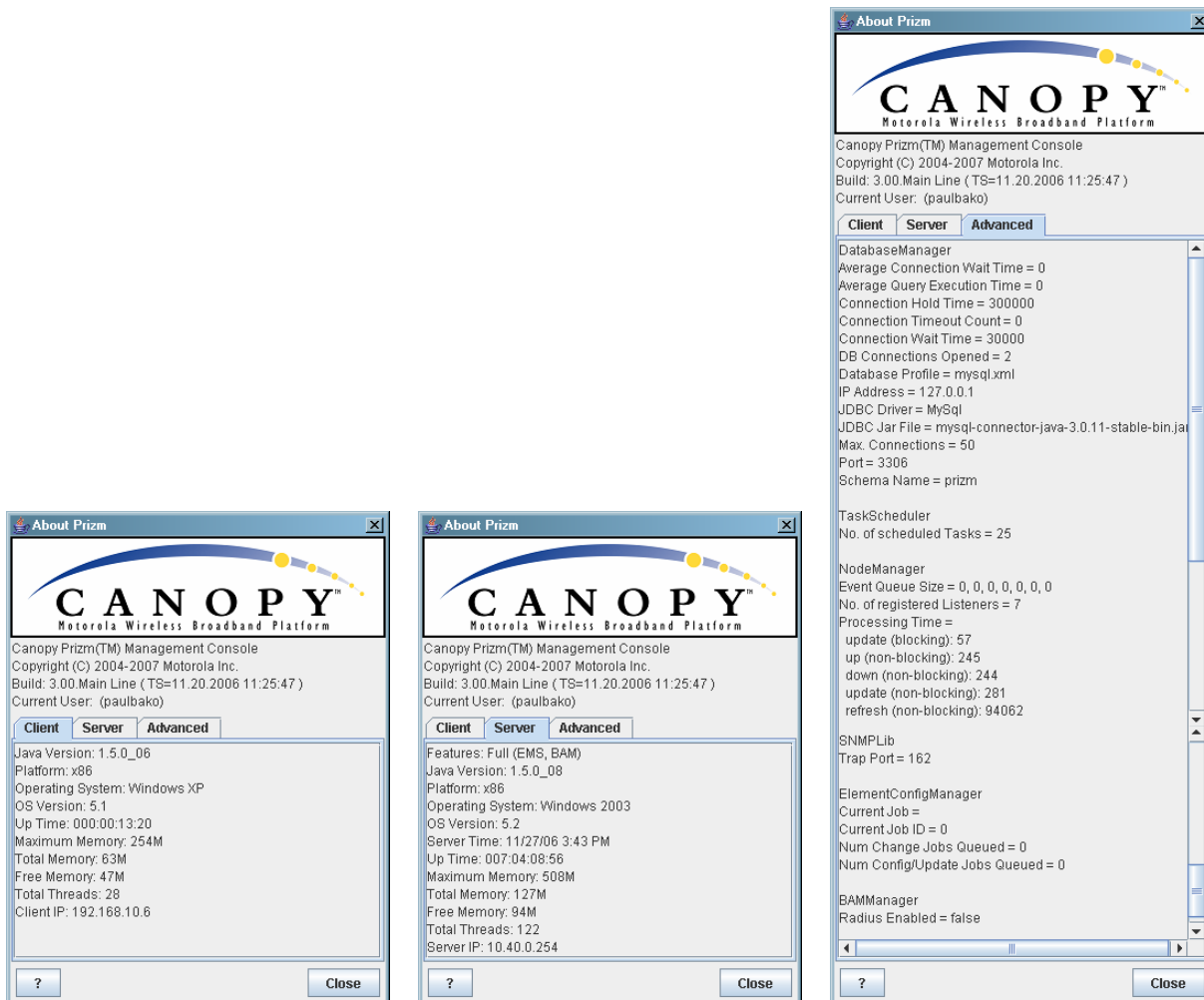


Figure 246: Example information tabs

The format of the Up Time fields is *days:hours:minutes:seconds*.

13.4.2 Checking Whether Secure Client Access is Enabled

If security is enabled on the Prizm server, then all communications between the Prizm client application and the Prizm server are transmitted through a Secure Socket Layer (SSL) connection. This keeps Prizm data secure against unauthorized attempts to read the data.

To help users quickly recognize whether SSL is enabled, Prizm provides a graphical indicator, as shown in [Table 33](#).

Table 33: SSL encryption status indicator

Symbol	Meaning
	SSL encryption is enabled.
	SSL encryption is disabled.

One of these icons or the other is visible at any time in the lower right corner of the Prizm console window. Further, Prizm provides mouse-over tooltips that are associated with these icons. The tooltip pop-up windows state whether SSL encryption is enabled. In the Prizm distribution, security is enabled by default.

13.4.3 Viewing the System Log

Administrator-level permissions allow access to the System Log, which displays the sequential list of all activities that have occurred within the Prizm system. Each event in the log is tagged with time, message type, originator, and message.

The messages types found in the System Log are defined in [Table 34](#).

Table 34: System Log message types

Message Type	Definition
INFO	Indicates normal activity in the system.
DEBUG	Logs debug data that Motorola can use to resolve a problem.
WARN	Warns of a potential or future problem.
SEVERE	Indicates an error condition that has been detected or triggered.

The originator field is for only internal tools to use and *is not* helpful to the Prizm administrator. This field is typically populated with SYSTEM.

To display the System Log, browse to **Tools→Administrator→System Log**. In the System Log tab, to search for a string that may be present in any field of the log, select **Edit→Find**. Prizm opens the Find in System Log window, as shown in [Figure 247](#).

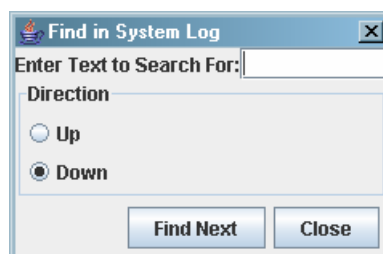


Figure 247: Find in System Log window

This window supports up and down, non case-sensitive searches and repeat searches, and Restart From Beginning searches. The search engine recognizes no character as wild card or special in any other way.

From the System Log tab, you can save a copy of the current System Log as a text file on your local computer. To do so, select **File→Save View Results As** and specify the desired path and file name. The file may be useful for remote troubleshooting of the Prizm server.

You can define a minimum level of log information that the system should record in the System Log. Available levels correspond to the message types that are listed in [Table 34: System Log message types](#) on Page 418. The highest level is **SEVERE**. The lowest selectable level is **DEBUG**. To set the desired level, open the System Log and select from the main menu **Edit→Set Severity Level**, then select the message type. This change is immediately effective.

Also, the BAM engine keeps a runtime log file that is separate from the core Prizm system log. Both types of logs are available from the main menu by selecting **Tools→Administrator→System Log** and then using the pull-down list to select the log that you want to view, as shown in [Figure 248](#).

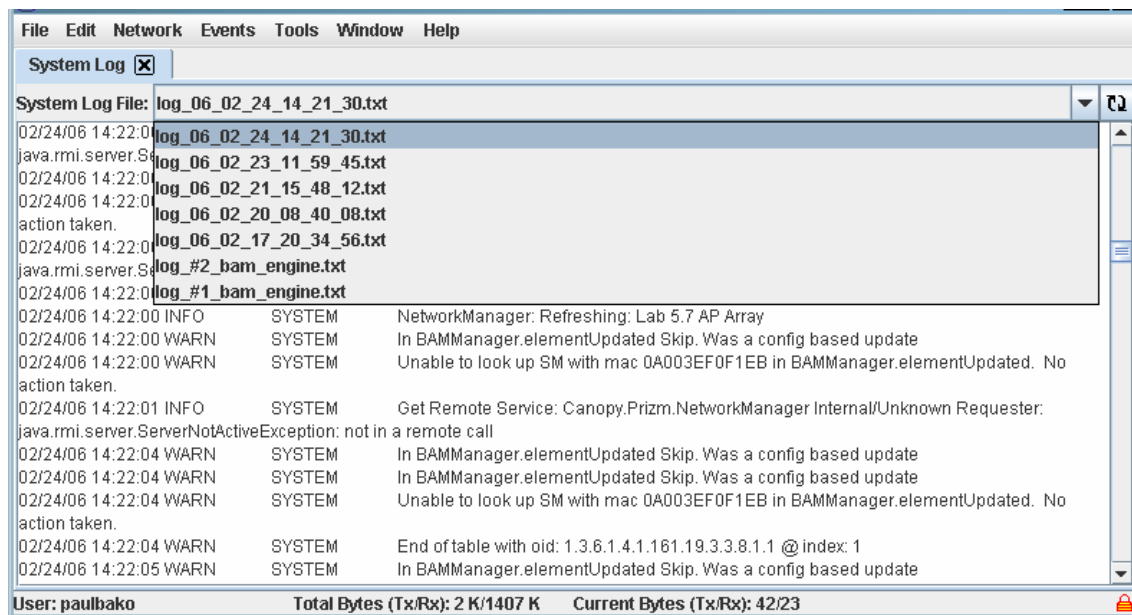


Figure 248: BAM logs and system logs selectable in System Log tab

A commented-out explanation of the format of a **trap** element precedes the contents of a trap. This explanation also indicates that, if the value of the **text** attribute in the **message** element is left null, then the trap *will not* generate an alert or an entry in the Event Log or System Log. This allows you to suppress unwanted messages for redundant or frequently received traps.

13.5 OBTAINING TECHNICAL SUPPORT

13.5.1 Performing Preliminary Steps

The contact information for Canopy Technical Support staff is included in this procedure. In most cases, you should follow the steps before you contact them. To get information or assistance for problems, use the following sequence of actions:

1. If the problems constitute an emergency, call Canopy Technical Support at **1 888 605 2552** (or **+1 217 824 9742**) or contact another technical support organization if one has been designated for you.
2. Search this user guide and the software release notes of supported releases
 - a. in the Table of Contents for the topic.
 - b. in the search function for keywords that apply.
3. Visit <http://www.canopywireless.com/support/knowledge> to view the Canopy Knowledge Base.
4. Ask your Canopy products supplier to help.
5. View and analyze event logs, error messages, and debug messages to help isolate the problem.



IMPORTANT!

In addition to providing the server System Log, the Prizm client application provides debug information that an administrator can sometimes use for troubleshooting problems. This information is available from the main menu at **Help→Debug Output**. After you encounter trouble, *keep the client application running* so that this temporary support information is available in case you contact support.

6. Check Canopy system release notes to verify that all of your Canopy equipment is on the correct software release.
7. Where appropriate
 - a. verify element connectivity (physical cabling).
 - b. at the SM level, minimize your network configuration (remove home network devices to help isolate problem).
 - c. perform site verification checklist(s).
8. From the main menu, select **Help→Support Information**.
RESULT: The Task Attributes window opens with tabs for General Information and Network Information.
9. Refer to the following section, [Using the Technical Support Information Tool](#), to determine how to best use this tool, based on the symptoms that you are experiencing in Prizm.

===== end of procedure =====

13.5.2 Using the Technical Support Information Tool

Prizm provides a tool for administrators on the client application or the administrator on the server to launch when trouble exceeds local diagnostic efforts. This tool assembles into a single encryptable file most of the information that Canopy Technical Support requires to diagnose typical problems encountered in Prizm operations. The tool also allows the operator to split the file to enable or speed up transmittal for data that exceeds 1 MB.

Depending on whether the tool is launched from the client application or the Prizm server, the data may include

- element web pages from elements that are selected in the interface when the tool is launched.
- whatever data Prizm stores about those selected elements.
- event logs, if elements are selected.
- the system log.
- license file contents and usage.
- the platform and environment on which the Prizm server operates.
- device templates, including any that were locally created or modified.
- Prizm configuration (all xml) files.
- installation logs.
- the identification of all running processes.
- additional information that you voluntarily enter in the interface to the tool.

So, if the tool is launched from both the client and the server, then the composite of the data files that the tool produces can include all of the above listed information. By default, the tool stores the output file(s) under the directory where you installed Prizm on the server, in the subdirectory `...modules/supportinfo/files/login_id`.

From main menu of the Prizm client application, you can launch the tool in either of two ways, depending on the results you want. If you want to be able to You *can* name and manage the running of the tool as a task, and specify its scope and owner, then you should enter the tool from the Task Scheduler. Either way, to launch the tool, you must be the Prizm default administrator, account type Administrator (referred to elsewhere in this guide as **ATA**), or a user who has Administrator permission level for Network Manager (referred to elsewhere in this guide as **NMA**).

Entering the Tool via the Help Menu

If you select **Help→Support Information** from the main menu, Prizm opens the Support Tool Options window, which prompts you to indicate whether you want to launch the tool or select (and possibly manage as well) any files that have been stored for sharing with the Technical Support staff. An example of this window is shown in [Figure 249](#).

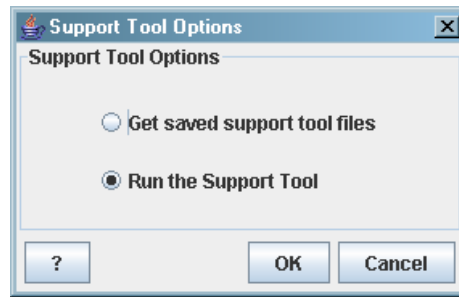


Figure 249: Example Support Tool Options window

If you then select **Run the Support Tool** and click **OK**, Prizm opens a Task Attributes window. Examples of this window are shown in [Figure 250](#) and [Figure 251](#).

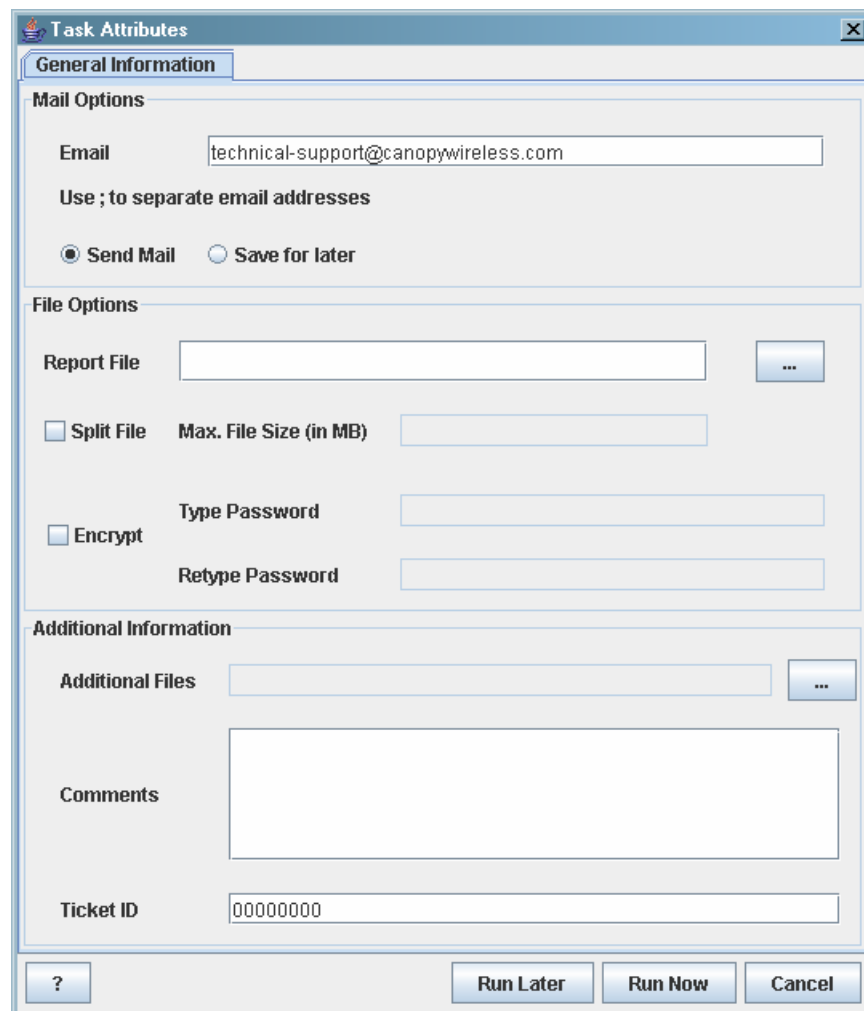


Figure 250: Example Task Attributes window, Support Information when no network is open

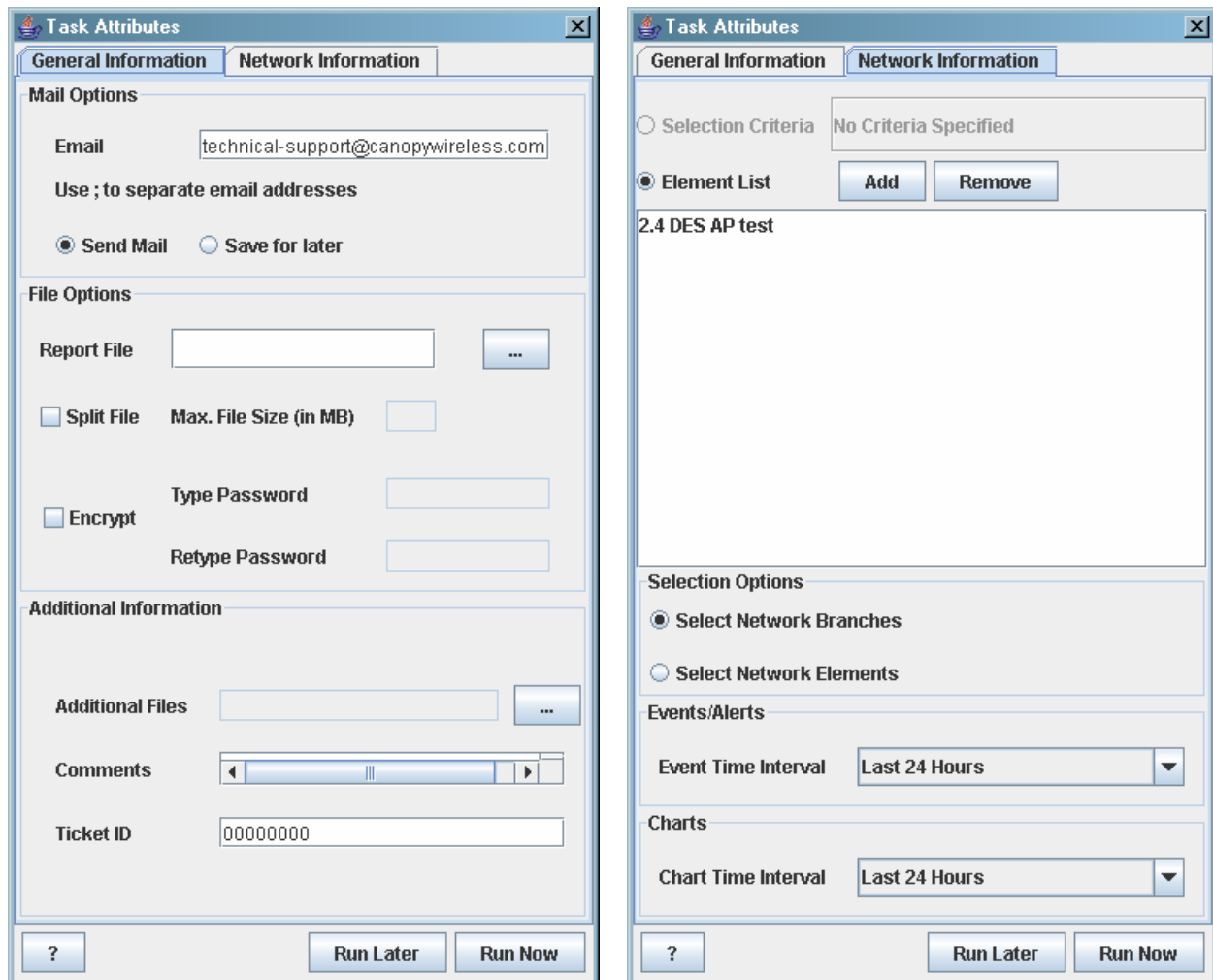


Figure 251: Example Task Attributes window tabs, Support Information when a network is open

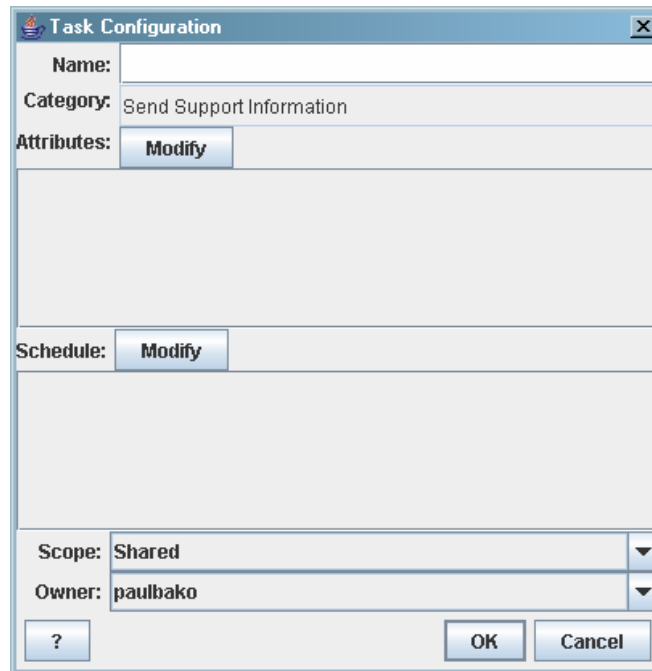
If a network browser was the top tab in the Prizm console, then the Task Attributes window provides a Network Information tab in addition to the General Information tab. In the General Information tab, the Mail Options are configurable.

Entering the Tool via the Task Scheduler

The alternative way to summon the support tool provides greater flexibility in that it uses the Task Scheduler in Prizm. You would begin as follows:

1. From the main menu, select **Tools→Task Scheduler**.
2. Select **Edit→Add a Task**.
3. Highlight **Send Support Information**.
4. Click **OK**.

RESULT: Prizm opens a Task Configuration window as shown in [Figure 252](#).



The image shows a 'Task Configuration' dialog box. It has a title bar with a close button. The main area contains several sections: 'Name' with an empty text field; 'Category' with a dropdown menu showing 'Send Support Information'; 'Attributes' with a 'Modify' button and a large empty text area below it; 'Schedule' with a 'Modify' button and a large empty text area below it; 'Scope' with a dropdown menu showing 'Shared'; and 'Owner' with a dropdown menu showing 'paulbako'. At the bottom, there is a '?' button, an 'OK' button, and a 'Cancel' button.

Figure 252: Example Task Configuration window, Send Support Information task

5. For **Name**, type in a designation for Prizm to associate with this task.
6. For **Attributes**, click the **Modify** button.
RESULT: Prizm opens a Task Attributes window. An example of this kind of Task Attributes window is shown in [Figure 253](#).

The figure displays two side-by-side screenshots of the 'Task Attributes' window, which is used for configuring tasks. The window has two tabs: 'General Information' and 'Network Information'.

General Information Tab (Left Screenshot):

- Mail Options:** Includes an 'Email' field with the value 'technical-support@canopywireless.com', a note 'Use ; to separate email addresses', and radio buttons for 'Send Mail' (selected) and 'Save for later'.
- File Options:** Includes a 'Report File' field, a 'Split File' checkbox, a 'Max. File Size (in MB)' field, an 'Encrypt' checkbox, 'Type Password' and 'Retype Password' fields.
- Additional Information:** Includes an 'Additional Files' field, a 'Comments' text area, and a 'Ticket ID' field with the value '00000000'.
- Buttons: '?', 'OK', and 'Cancel'.

Network Information Tab (Right Screenshot):

- Selection Criteria:** A dropdown menu showing 'No Criteria Specified'.
- Element List:** A list containing '2.4 DES AP test'. It includes 'Add' and 'Remove' buttons.
- Selection Options:** Radio buttons for 'Select Network Branches' (selected) and 'Select Network Elements'.
- Events/Alerts:** A section with 'Event Time Interval' set to 'Last 24 Hours'.
- Charts:** A section with 'Chart Time Interval' set to 'Last 24 Hours'.
- Buttons: '?', 'Run Later', and 'Run Now'.

Figure 253: Example Task Attributes window tabs, Send Support Information task

Regardless of whether a network browser view was the top tab in the console when you entered the support tool, this window provides both a General Information tab and a Network Information tab. In the General Information tab, the Mail Options *are not* configurable.

Populating the General Information Fields

When the General Information tab opens, the **Email** field contains the default address technical-support@canopywireless.com. If this field is active (not grayed out), you can substitute an appropriate address and/or add other recipients by first checking the **Send Mail** option in this section. If you specify multiple recipients, separate the addresses by semicolons. When you are satisfied with the string of the recipient(s), then you can either

- move on to the File Options section, and the tool will automatically send the information that technical support requires, presuming that **Send Mail** is checked, whenever the **Run Now** button is clicked.
- first recheck **Save for later**, and the tool will assemble that information and store it in the local folder from which you can later send it. In this case, the tool will not send it for you.

If a **Report File** already exists in the local folder, and you select it using the browse function (click the ellipsis button), this sets up the tool to gather *the latest data* into that file whenever you select **Run Now**. So, the contents of the report file are dynamic. If you want to keep a snapshot that the tool cannot overwrite, move the file to a distinctive file name elsewhere in your file system

This section also allows you to optionally

- select **Split File** to break the directory or file into separate pieces, each not larger than the number of megabytes that you then enter in the **Max. File Size** dialog box, to facilitate transmittal of the file.
- select **Encrypt** to secure the file such that it can be accessed only with the password that you then enter twice into the dialog boxes provided for that purpose. If you select this option, then you must also separately send the password to technical support. Without it, they will be unable to open the report file.

In the Additional Information section, you have the opportunity to browse to other files (**Additional Files**) that the tool should attach when it sends email to Canopy Technical Support as well as type any explanatory remarks into the **Comments** dialog box and, if appropriate to do so, modify the **Ticket ID**. Make note of this ID. This is the number by which both you and technical support personnel will

- refer to this information.
- distinguish it from past and future sets of information that are generated for technical support.

The number of files that results from the **Split File** function is the number of separate emails that the tool will send, each with the **Ticket ID** on the subject line and your **Comments** in the message body. When you click the ellipsis button associated with **Additional Files**, Prizm opens a Choose a File window. An example is shown in [Figure 254](#).

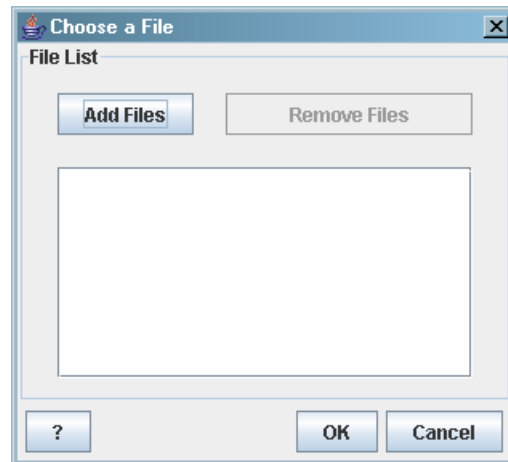


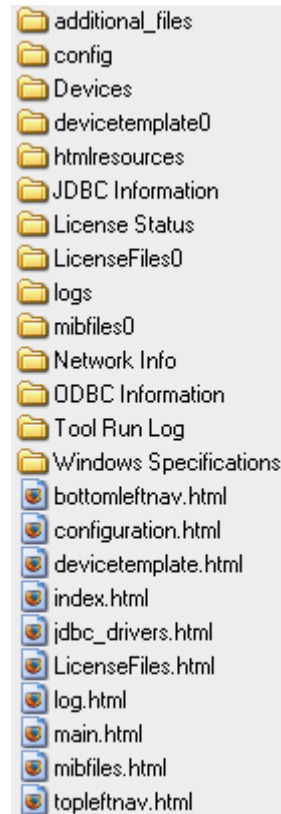
Figure 254: Example Choose a File window

This window, with its **Add Files** button, allows you to include any file from the client device in the data transmittal to technical support. Unlike the other files that the tool assembles, these *are not* overwritten by later versions when **Run Now** is selected. These additional files can be of any type. For example, you may send a mix of screen captures, performance charts, and notes of your own observations. After you have added files, you can mark one file at a time in the list and click the **Remove Files** button to keep the tool from including it in the transmittal.

Ultimately, the **Report File** is an encrypted .enc file or an unencrypted .zip file (or a numbered set of these file types, if the **Split File** option was selected). The file(s) contains the following directories and files, most of which are from the Prizm server. The `additional_files` directory (highlighted below) that the Report File includes the **Additional Files** that you select from the client device. The `index.html` file contains links to all of the files, including the Additional Files from the client.

Report File Contents Where Prizm Server is On Linux Windows

/additional_files
 /Boot Information
 /config
 /Configuration Data
 /Devices
 /devicetemplate0
 /Disk Filesystem Information
 /Environment Information
 /htmlresources
 /InstallationLog0
 /JDBC Information
 /Kernel Information
 /License Status
 /LicenseFiles0
 /logs
 /Mail Information
 /mibfiles0
 /Miscellaneous Data
 /Network Configuration
 /Network Service Information
 /ODBC Configuration
 /OS Log Data
 /Process Information
 /RPM Information
 /Services Information
 /Tool Run Log
 bottomleftnav.html
 configuration.html
 devicetemplate.html
 index.html
 InstallationLog.html
 jdbc_drivers.html
 LicenseFiles.html
 log.html
 main.html
 mibfiles.html
 topleftnav.html



Specifying Network Information for the Support Tool

Unlike in other scheduled tasks, the Network Information tab here allows you to generate only a fixed list of elements. If any element is highlighted in the background network view, even if no action by the user highlighted it, then the initial list in this tab includes the element. In the example tab shown in [Figure 253](#) above, the element was at the top of the network browser when the view opened. Rarely if ever would you want technical support involving only a default-selected element. To specify a correct list, either

- remove the element and add any others as follows:
 1. Click to highlight the element that entered the list by default.
 2. Click the **Remove** button.

3. For each element that you want to add, perform the following steps:
 - a. Click the **Add** button.
RESULT: Prizm opens a Select Network Elements window.
 - b. In the Select Network Elements window, specify filter criteria that encompass the element(s) that should be involved in the technical support.
EXAMPLE: Select **Management IP** for Element Attribute, then input the IP address at =.
 - c. In the Specify Element Criteria window, click the **OK** button.
RESULT: The Select Network Elements window displays a list of the elements that match your criteria.
 - d. In the Select Network Elements window, click the **OK** button.
- start over as follows:
 1. Close the Task Attributes window.
 2. In the current tab of the Prizm console, select the elements (that you want considered during technical support) in either of the following ways:
 - Check the checkbox of each.
 - Select the **Edit→Select All Displayed Elements** command and then uncheck any that you want eliminate.
 3. In the main menu of the client application, launch the tool again by selecting **Help→Support Information**.

Although you can define a filter to initially compose the element list, the support tool will not retain the filter. It will use only the list of elements that the filter operation outputs.

Managing Saved Support Tool Files

If you select **Help→Support Information** from the main menu, Prizm opens the Support Tool Options window, which prompts you to indicate whether you want to launch the tool or select (and possibly manage as well) any files that have been stored for sharing with the Technical Support staff. An example of this window is shown in [Figure 249](#) on [Page 422](#). If you then select **Get saved support tool files** and click **OK**, Prizm opens the Saved Support Files window. An example of this window is shown in [Figure 255](#).

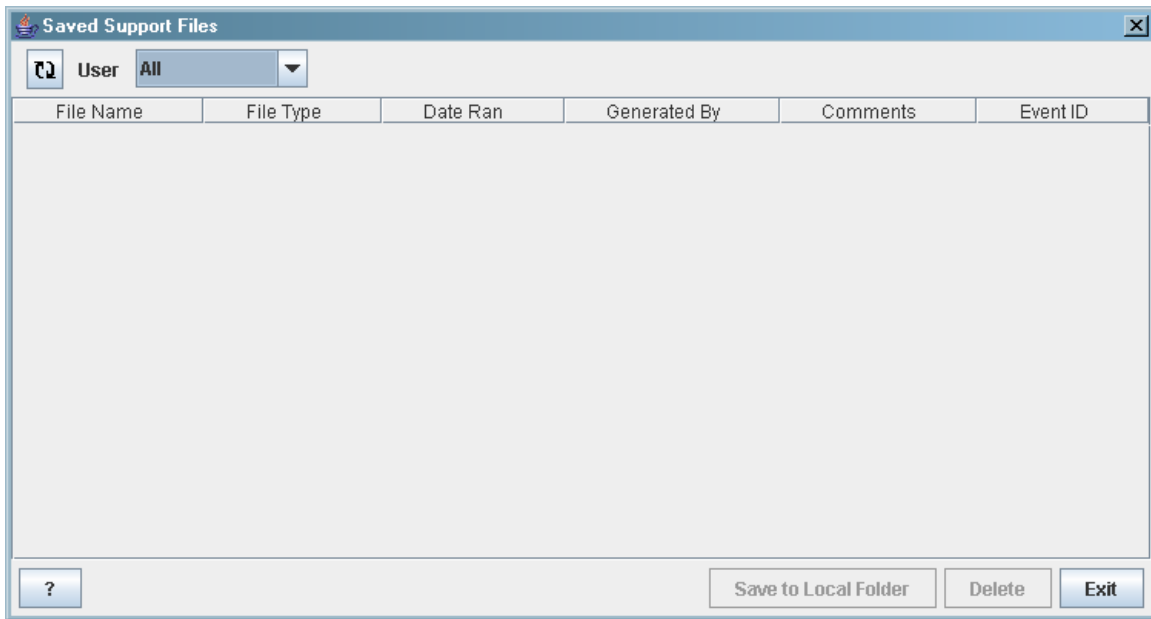


Figure 255: Example Saved Support Files window

In this window, you can change the user field to view a different set of files, delete any old or unwanted files, and save any to a directory on the client device.

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- Mibble (Version 2.3)
- Westhawk's Java SNMP Version 4_13
- JRobin 1.4.0
- JFreeReport 0.8.4_11
- Sub libraries used by JFreeReport:
 - JCommon 0.9.7
 - Pixie 0.8.1
 - BeanShell 1.2b6
 - GnuJAXP
 - iText 1.02b
 - POI 2.5.1
- PostgreSQL
- Apache Jakarta Tomcat
- Apache Commons Net Library 1.2.2
- Apache Commons Email Library 1.0
- Apache Commons Logging Library 1.0.4
- Apache Commons HttpClient Library 2.0.2
- Apache Commons FileUpload Library 1.2
- Apache Commons IO Library 1.3.1
- Apache Axis 1.4
- Apache Xerces2 Java Parser 2.7.0
- Apache XML Security 1.2.1
- SNMP4J 1.6-alpha
- SNMP4J-Agent 1.0-alpha2
- Jetty 5.1.4
- Java Math Expression Evaluator
- Boost Version 1.33.1
- ACE, TAO, and CIAO (v5.5)
- gSOAP 2.3.8
- RSA Data Security, Inc. MD5 Message-Digest Algorithm

- Command Line Process Viewer/Killer/Suspender for Windows NT/2000/XP version 2.03
- Crypto++ 5.2.1
- Silk Icons version 1.3
- JavaMail 1.4
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Westhawk's Java SNMP Version 4_13

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author: Tim Panton

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JFreeReport 0.8.4_11

Also includes sub-libraries:

JCommon 0.9.7 - <http://www.jfree.org/jcommon/index.html>

Pixie 0.8.1 - <http://sourceforge.net/projects/jfreereport/>

BeanShell 1.2b6 - <http://www.beanshell.org/>

GnuJAXP - <http://www.gnu.org/software/classpathx/jaxp>

iText 1.02b - <http://www.lowagie.com/iText>

POI 2.5.1 - <http://jakarta.apache.org/poi>

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APPENDIX B: HISTORY OF DOCUMENTATION

Issue 1 of this release-specific guide supports Prizm Release 3.0. Issue 2 supports both 3.0 and 3.1, except where notes specifically refer the Release 3.0 operator to use Issue 1. Earlier iterations were release inclusive.

APPENDIX C: DEVICE CONFIGURATION SOURCE ATTRIBUTE

PARAMETER IN THE AP

In Canopy System Release 6.1 and later releases, the AP includes a **Configuration Source** parameter, which sets where SMs that register to the AP are controlled for MIR, VLAN, the high-priority channel, and CIR as follows.

In a sector where **Software Scheduling** is implemented, the **Configuration Source** parameter affects the source of

- all MIR settings:
 - **Sustained Uplink Data Rate**
 - **Uplink Burst Allocation**
 - **Sustained Downlink Data Rate**
 - **Downlink Burst Allocation**
- all SM VLAN settings:
 - **Dynamic Learning** (except as described under [Source for Dynamic Learning Value](#) on Page 453)
 - **Allow Only Tagged Frames**
 - **VLAN Aging Timeout**
 - **Untagged Ingress VID**
 - **Management VID**
 - **VLAN Membership**

In a sector where **Hardware Scheduling** is implemented, the **Configuration Source** parameter affects the source of

- all MIR settings:
 - **Sustained Uplink Data Rate**
 - **Uplink Burst Allocation**
 - **Sustained Downlink Data Rate**
 - **Downlink Burst Allocation**
- all SM VLAN settings:
 - **Dynamic Learning** (except as described under [Source for Dynamic Learning Value](#) on Page 453)
 - **Allow Only Tagged Frames**
 - **VLAN Aging Timeout**
 - **Untagged Ingress VID**
 - **Management VID**
 - **VLAN Membership**
- the **Hi Priority Channel** setting

- all CIR settings
 - **Low Priority Uplink CIR**
 - **Low Priority Downlink CIR**
 - **Hi Priority Uplink CIR**
 - **Hi Priority Downlink CIR**

For any SM whose **Authentication Mode** parameter is set to **Authentication Required**, the above settings are derived as shown in [Table 35](#). If your network plans are atypical, consider the results that this table displays for the various **Configuration Source** values.

Table 35: Where feature values are obtained for the SM

Configuration Source Setting in the AP	Where These Values are Obtained in a Sector with							
	Software Scheduling				Hardware Scheduling			
	All MIR	All VLAN	HPC	All CIR	All MIR	All VLAN	HPC	All CIR
BAM	BAM	BAM	AP	n/a	BAM	BAM	BAM	BAM
SM	SM	SM	AP	n/a	SM	SM	SM	SM
BAM+SM	BAM	BAM, then SM	AP	n/a	BAM	BAM, then SM	BAM, then SM	BAM, then SM

NOTES:

HPC represents the **Hi Priority Channel** (enable or disable).

CIR is not available to SMs in a sector where Software Scheduling is implemented.

BAM+SM in the **Configuration Source** parameter *is not* recommended where Prizm manages the VLAN feature in SMs.

Where *BAM, then SM* is the indication, parameters for which Prizm does not send values are obtained from the SM.

Where *BAM* is the indication, values in the SM are disregarded.

Where *SM* is the indication, values that the BAM subsystem in Prizm sends through an AP that requires authentication are disregarded. However, values that Prizm sends via SNMP from its EMS where the AP does not require authentication become the values in the SM.

The high-priority channel is unavailable to older SMs that have Hardware Scheduling enabled.

If your network plans are typical, you can use the recommended combined settings that are shown in [Table 36](#).

Table 36: Recommended combined settings for typical operations

Most operators who use						
Canopy System Release...	and BAM Release...	or Prizm...	should set this parameter...	in this web page...	of this module...	to...
7.0 or 7.1	2.1	with the BAM sub-system licensed	Authentication Mode	Configuration	AP	Authentication Required
			Configuration Source	Configuration	AP	SM
7.2 or 7.3	2.1	with the BAM sub-system licensed	Authentication Mode	Configuration	AP	Authentication Required
			Configuration Source	Configuration	AP	BAM ¹
			All Local SM Management	VLAN Configuration	AP	Disable ²
			Local SM Management	VLAN Configuration	SM	Disable ¹
8.x or later	2.1	with the BAM sub-system licensed	Authentication Mode	Configuration, Security tab	AP	Authentication Required
			Configuration Source	Configuration, General tab	AP	BAM ¹
			SM Management VID Pass-through	Configuration, VLAN tab	AP	Disable ²
			SM Management VID Pass-through	Configuration, VLAN tab	SM	Disable ¹

NOTES:

1. **Configuration Source** set to **BAM** *does not* allow you to use the Only Untagged filtering option in the Canopy SM. To use this option, set **Configuration Source** to **SM**, and then change the value of **VLAN Enable** setting in Prizm to **No** for the SM.
The recommended setting without the BAM subsystem licensed is **SM**.
2. Regardless of the **Configuration Source** setting, if you disable this feature in the AP, then settings in the SM for VLAN management *will not* be used.

SOURCE FOR DYNAMIC LEARNING VALUE

For the case where the **Configuration Source** parameter in the AP is set to **BAM**, the SM stores a value for the **Dynamic Learning** VLAN parameter that differs from its factory default. When Prizm does not send VLAN values (because **VLAN Enable** is set to **No** in Prizm), the SM

- uses this stored Disable value for Dynamic Learning.
- shows the following in the VLAN Configuration web page:
 - *either* **Enable** or **Disable** as the value of the **Dynamic Learning** parameter.
 - **Allow Learning : No** under **Active Configuration**.

For the case where the **Configuration Source** parameter in the AP is set to **BAM+SM**, and BAM does not send VLAN values, the SM

- uses the configured value in the SM for **Dynamic Learning**. If the SM is set to factory defaults, then this value is **Enable**.
- shows under **Active Configuration** the result of the configured value in the SM. For example, if the SM is set to factory defaults, then the VLAN Configuration page shows **Allow Learning : Yes**.

This selection (**BAM+SM**) *is not* recommended where Prizm manages the VLAN feature in SMs.

APPENDIX D: TRANSITIONAL REFERENCE FOR BAM USERS

This is a temporary appendix that points to documentation supporting the functionality integrated into Prizm from BAM. Some of these references are to step-by-step procedures, and others are to important background information.

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