

Cisco Emergency Responder Version 2.0

Cisco® Unified Communications is a comprehensive IP communications system of voice, video, data, and mobility products and applications. It enables more effective, more secure, more personal communications that directly affect both sales and profitability. It brings people together by enabling a new way of communicating—where your business moves with you, security is everywhere, and information is always available...whenever and wherever it is needed. Cisco Unified Communications is part of an integrated solution that includes network infrastructure, security, mobility, network management products, lifecycle services, flexible deployment and outsourced management options, end-user and partner financing packages, and third-party communications applications.

Product Overview

Cisco Emergency Responder 2.0 is a software appliance that enhances emergency calling from Cisco Unified Communications Manager. It helps assure that Cisco Unified Communications Manager sends emergency calls to the appropriate Public Safety Answering Point (PSAP) for the caller's location, and that the PSAP can identify the caller's location and, if necessary, return the call. Cisco Emergency Responder can also notify customer security personnel of an emergency call in progress and the caller's location.

Cisco Emergency Responder helps Cisco Unified Communications Manager customers comply more effectively with their legal or regulatory obligations and reduce their risk of liability related to emergency calls.

Key Features and Benefits

- Automatically tracks IP phone location—Cisco Emergency Responder tracks wired Cisco Unified IP phones connected to supported Cisco LAN switches. Changes in phone locations can be detected within minutes. Cisco Unified wireless IP phones, third-party IP phones, and IP phones of any type connected to unsupported LAN switches are tracked by their IP address. The locations of analog phones connected to foreign-exchange-station (FXS) ports are manually configured in Cisco Emergency Responder.
- Provides emergency call routing instructions to Cisco Unified Communications Manager—When an emergency call is placed, Cisco Unified Communications Manager forwards the call to Cisco Emergency Responder for routing instructions. Cisco Emergency Responder determines the appropriate route for the caller's location and returns this information to Cisco Unified Communications Manager, which then forwards the call to a voice gateway to reach the correct PSAP through the public switched telephone network (PSTN).
- Identifies caller location to local exchange carriers (LECs) and PSAPs—LECs rely on the calling-party number associated with an emergency call to route emergency calls to the appropriate PSAP. PSAPs also rely on the calling-party number to identify the caller's location through a query to the PSAP Automatic Location Information (ALI) database. Cisco Emergency Responder replaces the calling-party number associated with an emergency call with one that corresponds to the caller's location, an emergency location identification number (ELIN). With Cisco Emergency Responder, customers can create and maintain a

correspondence between ELINs and emergency response locations (ERLs), and export records for inclusion in the ALI databases used by PSAPs.

- Eliminates administration for Cisco Unified IP phone relocation—Unlike traditional private branch exchanges (PBXs), Cisco Unified Communications Manager allows relocation of Cisco Unified IP phones without administrative intervention. Similarly, Cisco Emergency Responder eliminates the need to update the ALI database when a Cisco Unified IP phone relocates. Location records in the ALI database are indexed by ELINs, which are associated with a phone only at the time an emergency call is placed—preventing presentation of outdated location information to the PSAP. Line numbers of relocatable Cisco Unified IP phones are not sent to PSAPs and thus are not used to access location records.
- Supports emergency callback—Although Cisco Emergency Responder provides dedicated ELINs rather than ordinary telephone-line numbers with emergency calls, these ELINs are configured for direct inward dialing (DID) and can be used by PSAPs to return emergency calls, if necessary. Emergency calls can even be returned directly to phones with non-DID line numbers. Cisco Unified Communications Manager sends inbound calls addressed to ELINs to Cisco Emergency Responder, which exchanges the ELIN for the line number of the emergency caller, and returns the calls to Cisco Unified Communications Manager for completion.
- Alerts customer security personnel to emergency calls in progress—Cisco Emergency Responder provides various means of alerting customer security personnel to an emergency call in progress. Calls can be placed to desired extensions, announcing the location of an emergency caller. Alerts also appear in a Web browser-based user interface, or they can be sent by e-mail, for example, to an external paging system.
- Logs emergency calls and location record changes—Cisco Emergency Responder maintains a call history log, including the date, time, line number, and location from which an emergency call is placed. It also records changes to location records for auditing purposes.
- Offers Security, Simplicity, and Stability—Cisco Emergency Responder 2.0 provides security on external call control and administrative user interfaces. The appliance model simplifies the installation and upgrade of Cisco Emergency Responder 2.0, and improves system security and stability.

Product Architecture

Software Appliance

Cisco Emergency Responder 2.0 is a software appliance for installation on Cisco media convergence server (MCS) hardware platforms and equivalent customer-provided hardware servers. The appliance includes the underlying operating system and Cisco Security Agent as well as the Cisco Emergency Responder application. The appliance is accessed through a GUI that supports all aspects of system administration and management. No access to the underlying operating system is necessary.

Locating Phones

Cisco Emergency Responder uses Simple Network Management Protocol (SNMP) interfaces to Cisco Unified Communications Manager and supported LAN switches to determine Cisco Unified IP phone location. It periodically queries Cisco Unified Communications Manager for the MAC and

IP addresses of newly registered IP phones. Cisco Emergency Responder then interrogates the LAN switch infrastructure to determine the location of IP phones. Cisco Unified IP phones, including Cisco IP Communicator, use Cisco Discovery Protocol to announce their presence to the adjacent LAN switch, and appear as neighbors, identified by their MAC address, in the Cisco Discovery Protocol MIB. Cisco Unified IP phones use either Cisco Skinny Client Control Protocol (SCCP) or Session Initiation Protocol (SIP) to register their MAC address as well as their IP address with Cisco Unified Communications Manager. Products such as Cisco Unified wireless IP phones, third-party IP phones, and IP phones of any type connected to unsupported LAN switches (including the switches incorporated in Cisco Unified IP phones) do not appear as Cisco Discovery Protocol neighbors of supported LAN switches, but they can be tracked by their IP address, which they register with Cisco Unified Communications Manager using SCCP or SIP.

Routing Emergency Calls

Cisco Emergency Responder registers a computer-telephony-integration (CTI) route point for emergency calls with Cisco Unified Communications Manager, and exercises control over emergency calls using a Java Telephony Application Programming Interface (JTAPI). Any one emergency number can be controlled, such as 911 in North America, 999 in the United Kingdom, or 112 in the European Union, but multiple emergency numbers, including separate numbers for fire, police, and ambulance, are not supported. Cisco Emergency Responder modifies the called- and calling-party numbers to direct the call to the route configured on Cisco Unified Communications Manager appropriate for the caller's location and to provide an appropriate ELIN for the LEC to route the emergency call and for the PSAP to identify the caller's location.

Configuration

Cisco Emergency Responder requires configuration of ERL details, LAN switch and port details, IP subnet details, and manually configured phone details. These large-volume configuration tasks can be accomplished through export and import of files in comma-separated-value (.csv) format, as well as through the Web browser-based administrative user interface. ALI records can be exported in a variety of standard formats, as defined by the National Emergency Number Association (NENA). These records are forwarded to the ALI database through LEC-defined procedures or by third-party services.

Emergency Alerting

Cisco Emergency Responder provides various forms of alerts for customer security personnel. The Web browser-based user interface displays critical information about emergency calls in progress; historical details as well as details of emergency calls in progress are also available to the user. Cisco Emergency Responder uses CTI ports registered with Cisco Unified Communications Manager to place emergency announcement calls to security personnel. E-mail alerts generated by Cisco Emergency Responder can be sent to an external paging system.

Routing Emergency Callback

Cisco Emergency Responder also registers a CTI route point for calls returned by the PSAP, and uses JTAPI to replace the ELIN appearing as the calling-party number with the line number from which the most recent corresponding emergency call was placed. Cisco Emergency Responder allows multiple ELINs per ERL and assigns them in rotation to emergency calls from that ERL, allowing concurrent callback to as many emergency callers in an ERL as there are ELINs assigned to that ERL.

Redundancy

Configuration information is stored in a persistent database. Dynamic phone location tracking results are stored in memory. Both persistent and dynamic information can be replicated to a secondary Cisco Emergency Responder server, which registers distinct CTI route points with Cisco Unified Communications Manager to control emergency calls and PSAP callback if the primary Cisco Emergency Responder server does not respond to Cisco Unified Communications Manager.

A redundant pair of Cisco Emergency Responder servers constitutes a server group. A server group supports a Cisco Unified Communications Manager cluster, and must be co-located with it. Cisco Unified Communications Manager clustering over the WAN is supported; Cisco Emergency Responder servers can be separated from Cisco Unified Communications Manager servers and each other by no more than a 40-millisecond round-trip delay. Available bandwidth between separated Cisco Emergency Responder servers must be at least 1.5 megabits per second.

Multiclustering

Cisco Emergency Responder servers or groups can work together to track IP phones registered with a Cisco Unified Communications Manager cluster supported by one Cisco Emergency Responder server or group but connected to switches supported by another server or group. Such an arrangement of Cisco Emergency Responder servers or groups, called a Cisco Emergency Responder cluster, enables proper treatment of emergency calls even when Cisco Unified IP phones are relocated from a site served by one Cisco Unified Communications Manager cluster to a site usually served by another. Note: Cisco Emergency Responder 1.3 servers or groups cannot participate in a Cisco Emergency Responder cluster with earlier releases of Cisco Emergency Responder. Existing Cisco Emergency Responder servers or groups must first be upgraded to Cisco Emergency Responder 1.3.

Multilevel Administration

Cisco Emergency Responder supports multilevel administration by four distinct user groups. Location administrators can manage configuration associated with ERLs and ELINs, including the assignment of switch ports to locations. Network administrators manage configuration associated with LAN switches and discovery of IP phone locations. System administrators have unlimited access, whereas general users such as security personnel can view emergency call histories and receive Web browser-based alerts.

Network Management

Cisco Discovery Protocol, SNMP, and syslog provide critical information for managing Cisco Emergency Responder as part of a Cisco Unified Communications deployment. CiscoWorks Campus Manager Topology Services uses Cisco Discovery Protocol announcements from Cisco Emergency Responder to map its logical location. The SYSAPPL-MIB provides static and dynamic information about critical software components of Cisco Emergency Responder, including call processing, phone location tracking, administration, and database services. Syslog events can also be collected and analyzed by CiscoWorks Campus Manager.

Testing

Test calls placed by Cisco Unified Operations Manager are supported through the configuration of synthetic phones and test ERLs on Cisco Emergency Responder. Test calls verify the basic operation of Cisco Unified Communications Manager and Cisco Emergency Responder, but they

are not sent to a PSAP, they do not generate alerts, and they are not included in emergency call-history logs.

Product Specifications

Table 1 gives specifications of Cisco Emergency Responder.

Table 1. Specifications of Cisco Emergency Responder

Product Parameter	Specifications
Platform compatibility	Cisco 7800 Series Media Convergence Servers More information about specific models supported is available at: http://www.cisco.com/en/US/products/sw/voicesw/ps842/prod_release_notes_list.html .
Product compatibility	<ul style="list-style-type: none"> • Cisco Unified IP Phone 7902G, 7905G, 7910G, 7910G+SW, 7911G, 7912G, 7931G, 7940G, 7941G, 7941G-GE, 7960G, 7961G, 7961G-GE, 7970G, 7971G-GE, and 7985G models • Cisco Unified Wireless IP Phone 7920 and 7921 models (IP-subnet-based tracking only) • Cisco Unified IP Conference Station 7935 and 7936 models • Cisco Unified Personal Communicator (IP-subnet-based tracking only) • Cisco IP Communicator • Cisco IP SoftPhone (does not support Cisco Discovery Protocol-based tracking) • Cisco ATA 180 Series Analog Telephone Adaptors (IP subnet-based tracking or manual configuration only) • Cisco VG200 Series Analog Phone Gateways (IP subnet-based tracking or manual configuration only) • Cisco Catalyst® Express 500, Catalyst 2900 XL, Catalyst 2940, Catalyst 2950, Catalyst 2960, Catalyst 2970, Catalyst 3500 XL, Catalyst 3550, Catalyst 3560, Catalyst 3560-E, Catalyst 3750, Catalyst 3750-E, Catalyst 4000, Catalyst 4500, Catalyst 4900, Catalyst 5000, Catalyst 5500, Catalyst 6000, and Catalyst 6500 Series LAN switches • Cisco Ethernet switching network modules in Cisco 3700 Series Multiservice Access Routers and Cisco 2800 and 3800 Series Integrated Services Routers More information about specific models and releases supported is available at: http://www.cisco.com/en/US/products/sw/voicesw/ps842/prod_release_notes_list.html .
Software compatibility	<ul style="list-style-type: none"> • Cisco Unified CallManager • Cisco Unified Operations Manager More information about specific releases supported is available at: http://www.cisco.com/en/US/products/sw/voicesw/ps842/prod_release_notes_list.html .
Protocols	<ul style="list-style-type: none"> • Cisco JTAPI • Cisco Discovery Protocol • HTTP • Simple Mail Transfer Protocol (SMTP) • SNMP • Syslog
Performance	Up to 30 emergency calls per second, depending on server platform
Reliability and availability	Redundant (active and standby) hardware and software servers
MIBs	SYSAPPL-MIB

System Capacity

Table 2 gives capacity information for Cisco Emergency Responder, assuming one synthetic voice alert per emergency call.

Table 2. System Capacity

	Cisco 7816	Cisco 7825	Cisco 7835	Cisco 7845
Automatically tracked phones	6,000	12,000	20,000	30,000
Manually configured phones	1,000	2,500	5,000	10,000
Roaming phones (per Cisco Emergency Responder cluster)	600	1,200	2,000	3,000
Switches	200	500	1,000	2,000
Switch ports	12,000	30,000	60,000	120,000

ERLs	1,000	3,000	7,500	10,000
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Features

Phone location

- MAC-based tracking locates Cisco Unified IP phones connected to supported LAN switches.
 - Cisco Discovery Protocol MIB query locates Cisco Discovery Protocol-capable IP phones.
 - Content Addressable Memory (CAM) inspection locates phones with no Cisco Discovery Protocol capability.
- IP address-based tracking locates Cisco Unified IP phones not connected to supported LAN switches.
- Manual phone configuration locates phones not subject to MAC or IP address-based tracking, such as analog phones connected to voice gateways.

Emergency call processing

- Offers configurable emergency number, such as 911, 999, or 112
- Assigns an ELIN corresponding to the phone location
- Directs call to a gateway connecting to the appropriate PSAP
- Directs PSAP callback to the emergency caller

ERL administration

- ERL assignment by port, card, or switch
- Alerting information by ERL
- Multiple ELINs per ERL
- Manual phone assignment to ERL
- ERL audit trail, which tracks ERL configuration changes
- ERL debug tool, which identifies phone location for verification and troubleshooting

Data export and import capabilities for large-volume administration

- ERL and ALI details
- LAN switch details
- Switch port details
- IP subnet details
- Manually located phones

ALI record exports

- NENA formats
- Formatting tools for specific LECs

Security end-user alerting and tools

- Automatic Web alerts
 - Immediately displays emergency call summary data for acknowledgement

- Provides links to detailed location information for acknowledged emergency calls
- Records acknowledged emergency calls in a call-history log, and includes an editable comment field
- Automatic phone announcements
- E-mail alerts, including e-mail-based paging
- Tool to find current phone locations

Server redundancy (active and standby)

Remote servers and groups

Secure call control interfaces among Cisco Emergency Responder servers and with Cisco Unified Communications Manager servers

- Certificate-based authentication
- Transport encryption and integrity protection

Secure user interface

- Transport encryption and integrity protection
- User authentication
- Encrypted user password storage

Four levels of user authorization:

- Location administration
- Network administration
- System administration
- Security end user

Cisco Security Agent

Backup and restore utility that performs scheduled or on-demand backups

Support for the Cisco Unified Operations Manager network management application suite

- Topology services
- SNMP
- Syslog
- Test calls

Ordering Information

To place an order, visit the Cisco Ordering Home Page and refer to Table 3.

Table 3. Cisco Emergency Responder Ordering Information

Product Name	Part Number
Cisco Emergency Responder 2.0 Software with Cisco Emergency Responder 2.X User License 100 Phones	SW-ER-2.0-SVR-K9=
Cisco Emergency Responder 2.X User License 100 Phones	KEY-ER2.X-100=
Cisco Emergency Responder 2.X User License 500 Phones	KEY-ER2.X-500=
Cisco Emergency Responder 2.X User License 1,000 Phones	KEY-ER2.X-1K=
Cisco Emergency Responder 2.X User License 5,000 Phones	KEY-ER2.X-5K=
Cisco Emergency Responder 2.X User License 10,000 Phones	KEY-ER2.X-10K=
Cisco Emergency Responder 2.0 Software with Cisco Emergency Responder 2.X User License 100 Phones, Upgrade from Cisco Emergency Responder 1.X	SW-ER-2.0-UPG-K9=
Cisco Emergency Responder 2.X User License 100 Phones, Upgrade from Cisco Emergency Responder 1.X	KEY-ER2.X-UPG-100=
Cisco Emergency Responder 2.X User License 500 Phones, Upgrade from Cisco Emergency Responder 1.X	KEY-ER2.X-UP -500=
Cisco Emergency Responder 2.X User License 1,000 Phones, Upgrade from Cisco Emergency Responder 1.X	KEY-ER2.X-UPG-1K=
Cisco Emergency Responder 2.X User License 5,000 Phones, Upgrade from Cisco Emergency Responder 1.X	KEY-ER2.X-UPG-5K=
Cisco Emergency Responder 2.X User License 10,000 Phones, Upgrade from Cisco Emergency Responder 1.X	KEY-ER2.X-UPG-10K=

Unified Communications Software Subscription

Table 4 gives ordering information for UCSS for Cisco Emergency Responder.

Table 4. Unified Communications Software Subscription (UCSS) for Cisco Emergency Responder Ordering Information

Product Name	Part Number
UCSS for Cisco Emergency Responder for One Year - 100 users	UCSS-ER-1-100=
UCSS for Cisco Emergency Responder for One Year - 500 users	UCSS-ER-1-500=
UCSS for Cisco Emergency Responder for One Year - 1,000 users	UCSS-ER-1-1K=
UCSS for Cisco Emergency Responder for One Year - 5,000 users	UCSS-ER-1-5K=
UCSS for Cisco Emergency Responder for One Year - 10,000 users	UCSS-ER-1-10K=
UCSS for Cisco Emergency Responder for Two Years - 100 users	UCSS-ER-2-100=
UCSS for Cisco Emergency Responder for Two Years - 500 users	UCSS-ER-2-500=
UCSS for Cisco Emergency Responder for Two Years - 1,000 users	UCSS-ER-2-1K=
UCSS for Cisco Emergency Responder for Two Years - 5,000 users	UCSS-ER-2-5K=
UCSS for Cisco Emergency Responder for Two Years - 10,000 users	UCSS-ER-2-10K=
UCSS for Cisco Emergency Responder for Three Years - 100 users	UCSS-ER-3-100=
UCSS for Cisco Emergency Responder for Three Years - 500 users	UCSS-ER-3-500=
UCSS for Cisco Emergency Responder for Three Years - 1,000 users	UCSS-ER-3-1K=
UCSS for Cisco Emergency Responder for Three Years - 5,000 users	UCSS-ER-3-5K=
UCSS for Cisco Emergency Responder for Three Years - 10,000 users	UCSS-ER-3-10K=

Cisco Unified Communications Services And Support

Using the Cisco Lifecycle Services approach, Cisco and its partners offer a broad portfolio of end-to-end services to support the Cisco Unified Communications system. These services are based on proven methodologies for deploying, operating, and optimizing IP communications solutions. Initial planning and design services, for example, can help you meet aggressive deployment schedules and minimize network disruption during implementation. Operate services reduce the risk of communications downtime with expert technical support, and optimize services enhance solution performance for operational excellence. Cisco and its partners offer a system-level service and support approach that can help you create and maintain a resilient, converged network that meets your business needs.

For More Information

For more information about the Cisco Emergency Responder, visit <http://www.cisco.com/en/US/products/sw/voicesw/ps842/index.html> or contact your local Cisco account representative.

Acknowledgement

This product includes software developed by Justin Wells and Semiotek Inc. for use in the WebMacro Servlet Framework (<http://www.webmacro.org>)

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