AlterPath Console Server User Manual

A reference guide for users and systems administrators of Cyclades AlterPath Console Server - Web Management Service.

Product Version 2.2.0
Document Revision 6.0

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Table of Contents

Before You Begin

Chapter 1: Introduction

Chapter 2: Installing the ACS

Chapter 3: Using the Web Interface

Chapter 4: Configuring the Web Interface

Before You Begin

WELCOME to the AlterPath Console Server User Guide! This manual is designed to guide you in installing and configuring the AlterPath Console Server through the ACS web user interface, as well as other necessary information to guide you in your day-to-day operations of the ACS.

Audience

This manual is intended for System administrators and regular users who are responsible for the daily administration and operation of the AlterPath Console Server, using the web application interface.

While users may use any available method to configure the ACS, the ACS web interface is primarily designed for users who are new to Linux or UNIX with a primarily PC/Microsoft background.

The user is expected to have a basic knowledge of networking and using a graphical user interface.

For users who wish to configure ACS using vi, Wizard, or Command Line Interface (CLI), or read about other advanced features of the ACS, please refer to the *ACS Reference Guide*.

Document Organization

This manual is organized as follows:

1: Introduction	Defines and explains the overall product features and uses of ACS.
2: Installing the ACS	Explains the procedure for installing and setting up ACS.
3: Using the Web Interface	Explains how to access devices and operate the web interface. This chapter is designed for the ACS regular user.

4: Configuring the Web Interface

Presents the procedures for configuring the ACS, using the web interface. All the procedures follows the menu structure of the entire web interface in Wizard Mode and Expert Mode.

Appendix A

Summarizes the **Hardware Specifications** of the AlterPath Console Server, and lists the PCMCIA cards that the ACS supports.

Appendix B

Outlines the **Safety Considerations** for installing and handling the ACS.

Appendix C

Lists the latest **Web Browsers** that ACS supports, and explains the procedure for installing **JRE** on your PC.

Glossary

Contains a glossary of terms and acronyms used in the manual.

Index

Index of key words or subjects.

Typographical Conventions

Form/Window labels

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

Examples:
The **Add User** dialog box; 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.

Important words

For emphasis, important words are *italicized*.

Menu selections

The order in which you select a menu is indicated by the “greater than” symbol (>).

Example: **Network** > **Access Method**.

Screen words

Words that appear as part of the graphical user interface are typed in **boldface**.

Examples: The **Configuration** window; the **Password** field.

Untitled Data Fields

Some data entry fields of the GUI windows or forms do not have titles. When this field is described in any field definition section of the manual, the field is indicated as untitled, enclosed in angled brackets.

Example:
[*untitled*] Type in the port number in this field.

Untitled forms

While most forms are identified by it's menu selection, some forms do not bear the title. The manual uses initial capitals to refer to their names or titles.

Examples:
The Data Buffering form; the VPN Connections form; the Active Ports Session form.

User entry words

Words or characters that you would type in are shown in `courier`.

Example: `myPas8worD`

Window levels

Screen levels are also indicated by the "greater than" symbol (>), starting from parent to child to grandchild and so forth. In ACS, the navigable window types are the forms and the dialog boxes.

Example: **Security** > **Users and Groups** > **Add**

Naming Conventions

ACS

Short name for the Cyclades AlterPath Console Server.

Dialog box

The dialog box is a pop up window that appears and prompts for user input as part of the process for completing a form in order to configure the ACS.

Form

The form is the largest part of the user interface; it contains the user selection or input fields for each selected item in the menu.

Form names

The name or title of a form may not necessarily appear on the actual form. When this is the case, the form is named after its menu selection or form function.

Select

To *select* is the same as to *click your mouse*.

Document Symbols

This manual uses graphical symbols that are associated with specific types of note or information to indicate the following:

Reference to another page or document.

Note

Important

Danger or Warning

Cross References

The ACS User Manual cross-references the following Cyclades documents:

- ACS Reference Guide
- AlterPath Manager Manual
- Cyclades Power Management Manual

To access Cyclades product documentation, including release notes and updates, please visit the Cyclades web site at:

www.cyclades.com/support/downloads.php

Chapter 1
Introduction

The AlterPath Console Server (ACS) comes from Cyclades' line of Console Access and Terminal Servers designed to allow local and dial-in access for in-band and out-of-band network management.

Modeled after the Cyclades-TS line of console server, the ACS adds the following advanced features:

- PCMCIA slots that support standard interface cards (Ethernet, Modem, and wireless LAN).
- Optional dual entry redundant power supply (AC/DC) for extra reliability.
- Secure clustering for up to 1024 devices, SSH v2, RADIUS authentication, IPSec, IP filtering, and user access lists per port.
- Console management supports Windows Server 2003 EMS protocols.
- Data buffering, Event notification, and a selection of direct access methods to serial ports.

The Alterpath ACS is available in 1, 4, 8, 16, 32 and 48-port models that fit in 1U of rack space. As with most Cyclades products, the ACS runs an embedded version of the Linux operating system.

Audience

This manual is designed primarily for system administrators and regular users who configure and operate the ACS using the web browser, and who are fairly new to Linux.

For all configurations that involve using the VI text editor or command line interface (CLI), please refer to the *ACS Reference Guide*.

ACS Access and Configuration

You can access the ACS using any of the following three methods:

- Web Browser
- Console directly connected to the ACS

- Telnet/SSH over a network

You can configure ACS by using any of the following user interfaces:

- Web Browser
- VI Editor
- Wizard
- Command Line Interface (CLI)

With the ACS set up as a Console Access Server, you can access a server connected to the ACS through the server's serial console port from a workstation on the LAN or WAN.

There is no authentication by default; you can configure the system for authentication to be performed by a Radius server, a TacacsPlus server, or even by a local database. You can use either Telnet or ssh (a secure shell session).

Product Models and Components

There are two models of the ACS based on the type of power supply:

- ACS with a dual power supply and two PCMCIA slots
- ACS with a single power supply and two PCMCIA slots.

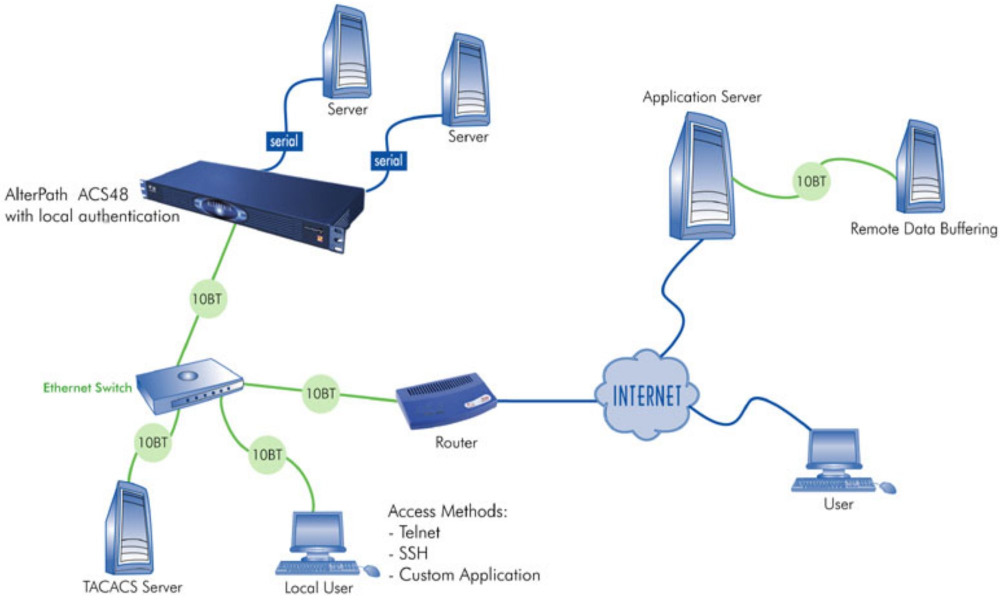
There are six models of the ACS based on the number of serial ports:

- ACS48
- ACS32
- ACS16
- ACS8
- ACS4
- ACS1

The figure below shows AlterPath ACS1 through ACS48.

ACS Setup Diagram

The diagram below shows a typical setup of the AlterPath Console Server.



Chapter 2
Installing the ACS

This chapter presents the procedures for installing and setting up the ACS, and is organized as follows:

- Package Contents
- Rack Installation
- Installation and Configuration Process

For configuration procedures using vi or CLI, refer to the ***ACS Reference Guide****.*

Package Contents

There are six models of the AlterPath Console Server based on the number of serial ports:

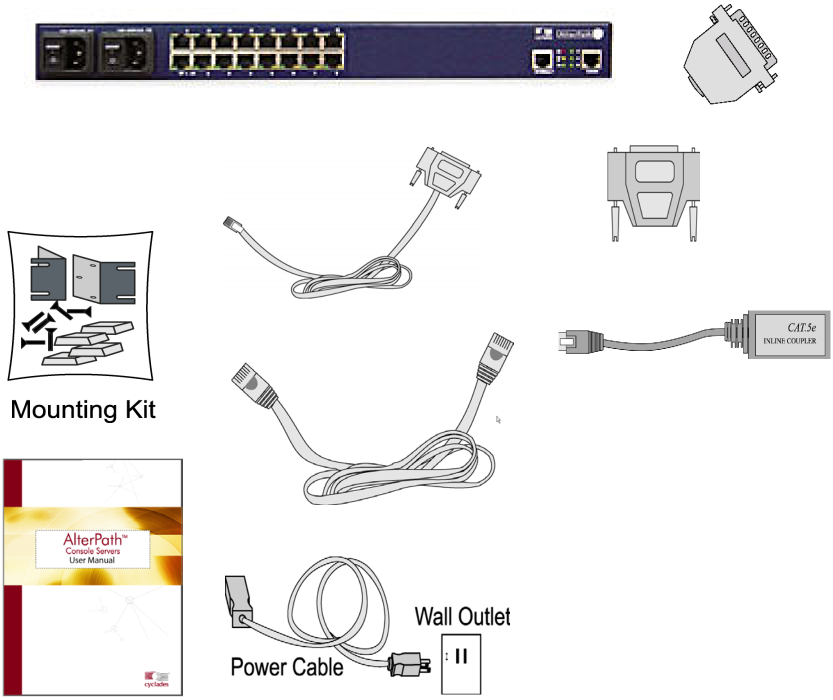
- ACS48
- ACS32
- ACS16
- ACS8
- ACS4
- ACS1

All models come with either a single (A/C or VDC) or double (A/C or -48 VDC) power supply.

Package Contents: ACS4 through ACS48

Typically, the product package for ACS4 through ACS48 contains the following:

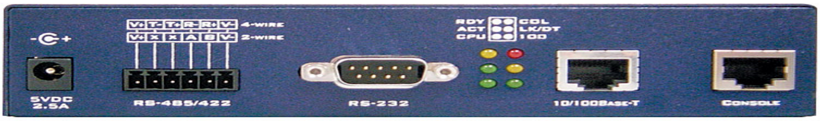
- ACS Box
- Power Cable(s)
- ADB0017 - DB25F Console Adapter
- ADB0025 - DB25M Console Adapter
- ADB0036 - DB9F Console Adapter
- ADB0039 - Sun/Netra Adapter
- CAB0018 - RJ45 CAT-5 Cable
- CAB0025 - DB25M Straight-Through Cable
- CON0071 - DB25F Loopback Connector
- Rack-Mounting Kit
- ACS User Manual and ACS QuickStart Guide
- ACS Reference Manual CD

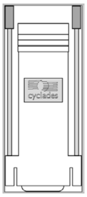


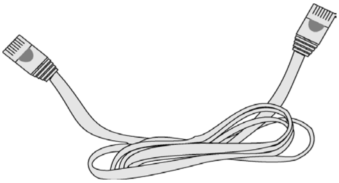
Package Contents: ACS1

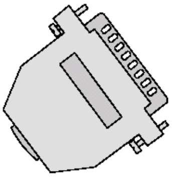
The ACS1 Package contains the following:

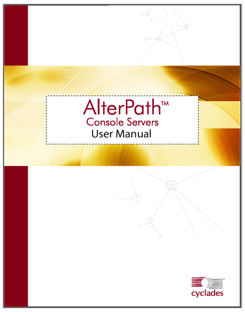
- ACS1 Box
- Power Cable
- Power Supply +5V / 2.5A
- CAB0042 - DB25F / DB9F Cross Cable
- CAB0018 - RJ45 / RJ45 CAT5 Cable
- CON0071 - DB25F Loopback Connector
- ADB0036 - RJ45 to DB9F Adapter
- CON0093 - DB9F to DB25M Connector
- ACS User Manual and ACS QuickStart Guide
- ACS Reference Manual CD





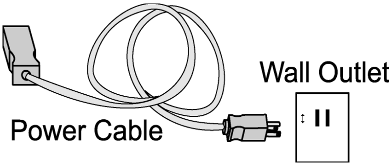






AlterPath™
Console Servers
User Manual

cyclades

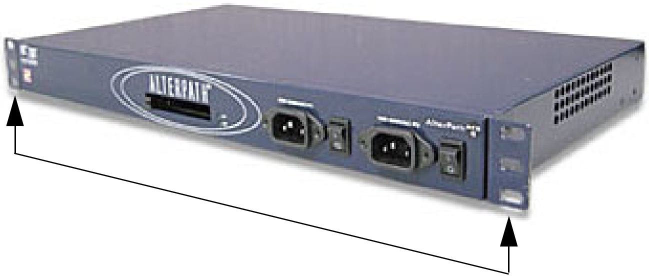


Although the ACS unit in the figures are shown with a dual power supply (A/C or -48VDC), some models may have a single power supply. The single power units will have just one power cable.
(ACS48 supports -48VDC.)

Rack Mounting the ACS

To rack-mount and connect the ACS to your network, perform the following steps:

1. Install the brackets onto the front corners of the box using a screw driver and the screws and bolts provided with the mounting kit.



2. Mount the ACS box in a secure position.

   Refer to Appendix B: **Safety Guidelines** section of this manual to ensure safety.

Important! Install your AlterPath Console Server near the power managed equipment and in an easily accessible location.

Important! Install the AlterPath Console Server in a location where there is an adjacent and accessible wall socket outlet.

3. Proceed to the **Installation and Configuration** section of this chapter.

System Requirements

To configure the ACS, Cyclades recommends any of the following hardware specifications:

- Workstation with a console serial port or,
- Workstation with Ethernet and TCP/IP topology or,
- Cyclades AlterPath Manager.

The hardware connectivity required for each configuration method:

Hardware Connectivity	*Configuration Method*
Workstation, Hub Ethernet Cables.	Web browser, vi, Wizard, or CLI
Console, Console Cable (constructed from RJ45 straight-through cable + adapter Workstation, Hub Ethernet Cables.	vi, Wizard, or CLI.

*This manual is designed primarily for web browser users. If you will use vi, the wizard (CLI version) or CLI, refer to the **ACS Reference Guide**.*

*To install ACS with AlterPath Manager, refer to the **AlterPath Manager Manual** and configure the device using the Manager.*

Default Configuration Parameters

- DHCP enabled (if there is no DHCP Server, IP for Ethernet is 192.168.160.10 with a Netmask of 255.255.255.0)
- CAS configuration
- Socket_server in all ports (access method is telnet)
- 9600 bps, 8N1
- No Authentication

Pre-Install Checklist

Before you install and configure the ACS, ensure that you have the following:

Root Access

You will need Root Access on your local UNIX machine in order to use the serial port.

HyperTerminal, Kermit,
or Minicom

If you are using a PC, ensure that HyperTerminal is set up on your Windows operating system. If you have a UNIX operating system, you will be using Kermit or Minicom.

IP Address of:
PC or terminal,
AlterPath Console Server,
NameServer, and Gateway

You will need to locate the IP address of your PC or workstation, the ACS, and the machine that resolves names on your network. Your Network Administrator can supply you with these. If there is outside access to the LAN that the ACS will be connected with, you will need the gateway IP address.

Network Access

You must have a NIC card installed in your PC to provide an Ethernet port, and have network access.

Java 2 JRE

You must have Java 2 Runtime Environment (JRE) version 1.4.2 (which can be found at http://java.sun.com/) installed on your PC with your browser acknowledged to use it.

Ensure that the browser you are using acknowledges the Java version by following the procedures given in *Appendix C: Supported Browsers and JRE*.

Installation and Configuration Process

The installation and configuration process is divided into six distinct tasks:

- Task 1: Install ACS and connect to the network.
- Task 2: Configure the network settings (using the console port).
- Task 3: Configure ACS by using the web in Wizard Mode.
- Task 4: Test Configuration.
- Task 5: Customize configuration by using the web in Expert Mode.
- Task 6: Save Changes.

*You can configure ACS using the command line interface alone. See the **ACS Reference Guide** to configure ACS in CLI.*

Task 1: Install ACS and connect to the network

1. Plug the power cable into the ACS.

   (When using an external power source. Optional.) Insert the female end of the black power cable into the power socket on the ACS and the 3-prong end into a wall outlet.

DANGER! *To help prevent electric shock, plug the ACS into a properly grounded power source. The cable is equipped with a 3-prong plug to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from the cable. If you use an extension cable, use a 3-wire cable with properly grounded plugs.*

IMPORTANT! *The AlterPath Console Server must be plugged into a receptacle protected by an appropriate, listed circuit breaker.*

2. Connect the console cable.

Construct a Console Cable out of the RJ-45 straight-through cable and the appropriate adapter provided in the product box. (All adapters have an RJ-45 connector on one end, and either a DB25 or DB9 connector on the other end, male or female). Connect this cable to the port labeled “Console” on the ACS with the RJ-45 connector end, and connect the adapter end to your PC’s available COM port.

The modem cable is not necessary for a standard installation and configuration. Use it when the configuration is complete and you want to access the box remotely through a serial port.

3. Connect to the Network.

   Connect the ACS network port to the Ethernet hub switch.

Task 2: Configure network settings

This step is necessary to make ACS visible on the network. The configuration can be done using the console port of the Cyclades ACS or via the network using the default network settings.

Initial Configuration Using the ACS Console Port

1. Install and launch your serial communication software (*e.g.*, HyperTerminal, Kermit or Minicom).

   You can obtain the latest update to HyperTerminal from: `http://www.hilgraeve.com/htpe/download.html.`

   If you are using a PC, use HyperTerminal to perform the initial configuration of the ACS directly through your PC's COM port connected with the ACS. HyperTerminal, which comes with Windows 95, 98, Me, NT, 2K, and XP is often located under **Start** > **Program** > **Accessories**. HyperTerminal emulates a dumb terminal when your PC connects to the serial port (console port) of the ACS.

2. Select available COM port.

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

3. Configure COM port using the following values:

   - 9600 bps
   - 8 data bits
   - No parity
   - 1 stop bit
   - No flow control

4. Power on the ACS.

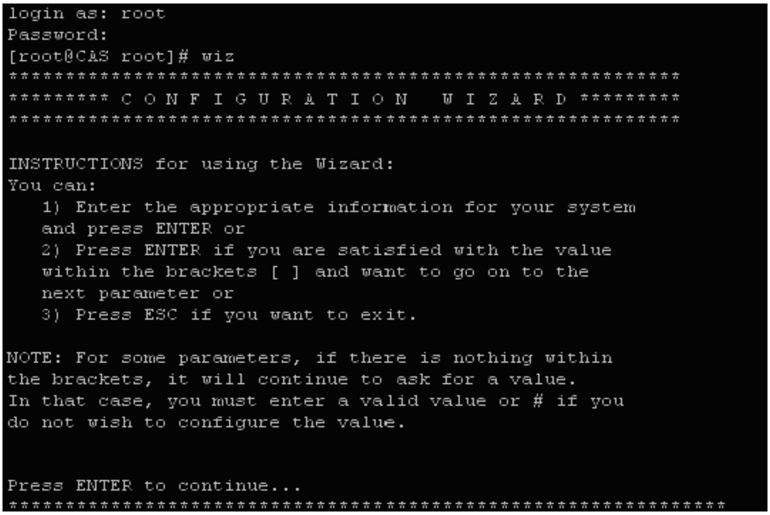
   Click **OK** on the Properties window.
   You will see the ACS booting on your screen. After it finishes booting, you will see a login prompt.

5. Connect COM Port to the ACS Console.

   Login as **`root`**, and enter the default password, **`tslinux`**.

6. Type in: **`wiz`**

   As shown in the sample screen below, the system brings up the configuration wizard banner and begins running the wizard. Follow the system prompts to either accept the default values or enter them manually.



```
login as: root
Password:
[root@CAS root]# wiz
***********************************************************
********* C O N F I G U R A T I O N   W I Z A R D *********
***********************************************************

INSTRUCTIONS for using the Wizard:
You can:
   1) Enter the appropriate information for your system
   and press ENTER or
   2) Press ENTER if you are satisfied with the value
   within the brackets [ ] and want to go on to the
   next parameter or
   3) Press ESC if you want to exit.

NOTE: For some parameters, if there is nothing within
the brackets, it will continue to ask for a value.
In that case, you must enter a valid value or # if you
do not wish to configure the value.


Press ENTER to continue...
***************************************************************
```

*For the procedure on how to configure the ACS from **wiz** to support Kerberos tickets, refer to the **ACS Reference Guide**.*

7. Proceed to Task 3.

After the initial configuration, you can configure the network further by using any of the following methods:

- Web Interface
- Command Line Interface via SSH
- AlterPath Manager, if installed in your network

By default, ACS uses DHCP client. Ask your System Administrator for the IP address. If your network doesn't have DHCP, then ACS will default to 192.168.160.10. Configure your ACS to connect to this address and run the web interface.

Task 3: Configure via Web Wizard

Proceed to **Chapter 4: Configuring the Web Interface**, and complete the procedure for configuring ACS in Wizard Mode.

Task 4: Test Configuration

Log in as a regular user and connect to a port.
Check the other features (*e.g*., Data Buffering, Management, etc.) as discussed in Chapter 3: Using the ACS.

*To create new users, see Wizard Mode **Step 3: Access** (page 4-10) of **Chapter 4: Configuring the Web Interface**.*

Task 5: Configure the web interface in Expert Mode

Return to Chapter 4: **Configuring the Web Interface** and continue with configuration using the *Expert Mode*.

Task 6: Save Changes

Click on the **Apply Changes** button located on the bottom of the ACS Web Configuration screen when done to save your configuration to Flash.

Chapter 3

Using the Web Interface

This chapter presents the methods for accessing serial ports and the basic operations for using ACS. Addressed to the ACS end user, the chapter is divided into the following topics:

- Using the Web Interface
- Using the Command Line Interface
- Using Telnet
- Using the TS Menu
- Power Management

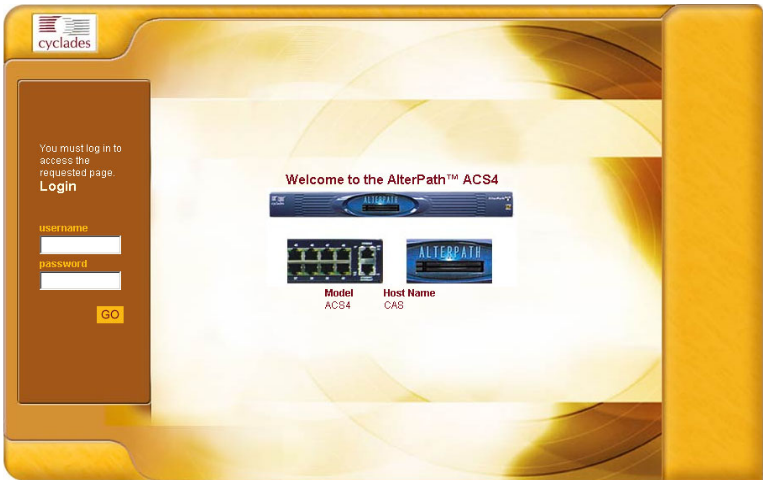
Using the Web Interface

Refer to **Appendix B** for a description of the web requirements for connecting to a serial port.

To use the web interface to connect to a serial port, follow the following procedure:

1. Connect your web browser to the ACS by typing in the Console Access Server's IP address (*e.g.*, https://10.10.10.10) in the address field of your internet browser and pressing **Enter**.

The system brings up the ACS Web Application Login Window:



You must log in to access the requested page.

Login

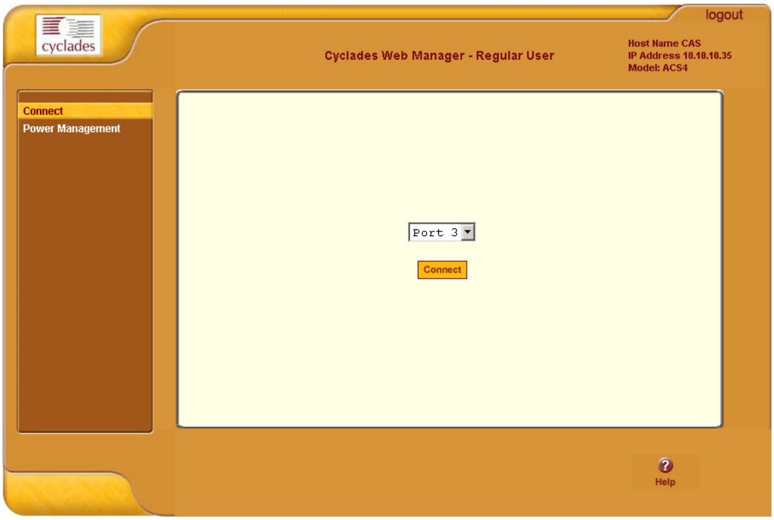
Welcome to the AlterPath™ ACS4

Model ACS4

Host Name CAS

2. To log in, type in your username and password as provided to you by your system administrator.
3. From the top menu bar, select **Applications**; from the left menu panel, select **Connect**.

The system brings up the Port Selection form:



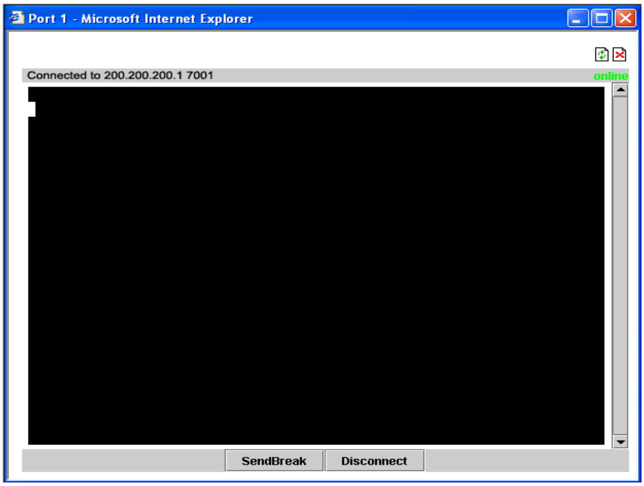
Cyclades Web Manager - Regular User

Host Name CAS
IP Address 10.10.10.35
Model: ACS4

Port 3

4. From the Port Selection form's drop down menu, select the port to which you want to connect.
5. Click on the **Connect** button.

   The system opens a Java window connecting to the chosen server.


Port 1 - Microsoft Internet Explorer

Connected to 200.200.200.1 7001

online

Using the Command Line Interface (CLI)

Operating the terminal varies according to whether the selected port is configured for Telnet access or for SSH access.

To log in, see the log in instructions for Telnet or SSH in the next section of this chapter.

Click in the terminal window and start entering commands.

To send a break to the terminal, click on the **SndBreak** button.

The upper right hand corner of the browser (Java window) shows two icons: Refresh and Disconnect.

Select the left icon to refresh or reconnect to the server; select the right icon to end the session or disconnect from the Java window.

Logging onto the Terminal

Telnet Access

To open a telnet session to a serial port, enter the following command:

`telnet` <hostname or IP address> <TCP port number>
Press ENTER

Where:

<hostname> is the hostname configured in the workstation where the telnet client will run (through /etc/hosts or DNS table). Or it can just be the IP address of the AlterPath ACS (Ethernet's interface) as configured by the user or as learned from DHCP.

<TCP port number> is the number associated to the serial port. The factory values, 7001 corresponds to serial port 1, 7002 to serial port 2 and so forth, and 3000 is a pool with all serial ports.

To close the telnet session, just press the telnet hot key configured in the telnet client application (usually it's "**Ctrl-]**").

SSH Access

Secure Shell (SSH) is a command interface and protocol often used by network administrators to connect securely to a remote computer. SSH replaces its non-secure counterpart rsh and rlogin. There are two versions of the protocol, ssh and ssh2. The AlterPath Console Server offers both.

To open a ssh session to a serial port or the next free serial port from a pool, issue the command:

```
ssh -l <username>:<server> <hostname or IP address>
```

Where:

<username> is the user configured to access that serial port. It is present either in the local CAS database or in a Radius/Tacacs/LDAP/Kerberos, etc database.

<Server> can be just the TCP port number assigned for that serial port (7001, 7002, etc), (3000, etc), the alias for the server connected to that serial port.

<hostname or IP address> is the hostname configured in the workstation where the ssh client will run (through /etc/hosts or DNS table). It can also be just the IP address of the AlterPath ACS (Ethernet's interface) configured by the user or learned from DHCP.

To exit the ssh session, press the hot key configured for that ssh client (usually "~.").

ts_menu Access

To access the serial port (telnet or ssh) using the ts_menu, login to the CAS unit and, after receiving the shell prompt, type in:

```
ts_menu
```

If configured, the menu will display the servername otherwise it defaults to the serial port number. See the sample menu below:

```
Serial Console Server Connection Menu for your Master
Terminal Server

1 ttyS1 2 ttyS2 3 ttyS3 4 ttyS4
5 ttyS5 6 ttyS6 7 ttyS7 8 ttyS8

Type 'q' to quit, a valid option[1-8], or anything else
to refresh:
```

Closing the session from ts_menu (from the console of your unit)

1. Enter the escape character.

   The escape character is shown when you first connect to the port.
   In character/text Mode, the Escape character is **`^]`** (caret and bracket, for telnet) or **`~.`** (tilde and period, for SSH).

   After entering the escape character, the following menu is shown:

   ```
   Console escape. Commands are:

   l go to line mode
   c go to character mode
   z suspend telnet
   b send break
   t toggle binary
   e exit telnet
   ```

2. Press “e” to exit from the session and return to the original menu.

   Select the exit option and you will return to the shell prompt.

Closing the session from ts_menu

From Telnet

You have to be sure that a different escape character is used for exiting your telnet session; otherwise, if you were to exit from the session created through the ts_menu, you will close your entire telnet session to your unit.
To do this, when you first telnet to your unit, use the “-e” option.

Example: to set Ctrl-? as the escape character, type:

```
telnet -e ^? 192.168.160.10
```

To exit from the session created through the ts_menu, just follow Step 1 from above. To exit from the entire telnet session to your unit, type the escape character you had set.

From SSH

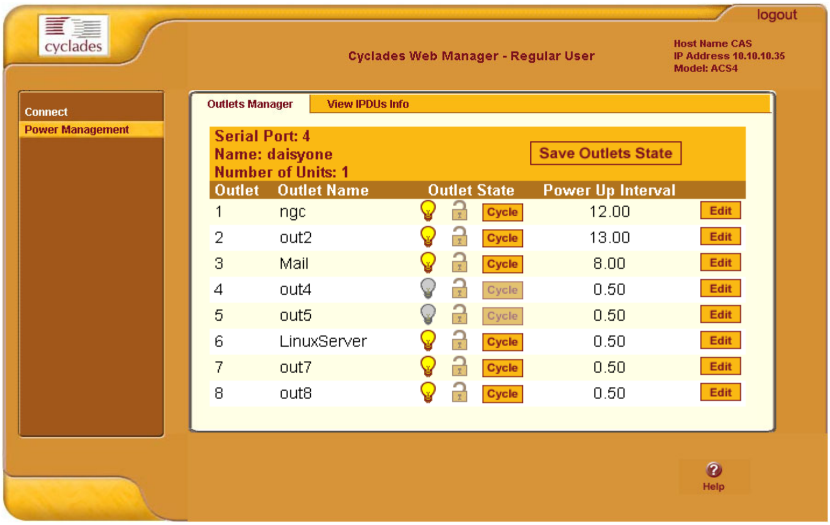
If you use SSH to make the first connection to the ACS, then the escape character for each session becomes: **`~~.`** (tilde, tilde, period)

Power Management

The Power Management forms (**Application** > **Power Management** > **Outlets Manager** or **View IPDUs Info**) allows you to manage the power outlets on the Cyclades AlterPath PM family of Intelligent Power Distribution Units (IPDUs) or view information about the IPDUs connected to the ACS.

The Outlets Manager form is used to power remote machines on and off, check the status and lock the power outlet in the on or off state to prevent accidental changes. The View IPDUs Info is used to view information about the status of the IPDU units.

For information on how to configure Power Management, refer to the *Power Management* section of *Chapter 4: Configuring the Web Interface*.



Cyclades Web Manager - Regular User

Host Name CAS
IP Address 10.10.10.35
Model: ACS4

Serial Port: 4
Name: daisyone
Number of Units: 1

Outlet	Outlet Name	Outlet State	Power Up Interval	
1	ngc	Cycle	12.00	Edit
2	out2	Cycle	13.00	Edit
3	Mail	Cycle	8.00	Edit
4	out4	Cycle	0.50	Edit
5	out5	Cycle	0.50	Edit
6	LinuxServer	Cycle	0.50	Edit
7	out7	Cycle	0.50	Edit
8	out8	Cycle	0.50	Edit

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Chapter 4
Configuring the Web Interface

This chapter presents the procedures for configuring ACS using the web interface, and is organized as follows:

Overview

This chapter is intended primarily for the System Administrator who is responsible for configuring the ACS web interface and its users. For information on how to configure ACS using VI or Command Line Interface (CLI), please consult the ACS Reference Guide.

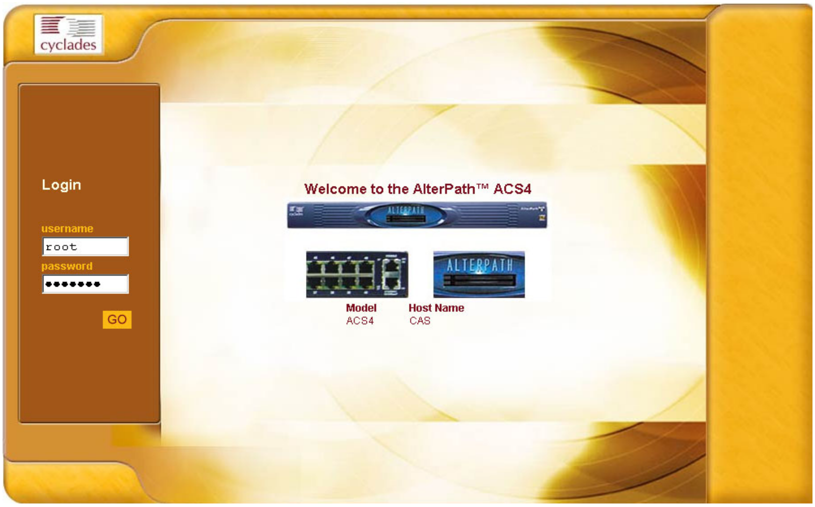
The ACS web configuration interface provides two modes of operation: Wizard and Expert. The organization of the chapter follows, in sequential fashion, the two modes and the menu selections available from each mode.

If you are a regular user, refer to *Chapter 3: Using the Web Interface*.

Logging In

1. Connect your internet browser to the Console Server by typing in the Console Access Server's IP address (*e.g.*, http://10.0.0.0) in the browser's address (URL) field.

   The system brings up the AlterPath ACS Login page:



username
root

password
•••••••

Welcome to the AlterPath™ ACS4

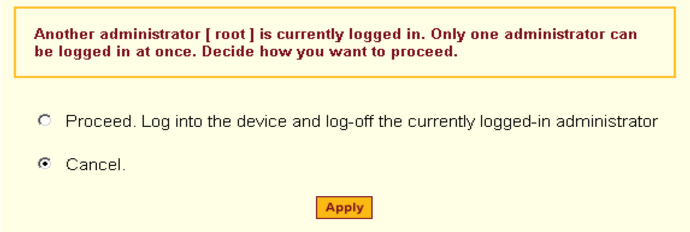
Model
ACS4

Host Name
CAS

2. Log in as **root** and type in the Web root password configured by the Web server.

   The system brings up the ACS Web management page.

   If another administrator is using the system, the following message appears:



Another administrator [root] is currently logged in. Only one administrator can be logged in at once. Decide how you want to proceed.

○ Proceed. Log into the device and log-off the currently logged-in administrator

● Cancel.

3. Click on the appropriate radio button and then click on the **Apply** button.

IMPORTANT: *Take note of this login procedure. All subsequent online procedures in this chapter assume that you are already logged in.*

ACS Web Interface: GUI Elements

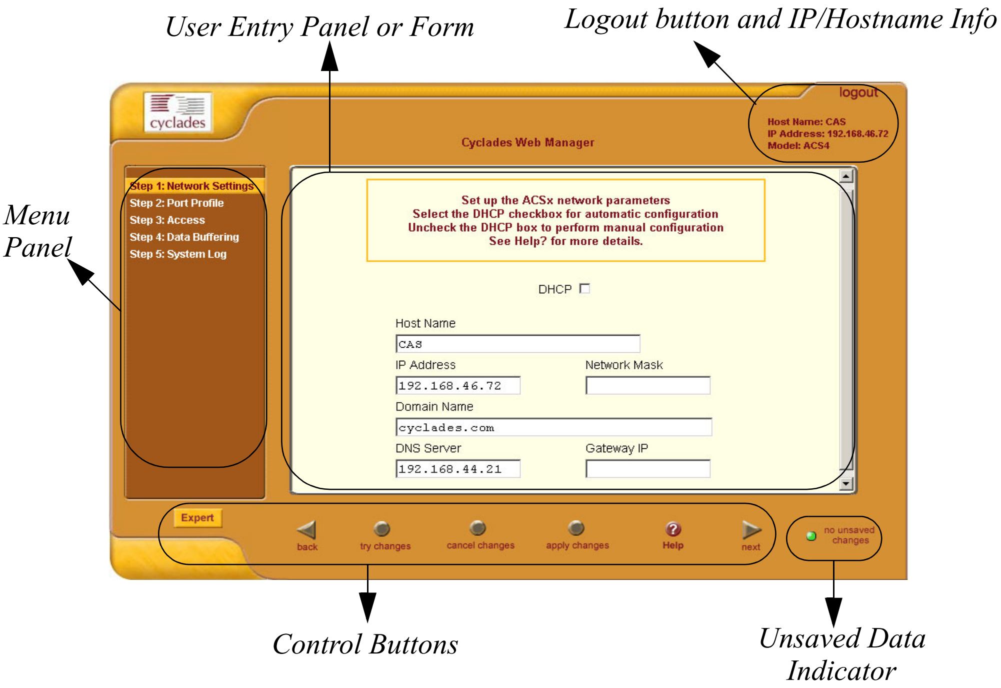
You can use the ACS web interface in two modes:

- Wizard
- Expert

Wizard Mode

The wizard is an intelligent system that simplifies configuration by providing users the default parameter values, prompting for only the necessary fields, giving specific instructions during the process and, in some cases, populating the fields automatically.

Designed for the novice, the wizard mode allows you to perform the basic configuration necessary to set up ACS and users in the quickest possible way. When you log on to ACS, the system, by default, is in Wizard Mode.



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

Set up the ACSx network parameters
Select the DHCP checkbox for automatic configuration
Uncheck the DHCP box to perform manual configuration
See Help? for more details.

DHCP □

Host Name: CAS

IP Address: 192.168.46.72

Network Mask:

Domain Name: cyclades.com

DNS Server: 192.168.44.21

Gateway IP:

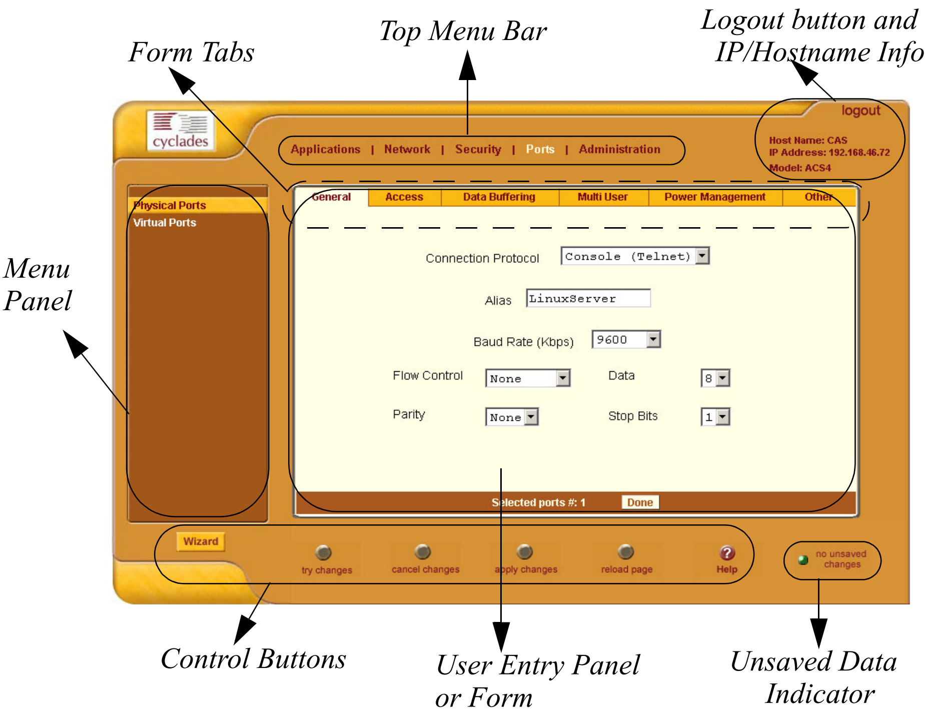
Shown above is a *typical* page of the ACS web interface in Wizard Mode. The user entry panel or form varies depending on the selected menu item. The

ACS uses forms and dialog boxes (*i.e*., pop-up windows that prompt you for an answer or command) for data entry.

Expert Mode

Designed for advanced users, clicking the **Expert** button at the bottom of the menu panel switches the web interface from Wizard to Expert Mode. Shown below is a typical ACS screen in Expert Mode. A main difference between the two modes is the addition of a top menu bar in the Expert Mode to support a wider array of menu choices.

The top menu bar supercedes the left menu panel. Based on what you select from the top menu bar, the selections from the left menu panel changes accordingly.



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

Connection Protocol: Console (Telnet)
Alias: LinuxServer
Baud Rate (Kbps): 9600
Flow Control: None
Data: 8
Parity: None
Stop Bits: 1

Selected ports #: 1

Occasionally, an Expert Mode menu selection will comprise multiple forms (such as the one shown above). These forms are identified by their tabs. Select the tab to access the desired form.

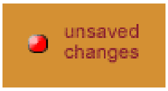
Button Functions

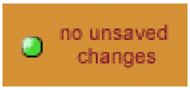
The control buttons located on the bottom of the ACS Web Configuration window provide you the following functions for operating the interface.

Button Name	*Use this button to:*
Wizard / Expert	Switch the ACS Web Configuration Screen to either Expert or Wizard Mode. The Wizard Mode is the default mode; in this mode, the Expert button is visible and vice versa.
Help?	Invoke the online help sub window which provides help information relating to the current form.
Back	Traverse to the previous form (*i.e.*, the form preceding the current form as it appears in the menu).
Try Changes	Test or run the system based on the settings from the current form without having to save the configuration.
Cancel Changes	Cancel your changes or reverts back to the original configuration values.
Apply Changes	Save your changes to the ACS Flash card.
Next	Traverse to the next form (*i.e.*, the form succeeding the current form as it appears in the menu).

Saving Your Configuration

The Unsaved Changes indicator on the lower right hand corner of the ACS web configuration window serves to remind you that you have made a configuration entry or change which has not been saved.





Unless you do not need to save your configuration, be sure to select the **Apply Changes** button to ensure that your changes are saved to Flash.

Configuring in Wizard Mode

As shown in the menu, the Wizard Mode configuration is composed of five steps:

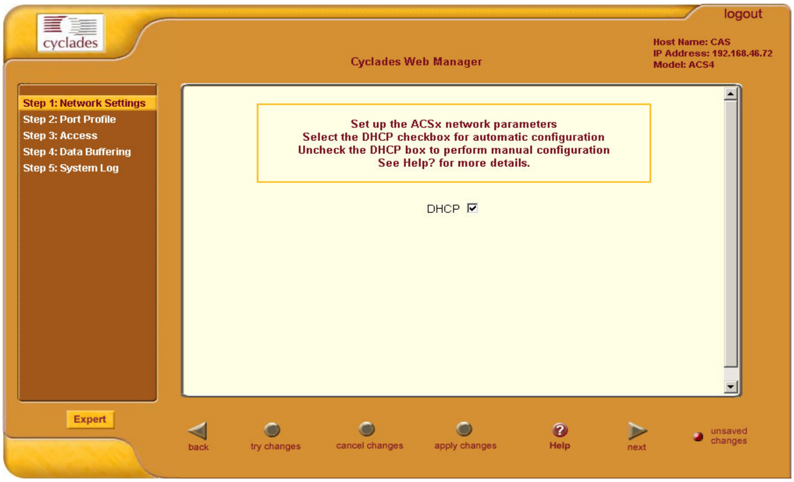
Step 1: Network Settings
Step 2: Port Profile
Step 3: Access
Step 4: Data Buffering
Step 5: System Log

Step 1: Network Settings

To configure the network settings for the ACS, follow the following steps:

1. From the main menu of the web interface, select **Step 1: Network Settings.**

   The system brings up the DHCP page (shown below). By default, the **DHCP** checkbox is check marked, which means that the system is already configured to use the DHCP server.



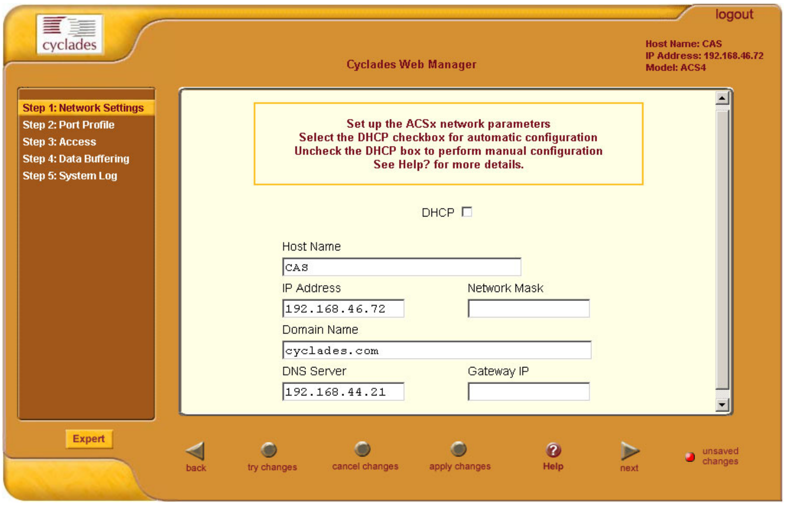
Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

Set up the ACSx network parameters
Select the DHCP checkbox for automatic configuration
Uncheck the DHCP box to perform manual configuration
See Help? for more details.

DHCP ☑

2. If you are using DHCP, proceed to **Step 2: Port Profile**; if not, click on the checkbox to deselect DHCP and enter your network settings manually.

   The Network Settings entry fields should appear as follows:



Set up the ACSx network parameters
Select the DHCP checkbox for automatic configuration
Uncheck the DHCP box to perform manual configuration
See Help? for more details.

DHCP □

Host Name: CAS

IP Address: 192.168.46.72

Network Mask:

Domain Name: cyclades.com

DNS Server: 192.168.44.21

Gateway IP:

3. Type in the network information in the corresponding entry fields, and then select **Apply Changes**.

   If the meaning of a field is unclear, select the **Help** button for a definition of the field.

4. Select the **Next** button OR proceed to **Step 2: Port Profile** section.

Step 2: Port Profile

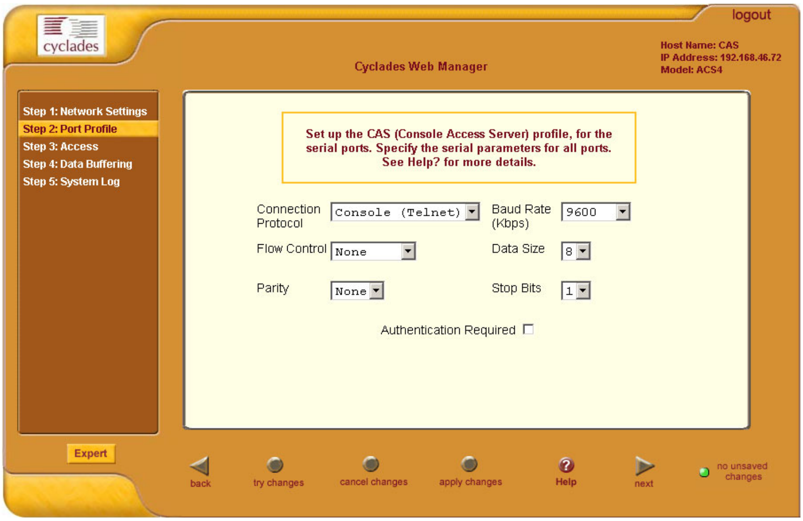
The Port Profile configures your Console Access Profile (CAS), defining the protocol and type of command line interface you will use to access the ACS. The Port Profile controls the speed, data size, parity, and stop bits of all ports. It sets the flow control to hardware, software, or none; and sets the DCD signal and tty after the system establishes a socket connection to that serial port.

In Wizard mode the system assumes that all devices will be connected at the same parameter values.

If you need to configure different values to specific devices, then you must click on the ***Expert*** *mode button and select* ***Ports*** *>* ***Physical Ports*** *to enter these values.*

1. From the main menu of the web interface, select **Step 2: Network Settings.**

   The system brings up the Port Profile form:



Set up the CAS (Console Access Server) profile, for the serial ports. Specify the serial parameters for all ports. See Help? for more details.

Connection Protocol	Console (Telnet)	Baud Rate (Kbps)	9600
Flow Control	None	Data Size	8
Parity	None	Stop Bits	1

Authentication Required □

2. From the Port Profile form, complete the necessary fields.

Field Name	*Definition*
Connection Protocol	The method you will use to access the serial ports. Cyclades recommend SSH to ensure that all data and authentication information are encrypted. Other options are Telnet and Raw Data (for un-negotiated plain socket connections).
Flow Control	The method of flow control used by the attached devices (Hardware, Software, or None).
Baud Rate	The serial speed on each console port, which should match the equipment you will connect to. The recommended Baud Rate is 9600.
Data Size	Number of data bits used by the attached devices (5, 6, 7 or 8).
Parity	Parity used by the attached devices (None, Odd, or Even).
Stop Bits	Number of stop bits used by the attached devices.
Authentication Req'd	Selecting this checkbox sets the system to require authentication to access the ports. This is done in the local database in the ACS.

If you require port authentication, then you must add users through Wizard ***Step 3: Access****.*

To configure other authentication methods (e.g., LDAP, RADIUS, TACACS), select the ***Expert*** *button to switch to Expert Mode and select:* ***Security*** *>* ***Authentication****.*

3. Select **Apply Changes** to save configuration to Flash.

4. Select the **Next** button or proceed to the next section, **Step 3: Access**.

Step 3: Access

The Wizard configuration of the Access form enables you to configure the general access rights of users and groups to the ACS or systems which ACS controls.

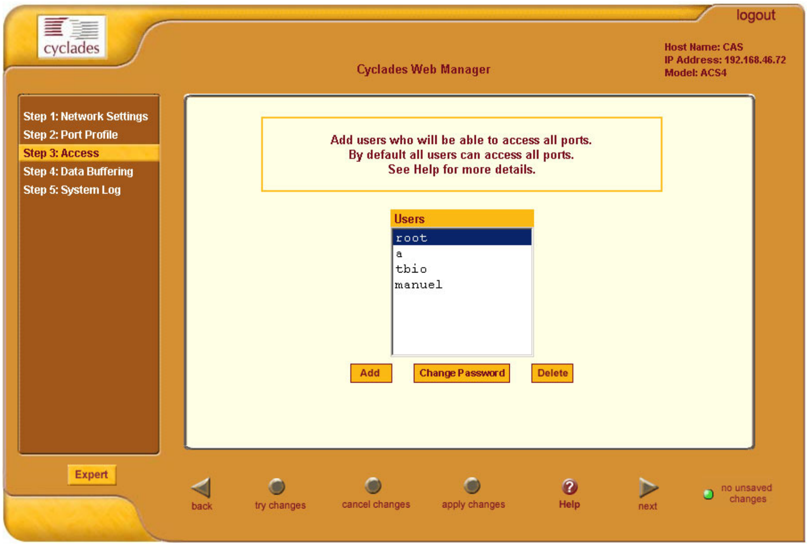
To grant users access to specific ports, switch to the Expert Mode, then go to ***Security*** *>* ***Users and Groups****.*

From this window, you can:

- Change a User Password
- Add a user
- Delete a user

1. If you haven't opened the Access Form, from the menu panel, select **Step 3: Access**.

   The system brings up the Access form:



Cyclades Web Manager

Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

Add users who will be able to access all ports.
By default all users can access all ports.
See Help for more details.

Users
root
a
tbio
manuel

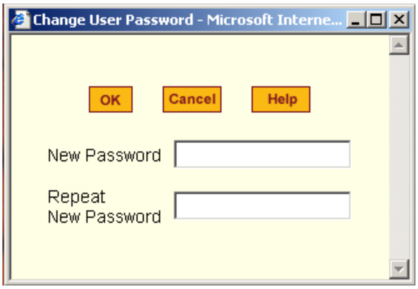
2. To complete your User Access configuration, proceed to the appropriate subheadings of this section: *Changing a User Password*, *Adding a User*, or *Deleting a User*.

Changing a User Password

If you haven't changed your root administration password, now is the time to change it using the ***Change User Password*** *dialog box.*

1. From the **Users** scrollable field box of the Access window, select the user whose password you want to change, and then select the **Change Password** button.

   The system brings up the **Change User Password** dialog box:



2. Type in the new password in the two entry fields of the dialog box, and then click on the **OK** button.

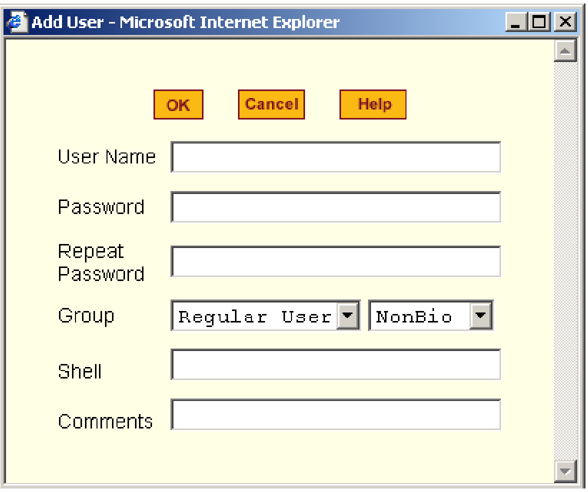
Adding a User

1. If you haven't opened the Access form, select **Step 3: Access** from the menu panel.

   The system brings up the Access form.

2. From the Access form, select the **Add** button.

   The system brings up the **Add User** dialog box:



Add User - Microsoft Internet Explorer

OK Cancel Help

User Name

Password

Repeat Password

Group: Regular User, NonBio

Shell

Comments

3. Enter the necessary User information into the following fields:

Field Name	*Definition*
User Name	Name of the ACS user.
Password	Password to be used by the user to access ACS.
Repeat Password	Re-type the password.
Group	Select the user group to which the user belongs. There are two default groups with the following associated access rights: Admin (Read/Write) Regular User (Read Only)
[*dropdown list*]	Select whether the user of this group is a NonBio or a BioUser.
Shell	Text string you wish to use as part of the shell prompt for the current user.

Field Name	*Definition*
Comments	Comments about the current user.

To define a new group, select the ***Expert*** *button to switch to the Expert Mode, and then select* ***Security*** *>* ***Users and Groups****.*

4. Select the **OK** button when done.
5. From the bottom of the main window, select the **Apply Changes** button.

Deleting a User

1. From the **Users** scrollable field box of the Access form, select the user that you wish to delete.
2. Select the **Delete** button.
3. Select **Apply Changes**.

For information on how to configure users and groups, see Users and Groups under configuring ACS in expert mode.

Step 4: Data Buffering

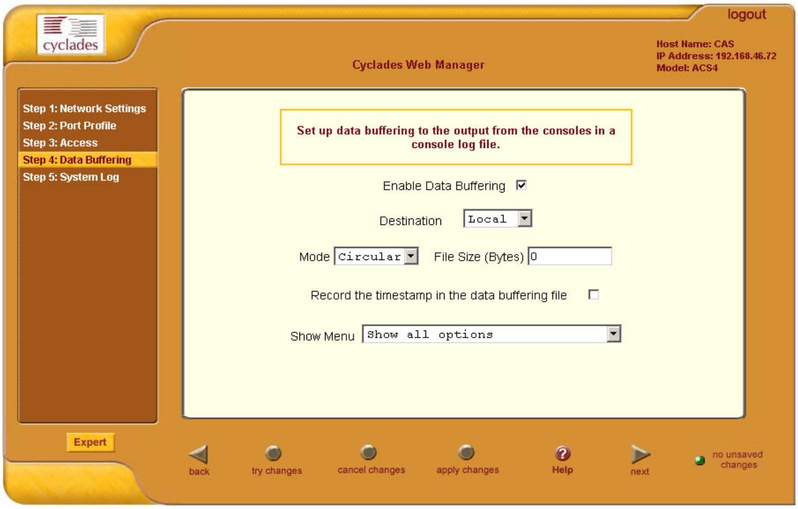
This step configures the data buffering file and mode for all ports that ACS controls.

You can set data buffering to be done in local files or in remote files through NFS. When using remote files, the remote server's disk/partition space imposes a limitation and the data is kept in linear (or sequential) files in the remote Server. When using local files, the size of the available RAMdisk also imposes a limitation. You can have data buffering done in file, syslog or both.

If you accept the default configuration values for data buffering, skip this step and proceed to **Step 5: System Log**. Do not click on the **Enable Data Buffering** checkbox.

1. From the menu panel, select **Step 4: Data Buffering**.

   The system brings up the Data Buffering form:


Set up data buffering to the output from the consoles in a console log file.

Enable Data Buffering ☑

Destination: Local

Mode: Circular   File Size (Bytes): 0

Record the timestamp in the data buffering file □

Show Menu: Show all options

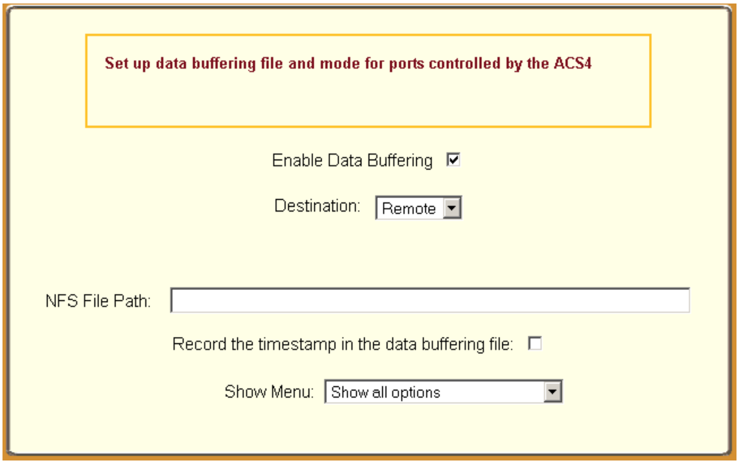
2. Select the **Enable Data Buffering** checkbox, if unselected.

   The system invokes the Data Buffering input fields.

3. Complete the input fields as follows:

Field Name	*Definition*
Destination	Destination of the buffer files: Local (i.e., Ramdisk) or Remote.
Mode	If you selected Local destination, choose the file sort mode. Select Linear for sequential files, Circular for non-sequential files.
File Size (Bytes)	If you selected Local destination, the value for this field cannot be zero.
Record the time stamp...	Commands the system to include a time stamp in the buffer.
Data Buffering file	Name of the buffer file.
Show Menu	Defines what you want to show in the menu of the buffer file. Select from: Show all options, No, Show data buffering file only, and Show without the erase options.

4. If you selected **Remote** from the Destination field, type in the **NFS File Path** from the resulting form (i.e., specify the NFS mount point. The NFS server must be already configured, and the mount point exported):



Set up data buffering file and mode for ports controlled by the ACS4

Enable Data Buffering ☑

Destination: Remote

NFS File Path:

Record the timestamp in the data buffering file: □

Show Menu: Show all options

5. Click on the **Apply Changes** button.

The system can filter messages based on their content and perform an action (*e.g.* to send an e-mail or pager message). To configure data buffering to send a notification alarm, you must use the **Notifications** form (Go to Expert Mode: **Administration** > **Notifications**).

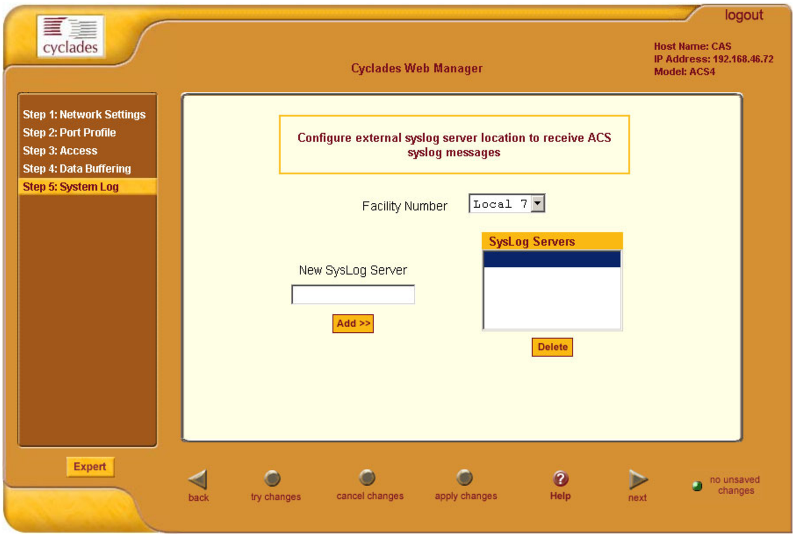
Step 5: System Log

The System Log form allows you to configure one or more syslog servers to receive syslog messages that are generated by the ACS. The ACS sends syslog messages to all syslog servers that are defined here.

*To configure syslog with data buffering features for specific ports, switch to the Expert Mode, and then go to **Ports** > **Physical Ports** > **Data Buffering**.*

1. From the menu panel, select **System Log**.

   The system brings up the System Log form:



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

Configure external syslog server location to receive ACS syslog messages

Facility Number: Local 7

2. From the System Log form, select the Syslog facility number that the ACS will use to send out syslog messages.

3. To add a new syslog server, type in the IP address in the **New Syslog Server** field, and click **Add**. (Repeat step for as many syslog servers you need to add.)

   OR

4. To delete a syslog server, select the **Syslog** server to be deleted from the **Syslog Servers** scrollable list box, and then click **Delete**.
5. Click on the **Apply Changes** button at the bottom of the main panel.

Configuring in Expert Mode

This section presents the procedures for configuring the ACS web interface in Expert Mode. This mode is designed for the advanced user who needs to configure the ACS beyond the capabilities of the basic wizard mode.

As indicated in the top menu bar, there are five additional areas of ACS configuration in Expert mode:

- Applications
- Network
- Security
- Ports
- Administration

Expert Mode Menu

Each top menu option provides additional side menu selections. Their functions are as follows:

Applications

Menu Selection	*Use this menu to:*
Connect	Select and connect to a port.
Power Management	View and edit IPDU settings.This menu comprises five tabbed forms: Outlets Manager, View IPDUs Info, Users Manager, Configuration, and Software Upgrade.
Terminal Profile Menu	Create command menu for a terminal (i.e., CLI or VI).

Most of the fields for each form are defined in the procedure. For a more detailed definition of these field names or terms, however, refer to the Glossary of this manual.

Network

Menu Selection	*Use this menu to:*
Host Settings	Configure host connections, including: Ethernet Port connections, DNS Service, and Name Service Access.
Syslog	Define the Syslog Servers to enable system logging.
PCMCIA Management	Enable the insertion or ejection of PCMCIA cards; configure the type of access and connection (e.g., Modem, ISDN, Ethernet) to ACS.
VPN Connections	Configure IPsec tunnels to establish a secure connection between ACS and a security gateway machine.
SNMP Daemon Settings	Configure the SNMP server to manage complex networks.
Services	Define or activate the method of access (i.e., Telnet, SSH, SNMP, Client, or NTP).
Firewall Configuration	Configure static IP tables
Host Table	View table of hosts; create, edit, and delete hosts.
Static Routes	View, create and delete routes from the table.

Security

Menu Selection	*Use this menu to:*
Users and Groups	Create/edit users and groups, establish/change their passwords, access rights and privileges.
Active Port Sessions	View the status of all active port sessions.

Ports

Menu Selection	*Use this menu to:*
Physical Ports	Modify ports settings for individual or all ports. Physical Ports is composed of five configuration forms as identified by their tab names: **General**, **Access**, **Data Buffering**, **Multi-User**, **Power Management** and **Other**.
Virtual Ports	Add, edit or delete port slaves.

Administration

Menu Selection	*Use this menu to:*
System Information	View summary information about the system (*e.g.*, Kernel, CPU, memory, *etc*.).
Notifications	Configure the system to deliver alarm notification by email, pager, or snmp trap; define alarm triggers; set data buffering to send notification.
Time/Date	Set the unit's date and time.
Boot Configuration	Defines the settings for loading the operating system in the event that the ACS fails to boot successfully.
Backup Configuration	Configure FTP server for backup operations.
Upgrade Firmware	Upload/upgrade new firmware.
Reboot	Reboot the ACS system.

Applications > Connect

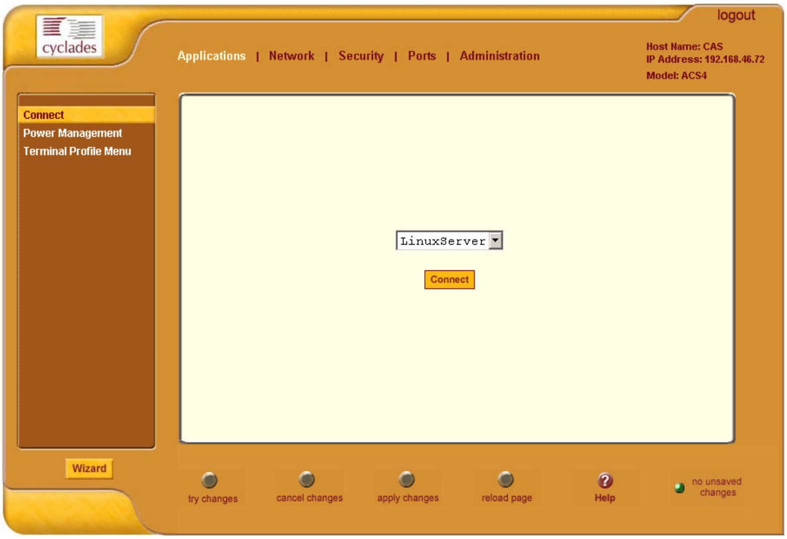
The **Connect** form is used to:

- Connect to a console port based on what port you select from the drop down menu.
- Connect to the ACS shell and use the command line interface.

In each case the ACS launches a java browser to make the connection.

1. From the top menu bar, select **Applications**; from the left menu panel, select **Connect**.

   The system invokes the port selection form:



2. From the drop down menu, select the port to which you want to connect.
3. Click on the **Connect** button.

*Refer to the **ACS Reference Guide** for using the Command Line Interface.*

Applications > Power Management

ACS allows you to remotely manage all Intelligent Power Distribution Units (IPDUs) connected to the ACS. Power management configuration comprises five tabbed forms:

Form Title	*Use this form to:*
Outlets Manager	Switch on/off and lock/unlock outlets.
View IPDUs Info	View IPDU information by ports and slaves. The information form provides real-time, global, current monitoring of all connected devices.
Users Manager	Add or delete users assigned to specific outlets.
Configuration	Enable over power protection, syslog and alarm notification from any specified port. The form allows you to set a current alarm threshold that once exceeded will have the ACS sound an alarm or send a notification message.
Software Upgrade	Upgrade power management software.

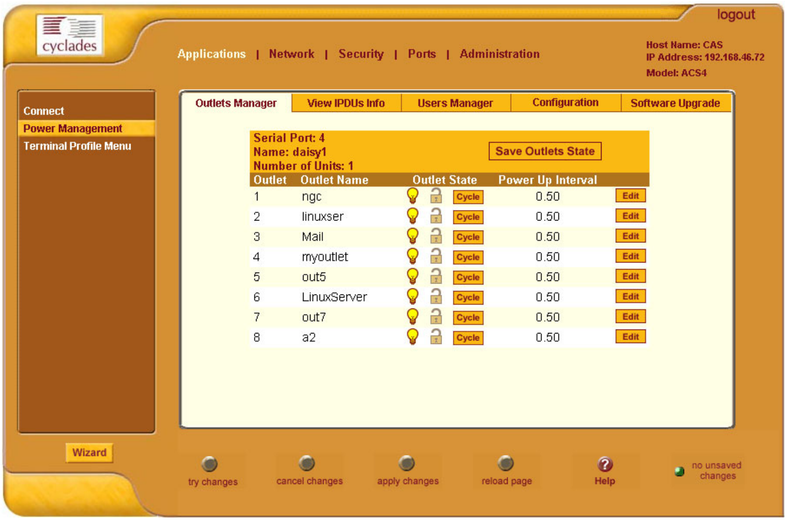
You can also configure the port assignments of the IPDU units, including its user and group access using the Power Management form of the Ports menu (**Ports** > **Physical Ports** > **Power Management**).

Applications > Power management > Outlets Manager

The **Outlets Manager** form allows you to check the status of all IPDUs connected to the Console Server, including their outlets. Any user who has Administration privileges can turn on, turn off, cycle, lock and unlock the outlets.

1. From the top menu bar, select **Applications**; from the left menu panel, select **Power Management**.

   The system invokes the following form:



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

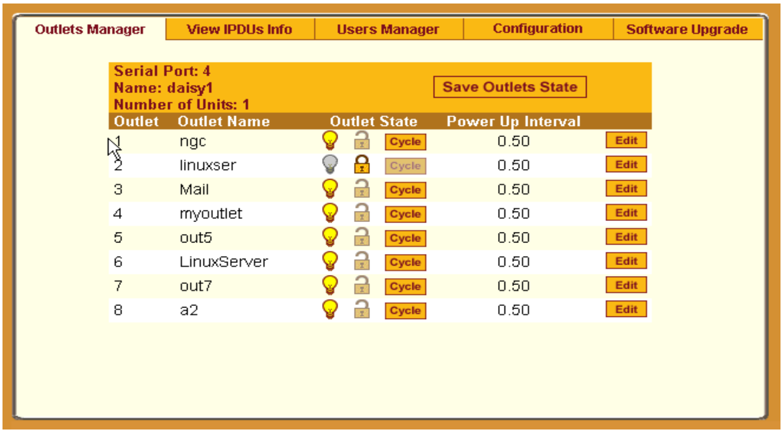
Serial Port: 4
Name: daisy1
Number of Units: 1

Outlet	Outlet Name	Outlet State	Power Up Interval	
1	ngc	💡 🔓 Cycle	0.50	Edit
2	linuxser	💡 🔓 Cycle	0.50	Edit
3	Mail	💡 🔓 Cycle	0.50	Edit
4	myoutlet	💡 🔓 Cycle	0.50	Edit
5	out5	💡 🔓 Cycle	0.50	Edit
6	LinuxServer	💡 🔓 Cycle	0.50	Edit
7	out7	💡 🔓 Cycle	0.50	Edit
8	a2	💡 🔓 Cycle	0.50	Edit

   In the example above, the yellow bulbs (*i.e*, the actual color online when the switch is ON) and the opened padlock indicate that the outlets are switched on and unlocked.

2. To switch on/off an outlet, click on the light bulb; to lock/unlock an outlet, click on the padlock.

In the sample form below, outlet 2 is switched off and locked.



Serial Port: 4
Name: daisy1
Number of Units: 1

Outlet	Outlet Name	Outlet State			Power Up Interval	
1	ngc			Cycle	0.50	Edit
2	linuxser			Cycle	0.50	Edit
3	Mail			Cycle	0.50	Edit
4	myoutlet			Cycle	0.50	Edit
5	out5			Cycle	0.50	Edit
6	LinuxServer			Cycle	0.50	Edit
7	out7			Cycle	0.50	Edit
8	a2			Cycle	0.50	Edit

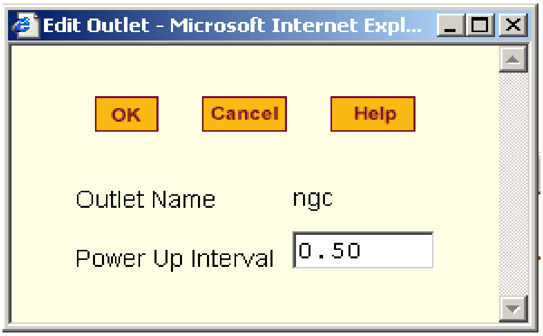
3. To save your changes, click on the **Save Outlets State** button located in the form.
4. From the lower control buttons of the main window, click on the **Apply Changes** button.

To Edit the Power Up Interval

You can edit the power up interval of an outlet as follows:

1. From the **Outlets Manager** form (**Applications** > **Power Management**), select the particular outlet that you wish to edit by clicking the adjacent **Edit** button.

   The system brings up the **Edit Outlet** dialog box:



Outlet Name ngc

Power Up Interval 0.50

2. From the **Power Up Interval** field of the Edit Outlet dialog box, enter the time interval (in seconds) in which the system waits after the outlet is switched on; select **OK** when done.

Applications > Power Management > View IPDUs Info

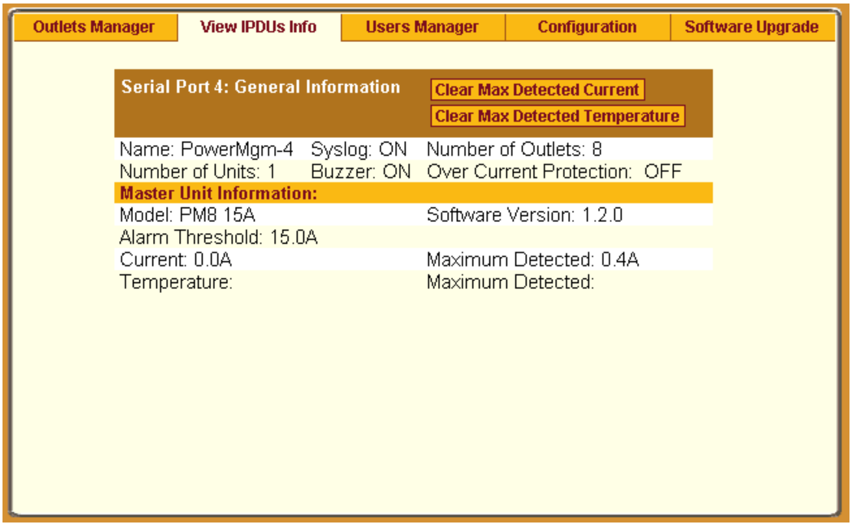
The IPDU Info form allows you to view all IPDU information (*e.g.*, number of outlets of each unit, current, temperature, alarm threshold levels, firmware, etc.) by serial port.

The form stores historical values of the maximum current and the maximum temperature.

To view IPDU information, perform the following steps:

1. From the top menu bar, select **Applications**; from the left menu panel, select **Power Management**; from the form tabs, select **View IPDUs Info**.

   The system brings up the **IPDUs Info** form:



Serial Port 4: General Information

Name: PowerMgm-4	Syslog: ON	Number of Outlets: 8
Number of Units: 1	Buzzer: ON	Over Current Protection: OFF

Master Unit Information:

Model: PM8 15A	Software Version: 1.2.0
Alarm Threshold: 15.0A	
Current: 0.0A	Maximum Detected: 0.4A
Temperature:	Maximum Detected:

2. To delete the stored values for the maximum detected current, select the **Clear Max Detected Current** button.
3. To delete the stored values for the maximum detected temperature, select the **Clear Max Detected Temperature** button.

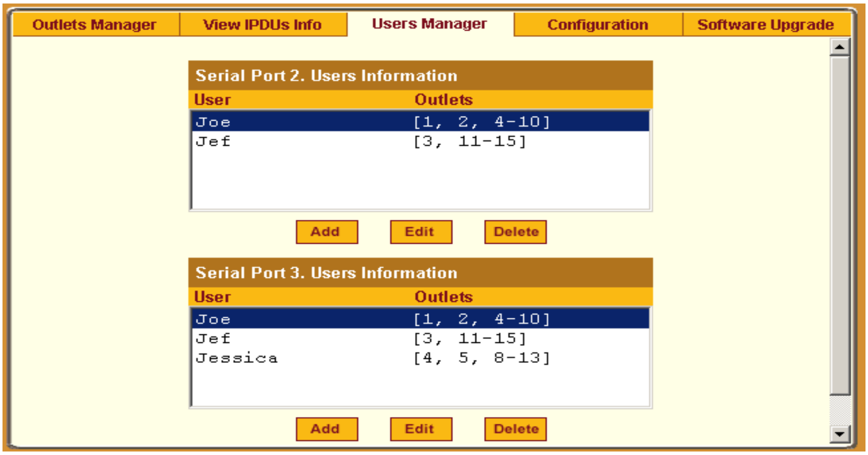
Applications > Power Management > Users Manager

The Users Management form of Power Management allows you to assign users to selected outlets for each serial port, and vice versa.

To add a user or edit an assigned user, perform the following steps:

1. From the top menu bar, select **Applications**; from the left menu panel, select **Power Management**; from the tabs, select **Users Manager**.

   The system brings up the **Users Manager** form:



Serial Port 2. Users Information

User	Outlets
Joe	[1, 2, 4-10]
Jef	[3, 11-15]

Serial Port 3. Users Information

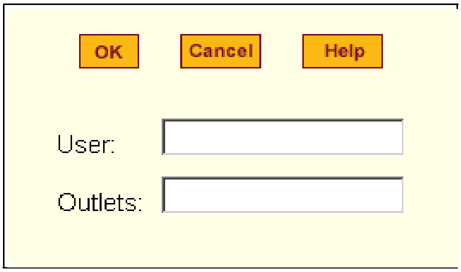
User	Outlets
Joe	[1, 2, 4-10]
Jef	[3, 11-15]
Jessica	[4, 5, 8-13]

2. To edit an assigned user, select the user you wish to edit from the Serial Port view table and then select the **Edit** button that corresponds to the table.

   - OR -

   To add or assign a new user select the **Add** button from the appropriate Serial Port view table.

   The system brings up the **Add/Edit User** dialog box:



3. From the **Add/Edit User** dialog box, modify or enter in the corresponding fields the user and the outlets to which the user is assigned, and then select the **OK** button.

   *In the **Outlets** field, use the comma to separate each outlet; use the hyphen to indicate a range of outlets* (*e.g.*, **1, 3, 6, 9-12**).

   *Selecting **Edit** will not allow you to edit or delete the user, only the outlet assignments for that user.*

4. Verify your entry by checking the appropriate Serial Port table from the Users Manager form.
5. Select the **Apply Changes** button located at the bottom of the ACS application window to save your configuration.

Deleting a User

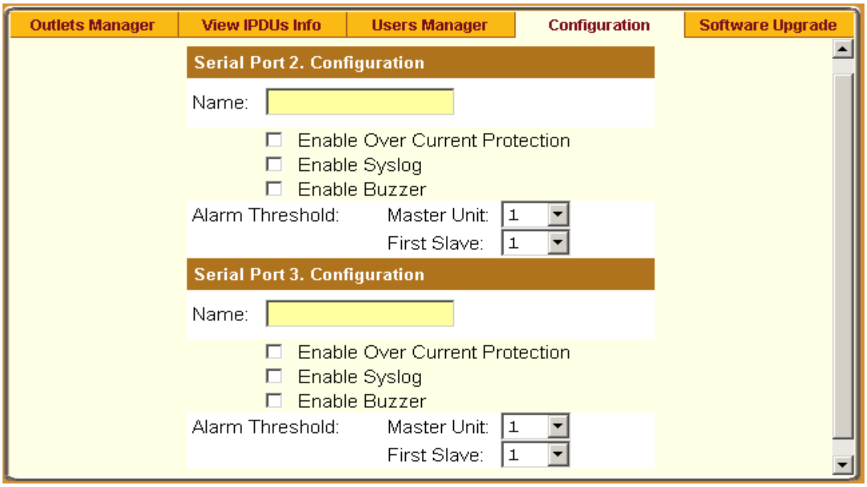
1. To delete an assigned user, select the user you wish to delete from the appropriate Serial Port view table.
2. Based on the Serial Port view table that you are working on, select the corresponding **Delete** button.
3. Select the **Apply Changes** button located at the bottom of the ACS application window.

Applications > Power Management > Configuration

To configure IPDUs to generate alarms or syslog files, perform the following steps:

1. From the top menu bar, select **Applications**; from the left menu panel, select **Power Management**; from the default Outlets Manager form select the Configuration tab.

   The system brings up the Configuration form:



Serial Port 2. Configuration

Name:

□ Enable Over Current Protection
□ Enable Syslog
□ Enable Buzzer

Alarm Threshold: Master Unit: 1
First Slave: 1

Serial Port 3. Configuration

Name:

□ Enable Over Current Protection
□ Enable Syslog
□ Enable Buzzer

Alarm Threshold: Master Unit: 1
First Slave: 1

2. From the Configuration form, select the Serial Port you wish to configure and then click on the appropriate radio buttons to enable/disable Over Current Protection, Syslog, and Buzzer.
3. If enabling the buzzer or alarm notification, provide the Alarm Threshold (1-100 amps) for that master or slave unit.
4. Click on the **Apply Changes** button at the bottom of the ACS application window.

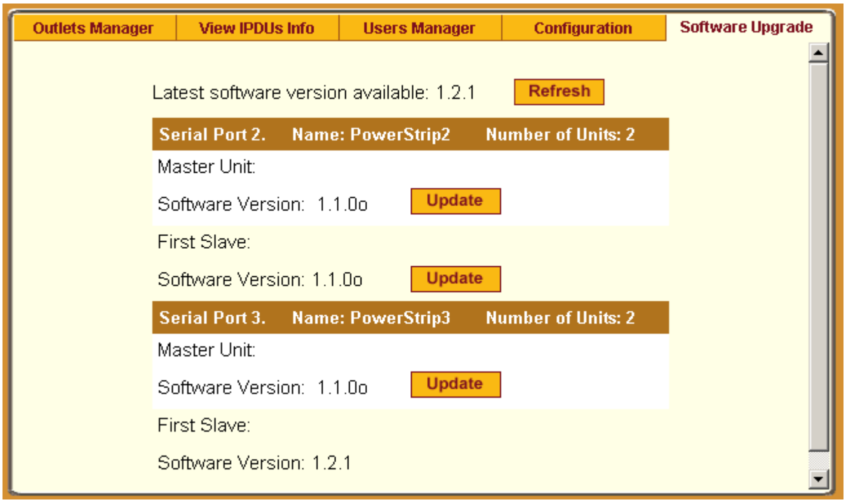
Applications > Power Management > Software Upgrade

The **Software Upgrade** form of Power Management allows you to upgrade the Power Management software for a selected serial port. The first line of the form shows the **latest software version available**. The presence of an Upgrade button indicates that a new software version for that master or slave port is available.

To upgrade the software for a selected port, perform the following steps:

1. From the top menu bar, select **Applications**; from the left menu panel, select **Power Management**; from the tabs, select **Software Upgrade**.

   The system brings up the **Software Upgrade** form:



Latest software version available: 1.2.1

Serial Port 2. Name: PowerStrip2 Number of Units: 2

Master Unit:

Software Version: 1.1.0o

First Slave:

Software Version: 1.1.0o

Serial Port 3. Name: PowerStrip3 Number of Units: 2

Master Unit:

Software Version: 1.1.0o

First Slave:

Software Version: 1.2.1

2. Select the **Refresh** button to ensure that all software information on the form is up-to-date.
3. From the Software Version list, select the software you wish to update, and then select the **Update** button to the right of the listed version.
4. Select the **Apply Changes** button at the bottom of the configuration window to save your configuration.

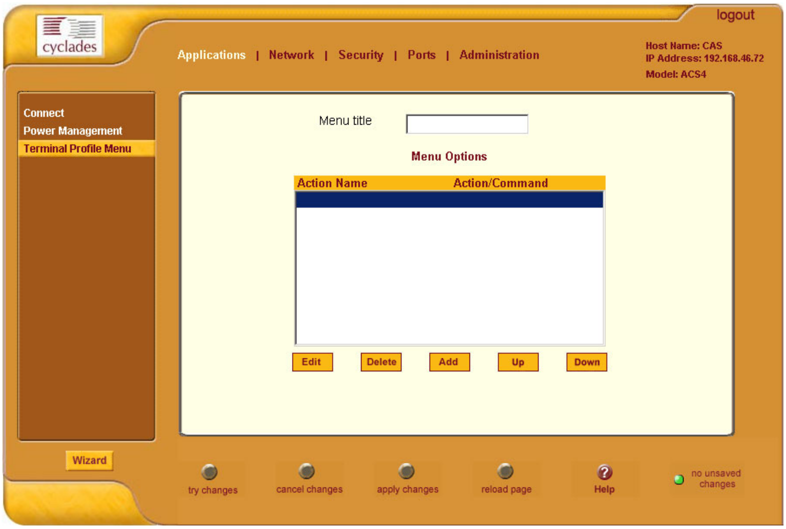
Applications > Terminal Profile Menu

The Terminal Profile Menu form enables you to create a menu of commands for users to use whenever ACS is used as a terminal server with dumb terminals attached. The menu should appear when users turn on the dumb terminal and login to ACS.

You can create any valid command recognized by the ACS operating system. The most common use of this feature is to launch an SSH session to a host system.

1. From the top menu bar, select **Applications**; from the menu panel, select **Terminal Profile Menu**.

   The system invokes the Terminal Profile Menu form:

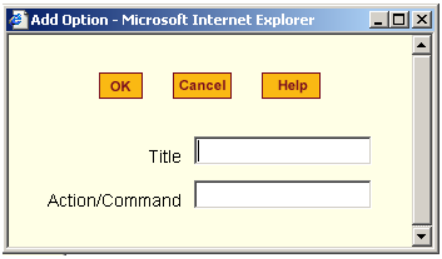


2. To edit a menu option, select the action name from the table and then click on the **Edit** button.

   - OR -

   To add a new menu option to an existing menu, click on the **Add** button.

The system invokes the following dialog box:



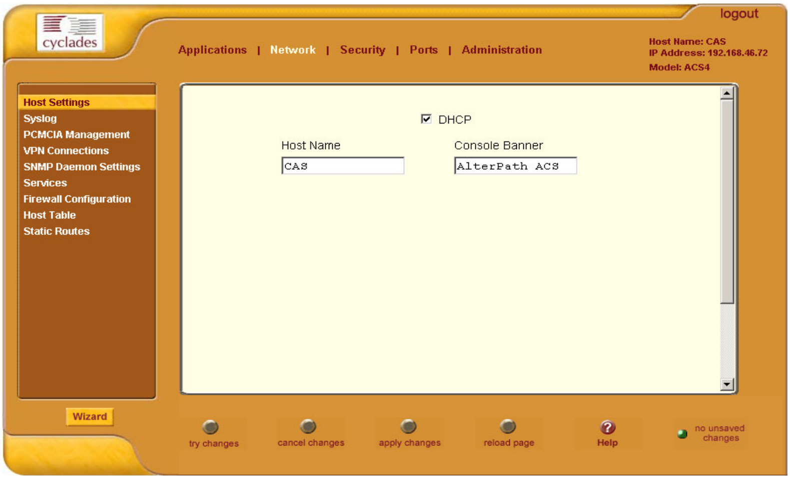
3. Type in the menu title and/or action to the corresponding entry fields and then select **Apply**.
4. Verify your entry or edits from the Menu Options list of the Terminal Profile Menu form.
5. To enter or edit another command, repeat steps 2 through 4.
6. Click on the **Apply Changes** button located at the bottom of the configuration window.

Network > Host Settings

The Host Settings form allows you to configure the network settings for ACS.

1. Select **Network** from the top menu bar, and then select **Host Settings** from the left menu panel.

   The system brings up the **Host Settings** form.



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

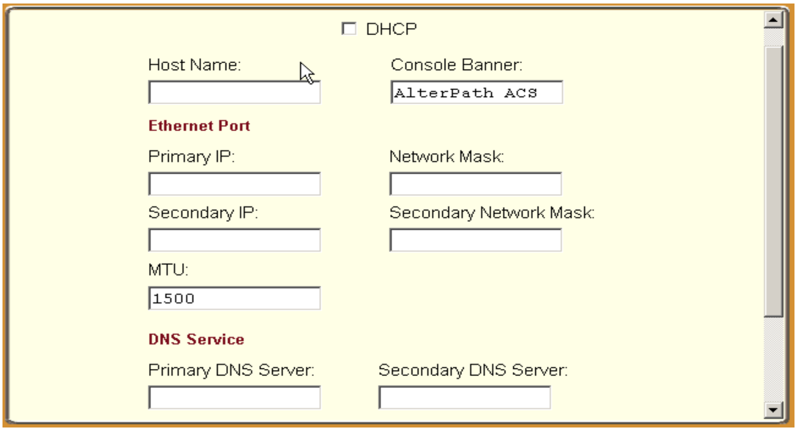
☑ DHCP

Host Name: CAS

Console Banner: AlterPath ACS

By default, the DHCP field is check marked. If you wish to disable DHCP and enter the host settings manually, click the checkbox to remove the check mark.

The system should add the following fields to your form:



☐ DHCP

Host Name:

Console Banner: AlterPath ACS

Ethernet Port

Primary IP:

Network Mask:

Secondary IP:

Secondary Network Mask:

MTU: 1500

DNS Service

Primary DNS Server:

Secondary DNS Server:

2. From the Host Settings form, complete or edit the following fields, as necessary:

Filed Name	*Field Definition*
Host Name	The fully qualified domain name identifying the specific host computer within the Internet.
Console Banner	A text string designed to appear on the console upon logging into and exiting from a port as a way to verify or identify the particular port connection.
Ethernet Port	
Primary IP	The numeric identification number of the primary machine on the Internet.
Secondary IP	The numeric identification number of the backup machine on the Internet.
Network Mask	The 32-bit number used to group IP addresses together or to indicate the range of IP addresses for this IP network/subnet/supernet.
Secondary Network Mask	Optional.
MTU	Maximum Transmission Unit used by the TCP protocol.
DNS Service	
DNS Server	Address of the Domain Name Server.
Secondary DNS Server	Address of the backup Domain Name Server.
Domain Name	The name that identifies the domain (e.g., domainname.com).
Gateway IP	As indicated.

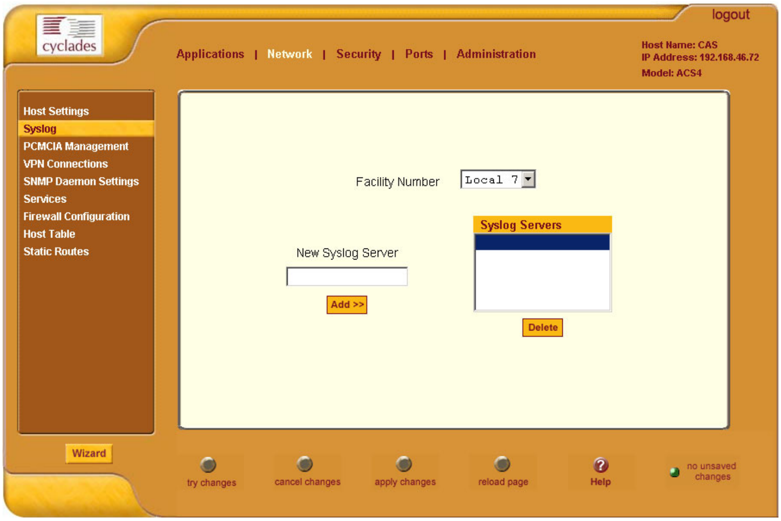
3. Select the **Apply Changes** button at the bottom of the application window to complete the procedure.

Network > Syslog

The Syslog form allows you to configure one or more syslog servers to receive ACS-generated syslog messages. The ACS generates syslog messages related to users connecting to ports, login failures and other information that can be used for audit trailing purposes. You also use this form to delete syslog servers.

1. Select **Network** from the top menu bar, and then select **Syslog** from the left menu panel.

   The system brings up the **Syslog** form.



2. Complete the form as follows:

Field Name	*Definition*
Facility Number	Facility number to identify the location of the Syslog Server.
New Syslog Server	Name of the Syslog Server that you wish to add.
Syslog Servers	List of all Syslog Servers connected to ACS.

3. To add a new Syslog Server, type in the name of the server in the **New Syslog Server** field, and then select the **Add** button

   - OR -

   To delete a Syslog Server, from the **Syslog Servers** list box, select the server you wish to delete, and then select **Delete**.
4. Select **Apply Changes** to save your changes to Flash.

Network > PCMCIA Management

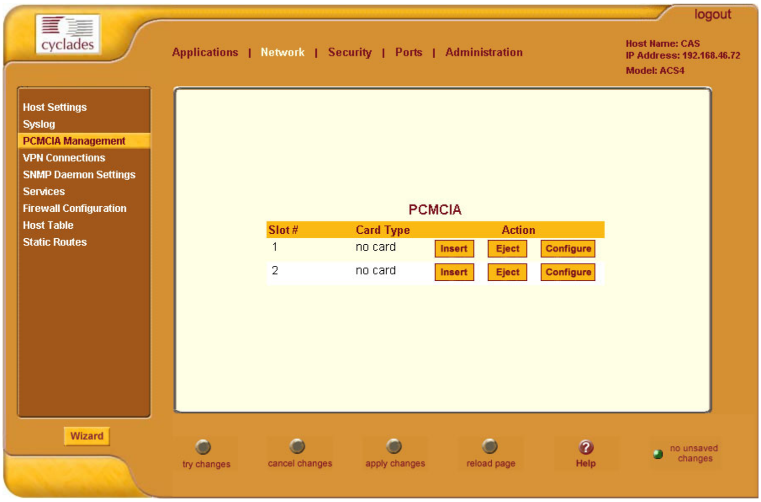
The PCMCIA Management form allows you to configure the types of PCMCIA card that are installed in either one or both of the PCMCIA slots. Cyclades ACS supports several PCMCIA cards including modem, ISDN, wireless and wired NICs, Compact Flash and IDE drives for data buffer storage.

For a list of all ACS-supported PCMCIA Cards, refer to ***Appendix A: Hardware Specifications****.*

You can insert a card at any time and the corresponding driver should load automatically. Before removing a card, however, you must configure the PCMCIA form to eject the card and stop the system from using the card.

1. Select **Network** from the top menu bar, and then select **PCMCIA Management** from the left menu panel.

   The system brings up the PCMCIA Management form:



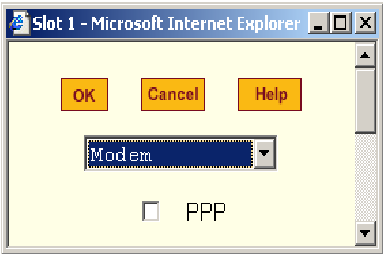
Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

PCMCIA

Slot #	Card Type	Action		
1	no card	Insert	Eject	Configure
2	no card	Insert	Eject	Configure

2. Insert the card into the PCMCIA slot and then select the **Insert** button.
3. To configure the card, select the **Configure** button.

   The system brings up the PCMCIA Configuration dialog box:



4. From the pull down menu, select the type of card that you are using.
5. Complete the rest of the dialog box. (See the succeeding **PCMCIA Configuration Dialog Boxes** section for information about each input field.)
6. Click on the **OK** button when done.
7. Click on **Apply Changes** to save your configuration.

PCMCIA Configuration Dialog Boxes

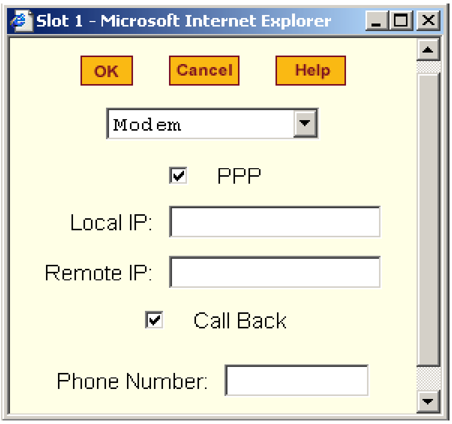
The ACS supports the following types of PCMCIA cards:

- Modem
- ISDN
- GSM
- Ethernet
- Compact Flash
- Wireless LAN

The dialog box for configuring the PCMCIA card will have varying sets of input fields depending on the type of PCMCIA card that you select from the drop down box:

Access Method: Modem

If the selected card type is *Modem* (default), the following fields are used:



Slot 1 - Microsoft Internet Explorer

Modem

☑ PPP

Local IP:

Remote IP:

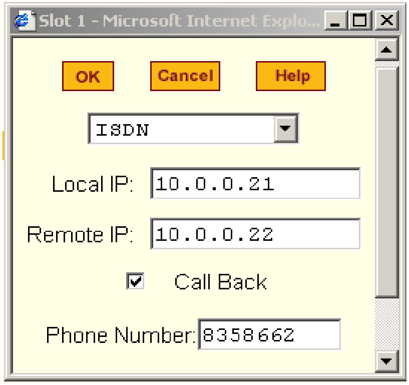
☑ Call Back

Phone Number:

Field Name	*Definition*
[PCMCIA Card]	Pull-down box to select the type of PCMCIA card that you are using.
PPP	Check box to enable point-to-point protocol.
Local IP	The local IP address of the PCMCIA card.
Remote IP	The remote IP address of the PCMCIA card.
Call Back	Check box to enable the callback security feature.
Phone Number	The phone number that the ACS uses to call back.

Access Method: ISDN

If the selected Access Method is *ISDN*, the following fields are used:



ISDN

Local IP: 10.0.0.21

Remote IP: 10.0.0.22

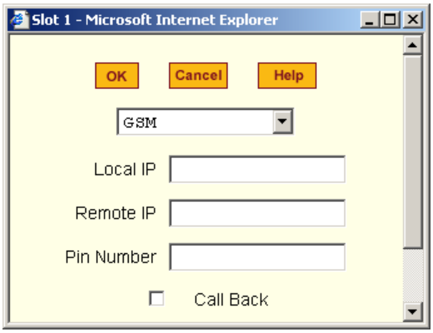
☑ Call Back

Phone Number: 8358662

Field Name	*Definition*
[PCMCIA Card]	Select ISDN from the pull-down box.
PPP	Check box to enable point-to-point protocol.
Local IP	The local IP address of the PCMCIA card.
Remote IP	The remote IP address of the PCMCIA card.
Call Back	Check box to enable the callback security feature.
Phone Number	The phone number that the ACS uses to call back.

Access Method: GSM

If the selected Access Method is *GSM*, the following fields are used:



GSM

Local IP

Remote IP

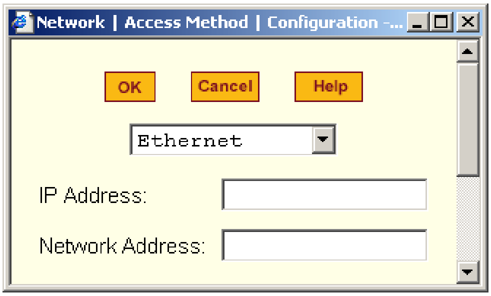
Pin Number

□ Call Back

Field Name	*Definition*
[PCMCIA Card]	Select GSM from the pull-down box.
Local IP	The local IP address of the PCMCIA card.
Remote IP	The remote IP address of the PCMCIA card.
Pin Number	The personal identification number associated with the GSM.
Call Back	Check box to enable the callback security feature.

Access Method: Ethernet

If the selected Access Method is *Ethernet*, the following fields are used:



Ethernet

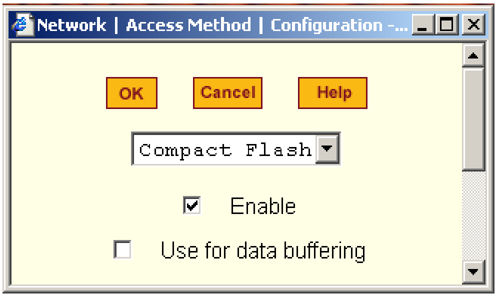
IP Address:

Network Address:

Field Name	*Definition*
[PCMCIA Card]	Select **Ethernet** from the Pull-down box.
IP Address	The local IP address of the Ethernet.
Network Address	The network address of the Ethernet.

Access Method: Compact Flash

If the selected Access Method is *Compact Flash*, the following fields are used:



Compact Flash

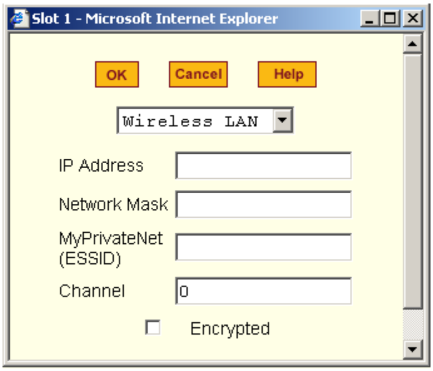
☑ Enable

□ Use for data buffering

Field Name	*Definition*
[PCMCIA Card]	Select **Compact Flash** from the Pull-down box.
Enable	Check box to enable the compact flash.
Use for Data Buffering	Check box to use the compact flash for data buffering.

Access Method > Wireless LAN

If the selected Access Method is *Wireless LAN*, the following fields are used:



Wireless LAN

IP Address

Network Mask

MyPrivateNet (ESSID)

Channel 0

□ Encrypted

Field Name	*Definition*
[*Unlabeled*]	Pull-down box to select the type of PCMCIA card that you are using.
PPP	Check box to enable point-to-point protocol.
Local IP	The local IP address of the PCMCIA card.
Remote IP	The remote IP address of the PCMCIA card.
Call Back	Check box to enable the callback security feature.
Phone Number	The phone number that the ACS uses to call back.

What is VPN

If you already understand how VPN works, skip this section and proceed to the next procedure, **Network > VPN Connections**.

A VPN, or Virtual Private Network lets the Console Server and a whole network communicate securely when the only connection between them is over a third network which is not trustable. The method is to put a security gateway machine in the network and create a security tunnel between the Console Server and this gateway. The gateway machine and the Console Server encrypt packets entering the untrusted net and decrypt packets leaving it, creating a secure tunnel through it.

Often it may be useful to have explicitly configured IPsec tunnels between the Console Server and a gateway of an office with a fixed IP address (in this case every machine on the office network would have a secure connection with the Console Server), or between the Console Server and the Console Server administrator machine, which must, in this case, have a fixed IP address. You can add this connection descriptor to both the Console Server and the other end. This is the advantage of using left and right instead of using local remote parameters.
If you give an explicit IP address for left (and left and right are not directly connected), then you must specify leftnexthop (the router which Console Server sends packets to in order to get them delivered to right). Similarly, you may need to specify rightnexthop (vice versa).

The Role of IPsec

IPsec is used mainly to construct a secure connection (tunnel) between two networks (ends) over a not-necessarily-secure third network. In ACS, the IPsec is used to connect the ACS securely to a host or to a whole network--configurations usually referred to as *host-to-network* and *host-to-host tunnel*. Practically, this is the same thing as a VPN, but here one or both sides have a degenerated subnet (*i.e*., only one machine).

The IPsec protocol provides encryption and authentication services at the IP level of the network protocol stack. Working at this level, IPsec can protect any traffic carried over IP, unlike other encryption which generally protects only a particular higher-level protocol (PGP for mail, SSH for login, SSL for

Web work and so on). The implementation of IPsec used by the AlterPath Console Server is FreeSWAN (www.freeswan.org).

You can use IPsec on any machine that does IP networking. Wherever required to protect traffic, you can install dedicated IPsec gateway machines. IPsec can also run on routers, firewall machines, various application servers, and end-user desktop or laptop machines.

Authentication Keys

To establish a connection, the Console Server and the other end must be able to authenticate each other. For FreeS/WAN, the default is public key authentication based on the RSA algorithm.

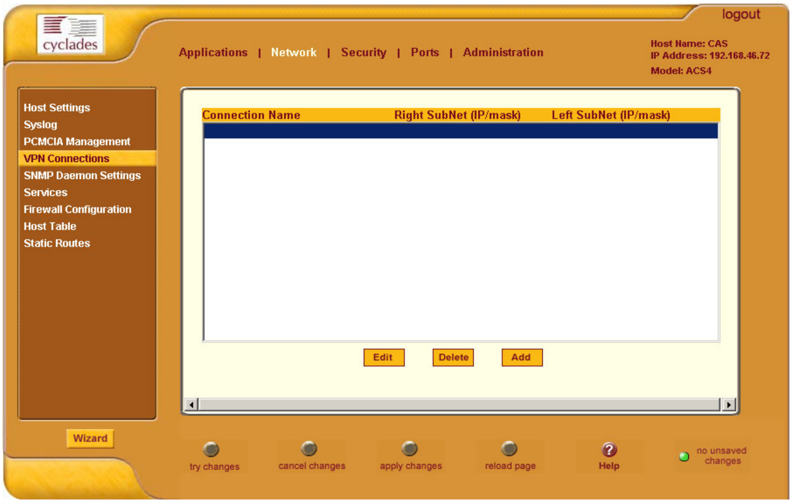
Network > VPN Connections

The VPN configuration form allows you to configure one or more VPN connections to other systems or Cyclades ACS devices.

Select one of the existing VPN connections and click the edit button or click the add button to add a new one. This launches a dialog box to prompt for the details of the connection. Complete the fields in the dialog box. The RSA keys may be entered using the Copy and Paste feature of your Browser.

1. Select **Network** from the top menu bar, and then select **VPN Connections** from the left menu panel.

   The system brings up the **VPN Connections** form:



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

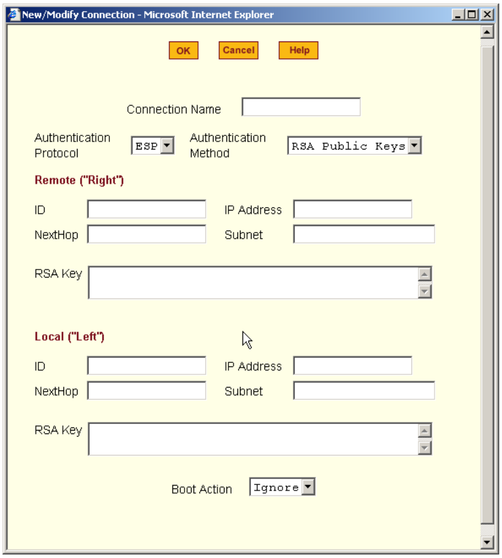
Connection Name	Right SubNet (IP/mask)	Left SubNet (IP/mask)

2. To edit a VPN connection, select the VPN connection that you wish to edit from the form, and then select the **Edit** button.

   OR

   To add a VPN connection, select the **Add** button.

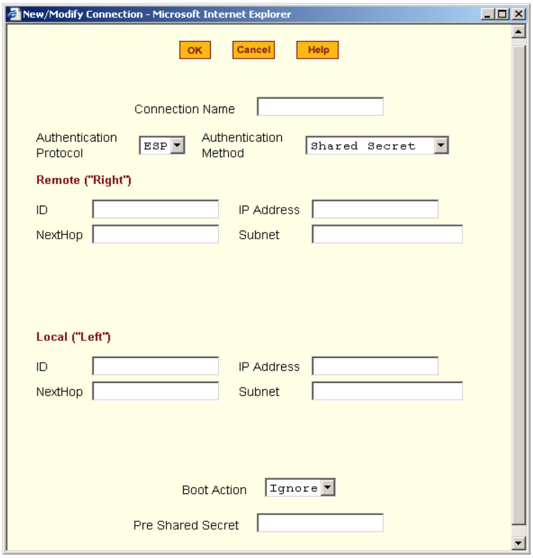
The system brings up the **New/Modify VPN Connection** dialog box:



Authentication Protocol ESP

Authentication Method RSA Public Keys

Boot Action Ignore



Authentication Protocol ESP

Authentication Method Shared Secret

Boot Action Ignore

If the selected **Authentication Method** is **RSA Public Keys**, the left dialog box is used. If the **Authenticatication Method** is **Shared Secret**, the right dialog box is used.

3. Edit or complete the appropriate fields from either dialog box as follows:

Field Name	*Definition*
Connection Name	Name of the VPN connection.
Authentication Protocol	Authentication protocol used to establish a VPN connection.
Authentication Method	Authentication method used to establish a VPN connection.
Remote (“Right”)	
ID	Identification name.
IP Address	Remote IP address.
NextHop	The router to which the Console Server sends packets in order to deliver them to the left.
Subnet Mask	As indicated.

Field Name	*Definition*
RSA Key	You may use the copy and paste feature of your browser to enter the RSA key.
Local ("Left")	
ID	Identification name.
IP Address	Local IP address.
NextHop	The router to which the Console Server sends packets in order to deliver them to the right.
Subnet Mask	As indicated.
RSA Key	You may use the copy and paste feature of your browser to enter the RAS key.
Boot Action	Boot action with regards to generating an RSA key pair upon system boot.
Pre-Shared Secret	The pre-shared password between left and right users.

4. Select the **OK** button.
5. Select the **Apply Changes** button to save your configuration.

SNMP Daemon Settings

Short for Simple Network Management Protocol, SNMP is a set of protocols for managing complex networks. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network. SNMP-compliant devices (*agents*), store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.

The ACS uses the Net-SNMP package (http://www.net-snmp.org). The Net-SNMP package contains various tools relating to the Simple Network Management Protocol including an extensible agent, an SNMP library, tools to request or set information from SNMP agents, tools to generate and handle SNMP traps, a version of the unix 'netstat' command using SNMP and a Tk/perl mib browser.

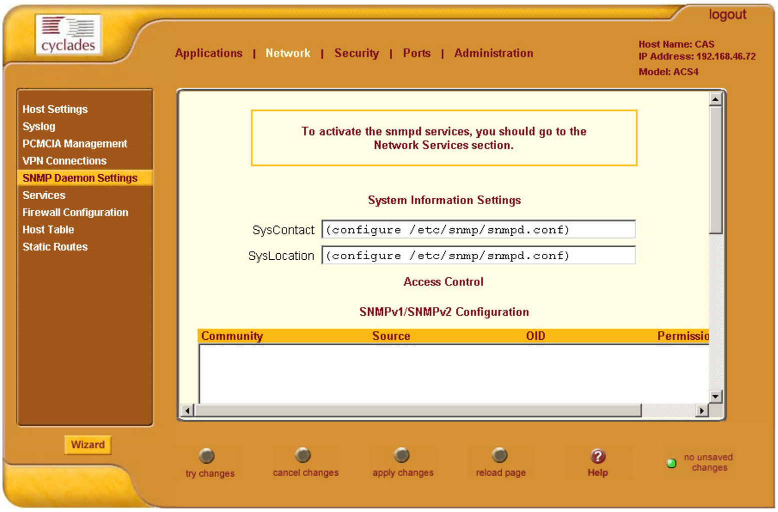
SNMP is configured with community names, OID and user names. ACS supports SNMPv1, v2 and v3. The two versions require different configurations. SNMPv1/v2 requires community, source, object ID and the type of community (read-write, read-only). V3 requires user name.

Important! *Check the SNMP configuration before gathering information about ACS by SNMP. There are different types of attacks an unauthorized user can implement to retrieve sensitive information contained in the MIB. By default, the SNMP configuration in ACS cannot permit the public community to read SNMP information.*

To configure SNMP:

1. From the top menu bar, select **Networks**; from the left menu panel, select **SNMP Daemon Settings**.

   The system invokes the SNMP Daemon Settings form:



To activate the snmpd services, you should go to the Network Services section.

System Information Settings

SysContact (configure /etc/snmp/snmpd.conf)

SysLocation (configure /etc/snmp/snmpd.conf)

Access Control

SNMPv1/SNMPv2 Configuration

Community	Source	OID	Permissio

2. Type in the following System Information, as necessary:

Field Name	*Definition*
Community	The community name acts as a password to authenticate messages sent between an SNMP client and a router containing an SNMP server. The community name is sent in every packet between the client and the server.

Field Name	*Definition*
SysContact	The email of the person to contact regarding the host on which the agent is running (*e.g.*, me@mymachine.mydomain)
SysLocation	The physical location of the system (*e.g.*, mydomain).

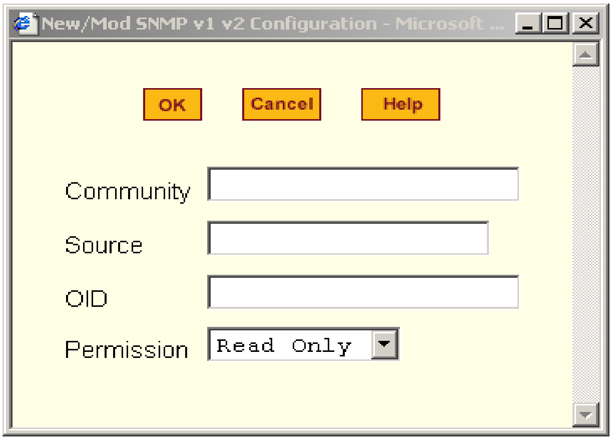
If you are using SNMPv3, skip steps 2 and 3; proceed to step 4.

3. To Add an SNMP agent using SNMPv1/SNMP2 Configuration, select the **Add** button located at the bottom of this view table.

   - OR -

   To edit an SNMP agent, select the **Edit** button.

   The system invokes the **New/Modify v1 v2 Configuration** dialog box:



Community

Source

OID

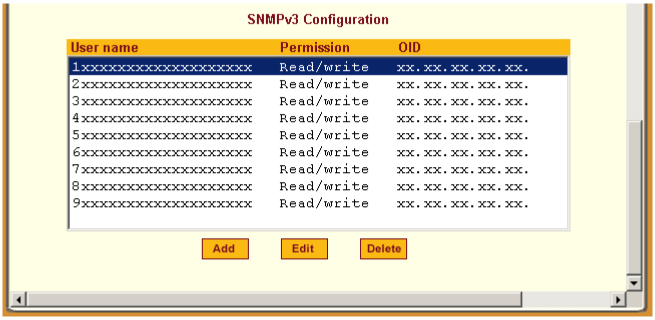
Permission Read Only

4. Complete the dialog box as follows:

Field Name	*Definition*
Community	The password used to authenticate messages sent between the SNMP client and the router containing the SNMP server.
Source	The IP addresses or the range of source IP address.
OID	Object Identifier.

Field Name	*Definition*
Permission	Select the permission type: Read Only - Read-only access to the entire MIB except for SNMP configuration objects. Read/Write - Read-write access to the entire MIB except for SNMP configuration objects. Admin - Read-write access.

5. If you are adding or editing an SNMP agent using SNMPv3, scroll down to the lower half of the SNMP Configuration form:



SNMPv3 Configuration

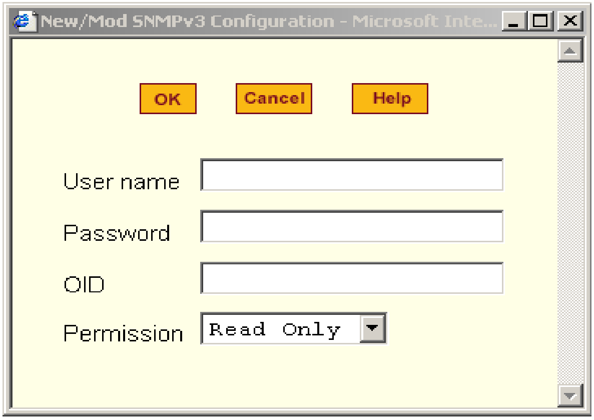
User name	Permission	OID
1xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.
2xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.
3xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.
4xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.
5xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.
6xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.
7xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.
8xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.
9xxxxxxxxxxxxxxxxxxx	Read/write	xx.xx.xx.xx.xx.

6. To Add an SNMP agent using SNMPv3 Configuration, select the **Add** button located at the bottom of this view table.

   - OR -

   To edit an SNMP agent, select the **Edit** button.

The system invokes the **New/Modify SNMP v3 Configuration** dialog box:



User name

Password

OID

Permission Read Only

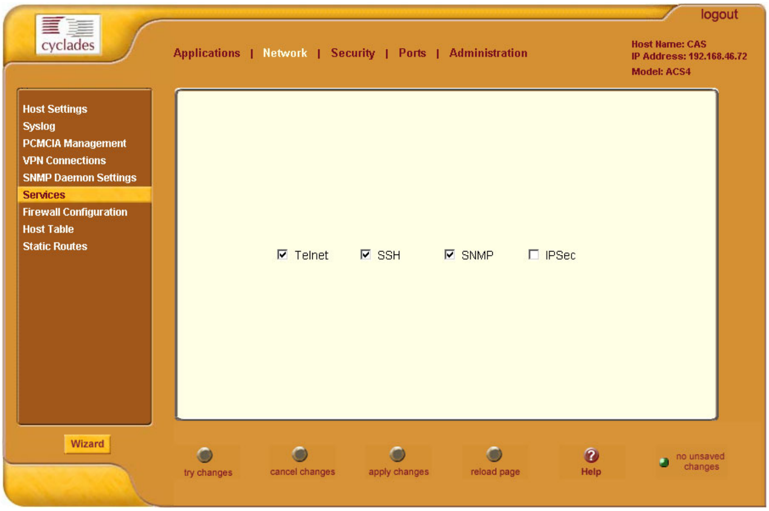
7. Complete the form and when done, select the **OK** button from the dialog box.
8. Verify your entry or modification from the respective tables of the SNMP Configuration form.
9. Select the **Apply Changes** button to complete the procedure.

Services

The **Services** form is used to activate any of the network services that you have configured for ACS to use.

1. From the top menu, select **Network**; from the left menu panel, select **Services**.

   The system invokes the Services form.



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

☑ Telnet ☑ SSH ☑ SNMP □ IPSec

2. From the Services form, select the service(s) you wish to use.
3. Select the **Apply Changes** button to save your configuration.

Firewall Configuration

Firewall configuration, also known as *IP filtering*, refers to the selective blocking of the passage of IP packets between global and local networks. The filtering is based on rules that describe the characteristics of the packet (*e.g.*, the contents of the IP header, the input/output interface, or the protocol).

This feature is used mainly in firewall applications to filter the packets that could potentially crack the network system or generate unnecessary traffic in the network.

Structure of IP Filtering

The Firewall Configuration form is structured on two levels:

- The view table of the Firewall Configuration form which contains a list of chains.
- The chains which contain the rules that control filtering.

Chain

The filter table contains a number of built-in chains and can include any other chains that you add (user-defined chains) through the **Add Chain** dialog box. User-defined chains are called when a rule which is matched by the packet points to the chain.

The built-in chains are called according to the type of packet, and are classified as follows:

- INPUT - For packets coming into the ACS box itself.
- FORWARD - For packets being routed through the ACS box.
- OUTPUT - For locally-generated packets.

Rule

Each chain has a sequence of rules that address the following:

- How the packet should appear in order to match the rule.
  Some information about the packet is checked according to the rule, for example, the IP header, the input and output interfaces, the TCP flags and the protocol.
- What to do when the packet matches the rule.

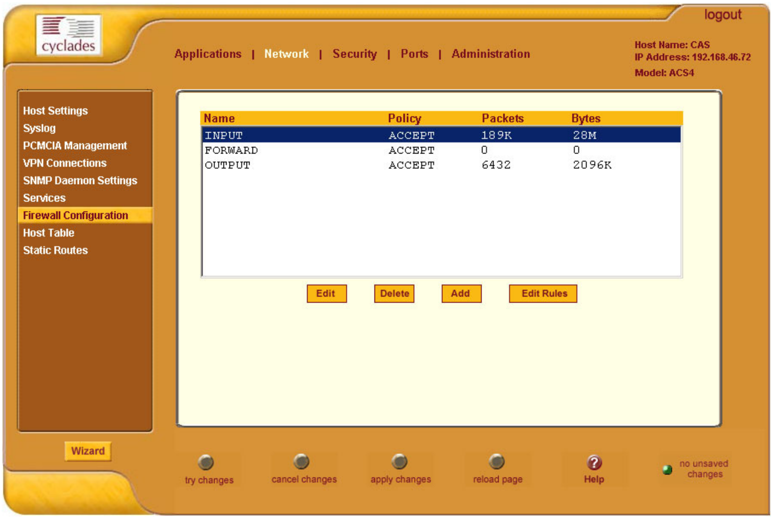
The packet can be accepted, blocked, logged or jumped to a user-defined chain.

When a chain is analyzed, the rules of this chain are reviewed one-by-one until the packet matches one rule. If no rule is found, the default action for that chain will be taken.

Network > Firewall Configuration

1. Select **Network** from the top menu bar, and then select **Firewall Configuration** from the left menu panel.

   The system brings up the Firewall Configuration form. As explained in the last section, this form lists the chains that make up the rules for IP filtering.

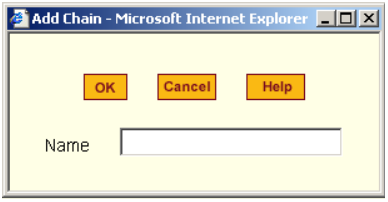


Name	Policy	Packets	Bytes
INPUT	ACCEPT	189K	28M
FORWARD	ACCEPT	0	0
OUTPUT	ACCEPT	6432	2096K

Adding a Chain

1. From the Firewall Configuration form, click on the **Add** button.

   The system brings up the **Add Chain** dialog box:

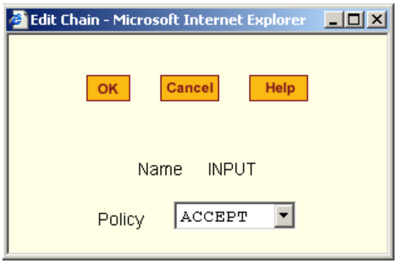


2. Type in the chain name in the **Name** Field, and then select **OK**.
3. After entering a new chain name, click on the **Edit Rules** button to access the next dialog window to enter the rules for that chain. Spaces are not allowed in the chain name.
4. Select **OK** to commit your changes.
5. To add rules to your new chain, proceed to the *Adding a Rule* section.

Editing a Chain

1. To edit a chain, select from the view table the chain you wish to edit and then select the **Edit** button.

   The system brings up the **Edit Chain** dialog box:



Name INPUT

Policy ACCEPT

2. Modify the **Policy** field, as necessary, and then select the **OK** button.
3. If you need to edit any rules for this chain, proceed to the *Editing a Rule* section.

Deleting a Chain

Only user-defined chains can be deleted. The system will not allow you to delete a built-in chain.

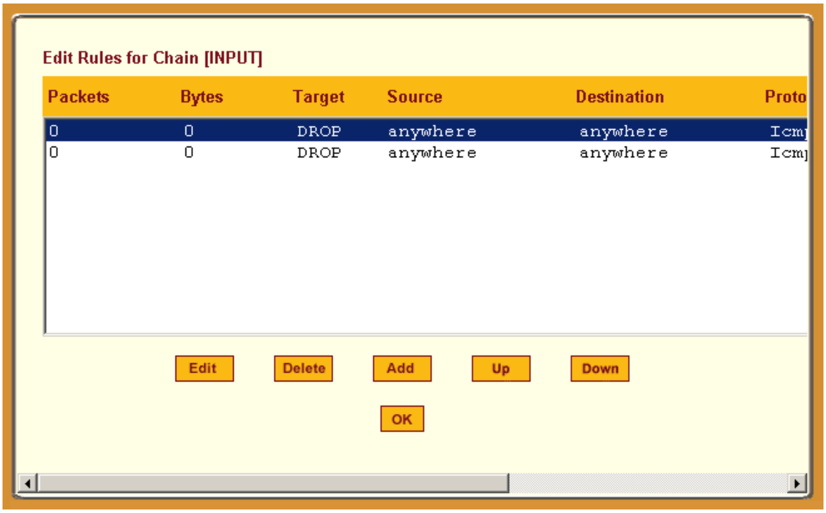
1. From the Firewall Configuration form, select the chain you wish to delete from the list, and then select the **Delete** button.

Editing a Rule

The rules define how the filtering should work. To edit a rule, choose from the **Edit Rule** dialog box the target policy (Accept/Reject/Log/Return/Drop) and the packets you want to filter (source/destination IP, Ethernet interface and protocol type, if it applies to fragments). Any of the items (*i.e.*, source/ destination IP, input/output interface) can be inverted by checking the **Inverted** check box. To invert means, rules will apply to everything except for the (adjacent) item just defined.

1. From the Firewall Configuration form, select the chain containing the rule(s) that you wish to edit, and then click on the **Edit Rule** button.

   The system brings up the **Edit Rules for Chain** form:

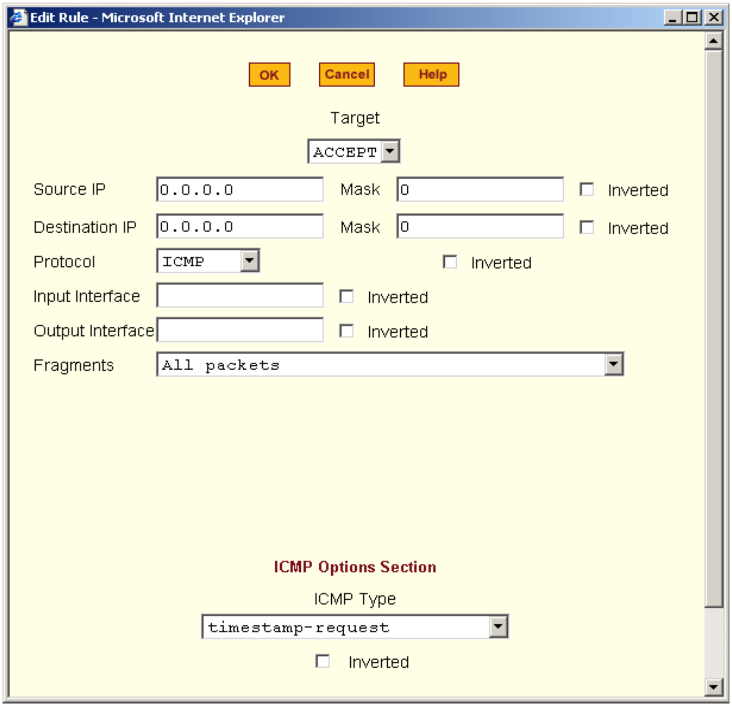


Edit Rules for Chain [INPUT]

Packets	Bytes	Target	Source	Destination	Proto
0	0	DROP	anywhere	anywhere	Icm
0	0	DROP	anywhere	anywhere	Icm

2. From the **Edit Rules for Chain** form, select the rule you wish to edit, and then click on the **Edit** button. Use the **Up** and **Down** buttons to navigate through the list, as necessary.

The system brings up the **Edit Rule** dialog box:



Target: ACCEPT

Source IP: 0.0.0.0 Mask: 0 □ Inverted

Destination IP: 0.0.0.0 Mask: 0 □ Inverted

Protocol: ICMP □ Inverted

Input Interface: □ Inverted

Output Interface: □ Inverted

Fragments: All packets

ICMP Options Section

ICMP Type: timestamp-request

□ Inverted

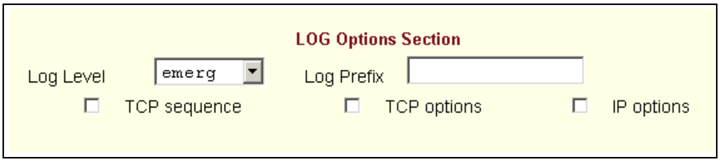
3. Complete the necessary fields as follows:

Field Name	*Definition*
Target	Indicates the action to be performed to the IP packet when it matches the rule. The kernel can be configured to ACCEPT, DROP, RETURN, LOG or REJECT the packet by sending a message, translating the source or the destination IP address/ port or sending the packet to another user-defined chain.
Source IP	The source IP address.
Mask	Source network mask. Required when a network should be included in the rule.
Inverted	Select box to invert the target action (*i.e.*, the action assigned to the target will be performed to all source IPs/Masks except to the one just defined).

Field Name	*Definition*
Destination IP	Destination IP address.
Mask	Destination network mask.
Inverted	Select box to invert the target action (i.e., the action assigned to the target will be performed to all Destination/Mask IPs except to the one just defined).
Protocol	The transport protocol to check. If the numeric value is available, select Numeric and type the value in the adjacent text input field; otherwise, select one of the other options.
Inverted	Select box to invert the target action (i.e., the action assigned to the target will be performed to all protocols except to the one just defined).
Interface	The interface where the IP packet should pass.
Inverted	Select box to invert the target action (i.e., the action assigned to the target will be performed to all interfaces except to the one just defined).
Fragments	Indicates the fragments or unfragmented packets to be checked. The firewall (i.e., IP Tables) can check for: - All Packets. - 2nd, 3rd... fragmented packets. - Non-fragmented and 1st fragmented packets.
ICMP Options Section	Select from the scrollable list the error message to be associated with the rule. ICMP is the internet protocol sent in response to errors in TCP/IP messages (i.e., IP datagrams or packets), between a host and a gateway. The messages are processed by the IP software and are transparent to the application user.

Additional Fields

If you selected Log as the Target, the following additional fields appear:



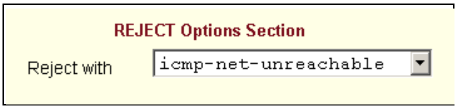
LOG Options Section

Log Level emerg ▾ Log Prefix

□ TCP sequence □ TCP options □ IP options

Field Name	*Definition*
Log Level	The log level classification to be used based on the type of error message (*e.g.*, alert, warning, info, debug, etc.).
Log Prefix	The prefix that will identify the log.
TCP Sequence	Check box to include TCP sequence in the log.
TCP Options	Check box to include TCP options in the log.
IP Options	Check box to include IP options in the log.

If you selected Reject as the target, the **Reject Options** field appears:



REJECT Options Section

Reject with icmp-net-unreachable ▾

From the scrollable list, select the ICMP message to be associated with the Reject target.

4. Click on the **OK** button when done.
5. Click on the **Apply Changes** located at the bottom of the ACS configuration window to save your configuration.

Adding a Rule

The forms and dialog boxes for adding a rule is similar to the ones used for editing a rule. Refer to the *Editing a Rule* procedure section for a definition of the user input fields.

1. From the **Firewall Configuration** form, select the chain to which you wish to add a rule (or if you are adding a new chain, select the **Add** button and follow the procedure for *Adding a Chain*.)

2. Click on the **Edit Rule** button.

   The system brings up the **Edit Rule for Chain** dialog box.

3. From the Edit Rule for Chain dialog box, click on the Add button.

   The system brings up the **Add Rule** dialog box.

4. Complete the Add Rule dialog box. (Refer to the Editing a Rule section for a definition of the input fields, as needed.)
5. Click on the **Apply Changes** button located at the bottom of the ACS configuration window to complete the procedure.

About the Reject Options Section

When **Reject** is selected as the target, the **Reject Options Section** appears with the following fields:

Field Name	*Definition*
Reject with	("Reject with" means that the filter will drop the input packet and send back a reply packet according to any of the reject types listed below.)
Choices are:	
icmp-net-unreachable	ICMP network unreachable alias.
icmp-host-unreachable	ICMP host unreachable alias.
icmp-port-unreachable	ICMP port unreachable alias.
icmp-proto-unreachable	ICMP protocol unreachable alias.
icmp-net-prohibited	ICMP network prohibited alias.
icmp-host-prohibited	ICMP host prohibited alias.
echo-reply	Echo reply alias.
tcp-reset	TCP RST packet alias.

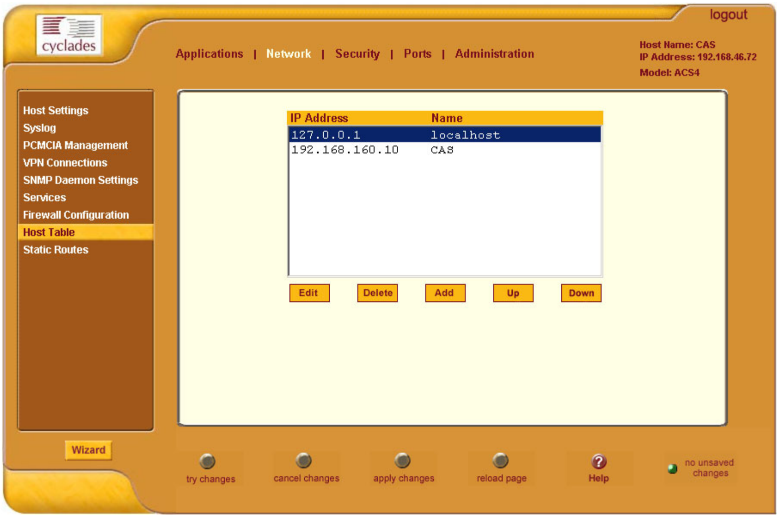
The packets are matched (using tcp flags and appropriate reject type) with the REJECT target.

Network > Host Table

The Host Table form enables you to keep a table of host names and IP addresses that comprise your local network, and thus provide information about your network environment.

1. From the top menu bar, select **Network**; from the left menu panel, select **Host Table**.

   The system invokes the Host Tables form:



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

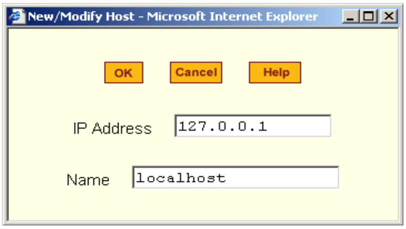
IP Address	Name
127.0.0.1	localhost
192.168.160.10	CAS

2. To edit host, select the host IP address from the Host Table and then click on the **Edit** button. (If the list is long, use the **Up** and **Down** buttons to go through each item in the list.)

   - OR -

   To add a host, click the **Add** button.

   The system brings up the **New/Modify Host** dialog box:



IP Address: 127.0.0.1

Name: localhost

3. Type in the new or modified host address in the **IP Address** field, and the host name in the **Name** field, and then select the **OK** button.
4. To delete a host, select the host you wish to delete from the Host Table form, and then select the **Delete** button from the form.
5. Select the **Apply Changes** button to save your configuration to Flash.

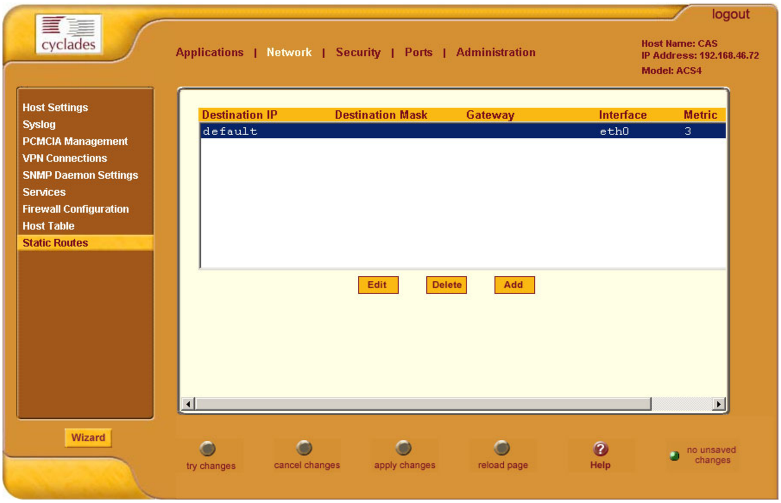
Network > Static Routes

The Static Routes form allows you to manually add routes. The Routing Table defines which interface should transmit an IP packet based on destination IP information. Static routes are a quick and effective way to route data from one subnet to another.

You can add or edit a hard-coded static route by clicking on the corresponding buttons. They'll bring you to a dialog box to enter the route to be added. To delete a static route, highlight the route and then select the **Delete** button.

1. From the top menu bar, select **Network**; from the left menu panel, select **Static Routes**.

   The system brings up the Static Routes table form:



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

Destination IP	Destination Mask	Gateway	Interface	Metric
default			eth0	3

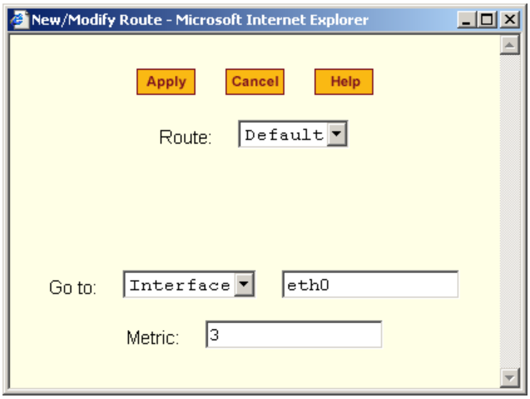
Refer to the field definitions in Step 3 for the meaning of each field in the table.

2. To edit a static route, select a route from the Static Routes form, and then select the **Edit** button.

   - OR -

   To add a static route, select the **Add** button from the form.

   The system invokes the **New/Modify Route** dialog box:



Route: Default

Go to: Interface eth0

Metric: 3

Complete the fields as follows:

Field Name	*Definition*
Route	Select **Default**, **Network**, or **Host**.
Network IP	*This field appears only if Network is selected.* The address of the destination network.
Network Mask	*Only if Network is selected.* The mask of the destination network.
Host IP	*Only if Host is selected.* The IP address of the destination host.
Go to	Select **Gateway** or **Interface**.
(Adjacent field)	The address of the gateway or interface.
Metric	The number of hops.

3. Select **Apply** when done.

Security

The Security configuration of the ACS, as shown by the left menu panel includes the following configuration forms:

- Users and Groups
- Active Ports Sessions

Users and Groups

Users and Groups configuration allows you to set up users to have access to the ACS web application, assign them to specific groups that share common access rights, as well as assign or re-assign passwords. Moreover, you can create new groups to add to the group list.

The access limits provide privileges based on the functionality of the Web page.

The two groups to which you can assign a user are:

- **Admin** - Read/Write Access
- **Regular User** - Limited R/W Access

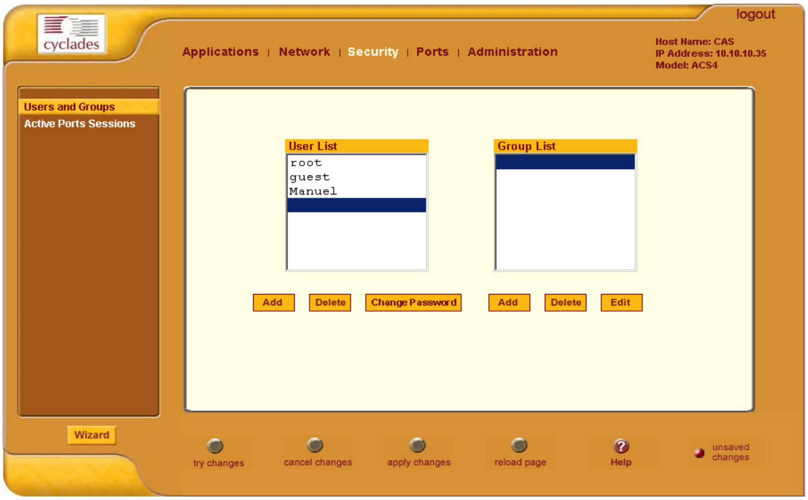
Although **root** is also a user, there is only one root user (username *root,* default password *tslinux*).

If a step does not apply (*e.g*., edit, delete), skip to the next step.

Adding Users and Groups to the Access List

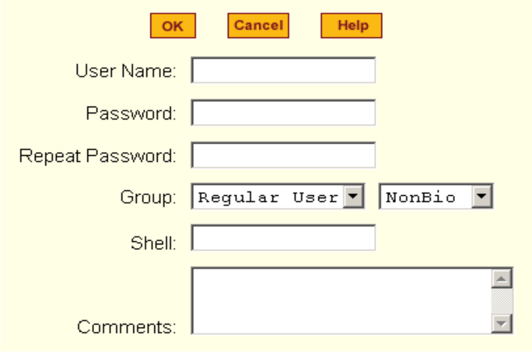
1. From the top menu bar, select **Security**; from the left menu panel, select **Users and Groups**.

   The system brings up the Users and Groups form:



2. To add a user to the **User list** OR to add a group to the **Group list**, select the **Add** button at the bottom of the corresponding list box.

   The system brings up the **Add Users and Groups** dialog box:



3. Complete the dialog box shown above, and then select **OK**.

All users must be assigned to a group.

4. To edit a user or a group, from the Users and Groups form, select the user or the group you wish to edit from the appropriate listbox, and then select the **Edit** button located that the bottom of the corresponding listbox.

5. Repeat step 3.

Deleting a User from a Group

1. To delete a user, select the user name you wish to delete from the User List of the Users and Groups form, and then select the **Delete** button at the bottom of the list box.

   - OR -

   To delete a group, select the group name from the Group listbox of the Users and Groups form, and then select the **Delete** button.

Changing the User Password

1. To change a user's password, select the user whose password you wish to change from the User List, and then select the **Change Password** button.

   The system brings up the Change Password dialog box.
2. Complete the Change Password dialog box and then select **OK**.
3. From the bottom of the main ACS window, select **Apply Changes** to save your configuration to Flash.

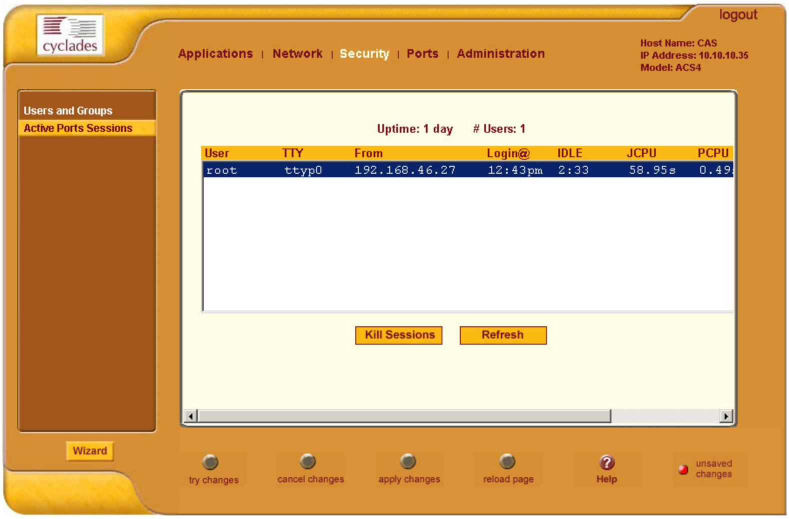
Active Ports Sessions

The Active Ports Sessions window is designed to provide you a quick status, and usage information (*e.g.*, user, tty, Login time, JCPU, *etc*.) pertaining to all active ports sessions.

Open sessions are displayed with their identifications and statistics data for login, session and CPU usage for the specific client. JCPU relates all processes attached to that port including running background processes. PCPU relates the current processing time.

1. From the top menu bar, select **Security**; from the left menu panel, select **Active Ports Sessions**.

   The system invokes the Active Ports Sessions window:



Uptime: 1 day # Users: 1

User	TTY	From	Login@	IDLE	JCPU	PCPU
root	ttyp0	192.168.46.27	12:43pm	2:33	58.95s	0.49

The field or column names of the above view table indicate the following:

Field Name	*Definition*
User	The user who initiated the port session.
TTY	The name of the serial port.
From	The network machine to which the port is connected.
Login	The time of the last login.

Field Name	*Definition*
Idle	The time when the port became inactive.
JCPU	The duration of time used by all processes attached to the tty. It does not include past background jobs; only currently running background jobs.
PCPU	The time used by the current process that is named in the **What** column.
What	The current process attached to the tty.

Ports

The Ports section of the ACS configuration in Expert Mode provides two menu choices:

Physical Ports	Allows you to view and modify the physical port settings.
Virtual Ports	Allows you to view and modify the slave port settings.

Ports > Physical Ports

The **Physical Ports** form is used to select the ports you wish to configure (*i.e.*, all ports or individually selected ports). Once you have selected the port(s) to configure, you will have access to five tabbed forms to configure any of the following:

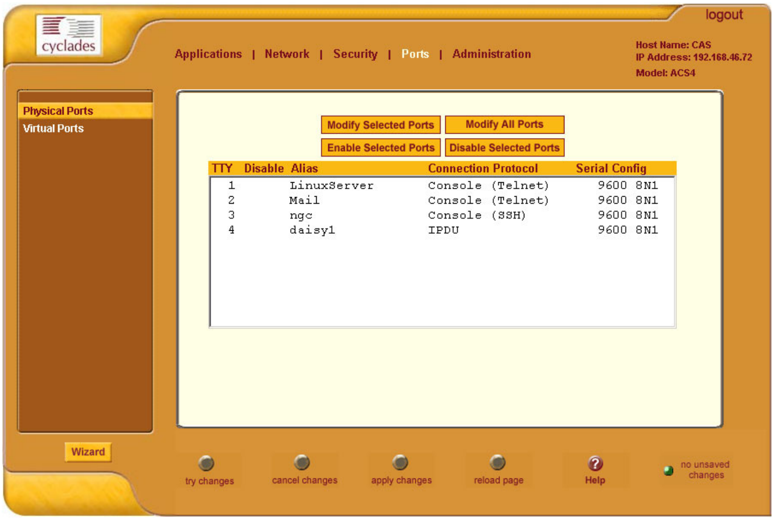
Tab Name	*Use this form to:*
General	Define general port settings
Access	Designate users and groups to authenticate, and assign authentication type or server.
Data Buffering	Define data buffering mode, size, syslog server, etc.
Multi User	Enable concurrent usage and sniff mode.
Power Management	Enable Power Management for the selected port(s); assign users and groups to enable them to set the IPDU settings for these port(s).

Tab Name	*Use this form to:*
Other (port settings)	Configure other port settings such as break interval, login banner, PPP options, etc.

To configure the ports:

1. From the top menu, select **Ports**; from the left menu, select **Physical Ports**.

   The system invokes the Physical Ports Modification form:



TTY	Disable	Alias	Connection Protocol	Serial Config
1		LinuxServer	Console (Telnet)	9600 8N1
2		Mail	Console (Telnet)	9600 8N1
3		ngc	Console (SSH)	9600 8N1
4		daisy1	IPDU	9600 8N1

   This form allows you to:

   - Modify all or only selected ports.
   - Enable or disable selected ports.

2. To modify selected ports, select the port you wish to modify from the Physical Ports Modification form, and then click on the **Modify Selected Ports** button.

   - OR -

   To modify all ports, click on the **Modify All Ports** button.

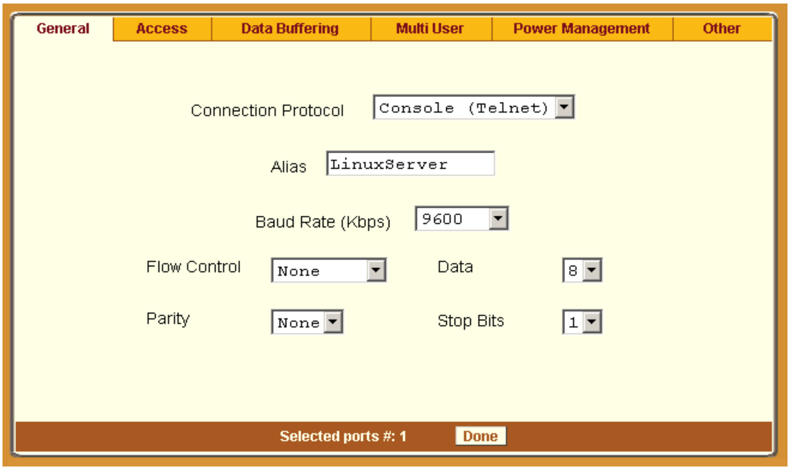
3. Proceed to the next section, **Port Settings** and select the tabbed form you wish to configure.

Ports > Physical Ports > General Port

The **General** form is used to define the port profile for the selected port(s).

1. From the top menu, select **Ports**; from the left menu, select **Physical Ports**.

   The system invokes the **General** tabbed form:



Connection Protocol	Console (Telnet)		
Alias	LinuxServer		
Baud Rate (Kbps)	9600		
Flow Control	None	Data	8
Parity	None	Stop Bits	1

Selected ports #: 1

2. Complete the form as follows:

Field Name	*Definition*
Connection Protocol	The connection protocol to be used by the selected port. Choices are: Console (Telnet), Console (SSH), Console (Raw), Telnet, SSHv1, SSHv2, Local Terminal, Raw Socket, PPP-No Auth, PPP, SLIP, CSLIP, and Power Management.
Alias	Port alias, if applicable.
Baud Rate (Kbps)	9600 Kbps is the default rate for most servers.
Data Size	The number of data bits.
Stop Bits	The number of port stop bits.
Parity	Port parity -- none, even, or odd.
Flow Control	Choices: None, Hardware, or Software.

3. Click on the Apply Changes button at the bottom of the ACS configuration window to save your port settings.

Ports > Physical Ports > Access

The Access form of the Ports menu is used to assign users and groups to an authentication services. You also select the authentication service from this form.

A summary of authentication services that you can configure from this form is as follows:

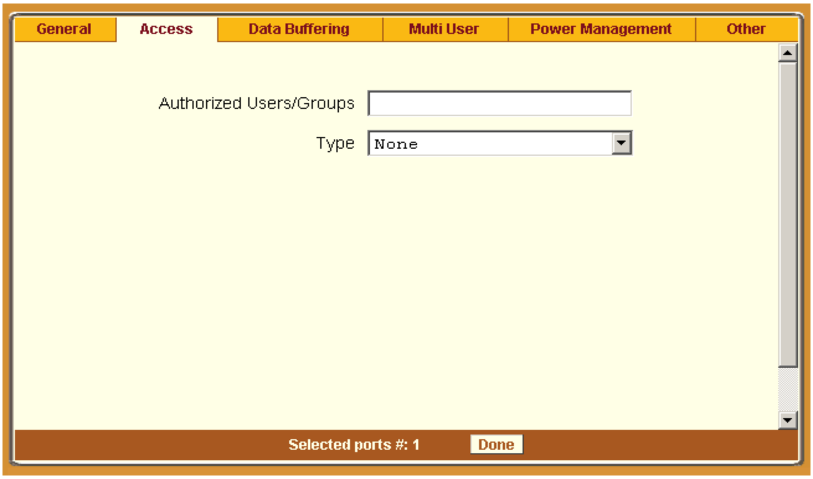
Authentication Type	*Definition*
None	No authentication.
Local	Authentication is performed locally (*i.e.*, using the /etc/passwd file).
Remote	This is for a terminal profile only. The unit takes in a username but does not use it for authentication. Instead it passes it to the remote server where it is then used for authentication.
Radius	Authentication is performed using a Radius authentication server.
TacacsPlus	Authentication is performed using a TacacsPlus authentication server.
Ldap	Authentication is performed against an ldap database using an ldap server.
Kerberos	Authentication is performed using a Kerberos server.
Local/Radius	Authentication is performed locally first, switching to Radius if unsuccessful.
Radius/Local	The opposite of the previous option.
Local/TacacsPlus	Authentication is performed locally first, switching to TacacsPlus if unsuccessful.
TacacsPlus/Local	The opposite of the previous option.
RadiusDownLocal	Local authentication is tried only when the Radius server is down.
TacacsPlusDownLocal	Local authentication is tried only when the TacacsPlus server is down.
kerberosDownLocal	Local authentication is tried only when the kerberos server is down.

Authentication Type	*Definition*
ldapDownLocal	Local authentication is tried only when the ldap server is down.
NIS NIS	All authentication types but NIS follow the format all.authtype <Authentication>DownLocal or <Authentication> (e.g. all.authtype radius or radiusDownLocal or ldap or ldapDownLocal, etc). NIS requires all.authtype to be set as local, regardless if it will be "nis" or its “Downlocal" equivalent.

To configure user/group authentication, perform the following steps:

1. From the top menu, select **Ports**; from the left menu, select **Physical Ports**; from the form tab menu, select **Access**.

   The system brings up the **Access** form:



Authorized Users/Groups

Type None

Selected ports #: 1

2. Enter the user or the group name.
3. From the **Type** drop down list, select the authentication type.

Entry Fields Based on Authentication Type

The user entry fields that are available from the Access form depend on the authentication type that you select from the **Type** field.

Authentication: Radius

Field Name
Authorized Users/Groups
First Authentication Server (Hostname)
Second Authentication Server (Hostname)
First Accounting Server (Hostname)
Second Accounting Server (Hostname)
Secret
Timeout
Retries

Authentication: LDAP or LdapDownLocal

When you select LDAP, authentication is performed against an LDAP database using an LDAP server. Selecting LdapDownLocal means that authentication is tried only when the LDAP server is down.

Field Name
LDAP Server
LDAP Base Domain Name
Secure LDAP

Authentication Type: NIS, LocalNIS or NISLocal (All ACS only)

1

Field Name
Authorized Users/Groups
NIS Domain Name
NIS Server IP

Authentication Type: Kerberos, KerberosDownLocal

Kerberos The server performing the authentication.

KerberosDownLocal Local authentication is tried only when the kerberos server is down.

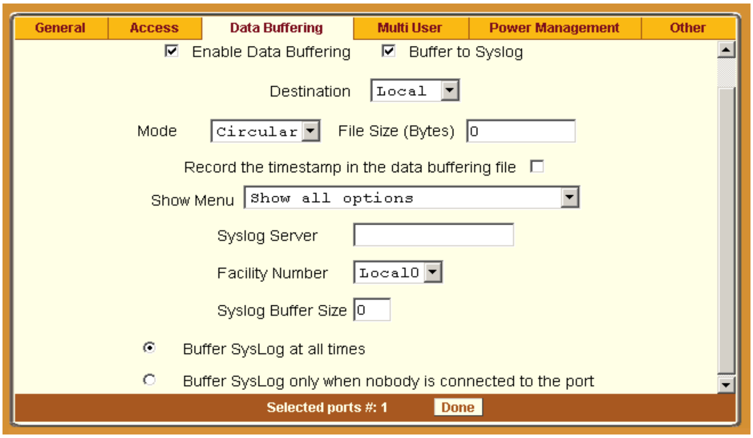
1

Field Name
Authorized Users/Groups
Kerberos Server (Realm)
Kerberos Realm
Domain Name

Ports > Physical Ports > Data Buffering

1. From the top menu, select **Ports**; from the left menu, select **Physical Ports**; from the Physical Ports form, select the ports to modify; from the resulting form, select the **Data Buffering** tab.

   The system brings up the Data Buffering form. The form below shows both checkboxes (**Enable Data Buffering** and **Buffer to Syslog**) selected to reveal all the form fields:



☑ Enable Data Buffering ☑ Buffer to Syslog

Destination: Local

Mode: Circular; File Size (Bytes): 0

Record the timestamp in the data buffering file ☐

Show Menu: Show all options

Syslog Server:

Facility Number: Local0

Syslog Buffer Size: 0

● Buffer SysLog at all times

○ Buffer SysLog only when nobody is connected to the port

Selected ports #: 1

2. Complete the necessary fields as follows:

Field Name	*Definition*
Destination	Select whether the destination of the data buffer is Local or Remote.
Mode	Select whether the Buffering Mode is Linear (sequential) or Circular (non-sequential).
Full Size (Bytes)	The maximum limit of the data buffer.
Record the timestamp...	Commands the system to include a timestamp in the data buffering file.
Show Menu	Indicates the menu type for viewing the buffer. Select from: Show all options, No, Show data buffering file only, and Show without the erase options.
Syslog Fields	
Syslog Server	The IP address of the Syslog Server.
Facility Number	Facility or location ID of the Syslog Server.

Field Name	*Definition*
Syslog Buffer Size	Maximum size of the buffer.

By selecting the appropriate radio button, you can configure ACS to:

- **Buffer Syslog at all times**.
- **Buffer only when nobody is connected to the port**.

*To configure data buffering to send alarm notifications, use the Notifications form (Expert Mode: **Administration** > **Notifications**).*

3. When done, select the **Apply Changes** button located at the bottom of the ACS configuration window.

Ports > Physical Ports > Multi-User

The Multi User form enables you to open more than one common and sniff session (multiple sessions) from the same port.

If configured as **No** (*i.e*., do not allow multiple sessions), only two users can connect to the same port simultaneously. If configured as **Yes**, more than two simultaneous users can connect to the same serial port.

A Sniffer menu is presented to the user and they can choose to:

- Open a sniff session
- Open a read and/or write session
- Cancel a connection
- Send a message to other users connected to the same serial port.

If it is configured as RW, only read and/or write sessions will be opened, and the sniffer menu won't be presented.

If configured as "sniff_session" only, a sniff session will be opened, and the sniffer menu won't be presented. Default value: no.

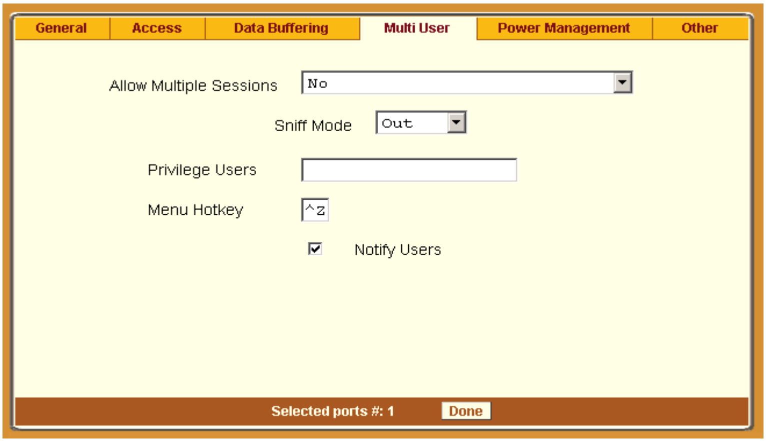
To configure ACS to allow multiple sessions:

1. Select **Ports** from the top menu bar; select **Physical Ports** from the left menu panel.

   The system brings up the Physical Ports list.

2. From the Physical Ports list, select the Port(s) you wish to modify (to enable multiple sessions).
3. Select the **Multi User** tab from the resulting form.

   The system invokes the Multi-User form:



Allow Multiple Sessions: No

Sniff Mode: Out

Privilege Users:

Menu Hotkey: ^z

☑ Notify Users

4. Complete the form as follows:

Field Name	*Definition*
Allow Multiple Sessions	Select from: No, Yes (show menu), Read/Write (do not show menu), ReadOnly (do not show menu).
Sniff Mode	Select from: Out, In, In/Out, and No.
Menu Hotkey	The hotkey for accessing the menu.
Notify Users	Check box to notify users of session access.

When multiple sessions are allowed for one port, ACS will accept only one common session and one sniffer session. In this setting, the behavior of the ACS is as follows:

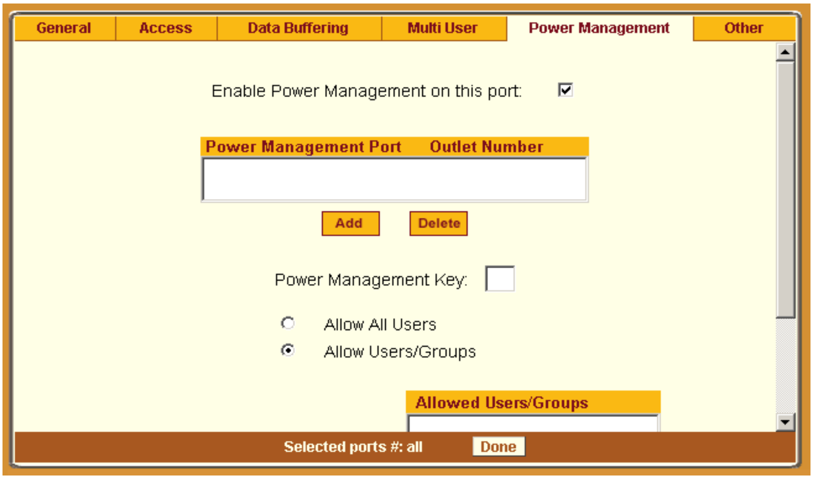
- The first user to connect to the port opens a common session.
- From the second connection on, only **Admin** users are allowed to connect to that port.
- The ACS will send a hotkey menu to the administrator(s).

Ports > Physical Ports > Power Management

The Power Management form of the Ports menu is used to enable power management for the current port, add and delete power management ports, and assign user and group access to these ports.

1. Select **Ports** from the top menu; select **Physical Ports** from the left menu; select **Power Management** from the row of tabs.

   The system brings up the **Power Management** form:



Enable Power Management on this port: ☑

Power Management Port	Outlet Number

Power Management Key: □

○ Allow All Users
● Allow Users/Groups

Allowed Users/Groups

Selected ports #: all

2. Complete the form as follows:

Field Name	*Definition*
Enable Power Management on this Port	Check mark to enable Power Management on the the selected port(s).
Power Management Port	View listbox for the PM ports and the assigned outlet numbers.
Power Management Key	The key sequence which the allowed user(s) can use to perform power management.
Allow All Users	Radio button to allow all users to perform power management on this port.
Allow Users/Groups	Radio button to allow only selected users or groups to perform power management on this port.

Field Name	*Definition*
Allowed Users/Groups	View List Box of Allowed Users or Groups. Use the Delete or Add button to maintain this listbox.

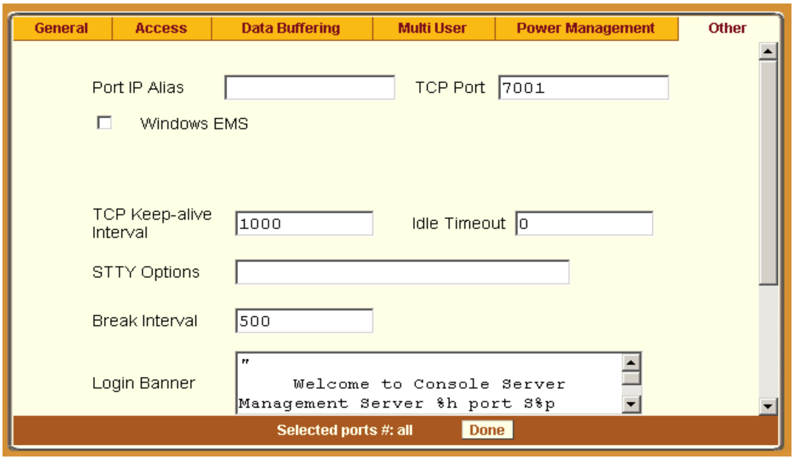
3. Select the **Apply Changes** button at the bottom of the ACS configuration window to save your configuration.

Ports > Physical Ports > Other

The **Other** form is used to define less commonly used port settings such as the Port IP Alias, STTY options, TCP keepalive intervals, enabling Windows EMS, and the like.

1. Select **Ports** from the top menu; select **Physical Ports** from the left menu; select **Other** from the row of tabs.

   The system brings up the last tabbed form for **Physical Ports**:



Port IP Alias

TCP Port 7001

□ Windows EMS

TCP Keep-alive Interval 1000

Idle Timeout 0

STTY Options

Break Interval 500

Login Banner

```
"
      Welcome to Console Server
Management Server %h port S%p
```

Selected ports #: all

2. From the above form, complete the following fields, as necessary:

Field Name	*Definition*
Port IP Alias	The IP alias of the selected port.
TCP Port	The TCP Port number.
Port Name	As indicated.
Windows EMS	Checkbox to enable Windows EMS (Expanded Memory).

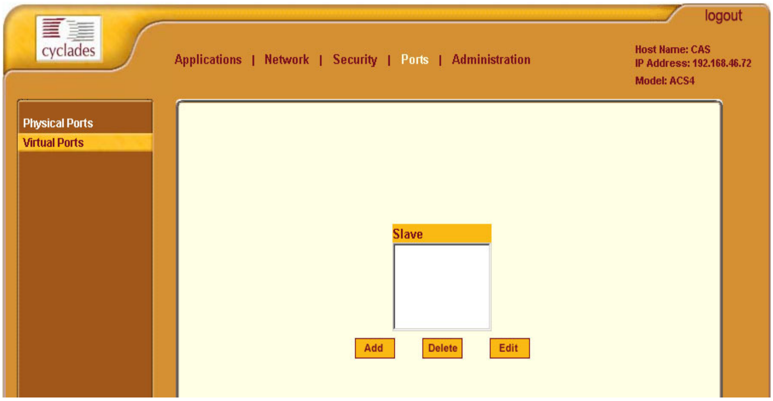
Field Name	*Definition*
TCP Keep-alive Interval	Specifies the time interval between the periodic polling by the system to check client processes and connectivity.
Idle Timeout	The maximum time (in seconds) that a session can be idle before the user is logged off.
STTY Options	Set terminal options.
Break Interval	Break interval in milliseconds.
Login Banner	Text entry field box. Enter the text you wish to appear as a login banner upon logging onto the terminal.
Host to Connect	Address of the host connected to the port.
Terminal Type	As indicated.
Modem Initialization	Text entry field box.
PPP Options	Options when using this protocol.

Ports > Virtual Ports

You can use one AlterPath console server as a Master to control other AlterPath console servers (slaves). The ports on the slave unit acts as an extension of the master unit. The Virtual Ports form is used to add, edit or delete these virtual ports or slaves.

1. From the top menu, select **Ports**; from the left menu, select **Physical Ports**.

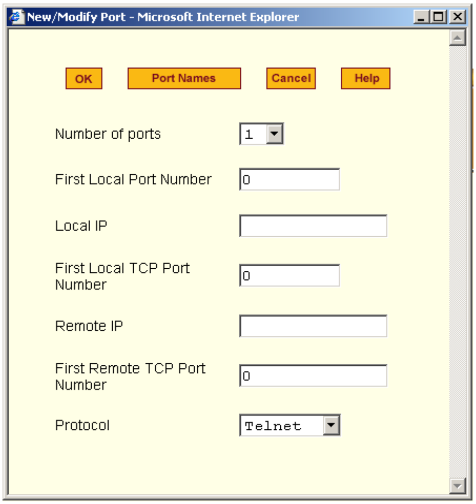
   The system brings up the **Virtual Ports** (Slave) form.



2. To add a new slave, select the **Add** button
   - OR -

   To edit a slave, select the slave you wish to edit from the Slave list.

   The system brings up the **New/Modify Port** dialog box:



Number of ports: 1

First Local Port Number: 0

Local IP:

First Local TCP Port Number: 0

Remote IP:

First Remote TCP Port Number: 0

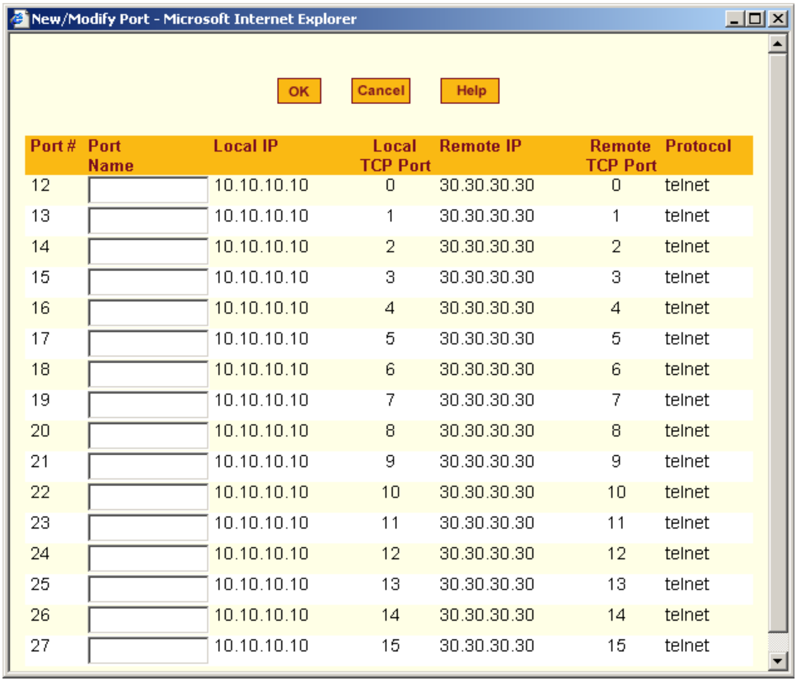
Protocol: Telnet

3. Complete the dialog box as follows:

Field Name	*Definition*
Number of Ports	Choices are 1, 4, 8, 16, 32 and 48.
First Local Port No.	As indicated.
Local IP	Local IP address.
First Local TCP Port No.	As indicated.
Remote IP	Remote IP address.
First Remote TCP Port No.	As indicated.
Protocol	Communication method between master and slave (Telnet or SSH).

4. If you want to assign port names to the ports, select the **Port Names** button.

The system brings up the Port Names dialog box:



Port #	Port Name	Local IP	Local TCP Port	Remote IP	Remote TCP Port	Protocol
12		10.10.10.10	0	30.30.30.30	0	telnet
13		10.10.10.10	1	30.30.30.30	1	telnet
14		10.10.10.10	2	30.30.30.30	2	telnet
15		10.10.10.10	3	30.30.30.30	3	telnet
16		10.10.10.10	4	30.30.30.30	4	telnet
17		10.10.10.10	5	30.30.30.30	5	telnet
18		10.10.10.10	6	30.30.30.30	6	telnet
19		10.10.10.10	7	30.30.30.30	7	telnet
20		10.10.10.10	8	30.30.30.30	8	telnet
21		10.10.10.10	9	30.30.30.30	9	telnet
22		10.10.10.10	10	30.30.30.30	10	telnet
23		10.10.10.10	11	30.30.30.30	11	telnet
24		10.10.10.10	12	30.30.30.30	12	telnet
25		10.10.10.10	13	30.30.30.30	13	telnet
26		10.10.10.10	14	30.30.30.30	14	telnet
27		10.10.10.10	15	30.30.30.30	15	telnet

5. For each port to be named, enter the port name in the corresponding **Port Name** field, and then select the **Apply** button.
6. Click on the **Apply Changes** button to save your configuration.

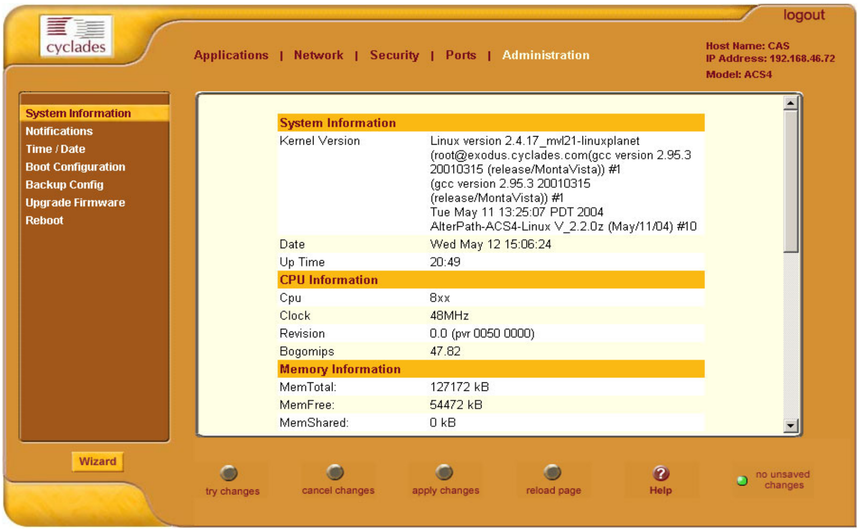
Deleting a Slave

1. To delete a slave from the list, select the unit to be deleted from the Virtual Ports form, and then click **Delete**.

Administration

Administration > System Information

System information provides information about the ACS version, CPU, memory, including PCMCIA.



System Information	
Kernel Version	Linux version 2.4.17_mvl21-linuxplanet (root@exodus.cyclades.com(gcc version 2.95.3 20010315 (release/MontaVista)) #1 (gcc version 2.95.3 20010315 (release/MontaVista)) #1 Tue May 11 13:25:07 PDT 2004 AlterPath-ACS4-Linux V_2.2.0z (May/11/04) #10
Date	Wed May 12 15:06:24
Up Time	20:49
CPU Information	
Cpu	8xx
Clock	48MHz
Revision	0.0 (pvr 0050 0000)
Bogomips	47.82
Memory Information	
MemTotal:	127172 kB
MemFree:	54472 kB
MemShared:	0 kB

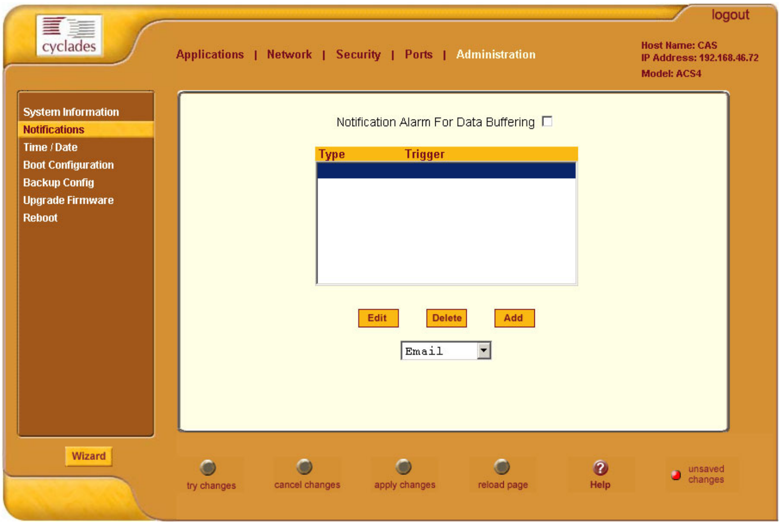
To view system information, select **Administration** from the top menu bar; select **System Information** from the left menu panel.

Administration > Notification

The Notification form is used to set up alarm notification to users through email, pager or SNMP traps.

1. From the top menu bar, select **Administration**; from the left menu panel, select **Notifications**.

   The system invokes the Notifications form:



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

Notification Alarm For Data Buffering □

Type	Trigger

Email

2. Complete the main form as follows:

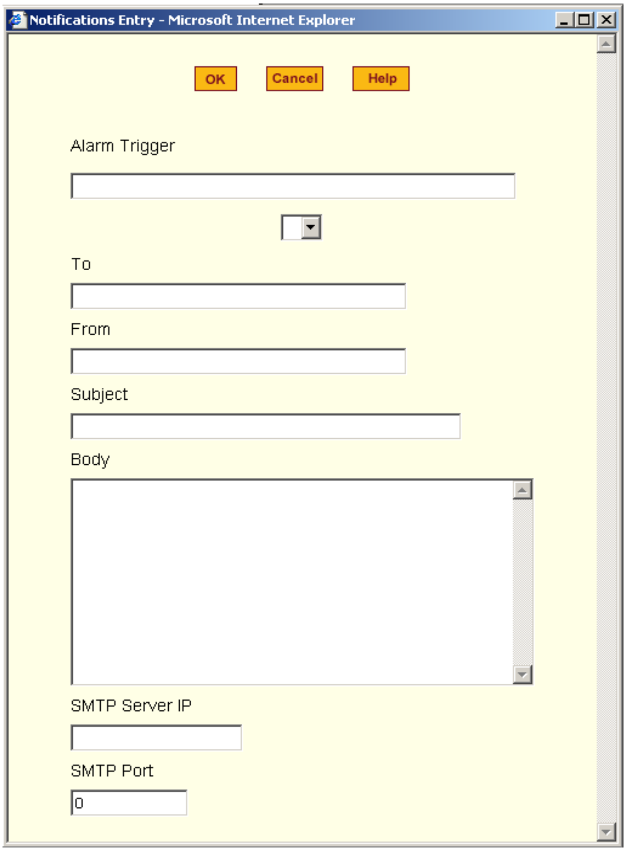
Field Name	*Definition*
Notification Alarm for Data Buffering	Checkmark to enable notification alarms for data buffering.
[*unlabeled view table*]	List of alarm types and triggers.
[*unlabeled dropdown list*]	Pull-down menu of notification methods (select: **Email**, **Pager**, or **SNMP Trap**).

3. Select the **Add** button.

   The system brings up the Notifications Entry dialog box. The type of dialog box that appears will depend on the notification method that you select from the Notifications form.

Email Notification

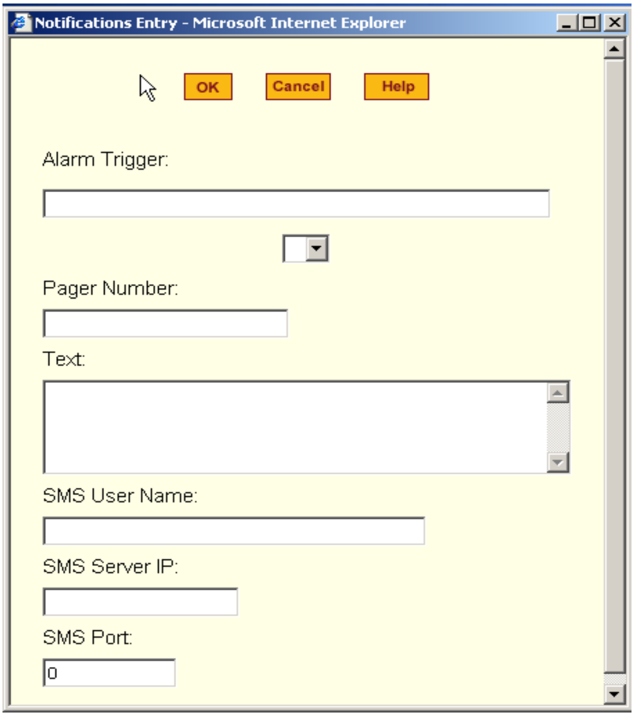
If you selected **Email** as the notification method, the following dialog box is used:



Field Name	*Definition*
Alarm Trigger	The trigger expression used to generate an alarm.
[*untitled dropdown field*]	
To/From/Subject/Body	The email for the designated recipient of the alarm notification.
SMTP Server IP	The IP address of the SMTP server.
SMTP Port	The port used by the SMTP server.

Pager Notifications

If you selected **Pager** as the notification method, the following dialog box is used:



Field Name	*Definition*
Alarm Trigger	The trigger expression used to generate an alarm.
[*untitled dropdown field*]	
Pager Number	The pager number of the notification recipient.
Text	The text message for the pager.
SMS Server IP	The IP address of the SMS server.
SMS Port	The port used by the SMS server.

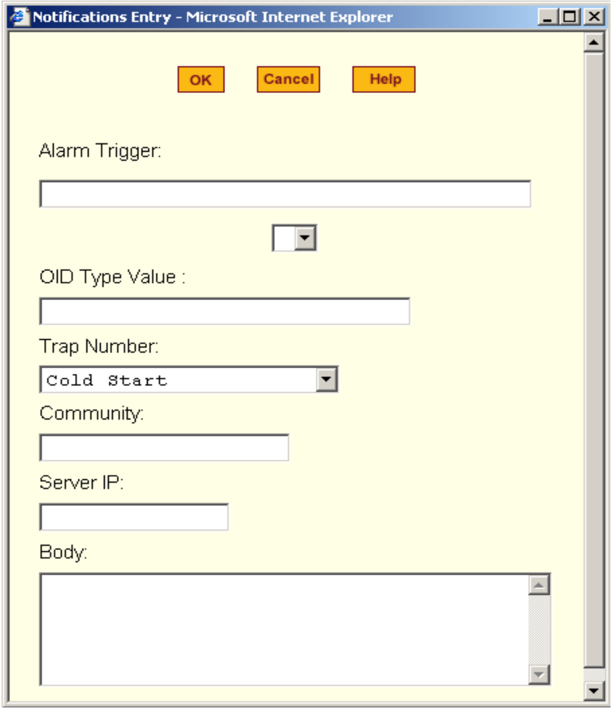
SNMP Trap Notification

SNMP traps are event notifications that are sent to a list of managers configured to receive events for that managed system. The Traps provide the value of one or more instances of management information.

Any SNMP enabled Device generates Fault Reports (Traps) that are defined in the MIB (which the SNMP Agent has implemented).

The Trap Definition vary with the SNMP Version (which defines the messaging format), but the information contained in these are essentially identical. The major difference between the two message formats is in identifying the events.

If you selected **SNMP Trap** as the notification method, the following dialog box is used:



Alarm Trigger:

OID Type Value :

Trap Number: Cold Start

Community:

Server IP:

Body:

Field Name	*Definition*
Alarm Trigger	The trigger expression used to generate an SNMP trap.
[*untitled dropdown field*]	
OID Type Value	The value that uniquely identifies an object to the SNMP agent.
Trap Number	The trap type defined in the MIB.
Community	The password used to authenticate the traps
Server IP	The address of the server running the SNMP.
Body	The text or content of the notification.

4. After selecting and completing the **Notification Entry** dialog box, select the **OK** button.
5. Select the **Apply Changes** button at the bottom of the ACS configuration window to save your configuration.

Administration > Time / Date

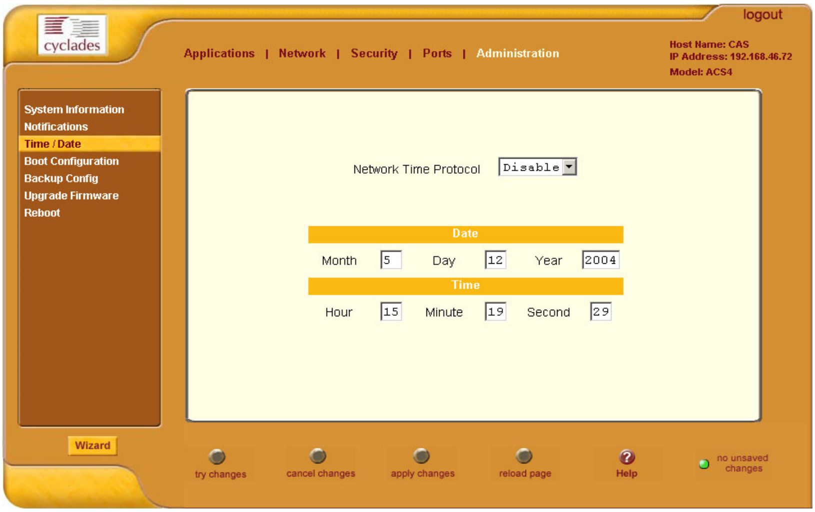
The Time/Date form is used to enable ACS to work as an NTP client. Network Time Protocol (NTP) is a standard for synchronizing your system clock with the *true time*, defined as the average of many high-accuracy clocks around the world. By default, NTP is disabled and you may enter the time and date manually using the Time/Date form.

Manual Setting

To set the time and date manually (*i.e*., locally, without NTP), perform the following steps:

1. Select **Administration** from the top menu bar, and then select **Time/Date** from the left menu panel.

   The system brings up the **Time/Date** form:



Network Time Protocol: Disable

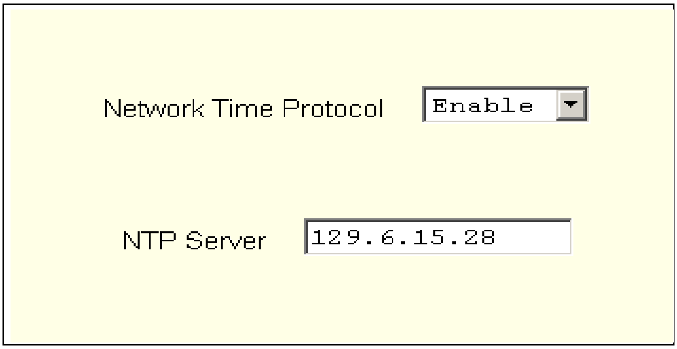
Date					
Month	5	Day	12	Year	2004
Time					
Hour	15	Minute	19	Second	29

2. If you are not using NTP, complete the date and time fields by selecting the appropriate numbers from the dropdown list boxes.
3. Click on the **Apply Changes** button to complete the procedure.

NTP Setting

To set the time and date through NTP, perform the following steps:

1. From the Time/Date form, choose **Enable** from the **Network Time Protocol** field.
2. Type in the address of the NTP server in the **NTP Server** field.



Network Time Protocol: Enable

NTP Server: 129.6.15.28

3. Click on the **Apply Changes** button.

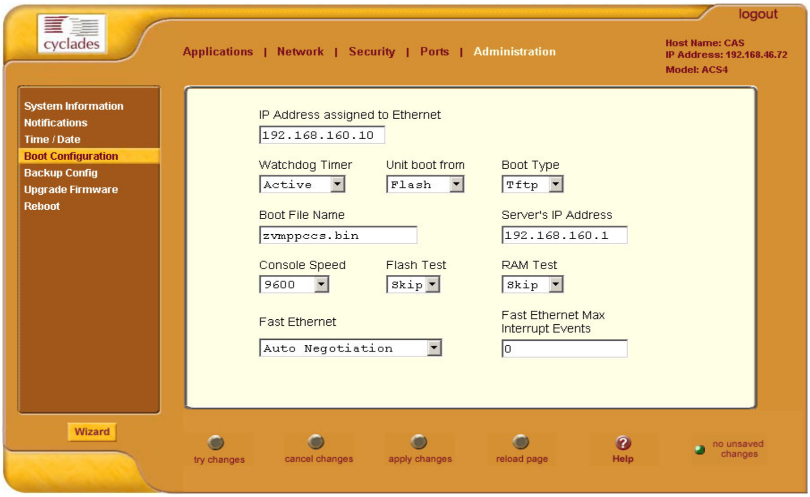
Administration > Boot Configuration

Boot configuration defines the settings for loading the operating system. In the event that the ACS fails to boot successfully, you can use the Boot Configuration form to change the boot settings.

The ACS can boot from its internal firmware or from the network. By default, the unit boots from Flash. If you need to boot from the network, install one TFTP or BOOTP server with the firmware to boot from, and then choose **boot from network** and fill in the fields. You may skip Flash test and RAM test for a faster boot.

1. From the top menu, select **Administration**; from the left menu, select **Boot Configuration**.

   The system brings up the Boot Configuration form:



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

IP Address assigned to Ethernet: 192.168.160.10
Watchdog Timer: Active
Unit boot from: Flash
Boot Type: Tftp
Boot File Name: zvmppccs.bin
Server's IP Address: 192.168.160.1
Console Speed: 9600
Flash Test: Skip
RAM Test: Skip
Fast Ethernet: Auto Negotiation
Fast Ethernet Max Interrupt Events: 0

2. Complete the fields as follows:

Field Name	*Definition*
IP Address assigned to Ethernet	As indicated.
Watchdog Timer	Sets the Watchdog Timer to Active or Inactive.

Field Name	*Definition*
Unit boot from	Specify whether to boot unit up from Flash or from the Network.
Boot Type	Select from the following types of booting: bootp, tftp, or both.
Boot File Name	Filename of the boot program you want to use.
Server's IP Address	As indicated.
Console Speed	Select from: 4800 through 118200.
Flash Test	Select this to test boot from the Flash card. You can Skip this test, or do a Full test.
RAM Test	Select this to test boot from RAM. You can Skip this test, do a Quick test or a Full test.
Fast Ethernet	Select the appropriate Ethernet setting if you need to change the Auto Negotiation (default value): 100BaseT Half-Duplex 100BaseT Full-Duplex 10BaseT Half-Duplex 10BaseT Full-Duplex
Fast Ethernet Max. Interrupt Events	The maximum number of packets that the CPU will handle.

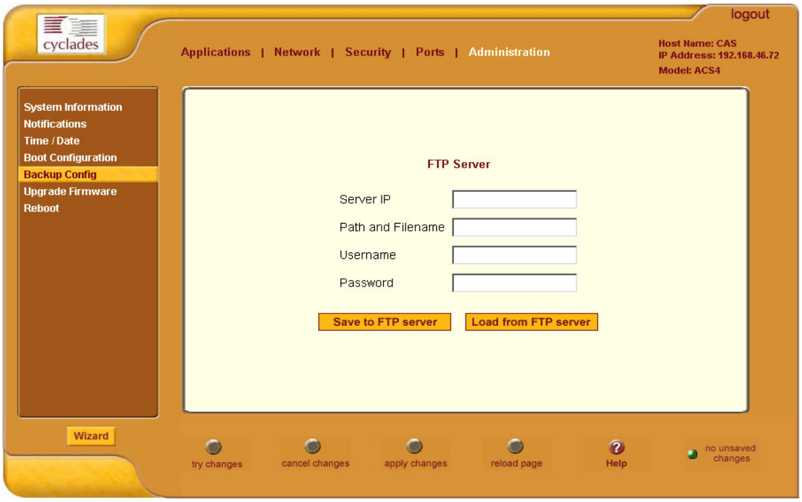
3. Select **Apply Changes** to save your configuration to Flash.

Administration > Backup Configuration

The Backup Configuration form allows you to set ACS to use a FTP server to save and retrieve its configuration. For the backup configuration to work, the FTP server must be on the same subnet. Ensure that it is accessible from the ACS by pinging the FTP server.

1. From the top menu, select **Administration**; from the left menu, select **Backup Configuration**.

   The system brings up the **Backup Configuration** form:



Host Name: CAS
IP Address: 192.168.46.72
Model: ACS4

2. Complete the form as follows:

Field Name	*Definition*
Server IP	IP address of the FTP server.
Path and Filename	Path and filename of the FTP server.
Username	Username of the person who is doing the backup.
Password	Password associated with the Username.

*Read the succeeding section, **Backup and Restore Procedure,** for a more detailed explanation of the fields.*

3. Select **Save to FTP Server** or **Upload from FTP Server**, as appropriate.

Backup and Restore Procedure

For backup purposes, you can give the configuration backup file a name according to your company's naming convention.

From the Backup Configuration form, fill in the fields with the server name (*i.e.*, the IP address of your workstation if you have just installed an FTP server in it), Username and Password (for a valid username defined in your FTP server), and the Path and Filename to which you have rights to access and write. The **Path** and **Filename** field must contain the full path and the filename that you will assign to the backup file.

Example:

To upload to the upload folder with the filename, AcsxxxxConfig040521, type in the following in the **Path and Filename** field:

```
upload/AcsxxxxConfig040521
```

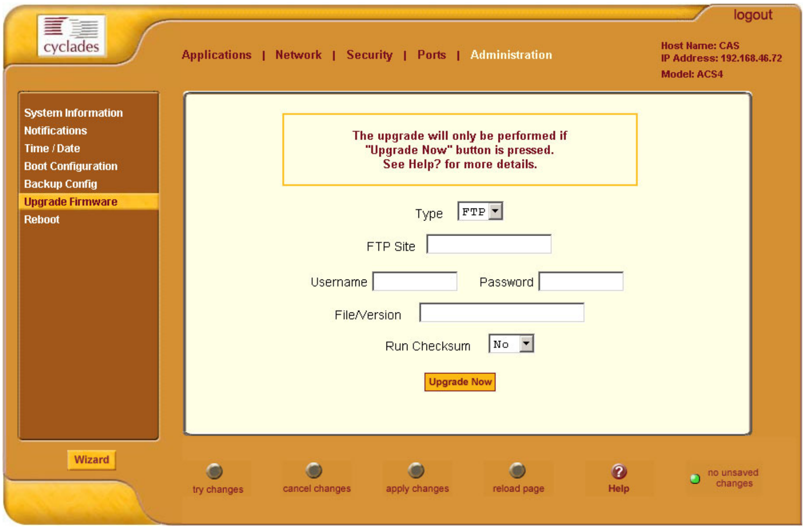
Always check the FTP server's upload folder after you have selected the **Save to FTP Server button.** Ensure that the file is there as some FTP servers do not return error conditions, which can cause the AlterPath ACS to display a "DONE" result even though the FTP did not store a copy.

Administration > Upgrade Firmware

The Upgrade Firmware form allows you to upload the ACS firmware from the Cyclades website to the ACS. To upgrade the ACS firmware, follow the procedure below:

1. Select **Administration** from the top menu, and then select **Upgrade Firmware** from the left menu.

   The system brings up the **Upgrade Firmware** form:



The upgrade will only be performed if "Upgrade Now" button is pressed. See Help? for more details.

Type: FTP

FTP Site

Username

Password

File/Version

Run Checksum: No

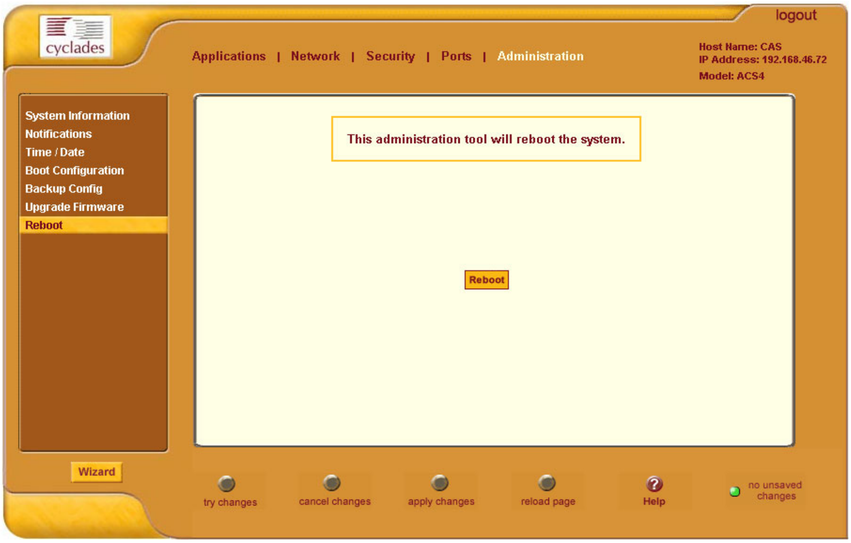
2. Complete the form as follows:

Field Name	*Definition*
Type	The method of upload.
FTP Site	The address of the FTP site.
Username	Username of the person who is doing the upload.
Password	Password associated with the Username.
File Version	The firmware file version.
Run Checksum	Runs the checksum program to verify the accuracy of the uploaded data.

3. Click on **Upgrade Now**.

Administration > Reboot

The Reboot form allows you to reboot the system by clicking the Reboot button.



This administration tool will reboot the system.

A: Hardware Specifications

CPU	MPC855T (PowerPC Dual-CPU)
Memory	128MB DIMM SDRAM / 16MB CompactFlash
Interfaces	1 Ethernet 10/100BT on RJ45 1 RS232 Console on RJ45 RS232 Serial Ports on RJ45 PCMCIA slots supporting: Secondary Ethernet, Wireless networking, CDMA, GPRS, GSM, V.90 modems, ISDN
Power	Internal 100-240VAC, 50/60 Hz† Optional Dual entry, redundant power supplies† † -48VDC option available
Operating Temperature	50°F to 112°F (10°C to 44°C)
Storage Temperature	-40°F to 185°F (-40°C to 85°C)
Humidity	5% to 90% non-condensating
Dimensions	ACS1: 6.3 x 4.0 x 1.5 in (16 x 10 x 3.8 cm) ACS 4-48: 17 x 8.5 x 1.75 in (43.18 x 21.59 x 4.45 cm)
Certification	FCC Part 15, A EN55022, A (CE) EN55024 UL 1950 Solaris Ready™

Supported PCMCIA Cards

Brand	*Model*	*Firmware*
10/100BT Ethernet		
Linksys	EtherFast 10/100 PC Card Model PCM100 v3	2.1.0 or higher
Linksys	EtherFast 10/100 PC Card ver.3	2.1.5 or higher
D-Link	EtherFast 10/100 PC Card Model DFE-670TXD	2.1.6 or higher
802.11b Wireless Ethernet		
Linksys	WPC11 v.3	2.1.5 or higher
V.90 (56k) Modem		
Xircom	XM5600 56K PC Card Modem Adapter	2.1.5 or higher
Zoom	Modem V.92 PC Card Plus Model 3075	2.1.0 or higher
ISDN		
AVM Fritz!	Card PCMCIA	2.1.1 or higher
Sedlbauer	Sedlbauer ISDN card	2.1.5 or higher
GSM		
Novatel Wireless[1]	Merlin G201	2.1.4 or higher
Sierra Wireless[1]	AirCard 750	2.1.4 or higher
Compact Flash[2]		
Hama	64MB CF Memory	2.1.5 or higher
Kingston	128MB CF Memory	2.1.5 or higher
PQI	64MB CF Memory	2.1.5 or higher
SanDisk	64MB CF Memory	2.1.5 or higher
Aved	16MB CF Memory	2.1.5 or higher
Other	Most other adapters and compact flash should also work but have not been verified by Cyclades.	2.1.5 or higher
IDE Hard Disk		
Toshiba	MK5002MPL 5GB	2.1.5 or higher

[1] WARNING: Consult with your local GSM service provider for coverage areas and support of this card prior to using it with the AlterPath™ ACS or ACS1

[2] In order to load a Compact Flash card on the AlterPath™ ACS or ACS1, use a PCMCIA Compact Flash adapter.

B: Safety Guidelines

This appendix section lists the safety guidelines for:

- RackMounting the ACS
- Operating the ACS

Safety Guidelines for Rack-Mounting the ACS

The following considerations should be taken into account when rack-mounting the AlterPath Console Server.

Temperature

The manufacturer's maximum recommended ambient temperature for the AlterPath Console Server is 122 ºF (50 ºC).

Elevated Operating Ambient Temperature

If the ACS is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature. See above.

Reduced Air Flow

Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading

Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Earthing

Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit, such as power strips or extension cords.

Safety Precautions for Operating the ACS

Please read all the following safety guidelines to protect yourself and your AlterPath Console Server.

DANGER!
Do not operate your ACS with the cover removed.

DANGER!
To avoid shorting out your ACS when disconnecting the network cable, first unplug the cable from the Host Server, unplug external power (if applicable), equipment and then unplug the cable from the network jack. When reconnecting a network cable to the back equipment, first plug the cable into the network jack, and then into the Host Server equipment.

DANGER!
To help prevent electric shock, plug the ACS into a properly grounded power source. The cable is equipped with a three-prong plug to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from the cable. If you have to use an extension cable, use a three-wire cable with properly grounded plugs.

Important!
To help protect the ACS from electrical power fluctuations, use a surge suppressor, line conditioner, or uninterruptible power supply.

Important!
Be sure that nothing rests on the cables of the ACS and that they are not located where they can be stepped on or tripped over.

Important!
Do not spill food or liquids on the ACS.

DANGER!
Do not push any objects through the openings of the ACS. Doing so can cause fire or electric shock by shorting out interior components.

Important!
Keep your ACS away from heat sources and do not block host's cooling vents.

Important!
The AlterPath Console Server product (DC version) is only intended to be installed in restricted access areas (Dedicated Equipment Rooms, Equipment Closets or the like) in accordance with Articles 110-18, 110-26 and 110-27 of the National Electrical Code, ANSI/NFPA 701, 1999 Edition.

Use 18 AWG or 0.75 mm2 or above cable to connect the DC configured unit to the Centralized D.C. Power Systems.

Install the required double-pole, single-throw, DC rated UL Listed circuit breaker between the power source and the AlterPath Console Server DC version. Minimum Breaker Rating: 2A. Required conductor size: 18 AWG.

Working inside the AlterPath Console Port Server

Do not attempt to service the AlterPath Console Server yourself, except when following instructions from Cyclades Technical Support personnel. In the latter case, first take the following precautions:

1. Turn the AlterPath Console Server off.
2. Ground yourself by touching an unpainted metal surface on the back of the equipment before touching anything inside it.

Replacing the Battery

WARNING:
There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

WARNUNG:
Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

FCC Warning Statement

The AlterPath Console Server has been tested and found to comply with the limits for Class A digital devices, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Installation & Service Manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the problem at his or her own expense.

Notice About FCC Compliance for all AlterPath ACS Models

To comply with FCC standards, the AlterPath Console Server require the use of a shielded CAT 5 cable for the Ethernet interface. Notice that this cable is not supplied with either of the products and must be provided by the customer.

Canadian DOC Notice

The AlterPath Console Server does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

L’AlterPath Console Server n’émete pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectrique edicté par le Ministère des Communications du Canada.

Aviso de Precaución S-Mark Argentina

Por favor de leer todos los avisos de precaución como medida preventiva para el operador y el AlterPath Console Server.

¡Peligro! No hacer funcionar el AlterPath Console Server con la tapa abierta.

¡Peligro! Para prevenir un corto circuito en el AlterPath Console Server al desconectarlo de la red, primero desconectar el cable del equipo y luego el cable que conecta a la red. Para conectar el equipo a la red, primero conectar el cable a la red y luego al equipo.

¡Peligro! Asegurarse que el equipo este conectado a tierra, para prevenir un shock eléctrico. El cable eléctrico del equipo viene con tres clavijas para conectar asegurar conexión a tierra. No use adaptadores o quite la clavija de tierra. Si se tiene que utilizar una extensión, utilice una que tenga tres cables con clavija para conexión a tierra.

¡Importante! Para proteger al AlterPath Console Server de fluctuaciones en corriente eléctrica, utilice una fuente eléctrica de respaldo.

¡Importante! Asegurarse de que nada descanse sobre los cables del AlterPath Console Server, y que los cables no obstruyan el paso.

¡Importante! Asegurarse de no dejar caer alimentos o bebidas en el AlterPath Console Server. Si esto ocurre, avise a Cyclades Corporation.

¡Peligro! No empuje ningún tipo de objeto en los compartimientos del AlterPath Console Server. Hacer esto podría ocasionar un incendio o causar un corto circuito dentro del equipo.

¡Importante! Mantenga el AlterPath Console Server Cyclades-TS fuera del alcancé de calentadores, y asegurarse de no tapar la ventilación del equipo.

¡Importante! El AlterPath Console Server con alimentación de corriente directa (CD) solo debe ser instalado en áreas con restricción y de acuerdo a los artículos 110-18, 110-26, y 110-27 del National Electrical Code, ANSI/NFPA 701, Edición 1999.

Para conectar la corriente directa (CD) al sistema, utilice cable de 0.75 mm (18 AWG).

Instalar el interruptor corriente directa (CD) aprobado por UL entre la fuente de alimentación y el AlterPath Console Server. El limite mínimo del interruptor deberá ser 2 amperes, con conductor de 0.75 mm (18 AWG).

Trabajar dentro del AlterPath Console Server

No intente dar servicio al AlterPath Console Server, solo que este bajo la dirección de Soporte Técnico de Cyclades. Si este es el caso, tome las siguientes precauciones:

Apague el AlterPath Console Server. Asegurase que este tocando tierra antes de tocar cualquier otra cosa, que puede ser al tocar la parte trasera del equipo.

Batería

¡Peligro! Una batería nueva puede explotar, si no esta instalada correctamente. Remplace la batería cuando sea necesario solo con el mismo tipo recomendado por el fabricante de la batería. Deshacerse de la batería de acuerdo a las instrucciones del fabricante de la batería.

C: Supported Browsers and JRE

Supported Web Browsers

The web browsers that support the AlterPath Console Server web interface are as follows:

- Netscape 7.1 for Windows
- Mozilla 1.3a for Windows
- MS Internet Explorer 6.0

Browsers that do not support the ACS web interface:

- Netscape Communicator 4.8
- Netscape Communicator 4.79

Installing JRE

Tested Environment

Windows XP + JREv1.4.2.	
Internet Explorer 6.0	Successful
Netscape 6.0 - 6.2.3	Successful
Netscape 7.0 - 7.1	Successful
Mozilla 1.1 - 1.3a	Successful

Requirements

For the ACS application to run, you must have Java 2 Runtime Environment (JRE) version 1.4.2. (which can be found at http://java.sun.com/) installed on your PC with your browser acknowledged to use it. You can first check if the browser you are using acknowledges the Java version by following the procedures given in the next sections.

From Windows Internet Explorer

Go to **Tools** > **Internet Options** > **Advanced**. Scroll down and look for a section on Java. There should be a checkbox that says “Use Java 2 v1.4.2...." If there isn't, this could either mean your browser is not activated to use the Java plug-in that came with the JRE you have installed or it just means that you don't have any JRE installed, in which case please install and repeat the check.

If you have already installed JRE and you just want to activate your browser to use it, go to your system's Control Panel > Java Plug-in icon > Browser > check on the browser(s) you want to activate to use the Java Plug-in. Now repeat the check to see if your browser will now use the correct Java Plug-in.

From Windows Netscape or Mozilla

Check to see if Java is enabled. Go to Edit > Preferences > Advanced > Check on Enable Java. To see what version of JRE Plug-in is used, go to Help > About Plug-ins. Scroll down to Java Plug-in section. Check if the Java Plug-in is the version you have installed.

TIP: When installing Netscape 7.0, it will ask if you want to install Sun Java. If you click on the box to install it, a version of JRE will be installed into your system; however, this does not mean that other browsers such as IE will recognize it. If you choose not to install Sun Java through Netscape but do it separately, Netscape 7.0 should automatically detect the JRE, and this can be checked by the instructions mentioned above.

Glossary

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.

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.

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 Access Server (CAS)

A CAS has an Ethernet LAN connection and many RS-232 serial ports. It connects to the console ports of servers and networking equipment and allows convenient and secure access from a single location.

Community

The community name acts as a password and is used to authenticate messages sent between an SNMP client and a router containing an SNMP server. The community name is sent in every packet between the client and the server.

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.

DNAT

Destination NAT. Translating the destination address of a datagram.

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.

IP packet filtering This is a set of facilities in network equipment that allows the filtering of data packets based on source/destination addresses, protocol, TCP port number and other parameters. Packet filtering is one of the main functions of a firewall.

IPsec Short for *IP Security Protocol*, IPsec is an extended IP protocol that provides encrypted security services. These services enable authentication, as well as for access and trustwothiness control. IPsec provides similar services as SSL, but it works on a network layer. Through IPsec you can create encrypted tunnels (VPN) or encrypt traffic between two hosts.

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.

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.

Masquerading

Where a system acts on behalf of other systems, such as when an ISP server accesses network services on behalf of a dial-up user.

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.

NFS *Network File System* is a protocol suite developed and licensed by Sun Microsystems that allows different makes of computers running different
operating systems to share files and disk storage. NFS is implemented using a connectionless protocol (UDP) in order to make it stateless.

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.

Object Identifiers (OID) The SNMP manager or the management application uses a well-defined naming syntax to specify the variables to the SNMP agent. Object names in this syntax are called Object Identifiers (Object IDs or OIDs). OIDs are series of numbers that uniquely identify an object to an SNMP agent. OIDs are arranged in a hierarchical, inverted tree structure.

The OID tree begins with the root and expands into branches. Each point in the OID tree is called a node and each node will have one or more branches, or will terminate with a leaf node. The format of OID is a sequence of numbers with dots in between.

There are two roots for Object Identifiers, namely iso and ccit. iso starts with .1 and ccit starts with .0. Most Object Identifiers start with .1.3.6.1, where 1=iso, 3=org, 6= dod, 1 = internet. The Internet sub-tree branches into mgmt and private.

To understand the concept of relative and absolute Object Identifiers, let us consider the AdventNet Object Identifier .1.3.6.1.4.1.2162. It specifies the path from the root of the tree. The root does not have a name or a number but the initial 1 in this OID is directly below root. This is called an absolute OID. However, a path to the variable may be specified relative to some node in the OID tree. For example, 2.1.1.7 specifies the sysContact object in the system group, relative to the Internet (.1.3.6.1) node in the OID tree. This is called a relative OID.

Off-Line Data Buffering This is a CAS feature that allows capture of console data even when there is no one connected to the port.

OID See **Object Identifier**.

Packet A packet is a basic communication data unit used when transmitting information from one computer to another. The maximum length of a packet depends on the communication medium. As an example, in Ethernet networks the maximum length is1500 bytes. A data packet can be divided into two parts: the header part and the data part. The header contains information needed for communication between nodes; the data is the body of the packet that is ultimately received by the application.

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.

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.

RISC

Reduced Instruction Set Computer. This describes a computer processor architecture that uses a reduced set of instructions (and achieves performance by executing those instructions very fast.) Most UNIX servers (Sun Sparc, HP, IBM RS6000, Compaq Alpha) were designed with a processor using a RISC architecture. The Intel ® x86 architecture.

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.

SNAT

Source NAT. Translating the source address of a datagram.

SNMP

Short for *Simple Network Management Protocol*, a set of protocols for managing complex networks. The first versions of SNMP were developed in the early 80s. SNMP works by sending messages, called protocol data units (PDUs), to different parts of a network.

SNMP-compliant devices, called agents, store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.
(Source: Webopedia)

SNMP Traps

Notifications or Event Reports are occurrences of Events in a Managed system, sent to a list of managers configured to receive Events for that managed system. These Event Reports are called Traps in SNMP. The Traps provide the value of one or more instances of management information.

Any SNMP enabled Device generates Fault Reports (Traps) that are defined in the MIB (which the SNMP Agent has implemented).

The Trap Definition vary with the SNMP Version (which defines the messaging format), but the information contained in these are essentially identical. The major difference between the two message formats is in identifying the events.

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.

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.

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.

VPN

Virtual Private Networking allows local area networks to communicate across wide area networks, typically over an encrypted channel. See also: **IPsec**.

Watchdog Timer

A watchdog timer (WDT) is a device or electronic card that performs a specific operation after a certain period of time if something goes wrong with an electronic system and the system does not recover on its own.

A common problem is for a machine or operating system to lock up if two parts or programs conflict, or, in an operating system, if memory management trouble occurs. In some cases, the system will eventually recover on its own, but this may take an unknown and perhaps extended length of time.

A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds during which a program or computer fails to respond following the most recent mouse click or keyboard action.

The timer can also be used for other purposes, for example, to actuate the refresh (or reload) button in a Web browser if a Web site does not fully load after a certain length of time following the entry of a Uniform Resource Locator (URL).

Index