AlterPath BladeManager
User Manual

Product Version 1.3.0
Revision No. 7

We believe the information in this manual is accurate and reliable. However, we assume no responsibility, financial or otherwise, for any consequences of the use of this product or manual. This manual is published by Cyclades Corporation, which reserves the right to make improvements or changes in the products described in this manual as well as to revise this publication at any time and without notice to any person of such revision or change. All brand and product names mentioned in this publication are trademarks or registered trademarks of their respective holders.

Cyclades, AlterPath ACS, AlterPath KVM/net, AlterPath Manager E2000, and AlterPath BladeManager are registered trademarks of Cyclades Corporation.
IBM, IBM BladeCenter and ServeRAID are registered trademarks of IBM Corporation.
Microsoft, Windows 95, 98, XP, ME, NT, and 2K are trademarks of Microsoft Corporation.
UNIX is a trademark of UNIX System Laboratories, Inc.
Linux is a registered trademark of Linus Torvalds.

For latest manual revisions, please refer to Cyclades website on:
http://www.cyclades.com/support/downloads.php

Table of Contents

Chapter 4: BladeManager Web Administration

Before You Begin

Welcome to the AlterPath BladeManager Manual! This manual is designed to help you install, configure, and operate the BladeManager, as well as to guide you in your daily operations of the product.

Note: *For convenience, this document refers to the AlterPath BladeManager as simply **BladeManager** or, as in the case of the command line interface, **IPBM**.*

Audience

This document is designed for system administrators and regular users of the BladeManager. Users are expected to have basic knowledge of using a graphical user interface such as Microsoft Windows.

Document Organization

The document is organized as follows:

Chapter Title	Description
1: Introduction	Defines and explains the overall product features and uses of the BladeManager.
2: BladeManager Installation	Explains the procedure for installing the BladeManager.
3: BladeManager Web Access	Explains to regular users (as opposed to admin users) how to use the web user interface. It highlights such procedures as connecting to a blade, dealing with alarms, and other system tracking and management procedures.

Chapter Title	Description
4: BladeManager Web Administration	Explains to the system administrator how to configure the BladeManager through the web interface and enable users to perform the various fault management procedures such as connecting to a blade, responding to an alert and more. Configuration settings include user access, alarm triggers, chassis and blade management, security profiles, as well as running the blade wizard.
5: Advanced Configuration	Addressed to the advanced user, provides configuration procedures using command line interface (CLI). It includes such procedures as backing up log files and user data, and installing SSL certificates.

Typographical Conventions

Form/Window Labels

Words that appear on forms, windows, or any part of the user interface are typed in **boldface**.

Examples:

The Alarm Trigger List form; the Password field.

Hypertext Links

With the exception of headings and the Table of Contents (which are already linked), all underlined words are hypertext links.

Form/Window Levels

Form levels are indicated by the “greater than” symbol (>), starting from the parent screen to child. Most BladeManager screens or windows contain only two levels.

Example:

Blades List > Blade Detail

Naming Conventions

Administrator	Also referred to as the *Admin User*. The system administrator of the BladeManager who has the authority to configure and manage the BladeManager.
BladeManager	The short name for AlterPath BladeManager.
Form	The form is the largest area of the user interface; it contains the user selection or input fields for each selected item in the menu.
Form Names	The form names of the application's GUI do not necessarily appear on the actual window. Because some forms do not have titles, these names are used to distinguish each form as well as to reflect the form function. The most commonly used form names are List forms and Detail forms. The configuration forms of the BladeManager (*i.e.*, Chassis, Blades, Users, Alarm Trigger) use the two types of forms. *Examples:* Blade List form; Blade Definition form.
Regular User	Refers to anyone who uses or logs onto the BladeManager application as a regular user (*i.e.*, the web management interface is on **Access** mode, not **Admin** mode) even though the user may be a system administrator.
Select	To *select* is the same as to *click your mouse*.

Command Line Syntax

While this manual is primarily designd for using the BladeManager web interface, some special features show you how to configure the BladeManager using the Command Line Interface (CLI). CLI configuration is discussed in Chapter 5 (Advanced Configuration) of the manual. The typographical conventions used for showing the syntax for these commands are as follows.

Brackets and Hyphens (dashes)

The brackets ([])indicate that the parameter inside them is optional, meaning that the command will be accepted if the parameter is not defined. When the text inside the brackets starts with a dash (-) and/or indicates a list of characters, the parameter can be one of the letters listed within the brackets.

Example:

iptables [-ADC] chain rule-specification [options]

Ellipses

Ellipses (...) indicate that the latest parameter can be repeated as many times as needed. Usually this is used to describe a list of subjects.

Example:

ls [OPTION]... [FILE]...

Pipes

The pipe (|) indicates that one of the words separated by this character should be used in the command.

Example:

netstat {--statistics|-s} [--tcp|-t] [--udp|-u] [--raw|-w]

When a configuration parameter is defined, the Linux command syntax conventions will be also used, with a difference.

Greater-than and Less-than signs

When the text is encapsulated with the “<>” characters, the meaning of the text will be considered, not the literal text. When the text is not encapsulated, the literal text will be considered.

Spacing and Separators

The list of users in the following example must be separated by semicolons (;); the outlets should be separated by commas (,) to indicate a list or with

dashes (-) to indicate range; there should not be any spaces between the values.

sXX.pmusers: The user access list. For example: jane:1,2;john:3,4. The format of this field is:

```
[<username>:<outlet list>][;<username>:<outlet list>...]
```

Where <outlet list>'s format is:

```
[<outlet number>|<outlet start>-<outlet end>][,<outlet number>|<outlet
start>-<outlet end>]...
```

Chapter 1
Introduction

The AtlerPath BladeManager is a comprehensive in-band and out-of-band blade management tool designed to complement the IBM Director. It provides BladeCenter users the necessary security, authentication, access control and administration capabilities to remotely manage blade servers and switch modules.

The BladeManager provides a wide range of features which includes the following:

- Continuously captures and records data logs for all BladeCenter devices for diagnostic and audit purposes.
- Generates system alarms and user notifications to avoid or reduce system failures.
- Provides secure, remote access to OS, POST and BIOS on every blade server and switch module to enable administrators to quickly diagnose and restore disconnected devices.
- Easy-to-use web interface for administrators and regular users.

For a summary of all the AlterPath BladeManager features, see “Key Features” on page 1-2 of this chapter.

The BladeManager web interface provides two modes based on the type of user:

- Access
- Admin

The Access mode is for regular users to view and access the blade servers to which they have authorized access. The Admin mode is for system administrators to configure and administer the BladeManager and its users.

Note: *Anyone who uses the BladeManager application in Access mode is referred to as a **user**, regardless of whether that user is a system administrator or not. An **administrator** or **admin user** is anyone who has the exclusive authority to configure and to perform various system administrative tasks for the BladeManager.*

Connectivity and Capacity

The BladeManager hardware platform is based on the IBM eServer xSeries 306. It comes with a Blade Wizard which enables the admin user to create up to 14 blades and 4 switches for each chassis. The BladeManager supports up to 6 chassis; altogether, the module support a maximum of 84 blades and 24 switches.

All blades have Serial over LAN (SOL), KVM/IP, virtual media, and power options created. For security, blade users are controlled by the Control Access List (ACL) which is configured through the Security Profile settings.

The switches connect as secondary or cascaded devices to the chassis.

Front view of the BladeManager:

See **Chapter 2: BladeManager Installation** to view the port connections available from the BladeManager.

Key Features

The key features of AlterPath BladeManager are:

- Single point security gateway
- Centralized authentication
- Consolidated views
- One-click access to consoles and devices
- Centralized data logging system
- Access log audit trail
- Log file compression and rotation capabilities
- Prioritized triggers and alarms
- Blade wizard
- Device, Console, and User Group Management
- Backup, restore, and replicate user data
- Exhaustive reporting
- Convenient web user interface
- Easy command line interface
- Product maintenance

Single Point Security Gateway

The BladeManager has been designed such that communication between users and the management network must pass through a single point of access (the BladeManager) to optimize security and enforce adherence to your corporate security policy.

A single, secure access point reduces management overhead for managing blade servers. Moreover, the multiple authentication options available ensures compatibility with existing infrastructure.

Centralized Authentication

Centralized authentication saves the user or administrator from using a password for each blade server, and thereby maintain a secure password. You need only use your password once upon logging onto the BladeManager. To access the blade servers and switch modules, the BladeManager provides the following authentication methods: local database, RADIUS, LDAP, Kerberos, Tacacs+, NIS and active_directory.

Consolidated Views and Blade Access

The BladeManager provides secure OS, POST and BIOS access to individual blades and switch modules.

From the BladeManager web interface, you can view a list of all blades to which you have authorized access. Information about each blade includes blade name, port, location, description, and status. For added security, users cannot view blades which they are not authorized to use.

Simple and Easy Web User Interface

The BladeManager provides a convenient and user-friendly web user interface for the regular user and the administrator. Hyperlinks enable you to access consoles, view data logs, and other information even faster. From one single interface, you can achieve just about everything you need to manage your network's consoles.

Users can only view and access those blades and switches to which they are assigned. This customization adds security to the system since users cannot view or access any blade or switch that does not concern them.

One-Click Access to Blades and Switches

Placing the mouse cursor over a chassis name from the Chassis List form allows the system administrator to access the BladeManager through the web or CLI. The default session type is configurable.

To access a blade, the regular user can choose and click on any blade or switch listed on the Blades List form. This opens a console session (through Secure Shell) for that particular blade, allowing the user to remotely fix problems related to the target blade.

By placing the mouse cursor over a blade or switch console name from the Blades List form, the user can select KVM, serial over LAN (SOL), or to power ON/OFF the selected blade or switch.

Centralized Data Logging System

The BladeManager provides continuous online and offline data logging of all system messages. It captures all console log messages and writes them to its internal hard disk drive. With a console log capacity of 20GB, the secure online/offline storage ensures availability of all important console messages.

Each line of the logfile contains a timestamp (a feature which prevents tampering) and provides a tool for analyses and audit trailing. Each time a user connects to a blade or switch, BladeManager adds a timestamp to the log file. The user identification timestamp is recorded in the data buffer and logged separately on the BladeManager access log database.

Log File Compression and Rotation

When a log file reaches a certain size (which is specified by the administrator), the system automatically compresses the file and then creates a new file to collect a new set of console data. The file rotation should be seamless with no data loss as the system copies from one file to another.

The administrator has the option to move the compressed log file to another server for archiving.

Prioritized Triggers & Alarms

BladeManager's event handling feature enables the system to identify possible issues and alert the user. As the BladeManager sends a message to the hard disk for storing and consolidation, it also scans the message for

triggers. A trigger is a text string pre-defined by the administrator which the system uses to detect a trigger text from messages. When the BladeManager detects a trigger text, based on how the trigger was configured by the administrator, it does the following:

- Send an email to a user list
- Create a prioritized alarm entry in the Alarm database
- Write a log message to the BladeManager logging system to acknowledge the trigger.

Other Alarm Features

- Notes - You can add notes to an alarm to indicate what action you have taken. These notes can be useful for future reference to similar issues.
- Reports - You can generate a report to show what actions were taken by whom, and how long it took to fix the issue.

Blade Wizard

The blade wizard allows the system administrator to define the blades automatically using default and customized values. The wizard automatically configures the selected blade(s) and switch(es) and applies them. The wizard saves the time-consuming task of configuring each blade and switch manually.

Chassis, Blades, and User Group Management

Chassis, blades, and users can be grouped to further simplify the organization and management of these system components. The administrator may create, update and delete any of the groups at anytime through the web management interface. Users can view only those groups to which they belong or have access.

Backup, Restore, and Replicate User Data

This feature allows users to create a backup of the BladeManager configuration and data files. The backup includes data from the compact flash, configuration data from the database, and log data from the console buffer files. This feature also enables users to copy console log files to a server for further analysis and archiving.

Exhaustive Reporting

Because the BladeManager consolidates all its logs and maintains its own databases, it provides in-depth reporting capabilities to suit the reporting needs of users and managers.

Multiport Ethernet Cards

The BladeManager supports up to two multiport PCI ethernet cards for secure networks that use multiple network segments. This enables the BladeManager to physically separate devices and connect to multiple network segments.

The Ethernet cards are detected by the configuration wizard during boot time.

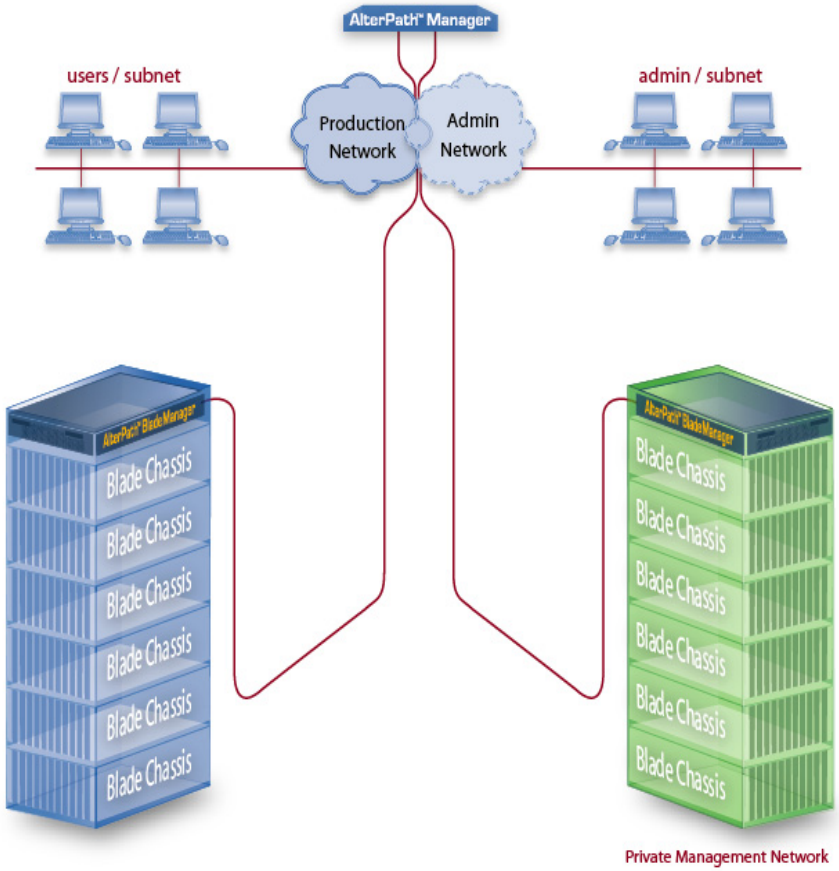
Command Line Interface (CLI)

For emergency access situations, the BladeManager can provide you with a command line interface by making a regular Secure Shell connection to the BladeManager.

CLI is one of two user interfaces (the other is the web interface) available to BladeManager users. The CLI is also used for First Time Configuration and system recovery procedures.

Deploying the BladeManager

The diagram below shows how the BladeManager may be set up to connect to a management network and a public network. Equipped with its own Ethernet switches, the two networks are physically separated. Any BladeManager user who needs to access a blade server or switch must authenticate and pass through the BladeManager.



Chapter 2
BladeManager Installation

This section discusses the procedures and requirements for installing the AlterPath BladeManager, and is organized as follows:

- Product Installation Checklist
- Rack Mounting Guidelines
- Major Components of the BladeManager
- Installing a DIMM
- Installing a Hard Disk Drive
- Installing a Simple-Swap Serial ATA Hard Disk Drive
- Installing a SCSI Hard Disk Drive
- Installing an Adapter
- Completing an Installation
- Connecting the Cables
- Updating the Server Configuration
- Preparing Console for Initial Configuration

Product Installation Checklist

Your AlterPath BladeManager is shipped with the following hardware components:

- BladeManager
- Console cable (null modem)
- Power cable
- 2 Ethernet cables
- Mounting kit

Rack Mounting Guidelines

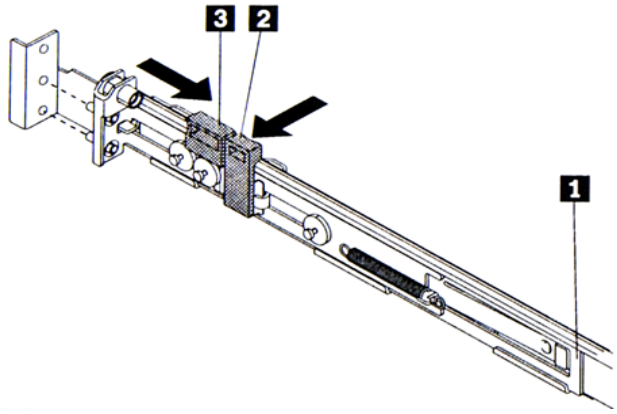
When rack-mounting the BladeManager, consider the following:

- Ensure the room temperature is below 35^{o} C (95^{o} F).
- If you install the BladeManager in a closed or multi-rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient temperature. Ensure that you install the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.
- Do not block any air vents. Usually, 15 cm (6 in.) of air space provides proper airflow.
- Plan the device installation starting from the bottom of the rack cabinet.
- Install the heaviest device in the bottom of the rack cabinet.
- Do not extend more than one device out of the rack cabinet at the same time.
- Connect all power cords to properly wired and grounded electrical outlets.
- Maintain reliable earthing of rack mounted equipment by inspecting supply connections other than direct connections to the branch circuit such as power strips or extension cords.
- Do not overload the power outlet when installing multiple devices in the rack.
- Remove the rack doors and side panels to provide easier access during installation.
- The slide rails in the kit come preset to the correct length for installing in an IBM rack cabinet and they are adjustable for other rack cabinets.
- The slide rails are marked RIGHT/FRONT and LEFT/FRONT for proper placement on the rack-cabinet flanges.
- Ensure that the equipment is mounted or loaded evenly to prevent a potentially hazardous condition.
- Do not place any object weighing more than 50 kg (110 lb) on top of rack-mounting devices.

To install the BladeManager in a rack cabinet, you need the following items:

- 2 slide rails
- 6 cable straps
- 6 M6 screws (for shipping and for securing vibration-prone areas)

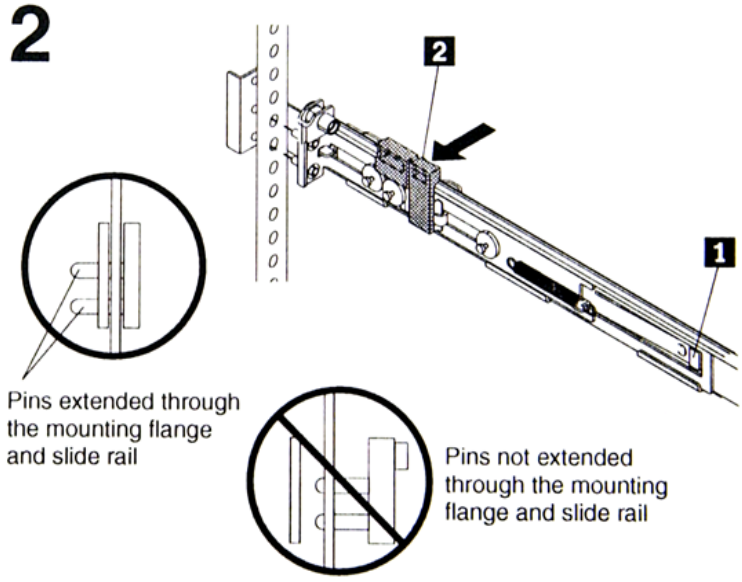
1



a. Press on the rail-adjustment bracket (1) on the rear of the slide rail to prevent the bracket from moving.

b. Press on tab (2) and tab (3) and slide the rail-locking carrier toward the front of the slide rail until it snaps into place.

c. Press on tab (2) and tab (3) on the front rail-locking carrier and slide the rail-locking carrier toward the rear of the slide until it snaps into place.

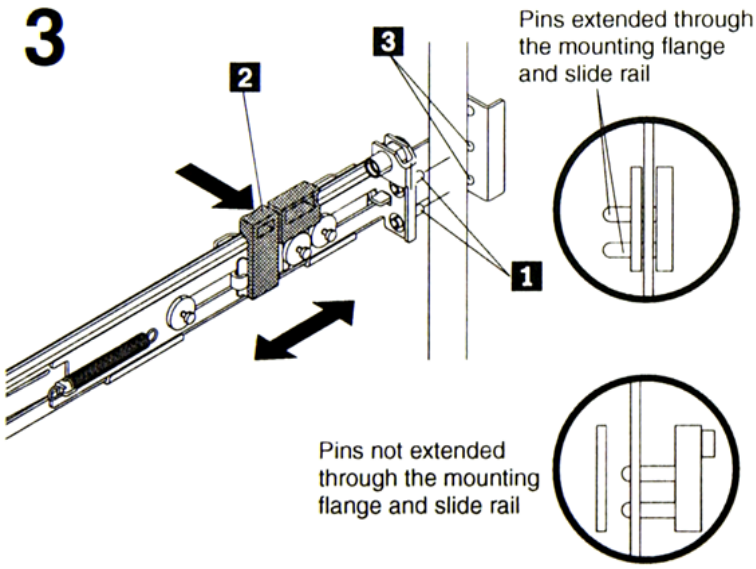


a. Lift the release tab (1) and fully extend the rail-adjustment bracket from the rear of the slide rail until it snaps into place, if you need to adjust the slide rail length.

b. Align the pins on the rear rail-locking carrier with the holes on the rear mounting flange.

c. Press the tab (2) to secure the rear of the slide rail to the rear mounting flange.

Important: Ensure that the pins are fully extended through the mounting flange and slide rail.



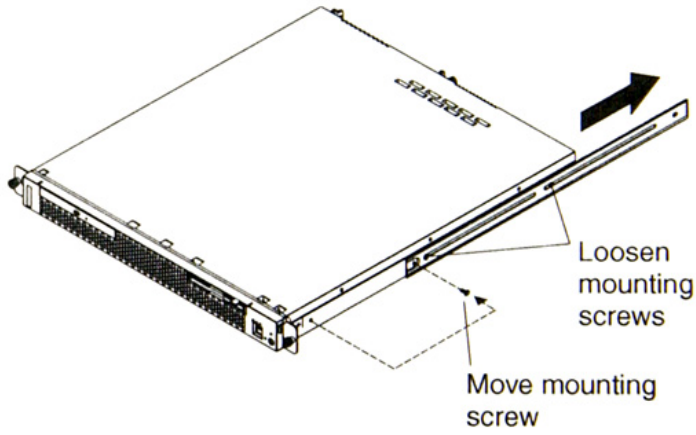
a. Align the pins (1) on the front rail-locking carrier to the front mounting flange.

b. If you adjusted the rail length, push the rail-locking carrier back toward the rear of the slide rail to align the slide rail with the mounting flange.

c. Press the tab (2) to secure the front of the slide rail to the front mounting flange.

d. Repeat steps 1 and 2 for the other slide rail.

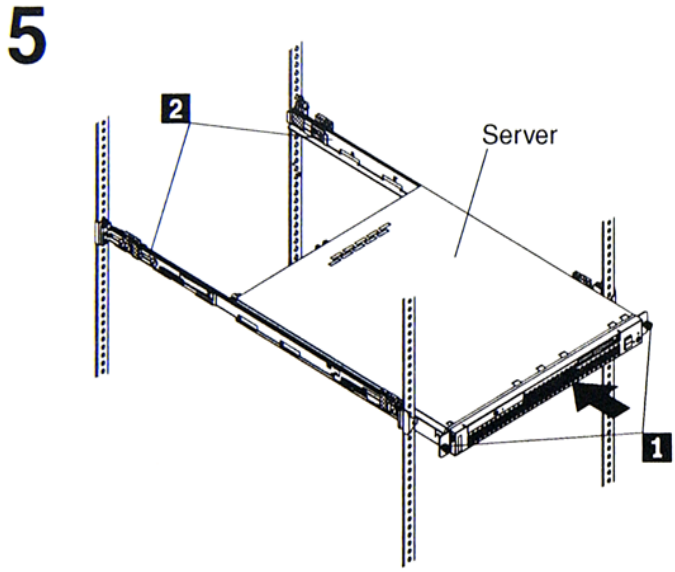
4



a. If you plan to transport the rack cabinet to another location with the server installed, remove one screw and loosen the other screws as indicated.

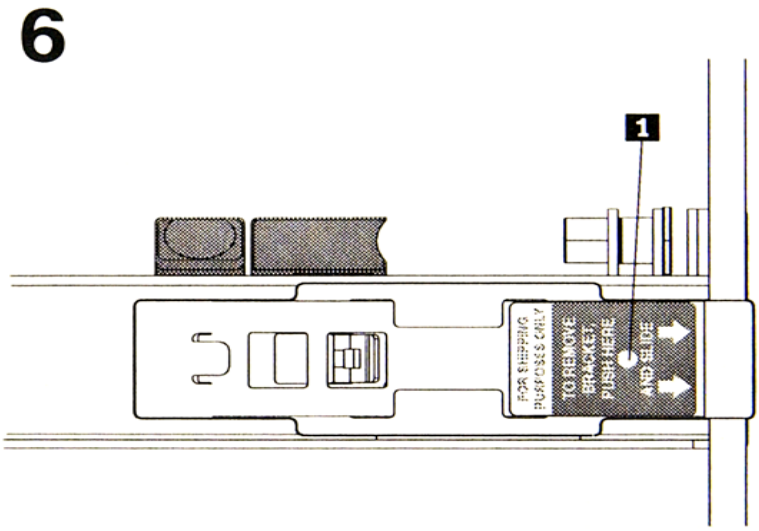
b. Fully extend the rail and re-insert the screw and tighten all screws to secure the rail.

c. If you do not plan to transport the rack cabinet with to another location with the server installed, continue with step 5.



a. Align the server on the slide rails and push the server fully into the rack cabinet. Secure the server to the front mounting flanges with the captive thumbscrews (1).

Note: You must leave the shipping brackets (2) attached to the slide rails unless the shipping brackets impede the server from sliding fully in the rack cabinet. If you need to remove the shipping brackets, continue with the next step.



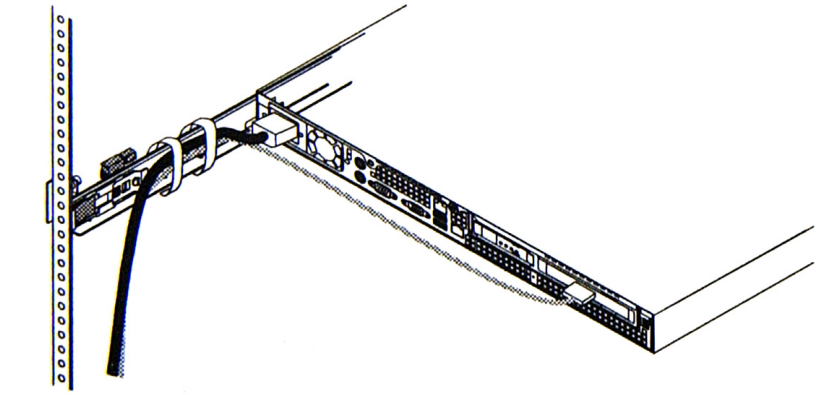
a. Press on the release tab (1) as indicated on the shipping bracket, and remove the shipping from the slide rail.

b. Repeat previous step for the other shipping bracket.

c. Store the shipping bracket for future use.

Note: You just re-install the shipping brackets on the slide rails before you transport the rack cabinet with the server installed. To re-install the shipping brackets, reverse this step.

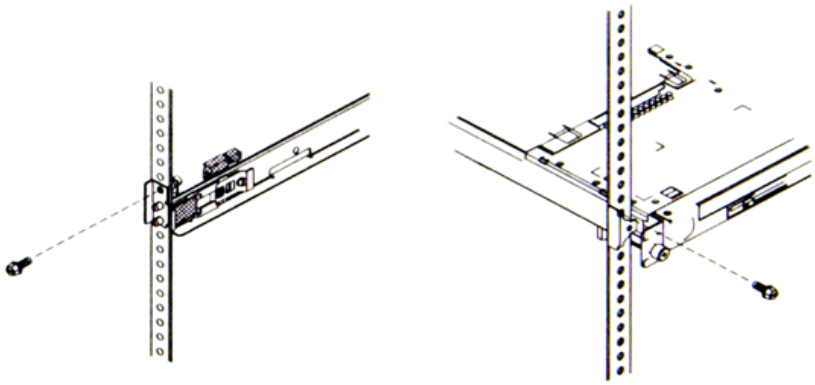
7



a. Attach cables to the rear of the BladeManager (such as keyboard, mouse, monitor cables, as needed).

b. Route the cables to the left corner of the BladeManager (as viewed from the rear) and use the cable straps to secure the cables to the slide rails.

8



a. Before you transport the rack cabinet to another location with the BladeManager installed, you must secure the server to the rack. If necessary, disconnect the cables from the rear of the server; then, slide the server out of the rack 150 mm (6 in.) and insert the M6 screws in each slide rail.

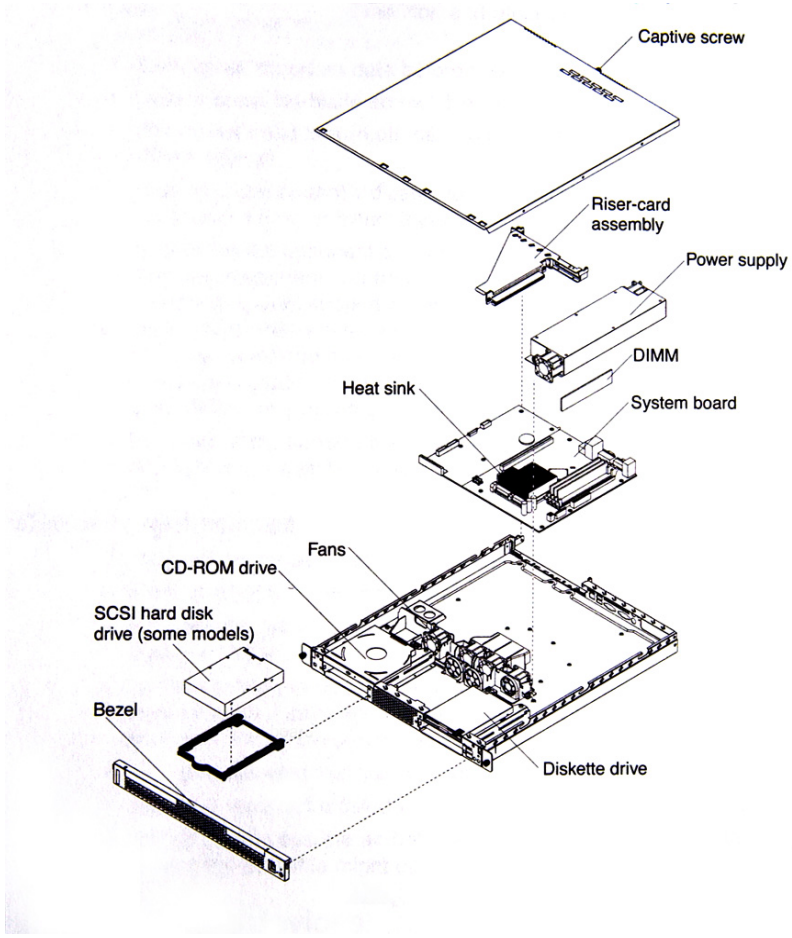
b. Secure the server or the rack cabinet with the M6 screws.

c. Ensure the rails are fully extended to the rear of the rack cabinet and that the shipping brackets are installed.

d. Go to steps 4, 5, and 6 for instructions.

Major Components of the BladeManager

The BladeManager hardware platform is based on the IBM eServer 306. It's basic components are as follows:



- Blue on a component indicates touch points where you can hold the component such as when you remove it from or install it in the server.
- Orange on or near a component indicates that you can hot-swap the component (that is, you can remove or install the component while the BladeManager is running).
- Orange can also indicate touch points on hot-swappable components.

Installation Safety Guidelines

System Reliability Guidelines

To help ensure proper cooling and system reliability, make sure that:

- Each of the drive bays has a drive tray installed in it.
- If the server has redundant power, each of the power-supply bays has a power supply installed in it.
- Allow the server cooling system to work properly by leaving approximately 50mm (2.0 in.) of open space around the front and rear of the server.
- There are no objects in front of the fans.
- You follow cabling instructions that come with optional adapters.
- You replace a failed fan within 48 hours.
- You do not remove the air baffle while the server is running since operating the server without the air baffle might overheat the microprocessor.

Static-Sensitive Devices

- Static electricity can damage electronic devices, including your server. To avoid damage, keep static-sensitive devices in their packages until you are ready to install them.
- Limit your movements as they build up static electricity around you.
- Handle the device carefully, holding it by its edges or frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the server for at least two seconds to drain static electricity from the package and from your body.
- Remove the device from its package and install it directly into the server without setting down the device. If you need to set down the device, place

it back into its package; do not place the device on your server or on a metal surface.

- Take extra care when handling devices during cold weather as heating reduces indoor humidity and increases static electricity.

Installation Procedures

This section provides the following procedures:

- Installing DIMMs
- Installing a Simple-Swap Serial ATA Hard Disk Drive
- Installing a SCSI Hard Drive
- Installing an Adapter
- Completing the Installation

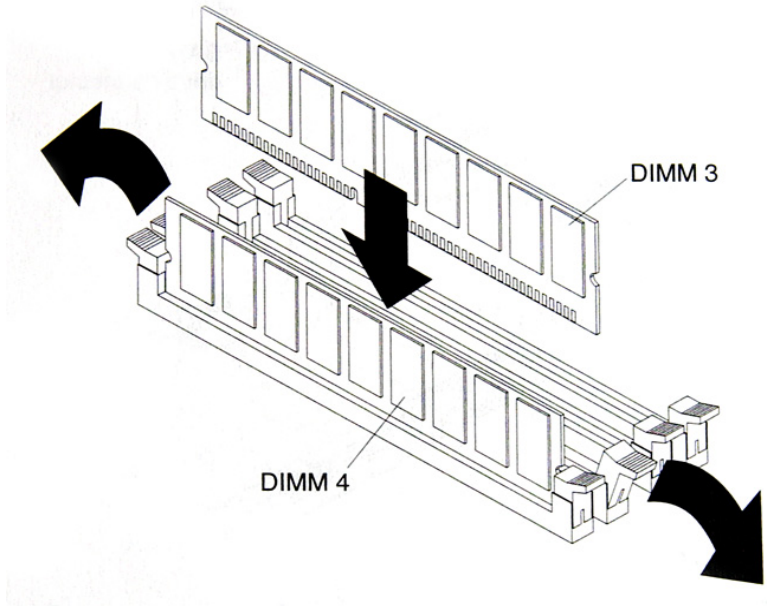
Installing DIMMs

When installing dual inline memory modules (DIMMs), consider the following information and guidelines:

- Your server supports 256 MB, 512 MB, and 1 GB DIMMs, for a maximum of 4 GB of system memory.
- Depending on the server configuration, the installation will reduce the amount of usable memory. A certain amount of memory must be reserved for system resources. The BIOS displays the total amount of installed memory and the amount of configured memory.
- Your server comes with one 512 MB DIMM installed in DIMM connector 1. If your system has one DIMM installed, when you install an additional DIMM, you must install it in DIMM connector 3, and it must be the same size, speed, type, and technology as the DIMM installed in DIMM connector 1. You can mix compatible DIMMs from various manufacturers.
- If you install a second pair of DIMMs in DIMM connectors 2 and 4, they do not have to be the same size, speed, type and technology as the DIMMs installed in DIMM connectors 1 and 3. However, the size, speed, type and technology of the DIMMs you install in connectors 2 and 4 must match each other.
- Install only 2.5 V, 184-pin, double-data-rate (DDR), PC2700 or PC3200, unbuffered synchronous dynamic random-access memory (SDRAM)

with error correcting code (ECC) DIMMs. These DIMMs must be compatible with the latest PC2700 and PC3200 SDRAM unbuffered DIMM specification.

- When you restart your server, the system displays a message indicating that the memory configuration has changed.



To install a DIMM, complete the following procedure:

1. Review the preceding installation guidelines.
2. Switch off the server and peripheral devices, and disconnect the power cord and all external cables.
3. Remove the Cover.

Caution: To avoid breaking the retaining clips or damaging the DIMM connectors, open and lose the clips gently.

4. Open the retaining clip on each side of the DIMM connector.
5. Touch the static-protective package containing the DIMM to any unpainted metal surface on the server. Then, remove the DIMM from the package.

6. Turn the DIMM so that the keys align with the slot.
7. Insert the DIMM into the connector by aligning the DIMM edges with the slots at each end of the DIMM connector. Firmly press the DIMM straight down into the connector by applying pressure on both ends of the DIMM simultaneously. The retaining clips snap into the locked position when the DIMM is firmly seated in the connector. If there is a gap between the DIMM and the retaining clips, the DIMM has not been inserted correctly; open the retaining clips, remove and reinsert the DIMM.
8. If you have other options to install, do so now.
9. Replace the cover.
10. Go to **Completing the Installation**, this chapter.

Installing a Hard Disk Drive

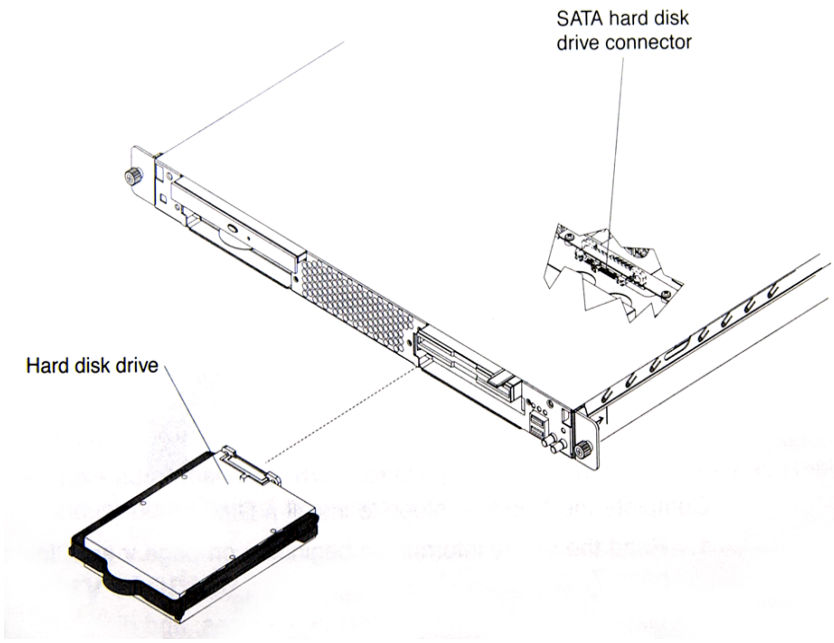
Follow the documentation that comes with the hard disk drive in addition to the instructions in this chapter.

Installing a Simple-Swap Serial ATA Hard Disk Drive

To install a simple-swap Serial ATA hard disk drive, complete the following procedure:

Note: If you have only one hard disk drive, install it in the left drive bay.

1. Review the installation safety guidelines ar the beginning of this chapter.
2. Switch off the server and peripheral devices, and disconnect the power cord and all external cables.
3. Press the release tabs on the bezel and pull the bezel away from the server.
4. Slide the drive into the server until it connects to the backplane.
5. If you have other options to install, do so now.
6. Reinstall the bezel.
7. Go to **Completing the Installation**, this chapter.



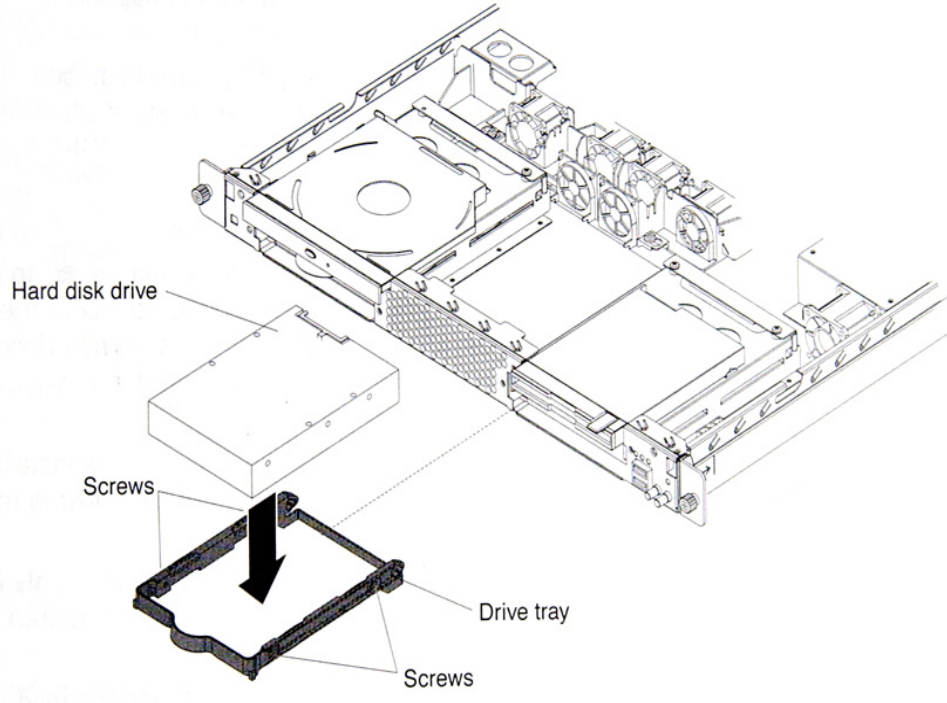
Installing a SCSI Hard Drive

To install a SCSI hard drive, complete the following procedure:

NOTE: If you have only one hard disk drive, install it in the left drive bay.

1. Review the safety installation guidelines at the beginning of this chapter.
2. Switch off the server and peripheral devices; disconnect the power cord and all external cables.
3. Remove the cover.
4. Press the release tabs on the bezel and pull the bezel away from the server.
5. Slide the drive tray out of the server, and then position the drive on the drive tray.
6. Secure the drive using the screws that come with the option.
7. Slide the drive tray back into the server.
8. Connect the signal and power cables to the drive

9. If you have other options to install, do so now.
10. Re-install the bezel and replace the cover. Go to **Completing the Installation**, this chapter.

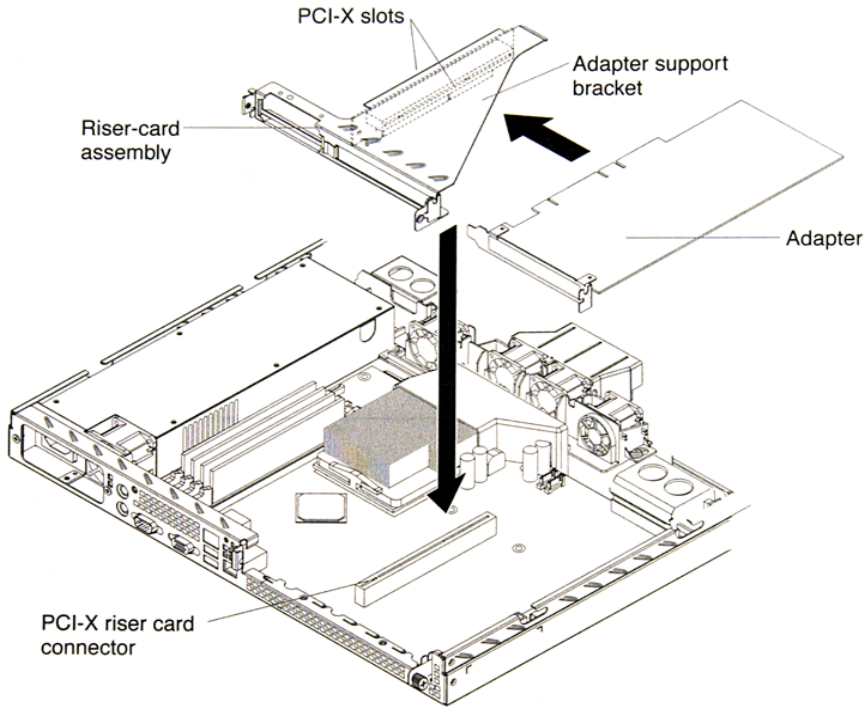


Installing an Adapter

This section describes the types of adapters that your server supports and other information to consider when installing as adapter.

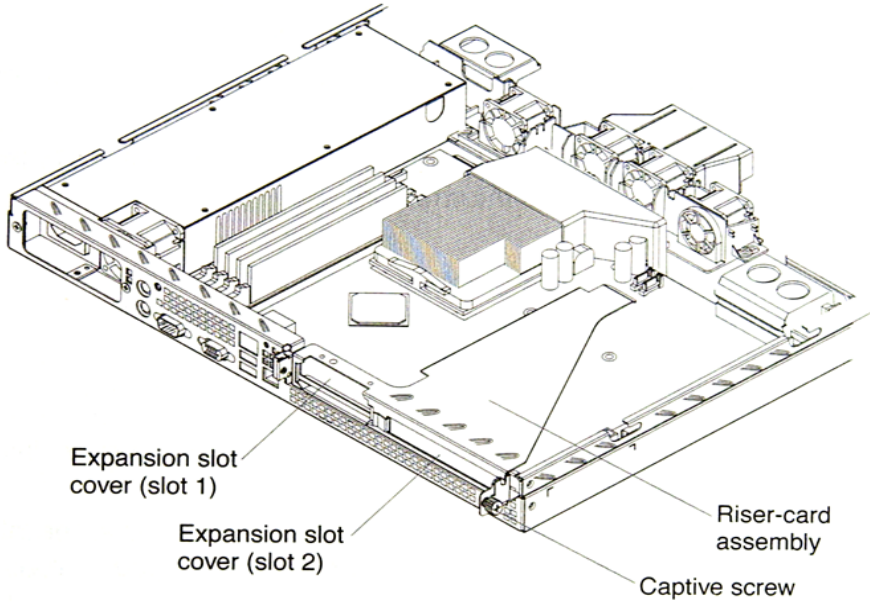
- In addition to the instructions in this section, follow the instructions that come with the adapter.
- Your server comes with two peripheral component interconnect-extended (PCI-X) adapter slots located on the riser card assembly. You must first remove the riser card assembly to access the PCI-X connectors.
- There are two 64-bit 66 MHz PCI-X slots.
- You can install one low profile half-length adapter in expansion slot 1 and one full-height, three-quarter length adapter in expansion slot 2.
- The BladeManager supports 3.3 V or universal adapters.

- The BladeManager uses a rotational interrupt technique to configure PCI-X adapters so that you can install PCI-X adapters that do not support sharing of PCI-X interrupts.
- The BladeManager scans PCI-X slots to assign system resources. If you have not changed the default startup sequence, the BladeManager starts devices in the following order:
  a. CR-ROM and diskette drives
  b. PCI-X slot 2
  c. PCI-X clot 1
  d. Integrated Ethernet controllers
- The optional Remote Supervisor Adapter II can be installed only in PCI-X slot 2.
- You can install an optional RAID controller in your server to control the internal hard disk drives (for example, to allow you to configure the internal hard disk drives into disk arrays.
- The optional ServeRAID-7t S-ATA controller can be installed only in PCI-X slot 1. The low-profile bracket that comes with the controller is required to install the controller.
- The optional ServeRAID-6i+ controller can be installed only in PCI-X slot 1. The low-profile bracket that comes with the controller is required to install the controller.
- No re-routing of the internal SCSI cable (SCSI models only) is required if you are installing the ServeRAID-6i+ controller. The ServeRAID-6+ controller uses the SCSI connector (SCSI models only) for output.



To install an adapter, complete the following procedure:

1. Review the safety installation guidelines at the beginning of this chapter.
2. Switch off the server and peripheral devices; disconnect the power cord and all external cables.
3. Remove the cover.
4. Follow the cabling instructions that come with the adapter. Route the adapter cables before you install the adapter.
5. Follow the instructions that come with the adapter to set jumpers or switches, if any.
6. Loosen the captive screw on the rear of the server and remove the riser-card assembly. Place the riser-card assembly on a flat, static-protective surfaced.



7. Remove the expansion-slot cover.

Important: PCI expansion-slot covers must be installed on all vacant slots. This maintains the electronic emissions characteristics of the server and ensures proper cooling of server components.

8. Touch the static-protective package containing the adapter to any unpainted metal surface on the BladeManager. Then, remove the adapter from the static-protective package. Avoid touching the components and gold-edge connectors on the adapter.

9. Place the adapter, component side up, on a flat, static-protective surface and set any jumpers or switches as described by the adapter manufacturer, if necessary.

Important: When you install an adapter in the riser-card assembly, carefully grasp the adapter by its top edge or upper corners, and align it with the PCI-X expansion slot; then, press the adapter firmly into the expansion slot.

10. Re-install the riser-card assembly. Ensure that the riser-card assembly is fully seated in the riser-card connector.

11. Tighten the captive screw on the rear of the server.
12. If you have other options to install, do so now.
13. Replace the cover. Go to **Completing the Installation**, this chapter.

Completing the Installation

To complete the installation, follow the steps below:

1. Re-install the cover.
2. Install the server in the rack cabinet.

   Attention:

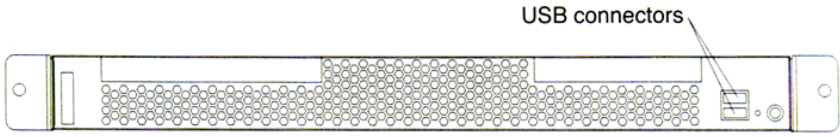
   Install your server only in a rack cabinet with perforated doors.

   Do not leave open space above or below an installed server in your rack cabinet. To help prevent damage to server components, always install a filler panel to cover the open space and to help ensure proper air circulation. See the documentation that comes with your rack cabinet for more information.
3. Connect the cables and power cords. See Connecting the Cables, this section.
4. Update the server configuration. See Updating the Server Configuration, this section.

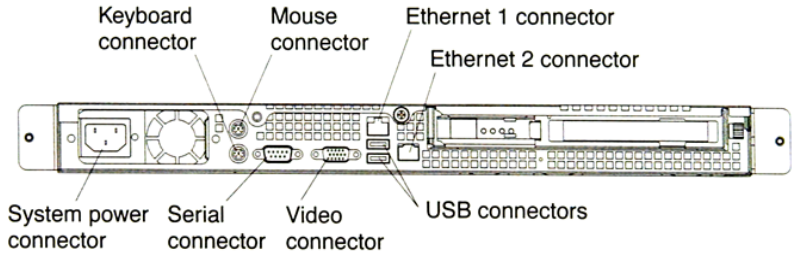
Connecting the Cables

The diagrams below show the locations of the input and output connectors on the front and rear of the BladeManager.

Front



Rear



1. Switch off the server before connecting (or disconnecting) cables from your server.
2. See the documentation that comes with your external devices for additional cabling instructions. It might be easier for you to route cables before you connect devices to the BladeManager.
3. Cable identifiers are printed on the cables that come with the BladeManager. Use these identifiers to connect the cables to the correct connectors.
4. There is one keyboard connector on the back of the server. Use this connector to connect the server to a keyboard or optional console switch. You can also connect a USB keyboard to the server using one of the USB ports. After installing a USB keyboard, you might need to use the Configuration/Setup Utility program to enable keyboardless operation and prevent the POST error message 301 from displaying during startup. For more information about this option and how to connect it to the BladeManager, see the documentation that comes with the option.

Updating the Server Configuration

When you start the BladeManager for the first time after you add or remove an internal option or external SCSI device, you might receive a message that the configuration has changed. The Configuration/Setup Utility program starts automatically so that you can save the new configuration settings.

Some options have device drivers that you need to install. See the documentation that comes with the device information about installing any required device drivers.

If the server has a RAID configuration using the SCSI controller with integrated RAID (SCSI models only) or the integrated Serial ATA controller with RAID and you have installed or removed a hard drive, you might have to reconfigure your disk arrays. See the RAID documentation on the IBM ServeRAID-7e (Adaptec HostRAID) Support CD for more information about reconfiguring the disk arrays.

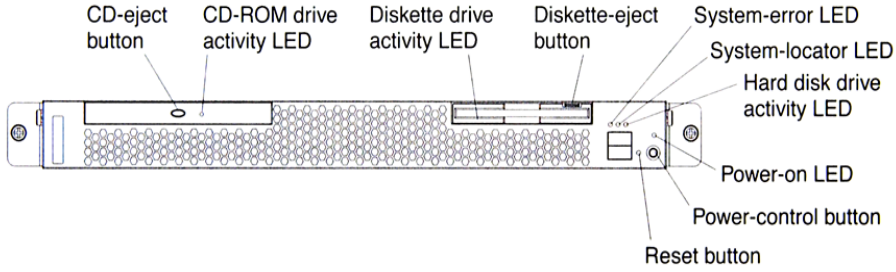
If the server has an optional RAID adapter and you have installed or removed a hard disk drive, see the documentation that comes with the RAID adapter for information about reconfiguring the disk arrays.

BladeManager Controls, LEDs, and Power

This section describes the controls and light-emitting diodes (LEDs) and how to switch the BladeManager on and off.

Front View

The diagram below shows the controls and LEDs on the front of the BladeManager.

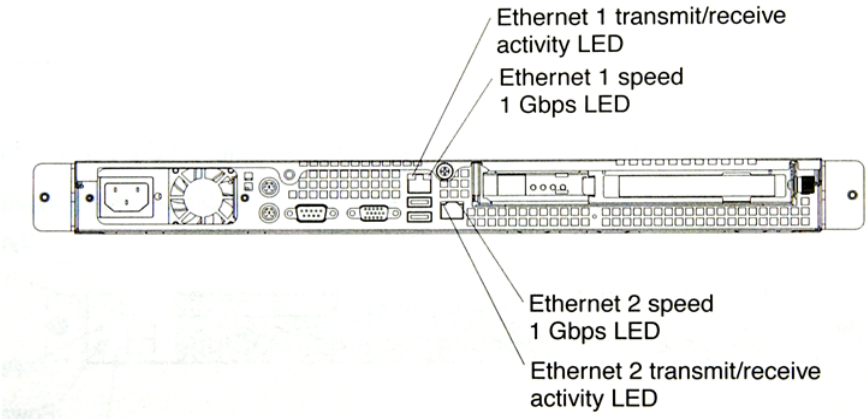


Front LEDs/Buttons	Function
CD-eject button	Press this button to release a CD from the CD-ROM.
CD-ROM drive activity LED	When lit, it indicates that the CD-ROM drive is in use.
Diskette drive activity LED	When lit, it indicates that the diskette drive is in use.
Diskette-eject button	Press this button to release a diskette from the diskette drive.
System-error LED	When lit, it indicates that a system error has occurred.
System-locator LED	Use this blue LED to visually locate the BladeManager if it is in a location with numerous other servers. If your server supports IBM director, you can use IBM Director to light this LED remotely.
Hard disk drive activity LED	When flashing, it indicates that a hard disk drive is in use.
Power-on LED	When lit and not flashing, it indicates that the server is switched ON. When flashing, it indicates that the server is switched OFF and still connected to an AC power source. When off, it indicates that AC power is not present, or the power supply or the LED itself has failed. If this LED is off, it does not mean that there is no electrical power in the BladeManager. The LED might be burned out. To remove all electrical power from the server, you must disconnect the power cord from the electrical unit.

Front LEDs/Buttons	Function
Power-control button	Press this button to switch the server ON and OFF manually.
Reset button	Press this button to reset the server and run the power on self-test (POST). You might have to use a pen or the end of a straightened paper clip to press the button.

Rear View

The diagram below shows the LEDs on the rear of the BladeManager.



Rear LEDs	Function
Ethernet 1 transmit/receive activity LED	This LED is on the Ethernet connector. When lit, it indicates that there is activity between the BladeManager and the network.
Ethernet 1 speed 1 Gbps LED	This LED is on the Ethernet connector. When lit, it indicates that the Ethernet network speed is 1 Gbps. When off, it indicates that the Ethernet network speed is 10 Mbps or 1000 Mbps.

Rear LEDs	Function
Ethernet 2 speed 1 Gbps LED	This LED is on the Ethernet connector. When lit, it indicates that the Ethernet network speed is 1 Gbps. When off, it indicates that the Ethernet network speed is 10 Mbps or 100 Mbps.
Ethernet 2 transmit/receive activity LED	This LED is on the Ethernet connector. When lit, it indicates that there is activity between the BladeManager and the network.

BladeManager Power Features

When the BladeManager is connected to an AC power source but is not switched on, the operating system does not run, and all core login except for the service processor is shut down. However, the server can respond to requests from the service processor, such as a remote request to turn on the server. The power-on LED flashes to indicate that the server is connected to AC power but not switched on.

Switching On the Server

Approximately 20 seconds after the BladeManager is connected to AC power, the power-control button becomes active, and you can switch on the BladeManager and start the operating system by pressing the power-control button.

You can also switch on the BladeManager in any of the following ways:

- If a power failure occurs while the BladeManager is switched on, the BladeManager will start automatically when power is restored.
- If the BladeManager is connected to an Advanced System Management interconnect network that contains at least one server with an optional Remote Supervisor Adapter II installed, the BladeManager can be switched on form the Remote Supervisor Adapter II user interface.
- If your operating system supports the system-management software for an optional Remote Supervisor Adapter II, the system-management software can switch on the BladeManager.

- If your operating system supports the Wake on LAN feature, the Wake on LAN feature can switch on the BladeManager.

Note: When 4 GB or more memory (physical or logical) is installed, some memory is reserved for various system resources and is unavailable to the operating system. The amount of memory that is reserved for system resources depends on the operating system, the BladeManager configuration, and the configured PCI options.

Switching Off the BladeManager

When you switch off the BladeManager and leave it connected to AC power, the BladeManager can respond to requests from the Service processor, such as a remote request to turn on the server. To remove all power from the server, you must disconnect it form the power source.

Caution: The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.

You can switch off the BladeManager in any of the following ways:

- You can switch off the BladeManager from the operating system if your operating system supports this feature. After an orderly shutdown of the operating system, BladeManager will switch off automatically.
- You can press the power-control button to start an orderly shutdown of the operating system and switch off the BladeManager if your operating system supports this feature.
- If the operating system stops functioning, you can press and hold the power-control button for more than 4 seconds to switch off the BladeManager.
- If the BladeManager is connected to an Advanced System Management interconnect network that contains at least one server with an optional Remote Supervisor Adapter II installed, the BladeManager can be switched off from the Remote Supervisor Adapter II user interface.
- If an optional Remote Supervisor Adapter II is installed in the server, the server can be switched off from the Remote Supervisor Adapter II user interface.

- If the Wake on LAN feature switched on the BladeManager, the Wake on LAN can switch off the BladeManager.
- You can switch off the BladeManager through a request from the service processor.

Pre-Configuration Requirements

Before configuring BladeManager, ensure that you have the following system set up and information ready:

Requirement	Description
HyperTerminal, Kermit, or Minicom	If you are using a PC, ensure that HyperTerminal is installed on your Windows operating system. If you are using the UNIX operating system, use Kermit or Minicom. NOTE: You will need Root Access on your local UNIX machine in order to use the serial port.
IP Addresses	Have the IP/Mask addresses of the following ready: - All Console Servers - Gateway - DNS Optional addresses: - NTP - SMTP (only when using the alarms feature).
NIC Card	Ensure that you have a NIC card installed in your PC to provide an Ethernet port, and allow network access.

Note: *To complete the configuration process, SKIP to **Chapter 4: Web Administration** and refer to the "First Time Configuration Wizard" on page 4-4.*

Note: ***Chapter 3: BladeManager Web Access** is designed for regular users who will use or operate the application after the BladeManager administrator has completed the configuration procedures discussed in chapter 4.*

Note: For a list of internet browsers and Cyclades device firmware versions supported by the BladeManager, refer to **Appendix A: Hardware Specifications**.

Configuring the COM Port Connection and Logging In

The console port is used for the initial configuration (also known as *First Time Configuration* in this document) which is performed using the Command Line Interface (CLI) via serial console connection.

First Time Configuration is responsible for establishing the superusers for the CLI (hardware configuration) and the BladeManager web interface and configuring the BladeManager connectivity and system settings. The process is discussed in more detail in *Chapter 4: Configuring the BladeManager*.

Before using the terminal, make sure it is configured as follows:

1. Select available COM port.

   In Hyper Terminal (**Start** > **Program** > **Accessories**), select **File** > **Properties**, and click the **Connect To** tab. Select the available COM port number from the Connection dropdown.

2. Configure COM port.

   Click the Configure button.

   Your PC, considered here to be a "dumb terminal," should be configured as follows:

   - Serial Speed: 9600 bps
   - Data Length: 8 bits
   - Parity: None
   - Stop Bits: 1 stop bit
   - Flow Control: none
   - ANSI emulation

3. Power on the BladeManager
4. Click OK on the Properties window.

   You will see the BladeManager booting on your screen. After it finishes booting, you should see the configuration screen.

Chapter 3
BladeManager Web Access

The web interface provides two modes for using the BladeManager based on the type of user: **Access** (for operation by regular users) and **Admin** (for configuration by system administrators). This chapter explains the procedures for operating the BladeManager web interface in Access Mode.

Addressed specifically to regular users, this chapter is organized as follows:

- User Interface Overview
- Accessing the BladeManager Web Management Interface
- Logging In
- Using the **Alarms** forms
- Using the **Blades** forms
- Using the **Logs** forms
- Using the **User Profile** forms

If you are a BladeManager administrator, refer to ***Chapter 4: BladeManager Web Administration****.*

User Interface Overview

The BladeManager user interface (in Access Mode) has four main menu options:

Menu Option	Function
Alarms	The Alarms list form is the first form that you see (or the default form) when you log in. Use this form to view alarms, update the status of an alarm or close an alarm after resolving it.

Menu Option	Function
Blades	Use the **Blades** form to view a list of blades assigned to you. From the list, select the blade you wish to access, or select the blade from the drop down menu on the top left, and then click on **Connect**. The blades list form provides access to the chassis blades and switches.
Logs	Use the Logs form to view the **Access Logs**, **Events Logs**, and **Data Buffer** for a particular blade or chassis. You can also access logs from the Blade List form.
User's Profile	The User's Profile form displays the profile of only the user currently logged in. Use the User Profile to view or modify your own user information, as well as your own security profile.

Using the Web Interface as a Regular User

To open the BladeManager web application, perform the following steps:

1. Type in the following URL from your web browser:

   https://nnn.nnn.nnn.nnn

   Where: **nnn.nnn.nnn.nnn** is the IP address provided to you by your BladeManager administrator.

   The IP address works for both encrypted (https) and non-encrypted (http) versions. Cyclades recommends that you use the encrypted version.

Note: To configure the encrypted version, see *"Disabling HTTP to Use Only HTTPS" on page 5-16*, *Chapter 5: Advanced Configuration*.

2. When the Login screen appears, enter your user name and password as provided by your system administrator.

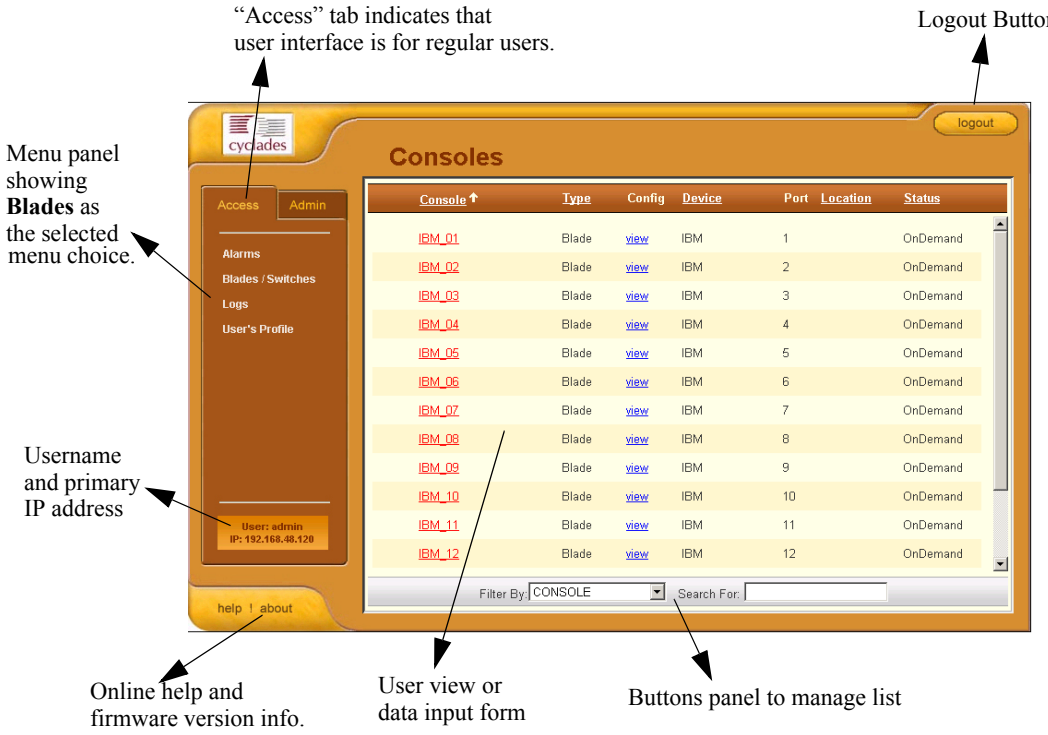
3. Select the **Login** button.

   Upon successful login, the **Alarms** form appears.

Note: The first time BladeManager launches your application screens, the process will be slow. Once the screens are cached, subsequent retrieval of screens should be fast.

General Screen Features

The diagram below shows the general features of the BladeManager web interface. The sample form is for illustration only; it is not the first screen that you see when you log in as a regular user.



The menu panel highlights the currently selected menu option.

Your user name and IP address appears on the lower left hand corner of the screen.

The Admin tab is visible to regular users with admin rights.

Be sure to select the **Logout** button on the top right hand corner after you finish your session.

Sorting a List Form by Column/Field Name

Most, if not all, list forms provide sort, search, and filter functions.

An underlined column name indicates that the list can be sorted by the column name. The Blade List form, for example, allows you to sort by Blade, Type, Device, Location, or Status. To sort by Location, simply click the column name, **Location**.

The arrow adjacent to the heading indicates that the list is sorted based on that heading. The position of the arrowhead indicates the sort order. A downward arrowhead indicates that the list is alphanumerically arranged in ascending order; an upward arrowhead, in descending order. You can change the sort order by clicking on the heading or the arrow.

Search and Filter Functions

When available, you will find the **Search** and **Filter by** buttons at the bottom of the List form.

This allows you to search through a List form by selecting the search category (*i.e.*, Blade group) from the dropdown field and selecting the **Search** button. You can also filter your search by selecting a category from the Filter by dropdown field and selecting the **Filter by** button. The system automatically saves the filtered list.

Alarms

The Alarm List form is the default form of the BladeManager Web Interface in **Access** mode. An alarm is a brief message alerting you of a possible problem that requires an action.

When BladeManager detects an alarm, it sends the alarm along with a ticket number to the user's Alarm List form. As a user, you should see only those alarms assigned to you by your administrator.

If the trigger for the alarm has been configured to send an email, then you should also receive an email notification regarding the alarm. Each alarm or ticket in the list includes a timestamp, a priority level, and a status.

Alarm Logs

The BladeManager not only stores each alarm in a database, but also maintains a log for each alarm. There are two ways in which you can view alarm logs:

- From the Alarms List form
- From the Logs form (**Logs** > **Data Buffer**)

Responding to an alarm

Since no two issues are exactly the same, you have several ways to respond to an alarm depending on its nature and severity. A “typical” procedure for responding to an alarm is as follows:

- Accept the ticket or assignment.
- Reassign the ticket or assignment to another user, and optionally add notes about the ticket.

Once assigned, the user working on the ticket can perform any of the following procedures to resolve the alarm or complete the ticket:

- View Blade Log and other related logs.
- Edit information ticket by changing the status and adding notes.
- Connect to the blade.
- Run a console session.
- If problem is fixed, change the alarm status and close the ticket.
- Re-assign the ticket to another user.

Alarm List Form

When you first log in to the BladeManager as a regular user or select Alarms from the menu, the Alarm List form is the first form that you will see. Use this form to view the list of alarms, to connect to a blade, and to view blade logs.

To re-assign the current ticket, change the ticket status, and add notes or comments, use the Alarm Detail (or Ticket Info) form.

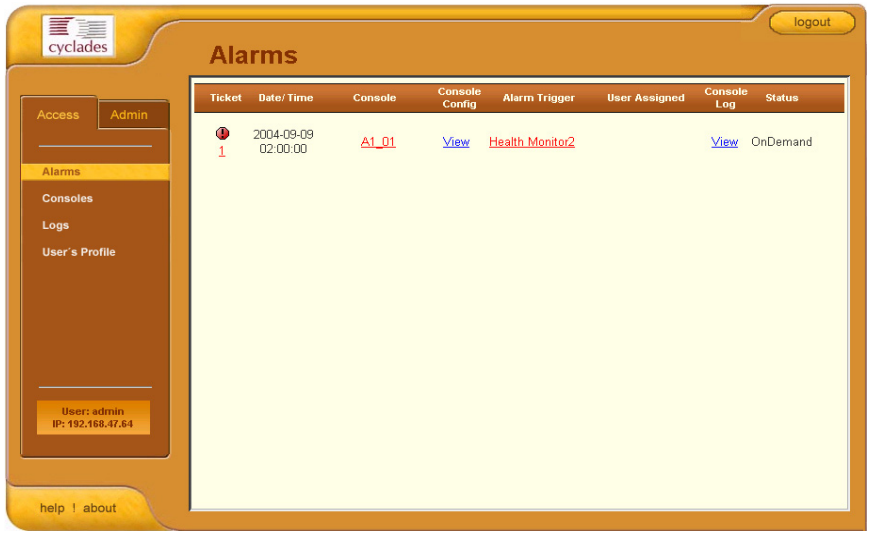


Table 3-1: Form Fields and Elements

Fieldname	Definition
Ticket	Ticket number assigned to an alarm. The symbol above the ticket number indicates the severity level of the alarm. Select the number to display the Alarm Detail form.
Blade	Blade from which the alarm originated. Click on the blade name to enable a console session according to the type of configured device and console. For example, a serial console will establish a text-based session; a KVM console will launch the KVM viewer, and an IPMI console will launch the SSH applet and connect to the IPMI SOL console.

Table 3-1: Form Fields and Elements

Fieldname	Definition
Blade Config	Blade configuration. Select this to view the Blade Detail form (which includes the secondary form: Console Notify, Console Access, and Console Group) for the particular console record.
Alarm Trigger	The Alarm Trigger name. Click on the name to view the Alarm Trigger Detail form.
User Assigned	User assigned to the alarm.
Status	Status of the alarm.
Blade Log	Select this to navigate to the Data Buffer log pertaining to the blade.

Viewing the Alarm Detail Form

The Alarm Detail form contains detailed information about the ticket as generated by an alarm. It allows you to re-assign the ticket, update the status, and enter notes regarding the alarm or ticket.

To view the ticket information for an alarm, follow the steps below:

1. From the Alarm List form, click on the ticket number.

The form brings up the Alarm Detail form.

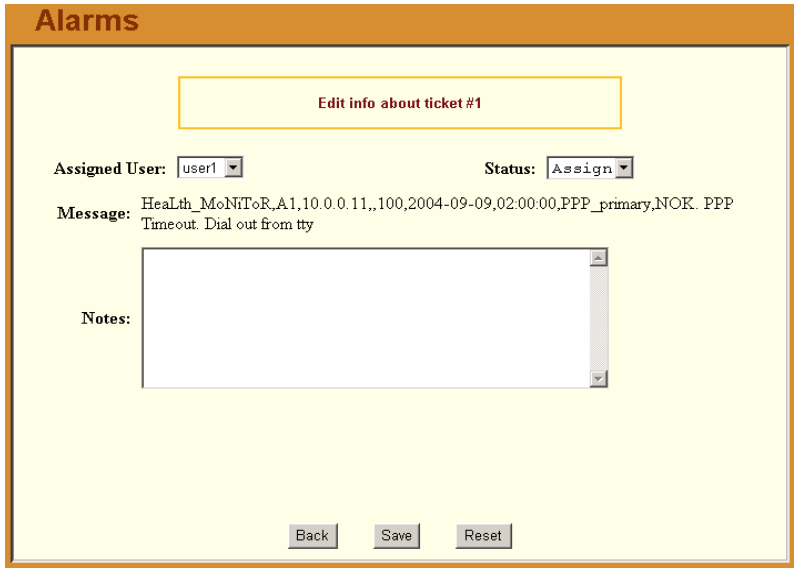


Table 3-2: Form Fields and Elements

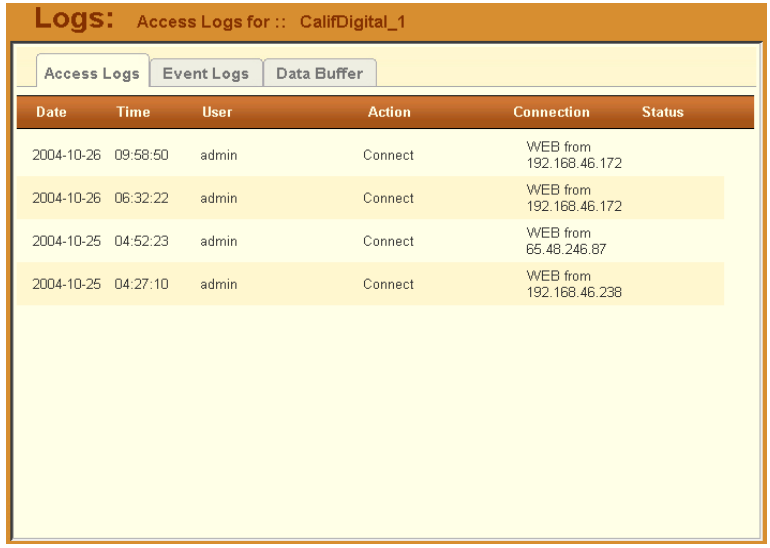
Fieldname / Button	Definition
Assigned Users	Dropdown box that lists all the assigned users for the current alarm. Select a user to assign or re-assign ticket to another individual user.
Status	Dropdown box to select the status of the ticket.
Messages	The system-generated message(s) pertaining to the alarm.
Notes	Text entry box for entering notes or comments about the current ticket or alarm.
Back	Button to return to the Alarm List form.
Save	Button to save your entries.
Reset	Button to reset the form to its original or default values.

>> Viewing Alarm or Console Logs

You can view the console log for a particular alarm or ticket from the Alarm List form. To view the console log, follow the step below:

1. From the Alarm List form, under the Console Log column heading, select the corresponding view link for the console log you wish to view.

   The system displays the Logs form:



>> Assigning a Ticket to a User

To assign or re-assign a ticket to a user, follow these steps:

1. From the Alarm List form, select an alarm or ticket to open the Alarm Detail or Ticket Information form.

   The system opens the Alarm Detail form.

2. From the Ticket Information form, select user from the **Assigned Users** dropdown list box.
3. If applicable, select the status from the **Status** dropdown list box.
4. If applicable, type in your notes or comments in the **Notes** text entry box.
5. Select **Save** to complete your entry.

Blades

Selecting **Blades** from the menu brings up the Consoles List form which allows you to:

- View detailed information about the blade consoles and switches assigned to you.
- Open a command line console session for a selected blade or switch.
- Launch the KVM Viewer and connect you to a KVM port (for KVM/net)
- Power ON or OFF the selected blade or switch.

Access to blades and switches and the types of connection are configured by the System Administrator from the Security Profile. You can view your security profile by going to **Users** > **Security**.

>> *Viewing the Blade List*

The Blades List form allows you to view the blades to which you have authorized access.

To view the Blade List form, follow this step:

1. From the Blades form, under the **Config** column, select the **view** link adjacent to the blade you wish to view.

The Blade List form appears.

Table 3-3: Form Fields and Elements

Column or Button Name	Definition
Blade	Blade or switch name. Place your mouse cursor over the Blade name to select connection type (CLI, KVM, VM, ON, OFF).
Type	The type of blade as defined in the Blade Detail form.
Config	For each line, select **view** to open the Blade Detail form of the selected console.
Chassis	Chassis used by the blade.
Port	Port number used by the blade.
Location	Location of the blade.
Status	Operating status (Enabled, Disabled, OnDemand) of the blade.

Table 3-3: Form Fields and Elements

Column or Button Name	Definition
Save View	Button to save the desired blade list and sort order.
Filter By	Button to filter your search by Blade Group Name which you select from the dropdown box.
Search	Button to search by individual console name which you select from the dropdown box.

>> Connecting to a Blade Console

To connect to a blade console:

1. From the Blade List form, select the blade you wish to connect to by selecting the blade name.

Note: If a modem is connected to a remote site, you will experience a slight delay before connecting to a console.

The system connects you to a console through Secure Shell (SSH).

In KVM/net, the listed console names are the KVM/net ports. Clicking on the console name will launch the ActiveX application and make a connection to the port.

Regardless of the type of "console," the BladeManager handles the authentication.

Multiple Users and Read/Write Access

Because the BladeManager supports multiple connections to the same port, this makes it possible for multiple users to view the same form. Note, however, that only the first user to connect to that port can have full *Read and Write* (R/W) access to the blade console panel while the rest can have *Read only* (R) access.

Viewing a Blade or Switch

Note: *This feature is available only to users of the optional **Blade Module**.*

The BladeManager allows you to view individual blades and switches from the Blade List form. To view a blade or switch, place the mouse cursor over the blade/switch name to display the list of connect options: **CLI** (command line interface), **KVM**, **VM**, **On** (i.e., to power on the blade server), and **Off** (i.e., to power off the blade server).

Like all other consoles, as a regular user, you can only view those blade servers to which you have access. You may also view your user profile with regards to blade access from the **User's Profile** option of the menu, **Security** form.

Consoles Detail Form

Use the Blade (or **Consoles**) Detail form to view specific information about a particular console (that is, the target blade or console). You can invoke this form from either the Alarm List form or the Blade List form.

If you have admin privileges, you also use this form to select user(s) to notify of the alarm and select user(s) to have access to the current blade. Below is an example of the Blade Detail form.

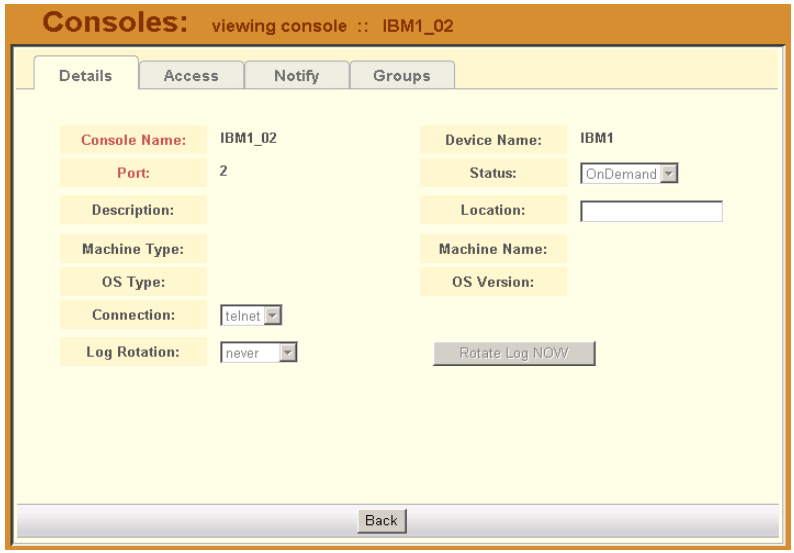


Table 3-4: Form Fields and Elements

Field Name	Definition
Details	Button to display the Console Detail form.
Access	Button to view users who are authorized to access the current console.
Notify	Button to view users who can be notified of an alarm pertaining to the current console.
Groups	Button to view the group(s) to which the current console belongs.
Console Name	Name of the (target) console.
Device Name	Name of the device used by the console.
Port	Name of port used by the console.
Status	Status of the target console (Able, Disable, On Demand).
Description	A brief description of the console.
Location	Physical location of the blade console.
Machine Type	Type of target system.
Machine Name	Other applicable system name.
OS Type	Operating system used by the console.
OS Version	Version of operating system.
Back	Button to return to the previous page or form.

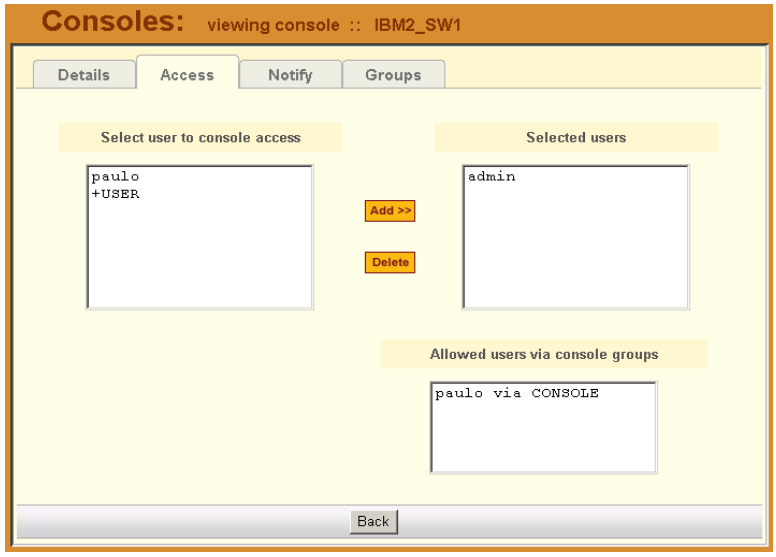
Consoles Access Form

The Consoles **Access** tabbed form shows the users who are authorized to access the current blade.

To view the Blade Access form:

1. From the Blade Detail form, click on Access.

   The system displays the Blade Access form:



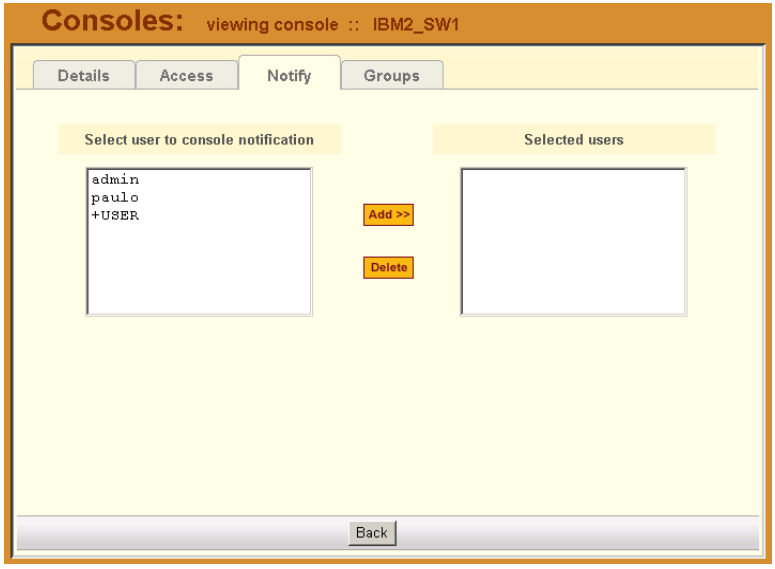
Consoles Notify Form

The Console Notify form shows the users who are notified when an alarm pertaining to the current console is generated.

To view the Console Notify form:

1. From the Console Detail form, click on Notify.

The system displays the Console Notify form:



In the selection box, a plus (+) sign indicates a group, as opposed to a user. USER is the default list which contains all users.

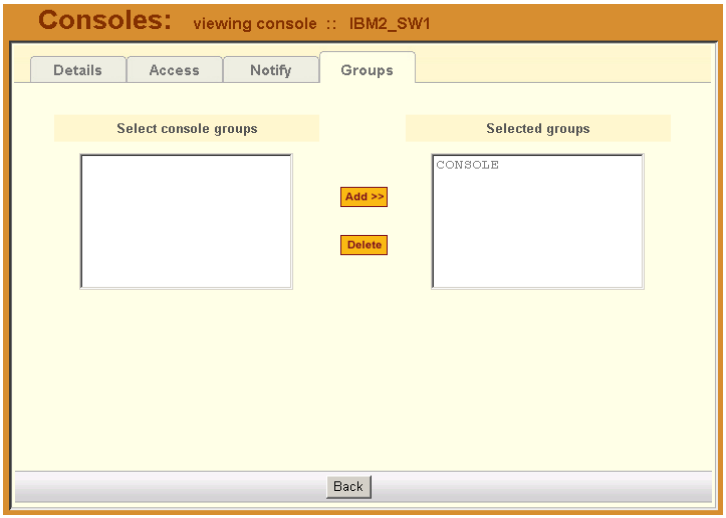
Consoles Groups Form

The Console Groups form shows the group(s) to which the current blade belongs.

To view the Blade Group form:

1. From the Blade Detail form, click on **Groups**.

The system displays the Blade Group form:



Logs

The Logs option of the menu allows you to select and view three types of logs pertaining to the blade(s) assigned to you:

Log Type	Definition
Access Log	Logs that provide logging information (*i.e.*, who accessed the blade, when and for how long, *etc*.) about a particular blade.
Events Log	Logs that provide information about notifications and alarms (who handled the alarm, what action was taken, etc.) triggered by a particular blade.
Data Buffer	This is a log of all transaction data generated on the blade.

All three logs are available for the specified blade. To access each log, select the appropriate log type from the title bar. As with blades and alarms, you can only view the logs of systems to which you have authorized access.

When you select Logs from the menu panel, the primary form, shown below, will prompt you for a range of dates from which to retrieve your logs.

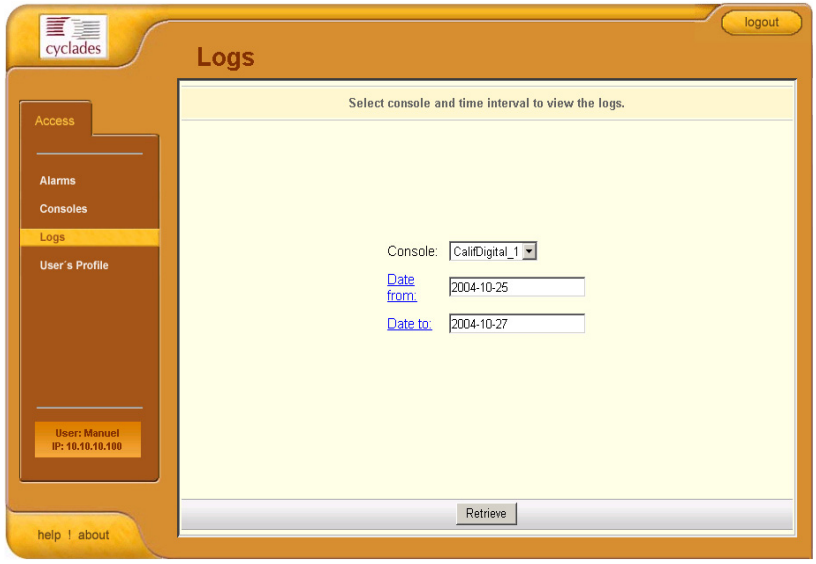


Table 3-5: Form Fields and Elements

Field Name	Definition
Console	Drop down list to select a blade server that will be the basis of the log(s) to be retrieved.
Date From	Drop down list to select the starting date of the log(s) to be viewed.
Date To	Drop down list to select the end date of the log(s) to be viewed.
Retrieve	Button to download the requested log(s) and display the Log forms.

>> *Viewing the Logs*

To view the logs available for a specified blade (to which you have authorized access), perform the following steps:

1. Select **Logs** from the menu.

The system brings up the main Blade Logs form.

2. From the Blade drop down list, select the blade from which you want to view the logs.

Note: *You can only view or access the logs of blades to which you have authorized access.*

3. Select a range of dates from which to base your logs by selecting from the **Date From** and **Date to** drop down lists.

   The system brings up the Logs Detail form.

Access Logs

Use Access Logs form to view the Access Logs, Event Logs, and Data Buffer Logs. The Access Logs (default log browser) provide all access information (*e.g.*, who accessed the blade, access date, action taken, etc.) about your target blade server.

The name of the blade/port/chassis to which the logs apply to is shown below the tab titles.

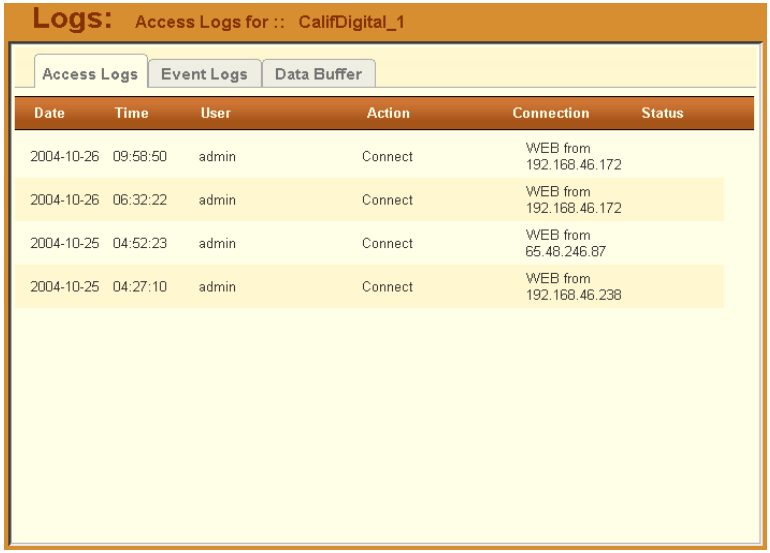


Table 3-6: Access Logs - Field Definition

Field Name	Definition
Date	Date in which the event occurred.
Time	Time of the event.
User	User who connected to the blade.
Action	What the user did in response to the alarm.
Status	Status of the blade (Enable / Disable).
Connection	Type of connection (e.g., SSH, Web); IP address used.

Event Logs

Use the Event Logs browser to view all events that occurred (within a specified range of time) on your target blade server.

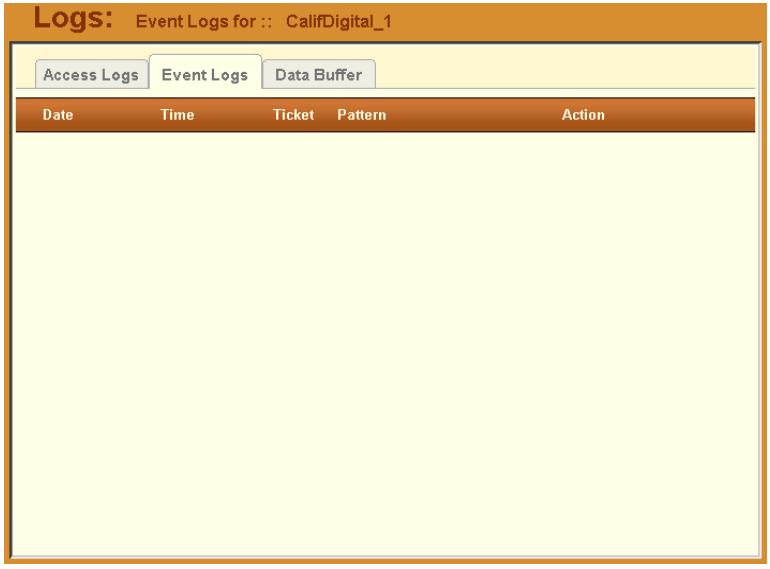
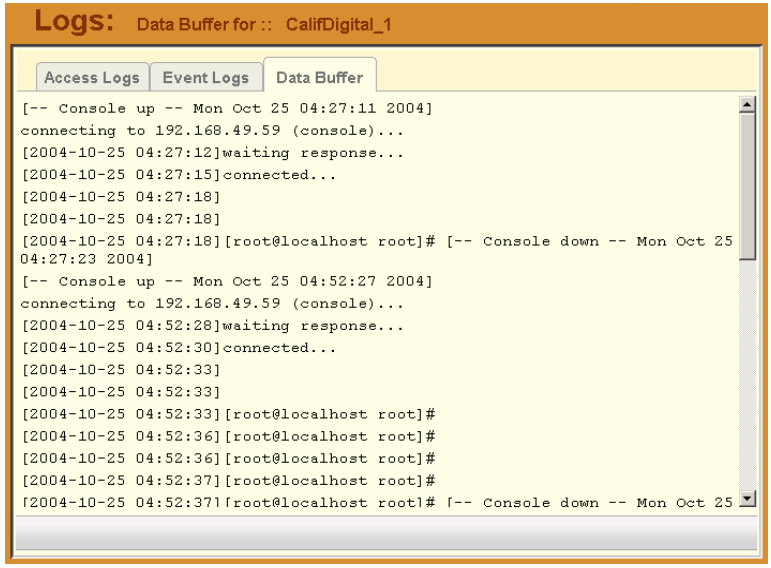


Table 3-7: Event Logs - Field Definition

Field Name	Definition
Date	Date of the event.
Time	Time of the event.
Ticket	Ticket number associated with the event.
Pattern	Trigger Expression
Action	Action taken to resolve event.

Data Buffer

Use the Data Buffer browser to view the contents of the data buffer generated by a target blade server.



Note: *You can also access the Data Buffer log from the **Alarms** form.*

User's Profile

The User's Profile form allows you to view your profile or contact information and modify a limited number of fields. The system allows you to view only your own profile.

The User's Profile has four tabbed forms. See the Form Fields and Elements table for the function of each form.

Table 3-8: Users Profile, Details Form - Fields and Elements

Field Name	Definition
Details	Tab or button to display the User Detail form. This is also the primary form of **User's Profile**.
Access	Tab/button to display the User Access form which shows all blades assigned to the current user.

Table 3-8: Users Profile, Details Form - Fields and Elements

Field Name	Definition
Groups	Tab/button to display the User Group form which shows all groups to which the current user belongs.
Security	Tab/button to display the Security form which shows the security profiles assigned to you. A security profile defines a user's access control to a device, and to which user group that profile is assigned.
User Name	The user name used to log into the BladeManager.
Admin User	Check box to indicate that the user has Admin privileges, and also belongs to the Admin user group.
Security Profile	Check box to indicate that a security profile has been assigned to the user.
Local Password	Check box to indicate that local authentication applies to the user.
Full Name	User's full name.
Email	User's email. This is the same field name used by the system for event notification.
Department	User's department.
Location	Location of department.
Phone	User's phone number.
Mobile	User's mobile phone number.
Pager	User's pager number.
Status	Indicates whether the user is **enabled** or **disabled**.

>> Changing Your Password

To change your password, perform the following steps:

1. From the User's Profile detail form, click on **Set Password**.
2. From the password dialog box, enter the new password twice.
3. Click on **Submit**.

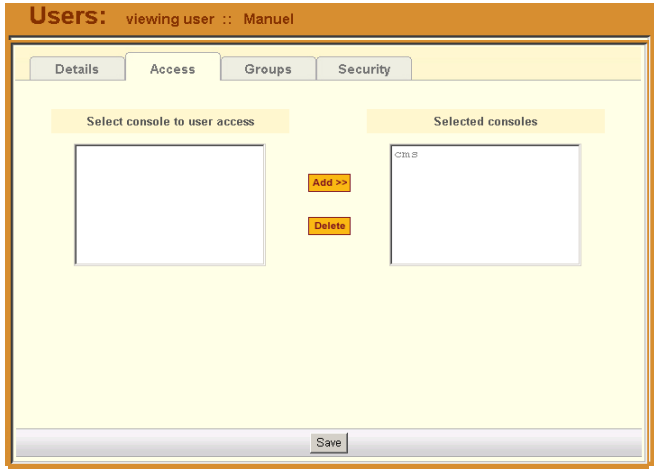
>> Viewing the User Access Form

The User Access form shows the blades that the current user can access.

To view the User Access form:

1. From the User Detail form, click on **Access**.

   The system displays the User Access form:



>> Viewing the User Groups Form

The User Groups tabbed form displays the groups to which you belong.

To view the User Group form:

1. From the User Detail form, click on **Groups**.

The system displays the User Group form:

Table 3-9: User's Profile, Groups Form - Fields and Elements

Field Name	Definition
Groups	Tab or button to select the current form.
Select groups for the user	List box from which to select a possible list of user groups assignable to the current user.
Add	Button to add a selected user group (left list box) to the **Selected groups** list box.
Delete	Button to delete a selected user group (right list box) and return it to the **Select groups for the user** list box.
Selected Groups	The list box that shows the group(s) assigned to the current user.

>> Viewing the Security Form

The Security form shows the current security profile assigned to you (for example, the blades you are allowed to access), including any other applicable profiles.

To view the Security form:

1. From the menu, select **User's Profile**; from the **Details** form, select the **Security** tab.

   The system displays the **Security** tabbed form:

Table 3-10: User's Profile, Security Form - Fields and Elements

Field Name	Definition
Security	Tab or button to select the current form.
Select security profile	List box from which to select a possible list of security profiles assigned to the current user.
Add	Button to add a selected security profile (left list box) to the **Selected security profiles** list box.

Table 3-10: User's Profile, Security Form - Fields and Elements

Field Name	Definition
Delete	Button to delete a selected security profile (right list box) and return it to the **Select security profile** list box.
Selected security profiles	The list box that shows the Security Profile assigned to the current user.
Security profiles via user groups	The list box that shows the Security Profile assigned to a user group (that is, the default USER group or any other defined user groups).

Chapter 4
BladeManager Web Administration

This chapter presents the procedures for configuring the AlterPath BladeManager through the web interface. Addressed to the BladeManager administrator who must use the web interface in the Admin Mode, the chapter is organized as follows:

- Operational Modes
- Configuration Process Flow
- First Time Configuration Wizard
- BladeManager Web Interface: Admin Mode
- Forms Summary
- Parts of the Web Interface
- Chassis Management
- Proxies
- Two Methods of Blade Configuration
- Configuring Blades Manually through the Menu
- Deleting a Device Group
- Alarm Trigger Management
- Blades / Switches
- Log Rotation
- Users
- User List form
- Setting the Local Password
- Groups
- Security Profiles
- Backing Up User Data
- System Recovery Guidelines
- BladeManager Database Transaction Support
- Info / Reporting

Operational Modes

The BladeManager provides two operating modes for configuration:

- First Time Configuration (CLI or text-based)
- Admin Mode (GUI-based)

Before you can use the BladeManager web interface you must first run the First Time Configuration wizard.

The admin user, by default, is the system administrator of the BladeManager web interface and runs the application in **Admin** mode. This designation cannot be revoked. Unless a regular user has been configured to be an admin user as well (through the User Detail form), regular users can use the application only in Access mode.

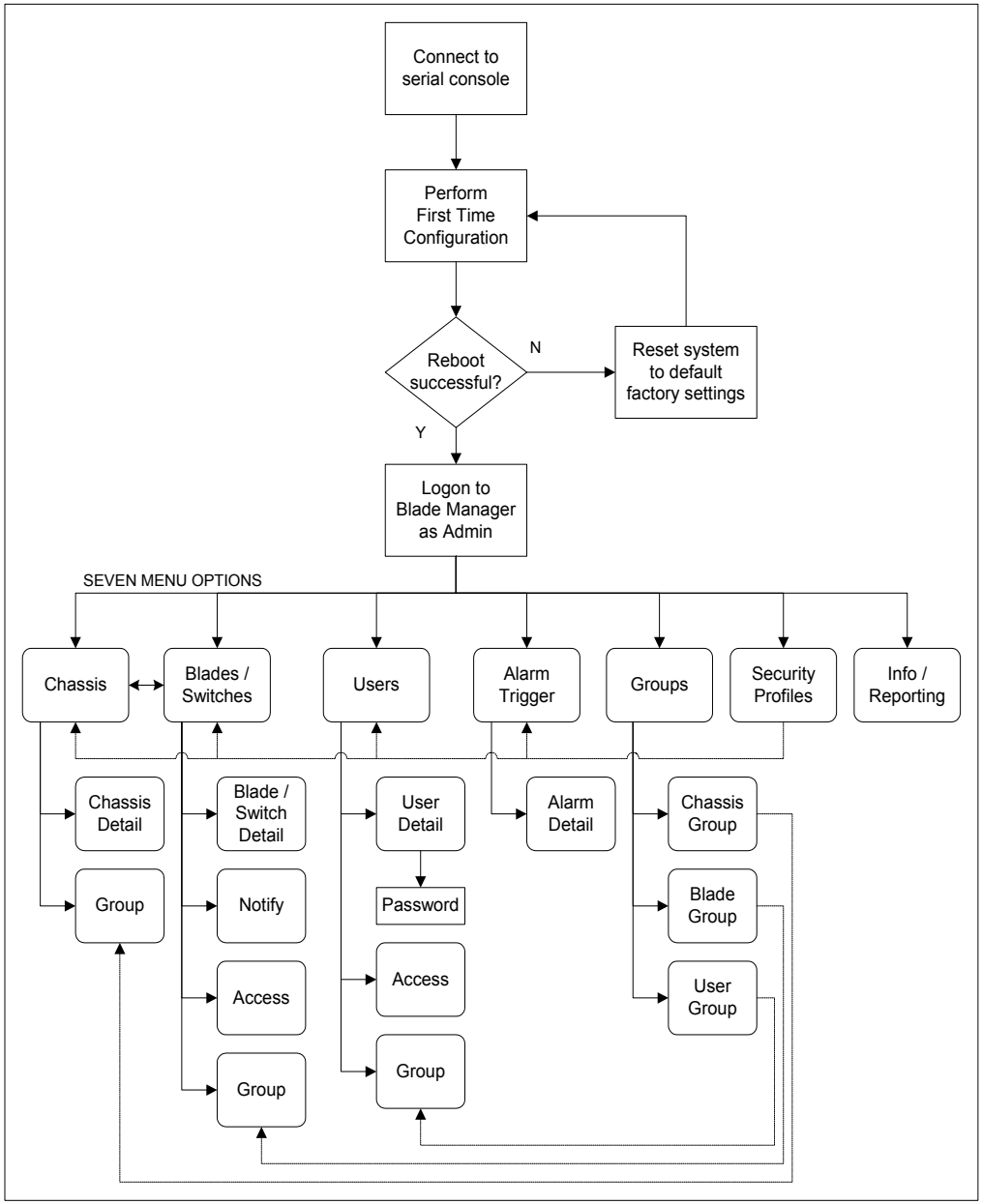
Only an administrator or admin user can use the web interface in Admin Mode which allows them to perform configuration procedures such as assigning admin roles to new users, adding new blades and alarms.

Note: For information on how to use the system in Access mode, refer to the previous **Chapter 3: BladeManager Web Access** .

Note: Certain configurational procedures (*e.g.*, System Recovery, Modem Card Configuration) require the use of the CLI by advanced users. These procedures are discussed in **Chapter 5: Advanced Configuration**.

Configuration Process Flow

The entire configuration process through the web interface is as follows:



You must perform the First Time Configuration process (see Configuration Flow Diagram) using the command line interface. Once completed, you may perform the rest of the configuration process and all daily administration procedures through the BladeManager web interface.

First Time Configuration Wizard

The first time configuration process is designed to:

- Establish user as root, the superuser for the CLI.
- Establish user as Admin, the superuser for the BladeManager web interface.
- Initialize your system and user settings to ensure full connectivity and functionality of the BladeManager.

First Time Configuration requires that you:

- Connect to a serial console
- Log in as *root*

Before you run First Time Configuration, check to ensure that your system is set up properly. If you are using a PC, ensure that HyperTerminal is installed on your Windows operating system. If you are using the UNIX operating system, use Kermit or Minicom.

Ensure that you have a NIC card installed in your PC to provide an Ethernet port, and allow network access.

Refer to **Chapter 2: BladeManager Installation** for procedures on how to prepare for First Time Configuration.

>> Running the First Time Configuration Wizard

To initiate the First Time Configuration Wizard, follows the steps below:

1. Connect the management console to the BladeManager unit.
2. Boot your management console.
3. Follow the configuration wizard. You may configure the following manually, or press **Return** to accept the default value(s).
    - Enter Root password (and re-type)
    - Enter Admin password (and re-type)
    - Select Time Zone

- Enter Date (format MM/DD/YYYY)
- Enter Primary Ethernet IP Address (Static/None).
- Enter Secondary Ethernet IP Address (Static/None)
- Configure Ethernet Subinterfaces (Yes/No/List)
- Configure Ethernet VLANs (Yes/No/List)
- Enter Ethernet default gateway
- Enter System's Hostname (30 characters max)
- Enter System's Domain name (60 characters max)
- Enter Primary nameserver's IP address
- Enter the NTP Server
- Enter email (SMTP) server
- Enter Authentication Method (local/radius/tacacs+/ldap/kerberos/nis/active_directory)

Note: Depending on the Authentication Method that you select, the system will prompt you for additional information. See "Setting the Authentication Method" on page 4-8 for more information.

>> Resetting Configuration to Factory Settings

If you make a mistake during the First Time Configuration (or if you need to make a change in the configuration), you can reset the configuration to its factory default settings and start over. To reset the configuration, follow these steps:

1. Log in to the management console as root.
2. Type in: **`defconf`** and press <Enter>.
3. Type in: **`reboot`** and press <Enter>.

Example:

BladeManager login: **root**
Password:
.
.
[root@BladeManager root]# **defconf**

WARNING: this will erase all of your current configuration and restore the system's factory default configuration. This action is irreversible!

Are you sure you wish to continue? (Y/N) **y**
Restoring default configuration ... done.

The new configuration will take effect after the next boot.
[root@BladeManager root]# **reboot**

Refer to the sample First Time Configuration, next section, to view how the parameters are entered into the system.

4. Save and reboot.

   Once saved, the BladeManager applies the new configuration to the system and saves the information on a Compact Flash card.

First Time Configuration Wizard: An Example

The First Time Configuration sample session shown below shows the portion of the command line data where the user configuration begins. This is commenced by the heading, Welcome to Cyclades-APBM!

Caution: *Before the Welcome heading appears, the system will prompt you for the following:*

```
Do you want to re-create hard disk partitions? (y/n) [n]
Do you want to re-create the System file system?(y/n)[n]
Do you want to re-create the Console Log file system?(y/n)[n]
Do you want to re-create the Configuration file system?(y/n)
[n]
```

*Be sure to answer **no** to the above questions. Once completed, you should see the configuration text as shown in the example below.*

Note: Default values are enclosed in angled brackets after each question or prompt. Press <Enter> to accept the default value.

```
=======================================================

Welcome to Cyclades-APBM!

Since this is the first time you are booting your APBM, you need to
answer some basic configuration questions. Once this is done, the
other APBM configuration parameters can be set through its Web
Management Interface (WMI).

Press any key to continue.
```

```
You must now set a password for 'root', the system administrative
account.

WARNING: this is a very powerful account, and as such it's advisable
that its password is chosen with care and kept within the reach of
system administrators only.

New password:
Re-enter new password:
Password changed

You must now set a password for 'admin', the administrative account for
the Web Management Interface (WMI).

WARNING: this is a very powerful account, and as such it's advisable
that its password is chosen with care and kept within the reach of
system administrators only.

New password:
Re-enter new password:
Password changed
Please choose the time zone where this machine is located.

Current system date and time is:
    Tue Apr  5 17:11:18 PDT 2005
Press ENTER to accept it or specify new ones.
Enter date in MM/DD/YYYY format: 48
Enter date in MM/DD/YYYY format:

Tue Apr  5 17:11:00 PDT 2005
Primary Ethernet IP address: (S)tatic or (N)one ? [S]:
Secondary Ethernet IP address: (S)tatic or (N)one ? [S]:
Configure  Ethernet Subinterfaces: (Y)es, (N)o or (L)ist ? [N]: n
Configure  Ethernet VLANs: (Y)es, (N)o or (L)ist ? [N]: n
Enter Ethernet Default Gateway [none]:

Enter the System's Hostname
    (max 30 characters) [E2000]:
Enter the System's Domain Name
    (max 60 chars) [localdomain]:
Enter the Primary Nameserver's IP address [none]:
Enter the NTP server:
Enter the email (SMTP) server:
Choose the desirable authentication method
    (local/radius/tacacs+/ldap/kerberos/nis/active_directory) [local]:

Cyclades-APBM V_1.3.0 (Apr/03/2005) - Console (kernel 2.4.25)

APBM login:
```

[At this point, First Time Configuration is complete. Close the terminal session and proceed to the web interface.]

==========

Setting the Authentication Method

The sample First Time Configuration shows *local* as the Authentication Method to use to authenticate a user.

Depending on the type of authentication service that you select, the wizard will prompt for questions relating to the authentication service of your choice. For example, if you select RADIUS, the system will prompt you for the RADIUS server name and the secret. Selecting TACACS+ will prompt you for the TACACS+ server IP address, the shared secret, and the available service (system).

If you select NIS, the system will prompt you for the NIS Domain Name and the NIS Server. For the NIS Domain Name, the system will accept **localdomain** or you may leave the field blank.

Note: If you use NIS Authentication and the NIS server fails, APBM will not allow you to add the user in the local database since it already exists in the NIS server. This is due to the way NIS centralizes and distributes user account information into common local files. For more detailed information, see "NIS Configuration" on page 5-8 of **Chapter 5: Advanced Configuration**.

Configuring Active Directory

To use Active Directory as your authentication method, select **ldap** and then proceed to the "Active Directory Configuration" on page 5-10 of **Chapter 5: Advanced Configuration**.

Hostname Configuration Must Follow RFC Standard

When configuring the hostname, the name must comply with RFC 608 which states that the hostname is a string composed of:

- Up to 48 characters drawn from the alphabet (A-Z)
- Digits (0-9), and the minus sign (-)
- No blank or space characters allowed
- No distinction between upper and lower case letters
- First character is a letter
- Last character is NOT a minus sign

Any deviation from this standard may cause the web browser to disable APBM cookies and prevent the user from logging into the E2000 web application.

>> Connecting to the Web Interface

Now that the installation is complete, you can begin the configuration using the web interface.

1. Type in the following URL from your web browser:

   http://nnn.nnn.nnn.nnn

   (*Non-encrypted version*)

   - OR -

   https://nnn.nnn.nnn.nnn

   (*Encrypted version*)

   Where: **nnn.nnn.nnn.nnn** is the IP address of either the first or second Ethernet interface that you defined during the First Time Configuration.

2. When the Login screen appears, enter **admin** as the username and the password (as specified in the First Time Configuration wizard).

The admin user is by default the manager of the BladeManager web interface and runs the application in **admin** mode. This designation cannot be revoked.

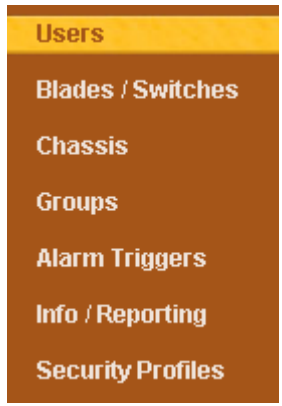
Disabling HTTP to Use Only HTTPS

The BladeManager is configured to allow both HTTP and HTTPS access. You can, however disable HTTP access by commenting out its configuration in the BladeManager unit by using the command line.

Note: To configure the encrypted version, see “Disabling HTTP to Use Only HTTPS” on page 5-16

BladeManager Web Interface: Admin Mode

Once you have completed the First Time Configuration procedure, you may login to the BladeManager web interface and use the system in Admin Mode. The Admin menu panel contains the following selections:



Configuring the BladeManager requires using the menu in a certain order. To facilitate the configuration process, the menu choices are discussed in the following order:

- Chassis
- Blades/Switches
- Alarm Triggers
- Users
- Groups
- Security Profiles
- Info/Reporting

Forms Summary

The table below summarizes all the forms of the BladeManager web interface in Admin mode. While there is no single approach to using the forms in a particular sequence, this document presents the menu options in the order in which a first time user might use them rather than in the order in which they appear in the menu panel.

For example, before configuring users, it is customary to configure the chassis, the blades and switches first. Once you have configured the blades

and switches, you can define users and assign them to access the target blades (menu option: **Users**), and define the triggers that will create alarms and send email notifications (menu option: **Alarm Triggers**) to users.

Table 4-1: Summary of Web Forms in Admin Mode

Menu Option	Forms and their Functions
Chassis	Chassis List - View list of Chassis; add, edit or delete chassis; view logs.
	Chassis **Details** - Edit chassis configuration details; set or change admin password; run blade wizard.
	Groups - Select the group(s) to access the chassis.
	Proxies - Select the type of web proxy to use when using the web application (*i.e.*, IBM BladeManager).
	Switch 1 - Configure a switch for the chassis.
	Switch 2 - Configure a second switch for the chassis.
	Switch 3 - Configure a third switch for the chassis.
	Switch 4 - Configure a fourth switch for the chassis.
Blades	Blades List - View list of blades; add, edit or delete blades;
	Details - View or edit blade configuration details (*e.g.*, connection type, log rotation, etc.)
	Access - Select user(s) to access the current blade.
	Notify - Select user(s) to be notified of an alarm regarding the current blade.
	Groups - Select blade groups.
Alarm Triggers	Alarm Trigger List - View alarm trigger list; add, edit or delete an alarm trigger.
	Alarm Detail - View or configure a selected alarm trigger.

Table 4-1: Summary of Web Forms in Admin Mode

Menu Option	Forms and their Functions
Users	User List - View list of users; add, edit or delete users.
	Details - View or configure a selected user.
	Access - Select blades and switches to which the current user can access.
	Groups - Select one or more groups to which a user can belong.
	Security - Select one or more security profiles to apply to the current user.
Groups	Group List - View list of groups according to user, blade or switch.
	Chassis > **General** - Select group members for the selected chassis group.
	Blade > **General** - Select group members for the selected blade group.
	User > **General** - Select group members for the current user group. **Security** - Select security profile to be applied to the current user.

Table 4-1: Summary of Web Forms in Admin Mode

Menu Option	Forms and their Functions
Security Profile	Security Profile List - View list of security profiles; add, edit or delete a security profile.
	General - Enable or disable the current security profile.
	Source IP - Define the source IP addresses allowed or not allowed.
	VLAN/Subnet - Define the VLANs/subnets allowed or not allowed.
	Date/Time - Define the date and time in which system access is allowed or not allowed.
	Authorization - Select the types of action allowable for the current security profile.
Info Reporting	Info / Reporting List
	Detail

>> Logging Into the BladeManager Web Interface

1. Type in your username and password in the corresponding fields of the Login screen:

2. Select the **Login** button.

Upon successful login, the User List form appears.

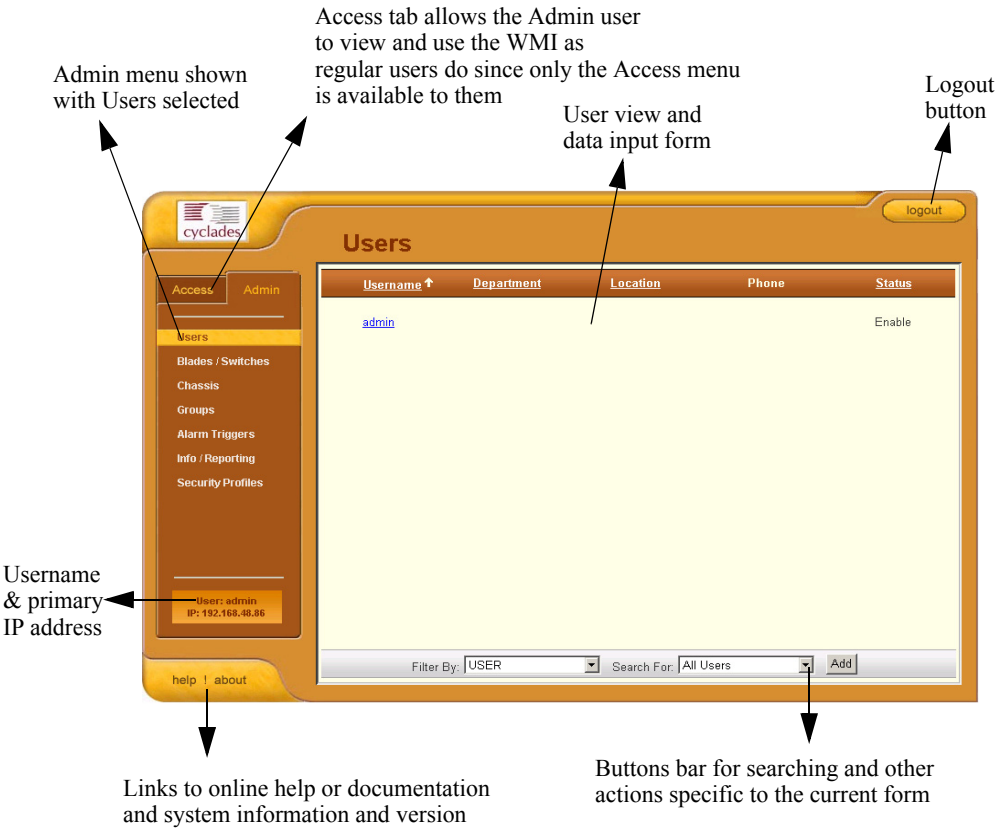
Note: When the BladeManager launches your application screens for the first time, the process tends to be slow. The system needs to build all the web pages in the BladeManager. Once the screens are stored, retrieving them should be fast.

Note: All procedures in this chapter assumes that you are already logged in.

Parts of the Web Interface

Before proceeding to the web configuration process, familiarize yourself with the graphical user interface. Shown below are the basic features of the

BladeManager web interface in Admin Mode. The form example shows the Users List form, the first form to appear in the web interface.



The first form to appear when you select an option from the menu panel is called the primary form. The Users List form, for example, is the primary form of the menu option, **Users** (User Management).

In this manual, all primary forms are shown in their entirety (*i.e.*, the entire screen which includes the menu panel and form). Non-primary forms are shown only as individual forms (*i.e.*, without the menu panel and other GUI elements outside the form).

Sorting, Filtering, and Saving a List Form

An underscored column heading on any of the list forms indicates that the list may be sorted based on that column heading. For example, you can sort the previously shown User List form by Username, Department, Location or Status by clicking on the heading.

Where there are several underscored headings on a list, an arrow appears adjacent to the heading on which the sort is based. The position of the arrowhead indicates the sort order. A downward arrowhead indicates that the list is alpha-numerically arranged in ascending order; an upward arrowhead, in descending order. You can change the sort order by clicking on the heading or the arrow.

Example:

The Console List form shown above is sorted by Console in ascending order. You can further sort this form by Type, Device, Location, and Status.

To filter your list by group, use the **Filter by** button. The system automatically saves the filtered list.

To search for a particular console, use the **Search** button.

Using the Form Input Fields

When typing in data into any of the input fields, note the following conventions:

- In the web form (as it appears on the screen), all required fields are shown in RED.
- With some exceptions, fields cannot contain special or reserved characters. If you enter an invalid character, the system generates the message: “Fields cannot contain special characters.”
- Only the following special characters are allowed:

```
_!@%&()[]{}<>?=+-*/,.;:^~
```

Verifying Error Messages

To verify an error message, you can view the form or screen in question by clicking on the error message. This feature allows you to verify or check the error message against the form.

Chassis Management

The **Chassis** option (composed of the **Devices** List form and seven tabbed forms) of the menu allows you to add a blade chassis and use the wizard to create 14-blade consoles, 14 blade-KVMs, and consoles for all installed switches. It includes an Access Control List and Notify list for the blade.

Pointing your cursor to the device name (*i.e.*, the chassis) from the Device list form allows you to access the Management Module through the web or CLI. The default CLI session type (SSH or Telnet) is configurable from the Blade Device form.

Note: The Web option is available only if the web proxy is set to **Enable**.

Table 4-2: Summary of Chassis (or Devices) Forms

Action	Form(s) Used
Add and configure new chassis.	Chassis List form (Add button) > Select Device Type form > Chassis **Details** form.
Edit chassis.	Chassis List form (Edit link) > Chassis **Details** form.

Table 4-2: Summary of Chassis (or Devices) Forms

Action	Form(s) Used
Delete chassis.	Chassis List form (Delete button).
Search, sort, and save list of devices.	Chassis List form.
Select group(s) to access the chassis.	**Groups** tabbed form.
Select type of web proxy to access web pages.	**Proxies** tabbed form.
Configure switch (up to four switches) in order to access the switch console.	**Switch 1** through **Switch 4**.
Run Blade Wizard.	The Blade Wizard (**Save & Create Blades** button) is available from all the tabbed forms.

Note: *Form names are shown in boldface. Some form names, such as the List form, do not appear on the actual form. Most menu options use a List form and a Detail form*.

Chassis > Devices List Form

The **Devices** List form, the primary form of **Chassis**, allows you to view a list of devices that are configured in the BladeManager. From this form, you can add a new device, or select the device to modify or delete. .

Table 4-3: Chassis (Devices) List - Fieldnames and Elements

Fieldname / Element	Definition
[*unlabeled checkbox*]	Checkbox to select the device to be deleted.
Device	Device name. Click on the device name to connect to the console server or device. Click on the column title (Device) to change the sort order.
Type	The type of device (IBM Blade Center).
Config	The device configuration. Click on **Edit** to display the Device Detail form for selected device record or line.
Firmware	The firmware version for this device.

Table 4-3: Chassis (Devices) List - Fieldnames and Elements

Fieldname / Element	Definition
Log	Device log buffer. Click on **Log** to view the log for this device.
Status	Status of the device: Enabled, Disabled or OnDemand. OnDemand means that the device is enabled only upon user connection.
Filter by	From the dropdown box, select the field by which to filter the list and then click on the **Filter by** button.
Search	From the dropdown box, select the device you wish to search, and then click on **Search**.
Add	Button used to add new devices.
Delete	Button used to delete the devices.

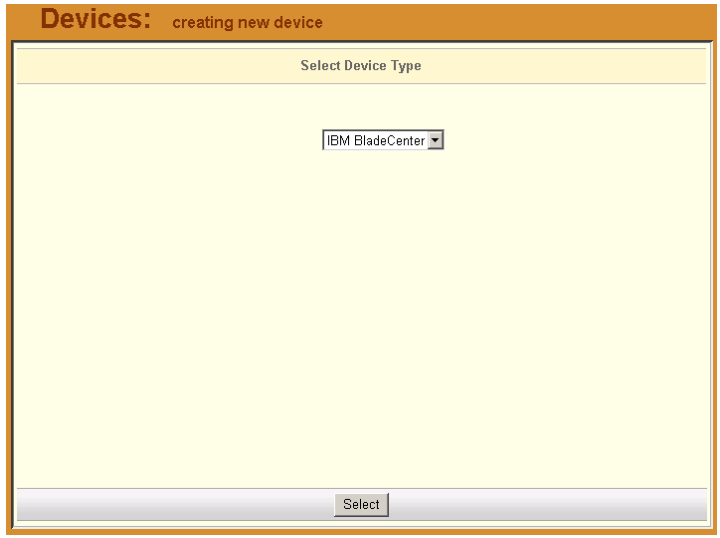
Adding or Editing a Chassis

1. From the menu panel select **Chassis**.

   The system displays the Device List form.

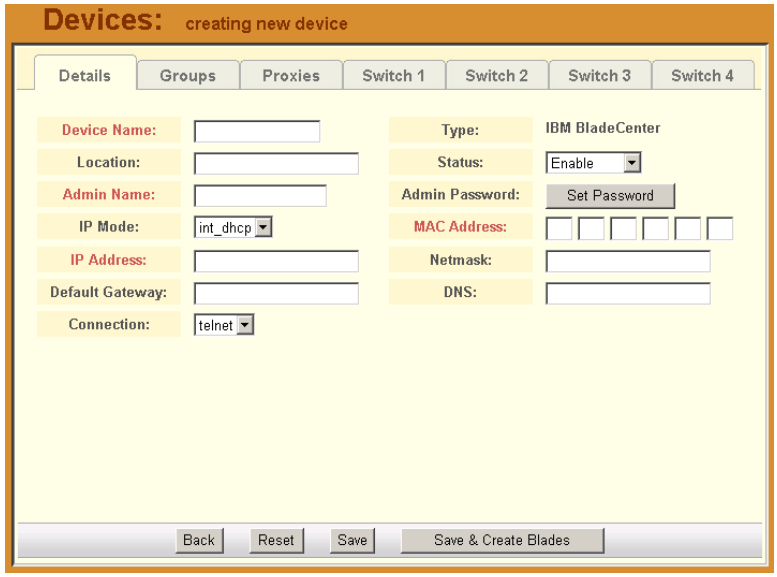
2. If you are adding a Chassis, from the Device List form, click on **Add** located at the bottom of the form.

The system displays the Select Device Type form:



3. From the Select Device Type form, (since the field box already says IBM BladeCenter) click the **Select** button. Proceed to Step 5.
4. If you are editing an existing chassis, from the Device list form, select the chassis you want to edit, and then click on the **edit** link (**Config** column, same row).

The system displays the **Devices** Detail form:



5. Complete or modify the Detail form as defined by the following table:

Devices Details Form - Fields and Elements

Fieldname	Definition
Details (tab)	Currently selected tabbed form.
Device Name	The symbolic name linked to the chassis.
Type	IBM Blade Center is the only supported type of device or chassis.
Location	Physical location of the device or chassis.
Status	Dropdown list box to select: Enable - connection between the BladeManager and the device is ALWAYS established. Disable - no connection is established, and all child consoles follow this configuration. **OnDemand** - connection is established only upon user's request.

Devices Details Form - Fields and Elements

Fieldname	Definition
Admin Name	The admin username (superuser) of the device.
Admin Password	Button to invoke a dialog box used to define the Admin's password. This password is used to access the IBM Blade Center port, but NOT to change the password. You must enter the SAME password registered in the blade server.
IP Mode	Dropdown list box. Select **int_dhcp** if BladeManager is the DHCP server for this device, or **ext_dhcp** if DHCP is served by another server, or **Static** if using a static IP. *See **Configuring Your DHCP Server,** this chapter.*
Mac Address	The MAC address if the selected IP mode is **int_dhcp**.
IP Address	The IP address of the device for IP mode: **int_dhcp** or **static**.
Netmask	As indicated, in dotted notation.
Default Gateway	As indicated, in dotted notation.
DNS	As indicated, in dotted notation.
Connection	Select the connection or session type for the device: Telnet or SSH.
Back	Button to return to the previous page.
Reset	Button to reset the form.
Save	Button to save your configuration.
Save / Create Blades	Button to activate the Blade Wizard.

6. Click on the **Save** button.

Using a DHCP Server and Selecting the Correct IP Mode

A DHCP server is build into the BladeManager. You can use your company's DHCP server or the BladeManager as your DHCP server. If you are not using a DHCP server, then you may use a static IP address.

The Device Definition window provides three IP modes in which to configure your DHCP server or static IP address. The IP address that you use depends on what type of mode you use.

Table 4-4: Types of IP Mode

IP Mode	When to use this mode
int_dhcp (internal)	Select this mode if you are using the BladeManager as your DHCP server. You decide on what IP address you wish to use and then save the configuration in the Device Definition form.
ext_dhcp (external)	Select this mode if you already have a DHCP server in your LAN that you wish to use. You will need to get from your System Administrator the IP address allocated for your company's DHCP server.
Static	Select this if using a static IP address. When using the static mode, you (or your LAN/ System Administrator) must first connect to the console server using the serial console to enter the IP address. You must then enter that same IP address in the BladeManager through the Device Definition form.

Function of the Status Field

The **Status** field of the Device Detail form indicates whether the connection between the BladeManager and the chassis/blade is **Enable** (*i.e*., permanently connected), **Disable** (no connection established), or **OnDemand**.

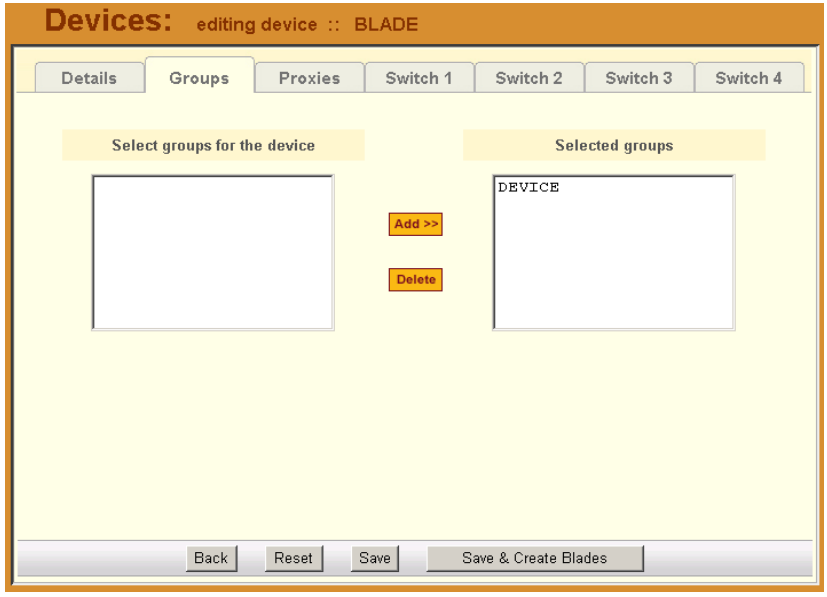
OnDemand means that the connection is established only upon the user's request, and disabled again when the last user on the console/device logs out. When disconnected, no data buffer or alarm is available.

>> Selecting the Group(s) to Access a Chassis

To select one or more groups to access a chassis:

1. From the menu, go to **Devices** > **Details** > **Groups**.

   The system displays the **Devices - Groups** tabbed form:



2. Select (or highlight) from the left list box the device group that the current chassis supports.

Note: Unless a device is configured for another group, the **Device** group is the default group for all devices.

3. Click on **Add**.
4. Repeat steps 2 and 3 if you have another group to add.

Note: To delete any entries from the **Selected Groups** box, highlight the group you wish to delete and then click on **Delete**.

5. Click on **Save** to save your configuration.

Proxies

The BladeManager includes a web proxy server so that connections to the native web interface of any supported device go through the BladeManager. This feature enables the BladeManager to:

- Connect users through the BladeManager to remote servers that it controls (*e.g.*, IBM Blade, KVM/net switches, ACS/TS units, and other servers) in connection with any web interface.
- Provide a secure mechanism for BladeManager clients to access remote servers.
- Configure remote AlterPath devices directly from the BladeManager.

Proxy Types

There are three types of proxy you can configure for a device:

Proxy Type	Function
Reverse Proxy	Reverse proxy allows any web server to be viewed through the proxy agent. The web server appears to the user as a subdirectory of the proxy server's document tree. Advantages: Target server does not need to have a routable IP address; not accessible outside the BladeManager; user workstation and network does not need to know about the target web server.

Proxy Type	Function
Forward Proxy	A forward proxy acts as a gateway for a client's browser, sending HTTP requests on the client's behalf to the Internet. The proxy protects your inside network by hiding the client's actual IP address and using its own instead. When the outside HTTP server receives the request, it sees the request or address as originating from the proxy server, not from the actual client. This type of proxy requires the proxy to be either configured as the default gateway for the client or for the client to send requests for the proxies servers via the proxy. The latter can be achieved by allowing the proxy to also act as an ARP proxy.
Forward Proxy with Proxy ARP	Proxy ARP is the technique in which one host answers ARP requests intended for another machine. By "faking" its identity, the router accepts responsibility for routing packets to the "real" destination. Proxy ARP can help machines on a subnet reach remote subnets without configuring routing or a default gateway.

Warning: *When you assign **Forward Proxy Using ARP** or **Forward Proxy without ARP**, all ports of the proxied device are reachable from the workstation from which the user is logged in. It is important that all console ports are configured with an authentication type other than **None**.*

The constraints that are set for all proxies rely on IP addresses only. Any user from a workstation where there is another user logged into the E2000 will have access (as long as the device does not require authentication) to all devices that are being proxied for that user.

Warning: Reverse Proxy does NOT work with Java applets and Active X applications. Consequently, the E2000 web interface cannot support the following connections:

- Remote access to the IBM Blade devices.

- Use the KVM viewer to access KVM/net console.

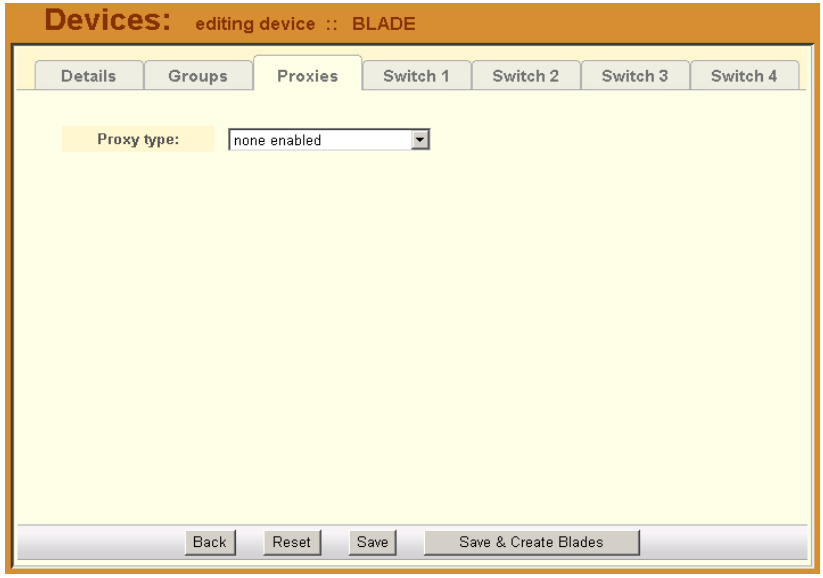
>> Configuring the Proxy

To create or configure a proxy for a target device, follow the steps below:

1. Go to: **Devices** List form.
2. If the Device is new, click on the **Add** button

   (If the Device already exists, highlight the device and click on the Edit button.)
3. From the Device Edit form, select the **Proxies** tab.

   The system displays the **Proxies** tabbed form.



4. From the Proxies tabbed form select the type of web proxy you wish to assign for the current device.

Note: If you select Forward Proxy, then you must set the default gateway of your PC and the chassis (or switches) to the IP addresses of the BladeManager if your PC and the chassis (or switches) are in different networks.

5. Click on **Save** to complete the procedure.

>> *Verifying your Proxy Setting*

1. To verify your configuration, return to the Devices List form, and under the Web Proxy column, select **YES**.

   A pop up window will display to show the web pages of the selected device.

Disabling the Proxy

Setting the Type of Proxy to none will display none under the Web column of the Device List form. Any admin user currently viewing the proxy will receive a message indicating that they are not authorized to access the proxy.

Configuring Ports to be Proxied

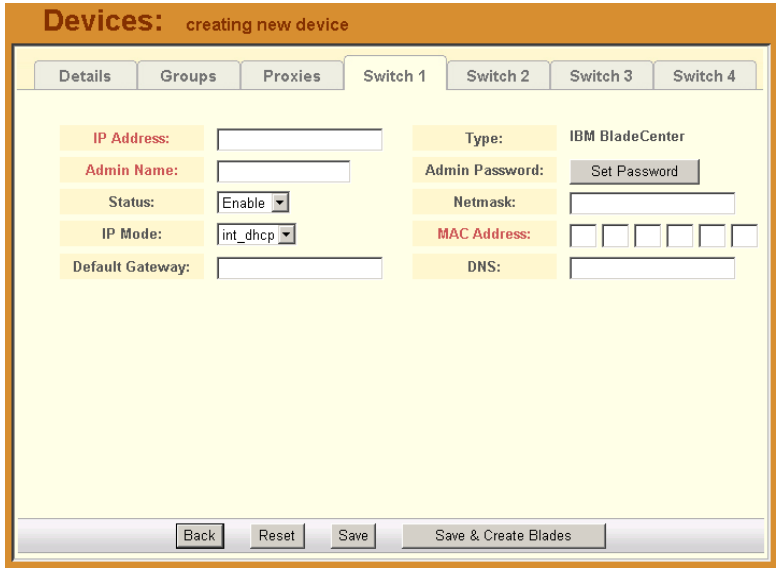
When Forward Proxy (with or without ARP) is enabled for a device, the default proxied ports are 80 and 443. To change the opened ports, see Changing Ports to be Proxied, **Chapter 5: Advanced Configuration**.

>> *Configuring the Chassis Switch*

Any of the four switch tabbed forms allows you to configure the connection for the chassis switch(es). Unless you have enabled the switch connection from the Switch tabbed form (up to four switches), the system will not allow you to add or configure the switch console.

1. From the menu, go to **Devices** > **Details** > **Groups**> **Switch 1**.

The system displays the **Devices - Switch 1** tabbed form:



2. Complete the **Switch 1** form, as necessary.

Table 4-5: Devices, Switch 1 Form - Fields and Elements

Fieldname	Definition
Switch 1 (tab)	Currently selected tabbed form.
IP Address	The IP address of the chassis module using IP mode: **int_dhcp** or **static**.
Type	The symbolic name linked to the chassis switch. IBM Blade Center is the only supported type of chassis.
Admin Name	The admin username (superuser) of the device.
Admin Password	Button to invoke a dialog box used to define the Admin's password. This password is used to access the IBM Blade Center port, but NOT to change the password. You must enter the SAME password registered in the blade server.

Table 4-5: Devices, Switch 1 Form - Fields and Elements

Fieldname	Definition
Status	Dropdown list box to select: Enable - connection between the BladeManager and the device is ALWAYS established. Disable - no connection is established, and all child consoles follow this configuration. IMPORTANT: The system will not allow you to add or configure a switch console unless this field is set to **Enable**.
Netmask	As indicated, in dotted notation.
IP Mode	Dropdown list box. Select **int_dhcp** if the BladeManager is the DHCP server for this device, or **Static** if using a static IP. *See **Configuring Your DHCP Server**, this chapter.*
MAC Address	This address is required ONLY if the IP mode is DHCP.
Default Gateway	As indicated, in dotted notation.
DNS	As indicated, in dotted notation.
Back	Button to return to the previous page.
Reset	Button to reset the form.
Save	Button to save your configuration.
Save / Create Blades	Button to activate the Blade Wizard.

Two Methods of Blade Configuration

Once the chassis has been defined and configured, there are two ways to configure the blades and switches:

- Through the Blade Wizard
- Through the **Consoles** form

>> Running the Blade Wizard

The Blade Wizard is designed to help you configure and automatically generate blades/switches for the current chassis. The wizard comprises a series of interactive screens or forms in which the system prompts you for input until it receives all the necessary information for configuring the blades and switches. Based on your input, the The wizard automatically generates and saves the consoles and switches.

1. To activate the Blade Wizard, click on the **Save/Create Blades** button from any of the Device forms.

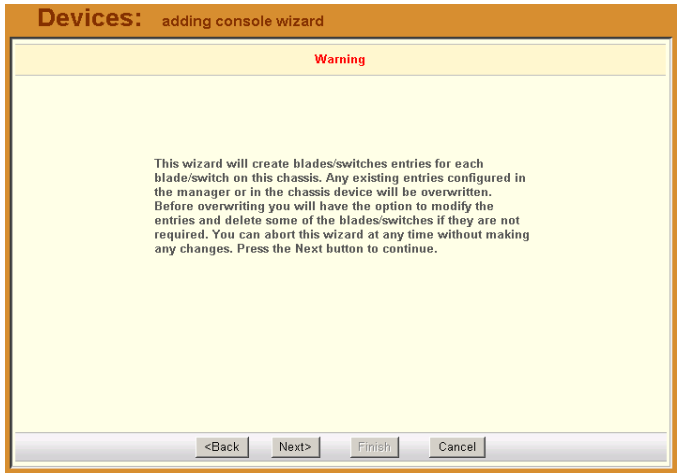
   The series of screens comprising the Blade Wizard are as follows:

Table 4-6: Summary of Blade Wizard Forms

Screen/Form Name	Function
Warning	Warns the users that existing entries for chassis/ blades in the BladeManager or chassis device will be overwritten.
Connection Method	Sets the default connection protocol for the blades or switches.
User Access, Notification & Groups	These three tabbed forms define who can access the blades/switches, the user(s) to be notified, the authorized group(s).
Console (blade/switch) selection.	Allows you to select each blade/switch to be configured from the list of unconfigured blades/ switches.
Edit Configuration	Allows you to edit any of the configured blades/ switches. This form provides advanced configuration options.
Confirmation	Prompts you to review and confirm the configuration.
Completion	Message to indicate successful completion.

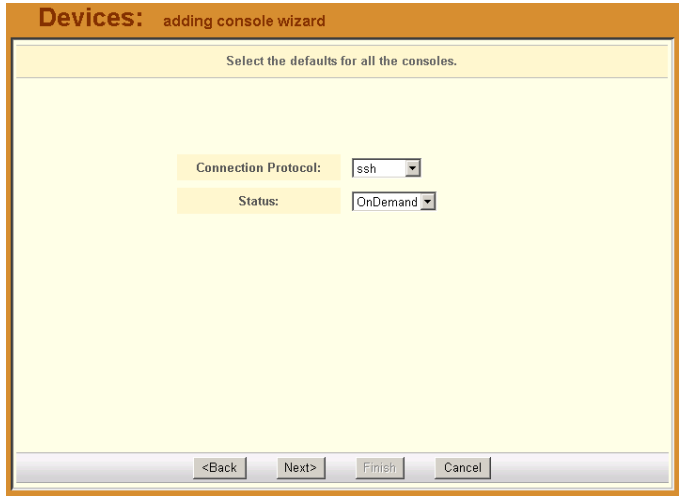
The Blade Wizard forms are as follows:

1. **Warning Message**: The Console Wizard begins with a warning message to notify you of any data to be overwritten and the choices you have before going ahead with the wizard.



Note: Use the **Back**, **Next**, and **Cancel** buttons to navigate through the forms. Pressing the **Next** button saves your current form settings.

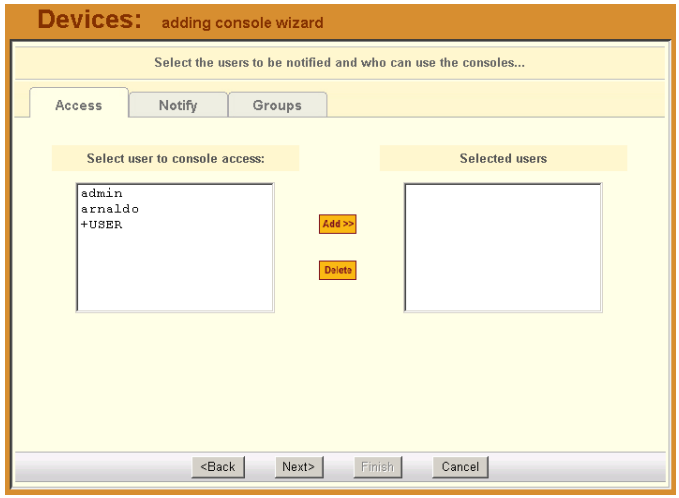
2. **Connection Method**:



Select the **Connection Protocol** and **Status**, and then click on **Next**.

Note: The default Connection Protocol is **Telnet**.

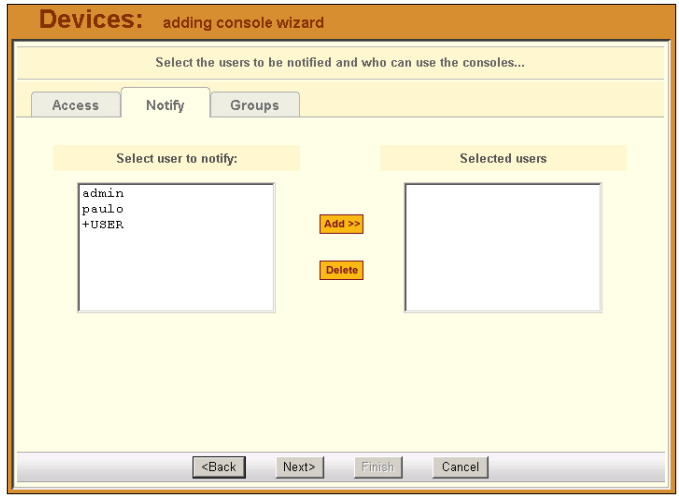
3. (User) **Access**:



+USER is the default list to which all users belong.

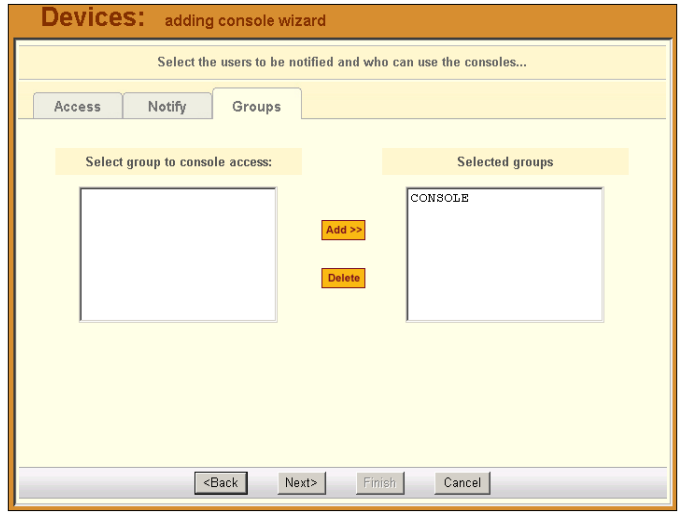
The system also adds a plus (+) sign to any added user group that appears in the selection box. Follow the instructions for the User Access form and then click on the **Notify** tab to proceed to the user notification form.

4. (User) **Notify**:



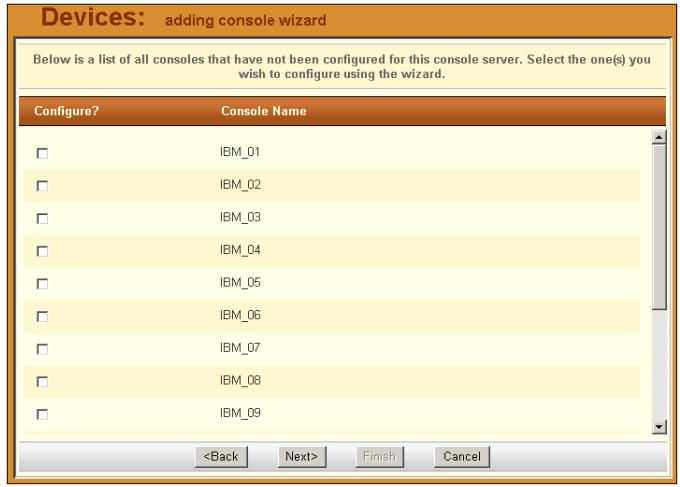
From the User Notification form, select the user(s) you wish to be notified and then select the Groups tab to display the Groups form.

5. **Groups**:



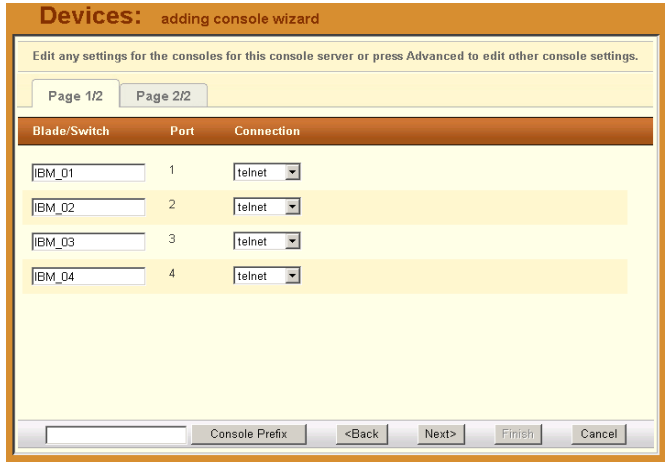
Complete the Groups form, as necessary, and then select the **Next** button to display the Unconfigured Consoles form.

6. **Unconfigured Consoles**:



Select the check box for each unconfigured console that you wish to configure, and then select the **Next** button to display the Edit Configuration form.

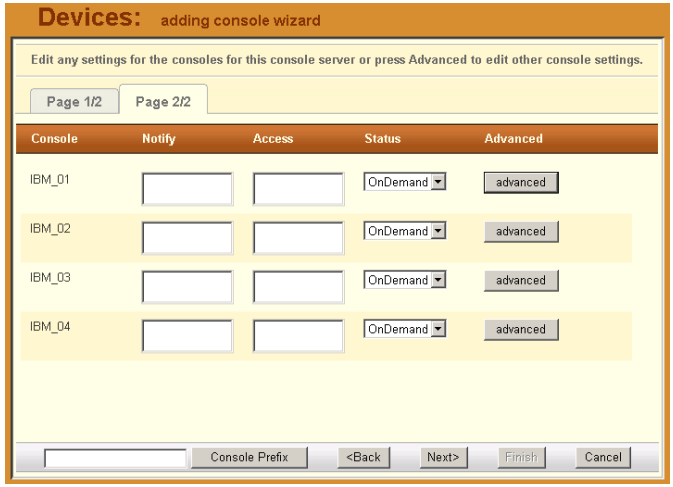
7. **Edit Configuration**:



From the Edit Settings form, verify your settiings and modify as necessary. Click on the second tab (**Page 2/2**) to continue the same form.

Note: If you need to change the prefix of the console names, type in the new prefix in the **Console Prefix** field and then click on the **Console Prefix** button. The system applies the new prefix to all console names.

8. **Confirmation**:



Check your console settings from the Confirm Edits form (the second tabbed form included). If information is incorrect, select the **Back** button

and repeat Edit Configuration and Confirmation, otherwise select the **Finish** button.

Configuring Blades Manually through the Menu

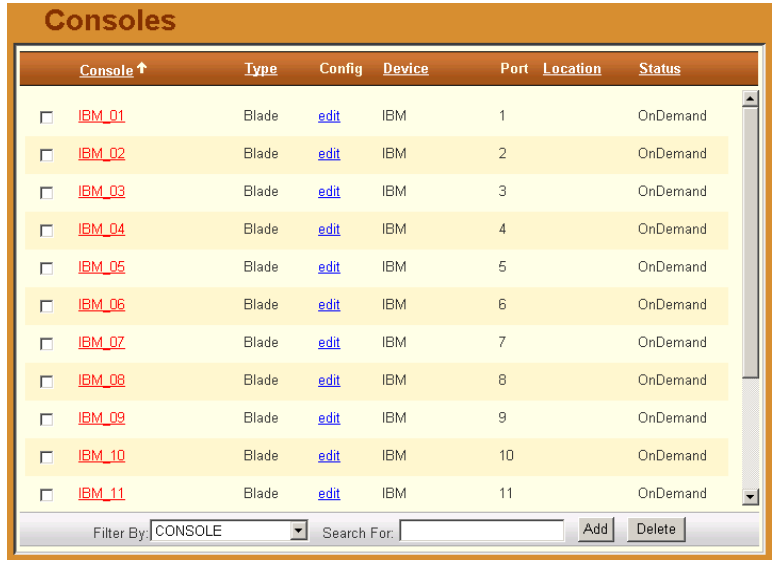
The other method for configuring blades and switches is to manually complete the forms that compose the **Chassis** option of the menu.

Consoles List Form

The Consoles list form (shown below) displays all the blades and switches configured and supported by the BladeManager.

The form allows you to:

- Connect to a blade/Switch - When you move your cursor to the blade or switch name, a pop-up window displays options to provide you the following connection types: KVM/net, VM, CLI (Command Line Interface), and Power On/Off. (These options are configured from the Security Profile which is associated with the User and Group.)
- Add a new server blade/switch by selecting the **Add** button.
- Edit a blade/switch configuration by clicking on edit to invoke the Consoles Detail form.



See the Consoles section to view the Consoles Detail form, including **Access**, **Notify**, and **Groups**.

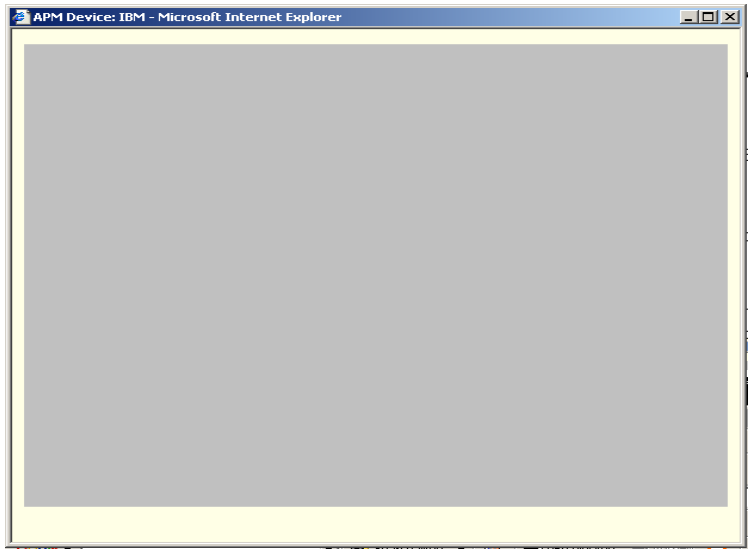
>> Connecting to a Device

To connect to a device, follow the steps below:

1. From the Device List form, click on the device name to which you wish to connect.

   If the Proxy for this device is enabled, then you should have the option to connect to CLI or Web when you click on the device name.

   In the example below, CLI was selected:



>> Deleting a Device

To delete (or disconnect) a device from the BladeManager, follow the steps below:

1. From the Device List form, select any device you wish to delete by clicking on the checkbox adjacent to the Device name.
2. Select the **Delete** button.

>> Deleting a Device from a Group

The proper way to delete a chassis, blade or switch from a group is to edit the group from which they belong. To delete a device from one or more groups, follows the steps below:

1. From the menu panel, select **Devices**.

   The system displays the Device List form.

2. Under the Config column of the Console List form, click on the **Edit** link of the device you wish to remove from a group.

   The system displays the Device Detail form for the selected device.

3. From the Device Detail form, click on **Groups**.

   The system displays the Device Group form.

4. From the **Selected Groups** view panel of the Console Group form, select the group or groups from which you wish to remove the current device.

5. Click on the **Delete** button.

6. Click on the **Save** button to complete the procedure.

Deleting a Device Group

You cannot delete a device group using the Device Group form. To delete a device group, select **Groups** from the menu and refer to the Groups section of this chapter.

Alarm Trigger

Note: Alarm triggers work only with Blades and Switches.

An alarm trigger is a text string that you can create to generate any one or combination of the following:

- Email notification for users or administrators
- Alarm

Alarm Trigger Management

Use the Alarm Trigger forms to perform the following Alarm Trigger configuration procedures:

Table 4-7: Summary of Alarm Trigger Forms

Form Function	Form(s) Used
Add a new trigger string.	Alarm Trigger list form (**Add** button) > Alarm Trigger detail form.
Edit an alarm trigger.	Alarm Trigger list form (**Alarm Trigger** name) > Alarm Trigger detail form.
Delete an alarm trigger.	Alarm Trigger list form (**Delete** button).
Create an alarm for the trigger string and prioritize the alarm.	Alarm Trigger detail form (Input fields: **Create Alarm** and **Priority**).
Create notification events (email list).	Alarm Trigger detail form (input field: **Notify**).
Assign one or more user to receive an email or alarm.	Console Detail form (Notify button). Go to: **Consoles**: Console List > Console Detail.
Define or verify the email address used when a user is notified of an event.	Users List form > Users Detail form

Note: *Users who use the application in Access Mode also have the capability to change their email address through the User Profile form.*

>> Viewing the Alarm Trigger List

The Alarm Trigger List form allows you to view all the alarm triggers configured for the BladeManager as well as to create, edit, and delete alarm triggers from the list.

To view the Alarm Trigger List form, follows the steps below:

1. From the menu, select Alarm Trigger.

The system displays the Alarm Trigger list form:

For an explanation of each fieldname, refer to the *Form Fieldnames and Elements* of the Alarm Trigger Detail form, next form section.

To view or edit the configuration of an alarm trigger, click on the alarm trigger name.

>> Creating an Alarm Trigger

Use the Alarm Trigger Detail form to define triggers to generate user notifications and alarms.

To create an alarm trigger, follows the steps below:

1. From the menu, select Alarm Trigger.

   The system displays the Alarm Trigger List form.

2. From the Alarm Trigger List form, click on the **Add** button.

The system displays the Alarm Trigger Detail form:

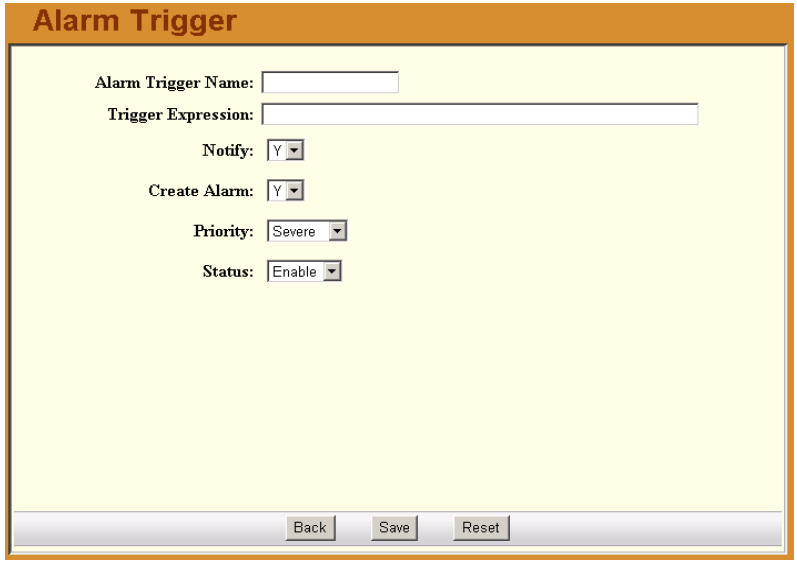


Table 4-8: Alarm Trigger Form - Fieldnames and Elements

Field Name	Definition
Alarm Trigger Name	Name of the trigger. Selecting a trigger name invokes the Alarm Trigger Detail form for that trigger.
Trigger Expression	String used to generate a trigger.
Notify	Yes or No. Indicates if system needs to notify (*i.e.*, send an email to) the user.
Create Alarm	Yes or No. Indicates if system needs to send an alarm to the user.
Priority	Indicates the priority or severity level of the alarm.
Status	Enable or disable a trigger.
Back	Button to return to the previous page or form.

Table 4-8: Alarm Trigger Form - Fieldnames and Elements

Field Name	Definition
Save	Button to save your trigger entry.
Reset	Button to reset the form to create a new trigger entry.

3. Complete the fields, as necessary.
4. Click on **Save** to complete the procedure.

>> Deleting an Alarm Trigger

1. From the main Alarm Trigger form, select the triggers to be deleted by clicking the check boxes to the left of each Alarm Trigger name.
2. Click on the **Delete** button.

Using the Logical AND in the Alarm Trigger Expression

To create a logical AND in the alarm trigger expression, use the period and asterisk: **.***

The alarm trigger is also capable of processing substrings. OK, for example, is a substring of NOK. Therefore, both types of messages will cause alarms if **.*OK** is appended to the HeaLth_MoNiToR trigger string.

Blades / Switches

The Blades/Switches option allows you to configure the following:

Table 4-9: Summary of Blade/Switch Forms and their Functions

Form Function	Form(s) Used
Add a new blade or switch to connect to the BladeManager and for user access.	Console List (**Add** button) > Select Console Type > Consoles detail.
Select or change the authentication method for console access.	Console Detail form (Input field: **Authentication**). NOTE: The BladeManager authenticates users from the console server.

Table 4-9: Summary of Blade/Switch Forms and their Functions

Form Function	Form(s) Used
Assign the current blade or switch to any number of users.	Console Detail form (**Access** button) > Console Access form.
Select the users to be notified of any alarms from the current console.	Console detail form (**Notify** button) > Console Notify form.
Edit a console.	Console List form (edit link under the Config column) > Console detail form.
Delete console.	Console List form (**Delete** button).
Assign or remove console(s) from the console group.	Console Detail form (**Groups** button) > Console Groups.
Search, sort, and save list.	Console List form.

Consoles List Form

Blades and switches are accessed from the Console form as consoles. The Console List form shows one console name for each blade or switch. When you move your cursor over the blade or switch name, a pop-up window displays options to provide you the following connection types:

Connection Type	Applies to:	Use this connection to:
CLI	Blade servers and switches.	Launch a CLI session using either Telnet or SSH. NOTE: Power control is available through ^ec sequence.
KVM	Blade servers only	Launch the remote console applet session for KVM.

Connection Type	Applies to:	Use this connection to:
VM	Blade servers only	Launch the remote console applet and remote disk of the currently selected blade server.
ON	Blade servers only	Power on the blade server.
OFF	Blade servers only	Power off the blade server.
Web	Switches only	Launch the web application.

A user's access to the blades switches and connection types are based on the user's **Security Profile**.

If you choose not to use the Console Wizard (**Devices**: Device List > Device Detail), then you can add consoles attached to the added device using the Console List and Console Detail forms.

Use the Console Detail form to define in detail a target console, to select users to receive alarm notifications pertaining to the console, and to select users to have authorized access to the console.

Data buffering, data logging, and event notification are valid definitions only for consoles with permanent connections (*i.e.*, data status is enabled).

>> *Viewing the Console List*

To view the Console List form, perform the following steps:

1. From the menu panel, select Consoles.

The system displays the Console List form:

From the Console List form, you can add, edit, or delete a console by selecting the appropriate button or link.

>> Adding a Serial Console

This procedure uses the serial console as an example of the console type to be created. Depending on the type of console, there will be variations in the Console Detail form, but the procedure for adding a console for all types of console is the same.

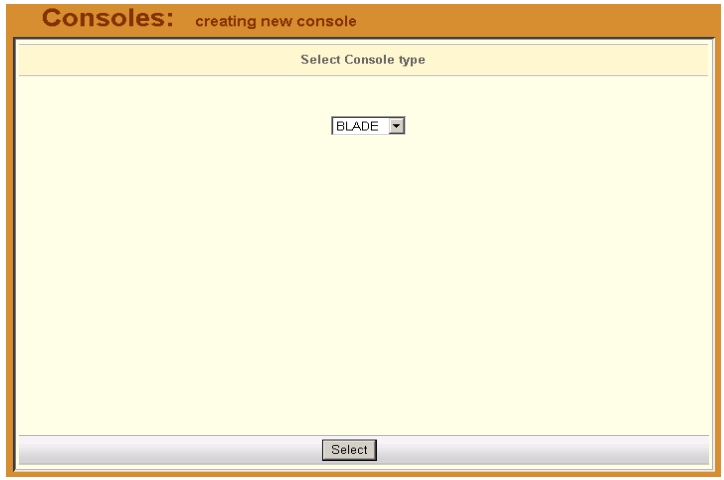
To add a console, follow the steps below:

1. From the menu, select **Consoles**.

   The system displays the Console List form.

2. From the Console List form, click on the **Add** button.

The system displays the Select Console Type form:



3. From the Select Console Type form, select the type of console (Blade or Switch) you wish to add.

   The system displays the Console **Details** form:

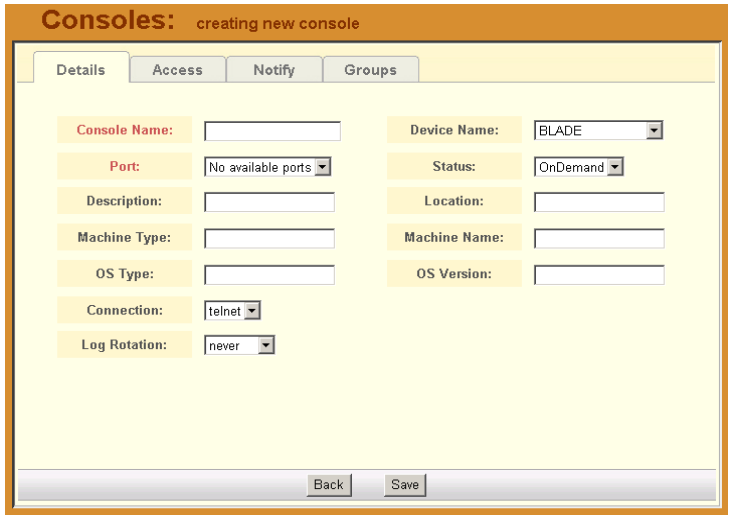


Table 4-10: Consoles Detail Form - Fieldnames and Elements

Fieldname	Definition
Details	Tab to display the Console Detail form which is the currently displayed form.
Notify	Tab to display the Console Notify form used to assign users to be notified when an alarm pertaining to the current console or device occurs.
Access	Tab to display the Console Access form used to assign or authorize users to access the current console.
Groups	Tab to display the Select Console Group form used to assign the current console to one or more console groups.
Console Name	*Required*. Name of the console
Device Name	(Drop down list.) Console server to which the current console is connected.
Port	Port on the console server when the console is connected. If you were configuring a switch console, the port number (e.g., SW_1) corresponds to the switch number (up to four).
Description	Brief description of the console.
Location	Physical location of the console.
Machine Type	Type of machine connected to the console.
Machine Name	Name of machine connected to the console.
OS Type	Type of operating system.
OS Version	Version of operating system.
Connection	Drop down list. Method used to establish a console connection: SSH, Socket, or Telnet.

Table 4-10: Consoles Detail Form - Fieldnames and Elements

Fieldname	Definition
Status	Drop down list. Enable, Disable, OnDemand.
Log Rotation	Frequency of the automatic log rotation process (Never, Daily, Weekly, Monthly).
Back	Button to revert to the last page or form.
Save	Button to save the configuration.
Logrotate Now	This field appears only if you selected **Edit** instead of the **New** button from the Console List form. Use this button to close and compress the console buffer log file, and to open a new file to receive new log entries. This operation overrides the Log Rotation automatic setting.

4. Complete the Console Detail form, as necessary.
5. Click on **Save** to complete the procedure.

Adding a Switch Console

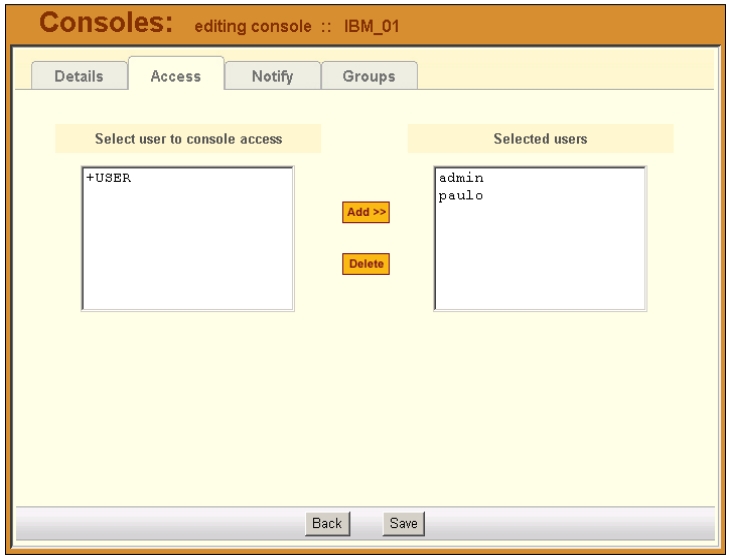
Adding a switch console follows the same procedure, except you have to select **Switch** when the system prompts for the console type. Be sure that you have set the switch to **Enable** (go to Chassis > Switch) in the switch device form otherwise you will receive an error message.

>> Selecting Users to Access the Console

Use the Console Access form to assign and authorized one or more users to access the current blade console.

1. From the Console Detail form (**Consoles**: Console List > Console Detail), click on the **Access** button.

The system displays the Console Access form:



2. From the resulting form, select a user from the **Select User to Console Access** view panel.

   In the selection box, **+USER** is the default list which contains all users. The plus (+) sign is also used to indicate all defined groups.

3. Select the **Add** button.

   The system transfers the selected user to the **Selected Users** view panel on the right.

4. To select another user, repeat steps 1 and 2. You can also use the <Shift> key to select multiple users.

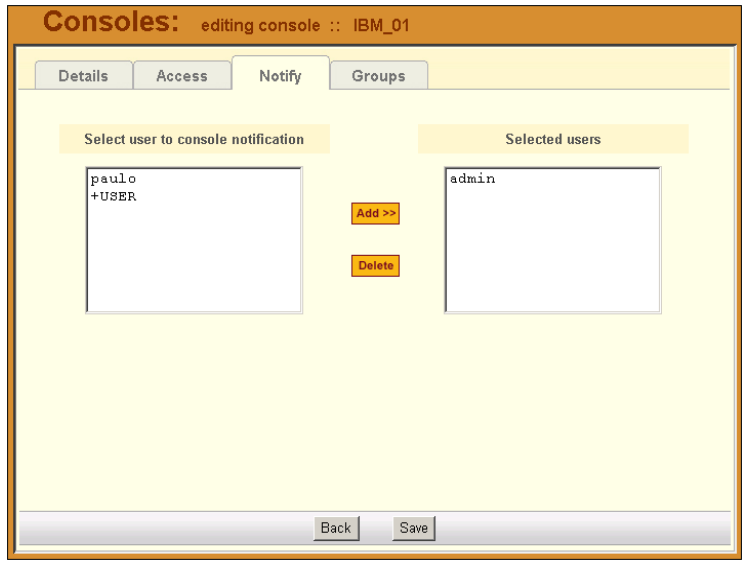
5. Click on **Save** to complete the procedure.

>> Selecting Users to be Notified

Use the Console Notify form to assign one or more users to whom the system can send all notifications (email or alarm) pertaining to the current console.

1. From the Console Detail form (**Consoles**: Console List > Console Detail), click on the **Notify** button.

The system displays the Console Notify form:



2. From the resulting form, select a user from the **Select User to Notify** view panel.

   In the selection box, **+USER** is the default list which contains all users. The plus (+) sign is also used to indicate all defined groups.

3. Select the **Add** button.

   The system transfers the selected user to the **Selected Users** view panel on the right.

4. To select another user, repeat steps 1 and 2. You can also use the <Shift> key to select multiple users.

5. Click on **Save** to complete the procedure.

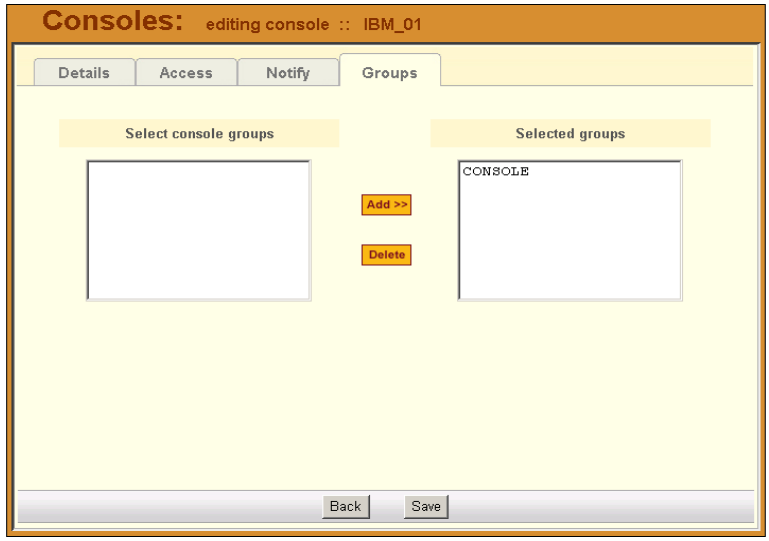
>> Assigning the Console to a Group

You can assign the current console to one or more groups using the Console Groups form. To use this form, however, a console group must already exist. To create a new group, you must select **Groups** from the main menu.

To assign a console to a group, follow the steps below:

1. From the Console Detail form (**Consoles**: Console List > Console Detail), click on the **Groups** button.

The system displays the Console Groups form:



2. From the resulting form, select a group from the **Select Console Groups** view panel.

Note: As with USER, CONSOLE is the default list which contains all consoles.

3. Select the **Add** button.

   The system transfers the selected group to the **Selected Groups** view panel on the right.

4. To select another group, repeat steps 1 and 2. You can also use the <Shift> key to select multiple groups.

5. Click on **Save** to complete the procedure.

>> Deleting a Console from a Group

To delete a Console from one or more groups, follows the steps below:

1. From the menu panel, select **Consoles**.

   The system displays the Console List form.

2. Under the Config column of the Console List form, click on the **Edit** link of the Console you wish to remove from a group.

The system displays the Console Detail form.

3. From the Console Detail form, click on Groups.

   The system displays the Console Group form.

4. From the Selected Groups view panel of the Console Group form, select the group or groups from which you wish to remove the current console.
5. Click on the **Delete** button.
6. Click on the **Save** button to end the procedure.

Deleting a Console Group

You cannot delete a console group from the Console Group form. To delete a console group or any group, you must select **Groups** from the menu.

See the **Groups** section of this chapter.

>> Connecting to a Console

To connect to a console using Secure Shell (SSH), follow the following step:

1. From the Console List form, select the console you wish to connect to by selecting the console name.

Log Rotation

Periodically, the system automatically compresses the file and then creates a new file to collect a new set of console data. The file rotation is seamless with no data loss as the system copies from one file to another.

As administrator, you have the option to manually compress the log file, archive it, and then open a new file to accept new logs.

>> Initiating Log Rotation

To initiate the log rotation perform the following steps:

1. From the Console List form, select the console for the particular console log you wish to rotate.

   The system displays the Console Detail form.

2. From the Console Detail form, click **Logrotate Now**.

>> Setting Log Rotation in Auto Mode

You can also set the log rotation to be automatically performed on a daily, weekly, or monthly basis. To set the system to automatically initiate log rotation on a regular basis, perform the following steps:

1. From the Consoles form, select the console (for the particular console log you wish to rotate) to view the Console Detail form.
2. From the **Log Rotation** field of the Console Detail form, select the frequency (daily, weekly, or monthly) of the log rotation.
3. Click on **Save**.

Users

The Users option provides forms that enable the following user management tasks:

Table 4-11: Summary of Users Forms

Form Function	Form(s) Used
Add a new user.	User list (**Add** button) > User detail.
Authorize the current user to access one or more consoles.	User detail (**Access** button) > User Access form.
View or edit user information	User list (username link) > User detail.
Set or change a user password.	User detail (**Set Password** button).
Define user as an administrator.	User detail (**Admin User** checkbox).
Assign a user to one or more groups.	User detail (**Groups** button) > User Groups form.
Delete a user.	User list (Delete button).
Search, sort, and save list	User list.

Important: Regardless of the authentication type (remote, local or none), any user who will use the BladeManager application MUST be entered in the BladeManager database in order to access the application.

User List form

Use the User List form to view all BladeManager system administrators and regular users. The list includes information about each user (*e.g.*, Name, Location, Phone) which you define in the User Detail form.

Any user who will use the BladeManager application *must* be entered in the BladeManager database in order to access the application, regardless of whether you are using any other authentication services or not. RADIUS users, for example, must still be registered in the BladeManager database through the User Detail form:

Below is the User List form:

For an explanation of field column, refer to the *Fieldnames and Elements* of the User Detail form in the next form section.

>> Adding a User

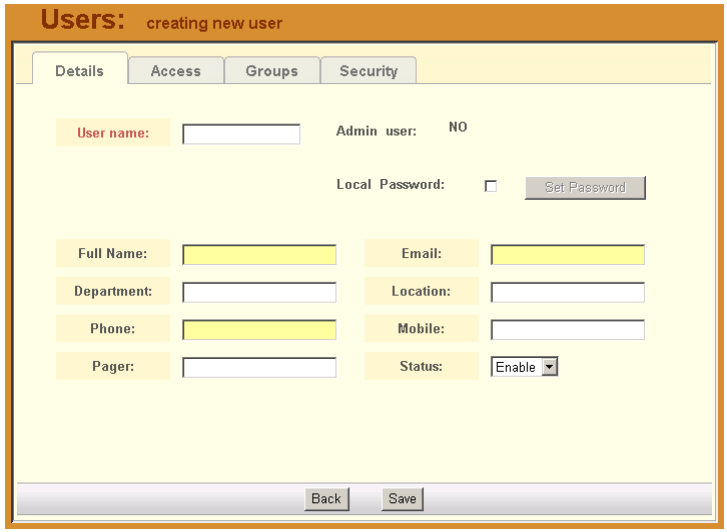
To add a new user, perform the following steps:

1. From the menu, select **Users**.

   The system displays the User List form.

2. From the User List form, click on the Add button.

   The system displays the User Detail form:



3. Complete the User Detail form, as necessary.

Table 4-12: Users, Details Form - Fieldnames and Elements

Fieldnames	Definition
Details	Button to display the User Detail form (which is the currently displayed form).
Access	Click this button to select the console(s) for the current user.
Groups	Click this button to assign or re-assign the current user to one or more user groups.
Username	As indicated.
Admin User	Checkbox to indicate if the user is an admin and to authorize user access to the web application in *admin* mode.

Table 4-12: Users, Details Form - Fieldnames and Elements

Fieldnames	Definition
Local Password	Checkbox to enable local authentication for the user. *NOTE: Even if you are using another server authentication (e.g., LDAP, RADIUS), it is advisable that you activate the password for local authentication in the event that your authentication server fails*.
Set Password	Button to display the password dialog box for setting the user password.
Full Name	The full name of the user.
Email	As indicated. This field is also used by the Alarm Trigger to notify the user of any event or issue relating to consoles and other system areas delegated to the user.
Department	The department to which the user belongs.
Location	The physical location of the user or department.
Phone	The phone number of the user.
Mobile	As indicated.
Pager	As indicated.
Status	Status of the user. Select **enable** or **disable**.
Back	Button to return to the previous page or form.
Save	Button to save the configuration.

4. Click on **Save** to complete the procedure.

>> Selecting Consoles for a User

The User Access form allows you to assign one or more consoles for the current user.

To assign consoles to a user, follow the steps below:

1. From the menu, select **Users**.

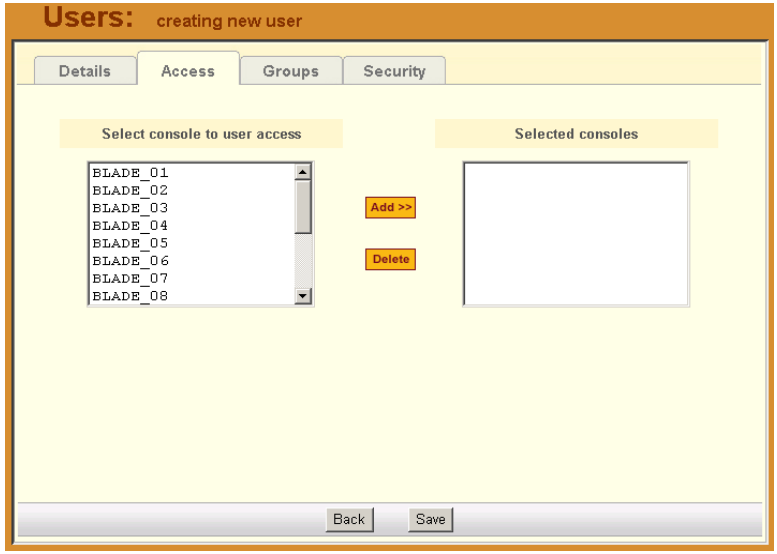
   The system displays the User List form.

2. From the User List form, select the user to whom you wish to assign console access.

   The system displays the User Detail form.

3. From the User Detail form, click on the **Access** button.

   The system displays the User Access form:



4. From the resulting form, select from the **Select Console to User Access** view panel the console you wish to assign to the user.

   In the selection box, the plus (+) sign is used to indicate defined groups. The Console (or +CONSOLE) group is the default console group.

5. Select the **Add** button.

   The system transfers the selected group to the **Selected Consoles** view panel on the right.

6. To select another console, repeat steps 4 and 5. You can also use the <Shift> key to select multiple groups.
7. Click on **Save** to complete the procedure.

>> Selecting User Group(s) for a User

The User Group form allows you to assign a user to one or more user groups. The user group, however, must already exist to be able to assign a user to the user group. Otherwise, select **Groups** from the menu to create a user group.

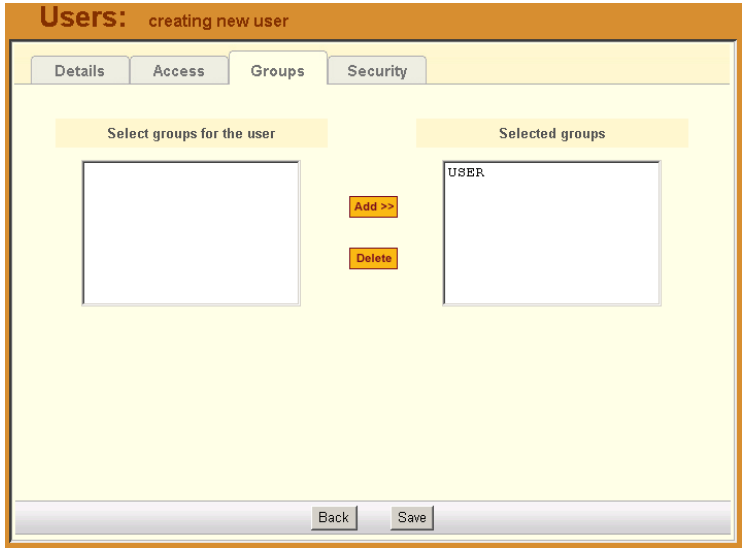
To assign a user to one or more groups, follow the steps below:

1. From the menu, select **Users**.

   The system displays the User List form.
2. From the User List form, select the user to whom you wish to assign one or more groups.

   The system displays the User Detail form.
3. From the User Detail form, click on Groups.

   The system displays the User Groups form:



4. From the resulting form, select from the **Select Groups for the User** view panel the group you wish to assign to the user.

5. Select the **Add** button.

   The system transfers the selected group to the **Selected Groups** view panel on the right.

6. To select another user group, repeat steps 4 and 5. You can also use the <Shift> key to select multiple user groups.

7. Click on **Save** to complete the procedure.

>> Deleting a User

To delete one or more users from the User List, follow the steps below:

1. From the User List form, click the check box to the left of the username that you wish to delete.

2. Click on **Delete**.

>> Deleting a User from a Group

To delete a user from one or more groups, follows the steps below:

1. From the menu panel, select **Users**.

   The system displays the User List form.

2. From the User List form, click on the user name you wish to remove from a group.

   The system displays the User Detail form for the selected user.

3. From the User Detail form, click on Groups.

   The system displays the User Group form.

4. From the **Selected Groups** view panel of the User Group form, select the group or groups from which you wish to remove the current user.

5. Click on the **Delete** button.

   Click on the **Save** button to end the procedure.

Deleting a User Group

You cannot delete a user group from the User Group form.

To delete a user group, see the **Groups** section of this chapter.

Setting the Local Password

You can set up users to have local authentication by setting the Local Password, and defining the user name and password.

A local password is used if the authentication setting for the BladeManager is **Local**. The local password is also used as a backup when server-based authentication is being used. In this case, if the authentication server is unavailable due to network problems then the system can use the local password. It is therefore advisable that you set a local password for some users even when server-based authentication is being used.

>> Setting Up Local Authentication

To set up local authentication for a user, follow the following steps:

1. From the User List form, select the user for whom you will set a password.

   The system will bring up the definition form for that user.

2. If a password has not been set up, from the User Definition form, select set password.

   System brings up the Password dialog box.

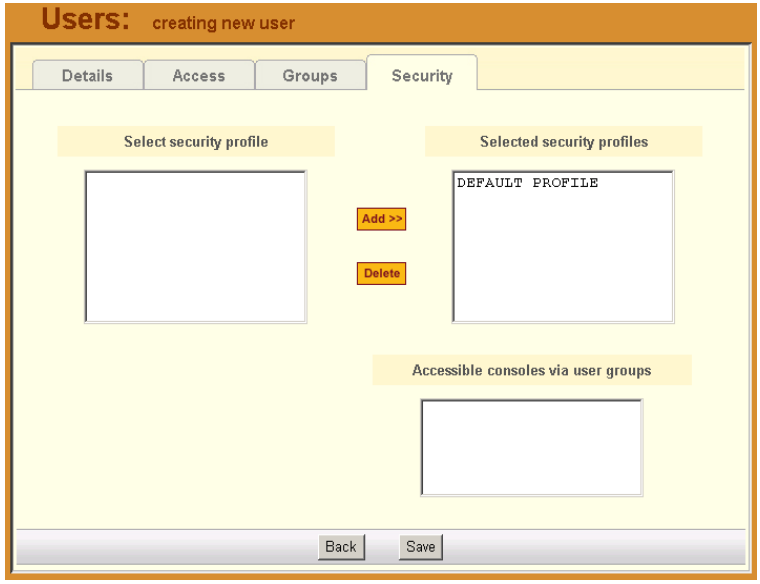
3. From the password dialog box, enter the password twice, and then click **Submit**.

4. From the User Definition form, click on the **Local Password** check box.

5. From the User Definition form, click **Save**.

>> Setting a User's Security Profile

The **Security** tabbed form of the User's Profile allows you to assign/delete a security profile to/from a user.



Groups

The **Groups** option allows you to create new groups of users, consoles, or devices, as well as to edit or delete these groups. The BladeManager has three default groups:

- Device
- Console
- User

The system does not allow you to edit or delete these groups. You can edit and delete only those groups that you have created.

>> Creating a Group

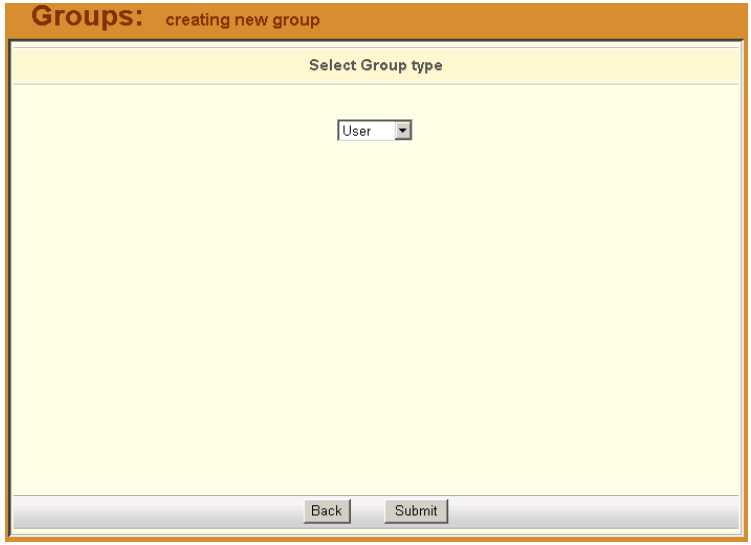
To create a new group, follows the steps below:

1. From the menu, select **Groups**.

The system displays the Group List form:

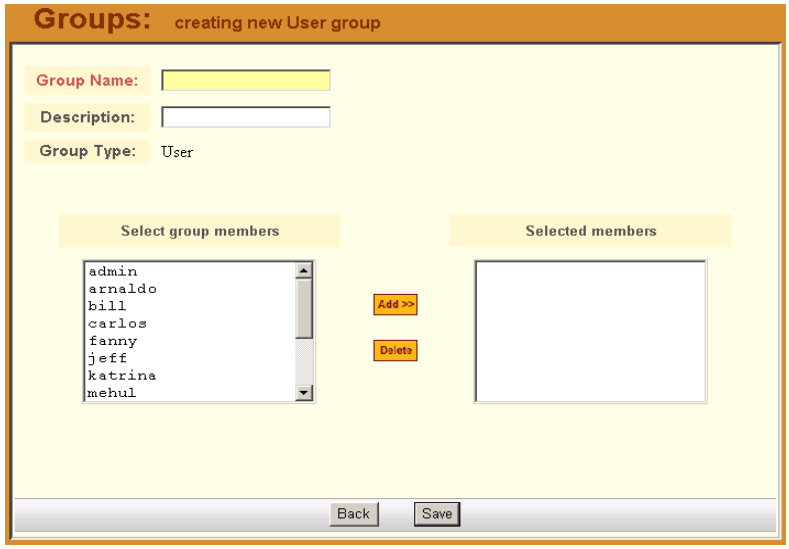
2. From the Group List form, click on the **Add** button.

   The system displays the Adding Group form:



3. From the resulting form, select the group type you wish to create (**Device**, **Console**, or **User**).

Based on your selection, the system displays the Group Detail form. The example below uses the Group Detail form for the Group Type, User:



4. Enter the Group Name and Description of the new group.
5. Click on **Save** to complete the procedure.

>> Deleting a Group

Note: *You cannot delete the following system-generated, default groups: Device, Console, and User.*

To delete a group, follow the steps below:

1. From the menu, select **Groups**.

   The system displays the Group List form.

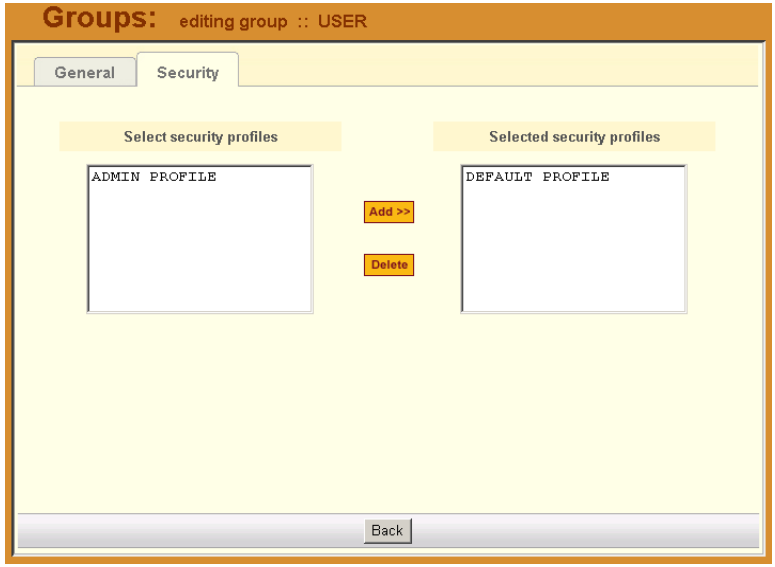
2. From the Group List form, click on the checkbox of the group that you wish to delete.
3. Click on **Delete**.

>> Assigning a Security Profile to a User Group

The User Group includes an additional tab, Security, which allows you to assign one or more Security Profiles to the current user group.

To assign a Security Profile:

1. Select the security profile from the Select Security Profile box and then click on the **Add** button.



Security Profiles

A security profile defines a set of rules or conditions regarding a user's access permissions and limits for accessing the BladeManager and its features. The **Security Profiles** feature allows the administrator to centrally create these rules for as many profiles as necessary. Each time a user requests a page, the system checks the security profile.

Security Profiles deal with IP filtering, VLAN restriction, time and date restrictions, and authorization rules that are applied to each user. The default rule of security profiles is **Deny**.

You can apply security profiles to users and user groups. The **Default Profile** is the profile of the default group, **User**. Whatever condition(s) you configure in the Default Profile is automatically applied to all users except Admin users. This profile cannot be deleted.

Note: To configure users and user groups, go to **Users** > **Groups**.

The Default Profile already allows users to log on. You may change it to block connections by default and then allow the valid users. If the chosen rule is Allow, you must select at least one action from the Authorization tab.

Security profile management is composed of the following forms:

Table 4-13: Summary of Security Profiles Forms

Form Title	Use this form to:
Security Profiles list form	View a list of available profiles along with the description, status, and default rule of each profile.
General tabbed form	Enter the security profile name, description, status (**Enabled**, **Disabled** or **Deleted**) and rule (**Allow** or **Deny**).
Source IP tabbed form	Enter the client workstation IP addresses from which you may allow a user to connect.
LAN ITF tabbed form	Enter the LAN interfaces and subnets to which you may allow a user to connect.
Date/Time tabbed form	Enter the date and time in which the user can access the system.
Authorization tabbed form	Define the specific authorized action (*e.g.*, Connect to a console, connect to a KVM/net, Connect to the web management interface, *etc*) for this profile.

Security Profile List

The Security Profile List form displays a list of all Security Profiles that you can assign to a user or user group. The list contains four columns:

Column Name	Definition
Profile Name	The name of the profile and, if applicable, the source IPs allowed for this profile.
Description	A brief description of the profile and, if applicable, the interfaces and the date/time allowed for this profile.

Column Name	Definition
Status	States if the profile is **enabled** or **disabled**; if appicable, lists all authorized actions for the current profile.
Rule	States whether the rule is to **allow** or **deny**.

>> *Adding or Editing a Security Profile*

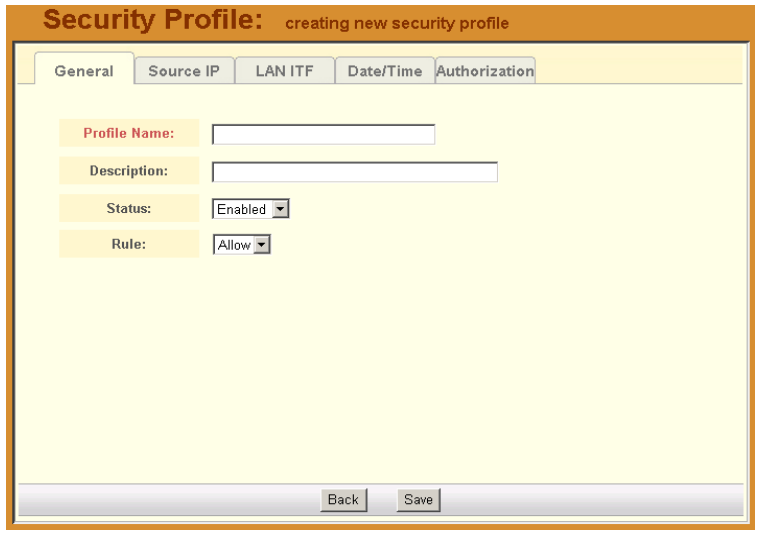
To add or edit a security profile, perform the following steps:

1. From the menu select Security Profile.

   The system displays the Security Profile list form (see previous page).

2. Select the **Add** button to add, or select an existing profile to edit.

The system displays the **Security Profiles - General** tabbed form:



3. From the **General** tabbed form, enter the profile name (required), a brief description of the profile, its status (Enabled, Disabled, Deleted), and the rule to be applied to the entire profile (Allow or Deny).
4. Click on **Save**.

>> Security Profiles: Source IP

1. Click on the **Source IP** tab to configure the conditions for accepting source pages for the current profile.

The system displays the **Source IP** tabbed form:

2. Complete or modify the form, as needed.

Table 4-14: Security Profiles, Source IP - Fieldnames and Elements

Field Name	Function
Source IP (tab)	Title of the current tabbed form.
Rule	The configured policy (Allow or Deny) that applies to the entire security profile. The default rule is configured from the **General** tabbed form.
Add Source IP Conditions	This section allows you to define the Source IP that will be used as the conditions for applying it to the rule.
IP	The IP address to be added to the Added Source IP Conditions list box.
Netmask	The netmask to be added to the Added Source IP Conditions list.

Table 4-14: Security Profiles, Source IP - Fieldnames and Elements

Field Name	Function
Add	Button to add to the conditions list the address you just entered in the IP or Netmask field.
Delete	Button to delete a selected IP address from the adjacent Source IP Conditions list box.
Added Source IP Conditions	List of source IP addresses to be applied to the rule.
Back	Button to return to the previous page.
Save	Button to save your configuration.

3. Click on **Save**.

>> Security Profiles: LAN ITF

The LAN ITF (Local Area Network Interfaces) tabbed form allows you to define the interfaces to which a user is either allowed to connect, or denied access. This feature is designed for situations where multiple network or LAN segments are used or defined.

Table 4-15: Security Profiles, VLAN/Subnet - Fieldnames and Elements

Field Name	Function
LAN ITF (tab)	Tab title to select the current form.
Rule	The configured policy (Allow or Deny) that applies to the current form and the entire security profile. The default rule is configured from the **General** tabbed form.
Select LAN ITF Conditions	List box that lists all LAN interfaces. Select the LAN interface(s) that will be applied to the rule.
Add	Button to select items from the **Select LAN ITF Conditions** (left box) and add to the **Selected LAN ITF Conditions** list box (right box).

Table 4-15: Security Profiles, VLAN/Subnet - Fieldnames and Elements

Field Name	Function
Delete	Button to remove any selected LAN ITF conditions from the right list box.
Selected LAN ITF Conditions	List of selected LAN ITF conditions that will be applied by the rule to the policy.
Back	Button to return to the previous page.
Save	Button to save your configuration.

>> Security Profile: Date/Time

The **Date/Time** tabbed form allows you to specify the time in which the profile will allow or deny access to the system.

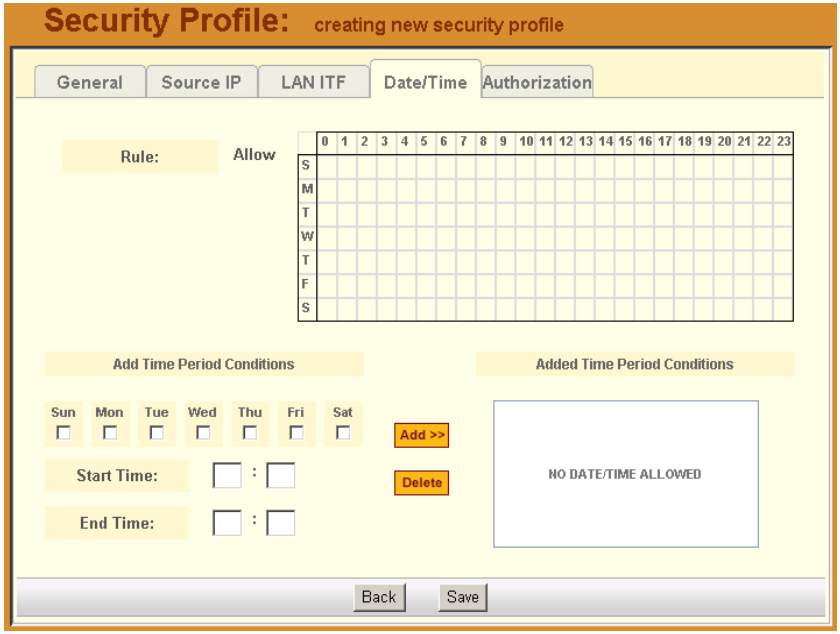


Table 4-16: Security Profiles, Date/Time - Fieldnames and Elements

Field Name	Function
Date/Time (tab)	Tab title to select the current form.
Rule	The configured policy (Allow or Deny) that applies to the entire security profile. The default rule is configured from the **General** tabbed form.
[Day/Time Table]	The table represents the days of a week (rows) and the hours of a day (columns). Clicking inside a segment selects a specific one-hour period of a day.
Add Time Period Conditions	Define below this title the time period conditions that applies to the default rule by clicking the appropriate boxes.
Sun - Sat (check boxes)	Select the day(s) to be applied to the default rule.
Start Time	Specify a Start Time to be applied to the selected day(s), as part of the time conditions.
End Time	Specify an End Time to be applied to the selected day(s), as part of the time conditions.
Add	Button to add the day and time settings to the Added Time Period Conditions box and apply them to the rule.
Delete	Button to delete the day and time settings from the Added Time Period Conditions box.
Added Time Period Conditions	Title of the list entry box for applying the day and time conditions.

>> Configuring Authorization

The Authorization tabbed form allows you to define the authorized actions for the current profile. If the rule chosen for a security profile is Allow, then you

must select at least one action from the Authorization form. To configure or authorize actions for a profile, follow the procedure below:

1. Go to: **Security Profiles** > **Authorization**.

   The system displays the Authorization tabbed form:

2. From the left hand box, which lists all the actions, select the action you wish to assign to the security profile and then click on **Add**.

   The list of valid actions to select from are as follows:

Authorized Action	Function
ConnectToDeviceCLI	Allow user access to CLI configuration interface.
ConnectToDeviceGUI	Allow user access to web configuration interface.
ConsoleGUI	Allow user access to console.
ConsoleReadWrite	Allow Read and Write access to console.
KVMReadWrite	Allow READ/WRITE access to a KVM/IP interface.

Authorized Action	Function
PowerControl	Allow user to perform power control operations.
System	Allow system access.
UseVirtualMedia	Allow user access to blades.

3. Repeat the previous step for all actions you wish to assign.
4. Click on **Save** to complete the procedure.

>> *Deleting a Security Profile*

To delete a security profile, perform the following steps:

1. From the main menu, select **Security Profiles**.
2. From the Security Profiles List form, check mark the Security Profile that you wish to delete.
3. Click on **Delete**.

Backing Up User Data

Using CLI, you can back up and restore the configuration and data files of the BladeManager to a local or a remote destination. This feature allows you to backup and restore (either independently or altogether) the following data types:

Data Type	Definition
System Configuration	Data related to the BladeManager host settings such as IP Address, Authentication Type, and Host Name.
Configuration Data	Data related to the configuration of consoles, users and so forth, which are stored in the database.
Data Buffers	The ASCII data collected from the consoles.

Backup and Restore Scenarios

For illustration purposes, there are two scenarios in which you can perform the backup.

- Replicating data to a hot spare machine - You back up the configuration data and data buffers and restore them to a second BladeManager unit. This method enables you to keep the network identity of each BladeManager unit, but maintain the same configuration for both units. The second unit serves as a spare system.
- Replacing the existing BladeManager - You back up ALL data to an external server. The BladeManager is then replaced with a new unit to which all data is restored. The new unit will have the same configuration as the original unit.

To use the Backup and Restore commands in CLI, see “Backup and Restore Commands” on page 5-18.

System Recovery Guidelines

In the event that the BladeManager goes down, the system will check the integrity of the file system during the restart. If a problem is found, then the system will attempt to repair any damage that may have occurred.

When performing a recovery procedure, if there is too much damage, you have the option to stop the booting process and take recovery actions through the serial console as follows:

1. Rebuild system partition
2. Rebuild database
3. Rebuild data log partition

The rest of the configuration process is done through the GUI/web interface.

If the BladeManager goes down, you will still have direct access to ports and consoles, but you will need to redefine the devices.

BladeManager Database Transaction Support

The BladeManager commits all successful database transactions to the BladeManager database. To ensure data integrity, the BladeManager roll will roll back any failed database transaction in the event that:

- There are concurrent users updating the same record at the same time or
- A system fault caused the database transaction to fail.

When multiple users who are logged in as admin update the same record simultaneously, the system will generate a warning message to one of the users:

>> Responding to the Warning Message

When you receive the above warning message, you must perform the following steps:

1. Click on the **Reload** button located at the bottom of the screen.

   The system displays the screen that you were updating.

2. Verify the information to determine if you still need to update the form. If you need to update the form, then proceed to re-update the form and then click on **Save**.

Optimistic locking is a mechanism to lock objects in multi-user systems to preserve integrity of changes so that one person's changes do not accidently get overwritten by another. It offers reduced concurrency, higher performance, and avoids deadlocks.

Changing the Default Configuration

This configuration procedure is for advanced users only. To change the default database configuration of the BladeManager, please refer to **Chapter 5: Advanced Configuration**.

Info / Reporting

Info/Reporting is a list that summarizes all console access information by users and administrators as shown:

Table 4-17: Info / Reporting - Fieldnames and Elements

Field Name	Definition
Session Start	Date and time when the session started.
Session End Date	Date and time when the session ended.
User	Name of session user.
Login State	Operating status of the login.
Console Name	As indicated.

Table 4-17: Info / Reporting - Fieldnames and Elements

Field Name	Definition
Reason	Reason for any failure of state change.
Connection Type	Connection type used by the session.
Source IP	As indicated.
User Name	Name of session user.
Session ID	As indicated.

To view a more detailed information about a particular user from a detail line, select from under the **User** column the particular user you wish to view.

When you select a user from the Info/Reporting List screen, the system displays the following detail list:

Chapter 5
Advanced Configuration

This chapter presents some procedures for configuring the BladeManager through the Command Line Interface (CLI).

First Time Configuration aside, Cyclades recommends the use of the CLI only for advanced *admin* users who are proficient with CLI, and would like more control over the configuration features of the BladeManager.

This chapter is organized as follows:

- Working from a CLI
- Shell Commands 2
- Copying and Pasting Text within the Console Applet Window
- Connecting Directly to Ports
- Sample Command Line Interface
- Set Commands
- Changing the Escape Sequence
- Re-defining the Interrupt Key
- Changing the Number of Lines in the SSH Applet
- Changing the Session Timeout
- Enabling Telnet
- NIS Configuration
- Active Directory Configuration
- Disabling HTTP to Use Only HTTPS
- Firmware
- Adding Firmware
- Upgrading the APBM Firmware
- Backing Up User Data
- Managing Log Files
- Changing the Database Configuration
- Restoring Your Configuration
- Installing SSL Certificates

Working from a CLI

The BladeManager allows you to use a command line interface (CLI) as an alternative to the web interface. You may use Linux or Windows-based secure shell (SSH) client. The same restrictions to the web management interface apply to the CLI.

>> Logging In

1. To connect to the BladeManager, enter the following shell commands:

```
> ssh -1 <username> <IP address of BladeManager>
> <password>
```

Note: The "**l**" in **ssh-1** is the alphabet "l" as in *lemon*).

2. If you are an administrator, the system will display a menu.

You can either run the console shell from the menu

- OR -

Go directly to the system prompt.

See the sample print of a CLI session at the end of this chapter. If you are a regular user, you will get the console shell alone, without a menu or system prompt.

Shell Commands

A list of commonly used CLI commands for operating the BladeManager are as follows:

Command	Use this command to:
man list	list the available commands
man <command name>	get a definition of a command
consolelist	list all consoles allocated to you as defined in the access control list.
console <console name>	connect to the console.

Command	Use this command to:
page <console name>	display the content of the data buffer file for the specified console.
searchlog	search the data log files for alarms.

Copying and Pasting Text within the Console Applet Window

The APM allows you to copy and paste text within your console (Java applet) window to facilitate any command line configuration of a device and other similar operations.

To use the *copy & paste* feature, right click your mouse.

This invokes a pop-up menu with the following options:

Menu Option	Use this option to:
Copy	Copy text from the applet window or another source.
Paste	Paste text to the applet window.
Disconnect	Close the applet window and disconnect your SSH session.
Send Break	Cause an OK prompt to appear on the applet screen.

The copy and paste feature follows the standard Windows/GUI convention of clicking the mouse, dragging it over the text to be copied, releasing the mouse to capture the entire text, and then positioning your cursor to the desired destination as you select the Paste option.

Note: Linux browsers do not support the Copy and Paste feature.

Connecting Directly to Ports

It is possible to connect to console ports using the BladeManager as a security proxy. Using SSH on your workstation, type in:

`ssh` <user name>:<console name>@<IP address of BladeManager>

This command opens a SSH connection to the manager, checks the username and password, checks the access control list to verify user access, and then establishes the connection to the appropriate console.

Sample Command Line Interface

An example of a command line interface as accessed by an admin is shown below:

```
**************************************************
login as: [This field is absent if the user is logged in as an admin. ]
Password:

-------------------------------------------------
                AlterPath Manager
-------------------------------------------------
Please choose from one of the following options:

1.CLI
2.Shell Prompt
3.Quit

Option ==> 1
User: admin
AlterPath Manager @(#)V_1.1.0b (Mar/19/2004) - CLI
admin@Mgr>
admin@Mgr>
admin@Mgr> man list
console     - connects to a console
consolelist - lists all monitored consoles
page        - prints all lines in a console's logfile
searchlog   - prints lines in a console's logfile
              that match a pattern
man <command> - to get help text of <command>

admin@Mgr>
admin@Mgr> consolelist
Mail-2 - port 1
DB-7 - port 2
admin@Mgr>
admin@Mgr>
admin@Mgr> console Mail-2
[Enter `^Ec?' for help]
```

```
[Enter `^Ec.' to disconnect]
**************************************************
```

CLI Commands

For your convenience, the CLI key commands (accessible by pressing ^Ec?) are summarized in the table below. Each command must be preceded by **^Ec**. For example, to send a broadcast message, you must press: <Ctrl>**Ecb**

Key(s)	Command	Key(s)	Command
`.`	disconnect	`a`	attach read/write
`b`	send broadcast message	`c`	toggle flow control
`d`	down a console	`e`	change escape sequence
`f`	force attach read/write	`g`	group info
`i`	information dump	`l?`	break sequence list
`l0`	send break per config file	`l1-9`	send specific break sequence
`o`	(re)open the tty and log file	`p`	replay the last 60 lines
`r`	replay the last 20 lines	`s`	spy read only
`u`	show host status	`v`	show version info
`w`	who is on this console	`x`	show console baud info
`z`	suspend the connection	`<cr>`	ignore/abort command
`?`	print this message	`^R`	replay the last line
`\ooo`	send character by octal code		

To exit from the CLI, press: <^> <shift>_
(*i.e.*, <Ctrl> <Shift> <*underscore*>)

Set Commands

The following set commands are available to enable you to manually and individually configure specific E2000 settings through CLI:

- setauth
- setboot
- setcons
- setdatetime
- date
- setnames
- setnetwork
- setntp
- setsmtp

SETAUTH - sets the authentication method. For example:

```
[root@APM_Paulo root]# setauth
Your configuration will be overwritten by the default files!!
Are you sure you want to continue? (y/n)[n] y
Continuing setauth...
Choose the desirable authentication method local/radius/
   tacacs+/ldap/kerberos/nis/active_directory)  [local]:
*** Configuration changed!
*** Execute saveconf to save the new values in flash.
```

Note: If you select Radius as the authentication method, the system will prompt you for other Radius servers to be configured, thus allowing you to configure more than one Radius Server.

SETBOOT - sets the network boot utility. For example:

```
[root@APM_Paulo root]# setboot
NL4000 Network Boot Configuration Utility
-----------------------------------------
Current Status:         DISABLED
Press <ENTER> if you wish to change it, or [Q<ENTER>] to quit:
Enter Local IP Address []:
Current Status:         DISABLED
Do you wish to save these parameters? (y/N) n
*** Network boot parameters NOT saved
```

SETCONS - sets console connection. For example:

```
[root@APM_Paulo root]# setcons
APM Console Configuration Utility
---------------------------------
Current Parameters: 9600, 8n1, vt100
Press <ENTER> if you wish to change it, or [Q<ENTER>]
   to quit:
Enter Baud Rate (in bps) [9600]:
Enter Word Length (5, 6, 7 or 8) [8]:
Enter Parity (even, odd or no) [no]:
Enter Stop Bits (1 or 2) [1]:
Enter Terminal Type [vt100]:
WARNING: make sure you're setting valid values for the
   console parameters, or you may make your console
   inaccessible!
Current Parameters: 9600, 8n1, vt100
Do you wish to save these parameters? (y/N)
```

SETDATETIME - sets the system date and time based on the selected time zone. For example:

```
[root@APM_Paulo root]# setdatetime
Please choose the time zone where this machine is located.
 1) Africa     18) Eire      35) Jamaica   52) ROC
 2) America    19) Etc       36) Japan     53) ROK
 3) Antarctica 20) Europe    37) Kwajalein 54) Singapore
 4) Arctic     21) Factory   38) Libya     55) System
 5) Asia       22) GB        39) MET       56) Turkey
 6) Atlantic   23) GB-Eire   40) MST       57) UCT
 7) Australia  24) GMT       41) MST7MDT   58) US
 8) Brazil     25) GMT+0     42) Mexico    59) UTC
 9) CET        26) GMT-0     43) Mideast   60) Universal
10) CST6CDT    27) GMT0      44) NZ        61) W-SU
11) Canada     28) Greenwich 45) NZ-CHAT   62) WET
12) Chile      29) HST       46) Navajo    63) Zulu
13) Cuba       30) Hongkong  47) PRC       64) iso3166.tab
14) EET        31) Iceland   48) PST8PDT   65) posix
15) EST        32) Indian    49) Pacific   66) posixrules
```

```
16) EST5EDT     33) Iran       50) Poland     67) right
17) Egypt       34) Israel     51) Portugal   68) zone.tab
Enter the number corresponding to your choice: 48
Current system date and time is:
   Tue Jan 25 15:40:35 PST 2005
Press ENTER to accept it or specify new ones.
Enter date in MM/DD/YYYY format:
Tue Jan 25 15:40:00 PST 2005
*** Configuration changed!
*** Execute saveconf to save the new values in flash.
```

DATE - sets the date and date format. For example:

```
[root@APM_Paulo root]# date 012515402005
Tue Jan 25 15:40:00 PST 2005
```

SETNAMES - sets the hostname, domain name, and primary nameserver's IP address. For example:

```
[root@APM_Paulo root]# setnames
Enter the System's Hostname
  (max 30 characters) [E2000]: APM_Paulo
Enter the System's Domain Name
  (max 60 chars) [localdomain]:
Enter the Primary Nameserver's IP address [none]:
*** Configuration changed!
*** Execute saveconf to save the new values in flash.
```

SETNETWORK - sets the Ethernet subinterfaces and VLANs. The example below configures the following devices as follows:

eth0
eth0:1
eth0:9999
eth0.2

```
[root@APM network]# setnetwork
Primary Ethernet IP address: (S)tatic, (N)one or
   (K)eep  current ? [K]: s
Enter Primary Ethernet IP address: 192.168.48.48
```

```
Enter Primary Ethernet Subnet Mask: 255.255.255.0
Secondary Ethernet IP address: (S)tatic, (N)one or
   (K)eep current ? [K]:
Subinterface eth0:1 IP address: (S)tatic, (N)one or
   (K)eep current ? [K]:
Subinterface eth0:9999 IP address: (S)tatic, (N)one or
   (K)eep current ? [K]:
Configure more Ethernet Subinterfaces: (Y)es, (N)o or
   (L)ist ? [N]: l
eth0:9999, 199.199.199.199, 255.255.255.252
Number of Subinterfaces already configured: 1
Configure more Ethernet Subinterfaces: (Y)es, (N)o or (
   L)ist ? [N]: y
Enter the Ethernet number [0-1]: 0
Enter the Subinterface index [0-9999]: 1
Subinterface eth0:1 IP address: (S)tatic or (N)one ? [S]:
Enter Subinterface eth0:1 IP address: 1.1.1.1
Enter Subinterface eth0:1 Subnet Mask: 255.0.0.0
Configure more Ethernet Subinterfaces: (Y)es, (N)o or
   (L)ist ? [N]:
VLAN eth0.2 IP address: (S)tatic, (N)one or
   (K)eep current ? [K]:
Configure more Ethernet VLANs: (Y)es, (N)o or
   (L)ist ? [N]: l
eth0.2, 2.2.2.2, 255.255.0.0
Number of VLANs already configured: 1
Configure more Ethernet VLANs: (Y)es, (N)o or (L)ist ? [N]:
Enter Ethernet Default Gateway [none]:

*** Configuration changed!
*** Execute saveconf to save the new values in flash.
Do you want to make these changes effective now (y/n)? y
```

This script creates the configuration file **/etc/network/ifcfg-eth**<index>, which has the same format as **ifcfg-eth0** and **ifcfg-eth1**.

OBS: In this example, index = 0, 0:1, 0:9999 and 0.2

The third option, **(K)eep command**, gives you the option to skip to the next Ethernet interface without changing the configuration of the current interface.

Use **^C** to stop changing interfaces and keep all changes made. If you do not exit with **^C** at the end, the script will ask if you want to make the changes effective now, in which case the script automatically runs **/etc/init.d/ networking restart**.

SETNTP - sets the NTP server's IP address. For example:

```
root@APM_Paulo root]# setntp
Enter the NTP server:
*** Configuration changed!
*** Execute saveconf to save the new values in flash.
```

SETSMTP - sets the email server's IP address. For example:

```
[root@APM_Paulo root]# setsmtp
Enter the email (SMTP) server:
*** Configuration changed!
*** Execute saveconf to save the new values in flash.
```

Changing the Escape Sequence

There are two ways to change the escape sequence:

- Locally: From the console session, use option ^Ece (refer to the table of help above for '**e**') to change the escape sequence. It applies only to the current console session. Once you log off, the escape sequence is deleted.
- Globally: Change file **/var/apm/bin/con** as below. To make it permanent, you must include this file in the **/etc/files.list** and then run **saveconf**.

```
#original line in /var/apm/bin/con
exec /var/apm/bin/console -Mlocalhost -l$USR $1

#modify this line to have -e <escape seq>. In this
example esc seq= ^Az
exec /var/apm/bin/console -Mlocalhost -e^Az -l$USR $1
```

The result of this change in the console session is as follows:

```
[arnaldo@hp arnaldo]$
[arnaldo@hp arnaldo]$ ssh -ladmin:acs8_02
192.168.47.86
Password:
Console on-demand, please wait...
[Enter `^Az?' for help]
```

```
[Enter `^Az.' to disconnect]
```

Re-defining the Interrupt Key

The key sequence **Ctrl+C** in the file **/var/apm/bin/apmrun.sh** has been changed to **Ctrl+_** (that is: ^_) to prevent the system from directing this command to any application running on the foreground rather than to the console server. Unlike **^C**, the latter is not a valid key combination for most servers including Sun, and should enable you to interrupt the console server as necessary.

If, however, you need to re-define the command, you may do so from the **apmrun.sh** file as shown:

```
/var/apm/bin/apmrun.sh
# Redefine CTRL+C here. Customize it as you wish.
stty intr ^_
```

Changing the Number of Lines in the SSH Applet

By default, the number of lines used by the memory buffer when a user scrolls the window is set to 1000 lines (Terminal buffer = 1000). You may change this value to suit your needs. Be aware, however, that specifying values greater than 1000 can degrade scroll performance.

To configure the number of lines:

1. Edit the file: **/opt/tomcat/apm/applet.conf**
2. Locate the line and edit as follows:
   ```
   Terminal.buffer = [number of lines]
   ```
3. Type in **saveconf** to save your configuration.
4. Close and reopen the applet window to make the change effective.

Changing the Session Timeout

The default session timeout value is 60 minutes. To change this value, follow the steps below:

1. Edit the file: **/opt/tomcat/apm/WEB-INF/web.xml**
2. Locate and edit the line:

```
<session-timeout>60</session-timeout>
```

3. To make the change effective, reboot or restart tomcat as follows:

```
/etc/init.d/tomcat stop
/etc/init.d/tomcat start
```

Enabling Telnet

Telnet is available in the E2000, but disabled by default to avoid security problems. To enable Telnet, follow the steps below:

1. From **/etc/services**, add the following line:

```
telnet          23/udp
```

2. Edit **/etc/xinetd.conf** as follows:

```
service telnet
{
   flags                = REUSE
   socket_type          = stream
   wait                 = no
   user                 = root
   server               = /usr/kerberos/sbin/telnetd
   log_on_failure += USERID
}
```

3. Create **/etc/protocols** with the following content:

```
tcp   6    TCP      # transmission control protocol
udp   17   UDP      # user datagram protocol
```

4. To complete the procedure, restart **xinetd** with the following command:

```
/etc/init.d/xinetd.conf restart
```

Note: xinetd services will be available after reboot, since this script is already included in the startup proceedure.

NIS Configuration

To use NIS authentication, NIS is selected from the First Time Configuration script. To further control NIS authentication, edit the following configuration file as follows:

File to edit: **/etc/nsswitch.conf**

Format: <database>:<service>[<actions><service>]

Where:	Parameter Definition:
<database>	Available: aliases, ethers, group, hosts, netgroup, network, passwd, protocols, publickey, rpc, services, and shadow.
<service>	Available: nis (use NIS version 2), dns (use Domain Name Service), and files (use the local files).
<actions>	this syntax has this format: [<status>=<action>] WHERE: <status> = SUCCESS, NOTFOUND, UNAVAIL, or TRYAGAIN <action> = RETURN or CONTINUE

What the status messages mean:

Status:	Meaning:
SUCCESS	No error occurred and the desired value is returned. The default action for this status is *return*.
NOT FOUND	The lookup process works, but the needed value was not found. The default action for this status is *continue*.
UNAVAIL	The service is permanently unavailable.
TRYAGAIN	The service is temporarily unavailable.

User Authentication

To use NIS only to authenticate users, change the lines about passwd, shadow and group in the configuration file (/etc/nsswitch.conf) as described below.

The BladeManager does not support user authentication against a NIS map and the local file (/etc/passwd) at the same time. Either the user is present in the NIS map or in the passwd file, but not both. The BladeManager will not even allow you to add a user in the local database if the user is already present in the NIS server.

The configuration below enables the system to authenticate NIS users and local users.

Authenticate the user first through the local database and if the user is not found, use NIS.

```
passwd: files compat
shadow: files compat
group: files compat

passwd_compat: nis
shadow_compat: nis
group_compat: nis
```

Authenticate the user first through NIS and if the user is not found, use the local database.

```
passwd: compat files
shadow: compat files
group: compat files

passwd_compat: nis
shadow_compat: nis
group_compat: nis
```

Authenticate the user first through NIS, and if the user is not found or the NIS server is down, use the local database.

```
passwd: compat [UNAVAIL=continue TRYAGAIN=continue] files
shadow: compat [UNAVAIL=continue TRYAGAIN=continue] files
group: compat [UNAVAIL=continue TRYAGAIN=coninue] file

passwd_compat: nis
shadow_compat: nis
```

```
group_compat: nis
```

Active Directory Configuration

To configure the BladeManager to use Active Directory for authentication, follow the steps below:

1. During First Time Configuration (see **Chapter 4: Web Configuration**), select **ldap** when prompted for the desired authentication method.
2. Connect to the BladeManager using SSH and login as **root**.
3. Configure **/etc/ldap.conf** as follows:

```
host 172.20.98.150
base dc=qalab,dc=cyclades,dc=com,dc=br
binddn cn=Adminitrator,cn=Users,dc=qalab,dc=cyclades,
   dc=com,dc=br
bindpw qa
pam_login_attribute sAMAccountName
pam_password ad
```

   a. On line 3 (see example above), add the lines as shown in **boldface**, using your own values.

   b. Delete the **uri** statement (already deleted from line 3 in the example) which is used in traditional LDAP, but not needed in Active Directory.

4. Type in **saveconf** to save your configuration.
5. Reboot the BladeManager.

Regarding **/etc/ldap.conf**, the host and base items are exactly the same when configuring traditional LDAP.

binddn is the distinguished name (dn) to bind with, and is composed by the common name (cn) plus the distinguished name of the search base, and **bindpw** is the password in the active directory server which corresponds to the common name given in the binddn statement.

pam_login_attribute and **pam_password** must be set to exactly the values shown above, thus informing the active directory server what kind of authentication is taking place.

Disabling HTTP to Use Only HTTPS

The BladeManager is configured to allow both HTTP and HTTPS access. You can, however disable HTTP access by commenting out its configuration in the BladeManager unit by using the command line. To do so, perform the following steps:

1. Edit the file: `/opt/tomcat/conf/server.xml`
2. Using the exclamation mark (!) and the double dash (--), comment out the following XML paragraph:

```
<!-- Define a non-SSL Coyote HTTP/1.1 Connector on port 8080 -->
<!-- Connector className="org.apache.coyote.tomcat4.CoyoteConnector"
       port="80" minProcessors="5" maxProcessors="75"
       enableLookups="true" redirectPort="443"
       acceptCount="100" debug="0" connectionTimeout="20000"
       useURIValidationHack="false" disableUploadTimeout="true" /-->
```

3. Restart the web server using the following command:

```
/etc/init.d/tomcat stop
/etc/init.d/tomcat start
```

Firmware

Adding Firmware

Firmware files (.tgz) are normally downloaded from the web and copied into the E2000 using Secure Copy (SCP). To add or import new firmware, follow this procedure:

1. From the web (www.cyclades.com), download the firmware to your computer.
2. Using the CLI, use the SSH **scp** command to copy the firmware to E2000.

   Example: **scp v214.tgz root@<ip_address>:/usr/fw**
3. Open the Firmware List form and click the **Import** button.

   The system should add the new firmware on the Firmware List form. The system also updates the Firmware/Boot drop down list in the Device Definition form.

Upgrading the APBM Firmware

You may upgrade the APBM firmware by downloading the upgraded software from the web to the E2000.

1. From the Cyclades website (www.cyclades.com), download and copy the firmware to the E2000 via Secure Copy (SCP).

   The firmware is composed of two files:

   - APBM_v130.tgz
   - APBM_v130.md5sum.tgz

2. Copy the two files to the E2000 /tmp directory as follows:

   ```
   scp APBM_v110.tgz root@E2000_IP:/tmp
   scp APBM_v110.md5sum.tgz
   ```

3. Login to the E2000 as **root**, and then change the directory to **/tmp** as follows:

   ```
   ssh root@APBM_IP
   cd /tmp
   ```

4. Install the new software to compact flash as follows:

   ```
   installimg all all.tgz
   reboot
   ```

Backing Up User Data

Using CLI, you can back up and restore the configuration and data files of the BladeManager to a local or a remote destination. This feature allows you to backup and restore (either independently or altogether) the following data types:

Data Type	Definition
System Configuration	Data related to the BladeManager host settings such as IP Address, Authentication Type, and Host Name.
Configuration Data	Data related to the configuration of consoles, users and so forth, which are stored in the database.

Data Type	Definition
Data Buffers	The ASCII data collected from the consoles.

Backup and Restore Scenarios

For illustration purposes, there are two scenarios in which you can perform the backup.

- Replicating data to a hot spare machine - You back up the configuration data and data buffers and restore them to a second BladeManager unit. This method enables you to keep the network identity of each BladeManager unit, but maintain the same configuration for both units. The second unit serves as a spare system.
- Replacing the existing BladeManager - You back up ALL data to an external server. The BladeManager is then replaced with a new unit to which all data is restored. The new unit will have the same configuration as the original unit.

Backup and Restore Commands

Using CLI, the command line for backup and restore are as follows:

```
> backup {log | sys[tem] | conf[iguration] | all}
[[user@]host:]file
```

```
> restore {log | sys[tem] | conf[iguration] | all}
[[user@]host:]file
```

If you do not specify a user, then the system uses the current username.
If you do not specify a host, then the system creates a backup of the local file.

The backup/restore functions by using secure copy (scp). The file is saved as a tar file (***.tgz**).

Managing Log Files

Where Log Files are Archived

Once log files are rotated, the system stores them in:

```
/var/log/consoles/rotated
```

You can back up these files to another server using the secure shell SCP program.

Backing Up Log Files to a Remote Server

You can copy rotated logs to another server that is more suited for holding large amounts of log data using the following command line syntax:

`save_rotated_log` [[*user@*]*host*:]file [`-flush`] [`-now`]

Where:

-flush deletes the current rotated logs
-now forces an immediate log rotation

The destination file is mandatory and must be the first argument. The order of the options (**-flush** and **-now**) does not matter; the system will perform the actions in the same order (save-flush-rotate) regardless of the options given.

If you supply *user@host*, the logs are transferred to a remote machine under the privileges of the specified user. If you do not supply *user@*, the system will assume that the current user is the remote one.

For remote destination, ensure that the remote machine is prepared to accept connections to ssh service on port 22. If only the file name is supplied, the system will copy the logs locally. You can include path names as part of the file name.

System Recovery Guidelines

In the event that the BladeManager goes down, the system will check the integrity of the file system during the restart. If a problem is found, then the system will attempt to repair any damage that may have occurred.

When performing a recovery procedure, if there is too much damage, you have the option to stop the booting process and take recovery actions through the serial console as follows:

1. Rebuild system partition
2. Rebuild database
3. Rebuild data log partition

The rest of the configuration process is done through the GUI/web interface.

If the BladeManager goes down, you will still have direct access to ports and consoles, but you will need to redefine the devices.

Changing the Database Configuration

Caution: *This configuration procedure is for advanced users only.*

You can change the default configuration values from the properties file (**/var/apm/apm.properties**).

Property Name	Default Property Value	If you change the default property value, ensure that . . .
db.apm	apmdb	The system creates a corresponding database.
db.apm.user	apm	The system creates a corresponding database user.
db.apm.pw	apmdb	
db.apm.max_connections	10	**max_connections** in my.cnf file is set to greater or equal to **db.apm.maxconnectiuons** value.
db.apm.host	localhost	the new host is available on the network.

Restoring Your Configuration

If during a configuration upgrade, the system displays an error or failed message, you can check the log file (**/var/log/conf-V_**[*version number*]**log**) and decide whether to restore the original configuration.

For example, if you are upgrading your configuration from V_1.2.1 to 1.3.0, then the log file to check is: **/var/log/conf-V_1.3.0.log**

To restore the previous configuration:

restconf config.tgz.old

Installing SSL Certificates

This section explains how to add or import your own SSL certificate to the BladeManager instead of using the Cyclades default SSL certificate.

A certificate for the HTTP security is created by a Certification Authority (CA). Using a public algorithm such as RSA or X509, certificates are commonly obtained by generating public and private keys.

To obtain and install a SSL certificate, follow the procedure below:

Step 1: Enter OpenSSL command.

On a Linux computer, you can generate a key using the Open SSL package through the command:

```
# openssl req -new -nodes -keyout private.key -out public.csr
```

If you use this command, the following information is required:

Parameter	Description
Country Name (2-letter code) [AU]:	The 2-letter country code.
State or Province Name (full name) [Some-State]:	Enter the full name (not the code) of the state.
Locality Name (e.g., city) [ ]:	Enter the name of your city.
Organization Name (e.g., company) [Internet Widgits Ltd]:	Organization that you work for or want to obtain the certificate for.
Organizational Unit Name (e.g., section) [ ]:	Department or section where you work.
Common Name (e.g., your name or your server's hostname) [ ]:	Name of the machine where the certificate must be installed.
Email Address [ ]:	Your email address or the administrator's.

You may skip the other requested information.

The command generates a Certificate Signing Request (CSR) which contains some personal (or corporate) information and its public key.

Step 2: Submit the CSR to the CA

Once generated, submit the CSR and some personal data to the CA. You can request this service by selecting from a list of CAs at the following URL:

```
pki-page.org
```

The service is not free. Before sending the certificate, the CA will analyze your request for policy approval.

Step 3: Upon receipt, install the certificate

Once the CSR is approved, the CA sends a certificate (*e.g.*, jcertfile.cer) to the origin and stores a copy on a directory server.

If you are satisfied that the certificate is valid, then you can import the certificate to your keystore using the **-import** command:

```
keytool -import -alias joe -file jcert.cer
```

The certification becomes effective in the next reboot.

More About Importing Certificates

There are many sources of information regarding certificate management on the web. The information below has been excerpted and modified from the keytool document which you can access from the following web site:

https://java.sun.com/j2se/1.4.2/docs/tooldocs/windows/keytool.html.

You import a certificate for two reasons:

1. To add it to the list of trusted certificates, or
2. To import a certificate reply received from a CA as the result of submitting a Certificate Signing Request (see the **-certreq** subcommand) to that CA.

Which type of import is intended is indicated by the value of the **-alias** option. If the alias exists in the database, and identifies an entry with a private key, then it is assumed you want to import a certificate reply. Keytool checks whether the public key in the certificate reply matches the public key stored with the alias, and exits if they are different. If the alias identifies the other type of keystore entry, the certificate will not be imported. If the alias does not exist, then it will be created and associated with the imported certificate.

Be sure to check a certificate very carefully before importing it as a trusted certificate! View it first (using the **-printcert** subcommand, or the **-import** subcommand without the **-noprompt** option), and make sure that the displayed certificate fingerprint(s) match the expected ones.

For example, suppose someone sends or emails you a certificate, and you put it in a file named /tmp/cert. Before you consider adding the certificate to your list of trusted certificates, you can execute a **-printcert** subcommand to view its fingerprints, as in:

```
keytool -printcert -file /tmp/cert
  Owner: CN=ll, OU=ll, O=ll, L=ll, S=ll, C=ll
  Issuer: CN=ll, OU=ll, O=ll, L=ll, S=ll, C=ll
  Serial Number: 59092b34
  Valid from: Thu JUL 01 18:01:13 PDT 2004
       until: Wed SEP 08 17:01:13 PST 2004
  Certificate Fingerprints:
  MD5:  11:81:AD:92:C8:E5:0E:A2:01:2E:D4:7A:D7:5F:07:6F
  SHA1: 20:B6:17:FA:EF:E5:55:8A:D0:71:1F:E8:D6:9D:C0:37:1
```

Then call or contact the person who sent the certificate, and compare the fingerprint(s) that you see with the ones that they show. Only if the fingerprints are equal is it guaranteed that the certificate has not been replaced in transit with somebody else's (for example, an attacker's) certificate. If such an attack took place, and you did not check the certificate before you imported it, you would end up trusting anything the attacker has signed (for example, a JAR file with malicious class files inside).

Note: it is not required that you execute a **-printcert** subcommand prior to importing a certificate, since before adding a certificate to the list of trusted certificates in the keystore, the **-import** subcommand prints out the certificate information and prompts you to verify it.

You then have the option of aborting the import operation. Note, however, this is only the case if you invoke the **-import** subcommand without the **-noprompt** option. If the **-noprompt** option is given, then there is no interaction with the user.

If you are satisfied that the certificate is valid, then you can add it to your key store as follows:

```
keytool -import -alias tomcat -file jcertfile.cer
```

This creates a trusted certificate entry in the keystore, with the data from the file jcertfile.cer, and assigns the alias tomcat to the entry.

Glossary

Access Control List (ACL)

The ACL is used for security inside of programs and operating systems. For example, Windows NT uses ACLs for directory and file access; Lotus Domino uses ACLs for database access.

An ACL contains both users and groups and what level of access each has. For example, you may give a regular user "Read" access, while a different user you could give manager or full access.

Authentication

The process by which a user's identity is checked within the network to ensure that the user has access to the requested resources.

ARP

Address Resolution Protocol. An ARP protocol in which a router masks its identity and sends routing packets to the requesting host. A proxy ARP can minimize the bandwidth on slower WAN links.

Basic In/Out System (BIOS)

Chips on the motherboard of a computer contain read only memory instructions that are used to start up a computer. The operating system of a PC also makes use of BIOS instructions and settings to access hardware components such as a disk drive. Some BIOS/CMOS settings can be set to scan for viruses, causing problems for some installation programs.

Baud Rate

The baud rate is a measure of the number of symbols (characters) transmitted per unit of time. Each symbol will normally consist of a number of bits, so the baud rate will only be the same as the bit rate when there is one bit per symbol. The term originated as a measure for the transmission of telegraph characters. It has little application today except in terms of modem operation. It is recommended that all data rates are referred to in bps, rather than baud (which is easy to misunderstand). Additionally,

baud rate cannot be equated to bandwidth unless the number of bits per symbol is known.

Blade Server

A Blade Server is a computer system on a motherboard, which includes processor(s), memory, a network connection and, sometimes, storage. The blade concept addresses the needs of large scale data centers to reduce space requirements for application servers and lower costs.

A typical application could be serving web pages. So along with a Storage Blade they can be rack-mounted in multiple racks within a cabinet together with common cabling, redundant power supplies and cooling fans. Blades can be added as required, often as "hot pluggable" units of computing as they share a common high speed bus.

IBM Definition: Blade Server refers to a chassis that can hold a number of hot-swappable devices called blades. That is, the entire package of chassis, server blades, and option blades.

Boot

To start a computer so that it is ready to run programs for the user. A PC can be booted either by turning its power on, (Cold Boot) or by pressing Ctrl+Alt+Del (Warm Boot).

Break Signal

A break signal is generated in an RS-232 serial line by keeping the line in zero for longer than a character time. Breaks at a serial console port are interpreted by Sun servers as a signal to suspend operation and switch to monitor mode.

Checksum

A computed value which depends on the contents of a block of data and which is transmitted or stored along with the data in order to detect corruption of the data. The receiving system recomputes the checksum based upon the received data and compares this value with the one sent with the data. If the two values are the same, the receiver has some confidence that the data was received correctly.

Cluster A cluster is a group of one or more computers working as a group to execute a certain task. From the user standpoint, a cluster acts as a large computer system.

Console Terminal used to configure network devices at boot (start-up) time. Also used to refer to the keyboard, video and mouse user interface to a server.

Console Port Most of the equipment in a data center (servers, routers, switches, UPS, PBX, etc.) has a serial console port for out-of-band management purposes.

DHCP *Dynamic Host Configuration Protocol*. A protocol for automatic TCP/IP configuration that provides static and dynamic address allocation and management.

DHCP enables individual computers on an IP network to extract their configurations from a server (the 'DHCP server') or servers, in particular, servers that have no exact information about the individual computers until they request the information. The overall purpose of this is to reduce the work necessary to administer a large IP network. The most significant piece of information distributed in this manner is the IP address.

DNS Server *Domain Name Server*. The computer you use to access the DNS to allow you to contact other computers on the Internet. The server keeps a database of host computers and their IP addresses.

Domain Name The unique name that identifies an Internet site. Domain Names always have 2 or more parts, separated by dots. The part on the left is the most specific, and the part on the right is the most general. A given machine may have more than one Domain Name but a given Domain Name points to only one machine. For example, the domain names: matisse.net, mail.matisse.net, workshop.matisse.net can all refer to the same machine, but each domain name can refer to no more than one machine. Usually, all of the machines on a given

Network will have the same thing as the right-hand portion of their Domain Names (matisse.net in the examples above). It is also possible for a Domain Name to exist but not be connected to an actual machine. This is often done so that a group or business can have an Internet e-mail address without having to establish a real Internet site. In these cases, some real Internet machine must handle the mail on behalf of the listed Domain Name.

Escape Sequence

A sequence of special characters that sends a command to a device or program. Typically, an escape sequence begins with an escape character, but this is not universally true.

An escape sequence is commonly used when the computer and the peripheral have only a single channel in which to send information back and forth. If the device in question is "dumb" and can only do one thing with the information being sent to it (for instance, print it) then there is no need for an escape sequence. However most devices have more than one capability, and thus need some way to tell data from commands.

Ethernet

A LAN cable-and-access protocol that uses twisted-pair or coaxial cables and CSMA/CD (Carrier Sense Multiple Access with Collision Detection), a method for sharing devices over a common medium. Ethernet runs at 10 Mbps; Fast Ethernet runs at 100 Mbps. Ethernet is the most common type of LAN.

Flash

Flash refers to a type of memory that can be erased and reprogrammed in units of memory known as blocks rather than one byte at a time; thus, making updating to memory easier.

Flow Control

A method of controlling the amount of data that two devices exchange. In data communications, flow control prevents one modem from "flooding" the other with data. If data comes in faster than it can be processed, the receiving side stores the data in a buffer. When the buffer is nearly full, the receiving

side signals the sending side to stop until the buffer has space again. Between hardware (such as your modem and your computer), hardware flow control is used; between modems, software flow control is used.

Hot-Swap Ability to remove and add hardware to a computer system without powering off the system.

ICMP *Internet Control Message Protocol* is an Internet protocol sent in response to errors in TCP/IP messages. It is an error reporting protocol between a host and a gateway. ICMP uses Internet Protocol (IP) datagrams (or *packets*), but the messages are processed by the IP software and are not directly apparent to the application user.

In-band Network Management In a computer network, when the management data is accessed using the same network that carries the data, this is called "in-band management."

IP Address A 32-bit address assigned to hosts using TCP/IP. It belongs to one of five classes (A-E) and is expressed as 4 octets separated by periods formatted as dotted decimals.

Each address has a network number, an optional sub network number and a host number. The first two numbers are used for routing, while the host number addresses an individual host within the network or sub network. A subnet mask is used to extract network and sub network information from the IP address.

ISDN A set of communications standards allowing a single wire or optical fibre to carry voice, digital network services and video. ISDN is intended to eventually replace the plain old telephone system.

Kerberos Kerberos was created by MIT as a solution to network security problems. The Kerberos protocol uses strong cryptography so that a client can prove its identity to a server (and vice versa) across an insecure network connection.

After a client and server has used Kerberos to prove their identity, they can also encrypt all of their communications to assure privacy and data integrity as they go about their business.

KVM Keyboard, video and mouse interface to a server.

LDAP *Lightweight Directory Access Protocol*. A software protocol for enabling anyone to locate organizations, individuals, and other resources such as files and devices in a network, whether on the Internet or on a corporate intranet.

LDAP is a "lightweight" (smaller amount of code) version of DAP (Directory Access Protocol), which is part of X.500, a standard for directory services in a network.

MAC *Medium Access Control*. Internationally unique hardware identification address that is assigned to the NIC (Network Interface Card) which interfaces the node to the LAN.

MTU Short for *Maximum Transmission Unit*, the largest physical packet size, measured in bytes, that a network can transmit. Any messages larger than the MTU are divided into smaller packets before being sent.

Every network has a different MTU, which is set by the network administrator. On Windows, you can set the MTU of your machine. This defines the maximum size of the packets sent from your computer onto the network. Ideally, you want the MTU to be the same as the smallest MTU of all the networks between your machine and a message's final destination. Otherwise, if your messages are larger than one of the intervening MTUs, they will get broken up (fragmented), which slows down transmission speeds.

Trial and error is the only sure way of finding the optimal MTU, but there are some guidelines that can help. For example, the MTU of many PPP connections is 576, so if you

connect to the Internet via PPP, you might want to set your machine's MTU to 576 too. Most Ethernet networks, on the other hand, have an MTU of 1500.

Network Mask

A 32-bit number used to group IP addresses together or to indicate the range of IP addresses on a single IP network/ subnet/supernet. There is a group of addresses assigned to each network segment. For example, the mask 255.255.255.0 groups together 254 IP addresses. If we have, as another example, a sub-network 192.168.16.64 with mask 255.255.255.224, the addresses we may assign to computers on the sub-network are 192.168.16.65 to 192.168.16.94, with a broadcast address of 192.168.16.95.

A number used by software to separate the local subnet address from the rest of a given Internet protocol address

Network masks divide IP addresses into two parts (network address and address of a particular host within the network). Mask have the same form as IP addresses (i.e. 255.255.255.0), however, its value is needed to be understood as a 32-bit number with certain number of ones on the left end and zeros as the rest. The mask cannot have an arbitrary value. The primary function of a subnet mask is to define the number of IP hosts that participate in an IP subnet. Computers in the same IP subnet should not require a router for network communication.

NTP

Network Time Protocol. A standard for synchronizing your system clock with the ``true time'', defined as the average of many high-accuracy clocks around the world.

Parity

In serial communications, the parity bit is used in a simple error detection algorithm. As a stream of data bits is formed, an extra bit, called the parity bit, is added. This bit is set on (1) or off (0), depending on the serial communications parameters set in the UART chip.

The following lists the available parity parameters and their meanings:

Odd - Parity bit set so that there is an odd number of 1 bits
Even - Parity bit set so that there is an even number of 1 bits
None - Parity bit is ignored, value is indeterminate

PCMCIA

Personal Computer Memory Card International Association. An organization consisting of some 500 companies that has developed a standard for small, credit card-sized devices, called PC Cards. Originally designed for adding memory to portable computers, the PCMCIA standard has been expanded several times and is now suitable for many types of devices including network cards (NICs).

The PCMCIA 2.1 Standard was published in 1993. As a result, PC users can be assured of standard attachments for any peripheral device that follows the standard.

Port

A port is a 16-bit number (the allowed range being 1 through 65535) used by the TCP and UDP protocols at the transport layer. Ports are used to address applications (services) that run on a computer. If there was only a single network application running on the computer, there would be no need for port numbers and the IP address only would suffice for addressing services. However, several applications may run at once on a particular computer and we need to differentiate among them. This is what port numbers are used for. Thus, a port number may be seen as an address of an application within the computer.

PPP

Point-to-Point Protocol. This protocol is a way to connect your computer to the Internet over telephone lines. PPP is replacing an older protocol, SLIP, as it is more stable and has more error-checking features.

PPP has been a widely-used Internet standard for sending datagrams over a communications link. The PPP standard is described in RFC 1661 by the Point-to-Point Working Group

	of the Internet Engineering Task Force (IETF). PPP is commonly used when remote computers call an Internet service provider (ISP) or a corporate server that is configured to receive incoming calls.
Profile	Usage setup of the ACS either as a Console Access Server (CAS), a Terminal Server, or a Remote Access Server.
Proxy ARP	The technique in which one machine, usually a router, answers ARP (Address Resolution Protocol) requests intended for another machine. By "faking" its identity, the router accepts responsibility for routing packets to the "real" destination. Proxy ARP allows a site to use a single IP address with two physical networks. Subnetting would normally be a better solution.
RADIUS	*Remote Authentication Dial-In User Service* is a client/server protocol and software that enables remote access servers to communicate with a central server to authenticate dial-in users and authorize their access to the requested system or service. RADIUS allows a company to maintain user profiles in a central database that all remote servers can share.
Root Access	*Root* is the term for a very highly privileged administrative user (particularly in unix environments). When an ISP grants you root access, it means you will have full control of the server. With full control, you will be able to install any software and access any file on that server.
Routing Table	The Routing Table defines which interface should transmit an IP packet based on destination IP information.
Secure Shell (SSH)	SSH has the same functionality as Telnet (see definition for **Telnet**), but adds security by encrypting data before sending it through the network.
Server Farm	A collection of servers running in the same location (see **Cluster**).

SMTP Simple Mail Transfer Protocol. Specifies the format of messages that an SMTP client on one computer can use to send electronic mail to an SMTP server on another computer.

SOL Serial Over LAN.

SSH (Secure Shell) A protocol which permits secure remote access over a network from one computer to another. SSH negotiates and establishes an encrypted connection between an SSH client and an SSH server.

Stop Bit A bit which signals the end of a unit of transmission on a serial line.A stop bit may be transmitted after the end of each byte or character.

Subnet Mask A bit mask used to select bits from an Internet address for subnet addressing. Also known as Address Mask.

STTY Set the options for a terminal device interface.

This command prints information about your terminal settings. The information printed is the same as if you had typed stty while interacting with a shell.

The stty utility sets or reports on terminal I/O characteristics for the device that is its standard input. Without options or operands specified, it reports the settings of certain characteristics, usually those that differ from implementation-dependent defaults. Otherwise, it modifies the terminal state according to the specified operands.

TACACS *Terminal Access Controller Access Control System.* Authentication protocol, developed by the DDN community, that provides remote access authentication and related services, such as event logging. User passwords are administered in a central database rather than in individual routers, providing an easily scalable network security solution.

TACACS+ *Terminal Access Controller Access Control System Plus*. A protocol that provides remote access authentication, authorization, and related accounting and logging services, used by Cisco Systems.

TCP Keep-Alive Interval The time interval between the periodic polling of all inactive TCP/IP connections, checking that the client processes really are still there. After a certain period of inactivity on an established connection, the server's TCP/IP software will begin to send test packets to the client, which must be acknowledged. After a preset number of 'probe' packets has been ignored by the client, the server assumes the worst and the connection is closed.

The keepalive timer provides the capability to know if the client's host has either crashed and is down or crashed and rebooted.

Telnet A terminal emulation program for TCP/IP networks such as the Internet. The Telnet program runs on your computer and connects your PC to a server on the network. You can then enter commands through the Telnet program and they will be executed as if you were entering them directly on the server console

Terminal Server A terminal server has one Ethernet LAN port and many RS-232 serial ports. It is used to connect many terminals to the network. Because they have the same physical interfaces, terminal servers are sometimes used as console access servers.

TTY 1. In Unix, refers to any terminal; sometimes used to refer to the particular terminal controlling a given job (it is also the name of a Unix command which outputs the name of the current controlling terminal). 2. Also in Unix, any serial port, whether or not the device connected to it is a terminal; so called because under Unix such devices have names of the form **tty**.

UDP — *User Datagram Protocol* uses a special type of packet called a datagram. Datagrams do not require a response; they are one way only (connectionless). Datagrams are usually used for streaming media because an occasional packet loss will not affect the final product of the transmission.

U Rack Height Unit — A standard computer rack has an internal width of 17 inches. Rack space on a standard rack is measured in units of height (U). One U is 1.75 inches. A device that has a height of 3.5 inches takes 2U of rack space.

Appendix A:
BladeManager Hardware Specifications

Microprocessor	One Intel Pentium IV 1024 KB (minimum) Level-2 cache and MMX™ (MMX2) technology.
Memory	512MB SDRAM 256MB CompactFlash
Operating System	Netlinos Open Source Networking OS
Security	RADIUS, TACACS+, Kerberos, LDAP, Active Directory, SSHv2, SSL
Management	Text-based console shell access, Cyclades web-based management (CWM) interface
Dimensions	Height: 43mm (1.75 inches, 1 U) Depth: 508 mm (20 inches) Width: 430 mm (16.69 inches) Maximum Weight: 12.7 kg (28 lb) depending on your configuration.
Interfaces	Dual 1000Base-T, 100Base-T, 10Base-T Ethernet controllers on the system board with Wake on LAN® support. RS-232 serial console port 4 USB ports Keyboard port Mouse port ATA-100 single-channel IDE controller
Drives	Diskette: 1.44 MB CD-ROM: IDE
Expansion Bays	Two 3.5-inch slim-high bays for hard disk drives

Expansion Slots	Two 66 MHz/64-bit PCI-X slots (one low profile half-length, one full-height three-quarter-length)
Video Controller	ATI Radeon 7000M IGP video on system board Compatible with SVGA and VGA 16 MB DD-SDRAM video memory
Power	300 watt (110 or 220 V ac auto sensing)
Operating Environment	
Air Temperature	Server on: 10^{o} to 35^{o}C (50^{o} to 95^{o}F) Altitude: 0 to 914 m (2998.7 ft) Server off: -40^{o} to 60^{o}C (-104^{o} to 140^{o}F) Maximum altitude: 2133 m (6998 ft)
Humidity	Server on: 8% to 80% Server off: 8% to 80%
Heat Output	Approximate heat output in British thermal units (Btu) per hour: Minimum configuration: 307 Btu (90 watts) Maximum configuration: 850 Btu (250 watts)
Acoustical noise emissions	Sound power, idling: 6.5 bel maximum Sound power, operating: 6.5 bel maximum
Certifications	FCC Class A, CE

Notes:
Power consumption and heat output vary depending on the number and type of optional features installed and the power-management optional features in use.
These levels were measured in controlled acoustical environments according to the procedures specified by the American National Standards Institute (ANSI) S12.10 and ISO 7779 and are reported in accordance with ISO 9296. Actual sound-pressure levels in a given location might exceed the average values stated because of room reflections and other nearby noise sources. The declared sound-power levels indicate an upper limit, below which a large number of computers will operate.

Supported web browsers and java runtime systems:

- Mozilla 1.0.2/java plugin 1.4.2
- Netscape 7.1/java plugin 1.4.2
- Internet Explorer 6.0/java plugin 1.4.2

The Java Runtime plugin is available from the Sun web site at:
http://java.sun.com/products/plugin/

Supported AlterPath KVM/net Version: 1.1.0 and above.