



Overview of the Cisco CTE 1450

The Cisco Content Transformation Engine 1400 (CTE 1400) Series devices are appliances used to render web-based content (such as HTML or XML) to a format appropriate for devices that do not accept HTML. Such devices include WAP phones, IP phones, or PDAs).

The Cisco CTE 1450 is a combined hardware and software platform, used in conjunction with CTE Design Studio (which defines the rendering rules for the CTE 1450). The details of the rendering process are defined in a GUI application (CTE Design Studio) as part of the Cisco CTE 1450 package. Because of its ease of deployment and the use of the GUI tool, the Cisco CTE 1450 allows content providers to quickly extend the reach of existing data.

This chapter includes a high-level description of the Cisco CTE 1450 and its features. It contains network application diagrams and a functional overview of the product.



Note

Throughout this guide, you will see the Cisco CTE 1400 Series devices referred to as the “Cisco CTE 1450” or as “your system.” Some document titles refer to a Cisco CTE 1400 rather than a Cisco CTE 1450, but the software runs on both chassis.

Functional Overview

The Cisco CTE 1450 is a dedicated appliance that performs the following functions to deliver wireless data:

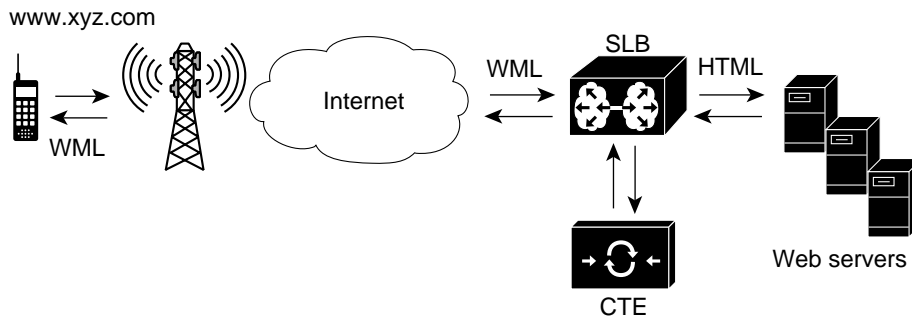
- **Presentation Management:** The Cisco CTE 1450 recognizes the type of wireless device making the connection and formats the data to be presented to match the requirements and constraints of the device. Content can come from any HTML or XML interface.
- **Connection Management:** The Cisco CTE 1450 works with a server load balancer (SLB) to ensure that requests are served in an efficient manner. The Cisco CTE 1450 benefits from the ability of the SLB to send requests from the same client to the same destination. With this interaction, the SLB maintains sessions despite dropped connections. The Cisco CTE 1450 is also able to hold in proxy session cookies for devices that cannot accept cookies.
- **Data Management:** The Cisco CTE 1450 is able to terminate HTTPS traffic and therefore provide an endpoint for a secure link. The Cisco CTE 1450 is also able to interact with cache products to serve up frequently requested data. Integration with push technology allows the Cisco CTE 1450 to send alerts to users when certain conditions are triggered. The SLB provides redundancy across multiple Cisco CTE 1450s. Using multiple Cisco CTE 1450s not only addresses redundancy issues but also scaling issues.

- **Application Creation:** The interface of the Cisco CTE 1450 helps users quickly extend access to content to new devices using existing content from web sites, applications servers or databases. Configuring the content rules takes very little time.

The Cisco CTE 1450 in an Enterprise Network Application

Figure 1-1 shows a simple Cisco CTE 1450 application.

Figure 1-1 Cisco CTE 1450 Application



A Cisco CTE 1450 is typically installed behind an SLB and runs in reverse-proxy mode. To the SLB, the Cisco CTE 1450 appears to be a server with content (www.xyz.com). The Cisco CTE 1450 also appears to be a client when it makes a request for the real data residing on the content server. No IP address changes or software changes are required in the back-end servers. Users need to configure the SLB specifically for these services.

The Cisco CTE 1450 works with existing network infrastructure as a complete solution. For example, the Cisco CTE 1450 works with the SLB to provide load balancing for mobile traffic. Cookies ensure that users dropped due to intermittent connections can resume their sessions where they left off when they reconnect. The Cisco CTE 1450 can also work with caches to speed up service to mobile users.

The Cisco CTE 1450 product is composed of two parts:

- The appliance hardware that performs the base transformation functionality.
- The CTE Design Studio GUI tool running on a PC (Windows 98 or 2000). Users of the GUI tool create the style sheets that define the transformation process, then download the style sheets to the Cisco CTE 1450 hardware. The Cisco CTE 1450 then transforms the requested content to the format appropriate for the requesting device; in this case, wireless markup language (WML).

Operational Modes

The Cisco CTE 1450, which easily adapts to customer network configurations, supports four configuration modes. The modes differ mostly in regard to the device that the CTE 1450 is attached to, where the content comes from, and where the content is sent.

- **SLB mode**—The Cisco CTE 1450 attaches to a server load balancer, transforming content supplied by servers attached to the server load balancer, while the SLB filters wired traffic from wireless traffic.
- **Directed mode**—The Cisco CTE 1450 attaches to a switch, transforming content for devices accessing a wireless URL, while content to wired URLs is handled directly by a server farm.

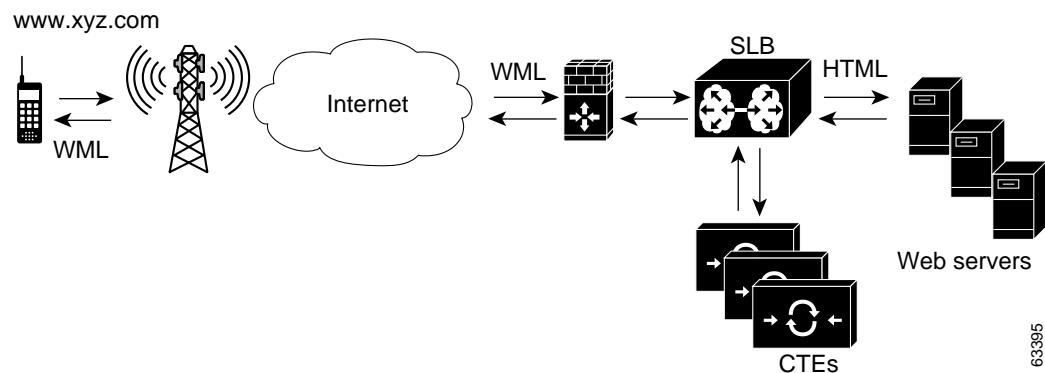
- Direct mode—The Cisco CTE 1450 attaches to a switch, handling all the requests, transforming content for mobile devices, and passing untransformed content to desktop browsers.
- Redirect mode—The Cisco CTE 1450 attaches to a switch and transforms content for mobile devices that have been redirected to the Cisco CTE 1450.

These modes are described in the following sections.

SLB Mode

In SLB mode, a Cisco CTE 1450 farm and a farm of web servers connect to a combination switch/server load balancer. In this scenario, the Cisco CTE 1450s are configured just like servers in a server farm with a URL of `www.xyz.com`. As far as the SLB is concerned, each Cisco CTE 1450 is a server that can handle a request. Wired requests, such as Netscape Navigator or Internet Explorer, are load balanced over the server farm, while other requests, such as a wireless or IP phone, are sent to the Cisco CTE 1450s. [Figure 1-2](#) shows an example of several Cisco CTE 1450s in SLB mode.

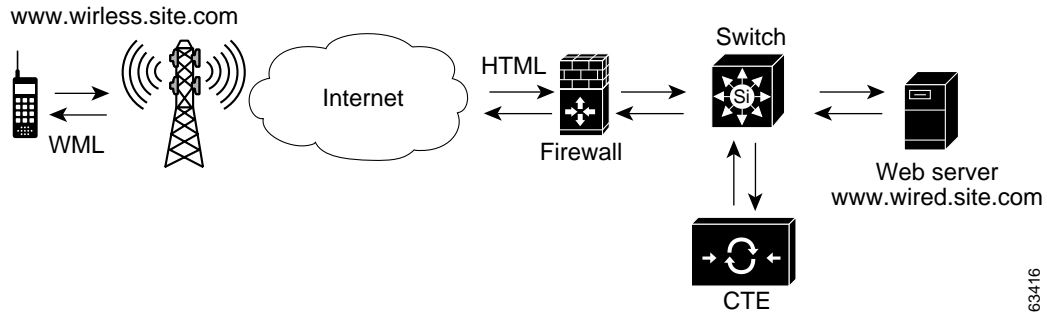
Figure 1-2 SLB Mode



Each Cisco CTE 1450 contains the same configuration data and can serve any client request. If one Cisco CTE 1450 in the farm fails, the SLB balances connections to other Cisco CTE 1450s. By adding more Cisco CTE 1450s, the site can handle more wireless sessions.

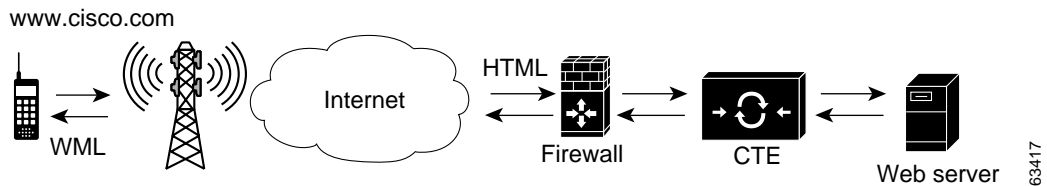
Directed Mode

In directed mode, the Cisco CTE 1450 and a web server connect to a switch rather than a switch/server load balancer combination. Traditional wired clients go to the site via the usual URL, `www.wired.site.com`, while wireless clients go to the site via a different URL, `www.wireless.site.com`. This URL maps to the Cisco CTE 1450. [Figure 1-3](#) shows an example of a Cisco CTE 1450 in directed mode.

Figure 1-3 Directed Mode

Direct Mode

In direct mode, the Cisco CTE 1450 connects to a switch with a web server directly attached to the Cisco CTE 1450. All traffic is sent to the Cisco CTE 1450. [Figure 1-4](#) shows an example of a Cisco CTE 1450 in direct mode.

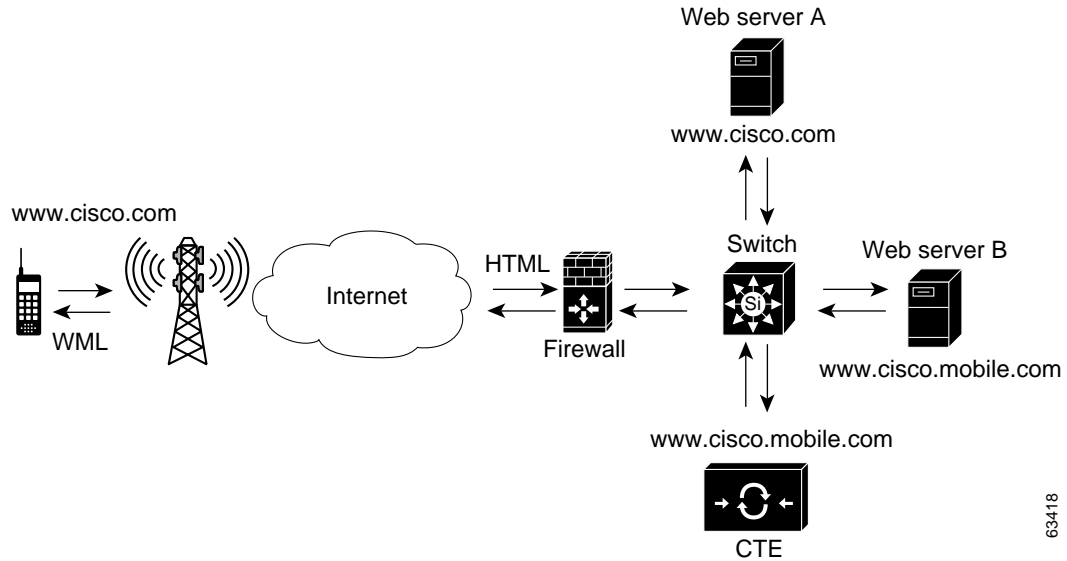
Figure 1-4 Direct Mode

Redirect Mode

In redirect mode, the Cisco CTE 1450 connects to a switch with a web server directly attached. The wireless device makes a request for the same URL used by a wired device—www.site.com. [Figure 1-5](#) shows an example of a Cisco CTE 1450 in redirect mode.

A script in Web server A checks the browser type and sends a redirect to the mobile device that points to the Cisco CTE 1450—www.mobile.site.com. The wireless device sends a request to www.mobile.site.com, and the Cisco CTE 1450 sends the request to Web server B.

Figure 1-5 Redirect Mode



63418

Features

The Cisco CTE 1450 provides the following features to users of non-HTML devices wishing to access HTML-format information:

- Device recognition—The ability to identify a device making a request for a web page
- Device-specific transcoding—The process of converting input (HTML, XML) to an output format appropriate for the requesting device (page depth, color support, image support, etc.)
- Image transcoding—Support for image format conversion as well as color and size reduction
- Session management—Cisco CTE 1450 keeps some connection state information to ensure efficiency of a session
- Session cookie proxy—The ability to store a session cookie on behalf of a device that does not support cookies
- SSL support—Support for Secure Socket Layer (SSL) connections (HTTPS 443 traffic)

The Cisco CTE 1450 also provides the following features to providers of HTML-format information:

- GUI driven rules creation—The tool used to configure the transcoding rules is a GUI application
- Redundancy—The Cisco CTE 1450 provides a redundant solution when used in conjunction with an SLB
- Scalable performance—Performance increases in a linear manner as you add more Cisco CTE 1450s to a farm

Included Software

All CTE software is loaded at the factory. The following software is included on your system:

- Diagnostics for evaluating your system components and devices. For information on using the system diagnostics disks, see the [“Running the Diagnostics CD” section on page 4-7](#).
- The Recovery CD, which allows you to reinstall the CTE software in the event of a disk corruption.
- The CTE Design Studio CD, which allows you to install CTE Design Studio on a separate server.

Unsupported

Cisco does not support the presence of any third-party software on the Cisco CTE 1450. Installing third-party software on the Cisco CTE 1450 may void your support contract; Cisco will not support any technical difficulty arising from the installation of any third-party software package.

Redundancy Architecture

Multiple instances of the Cisco CTE 1450 in conjunction with an SLB can provide failover redundancy. In the event of a hardware or software failure, all current active requests will be lost; however, the next request will go to the failover Cisco CTE 1450, provided that the failover Cisco CTE 1450 contains the same configuration information as the primary Cisco CTE 1450.

External Interfaces

Two 10/100 RJ-45 interfaces are provided for network connectivity. In addition, one console port is provided for configuration purposes.

Bezel Features

The Cisco CTE 1450 has a bezel that attaches to its front and covers the front panel. The bezel covers the power switch and other front-panel features to prevent accidental power-down or reboot. The bezel contains two Ethernet indicators and a power indicator, and it provides access to the serial port. Indicators are also marked with icons that indicate their function.

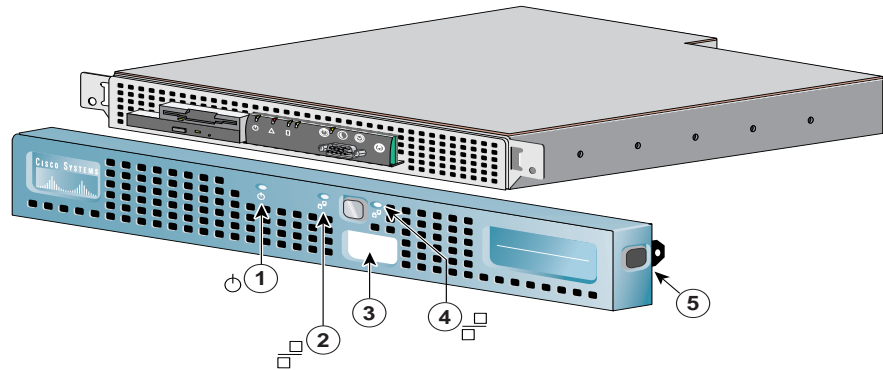
You need to remove the bezel to turn on the unit after installation. To remove the bezel, press the tab on each end of the bezel and lift it from the chassis. [Figure 1-6](#) shows the bezel features.



Caution

Do not grab the bezel when lifting the unit. The bezel is not intended as a handle and may not support the weight of the unit.

Figure 1-6 Bezel Features



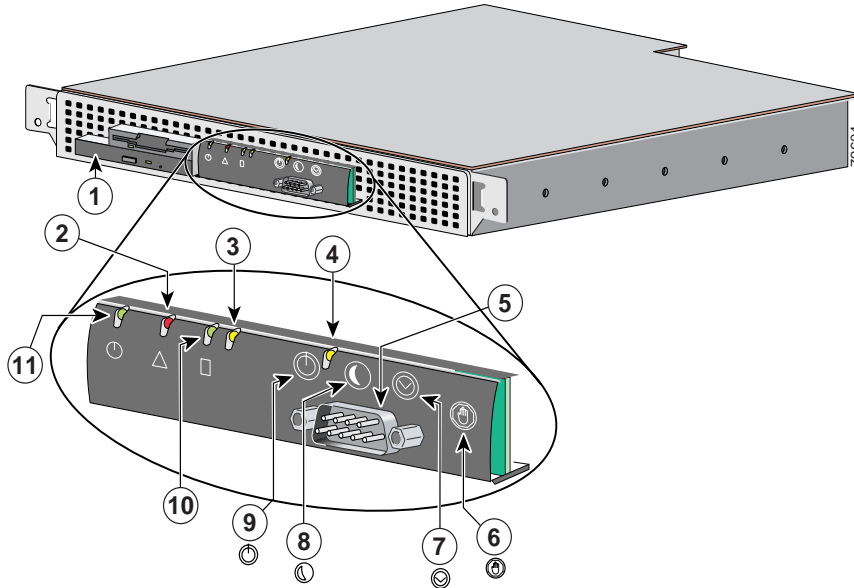
1	Power indicator	4	Ethernet 1 activity / link indicator
2	Ethernet 0 activity / link indicator	5	Bezel mounting tabs (2)
3	Console / serial port access		

Front-Panel Features

The Cisco CTE 1450 front panel contains several Items not included on the bezel. These include switches, indicators, a CD-ROM drive, and a serial port. See Figure 1-7 for a complete list.

To access the front panel, remove the bezel (see the [“Removing and Replacing the Bezel”](#) section on page 4-10). Figure 1-7 shows the front panel’s features.

Figure 1-7 Front-Panel Features



1	CD-ROM drive	7	Reset switch
2	System-fault indicator	8	Sleep switch (not supported)
3	Ethernet 0 activity / link indicator	9	Power switch
4	Ethernet 1 activity / link indicator	10	Hard-drive indicator
5	Console / serial port	11	Power indicator
6	Non-maskable interrupt switch		

System Indicators

When troubleshooting your system, you might need to check the status of the indicators on the system front panel (see Figure 1-7). The appearance and function of these lights are described in Table 1-1.

Table 1-1 System Indicators

Indicator	Color	Function
System fault	Amber	This indicator blinks during system startup and when a system fault is detected. This indicator is not visible with the bezel attached.
Hard drive	Green	This indicator blinks when hard-drive activity occurs. This indicator is not visible with the bezel attached.
Power	Green	This indicator lights up when the Cisco CTE 1450 is connected to an AC power source. It blinks when the Cisco CTE 1450 is in sleep mode. The bezel contains a duplicate of this indicator.

Table 1-1 System Indicators (continued)

Indicator	Color	Function
Ethernet 0 activity / link	Amber	This indicator lights up when the Ethernet 0 port is connected to a network. It blinks when activity occurs on this channel. The bezel contains a duplicate of this indicator.
Ethernet 1 activity / link	Amber	This indicator lights up when the Ethernet 1 port is connected to a network; it blinks when activity occurs on this channel. The bezel contains a duplicate of this indicator.

System Switches

Refer back to Figure 1-7 to see the location of the switches on the Cisco CTE 1450 front panel. To activate a switch, press the button with the corresponding icon on the front panel. Table 1-2 describes the function of these switches.

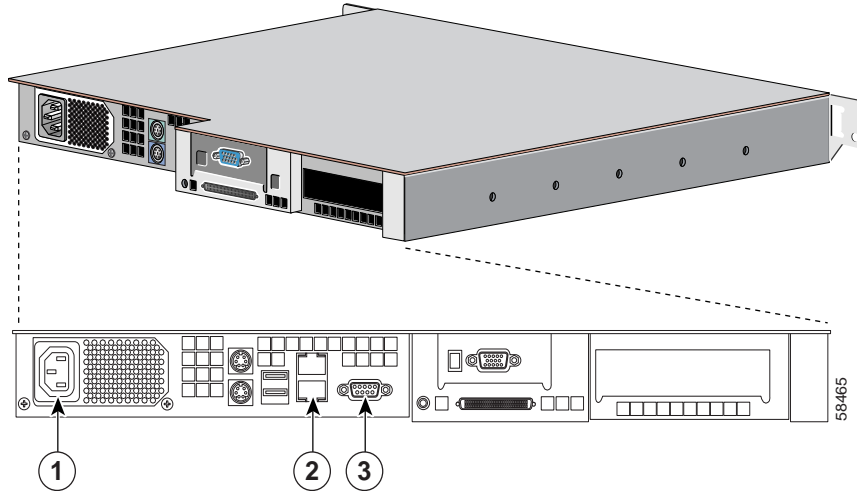
Table 1-2 Front-Panel Switches

Switch	Function
Power switch	This switch turns the power on and off. To turn system power off, press and hold this switch for at least 4 sec. There is a power switch on both the bezel and on the front panel.
Sleep switch	This switch is disabled. The Cisco CTE 1450 does not support a sleep mode. This switch is accessible only when the bezel is removed.
Reset switch	This switch reboots the system. If you cannot shut down the Cisco CTE 1450 using the operating system, press the Reset switch. This switch is accessible only when the bezel is removed.
Non-maskable interrupt switch	Use this switch only when instructed to do so by the Cisco Technical Assistance Center. This switch is accessible only when the bezel is removed.

Back-Panel Features

The back panel contains the Cisco CTE 1450 AC power receptacle, Ethernet connectors, and a serial port. Figure 1-8 shows the back-panel features. Do not attach peripheral devices, such as mice, monitors, and keyboards to the Cisco CTE 1450. It does not support their use.

Figure 1-8 Back-Panel Features



1	AC power receptacle	3	Serial port
2	Ethernet connectors (Ethernet 0 is the lower port, and Ethernet 1 is the upper port)		

Serial Ports

The two integrated serial ports on the front and back panels of the system use 9-pin, D-subminiature connectors.

Serial Port Connectors

If you reconfigure your hardware, you may need a pin number and signal information for the serial port connectors. Figure 1-9 illustrates the pin numbers for the serial port connectors, and Table 1-3 defines the pin assignments and interface signals for the serial port connector.

Figure 1-9 Pin Numbers for the Serial Port Connectors

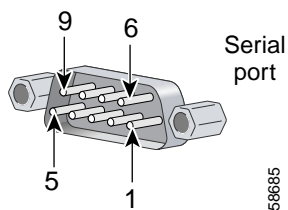


Table 1-3 Serial Port Pin Assignments

Pin	Input or Output	Signal	Definition
1	I	DCD	data carrier detect
2	I	SIN	serial input
3	O	SOUT	serial output
4	O	DTR	data terminal ready
5	N/A	GND	signal ground
6	I	DSR	data set ready
7	O	RTS	Request To Send
8	I	CTS	Clear To Send
9	I	RI	ring indicator
Shell	N/A	N/A	chassis ground

Ethernet Connectors

Your system has integrated 10/100 Mbps Ethernet connectors. Each Ethernet connector provides all the functions of a network expansion card and supports both the 10BASE-T and 100BASE-TX Ethernet standards.



Warning

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.

Network Cable Requirements

The Cisco CTE 1450 Ethernet connectors are designed for attaching an unshielded twisted pair (UTP) Ethernet cable equipped with standard RJ-45 compatible plugs. Observe the following cabling restrictions for 10BASE-T and 100BASE-TX networks:

- For 10BASE-T networks, use Category 3 or greater wiring and connectors.
- For 100BASE-TX networks, use Category 5 or greater wiring and connectors.
- The maximum cable run length (from a workstation to a concentrator) is 328 ft or 100 m.
- For 10BASE-T networks, the maximum number of daisy-chained concentrators on one network segment is four.



Note

To avoid line interference, put voice and data lines in separate sheaths.

