CHAPTER 1

Overview

This chapter contains the following sections:

For more information on how to get started quickly, see the *Quick Start Guide, Cisco ACE 4700 Series Application Control Engine Appliance.*

ACE Appliance Device Manager Overview

The ACE Appliance Device Manager, which resides in flash memory on the ACE appliance, provides a browser-based interface for configuring and managing the ACE appliance. Its intuitive interface combines easy navigation with point-and-click provisioning of services, reducing the complexity of configuring virtual services and multiple feature sets.

ACE Appliance Device Manager menus and options:

- Supports end-to-end service provisioning of the ACE appliance and any associated virtual contexts, including network access, port management, application acceleration and optimization, load-balancing, SSL management, resource management, and fault tolerance.

Note Device Manager uses SSH and XML over HTTPS to communicate with the ACE appliance and applying exec mode configuration changes (such as, checkpoint, SSL certificate, license, copy, and backup and restore configurations) to the appliance. By default, SSH is enabled on the appliance. However, ensure that the **ssh key rsa 1024 force** command is applied on the appliance.

- Helps you manage ACE appliance licenses and role-based access control (RBAC).
- Provides a monitoring interface with a flexible choice of statistics and graphs.
- Enables you report any problem with the ACE appliance using the Lifeline feature, which allows you to forward critical information about the problem to Cisco Technical Support.
- Offers task-based context-sensitive help from each screen, providing information about fields on the screen and related procedures.

For more information on how to get started quickly, see the *Getting Started Guide, Cisco ACE 4700 Series Application Control Engine Appliance*.

Information About the ACE No Payload Encryption Software Version

Beginning with ACE software Version A5(2.0), Cisco makes available the following two ACE software versions:

- ACE Payload Encryption (PE)—CLI commands related to payload encryption protocols are enabled. The ACE uses the payload encryption protocols to encrypt through-the-box traffic, such as IPsec, SSL VPN, and other secure voice protocols. The ACE PE software version contains the same payload encryption functionality found in previous ACE software versions.
- ACE No Payload Encryption (NPE)—CLI commands related to payload encryption protocols are either removed or do not function because the key encryption configuration commands have been removed. The new ACE NPE software version supports customers located in countries where the United States has imposed export restrictions on crypto functions. Without the use of payload encryption protocol commands, you cannot configure the ACE to perform data encryption tasks, such as configuring it as a virtual Secure Sockets Layer (SSL) server for SSL initiation or termination.

Modifications made to the ACE NPE software version do not affect management protocols, such as SSH, which is required to access the Device Manager GUI. For more information, see the "Using the Setup Script to Enable Connectivity to the Device Manager" section in the *Cisco 4700 Series Application Control Engine Appliance Administration Guide*.

When using the ACE NPE software version, Device Manager includes the following modifications:

- The SSL configuration tab (Config > Virtual Contexts > SSL) is removed to prevent access to the main SSL configuration windows.
- In GUI sections that typically contain encryption-related configuration attributes, the attributes are either removed or you are not permitted to configure them. If you attempt to configure an encryption-related attribute, Device Manager does not allow you to deploy the configuration.
- In GUI sections that display monitored attributes that include encryption-related attributes (such as SSL connection rate), the encryption-related attributes may be listed but do not show any values associated with them.

This guide and the Device Manager online help contain notes where information about encryption-related attributes is affected when using the ACE NPE software version.

Finding Information on CLI Tasks

ACE Appliance Device Manager does not include a one-to-one mapping of all the possible command line interface (CLI) tasks for the ACE appliance. Table 1-1 identifies some of the individual tasks to be performed from the CLI and provides a reference to the applicable configuration guide. For tasks not found in this table, see the *Getting Started Guide, Cisco ACE 4700 Series Application Control Engine Appliance.*

Table 1-1 CLI Documentation References

Task Topic	Related CLI Documentation
ARP, configuring	*Routing and Bridging Guide, Cisco ACE Application Control Engine* Chapter 5, Configuring ARP
Authentication and accounting (AAA) services	*Security Guide, Cisco ACE Application Control Engine* Chapter 2, Configuring Authentication and Accounting Services
Boot configuration (environment variable)	*Administration Guide, Cisco ACE Application Control Engine* Chapter 1, Setting Up the ACE
Date and time (time zone, daylight savings time, clock settings, and NTP)	*Administration Guide, Cisco ACE Application Control Engine* Chapter 1, Setting Up the ACE
LDAP directory server	*Security Guide, Cisco ACE Application Control Engine* Chapter 2, Configuring Authentication and Accounting Services
Message-of-the-day banner	*Administration Guide, Cisco ACE Application Control Engine* Chapter 1, Setting Up the ACE
Logging in to the ACE	*Administration Guide, Cisco ACE Application Control Engine* Chapter 1, Setting Up the ACE
RADIUS server	*Security Guide, Cisco ACE Application Control Engine* Chapter 2, Configuring Authentication and Accounting Services
script file [1]	*Command Reference, Cisco ACE Application Control Engine*
SSH management sessions	*Administration Guide, Cisco ACE Application Control Engine* Chapter 2, Enabling Remote Access to the ACE
TACACS+ server	*Security Guide, Cisco ACE Application Control Engine* Chapter 2, Configuring Authentication and Accounting Services
VLAN interfaces, configuring	*Routing and Bridging Guide, Cisco ACE Application Control Engine* Chapter 2, Configuring VLAN Interfaces

1. ACE Appliance Device Manager supports the domain object type Script for RBAC configuration. It does not configure the script CLI command. To use the script file command, use the ACE Appliance CLI to load a script into memory on the ACE and enable it for use.

Note When you use the ACE CLI to configure named objects (such as a real server, virtual server, parameter map, class map, health probe, and so on), consider that the Device Manager (DM) supports object names with an alphanumeric string of 1 to 64 characters, which can include the following special characters: underscore (_), hyphen (-), dot (.), and asterisk (*). Spaces are not allowed.

If you use the ACE CLI to configure a named object with special characters that the DM does not support, you may not be able to configure the ACE using DM.

Logging into ACE Appliance Device Manager

You access ACE Appliance Device Manager features and functions through a Web-based interface. The following sections describe logging in, the interface, and terms used in ACE Appliance Device Manager.

By default, your ACE provides an Admin context and five user contexts, which allow you to use multiple contexts if you choose to configure them. ACE Appliance Device Manager uses Hypertext Transfer Protocol Secure (HTTPS) to securely encrypt HTTP requests and responses.

The ACE Appliance Device Manager login screen allows you to do the following:

- Log into the ACE Appliance Device Manager interface (First Time Login, page 1-4 or Logging In as a User, page 1-5)
- Change the password for your account (See Changing Your Account Password, page 1-6.)
- Obtain online help by clicking **Help**

We recommend that before you log into the ACE Appliance Device Manager that you log in to the ACE appliance CLI and initially configure basic settings on the ACE. See the *Administration Guide*, *Cisco ACE Application Control Engine*, Chapter 1, Setting Up the ACE, for details.

Note The DM does not support duplicate management IP addresses in different contexts.

First Time Login

After you perform the initial setup of the ACE appliance using the CLI, use the following procedure to log in the first time.

Procedure

Step 1 Use a Web browser and navigate to the ACE Appliance Device Manager login screen by typing the IP address of the management interface configured during initial setup, such as https://192.168.11.1. A security alert screen appears.

Note The DM does not support duplicate management IP addresses in different contexts.

Step 2 We recommend that you view the certificate to confirm it is from Cisco Systems, and then click **OK** or **Yes** to accept the certificate and proceed to the login screen. The keys you select may be different based on your browser.

Step 3 In the User Name field, type **admin**.

The admin account was created when the system was installed. Once you are logged in using this account, you can create additional user accounts and manage virtual contexts, roles, and domains. For information on changing account passwords, see Changing User Passwords, page 15-13.

Step 4 In the Password field, type the password for the admin user account, **admin**. The password for the admin user account was configured when the system was installed. Change the default admin login password as outlined in Changing Your Account Password, page 1-6.

Note All ACE appliances shipped from Cisco Systems are configured with the same administrative username and password. If you do not change the default Admin password, you will only be able to log in to the ACE through the console port.

Step 5 Click **Login**.

When you log in, the default page that appears is the DM Homepage (see Chapter 2, "Using Homepage").

Step 6 We recommend you change your admin password. See Changing Your Account Password, page 1-6.

Logging In as a User

Procedure

Step 1 Use a web browser and navigate to the ACE Appliance Device Manager login screen by typing the IP address of the management interface of a virtual context you wish to login into, such as https://192.168.11.1. The login screen appears.

Note The DM does not support duplicate management IP addresses in different contexts.

Step 2 To login as a user, enter **userid** in the User Name field (where *userid* is the login name provided by your admin).

Step 3 Enter your password and click **Login**.

Related Topics

- Changing Your Account Password, page 1-6
- ACE Appliance Device Manager Interface Overview, page 1-6
- Managing Users, page 15-7
- Managing User Roles, page 15-14
- Managing Domains, page 15-31

Changing Your Account Password

All ACE appliances are shipped from Cisco Systems with the same administrative username and password. If you do not change the default Admin password, you will only be able to log in to the ACE through the console port.

Use this procedure to change your account password.

Procedure

Step 1 Using a Web browser, navigate to the ACE Appliance Device Manager login screen by typing the IP address of the management interface configured during initial setup, such as https://192.168.11.1. The login screen appears.

Note The DM does not support duplicate management IP addresses in different contexts.

Step 2 In the User Name field, enter your account user name.

Step 3 Click **Change Password**. The Change Password configuration screen appears.

Step 4 In the User Name field, enter the user name of the account you want to modify.

For a user name in a context other than the Admin context, you must include the context name after the user name in the following format: *username@context_name*

For example, for the test_1 user name in the C1 context, enter test_1@C1.

Step 5 In the Old Password field, enter the current password for this account.

Step 6 In the New Password field, enter the new password for this account.

Password attributes such as minimum and maximum length or accepted characters are defined at the appliance level. Valid passwords are unquoted text strings with a maximum of 64 characters.

Step 7 In the Confirm New Password field, reenter the new password for this account.

Step 8 Do the following:

- Click **OK** to save your entries and to return to the login screen.
- Click **Cancel** to exit this procedure without saving your entries and to return to the login screen.

Related Topics

- Logging into ACE Appliance Device Manager, page 1-4
- ACE Appliance Device Manager Interface Overview, page 1-6
- Changing the Admin Password, page 15-13

ACE Appliance Device Manager Interface Overview

When you log into the ACE Appliance Device Manager, the default window that appears is the Homepage from which you can access the operational and monitoring features of DM. For details about using Homepage, see Chapter 2, “Using Homepage”).

Figure 1-1 is the All Virtual Contexts table (**Config > Virtual Contexts)** as an example of the DM interface components. Table 1-2 describes the numbered fields. A description of the buttons in the ACE Appliance Device Manager window are in Table 1-4 on page 1-9.

Features that are not accessible from your user login or context due to permission settings will not display or may display grayed out. For more details on roles and features, see Managing User Roles, page 15-14.

Figure 1-1 ACE Appliance Device Manager Interface Components

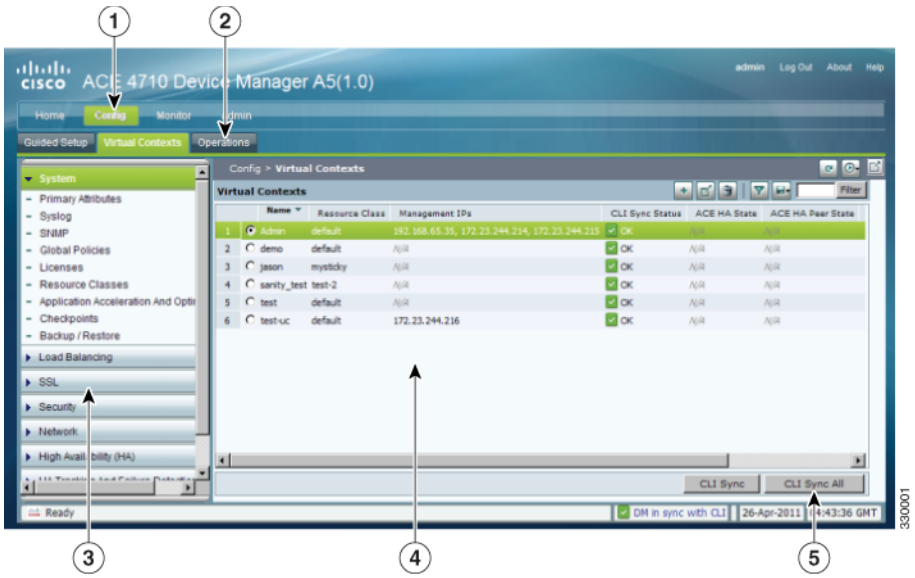


Table 1-2 ACE Appliance Device Manager Interface Components Descriptions

Field	Description
1	Navigation pane, which contains: • The high-level navigation path within the ACE Appliance Device Manager interface, which includes Config, Monitor, and Admin functions. You can click a tab in the navigation path to view the next level of menus below the tabs. • The Logout button. • A Help menu that provides links to context-sensitive help and ACE Appliance Device Manager version information.
2	A second-level navigation path, which contains another level of navigation. Clicking an option in this submenu displays its associated menus in the navigation pane.
3	Third-level navigation pane, which contains additional levels of navigation. Clicking on the menu bar in this pane toggles the task menu display options.

Table 1-2 ACE Appliance Device Manager Interface Components Descriptions (continued)

Field	Description
4	Content area, which contains the display and input area of the window. It can include tables, graphical maps, configuration screens, graphs, buttons, or combinations of these items. For a description of buttons, see Table 1-4 on page 1-9.
5	Status bar, which displays Device Manager and CLI synchronization information, polling status for a context, and the current date and time of the ACE appliance. **Note** Time values are displayed using a fixed time zone (GMT). The Device Manager automatically converts the timezone setting of the ACE appliance to GMT and displays the GMT string adjacent to the current time.

Related Topics

- Understanding ACE Appliance Device Manager Screens and Menus, page 1-8
- Understanding Table Buttons, page 1-11

Understanding ACE Appliance Device Manager Screens and Menus

Figure 1-2 contains many common screen elements as described in Table 1-3.

Figure 1-2 Example ACE Appliance Device Manager Screen

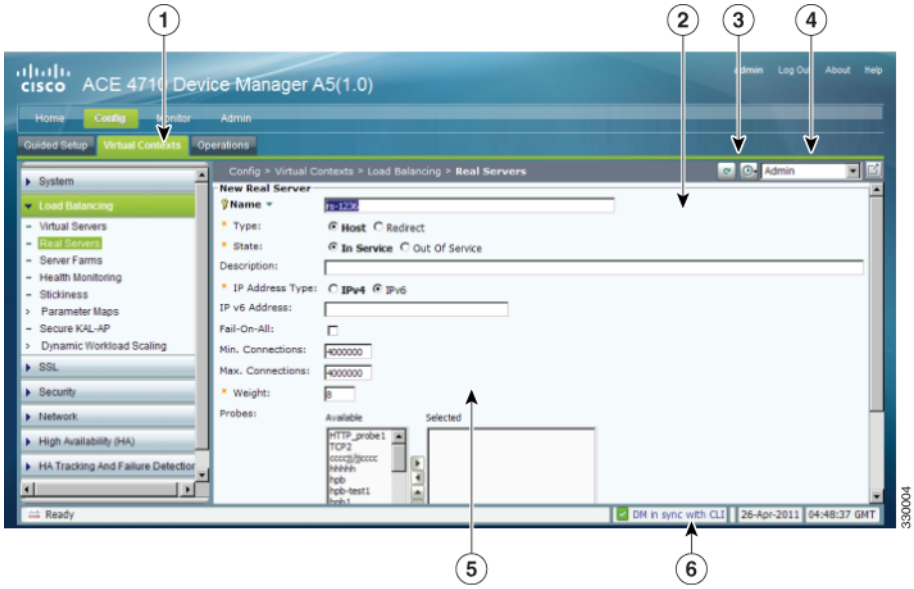


Table 1-3 Example ACE Appliance Device Manager Screen Descriptions

Number	Description
1	The high-level navigation path within the ACE Appliance Device Manager interface, which includes Config, Monitor, and Admin functions. You can click a tab in the navigation path to view the next level of menus below the tabs.
2	Content area. Contains the display and input area of the window. It can include tables, graphical maps, configuration screens, graphs, buttons, or combinations of these items.
3	Content buttons, which are described in Table 1-4.
4	Object selector. Use this field to change virtual contexts.
5	Input fields. Use these fields to make selections and provide information. Fields with 2 or 3 options use radio buttons. Fields with more than 3 options use dropdown lists.
6	Synchronization and configuration section of the status bar. One indicator displays DM GUI and CLI synchronization and summary count information and the other indicator displays CLI synchronization information and polling status for a context. See Viewing Virtual Context Synchronization Status, page 4-80 for CLI Config Status message descriptions or Error Monitoring, page 14-15 for polling state message descriptions.

Related Topics

- Understanding ACE Appliance Device Manager Buttons, page 1-9
- Understanding Table Buttons, page 1-11
- ACE Appliance Device Manager Screen Conventions, page 1-15

Understanding ACE Appliance Device Manager Buttons

Table 1-4 describes the buttons that appear in some of the Config, Monitor, and Admin screens.

Note ACE Appliance Device Manager documentation, including online help, uses the names of buttons in all procedures. For example, “Click **Back** to return to the previous screen.”

Table 1-4 Button and Element Descriptions

Button	Name	Description
	Back	Returns you to the previous screen.
	Forward	Takes you to the screen previously visited from the current location.
	Refresh	Immediately refreshes the information in the content area with the current information.

Table 1-4 Button and Element Descriptions (continued)

Button	Name	Description
	Auto Refresh	Pauses the automatic refresh feature. You can pause the automatic refresh for 30, 60, 120, 300, 600, or 3600 seconds. If you disable the automatic refresh feature, ACE Appliance Device Manager times out after 30 minutes.
	Help	Launches context-sensitive help for the current screen.
	Add Another	Saves the current entries and refreshes the screen so you can add another entry.
	Advanced Editing Mode	Lets you view or enter advanced arguments for the selected display.
	Switch between Configure and Browse modes	Displays the subtables for those items that have additional sets of parameters that can be configured, such as **Config** > **Virtual Contexts** > ***context*** > **Load Balancing** > **Server Farms**. **Note** This button is not available on single-row tables such as **Config** > **Virtual Contexts** > **System** > **SNMP**. To switch between these modes, navigate to another screen where the button appears (for example, **Config** > **Virtual Contexts** > ***context*** > **Load Balancing** > **Server Farms**), click the button to enter the desired mode, and then return to the screen on which the button was missing. You will remain in the mode you selected.
	Key	Indicates that the associated field is a key field for this table. This field is mandatory and should be unique. If there are two fields with this key, then the combination must be unique.
	Plus	Displays a table with information related to the field where Plus appears. For example, when Plus appears next to the field label *Role*, clicking **Plus** displays a list of all Role Names in a separate window. Indicates that the associated field is a key field for this table. This field is mandatory and should be unique. If there are two fields with this key, then the combination must be unique. In File Browser only: expands or collapses the folder structure and reloads the specific directory.
	Screen Mode	Toggles from partial to full screen mode. Maximizes the content area and removes the navigation aids.
	Reorder List	Toggles list by alpha-order.

Related Topics

- Understanding ACE Appliance Device Manager Screens and Menus, page 1-8
- Understanding Table Buttons, page 1-11
- ACE Appliance Device Manager Screen Conventions, page 1-15

Understanding Table Buttons

When the content area of the ACE Appliance Device Manager screen contains a table, there are several buttons that appear as described in Table 1-5.

Table 1-5 ACE Appliance Device Manager Table Buttons

Button	Name	Description
	Add	Lets you an entry to the displayed table.
	View/Edit	Opens the configuration screen of a selected entry in the table.
	Delete	Deletes the selected entry in the table.
	Filter	Filters the displayed list of items according to the criteria you specify. (See Filtering Entries, page 1-13.)
	Go	Appears when filtering is enabled; updates the table with the filtering criteria.
	Save	Displays the current information in a new window in either raw data or Excel format so you can save it to a file or print it.

Related Topics

- Understanding ACE Appliance Device Manager Buttons, page 1-9
- ACE Appliance Device Manager Screen Conventions, page 1-15
- ACE Appliance Device Manager Interface Overview, page 1-6
- Conventions in Tables, page 1-12

Conventions in Tables

Selecting Table Entries

Double-clicking an entry in a table opens its corresponding configuration screen.

You can select multiple entries in a table in two ways:

- To select all table entries, check the check box at the top of the first column (where available).
- To select multiple entries individually, select the desired entries.

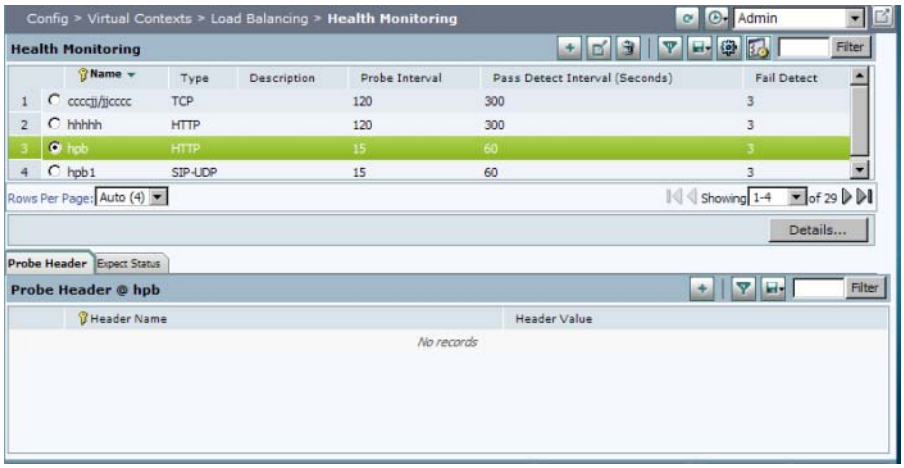
Parent Rows

If you select multiple entries in a table and then choose an option that can apply to only one entry at a time, the Parent Row field appears first in the configuration screen (see Figure 1-3).

The Parent Row field lists the selected entries and requires you to select one. Subsequent configuration choices in this screen are applied only to the entry identified in the Parent Row field.

Parent Row columns appear in subtables when multiple items are selected in the primary table.

Figure 1-3 Parent Rows in Configuration Screens

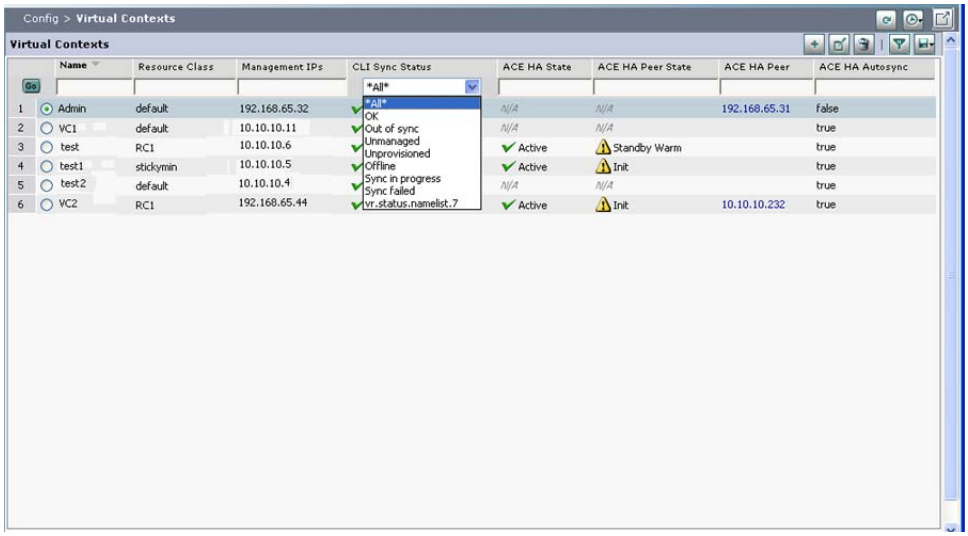


Filtering Entries

Click **Filter** to view table entries using criteria you select. When filtering is enabled, a filter row appears above the first table entry that allows you to filter entries in the following ways:

- In a drop-down list, select one of the ACE Appliance Device Manager-identified categories (see Figure 1-4). The table refreshes automatically with the entries that match the selected criterion.
- In fields without drop-down lists, enter the string you want to match, and then click **Go** above the first table entry. The table refreshes with the entries that match your input.

Figure 1-4 Example Table with Filtering Enabled



Related Topics

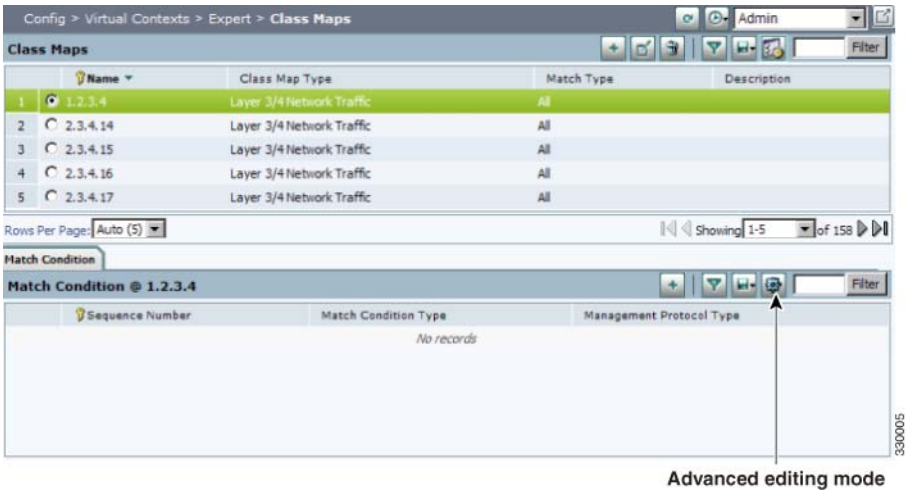
- ACE Appliance Device Manager Interface Overview, page 1-6
- Using the Advanced Editing Option, page 1-14

Using the Advanced Editing Option

By default, tables include columns that contain configured attributes, or a subset of columns related to a key field.

To view all configurable attributes in table format, click **Advanced Editing Mode** (the highlighted button in Figure 1-5). When advanced editing mode is enabled, all columns appear for your review (see Figure 1-5).

Figure 1-5 Advanced Editing Enabled Screen



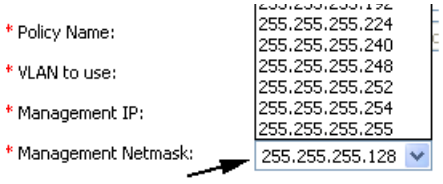
Related Topics

- ACE Appliance Device Manager Interface Overview, page 1-6
- Conventions in Tables, page 1-12

ACE Appliance Device Manager Screen Conventions

Table 1-6 describes other conventions used in ACE Appliance Device Manager screens.

Table 1-6 ACE Appliance Device Manager Screen Conventions

Convention	Example	Description
Dimmed field		Dimmed fields signify items that cannot be modified or that are not accessible from the current screen. Some buttons are dimmed if more than one item is selected in the list. For example, if multiple servers are selected in the Real Servers table, the View/Edit button is dimmed.
Dropdown lists		Fields with 2 or 3 options use radio buttons. Fields with more than 3 options use dropdown lists.
Light yellow field with green font		Warning text that appears below the affected field as green font against a light yellow background. In the example, a message stating that the community string must be entered if virtual context monitoring is used resulted in this display.
Red asterisk		A red asterisk indicates a required field.
Yellow field with red font		Incorrect, invalid, or incomplete entries appear as red font against a yellow background. In the example, an IP address cannot begin with four digits, resulting in this display. Warning text may also display below the affected field in green text on a yellow background.

Related Topics

- Conventions in Tables, page 1-12
- ACE Appliance Device Manager Interface Overview, page 1-6

Viewing Monitoring Results

Figure 1-6 shows an example graph from the Monitor component.

Figure 1-6 Monitoring Results Screen

Monitor graphs offer many options including graph type, viewing raw data, graph layout, and values to be included. Table 1-7 identifies these options and their associated buttons. When viewing a graph, click the button to select the option. ACE Appliance Device Manager displays graph data in GMT.

Note The maximum number of statistics that can be graphed is five.

Note On the ACE, statistics are kept for 7 days or 20,000 hourly records, whichever comes first. The duration it takes to reach 20,000 hourly records is determined by the number of contexts, interfaces and real servers configured. The “All dates” graph provides all available data in the database, up to the above mentioned numbers. An ACE reboot will reset the statistics database.

Table 1-7 ACE Appliance Device Manager Monitor Buttons (unsure if all of these are still available)

Button	Name	Description
Graph Options		
	Line graph	Creates a line graph using the displayed information.
	Stacked bar graph	Creates a stacked bar chart using the displayed information.

Table 1-7 ACE Appliance Device Manager Monitor Buttons (unsure if all of these are still available)

Button	Name	Description
	Bar graph	Creates a bar graph using the displayed information.
Viewing Options		
	Show raw data	Displays the raw data in table format.
	Output to Excel	Displays the raw data in Excel format in a separate browser window.
Layout, Value, and Time Options		
	Change Legend Location	Displays the location of the legend.
	Multigraph Mode	Displays two line graphs next to each other.
	Value delta per time	Displays data points over time. See Monitoring Resource Usage, page 14-17 for a comparison of regular and value delta per time graphs. Time values are displayed using a fixed time zone (GMT).
	Time range	Displays the selected time range of the data to graph. Includes previous 1, 2, 8, or 24 hours or all dates.

Related Topics

- ACE Appliance Device Manager Interface Overview, page 1-6
- Understanding ACE Appliance Device Manager Terminology, page 1-22
- Monitoring Resource Usage, page 14-17

Configuration Overview

Use the flow chart in Figure 1-7 to get started with the ACE Appliance Device Manager. Table 1-8 describes these tasks in more detail.

Figure 1-7 High-Level Configuration Process

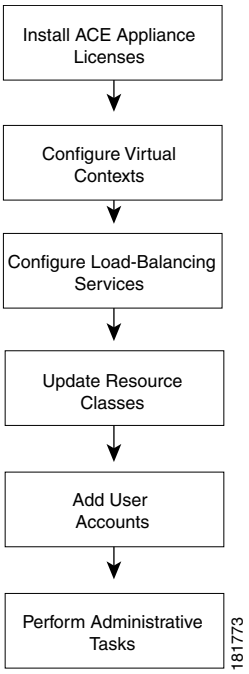


Table 1-8 Configuration Task Overview

	Task	Description
Step 1	Install ACE appliance licenses.	In this step you install licenses for ACE appliances that let you increase the number of virtual contexts, appliance bandwidth, and SSL TPS (transactions per second). See Managing ACE Appliance Licenses, page 4-29 for details.
Step 2	Configure virtual contexts.	In this step you partition the ACE appliance into multiple virtual devices or *contexts*. Each context contains its own set of policies, interfaces, resources, and administrators, allowing you to efficiently manage resources, users, and the services you provide to your customers. See Using Virtual Contexts, page 4-2 for details.
Step 3	Configure load-balancing services.	In this step you configure load balancing to manage client requests for service. See Load Balancing Overview, page 5-1 for details.
Step 4	Update resource classes.	In this step you configure resource usage models that you can apply across your network. See Managing Resource Classes, page 4-35 for details.

Table 1-8 Configuration Task Overview (continued)

	Task	Description
Step 5	Add user accounts.	In this step you set up tiered access for users. See Managing the ACE Appliance, page 15-1 for details.
Step 6	Perform administrative tasks.	This step includes ongoing maintenance and administrative tasks, such as follows: • Updating ACE appliance software (see Managing ACE Appliance Licenses, page 4-29). • Monitoring virtual context or ACE Appliance Device Manager statistics (see "Monitoring Your Network" section on page 14-1).

Understanding ACE Features

The ACE performs high-performance server load balancing (SLB) among groups of servers, server farms, firewalls, and other network devices, based on Layer 3 as well as Layer 4 through Layer 7 packet information. The ACE provides the following major features and functionality.

- **Ethernet Interfaces—**The ACE provides four physical Ethernet ports that provide an interface for connecting to 10-Mbps, 100-Mbps, or 1000-Mbps networks. Each Layer 2 Ethernet port supports autonegotiate, full-duplex, or half-duplex operation on an Ethernet LAN, and can carry traffic within a designated VLAN interface.
- **Routing and Bridging—**You configure the corresponding VLAN interfaces on the ACE as either routed or bridged. When you configure an IP address on an interface, the ACE automatically configures it as a routed mode interface. When you configure a bridge group on an interface VLAN, the ACE automatically configures it as a bridged interface.
- **Traffic Policies—**The ACE allows you to perform advanced administration tasks such as using traffic policies to classify traffic flow and the action to take for the type of traffic. Traffic policies consist of class maps, policy maps, and service policies.
- **Redundancy—**Redundancy provides fault tolerance for the stateful switchover of flow, and offers increased uptime for a more robust network.
- **Virtualization—**Virtualization allow you to manage ACE system resources and users, as well as the services provided to your customers. Multiple contexts use the concept of virtualization to partition your ACE into multiple virtual devices or contexts. Each context contains its own set of policies, interfaces, resources, and administrators.
- **Server Load Balancing—** Server load balancing (SLB) on the ACE provides network traffic policies for SLB, real servers and server farms, health monitoring through probes, and firewall load balancing.
- **ACE Security Features—**The ACE contains several security features including ACLs, NAT, user authentication and accounting, HTTP deep packet inspection, FTP command request inspection, and application protocol inspection of DNS, HTTP, ICMP, or RTSP.
- **Secure Sockets Layer—**The SSL protocol on the ACE provides encryption technology for the Internet, ensuring secure transactions.

- **Application Acceleration and Optimization—**The ACE includes several optimization technologies to accelerate Web application performance, optimize network performance, and improve access to critical business information.
- **Command-Line Interface—**The command-line interface (CLI) is a line-oriented user interface that provides commands for configuring, managing, and monitoring the ACE. For more information, see the *Command Reference, Cisco ACE Application Control Engine*.

Related Topics

- ACE Appliance Device Manager Overview, page 1-1
- *Command Reference, Cisco ACE Application Control Engine*

IPv6 Considerations

The DM supports IPv6 configurations with the following considerations:

- By default, IPv6 is disabled on an interface. You must enable IPv6 on the interface to enable its configured IPv6 addresses. The interface cannot be in bridged mode. The interface may or may not have IPv4 addresses configured on it.
- When you enable IPv6 or configure a global IPv6 address on an interface, the ACE automatically does the following:
  - Configures a link-local address (if it is not already configured)
  - Performs duplicate address detection (DAD) on both addresses

  You must enable IPv6 on the interface to enable global IPv6 address.
- IPv6 on interface can be individually enabled or disabled. IPv6 cannot be enable or disable globally.
- A link-local address is an IPv6 unicast address that has a scope of the local link only and is required on every interface. Every link-local address has a predefined prefix of FE80::/10. You can configure a link-local address manually. If you do not configure a link-local address before enabling an IPV6 address on the interface, the ACE automatically generates a link-local address with a prefix of FE80::/64. Only one IPv6 link-local address can be configured on an interface.

  In a redundant configuration, you can configure an IPv6 peer link-local address for the standby ACE. You can configure only one peer link-local address on an interface.
- A unique-local address is an optional IPv6 unicast address that is used for local communication within an organization and it is similar to a private IPv4 address (for example, 10.10.2.1). unique-local addresses have a global scope, but they are not routable on the internet, and they are assigned by a central authority. All unique-local addresses have a predefined prefix of FC00::/7. You can configure only one IPv6 unique-local address on an interface.

  In a redundant configuration, you can configure an IPv6 peer unique-local address on the active that is synchronized to the standby ACE. You can configure only one peer unique-local IPv6 address on an interface.
- A global address is an IPv6 unicast address that is used for general IPv6 communication. Each global address is unique across the entire Internet. Therefore, its scope is global. The low order 64 bits can be assigned in several ways, including autoconfiguration using the EUI-64 format. You can configure only one globally unique IPv6 address on an interface.

  In a redundant configuration, you can configure an IPv6 peer global address that is synchronized to the standby ACE.

When you configure redundancy with active and standby ACEs, you can configure a VLAN interface that has an alias global IPv6 address that is shared between the active and standby ACEs. The alias IPv6 address serves as a shared gateway for the two ACEs in a redundant configuration. You can configure only one alias global IPv6 address on an interface.

- A multicast address is used for communications from one source to many destinations. IPv6 multicast addresses function in a manner that is similar to IPv4 multicast addresses. All multicast addresses have a predefined prefix of FF00::/8.
- The ACE supports abbreviated IPv6 addresses. When using double colons (::) for leading zeros in a contiguous block, they can only be used once in an address. Leading zeros can be omitted. Trailing zeros cannot be omitted. The DM will abbreviate an IPv6 address after you finish typing it. If you enter the entire address with a block of contiguous zeros, the DM collapses it into the double colons. For example: FF01:0000:0000:0000:0000:0000:0000:101 becomes FF01::101.
- The ACE uses the Neighbor Discovery (ND) protocol to manage and learn the mapping of IPv6 to Media Access Control (MAC) addresses of nodes attached to the local link. The ACE uses this information to forward and transmit IPv6 packets. The neighbor discovery protocol enables IPv6 nodes and routers to:
  - Determine the link-layer address of a neighbor on the same link
  - Find neighboring routers
  - Keep track of neighbors

  The IPv6 neighbor discovery process uses ICMPv6 messages and solicited-node multicast addresses to determine the link-layer address of a neighbor on the same network (local link), verify the reachability of a neighbor, and keep track of neighbor routers. The IPv6 neighbor discovery process uses the following mechanisms for its operation:
  - Neighbor Solicitation
  - Neighbor Advertisement
  - Router Solicitation
  - Router Advertisement
  - Duplicate Address Detection
- The ACE supports IPv6-to-IPv6 L4/L7 SLB, including support for IPv6 VIP, predictor, probe, server farm, sticky, access-list, object-group, interface, source NAT, OCSP, and CRL.
- The probe must have the same IP address type (IPv6 or IPv4) as the real server. For example, you cannot configure an IPv6 probe to an IPv4 real server.
- You can associate both IPv6 and IPv4 probes to a server farm.
- Only the following Layer 7 protocol will support IPv6:
  - Layer 7 HTTP/HTTPS/DNS
  - Layer 4 TCP/UDP
- The ACE supports the following:
  - IPv6-to-IPv4 SLB and IPv4-to-IPv6 SLB for L7 HTTP/HTTP/TCP/UDP
  - Source NAT support of IPv6
  - IPv6 access-list and object group
  - DHCPv6 relay

- ICMPv6 traffic is not automatically allowed. You must configure the corresponding management traffic policy to allow the ping request to ACE. However, the necessary ND (neighbor Discovery) messages for ARP, duplication address detection are automatically permitted.
- All the management traffic used by the network management server or DM is required to send over IPv4 protocol. IPv6 is not supported.
- Copying files over IPv6 to or from devices are not supported.
- The ACE supports IPv6 HA:
  - All the FT transport (ft vlan) is still on IPv4.
  - Track IPv6 host /peer will be supported

Understanding ACE Appliance Device Manager Terminology

It is useful to understand the following terms when using the ACE Appliance Device Manager:

- Virtual context

  A virtual context is a concept that allows users to partition an ACE appliance into multiple virtual devices. Each virtual context contains its own set of policies, interfaces, and resources, allowing administrators to more efficiently manage system resources and services.

- Virtual server

  In a load-balancing environment, a virtual server is a construct that allows multiple physical servers to appear as one for load-balancing purposes. A virtual server is bound to physical services running on real servers in a server farm and uses IP address and port information to distribute incoming client requests to the servers in the server farm according to a specified load-balancing algorithm.

- Role-Based Access Control

  Managing users using role-based access allows administrators to set up users, roles, and domain access to your virtual contexts. Each user is assigned a role and a domain which defines what virtual contexts they can view and configure. Roles determine which commands and resources are available to a user. Domains determine which objects they can use. Only users associated with an admin virtual context are allowed to see other virtual contexts.

  There are two types of virtual contexts:

  - Admin context

    The Admin context, which contains the basic settings for each virtual device or context, allows a user to configure and manage all contexts. When a user logs into the Admin context, he or she has full system administrator access to the entire ACE appliance and all contexts and objects within it. The Admin context provides access to network-wide resources, for example, a syslog server or context configuration server. All global commands for ACE appliance settings, contexts, resource classes, and so on, are available only in the Admin context.

  - User context

    A user context has access to the resources in which the context was created. For example, a user context that was created by an administrator while in the Admin context, by default, has access to all resources in an ACE appliance. Any user created by someone in a user-defined context only has access to the resources within that context. In addition, roles and domains create access parameters for each user. For a description of the predefined user roles, see Managing User Roles, page 15-14.

For more information on RBAC, see Controlling Access to the Cisco ACE Appliance, page 15-3.

- Resource class

  A resource class is a defined set of resources and allocations available for use by a virtual context. Using resource classes prevents a single context from using all available resources and can be used to ensure that every context is guaranteed the minimum set of resources necessary.

Related Topics

- Controlling Access to the Cisco ACE Appliance, page 15-3
- ACE Appliance Device Manager Interface Overview, page 1-6
- Conventions in Tables, page 1-12
- Glossary

Supported Browsers for ACE Appliance Device Manager

The ACE appliance Device Manager is supported on the following browsers listed in Table 9. All browsers require cookies and DHTML (JavaScript) to be enabled.

Table 9 Supported Browsers

Browser	Version	Client Platform
Microsoft Internet Explorer	IE 7.0	Windows XP Professional with Service Pack 2 or Windows Vista with Service Pack 1
	IE 8.0	Windows XP Professional with Service Pack 2, Windows Vista with Service Pack 1, or Windows 7
Firefox	20	• Windows XP Professional with Service Pack 2, Windows Vista with Service Pack 1, or Windows 7 • Red Hat Enterprise Linux 5