



# EasyCall Gateway

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# EasyCall Gateway

The Citrix EasyCall Gateway™ powers EasyCall Voice Services, enabling click-to-call communications within Mac, PC, or Web-based applications from any telephone. The EasyCall Gateway integrates with your telephone system and corporate directory to provide the simplest and most intuitive way of enabling click-to-call in any application.

Product documentation is available for the following EasyCall Gateway releases:

- [EasyCall Gateway 3.0.1](#)

## Related Citrix Products

The EasyCall Gateway is related to the following Citrix products:

<a href="#">Communications Plug-ins</a>	<a href="#">Receiver</a>
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Can't find what you're looking for? If you're looking for documentation for previously released versions of this product, go to the Citrix Knowledge Center. For a complete list of links to all product documentation in the Knowledge Center, go to <http://support.citrix.com/productdocs/>

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## What's New

EasyCall Gateway 3.0.1 includes the following new options and updates:

- Different URL for accessing the administration tool: [To open the administration tool](#)
- Different URL for accessing the user portal: [To install the EasyCall plug-in](#)
- Root password restrictions: [To change the root administrator password](#)
- Show caller ID option: [To configure an LDAP/AD directory source](#)
- New client upgrade page: [To upgrade EasyCall](#)
- Client version info on Dashboard: [To get information about the EasyCall Gateway](#)
- SIP re-INVITEs option: [To configure call handling](#)

## In This Section

Under this node, you will find the following resources for the EasyCall Gateway:

<a href="#">ReadMe for EasyCall Gateway 3.0.1</a>	Get information about known issues
<a href="#">Overview</a>	Review conceptual information about the EasyCall Gateway and EasyCall (communications plug-in)
<a href="#">Getting Started</a>	Install the EasyCall Gateway and perform the minimum configuration
<a href="#">Configuring Network Settings</a>	Configure the EasyCall Gateway virtual network interface and name service settings
<a href="#">Obtaining and Importing SSL Certificates</a>	Obtain SSL certificates from a Certificate Authority and import them into the EasyCall Gateway
<a href="#">Configuring Authentication</a>	Learn about the authentication script and how to use the administration tool to work with it
<a href="#">Configuring Telephony Settings</a>	Define trunk connections and configure telephony settings

<a href="#">Configuring Directory Sources</a>	Add groups to associate directory sources with roles and configure directory sources
<a href="#">Clustering EasyCall Gateways</a>	Group EasyCall Gateways to provide high availability, share resources, and to load-balance
<a href="#">Delivering EasyCall to End Users</a>	Read about various methods available to deliver the EasyCall client to end users
<a href="#">Managing EasyCall Conferences</a>	Specify the URLs and dial-in numbers for user access to conferences and manage conference operation
<a href="#">Maintaining and Monitoring the EasyCall Gateway</a>	Perform maintenance tasks such as changing the root password, backing up the configuration, exporting CDRs, using network diagnostic tools, and viewing logs
<a href="#">Using the Web Services API to Build Web Apps</a>	Use the EasyCall Web Services APIs to build Web applications that include click-to-call, conferencing, and corporate directory searches

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<a href="#">Configuring Telephony Settings</a>	Define trunk connections and configure telephony settings



<a href="#">Configuring Directory Sources</a>	Add groups to associate directory sources with roles and configure directory sources
<a href="#">Clustering EasyCall Gateways</a>	Group EasyCall Gateways to provide high availability, share resources, and to load-balance
<a href="#">Delivering EasyCall to End Users</a>	Read about various methods available to deliver the EasyCall client to end users
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# ReadMe for EasyCall Gateway 3.0.1

## Contents

- **Finding Documentation**
- **Getting Support**
- **Known Issues**
- **Issues Fixed in this Release**

## Finding Documentation

To access complete and up-to-date product information, go to Citrix [eDocs](#) and expand **Technologies > EasyCall Gateway**.

To view the EasyCall Gateway online help, click the **Help** link at the top of each administration tool page.

## Getting Support

Contact your supplier for first-line support. Citrix offers online technical support services on the [Citrix Support Web site](#). The EasyCall Support page includes links to downloads, the Citrix Knowledge Center, Citrix Consulting Services, and other useful support pages. You can also purchase Citrix EasyCall Preferred Support.

Our [support forum](#) also is a good source of information.

## Deploying the communications plug-in for Windows upgrade

If you do not use Citrix Receiver to deploy the communications plug-in for Windows, there is an issue with the automatic upgrade that prevents the upgrade on user computers. To avoid the issue, use the following steps to upload the communications plug-in for Windows upgrade to the EasyCall Gateway:

1. Upgrade the EasyCall Gateway.
2. Go to the **Maintenance > Clients** page and browse to the upgrade file.

3. Enter "3.1" in the Client Version Number field. You must enter "3.1" for the upgrade to work properly.

The next time users connect to the EasyCall Gateway, they will be prompted to upgrade.

If your users need to upgrade EasyCall themselves, instructions are in the [ReadMe for Communications Plug-in 3.0.1 for Mac](#) and [ReadMe for Communications Plug-in 3.0.1 for Windows](#).

## Known Issues

### **Download page does not work in Windows Vista if UAC is enabled**

When using Windows Vista, the EasyCall Download page does not work in Internet Explorer 7 if User Account Control (UAC) is enabled. [5817]

### **Cannot install EasyCall from a streamed browser**

If you run Outlook via application streaming and click a link in an email to install EasyCall, the Download page opens in a browser window that is streamed and does not allow you to complete the installation. [6260]

### **EasyCall streaming requirement**

To stream EasyCall using XenApp Plugin for Streamed Apps 1.2, you must first install the Microsoft Visual C++ 2008 Redistributable Package on client devices. This redistributable is available from the Microsoft Visual Studio Web site.

### **Must save before first test of an FTP CSV source connection**

When you initially configure an FTP CSV source, you must click Save before testing the connection. Otherwise, the source will not be automatically synchronized. [6893]

### **Cannot use multiple search filters to limit imported entries**

On the Directory Source Configuration > Details Configuration page, entering multiple search filters in the Search Filter field causes the synchronization to fail. When this occurs, the system log will include the entry: "Missing attribute description (87) Filter Error". [7521]

### **Add/Edit Group interface does not catch all errors**

The Add/Edit Group interface allows you to create a group with no name or that has no roles. Neither of those conditions should be allowed. Also, if you press Return instead of clicking Submit from the Add/Edit Roles page, it appears that your input was not submitted (all fields are blank when the page refreshes), although the role was added or changed. [7049]

### **Joining Conference page message always prompts to press 1 to continue call**

Regardless of the Prompt to Complete Call checkbox setting, the Joining Conference page that appears when you dial into a conference always prompts you to press 1 to join the call. [7472]

### **User changes to locations are not applied to corresponding Call Forwarding rules**

If a user creates a location, adds it to the Call Forwarding locations, and then changes the location name, calls continue to be redirected to the old location and thus the call fails. [7261]

### **Issue with locations created when master node is off-line**

If you create multiple locations while the master node is off-line, only the first location created is sent to the master when it comes back on-line. [6655]

### **Conferences created when master node is off-line are not submitted**

If you create a conference while the master node is off-line, the new conference is not submitted to the master node when it comes back on-line. [6633]

### **After logging out of or exiting from the User Portal, an immediate log-in attempt fails**

After you exit from the User Portal, immediately attempting to log back in to the portal will fail. Wait at least one minute before logging back in. [7369]

### **The Call Log shows "In progress" as the end time for some calls**

If a trunk setting in the EasyCall Gateway configuration is incorrect, the end time for calls is shown as "In progress". [6320]

When the EasyCall Gateway is restarted, any active calls will be shown as "In progress" from that point on. [7487]

### **Node certificates are not included in backups**

Certificates that you have uploaded to cluster nodes are not included in backups performed from the master node. If you need to restore a node, you will need to reimport any custom certificates from each node. [6862]

### **Time server configuration no longer necessary**

Now that the EasyCall Gateway is delivered as a virtual appliance, it is no longer necessary to manually configure the time server. Any manual configuration is overwritten when the host server synchronizes its clock with the EasyCall Gateway. [7383]

### **Server uptime for master node is incorrect**

The Dashboard page for the master node shows the server uptime for the last node to join or rejoin the cluster, rather than for the master node. [6640]

### **Node version on Dashboard page is slow to refresh**

The Dashboard might not show the correct node version for a couple of minutes after you first display the page. During that time you will see a message: Unable to retrieve current version. [6626]

### **Advancing the gateway time logs you out of the administration tool**

Changing the gateway time too far into the future causes the session to expire and thus logs you out of the administration tool. [5744]

### Tabbing in online help moves focus to unused frames

The online Help for the administration tool and the Windows EasyCall client include unused frames which, when you are tabbing around in Help, make it appear that the focus is not moving. [7133]

## Issues Fixed in this Release

The following issues were fixed since the last release.

- Administration tool root password needs to be more restrictive [6819]
- User Management page does not list users in alphabetical order [7240]
- On the User Management page, clicking in the Last Name field does not cause the Directory Search button to automatically select [7522]
- Upload of NormalizerConfig.xml alone does not update database [7468]
- Need SIP Re-INVITEs option in administration tool [7513]
- Show the Caller ID of Restricted Users option is missing [7517]
- Call log does not display calls in sequential order [7542]
- User Portal URL is hard for users to remember (Note: The User Portal URL is now <https://gatewayAddress> and the Administration Tool URL is now <https://gatewayAddress/admin>.) [7545]
- EasyCall is never automatically upgraded; the Check for Upgrade command does not work [7548]
- EasyCall download page does not show the correct Mac OS versions [7553]

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# Overview

EasyCall is an easy to implement and manage solution that communication-enables enterprise applications. The EasyCall plug-in (also known as the communications plug-in) is streamed to or installed on user desktops, providing communication features in Windows and Macintosh applications. In addition, the EasyCall Web Services API can be used to communication-enable Web applications.

These topics describe the EasyCall Gateway and EasyCall (communications) plug-in:

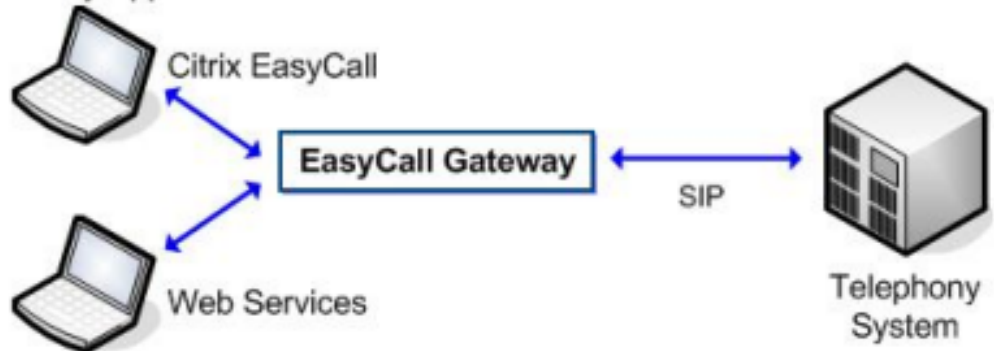
<a href="#">About EasyCall</a>	How EasyCall works; its features
<a href="#">Call Flow</a>	How a call is processed when a user initiates it using EasyCall
<a href="#">Licensing</a>	How EasyCall is licensed
<a href="#">Capacity Guidelines</a>	Guidelines for implementing multiple EasyCall Gateways; how capacity is impacted by usage

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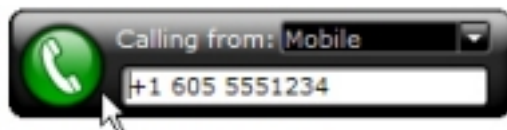
# About EasyCall

The EasyCall Gateway is implemented as an adjunct to the corporate telephony system, as shown in the following illustration. The EasyCall Gateway is provided as a virtual appliance that installs on Citrix XenServer 5.

## Client for Any Application



## Clientless for Embedding in Web Applications



605 555-1234

EasyCall enables a user to call any phone number displayed in published, streamed, or installed Windows or Macintosh applications without dialing the number. The user simply hovers the mouse pointer over telephone numbers in application windows and then clicks a button to start the call from any telephone (office, mobile, home, and so on).

The EasyCall Gateway calls the user's telephone first, dials the clicked-on number, and then connects the two calls. The EasyCall Directory feature provides access to corporate directories and Outlook contacts, from which users can click-to-call their colleagues. The EasyCall conference feature enables users to set up and join web-based conference calls hosted on the EasyCall Gateway.

## EasyCall Gateway Features

- Leverages your telephony system infrastructure and PSTN connectivity by integrating with the telephony system via SIP trunking. SIP trunking is used with an IP-enabled telephony system.
- Originates calls from the company's telephony system so that voice traffic remains on-network and uses least-cost routing to reduce the costs of calls. This is especially beneficial for international calls.
- Reduces mobile phone bills because mobile calls are in-bound rather than out-bound.
- Enables remote users to use home office or mobile phones instead of soft phones for calls.
- Customizable call confirmation and call disconnection prompts. Upload your .wav files to the EasyCall Gateway as described in [Configuring EasyCall Voice Prompts](#).
- Maintains a record of call details including the originating and called telephone numbers. You can export Call Detail Records (CDRs) for specified start and end dates and you can delete all CDRs.
- Provides an easy-to-use administration tool for configuring network settings, telephony system integration parameters, and multiple directory sources for use with EasyCall. Includes a Dashboard that provides usage, status, and system log information.
- Uses SSL to protect communication with EasyCall and the EasyCall Web Services API. You can optionally add security by not allowing clients to connect to the EasyCall Gateway unless they have a signed certificates installed. By default, EasyCall clients connect without alerts provided that the gateway has a signed certificate.
- Can be clustered for high availability and load-balanced operation.



## EasyCall (communications) plug-in Features

- Installs through Citrix Receiver, Citrix XenDesktop, or Citrix Application Streaming. Can also be installed on a user desktop from a download page or via a software management system.
- User-friendly download page. End users (who do not obtain the plug-in from other delivery mechanisms such as Citrix Receiver) can download and install EasyCall from a download page located on the gateway. The EasyCall Gateway host name and port number are automatically pre-populated in the configuration dialog box. The download page also provides access to the EasyCall demo.
- Makes calling easy by eliminating the need to mentally transfer numbers between a PC and the phone. For example, there is no need for Contact Center Agents to look away from sales force or customer relationship applications to dial a call or use a soft phone. Instead, the Agents can quickly look up a user and click-to-call from the Directory.
- Enables most telephone numbers that appear in Windows applications to be directly called. This includes local, long distance, international numbers, and internal extensions. For more information, see [Customizing Telephone Number Recognition](#).
- Support for multiple languages, with a fully translated interface and help system. Plus EasyCall operates on several international versions of Windows. The Windows locale determines the language and customizable call prompts used.
- Features a non-intrusive fade-in phonebar. When a user hovers the mouse pointer over a phone number, the phonebar is dimmed. The phonebar grows brighter as the user moves the mouse pointer closer to it. If the user does not want to call a number, moving the mouse pointer away from the number closes the phonebar.
- EasyCall also allows a user to type a phone number in the phonebar. This feature is particularly valuable when calling internationally while away from the office.
- Allows users to make calls from any phone. You can set up locations for users and also optionally allow users to create their own locations.
- Have calls to a user's corporate extension forwarded to the phone numbers the user has added to EasyCall. A user can enable/disable Call Forwarding and specify the order in which phones are dialed.
- The Net Call feature enables you to eliminate the cost of supporting toll-free numbers by providing links on internal and external portals to frequently dialed numbers such as sales and support. Net Call enables any web surfer to take advantage of EasyCall.
- Enables a user to look up a previously called number and redial the number from a list of Recent Calls.
- Includes a Directory feature that displays the corporate directory and Outlook or Address Book contacts when a user starts typing a name in the directory search bar.
- Enables a user to change to a different EasyCall Gateway.
- Optionally provides access to EasyCall Conference, a simple way to create and join conference calls. Users click a URL to join the conference call, rather than having to enter a phone number and access code.

- Works transparently with IPsec and SSL VPN clients, including the Citrix Access Gateway.

## EasyCall Web Services API Features

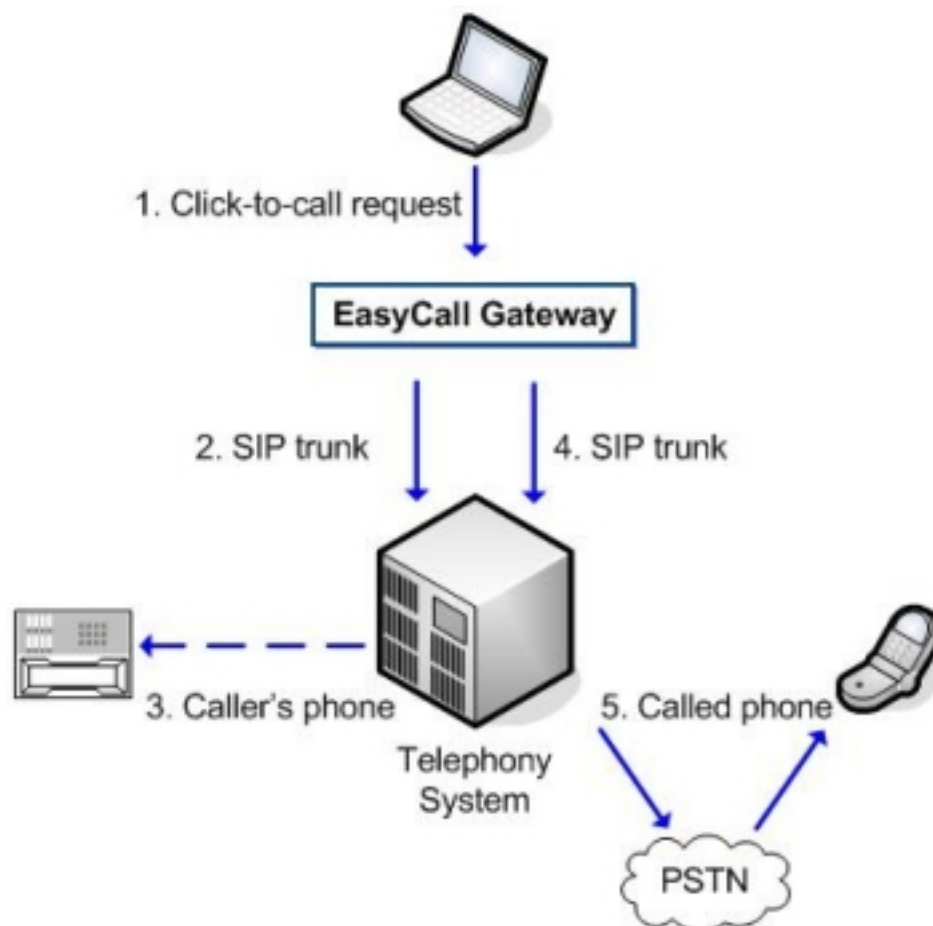
Enables web application designers to:

- Make it easier for external users to contact corporate call centers or to provide reach directory services that improve internal communication.
- Build click-to-call functions into applications so that users can place calls from any phone to any phone by clicking a telephone number listed on a web page.
- Build directory functions into applications so that users can search a corporate directory for contact information.
- Develop a web service client that verifies domain/username against an authentication mechanism.

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# Call Flow

The following illustration and steps describe the call flow when an EasyCall user initiates a phone call via click-to-call.



1. When an EasyCall user hovers the mouse pointer over a telephone number displayed on the desktop and clicks the button in the phonebar, EasyCall sends a click-to-call request to the EasyCall Gateway. The request includes the caller's and the destination phone number.
2. The EasyCall Gateway places an outbound call to the user extension over the SIP trunk.
3. The caller's phone rings. When the caller answers, the EasyCall Gateway prompts the user to confirm by pressing "1" to connect. (The administrator can disable the prompt.)
4. The EasyCall Gateway places a call to the outbound number. Call status displays on the caller's desktop.
5. The called person answers the phone, thus establishing the talk path. The EasyCall Gateway then releases itself from the media path by using SIP re-INVITES to perform direct media bridging.

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# Licensing

Citrix EasyCall is licensed for use with:

- XenApp Standard, Advanced, and Platinum Editions
- XenDesktop Standard, Advanced, and Platinum Editions
- Netscaler Standard, Enterprise, and Platinum editions

You may install and use the EasyCall Gateway software on an unlimited number of XenServer virtual appliances. You may install and use the EasyCall communications plug-in for Windows or Macintosh on an unlimited number of client devices.

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# Capacity Guidelines

The number of EasyCall Gateways needed for a site is based on the user load. You can cluster multiple EasyCall Gateways to support larger user bases.

Click-to-call originations, directory lookup requests, and conference sessions are the primary drivers of EasyCall application performance. Based on simulated user traffic load without conferencing enabled, each EasyCall Gateway instance supports 4,000 users concurrently connected placing up to 4,000 busy hour calls, while initializing up to 3000 busy hour searches of a directory that can contain up to 200,000 entries with typical directory searches requiring sub 500 millisecond response times.

With conferencing enabled, traffic capacity depends on the typical number of simultaneously active conference sessions as follows.

Busy Hour Conference Sessions	Concurrent Users	Busy Hour Calls	Busy Hour Directory Searches
0	4000	4000	3000
50 (ten concurrent conferences with 5 participants each)	4000	4000	3000

## Call Capacity Calculations

The number of busy hour calls is further constrained by the number of primary rate SIP channels configured, as described in this topic. These calculations use the Erlang B model (service with rejections) to determine the call capacity of an EasyCall Gateway. The calculation is based on assumptions of the time the EasyCall Gateway spends in the call path (3 minutes per SIP call), the call arrival rate, and the call rejection rate.

In SIP environments, call capacity depends on the maximum number of SIP virtual channels configured on the PBX for that trunk.

The calculations in the following table use the Erlang B model and assume a .1% call rejection rate and a 3-minutes average time on the call per channel before path replacement. Based on the number of SIP channels provisioned on the PBX, the table shows the maximum service rate in calls per hour based on the above assumptions.

Number of channels	Calls per hour	Erlangs
35	200	20
71	500	50
128	1000	100
238	2000	200
450	4000	400

## Capacity Guidelines

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Call capacity may also be limited by the call capacity of your PBX system. Contact your PBX vendor for traffic handling information.

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# Telephone System Requirements and Integration

The EasyCall Gateway has the following requirements for the telephony system at the customer site:

- The telephony system must support SIP (RFC 3261) trunks for call redirection.
- SIP trunks are virtual digital (IP-based) and require only compliant software.
- You can configure an EasyCall Gateway with multiple telephony systems, if calls are handled using round-robin scheduling.
- In a private network with distributed multiple telephony systems, multiple EasyCall Gateways can be installed at a central location to serve users at satellite locations.

Work with your telephony system specialist to ensure that the telephony system meets the requirements and properly integrates with the EasyCall Gateway.

The EasyCall Gateway can be configured for operation with a variety of telephony systems at the customer site. Each call made through EasyCall appears as two independent calls on the telephony system, with the from numbers pointing to the opposite call leg, as follows:

- An entry from the trunk to the call originator. The Caller ID is set to the number that the call originator is trying to reach.
- An entry from the trunk to the number the call originator is trying to reach. The Caller ID is set to the call originator's phone number. (Depending on configuration, the call originator might be a default caller ID assigned by the administrator or the caller's own caller ID.)

For more information:

- Refer to the [EasyCall Gateway Pre-Installation Checklist](#) for the telephony systems supported by this release.
- Refer to the *Citrix EasyCall Gateway Telephony System Integrator's Guides* for details on configuring a telephony system for use with the EasyCall Gateway. Go to <http://support.citrix.com/product/cg/> and then click the link for the release. The integrator's guides are located on the Documentation tab for each release.

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# Getting Started

These topics describe how to install the EasyCall Gateway and perform the minimum configuration needed to test its basic operation and connectivity to the communications plug-in:

<a href="#">EasyCall Gateway Pre-Installation Checklist</a>	Collect the information you need to configure the EasyCall Gateway; refer to information about inbound and outbound port usage
<a href="#">Implementation Summary</a>	Review the deployment sequence for the EasyCall Gateway
<a href="#">To install the virtual appliance</a>	Install the EasyCall Gateway using Citrix XenCenter
<a href="#">To complete the initial configuration</a>	Connect the EasyCall Gateway virtual appliance to your network
<a href="#">About Firewall Configuration</a>	Get the information you need to configure your firewall
<a href="#">Configuring and Testing Basic Settings</a>	Perform the configuration needed to be able to place a call using the communications plug-in
<a href="#">Configuration Task List</a>	Refer to this task list to ensure you have fully configured the EasyCall Gateway before putting it into production



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# EasyCall Gateway Pre-Installation Checklist

## Overview

This checklist is for EasyCall Gateway administrators. Information for telephony system integrators is provided in the *EasyCall Gateway Telephony System Integrator's Guides*. Those guides are available from <http://support.citrix.com/product/cg> (follow the links to the release and Documentation).

We recommend that you print this checklist and keep it updated and accessible to the administrator.

## Firewall Requirements

The firewall used for the EasyCall Gateway must allow TCP traffic over HTTPS port 443 for communication with the EasyCall or Web Services API.

The telephony system and the EasyCall Gateway must not be separated by a firewall or NAT.

## Basic Network Connectivity

Interface 1 IP address: \_\_\_\_\_

Subnet mask: \_\_\_\_\_

Default gateway IP address: \_\_\_\_\_

External IP address: \_\_\_\_\_

External port: \_\_\_\_\_

SIP External IP address\*: \_\_\_\_\_

SIP local network\*: \_\_\_\_\_

DNS server(s): \_\_\_\_\_

\* Required only by some SIP carriers.

## EasyCall Gateway Port Usage

The following tables list all of the EasyCall Gateway inbound and outbound ports. These ports must be open on the EasyCall Gateway's gateway device (such as a firewall or router).

Gateway Inbound Ports	Transport Protocol	Application Protocol	Purpose	Configurable?
22	TCP	SSH	SSH service	No
123	UDP	NTP	Network Time Protocol timer service	No
443	TCP	HTTPS	EasyCall to EasyCall Gateway	No
5060	UDP	SIP	SIP Trunk	Yes
20000 - 20500	UDP	RTP	SIP Trunk	Yes
Gateway Outbound Ports	Transport Protocol	Application Protocol	Purpose	Configurable?
37	TCP	rdate	rdate service	No
43	TCP	whois	whois service	No
53	TCP/UDP	DNS	DNS service	No
123	UDP	NTP	Network Time Protocol timer service	No
389	TCP	LDAP	LDAP Server connection	Yes
514	UDP	Syslog	Syslog service	No
(depends on the telephony system)	UDP	SIP	SIP Trunk	Yes
Dynamic range (depends on the telephony system)	UDP	RTP	SIP Trunk	Yes

## Telephony System

Select the telephony system used at the site:

Alcatel OmniPCX Enterprise Version 8.0

Alcatel OmniPCX Enterprise Version \_\_\_\_\_

Asterisk (including Trixbox) Version 1.2

Asterisk (including Trixbox) Version 1.4

Asterisk (including Trixbox) Version \_\_\_\_\_

Avaya S8300 /S87xx-Series with Media Gateway and SIP-Enablement Services (R4.1.31.2) and Avaya Communication Manager Version 5.0

## EasyCall Gateway Pre-Installation Checklist

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\_\_\_ Avaya S8300 /S87xx-Series with Media Gateway and SIP-Enablement Services (R4.1.31.2) and Avaya Communication Manager Version \_\_\_\_\_

\_\_\_ Avaya S8300 /S87xx-Series and Avaya Communication Manager Version 3.0

\_\_\_ Avaya S8300 /S87xx-Series and Avaya Communication Manager Version 4.01

\_\_\_ Avaya S8300 /S87xx-Series and Avaya Communication Manager Version \_\_\_\_\_

\_\_\_ Bandwidth.com

\_\_\_ Cisco Unified Communications Manager Version 4.1(3)

\_\_\_ Cisco Unified Communications Manager Version 4.2(3)

\_\_\_ Cisco Unified Communications Manager Version 5.1

\_\_\_ Cisco Unified Communications Manager Version 6.0

\_\_\_ Cisco Unified Communications Manager Version \_\_\_\_\_

CCM utilizes Call Search Spaces. If configured, use this call space:  
\_\_\_\_\_. For details, please refer to the *Telephony System Integrator's Guide* for Cisco.

\_\_\_ Cisco CallManager Express Version 3.2

\_\_\_ Cisco CallManager Express Version 4.0

\_\_\_ Cisco CallManager Express Version \_\_\_\_\_

\_\_\_ Nortel Meridian Series and Nortel Communication Server 1000 Version 5.0

\_\_\_ Nortel Meridian Series and Nortel Communication Server 1000 Version \_\_\_\_\_

\_\_\_ Media Gateway for non-SIP compatible telephony systems: AudioCodes Mediant 1000

\_\_\_ Media Gateway for non-SIP compatible telephony systems: Other \_\_\_\_\_

SIP audio codec is 711ulaw? \_\_\_ Yes \_\_\_ No

### **For SIP connections:**

Trunk capacity: \_\_\_\_\_

SIP domain: \_\_\_\_\_

PBX SIP IP address: \_\_\_\_\_

PBX SIP port: (Defaults to 5060.) \_\_\_\_\_

User name and secret: \_\_\_\_\_

Voice mail extension: \_\_\_\_\_

Note: SIP carriers have additional requirements. Refer to the *Telephony System Integrator's Guide* for your telephony platform for more information.

**Cluster-wide call and conference settings:**

External cluster address: \_\_\_\_\_

(The External Cluster Address must be forwarded to a static IP address of one of the cluster nodes. The node which services the External Cluster Address must have a valid SSL certificate to avoid certificate warnings from web browsers.)

Default Caller ID: \_\_\_\_\_

Conference Dial-in Number and Extension: \_\_\_\_\_

(The Conference Dial-in Number must be set up from your telephony system so that it knows how to route all calls to the number to your EasyCall Gateway.)

Maximum Number Per Node of Conferences: \_\_\_\_\_

Maximum Number Per Node of Conference Participants: \_\_\_\_\_

To make EasyCall conferencing available to users outside of your firewall, configure a Web proxy to:

Forward https requests for EasyCall from external parties to the EasyCall Gateway.

Route the client responses back to the external parties.

## Call Setting Configuration

Use Diversion (Applies to Cisco only.)

Use E164 dialing (Applies to SIP carriers only. Remaining fields not used when this option is selected.)

Country: \_\_\_\_\_

Domestic dial prefix: \_\_\_\_\_ (Example "1" for U.S.)

International dial prefix: \_\_\_\_\_ (Example "011" for U.S or "00" for U.K.)

Area code: \_\_\_\_\_

Trunk access code: \_\_\_\_\_ (Example "9" or "0")

Domestic cell prefix: \_\_\_\_\_ (Applies to Mexico and Argentina only.)

Domestic carrier code: \_\_\_\_\_

International carrier code: \_\_\_\_\_

Use International carrier code instead of international prefix (Applies to Finland only.)

Use Open Numbering Plan (Is on by default. In closed numbering plans, there is no concept of local dialing vs. domestic dialing.)

## Call Setting Customization

Use additional local area codes or overlays:

Area Code	Local dialing requires the area code?	Domestic prefix?
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

Numbers to be recognized as extensions:

Length of extensions:  3-digit  4-digit  5-digit

Extensions preceded by:  #  /  Ext.  Ext:  Other \_\_\_\_\_

(“Ext” includes all variations of capitalization, such as EXT and ext, and with or without the end punctuation.)

Extension prefix: \_\_\_\_\_

For numbers that include alphabetic characters:

Allow the following prefixes: \_\_\_\_\_

Block access to the following prefixes: \_\_\_\_\_

(By default, in the U.S. EasyCall recognizes numbers with alphabetic characters if they have the prefixes 800, 866, 877, or 888.)

Dial private network numbers as an:

External (On-net number)

Internal (Extension)

Number pattern for private network numbers: \_\_\_\_\_

(For example, +NN.NN.NNNN.NNNN, ESN NNN-NNNN, (ESN) NNN-NNNN.)

Interpret a ten-digit number that does not include an international dial prefix as:

a domestic number based on the EasyCall Gateway locale

a U.S. number regardless of the EasyCall Gateway locale

(Ten-digit numbers can have any pattern defined by:  
[punctuation]NNN[punctuation]NNNN[punctuation]NNNN.)

Additional restricted phone number patterns: \_\_\_\_\_

(Patterns already configured include those prefixed by "fax", "tty", and currency symbols; numbers in date/time formats. Example: Service URL  
https://server.domain.com/workplace/services/CallDirector)

## Directory Source Configuration

You can use multiple sources for the directory information to appear in EasyCall. Print a copy of this page for each directory source.

### LDAP/AD Source

Use this directory as a source for EasyCall users:

\_\_ User domain prefix: \_\_\_\_\_

\_\_ Node name: \_\_\_\_\_

Group roles for this source: \_\_ CALL \_\_ CONFERENCE \_\_ CALL\_FORWARD \_\_  
CREATE\_LOCATIONS

LDAP server IP address and port: \_\_\_\_\_

(LDAP server port defaults to 389. If you use an indexed database, using port 3268 will significantly speed the LDAP queries.)

LDAP Bind DN and password: \_\_\_\_\_

Example syntax:

"cn=DirectoryManager,o=cisco.com" (Cisco DC Directory)

"ou=administrator,dc=ace,dc=com"

"username" (Active Directory User Principal Name; cannot be email address)

"cn=Administrator,cn=Users,dc=ace,dc=com" (Active Directory)

For Novell eDirectory, the Bind DN user must have access rights to see the properties of the users.

LDAP Base DN: \_\_\_\_\_

Example syntax:

"ou=Users,o=cisco.com" (Cisco DC Directory)

"ou=Users,dc=ace,dc=com"

"cn=Users,dc=ace,dc=com" (Active Directory)

Search Filter: \_\_\_\_\_

(Defaults to "objectclass=person".)

## EasyCall Gateway Pre-Installation Checklist

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LDAP Attribute fields: (Defaults in parentheses.)

Email Address (mail) \_\_\_\_\_

Username (username) \_\_\_\_\_ Required.

Display Name (cn) \_\_\_\_\_

FirstName (givenName) \_\_\_\_\_

Extension (ipPhone) \_\_\_\_\_

Surname (sn) \_\_\_\_\_

Title (title) \_\_\_\_\_

Department (department) \_\_\_\_\_

Work Phone (telephoneNumber) \_\_\_\_\_

Mobile Phone (mobile) \_\_\_\_\_

Other Phone (homePhone) \_\_\_\_\_

### CSV File Download Source

FTP server IP address: \_\_\_\_\_

FTP server username and password: \_\_\_\_\_

CSV file path and filename: \_\_\_\_\_

## EasyCall Client Installation

EasyCall installation will be handled through:

Citrix Receiver

Citrix XenApp Publishing

Citrix Application Streaming

Citrix XenDesktop

User download

Microsoft System Management Server

---

# Implementation Summary

The following steps summarize the implementation workflow for an EasyCall Gateway, from initial installation through delivering and testing the communications plug-in. For a post-implementation task list, see [Configuration Task List](#).

1. Install the EasyCall Gateway using Citrix XenCenter: [To install the virtual appliance](#).
2. Complete initial configuration: [To complete the initial configuration](#).
3. Configure your firewall: [About Firewall Configuration](#).
4. Integrate the telephony system and the EasyCall Gateway. This integration work is performed by a telephony system specialist (your vendor or an internal resource) according to the guidelines provided in the EasyCall Gateway Telephony System Integrator's Guide specific to your telephony system. The integration can be performed in tandem with the previous step. Refer to the *Citrix EasyCall Gateway Telephony System Integrator's Guides* for details on configuring a telephony system for use with the EasyCall Gateway. Go to <http://support.citrix.com/product/cg/> and then click the link for the release. The integrator's guides are located on the Documentation tab for each release.
5. Configure the EasyCall Gateway using the EasyCall Gateway administration tool: [To define the properties of a trunk](#), [Configuring Telephony Settings](#), and [To configure a directory source](#).
6. If needed, cluster the EasyCall Gateways: [Clustering EasyCall Gateways](#).
7. Deliver the communications plug-in: [To install the EasyCall plug-in](#) and [To test your EasyCall implementation](#).



---

# To install the virtual appliance

EasyCall Gateway is provided as a virtual appliance which you can install using Citrix XenCenter for XenServer 5.0 (Express, Standard, Enterprise, or Platinum Edition).

1. The EasyCall Virtual Appliance (.xva) image is available for download from the Citrix support site. The image name is citrix-ecg-releaseNumber.xva.bz2.
2. Unpack the zip file using 7Zip, WinZip, or another archive utility.
3. Start Citrix XenCenter.
4. In XenCenter, choose **File > Import VM**.
5. Click **Browse**, navigate to the .xva file, and click **Open**.
6. Select **Exported VM** as the Import Type and then click **Next**.
7. In the Home server screen of the wizard, select the XenServer instance where this VM should be imported and then click **Next**.
8. In the Storage screen, select the XenServer where the storage repository resides and then click **Import**. The import will begin and the Network screen appears.
9. In the Network screen, select **Network *n*** from Network and then click **Next**. *n* will be 0 unless XenServer is installed on a server with multiple networks.
10. In the Finish screen, remove the check mark from **Start VM after Import** and then click **Finish**.

The import progress is displayed in the status bar at the bottom of the XenCenter window and also on the Logs tab. The import process may take some time, depending on the size of the VM and the speed and bandwidth of the network connection between XenCenter and the server where you are installing the new VM.

After the import process completes, you can specify the amount of memory to be allocated to this VM before starting the VM.

11. Allocate memory to the VM:
  - a. In the XenCenter window, right-click the VM and choose **Properties**.
  - b. Click the **Memory and VCPUs** tab and choose the amount of memory for the VM. We recommend a minimum of 2Gb.
  - c. Optionally change the number of VCPUs.
  - d. Click **OK**.
12. Configure the VM for an auto-generated MAC address. (The VM will not function properly without a unique MAC address.)

## To install the virtual appliance

---

- a. In the XenCenter window, select the VM and click the **Network** tab.
  - b. Click the **Properties** button and select **Auto-generate**.
  - c. Click **OK**.
13. In the XenCenter window, right-click the VM and choose **Start**. The VM starts and the Network Configuration Utility appears.
  14. Enter the IP address, netmask, default gateway, and a DNS server and then save those settings as directed on the screen.

The utility will save network settings and reboot the virtual appliance.

You have now completed the installation and one-time configuration of the EasyCall Gateway virtual appliance.

After the VM reboots, a message displays the URL you will need for further EasyCall Gateway configuration.

---

# To complete the initial configuration

The following steps describe the required initial configuration.

1. To access the EasyCall Gateway administration tool from your desktop, open a Web browser and enter **https://gatewayAddress/admin**, where *gatewayAddress* is the one you set in the Network Configuration Utility.
2. Log on to the EasyCall Gateway administration tool: The user name is **root** and the default password is **rootadmin**.
3. Click **Cluster Configuration**. On the **Nodes** tab, click the Master node link in the Node Name column.
4. On the **Interfaces** tab, set the External IP Address if you have geographically distributed cluster nodes or if you want to allow individuals outside of your company firewall to participate in EasyCall conferences.
5. Click **Submit**.
6. To apply the network settings, click **Maintenance > Services** and then click **Restart**.
7. On the **Cluster Configuration > Nodes** page, click the **Activate Node** link.
8. Follow these links for information about the next configuration steps:
  - [About Firewall Configuration](#)
  - [Configuring and Testing Basic Settings](#)
  - [Configuration Task List](#)

**Note:** For the additional configuration required for some SIP carriers, refer to the *Citrix EasyCall Gateway Telephony System Integrator's Guide* for your SIP carrier. Go to <http://support.citrix.com/product/cg/> and then click the link for the release. The integrator's guides are located on the Documentation tab for each release.

---

# About Firewall Configuration

The EasyCall Gateway is deployed inside your firewall. The EasyCall plug-in communicates with the EasyCall Gateway over port 443. The firewall used for the EasyCall Gateway must allow TCP traffic over port 443 for communication with EasyCall or the EasyCall Web Services API. For additional information on port uses and requirements, refer to the [EasyCall Gateway Pre-Installation Checklist](#).

If SIP trunking is used, the telephony system and the EasyCall Gateway must not be separated by a firewall.

---

# Configuring and Testing Basic Settings

The following topics describe the minimum configuration needed to configure the basic functionality of the EasyCall Gateway:

[To define the properties of a trunk](#)

[To configure a directory source](#)

[To install the EasyCall plug-in](#)

[To test your EasyCall implementation](#)

When you have completed the steps in those topics, you should be able to place a call using EasyCall.

---

# To define the properties of a trunk

If you have questions about the properties of the trunks configured at your site, please contact the telephony specialist who performed the integration.

1. In the EasyCall Gateway administration tool, click **Cluster Configuration** and then click **Trunks**.
2. Click **Add Trunk**.
3. On the Add/Edit Trunk page, enter a description in **Trunk Name**. This name identifies this trunk in the list on the **Trunks** tab.
4. In **Trunk Capacity**, enter the number of channels available to EasyCall. For general information about capacity, see [Capacity Guidelines](#). Your telephony system specialist can provide this value.
5. Enter the SIP Switch Settings provided by your telephony specialist. For more information, see [To define the trunk type and connection](#).
6. Configure call handling so that phone numbers will be dialed correctly from the locale of the gateway. For details, see [To configure call handling](#) “Configuring Call Handling” on page 55.
7. Click **Submit**.

---

# To configure a directory source

You can configure an unlimited number of directory sources (LDAP/AD directory server, FTP server, CSV file, or custom script) for display in the EasyCall Directory. Each source is associated with one Group which defines the roles for users in that directory source. Roles determine whether users can make calls from EasyCall, create EasyCall conferences, use Call Forwarding, and create locations.

1. In the EasyCall Gateway administration tool, click **Directory Source Configuration**. Notice that in the **Groups** tab the “All Roles” group is already created for you.
2. If you want to create a role that limits user access to EasyCall features:
  - a. Click **Add Group**.
  - b. Enter a name for the group.
  - c. Select each EasyCall feature that you want available to users in the group and then click **Submit**. Repeat these steps for each role that you want to add.
3. In the **Groups** tab, specify how you want users handled if their group is deleted and then click **Submit**.
4. Click the **Directory Sources** tab.
5. Under the Configured Directory Sources list, click **Add**.
6. A directory source is always used to populate the EasyCall Directory. If you also want the directory source to be used as a source of EasyCall users, select the **Use this directory as a source for EasyCall users** checkbox. When you select the checkbox, two additional fields appear:
  - For **User Domain Prefix**, enter the domain associated with users in this directory source. When a user logs in to EasyCall, the user must specify a domain, which is validated against the domain prefix specified here.
  - For **Node Name**, specify the node for which this source is to be used. Defaults to Any. You would select a specific node if you want this directory source to apply only to that node and not be available to EasyCall users who are connected to other nodes in the same cluster.
7. Select the **Source Type** that you will configure:
  - Directory Server:** Configure scheduled downloads of user information from an LDAP or Active Directory server.
  - FTP Server:** Configure scheduled downloads of user information from a CSV file located on an FTP server.
  - Uploaded CSV File:** Configure scheduled uploads of user information from a CSV file located on a computer that can be reached from the EasyCall Gateway.
  - Custom Script:** Configure uploads of user information from a custom script.
8. Enter a descriptive **Source Name**.

9. Select the **Group** to be associated with all users obtained from the configured source.
10. Specify the synchronization schedule.
11. Click Next Step and complete the configuration as described in [Configuring Directory Sources](#).
12. After you have created all of the directory sources, use the **Up** and **Down** links in the Priority column to order the sources. The source at the top of the list has the highest priority. Information for a user that appears in multiple sources will be handled according to the Directory Source Setting that you specify (see next step).
13. Specify a Directory Source Setting to determine how users who appear in more than one directory source are to be handled. You can choose to obtain user information from the source with the highest priority (which will take precedence over other sources) or to not overwrite user information during a synchronization so you can review conflicts.
14. To immediately synchronize the EasyCall Gateway with one or more sources, select each source and click **Sync**. The EasyCall Gateway will be synchronized with the sources in the order in which they appear in the **Directory Sources** tab.



---

# To install the EasyCall plug-in

To test the EasyCall implementation, download and install the EasyCall plug-in on a computer that has network access to the EasyCall Gateway. After you test the EasyCall implementation and completed configuration, see [Delivering EasyCall to End Users](#).

1. Open the following URL in a Web browser: `https://gatewayAddress/download`

where *gatewayAddress* is either the default IP address of the EasyCall Gateway (10.20.30.40) or the one that you assigned during setup.

2. Click the **Download Now** button.

EasyCall is downloaded and installed on your computer. However, if you have disabled JVM or the execution of embedded code, EasyCall is not installed automatically. You must run the installer manually and respond to a prompt for the EasyCall Gateway host name.

After EasyCall is installed, it starts automatically when you start Windows. EasyCall commands are available from the EasyCall notification area icon. Some commands are also available from the EasyCall User Portal, which you can reach through this address: `https://gatewayAddress`. *gatewayAddress* is either the default IP address of the EasyCall Gateway (10.20.30.40) or the one that you assigned during setup.

---

# To test your EasyCall implementation

For information about using EasyCall, refer to the Help available from the EasyCall client.

1. In a Windows application, open an application or page that contains a phone number.
2. Hover over the phone number. In the phonebar, click the phone icon.
3. Complete the call on your phone. If the number is dialed, you have successfully deployed EasyCall. Review the table in [Configuration Task List](#) for additional tasks that you might need to complete.

---

# Configuration Task List

After you complete the minimum steps needed to install the EasyCall Gateway and test EasyCall, review the following table for additional configuration tasks.

Configuration Tasks
<a href="#">Change the root administrator password</a>
<a href="#">Change the NTP server used by the gateway or enter a server date and time</a>
<a href="#">Specify Domain Name Servers; add entries to the HOSTS file</a>
<a href="#">Set up SSL certificates</a>
<a href="#">Define additional trunks</a>
<a href="#">Optionally customize EasyCall voice prompts</a>
<a href="#">Customize telephone number recognition</a>
<a href="#">Add groups and directory sources</a>
<a href="#">Configure Call Forwarding</a>
<a href="#">Configure the Net Call feature</a>
<a href="#">Optionally cluster EasyCall Gateways</a>
<a href="#">Back up the system configuration</a>
<a href="#">Deliver EasyCall to end users</a>

---

# Configuring Network Settings

After installing the EasyCall Gateway, you can change its network settings provided it is not part of a cluster.

**Note:** To apply changes to network settings, you must restart the EasyCall Gateway (**Maintenance > Services**).

These topics describe the EasyCall Gateway network configuration settings:

<a href="#">To open the administration tool</a>	Access and log in to the gateway interface
<a href="#">To configure the network interface</a>	Configure settings such as IP address and net mask for the virtual network interface
<a href="#">Configuring Name Service Information</a>	Specify DNS servers or add entries to the HOSTS file

---

# To open the administration tool

The web-based EasyCall Gateway administration tool enables you to configure the gateway and obtain information about its operation.

1. In a web browser, type `https://gatewayAddress/admin`. The *gatewayAddress* is either the IP address or host name of the EasyCall Gateway.
2. Type the administrator root user name and password. The default credentials are root and rootadmin. To change the password, see [To change the root administrator password](#). The EasyCall Gateway **Dashboard** page opens. For information on the Dashboard, see [To get information about the EasyCall Gateway](#).

---

# To configure the network interface

You connect the EasyCall Gateway to your network using its virtual network interface.

1. In the administration tool, click **Cluster Configuration** and then click the **Nodes** tab.
2. Click the node name and complete the fields on the **Interfaces** tab as described in the following table. If the fields are not editable, the EasyCall Gateway is part of a cluster. You must remove it from the cluster to change its settings, as described in [To disconnect a member node from a cluster](#).

Setting	Description
IP Address	Defaults to 10.20.30.40.
Subnet Mask	Identifies the range of addresses that can be reached without using a gateway device.
Default Gateway	The IP address of the default gateway device, such as the main router or firewall. This should be the same as the default gateway setting that is on computers on the same subnet.
External IP Address	The external address if the EasyCall Gateway is behind a Network Address Translation (NAT) device.
External Port	

**Note:** The **General** tab available from **Cluster Configuration > Nodes** page applies only to sites using SIP carriers for telephony services. For information, see the [http://support.citrix.com/product/cg/Citrix EasyCall Gateway Network Integrator's Guide](http://support.citrix.com/product/cg/Citrix_EasyCall_Gateway_Network_Integrator's_Guide) for the SIP carrier. (After you follow the link, click the link for the release. The integrator's guides are located on the Documentation tab for each release.)

3. To apply the network settings, click **Maintenance > Services** and then click **Restart**.

---

# Configuring Name Service Information

You can specify up to three Domain Name Servers (DNSs) to be used by the EasyCall Gateway for translation of fully-qualified domain names (FQDNs) to IP addresses. If your network configuration prevents the EasyCall Gateway from connecting to DNS for address translations, you can add entries to your HOSTS file via the EasyCall Gateway administration tool.

When the EasyCall Gateway attempts to translate an FQDN to an IP address, it checks its HOSTS file before connecting to DNS to perform the address translation. If the EasyCall Gateway can translate the FQDN to an IP address using the information in the HOSTS file, it does not use DNS to perform the address translation.

**Note:** Adding entries to the HOSTS file can optimize performance because the EasyCall Gateway does not have to connect to a different server to perform the address translations.

## To specify DNS servers or add entries to the HOSTS file

1. Click **Cluster Configuration** and then click the **Nodes** tab.
2. Click the node name, click the **DNS/Hosts** tab, and complete the fields as described in the following table. If the fields are not editable, the EasyCall Gateway is part of a cluster. You must remove it from the cluster to change its settings, as described in [To disconnect a member node from a cluster](#).

Setting	Description
DNS Server 1 - 3	The IP address of each server.
Host Name / Host IP	Click <b>Add</b> to enter the FQDN and IP address pair to be added to the HOSTS file.

3. To apply the network settings, click **Maintenance > Services** and then click **Restart**.

## To change or delete an entry from the HOSTS file

1. Click **Cluster Configuration** and then click the **Nodes** tab.
2. Click the node name, click the **DNS/Hosts** tab.
3. To change an entry, click its host name in the Static Hosts table, change the settings, and click **Submit**. To delete an entry, select the checkbox beside its name and click **Delete**.
4. To apply the network settings, click **Maintenance > Services** and then click **Restart**.

---

# Obtaining and Importing SSL Certificates

EasyCall uses Secure Sockets Layer (SSL) certificates to create secure connections between the EasyCall Gateway and the EasyCall (communications) plug-in. The EasyCall Gateway includes a temporary certificate. You must replace the temporary certificate to enable EasyCall to work without security alerts and other errors. You can use the EasyCall Gateway administration tool to create and import a self-signed certificate, however, when the EasyCall plug-in attempts to connect the server, the browser will issue certificate alerts.

These topics describe how to obtain and import certificates from a Certificate Authority and import them into the EasyCall Gateway so that users do not receive certificate alerts:

<a href="#">Working with a Certificate Authority</a>	Learn about working with a Certificate Authority (CA) and what an SSL certificate obtained from a CA includes
<a href="#">To obtain an SSL certificate</a>	Generate a self-signed certificate and its associated Certificate Signing Request
<a href="#">To import certificates</a>	Import the root, intermediate, and server certificates into the EasyCall Gateway keystore



---

# Working with a Certificate Authority

You can obtain an SSL certificate from either an internal or public Certificate Authority (CA). Consult your security department to find out the CA required by your company and the procedure for obtaining server certificates. Instructions for generating server certificates using various Web server products are available from the Web sites of popular CAs such as VeriSign.

Obtaining a digital certificate from a public CA involves a verification process in which:

- Your organization provides corporate or organization information so the CA can verify that your organization is who it claims to be. The verification process may involve other departments in your organization, such as accounting, to provide letters of incorporation or similar legal documents.
- Individuals with the appropriate authority in your organization are required to sign legal agreements provided by the CA.
- The CA verifies your organization as a purchaser; therefore, your purchasing department is likely to be involved.
- You provide the CA with contact details of suitable individuals whom they can call if there are queries.

## What the CA Provides

The SSL certificate provided by a CA includes the following:

- Server certificate

A server certificate certifies the identity of a server.

- Root certificate

A root certificate identifies the CA that signed the server certificate. The root certificate belongs to the CA. This type of digital certificate is required by a client device to verify the server certificate. When establishing a secure connection with a Web browser on a client device, the server sends its certificate to the client.

- Intermediate certificate

An intermediate certificate is a certificate that goes between the EasyCall Gateway (the server certificate) and a root certificate.

---

# To obtain an SSL certificate

You must import the root and intermediate certificates into the EasyCall Gateway keystore before the server certificate.

1. In the administration tool, click **Maintenance > Certificates**.
2. From the **Select an Action** list, select **Import chain certificate from a certificate authority**.
3. In the **Upload Certificate File** section, click **Browse** to locate the chain1.cer file on your local share.
4. Click **Submit** to upload the root certificate.
5. The **Certificate Status** text box displays the following on successful completion:  
  
Keystore type: JKS  
Keystore provider: SUN  
Your keystore contains 5 entries
6. Repeat the process for the intermediate certificate (chain2.cer). Now you are ready to import the server certificate.
7. From the **Select an Action** list, select **Import certificate from a certificate authority**.
8. In the **Upload Certificate File** section, click **Browse** to locate the certificate.cer file on your local share.
9. Click **Submit** to upload the server certificate.
10. The **Certificate Status** text box displays the following on successful completion:  
  
Keystore type: JKS  
Keystore provider: SUN  
Your keystore contains 5 entries
11. Restart the EasyCall Gateway.
12. Verify through your browser interface that the certificate installed on the EasyCall Gateway is signed by the CA who issued it.

---

# To import certificates

To obtain an SSL certificate from a certificate authority (CA), you must first use the EasyCall Gateway administration tool to generate a self-signed certificate and its associated Certificate Signing Request (CSR) required by the CA. You can then purchase a certificate from the CA by providing some information including the CSR.

1. In the administration tool, click **Maintenance > Certificates**.
2. From the **Select an Action** list, select **Generate self-signed certificate**.
3. In **Common Name**, enter the host name for the EasyCall Gateway and complete the rest of the fields. Use the on-screen hints to guide your input. If you have questions about completing these fields, contact your company's certificate expert.
4. Click **Submit** to generate a self-signed certificate for the specified EasyCall Gateway. The certificate fingerprint appears in the Certificate Status area.

**Note:** Although you can use this self-signed certificate with the EasyCall Gateway, EasyCall users will receive security alerts when attempting to connect to the EasyCall Gateway.

5. Select **Export certificate signing request** to create the certificate signing request. The CSR appears in a separate window. This is the document required by CAs. The CSR begins with the text "BEGIN NEW CERTIFICATE REQUEST" and ends with "END NEW CERTIFICATE REQUEST".

**Note:** If you have pop-ups blocked in your Web browser, you must temporarily enable pop-ups to view the CSR.

6. Copy the text in a text editor and save the file.
7. Follow your company's procedure for contacting the appropriate CA to obtain a certificate. Have the following information available:
  - The CSR that you saved in the previous step.
  - Server platform information: The server platform is Apache and the certificate usage is Web Server. Not all CAs require this information. The CA will provide an SSL server certificate, a root certificate, and an intermediate certificate.
8. Save the certificates in a text editor, using the following file names:
  - `certificate.cer` – server certificate
  - `chain1.cer` – root certificate
  - `chain2.cer` – intermediate certificate

---

# Configuring Authentication

Authentication validates users before allowing access to EasyCall. The default authentication for EasyCall allows any user to place calls through EasyCall provided that all of the following conditions are met:

- The EasyCall plug-in is installed on the user's computer.
- The EasyCall plug-in can connect to the EasyCall Gateway, which is usually installed behind the corporate firewall.
- The user's login must match one on the list of users from a directory source.

These topics describe the authentication script and how to use the administration tool to work with it:

<a href="#">About Authentication</a>	Get an overview to authentication and the supported authentication mechanisms
<a href="#">About the Authentication Script</a>	Learn about the script and its required functions: authenticate and cleanup
<a href="#">Changing and Testing the Script</a>	Change the script, test it, and restore the default script

---

# About Authentication

The EasyCall Gateway administration tool provides access to the default authentication script so that you can integrate your existing authentication mechanism into the EasyCall Gateway. The default authentication script does not validate the domain/username. Thus, to verify domain/username against an authentication mechanism, you must develop a web service client using the EasyCall Web Services APIs, as described in [Using the Web Services API to Build Web Apps](#).

The following steps describe what occurs when the EasyCall (communications) plug-in attempts to log in to the EasyCall Gateway:

1. The EasyCall plug-in sends the login request to the EasyCall Gateway server.
2. The server verifies the validity of the plug-in. Login is denied if the server cannot verify the plug-in.
3. The server verifies that the user's login matches one on the list of users from a directory source.
4. The server verifies the user's domain/username (passed by the EasyCall plug-in) against the authentication script. If the script rejects the user's domain/username, login is denied.

The EasyCall Gateway supports any authentication method that has an API, including the following:

- Active Directory
- LDAP

The EasyCall Gateway supports the OpenLDAP library, provided by Novell. Those resources are available at <http://www.openldap.org/>. It also supports the LDAP provided with the Java Development Kit.

- RADIUS
- SmartCard
- Client certificate
- Third-party authentication (such as web server authentication)
- Local file
- And any other method with an API

---

# About the Authentication Script

You can view and edit the default authentication script through the EasyCall Gateway administration tool on the **User Management > Authentication** page.

**Note:** Knowledge of JavaScript is required to modify the script. Depending on your authentication system, you might also need to know Java and other technologies. If your site requires assistance, please contact your Citrix Reseller or Citrix Professional Services.

The authentication script is executed when the EasyCall Gateway starts and when you save a change to the script on the **Authentication** page.

The script must export two functions, one used for authentication and one used to clean up after the script is replaced. The global context of the script can be accessed from those functions. The global context may carry global variables or additional functions as required. The global context is executed when the script is installed.

For an example script, refer to <http://support.citrix.com/article/CTX123674>. For information about the EasyCall Web Services API, refer to [Using the Web Services API to Build Web Apps](#).

## authenticate() Function

The `authenticate` function takes a `userInfo` object as its input and returns an `AuthInfo` object.

```
authenticate(userInfo)
```

### Inputs

The `userInfo` object provides the following methods:

- `getUserName()`

Returns a string with the username that was provided by the client. If the user was logged in on a particular domain, the username will come in form of (DOMAINNAME\USERNAME).

- `getCustomField(fieldName)`

Returns a custom field string with the specified name string. These fields are read from the client request to authenticate. The fields may have to be requested from the client by using the `NEED_MORE_INFO` error code first, as described in [Returns, next](#).

### Returns

The `AuthInfo` object provides the following fields, described in the table:

- `ErrorCode`

The `ErrorCode` field is used to determine whether the authentication was successful, unsuccessful, or if more data is required from the client.

- `requestField`
- `requestValue`

Error Codes	Must be used to indicate:
SUCCESS	Successful authentication.
NEED_MORE_INFO <i>requestField</i> [ <i>requestValue</i> ]	<p>The client needs to send more information to the server for authentication to succeed. (The EasyCall plug-in supports only the username or username/domain name. A custom Web service must be used if additional information is required to log in the user.)</p> <p><i>requestField</i>: Required. Indicates to the client which property needs to be provided.</p> <p><i>requestValue</i>: Required only if the response value should be computed based on some data. It can be used by the client to calculate the response.</p>
INVALID_ARGUMENT <i>requestField</i>	<p>An invalid or missing value.</p> <p><i>requestField</i>: Required. Indicates to the client which property had an invalid value.</p>
ACCESS_DENIED	That the credentials are invalid.
SERVER_ERROR	A system error.

## cleanup() Function

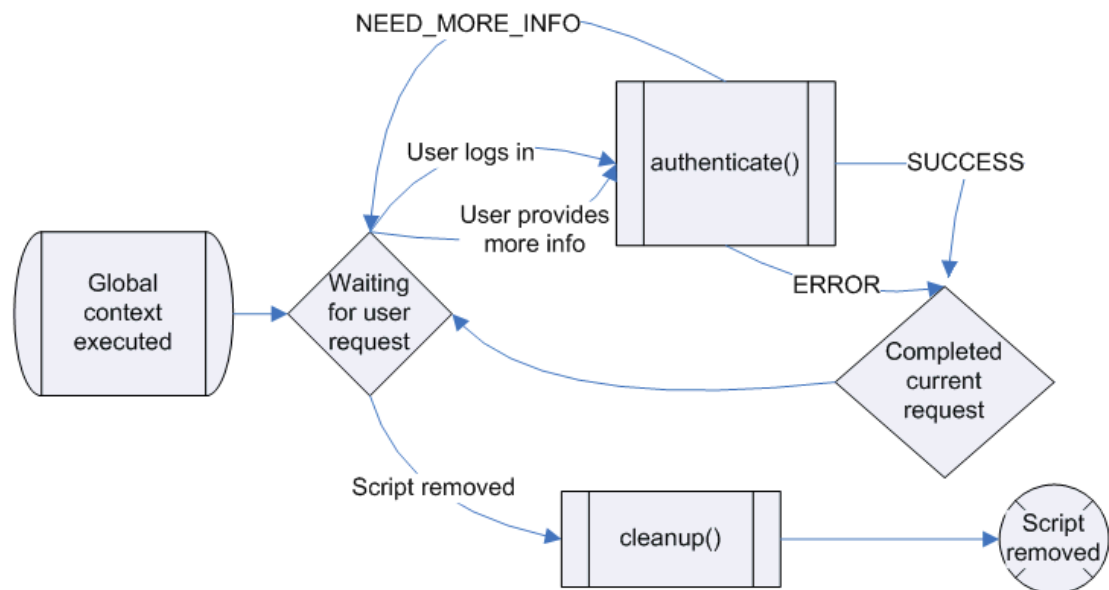
When the authentication script is removed from the system, for example, replaced with a newer version, the `cleanup()` function is called. `cleanup()` should be used to close any open files, sockets, or release any other system resources that have been allocated during the initialization or execution of the authentication script.

When you use the test function on the **User Management > Authentication** page, `cleanup()` is always performed as the last step of the test.

# Changing and Testing the Script

Use the **User Management > Authentication** page to input changes to the authentication script, test it, and save it. You can directly test the `authenticate` function. Although you cannot directly test the `cleanup` function, it is called after the `authenticate` function completes.

**Note:** Be sure to test your script before attempting to save it. If an attempt to save a script fails because of a compilation error, the script will not be saved.



When the script is tested from the Authentication Script page, it undergoes all life cycles: The global context is first executed, then the function being tested is executed, and then the cleanup is performed, as shown in the following flow diagram.

## To change and test the script

1. Go to the **User Management > Authentication** page and input your changes in the script.
2. Click **Show Test Dialog** to display the test fields.
3. Enter a username to test.
4. If your script includes custom fields, click **Add Data** for each field and input each key name and a test value for it. The following constants are defined for the key-value pairs that the client can send to the server. Your script can define others.

Key	Description
-----	-------------



user_name	The username of the user connecting to the EasyCall Gateway. The username must come in the form or "DOMAINNAME\USERNAME" or "USERNAME". This field is required when logging in.
client_type	Any web service client should specify the value "GENERIC" for this key.
redirect_count	Redirection count. The client must increase this count to "1" any time it is following a redirection as a result of encountering a REDIRECT result. Otherwise, the count should never be set.

5. Click **Run Test** to compile the current script and then execute the selected function. The result returned by the tested function appears above the test area. If your script throws any exceptions that you think should be ignored, be sure to change the script to catch the exception manually.
6. When you are satisfied with the test results, click **Save**. (Click **Cancel** to remove changes made to the script since it was last successfully saved.)

The EasyCall Gateway attempts to compile the script. If there are no compilation errors, the script is saved and becomes effective immediately.

If the compilation fails, a description of the error displays below the script text area and the script is not saved.

**Note:** To restore the default script, click **Set Default**.

---

# Configuring Telephony Settings

These topics describe telephony system configuration:

<a href="#">To define the trunk type and connection</a>	Add, edit, activate, or deactivate trunks.
<a href="#">To configure call handling</a>	Configure settings so that calls are dialed correctly from the locale of the EasyCall Gateway.
<a href="#">To specify the caller ID defaults</a>	Configure caller ID display defaults.
<a href="#">To configure Call Forwarding</a>	Read a summary of the tasks required to configure call forwarding.
<a href="#">Configuring Net Call</a>	Configure Net Call with or without a Web-based front-end.
<a href="#">Configuring EasyCall Voice Prompts</a>	Disable the voice prompt; create and upload custom voice prompts.
<a href="#">Customizing Telephone Number Recognition</a>	Learn how EasyCall recognizes and normalizes telephone numbers and about the customization services available from Citrix Technical Support.

---

# To define the trunk type and connection

You must define each trunk that connects the telephony system to the EasyCall Gateway. This configuration can be done in tandem with the configuration described in the *EasyCall Gateway Telephony System Integrator's Guides* available from <http://support.citrix.com/product/cg/>. (Click the link for the release and then locate the integrator's guides on the Documentation tab for the release.)

If you have questions about the properties of the trunks configured at your site, please contact the telephony specialist who configured your telephony system. For a list of the trunks supported by the EasyCall Gateway, refer to the Pre-Installation Checklist.

1. In the administration tool, click **Cluster Configuration > Trunks**.
2. To add a trunk to the node, click **Add Trunk**. To change an existing trunk, click the trunk name in the list.
3. Enter a descriptive **Trunk Name** and select the node to be configured for the trunk.
4. Complete the **Switch Settings** as described in the following table.

Setting	Description
SIP Domain	The FQDN of the telephony system server.
PBX IP Address	The IP address or host name of the telephony system. Defaults to 0.0.0.0.
PBX Port	The port on which the telephony system receives SIP calls. Defaults to 5060 for SIP.
User Name Secret	If you are using a SIP carrier, complete the additional settings as described in the <i>EasyCall Gateway Telephony System Integrator's Guide</i> for the SIP carrier.
Voice Mail Extension	Used to forward a call to voice mail when an EasyCall user with Call Forwarding enabled does not answer any of the configured phone locations. For example, "2345".
Call Configuration	See <a href="#">To configure call handling</a> .

5. To immediately activate the trunk, click the **Activate Trunk** link for the trunk.

---

# To configure call handling

Before the EasyCall Gateway sends a phone number to the telephony system for dialing, it modifies the number so that it is dialed correctly from the locale of the appliance. For more information on phone number handling, see [Customizing Telephone Number Recognition](#).

**Note:** When you change EasyCall configuration, you must let users know that they need to restart EasyCall to update it with the changes.

1. In the administration tool, click **Cluster Configuration > Trunks**.
2. Click the trunk name in the list.
3. Complete the Call Configuration settings as described in the following table and then click **Submit**.

Setting	Description
Use Diversion	Applies to Cisco telephony systems only. This checkbox must be selected to support Call Forwarding.
Use E164 dialing	Applies to SIP carriers only. Refer to the <i>EasyCall Gateway Telephony System Integrator's Guide</i> for your telephone system for information on this option and how it affects other call settings. The guides are available from <a href="http://support.citrix.com/product/cg/">http://support.citrix.com/product/cg/</a> . (Click the link for the release and then locate the integrator's guides on the Documentation tab for the release.)
Country	The Country name of the trunk connected to the EasyCall Gateway. The EasyCall Gateway uses the country name and area codes to determine if a phone number should be dialed as a local, domestic, or international number from the locale of the telephony system associated with the EasyCall Gateway. For more information about how the EasyCall Gateway handles phone numbers, see <a href="#">About EasyCall Number Manipulation</a> .
Domestic Dial Prefix	The prefix needed to dial a domestic long distance number from the locale of the EasyCall Gateway. Populated based on the Country selected.
International Dial Prefix	The prefix needed to dial from the locale of the EasyCall Gateway to another country. Populated based on the Country selected.
Area Code	The local area code of the trunk connected to the EasyCall Gateway. For some locations in Europe, the area code is the geographic area code without the domestic dialing prefix.

## To configure call handling

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Trunk Access Code	The prefix that must be dialed to access an outside line from the corporate telephony system. Defaults to 9.
Domestic Cell Prefix	Applies to Mexico and Argentina only. The prefix that must be dialed when calling a cell phone in Mexico (or Argentina) from within that country. Optional.
Domestic Carrier Code	The domestic carrier code to be used when dialing a domestic number. Optional.
International Carrier Code	The international carrier code to be used when dialing an international number. Optional.
Use International Carrier Code instead of International Prefix	Applies to Finland only. When this option is selected, the International Dial Prefix will not be added to numbers that include an international carrier code. Optional.
Use Open Numbering Plan	If your country has a closed numbering plan, clear this option. Closed numbering plans have the same phone number length throughout the country and there is no concept of local dialing vs. domestic dialing. That is, you dial a number the same way whether you are calling next door or to a different area code.
Can Send SIP Re-INVITES	When enabled, this setting allows the telephony system to make the two calls (to the caller and the callee), bridge them, and then drop out of the call. If your telephony system does not allow re-INVITES to be sent, disable this setting to avoid one-way audio.

---

# To specify the caller ID defaults

By default, EasyCall users can choose to have their caller ID shown or hidden when making calls with EasyCall. You can supply the default caller ID to appear when users block display of their caller ID.

1. In the administration tool, click **Cluster Configuration > Cluster**.
2. Enter the Default Caller ID.

---

# To configure Call Forwarding

Call Forwarding enables EasyCall users to forward their office phones to any phone. Thus, remote workers gain the benefits of making and receiving calls through EasyCall regardless of where they are.

To use this feature, EasyCall users:

- Add to EasyCall the phone numbers (locations) where they want calls redirected.
- Specify the order in which phones are dialed.
- Enable/disable Call Forwarding at any time.

Those tasks are covered in the.

1. Determine if your telephony system supports redirection. For example, SIP carriers do not support this feature.
2. Refer to the *EasyCall Gateway Telephony System Integrator's Guide* for your telephony system for any configuration needed to support Call Forwarding. Those guides are available from <http://support.citrix.com/product/cg/>. (Click the link for the release and then locate the integrator's guides on the Documentation tab for the release.)
3. Verify that the Extension attribute is defined on the **LDAP Directory Source Configuration - Details Configuration** page. (If the extension is provided in the work phone field only, Call Forwarding will not work.)
4. Enable the **Use Diversion** option on the **Add/Edit Trunk** page, as described in [To configure call handling](#).

---

# Configuring Net Call

The Net Call feature enables you to configure links on web pages that any web surfer can dial. By using Net Call, you can eliminate the cost of supporting toll-free numbers by providing links on internal and external portals to frequently dialed numbers such as sales and support.

There are two methods for configuring Net Call:

- Simplest Web site configuration. More steps for a user to make a call.

With this configuration, users who click a Net Call link are prompted to enter their phone number. After their phone rings, they must enter "1" to confirm the call (if Prompt to Complete Call is enabled). Then, the Net Call number they are calling rings and the users are connected to the Net Call number.

- More involved Web site configuration. Fewer steps for a user to make a call.

With this configuration, users who click a Net Call link are connected to the Net Call number with no additional action on their part. The Web-based front-end collects the user's phone number and country code and uses that to build the required URL.

## To configure Net Call without a Web-based front-end

This is the simplest configuration. However, users who click a Net Call enabled link must enter their phone number before the call can be completed.

1. Specify the numbers you want to use with Net Call: In the administration tool, go to **Net Call Configuration**.
2. Specify an alias and phone number for each Net Call number you want to include on your Web site. To add a Net Call number, click **Add Phone Number**. The alias is used behind the scenes to identify a phone number. The alias for a phone number must be unique.
3. After you have completed adding phone numbers, click **Submit**. The links that need to be added to your Web site appear beside the numbers that you added.
4. Provide to your company Web designer the URLs the links that are on the **Net Call Configuration** page.

## To configure Net Call with a Web-based front-end

This more involved configuration uses a Web-based method to collect user phone numbers so that users do not have to enter a phone number to complete a call.

1. Specify the numbers you want to use with Net Call: In the administration tool, go to **Net Call Configuration**.



2. Specify an alias and phone number for each Net Call number you want to include on your Web site. To add a Net Call number, click **Add Phone Number**. The alias is used behind the scenes to identify a phone number. The alias for a phone number must be unique.
3. After you have completed adding phone numbers, click **Submit**.
4. Provide to your company Web developer the following URL format. The Web developer will need to build a Web-based front end that collects a caller's phone number and country code.

`https://ipAddress/netcall?phonealias=alias&countrycode=code&callerphone=number`

For example:

`https://10.10.100.10/netcall?phonealias=Sales&countrycode=1&callerphone=4085551212`

---

# Configuring EasyCall Voice Prompts

Voice prompts assist EasyCall and Easy Conference users during a call. By default, EasyCall users must press “1” before being connected to the number being called. You can disable that prompt and the requirement to press 1.

You can also customize some voice prompts for each supported locale and upload them to the gateway through the **Maintenance > Upgrades** page. If you need to return to a default .wav file and do not have a backup file, please contact Citrix support.

## To disable the voice prompt and requirement to press 1

1. In the administration tool, click **Cluster Configuration > Cluster**.
2. Clear the checkbox for **Prompt to Complete Call**. This option does not apply to EasyCall Conference.

## To create and upload custom voice prompts

You can customize the following voice prompts.

Action	Default voice prompt and filename
EasyCall confirmation, played when the caller connects to the gateway.	For Citrix to complete your call, press 1. To skip this message in the future, you may press 1 at any time. <i>locale_ConfirmCall.wav</i>
EasyCall disconnection, played when the gateway cannot complete the call.	We are unable to complete your call at this time. Disconnecting. <i>locale_Disconnecting.wav</i>
Conference confirmation, played when the caller connects to the gateway.	For Citrix to add you to your conference, press 1. To skip this message in the future, you may press 1 at any time. <i>locale_ConfirmConference.wav</i>
Conference disconnection, played when the gateway cannot complete the call due to an invalid confirmation code.	A valid confirmation code was not received. We are unable to add you to your conference at this time. Please contact your conference chairperson. Disconnecting. <i>locale_DisconnectConference.wav</i>

Conference PIN reminder, played during the call initiated when the user clicks the Forgot Your PIN link.	In response to your request for a reminder <i>locale_EasyConferencePinReminder.wav</i>
	this message will repeat three times. <i>locale_EasyConferencePinRepeat.wav</i>
	Your conference Pin is <i>locale_EasyConferenceYourPin.wav</i>

1. Use a sound recording program to record the prompts. To use a sound recording program, your computer must have a sound card and a microphone. The sound recording program provided with Windows is located at **Start > Programs > Accessories > Entertainment > Sound Recorder**.
2. Save the recordings to the appropriate filenames. *locale* is DEU, ENG, ESP, or FRA.
3. Put the WAV files in a location that is reachable from the EasyCall Gateway.
4. To upload the WAV files, click **Maintenance > Upgrades**.
5. Click **Browse**, locate the WAV file, and then click **Open**.
6. Click **Upgrade** to upload the WAV file.

---

# Customizing Telephone Number Recognition

When a user hovers the mouse pointer over an area of the screen, EasyCall looks for possible telephone numbers. If EasyCall recognizes a series of digits as a probable telephone number, it displays the number in a fade-in phonebar. The user can edit any discrepancy in the number before calling it. After the user clicks to call the number, EasyCall sends the number to the EasyCall Gateway. The EasyCall Gateway applies dial rules to the number, dials the caller's specified phone, and then dials the clicked number.

The following topics describe how EasyCall recognizes and normalizes telephone numbers and provides an overview to the customization services available from Citrix Technical Support.

<a href="#">About EasyCall Number Recognition</a>
<a href="#">About EasyCall Number Manipulation</a>
<a href="#">Number Recognition Customization Options</a>
<a href="#">Unsupported Number Patterns and Dialing Provisions</a>

---

# About EasyCall Number Recognition

EasyCall supports local, long distance, and international telephone numbers as well as internal extensions and phone numbers that include alphabetic characters.

**Note:** International telephone numbers must be E.164-compliant. E.164 is a standard for phone numbers recommended by the International Telecommunication Union's Telecommunication Standardization Sector (ITU-T). The majority of the world's telephone numbers conform to the E.164 format, which is typically + or ++ (plus sign), followed by a maximum of fifteen digits consisting of country code, area code, and subscriber number.

To enable EasyCall to recognize numbers appropriately for a particular locale, EasyCall obtains a user's country code from the Windows locale setting. If the user has configured the Phone and Modem Options (available from the Windows Control Panel) with a country code and area code, EasyCall will use them. EasyCall users can change their current country code and area code through the EasyCall interface.

While EasyCall can find telephone numbers in many contexts, it may not find the following numbers:

- Numbers that are hyphenated at the end of a line.
- Numbers located in tables, including those that are word-wrapped in a cell.
- Numbers in scanned documents.
- Numbers that include an extension, such as "020-7946-0555 Ext. 200".
- Internal or private network telephone numbers (configurable).
- Numbers that appear within a series of other numbers.
- Numbers that contain unusual characters such as brackets or slashes. The valid delimiters in phone numbers are:

Square brackets: [ ]

Parentheses: ( )

Forward slash: /

Hyphen: -

Period: .

Single quotation mark: '

Space

- Numbers in very large or very small fonts.

- Numbers that contain double spaces, such as "201 555 2368".
- Numbers that include a period followed by a space, such as "303 . 555 . 4578".

EasyCall does not recognize numbers that are in unusual formats as detailed in [Unsupported Number Patterns and Dialing Provisions](#)

EasyCall number handling can be customized as described in [Number Recognition Customization Options](#).

---

# About EasyCall Number Manipulation

After EasyCall determines that a number is a telephone number, it normalizes the number into the E.164 format (the universal format for telephone numbers) and then applies built-in dial rules.

- EasyCall uses the country code and area code that users configure in the EasyCall plugin to determine whether the normalized number should be dialed as a local, domestic, or international number.
- After determining how to dial the number, EasyCall applies built-in digit manipulation rules to create a locally dialable number.
  - Based on the country code and area code of the EasyCall Gateway, EasyCall appends the appropriate international prefix (such as 011 or 00) or domestic prefix (such as 1 or 0). It may shorten local numbers if that is possible, such as by removing the area code (if permitted in the locale).
  - If an outside line prefix is configured, it is added to the number. The outside line prefix is configured in the EasyCall Gateway administration tool on the **Cluster Configuration - Add/Edit Trunk** page. This prefix and others are described in [To configure call handling](#).

The following table shows how EasyCall normalizes and manipulates variously formatted phone numbers when the EasyCall Gateway is configured for the United Kingdom and area code 1753. Note that normalization results in the addition of country code and area code (if missing).

Number displayed on the Web site	Result of EasyCall normalization	Number sent for dialing
+44-1953-276200	+44.1953.276200	01953 276200
+44-1753-276200	+44.1753.276200	01753 276200
+44 (0)1753 276200	+44.1753.276200	01753 276200
01753-276200	+44.1753.276200	01753 276200
0175327 6200	+44.1753.276200	01753 276200
276200	+44.1753.276200	01753 276200

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# The Customization Process

If your site needs customized number recognition, follow these general steps:

1. Refer to the customization tech note at <http://support.citrix.com/product/cg/>.

Contact Citrix Technical Support if you need to discuss the customization required.

Technical Support can work with you to determine customization needs and will create a patch file.

2. Upload the patch file to the EasyCall Gateway.
3. Restart the EasyCall Gateway.
4. After the EasyCall Gateway restarts, close all open Web browser windows and log out of EasyCall.
5. Log back in to EasyCall to see the effects of the customization.



---

# Number Recognition Customization Options

EasyCall number recognition can be customized for your locale. The customization must be performed by Citrix Technical Support. If your site needs customized number recognition, follow these general steps:

1. Refer to the customization article at <http://support.citrix.com/article/CTX119944>. Contact Citrix Technical Support to discuss the customization required. (The sections following these steps describe customization options.) Technical Support can work with you to determine customization needs and will create a patch file.
2. Upload the patch file to the EasyCall Gateway.
3. Restart the EasyCall Gateway.
4. After the EasyCall Gateway restarts, close all open Web browser windows and log out of EasyCall.
5. Log back in to EasyCall to see the effects of the customization.

## Specifying Numbers to be Recognized as Extensions

EasyCall recognizes as extensions one- to five-digit numbers that are preceded by the following prefixes:

Ext. (and other forms such as EXT., ext., Ext, EXT)

Ext: (and other forms such as EXT:, ext:, Ext, EXT)

x

X

#

/

If your site has Web applications that include extensions as a stand-alone number or as a number with some other prefix such as “x” or some digits, you can specify the pattern(s) to be considered phone extensions. For example, if you have a directory application with four-digit extensions, EasyCall can be customized so that any four-digit number series is recognized as an extension.

## Changing the Recognition of Numbers that Include Alphabetic Characters

By default, EasyCall recognizes some phone numbers that contain alphabetic characters, such as 1-800-Flowers. For example, in the U.S, numbers that include alphabetic characters are recognized by EasyCall if they have the prefixes 800, 866, 877, or 888.

That behavior can be customized as follows:

- Add prefixes that can be used with alphabetic characters. For example, this would be needed if your users frequently make calls to a number on your Web site that is prefixed with your area code and contains alphabetic characters (such as 404-GET-DATA).
- Remove any of the default prefixes that can be used with alphabetic characters. For example, you can block access to all phone numbers containing alphabetic characters by not including any predefined prefixes for phone numbers.

## Defining the Format for Private Network Numbers

Corporate phone books and directories might include private network phone numbers, such as the following:

+NN.NN.NNNN.NNNN

ESN NNN-NNNN

(ESN) NNN-NNNN

Customization can define the private network number patterns to be recognized as dialable numbers. For example, customization can enable EasyCall to:

- Dial a private network number (such as +52.55.5905.1707) as an “on-net” number (560-1707).
- Dial a private network number (such as ESN 560-1700) as an extension (5601707).

EasyCall recognizes such numbers as in-network extensions rather than as local numbers and does not add prefixes configured in the **Configuration - Add/Edit Trunk** page to the dial strings.

## Changing How Ten-Digit Numbers are Recognized

EasyCall uses the country code and area code that you configure in the EasyCall Gateway to determine whether the number should be dialed as a local, domestic, or international number. If EasyCall is unable to recognize a ten-digit phone number as international (the number is not prefixed with a +, ++, 00, or other international dial prefix), EasyCall can be customized to interpret the number as follows:

- Interpret a ten-digit number as a domestic number, based on the locale of the EasyCall Gateway. For example, if the EasyCall Gateway is in Germany and a user hovers over a

ten-digit number, the number is interpreted as a domestic number (rather than a U.S. number).

- Interpret a ten-digit number as a U.S. number, regardless of the locale of the EasyCall Gateway.

## Handling Overlay Area Codes

EasyCall identifies a phone number in locales served by a single area code. However, some locales have more than one area code in their local dialing area. These multiple area codes are referred to as overlays. In some locales, the domestic prefix is not required when dialing a local number with an overlay; in other locales, the domestic prefix is required.

For example, in Denver, Colorado numbers beginning with area codes 303 and 720 are considered local numbers. To dial a local number in Denver, you must always include the area code, but you do not need to include the domestic prefix (1). However, some locales with overlays do require the domestic prefix. EasyCall can handle such locales through customization.

## Restricting the Number Patterns Recognized as Phone Numbers

EasyCall contains instructions that prevent certain number patterns in Web pages and emails from being recognized as telephone numbers. For example, EasyCall ignores numbers preceded by “fax”, “tty”, “P.O Box”, and currency symbols, as well as numbers that are in date, time, and IP address formats.

EasyCall can be customized with additional character sequences to be ignored to handle patterns specific to your applications or locale.

---

# Unsupported Number Patterns and Dialing Provisions

EasyCall does not support the following, either due to number recognition or dialing limitations:

- Recognition of multiple phone numbers for which only the subscriber number is repeated. For example:

Tel: +20 02 7943194 - 7943195 - 7940658

where - separates the three subscriber numbers. In this case, +20 02 7943194 will dial correctly, but the second and third partial numbers will not.

Similarly, in the following number formats, only the first number listed will dial correctly:

+20 02 7943194 / 95

(662) 233-7060, 234-8060

+420 412 531164 , 412 531626

- Recognition of phone numbers that include non-standard characters or formatting, such as the following:

03-5812-6600(9:00-18:00)

+358-(0)9-701 2424, +358-(0)50-566 4527

+90 212 347 21 35-36-37-38

- Recognition of both a phone number and its extension. When EasyCall encounters the following patterns, it recognizes either the phone number or the extension, depending on where the mouse is hovering:

13035551212 ext.112

13035551212, ext.112

13035551212 ext 112

- Recognition of phone numbers that are delimited with a bullet character, if the page is using the ISO-8859-1 encoding and uses the 0x95 character instead of the character entity reference for a bullet (•), such as:

8 0 0 . 2 5 3 . 2 2 2 4 • 7 0 7 . 9 4 4 . 0 2 2 8

This is not an issue in pages that use UTF-8 encoding.

- Recognition of phone numbers that include a single quotation mark (').

---

# Configuring Directory Sources

You can configure an unlimited number of directory sources for EasyCall. The EasyCall Gateway supports LDAP directories, Microsoft Active Directory, directories saved in Comma-Separated Value format (CSV), and directories provided by a custom script.

Information from the directory sources:

- Appears in the EasyCall Directory.

Once a directory entry has been created for a user, that user can change the user information. Any such changes are not overwritten by subsequent synchronizations with directory sources.

A user's name is not case-sensitive. EasyCall uniquely identifies a user by a combination of the user name and the directory source from which the user was obtained.

- Appears, by default, as the locations from which an EasyCall user can make phone calls. EasyCall displays the labels "Work", "Mobile", and "Other" and the corresponding phone numbers from the directory source.

A user can make calls from any of those telephone numbers when connected to the EasyCall Gateway. The caller ID displayed for such calls will be the default caller ID defined for the EasyCall Gateway (not the caller ID of the phone being used to make the call).

Users can change their locations and create additional locations. You can prevent users from creating locations: Define a Group that does not include the role for creating locations and then associate that group to the directory source from which the users are obtained.

These topics describe group and directory source configuration:

<a href="#">To add a group</a>	Add a group to to associate a directory source with a set of roles.
<a href="#">To configure an LDAP/AD directory source</a>	Configure LDAP-based or Active Directory (AD) sources.
<a href="#">Managing Directory Sources</a>	Delete a directory source, force a synchronization, and specify whether to overwrite user information.
<a href="#">Looking up Attributes in Your LDAP Directory</a>	Install, set up, and use LDAP Browser.
<a href="#">CSV File Requirements</a>	Learn about the file requirements of directory information saved in a CSV-formatted file.
<a href="#">To configure a CSV file as a directory source</a>	Configure a CSV file as a directory source.

## Configuring Directory Sources

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<a href="#">To configure a custom script for directory sources</a>	Configure a script to connect to external directory sources.
<a href="#">Viewing User Information</a>	View users by online status or directory source and view user details.

---

# To add a group

A group is used to associate a directory source with a set of roles. A group can include one or more of the following roles:

- CALL (can place calls through EasyCall)
- CONFERENCE (can create conferences through EasyCall)
- CALL\_FORWARD (can forward calls placed to an office extension to other EasyCall locations)
- CREATE\_LOCATIONS (can create locations in EasyCall)

The group All Roles is created for you. When you add a directory source, you must specify a group for the source. Directory sources that existed before you upgraded to Release 3.0 are automatically assigned to the All Roles group.

1. In the administration tool, click **Directory Source Configuration**.
2. In the **Groups** tab, click **Add Group**.
3. Enter a name for the group.
4. Select each EasyCall feature that you want available to users in the group and then click **Submit**.
5. In the **Groups** tab, specify in the Group Policy area how you want users handled if their group is deleted and then click **Submit**.



---

# To configure an LDAP/AD directory source

The EasyCall Gateway supports the following directory types and automatically detects the version in use.

- LDAP version 3
- Microsoft Active Directory
- Nortel Messaging LDAP version 2
- OpenLDAP

If you are unfamiliar with the LDAP attributes for your site, see [Looking up Attributes in Your LDAP Directory](#) for information about a free LDAP browser you can use to display the structure of your LDAP directory and its attributes.

1. In the administration tool, click **Directory Source Configuration**.
2. In the Directory Source Settings section, which applies to all directory sources:
  - Select how you want to handle user accounts that are in multiple directory sources.
  - For users who are not in a group that has the CREATE\_LOCATIONS role, use the **Show the Caller ID of Restricted Users** checkbox to indicate whether the caller ID for automatically created locations should be shown.
3. Click **Submit**.
4. To add a directory source, click **Add**. To change the settings of a configured directory source, click its source name link. The Directory Source Configuration page appears.
5. A directory source is always used to populate the EasyCall Directory. If you also want the directory source to be used as a source of EasyCall users, select the **Use this directory as a source for EasyCall users** checkbox. When you select the checkbox, additional fields appear:
  - For **User Domain Prefix**, enter the domain associated with users in this directory source. When a user logs in to EasyCall, the user must specify a domain, which is validated against the domain prefix specified here.
  - For **Node Name**, specify the node for which this source is to be used. Defaults to Any. You would select a specific node if you want this directory source to apply only to that node and not be available to EasyCall users who are connected to other nodes in the same cluster.
  - For **Trunk Name**, specify the trunk for which this source is to be used. Defaults to Any. You would select a specific trunk if you want this directory source to apply only to that trunk and not be available to EasyCall users who are connected to other trunks.

## To configure an LDAP/AD directory source

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6. Select the **Source Type Directory Server** and then enter a descriptive name for the source.
7. Select the group to be associated with the source (to determine the roles each user in the group will have).
8. Specify a synchronization schedule for the source.
9. Click **Next Step**.
10. Complete the other settings as described in the following table.

Setting	Description
Server Address	The IP address or host name and port for the LDAP server to be used to import directory information. The Cisco DC Directory port is usually 8404.  The LDAP Server Port for some LDAP directories is typically 389. If you are using an indexed database, such as Microsoft Active Directory with a Global Catalog, changing the LDAP Server Port to 3268 will significantly speed the LDAP queries.  If your directory is not indexed, we recommend that you use an administrative connection, rather than an anonymous connection, from the EasyCall Gateway to the database. Download performance improves when you use an administrative connection.
Server Port	

<p>Bind DN</p> <p>Bind Password</p>	<p>The Administrator Bind DN and password for queries to your LDAP/AD directory. The EasyCall Gateway binds to the directory server using the administrator credentials and then searches for the user. After locating the user, the EasyCall Gateway unbinds the administrator credentials and rebinds with the user credentials.</p> <p>Example syntax for Bind DN:</p> <p>"cn=DirectoryManager,o=cisco.com" (Cisco DC Directory)</p> <p>"ou=administrator,dc=ace,dc=com"</p> <p>"username" (Active Directory User Principal Name, UPN)</p> <p>"cn=Administrator,cn=Users,dc=ace,dc=com" (Active Directory)</p> <p>For Active Directory, if you do not use the UPN for the Bind DN, the group name (specified as "cn=groupname") is required. For other LDAP directories, the group name either is not required or, if required, is specified as "ou=groupname". For Active Directory, you cannot use the email address as the Bind DN.</p> <p>Note that most directories do not return useful information on anonymous binds.</p>
<p>Base DN</p>	<p>The Base DN to be used as a starting point for directory searches. Base DN is usually derived from the Bind DN by removing the user name and specifying the group where users are located.</p> <p>Example syntax for Base DN:</p> <p>"ou=Users,o=cisco.com" (Cisco DC Directory)</p> <p>"ou=Users,dc=ace,dc=com"</p> <p>"cn=Users,dc=ace,dc=com" (Active Directory)</p>
<p>Search Filter</p>	<p>The LDAP search filter used to limit the imported entries. Defaults to objectclass=person.</p> <p>You can specify multiple search filters using the syntax for objectclass filters. for example:</p> <p>(&amp;(&amp;(&amp;(objectClass=top)(objectClass=person)))(objectClass=...))</p> <p>Please contact support if you need assistance.</p>

## To configure an LDAP/AD directory source

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Attributes:	Default values for these attributes:
Email address	mail
Username	username (This is the only required field.)
Display Name	cn
FirstName	givenName
Surname	sn
Title	title
Department	department
Work Phone	telephoneNumber
Extension	ipPhone
Mobile Phone	mobile
Other Phone	home

11. Click **Save**. The EasyCall Gateway synchronizes with the new directory source.

---

# Managing Directory Sources

## To delete a directory source

- Click **Directory Source Configuration**, select the checkbox beside each source name you want to delete, and then click **Delete**. To select all checkboxes at once, select the checkbox in the table heading.

## To force a synchronization

If your directory sources change and you want to synchronize with them before the next scheduled synchronization, you can force a synchronization as follows.

- Click **Directory Source Configuration**, select the checkbox beside each source name you want to update with the directory source, and then click **Sync**. To select all checkboxes at once, select the checkbox in the table heading.

## To specify how to handle users that are defined in multiple directories

- Click **Directory Source Configuration**, select one of the directory source settings, and click **Submit**.

If you choose **Never overwrite user information and only show conflicts that have occurred**, conflicts will be indicated by the addition of a **Conflicts** button to the Directory Source Configuration page after a synchronization. Click the **Conflicts** button to view user information that appeared in multiple sources (and therefore was not overwritten).

---

# Looking up Attributes in Your LDAP Directory

With the exception of the LDAP Base DN syntax, which is site-specific, the attributes used for EasyCall are defaults common to widely used LDAP directory applications. If a default attribute does not work for your site, you can easily look up the correct attribute with the free LDAP Browser from Softerra.

## To install and set up LDAP Browser

1. Download the free LDAP Browser application from [www.ldapbrowser.com](http://www.ldapbrowser.com).
2. Install LDAP Browser and open it.
3. From the LDAP Browser window, choose **File > New Profile** and specify the following settings:
  - **Host:** Host name or IP address of your LDAP server.
  - **Port:** Defaults to 389.
  - **Base DN:** You can leave this field blank. (The information provided by the LDAP Browser will help you determine the Base DN needed on the **Attribute Configuration** tab.)
  - **Anonymous Bind:** Select the checkbox if the LDAP server does not require credentials to connect to it. If the LDAP server requires credentials, leave the checkbox cleared, click **Next**, and enter the credentials.
4. Click **Finish**. The LDAP Browser displays the profile name that you just created in the left pane of the LDAP Browser window and connects to the LDAP server.

## To look up LDAP attributes

1. In left pane of the LDAP Browser, select the profile name that you created.
2. To look up the Base DN, locate in the right pane the **namingContexts** attribute. The value of that attribute is the Base DN for your site. The Base DN is typically "dc=myDomain,dc=com" (if your directory tree is based on Internet domain names) or "ou=domain,o=myOrg,c=country".
3. Note the objectClass entries. The LDAP **Search Filter** on the **Attribute Configuration** tab defaults to objectClass=person which will search the person class. You do not need to change that default unless you need to narrow the search.
4. To look up the attributes associated with people, such as name and phone numbers:
  - a. Double-click the folder at the top of the right pane. The right pane displays the structure for the attribute that you clicked. For example, you might see a "cn" entry for each individual in the LDAP directory or "ou" entries under which you will find individuals or groups. Click through the structure until you locate a list of individuals.
  - b. Double-click the folder for an individual to view the attribute names and compare them to the attributes in the EasyCall Gateway Attribute Configuration tab.

---

# CSV File Requirements

CSV files uploaded to the EasyCall Gateway must meet the following general requirements:

- A CSV file used as a directory source can have any filename. The fields must appear in the following order:

userName  
displayName  
firstName  
lastName  
title  
department  
workTelephone  
mobileTelephone  
otherTelephone  
email  
PBX\_extension

The three telephone numbers will appear under the headings Work, Mobile, and Other in the EasyCall Directory. Here is a sample record:

```
tranga,Thai Ranga,Thai,Ranga,Manager,Engr,408 555 6693,408 555  
1234,408 555 2344,tranga@company.com,x4010
```

- The first line of the CSV file is ignored (it can contain field headings). Each subsequent row is a record with field values.
- A record must appear on one line. A line can be terminated with a line feed (0xa) or with the carriage return and the line feed characters (0xd 0xa).
- Fields must be separated by commas (u002c). Two consecutive commas designate an empty field.
- All the fields must be specified on a line for the line to be considered valid. If a field value is missing, empty space should be used. In other words, the number of field separators should be constant on every line.
- The username field must be non-empty and must contain characters other than white space characters.
- You must use UTF-8 encoding for non-ASCII characters (such as European characters).
- Any whitespace characters at the beginning or the end of a field are discarded, unless enclosed in quotation marks. A field consisting of whitespaces only will be considered empty.
- A whitespace character is defined as:

Unicode space character (Not non-breaking spaces: u00A0, u2007, u202f)



Horizontal Tabulation (u0009)

Line Feed (u000a)

Vertical Tabulation (u000b)

Form Feed (u000c)

Carriage Return (u000d)

File Separator (u001c)

Group Separator (u001d)

Record Separator (u001e)

Unit Separator (u001f)

- To prevent a single character from processing, escape the character by preceding it with a backslash character (u005c). The backslash character itself should be escaped by another backslash character. Escaped characters do not impact processing; thus, if a comma is escaped, it is not considered a field separator.
- Multiple characters can be escaped by enclosing them in double quotation marks (u0022). The Backslash escape is recognized inside quotation marks, so that quotation marks themselves can be escaped.

---

# To configure a CSV file as a directory source

For directories that can be saved in CSV format, you point the EasyCall Gateway to the location on an FTP server where you have saved each directory file or to a network location from which a CSV file can be uploaded. The CSV files used as directory sources for EasyCall must conform to the [CSV File Requirements](#).

1. In the administration tool, click **Directory Source Configuration**.
2. In the Directory Source Settings section, select how you want to handle user accounts that are in multiple directory sources and click **Submit**. This setting applies to all directory sources.
3. To add a directory source, click **Add**. To change the settings of a configured directory source, click its source name.
4. A directory source is always used to populate the EasyCall Directory. If you also want the directory source to be used as a source of EasyCall users, select the **Use this directory as a source for EasyCall users** checkbox. When you select the checkbox, two additional fields appear:
  - For **User Domain Prefix**, enter the domain associated with users in this directory source. When a user logs in to EasyCall, the user must specify a domain, which is validated against the domain prefix specified here.
  - For **Node Name**, specify the node for which this source is to be used. Defaults to Any. You would select a specific node if you want this directory source to apply only to that node and not be available to EasyCall users who are connected to other nodes in the same cluster.
5. Select the Source Type, either **FTP Server** or **Uploaded CSV File**, and then enter a descriptive name for the source.
6. Select the group to be associated with the source (to determine the roles each user in the group will have).
7. Specify a synchronization schedule for the source.
8. Click **Next Step**.
9. For FTP Server configuration, enter:
  - The IP address of the FTP server where the CSV file is located.
  - The credentials required to access the FTP server.
  - The full path and filename of the CSV file on the FTP server.
10. For Uploaded CSV File configuration, enter the location of the CSV file on your network.
11. Click **Save**.

To configure a CSV file as a directory source

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# To configure a custom script for directory sources

You can also use a script to connect to external directory sources. If you need assistance with developing a custom script, please open a Citrix support case.

1. In the administration tool, click **Directory Source Configuration**.
2. In the Directory Source Settings section, select how you want to handle user accounts that are in multiple directory sources and click **Submit**. This setting applies to all directory sources.
3. To add a directory source, click **Add**. To change the settings of a configured directory source, click its source name link.
4. A directory source is always used to populate the EasyCall Directory. If you also want the directory source to be used as a source of EasyCall users, select the **Use this directory as a source for EasyCall users** checkbox. When you select the checkbox, two additional fields appear:
  - For **User Domain Prefix**, enter the domain associated with users in this directory source. When a user logs in to EasyCall, the user must specify a domain, which is validated against the domain prefix specified here.
  - For **Node Name**, specify the node for which this source is to be used. Defaults to Any. You would select a specific node if you want this directory source to apply only to that node and not be available to EasyCall users who are connected to other nodes in the same cluster.
5. Select the Source Type **Custom Script**, and then enter a descriptive name for the source.
6. Select the group to be associated with the source (to determine the roles each user in the group will have).
7. Specify a synchronization schedule for the source.
8. Click **Next Step**.
9. Enter the script in the text box and click **Save**. The EasyCall Gateway automatically synchronizes with the new directory source.

---

# Viewing User Information

The **User Management** page provides the following information about the user accounts in the EasyCall Gateway database:

- User details such as name, email address, company extension, and other phone numbers.
- The name of the directory source containing the user account and the date the user record was last updated.
- The group to which the user belongs and the roles available to the user.
- The user's EasyCall configuration, such as the user's configured locations and Call Forwarding policies.
- The user's online status.

**To view users by online status or directory source**

- In the administration tool, click **User Management** and then select **Online Status** or select a directory source and click **Search**.

**To view details about a user**

- Click the user's name in the **User Management** page.

---

# Clustering EasyCall Gateways

You can group up to four EasyCall Gateways (nodes) into a cluster to provide high availability, share telephony and data resources, and to load-balance EasyCall traffic across the nodes.

These topics describe how to work with clustered EasyCall Gateways:

<a href="#">About Clusters</a>	Learn about stand-alone, master, and member nodes; the tasks that can be performed on each node type; how load-balancing is handled for clusters; and network considerations for clusters.
<a href="#">Pre-Requisites for Clustering</a>	Read about the setup required for master and member nodes.
<a href="#">To connect a member node to a master node</a>	Create a cluster.
<a href="#">Working with a Cluster</a>	Back up, upgrade, get information about, activate, suspend, and disconnect a node.
<a href="#">Working with a Member Node</a>	Restart, shut down, and use diagnostic tools on a member node.
<a href="#">To disconnect a member node from a cluster</a>	Disconnect a member node from a cluster.
<a href="#">To promote a member node to a master node</a>	Promote a member node to a master node.

---

# About Clusters

When you initially bring an EasyCall Gateway online, it is considered a *stand-alone node*. When you log in to a stand-alone EasyCall Gateway and connect another gateway to it, the gateway you are logged in to becomes the *master node*. The gateway you connect to the master node is a *member node*.

After an EasyCall Gateway becomes a master or member node, you can view its network interface settings but you cannot change them. To change a master or member node's network interface settings, you must disconnect the node from the cluster.

**Note:** Before creating a cluster, be sure to complete the configuration of each EasyCall Gateway that will be a part of the cluster, as outlined in [To connect a member node to a master node](#).

The following table summarizes the tasks that you can perform when logged in to a master, member, or stand-alone node.

Configuration, Maintenance, and Monitoring Tasks	Function available when logged in to this node type:		
	Master	Member	Stand-alone
Configure network settings	No	No	Yes
View network settings	Yes	Yes	Yes
Add static routes; specify Domain Name Servers; add entries to the HOSTS file	No	No	Yes
Configure trunk settings	Yes, when logged in to the master node.		Yes
Change the root administrator password	Yes	No	Yes
Change the NTP server used by the gateway or enter a server date and time	Yes	No	Yes
Set up SSL certificates	Yes	No	Yes
Configure telephony settings directory sources, and locations	Yes	No	Yes

Delete conferences	Yes, when logged in to the master node.		Yes
Back up or restore the system configuration	Yes. When you back up or restore from the master node, all connected member nodes are also backed up or restored.		Yes
Upgrade the server	Yes. When you upgrade from the master node, all connected member nodes are also upgraded.		Yes
Shut down or restart the server	Yes	Yes	Yes
Export or delete CDRs	Yes	No	Yes
View the Dashboard or call log	Yes, when logged in to the master node.		Yes
View System log	Yes	Yes	Yes
Perform network diagnostic tests	Yes	Yes	Yes
Promote to master node	No	Yes	No
Configure cluster-wide and node-wide settings; activate/suspend a node	Yes, when logged in to the master node.		Yes
Disconnect a node	Yes, when logged in to the master node.		No

## Clustering and Load Balancing

The master node of a cluster handles the load balancing. If the master node becomes unavailable, the other nodes handle the traffic although without the efficient load balancing provided by the master node. If a member node becomes unavailable, the other nodes handle the traffic so that EasyCall service remains available.

## Network Considerations for Clustering

EasyCall Gateway clusters are intended as a site solution and not a cross-geographical solution. All nodes in an EasyCall Gateway cluster must be located on the same local network and on the same subnet. EasyCall clients can connect to a cluster from any location which has IP routing to its nodes.

EasyCall Gateways can place calls through a variety of SIP providers, such as SIP PBXs, SIP carriers, or SIP gateways. Easy node in a cluster can connect to multiple SIP providers or share a common SIP provider. IP routing must exist between a node and SIP provider.



---

# Pre-Requisites for Clustering

Before you can create a cluster, you must configure each EasyCall Gateway that will be in the cluster. You cannot access network interface settings once a node is added to a cluster. You can change network interface settings on stand-alone nodes only.

The configuration required differs for master and member nodes, as follows.

## Pre-requisites for a master node:

1. Configure network interface settings.
2. Change the root administrator password.
3. If needed, add static routes and configure name service information.
4. Optionally, configure trunk and cluster-wide settings. They can be changed after a cluster is created.
5. Install SSL certificates.
6. Configure the NTP server used by the gateway.
7. Configure telephony settings, directory sources, and locations.

## Pre-requisites for a member node:

1. Configure network interface settings.
2. Change the root administrator password.
3. If needed, add static routes and configure name service information.
4. Optionally, configure trunk settings. They can be changed after a cluster is created.
5. Configure locations. Locations must be consistent across a cluster.
6. Install SSL certificates.
7. Synchronize the server time with the gateway to be the master node. Server time must be synchronized between master and member nodes to avoid problems with logging and replicating transactions.

---

# To connect a member node to a master node

After configuring the EasyCall Gateways as outlined in [Pre-Requisites for Clustering](#), you can connect the servers to form a cluster. When you add a member node to a cluster, the master node database is replicated to the member node. If the master node subsequently goes offline, the member node continues to provide EasyCall and EasyCall conference services.

1. Log in to the EasyCall Gateway to be the master node.
2. Click **Cluster Configuration**.
3. Click **Connect Node**.
4. In the Add New Member Node page, enter a name and the IP address of the EasyCall Gateway you want to connect as a member node.
5. Click **Submit**. The node is added, with a Node Type of “Member.”

Your cluster now includes a master node and one member node. Repeat this procedure to add more member nodes.

**Note:** You can view, but not change, the network interface settings for each node in a cluster. To view those settings, click the node name link in the Cluster Configuration - Nodes page. To change the network interface settings of a node, see [To disconnect a member node from a cluster](#).

6. Go to the **Cluster Configuration > Cluster** page and complete the settings as described in the following table.

Setting	Description
External Cluster Address	A public domain or public IP address used to create the URL for the Join Conference pages. The External Cluster Address must be forwarded to a static IP address of one of the cluster nodes. Important: The node which services the External Cluster Address must have a valid SSL certificate to avoid certificate warnings from web browsers.
Prompt to Complete Call	By default, EasyCall users must press “1” before being connected to the number being called. You can disable that prompt and the requirement to press 1 by clearing this checkbox. For more information, see <a href="#">Configuring EasyCall Voice Prompts</a> “Configuring EasyCall Voice Prompts” on page 61.

To connect a member node to a master node

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Default Caller ID	By default, EasyCall users can choose to have their caller ID shown or hidden when making calls with EasyCall. You can supply the default caller ID to appear when users block display of their caller ID.
Default Company Number	The phone number used for Net Call.
Conference Dial-in Number and Extension	<p>A number that an EasyCall user can dial to initiate a conference call, as an alternative to using the user portal to start a conference call. When the call connects, the user is prompted for the conference ID and PIN.</p> <p>The Conference Dial-in Number must be set up from your telephony system so that it knows how to route all calls to the number to your EasyCall Gateway.</p>
Maximum Number Per Node of Conferences and Conference Participants	Used to limit the conference activity per node. For information on how conference activity impacts EasyCall Gateway performance, see <a href="#">Capacity Guidelines</a> .

---

# Working with a Cluster

You work with a cluster by logging in to the master node.

## To back up a cluster configuration

- Go to **Maintenance > Backup/Restore**. Configuration settings for each node will be backed up.

## To upgrade a cluster

- Go to **Maintenance > Upgrade**. Each node will be upgraded.

## To view status information for each node

- Go to the **Dashboard** or the **Cluster Configuration - Nodes** page.

## To access the system log for each node

- Go to the **Dashboard**.

## To activate or suspend a node

- Go to the **Cluster Configuration - Nodes** page and click the **Activate Node** or **Suspend Node** link.

## To disconnect a node

- Go to the **Cluster Configuration - Nodes** page, select the checkbox for the node, and click **Disconnect Node**. For more information, see [To disconnect a member node from a cluster](#).

---

# Working with a Member Node

You log in to a member node only if you need to perform the following tasks:

- Restart or shut down a member node.
- Use network diagnostic tools on a member node.
- Promote a member node to a master node, as described in [To promote a member node to a master node](#).

To back up, restore, or upgrade a member node, see [Working with a Cluster](#).

---

# To disconnect a member node from a cluster

You might need to disconnect a node from a cluster to perform maintenance on the server or to change its network settings. When you disconnect a member node from a cluster, it becomes a stand-alone node. To put a stand-alone node into service, it must meet the requirements of a master node.

1. Log in to the master node.
2. On the **Cluster Configuration - Nodes** page, select the checkbox for the node, and click **Disconnect Node**.
3. Wait about two minutes before logging in to the stand-alone node. If the Node Configuration page appears when you log in, log out and wait about two more minutes before logging in to the stand-alone node.

**Note:** If the member node is unreachable when you disconnect it, you will not be able to access the administration tool from it. To reach the administration tool from the disconnected node (to add it back to the cluster or to use it as a stand-alone node), you must remove its database from `/etc/commsserver/ecgdb` and then restart the node.

---

# To promote a member node to a master node

If a master node fails, you can quickly recover by promoting one of the member nodes to master node.

- The node that you promote to master will inherit all of the connections of the previous master node.
- The previous master node goes out of service and any trunks that were associated with it are deleted from the database.
- Any transactions that were not replicated from the old master node to its member nodes are lost.
- To put the old master node back into service, you must add it as a member node to a cluster.

You might need to reimage the old master node or reset its database before you can add it as a member node. Once a master node is taken out of service (by promoting another node to master), the old master node retains its configuration but can no longer operate as a master node.

1. Log in to the member node that you want to become the master node.
2. Click **Node Configuration**.
3. Click **Promote to Master**.
4. Click **OK** in the confirmation window. When the Administration Tool refreshes, the promoted node appears as the master node in the **Cluster Configuration > Nodes** page.

---

# Delivering EasyCall to End Users

These topics describe the various methods available to deliver the EasyCall client to end users.

<a href="#">Deploying with Citrix Receiver</a>	Deliver the Citrix communications plug-in with Citrix Receiver.
<a href="#">Deploying with Citrix Application Streaming</a>	Deploy EasyCall through Citrix XenApp streaming.
<a href="#">Deploying with Citrix XenApp Publishing or XenDesktop</a>	Publish EasyCall via Citrix XenApp or XenDesktop.
<a href="#">Supporting Users Who Install from a Download Page</a>	Learn about the information needed by users who download EasyCall from the EasyCall Gateway download page.
<a href="#">Deploying via Push Installation</a>	Deploy EasyCall to users via a push installation method.



---

# Deploying with Citrix Receiver

**Note:** When EasyCall is delivered with Citrix Receiver, it is known as the Citrix communications plug-in.

Citrix Receiver simplifies application delivery for administrators by eliminating the need to repeatedly install and update the Citrix communications plug-in on client devices. Administrators use the web-based Citrix Merchandising Server Administrator Console to configure plug-ins and schedule their delivery to devices. For information about configuring Merchandising Server, go to <http://support.citrix.com/proddocs/index.jsp> and expand **Receiver and Plug-ins > Merchandising ServerAdministration**.

Instead of installing the Citrix communications plug-in on the client device, the end user installs Citrix Receiver, which then transparently installs and updates the Citrix communications plug-in as scheduled by the administrator.

---

# Deploying with Citrix Application Streaming

You can deploy EasyCall through Citrix XenApp streaming. Application streaming enables applications to be delivered to client devices and run in a protected, virtual environment. Applications are managed in a centralized Application Hub, but are streamed to the client device and run in an isolation environment. Applications become an on-demand service that is always available and up to date.

## Profiling the EasyCall Client

1. To start the Citrix Streaming Profiler, click the Windows Start menu and choose **Programs > Citrix > Streaming Profiler > Streaming Profiler**.
2. Click the toolbar button to start the **New Profile Wizard**.
3. Enter the Profile Name (**CitrixEasyCall** in this example) and then click **Next**. When naming a profile, choose a simple name. Do not include any criteria the client uses to identify targets. For example, do not include a version number in the profile name.
4. Accept the default of **Enhanced Security** and then click **Next**.
5. Select each operating system on which EasyCall will run and select the target language(s). Click **Next**. The target operating system should be the same as the one you are using for profiling.
6. Select **Advanced Install** and then click **Next**.
7. Accept the default of **Run install program or command line script** and then click **Next**.
8. Click **Browse**, navigate to **Citrix EasyCall Plug-in.msi**, and click **Next**.
9. Click **Launch Installer** and follow the instructions in the InstallShield Wizard.
10. Enter the EasyCall Gateway host name or IP address and click **Install**.
11. After you click **Install**, a status message in the notification area indicates that EasyCall is running. Right-click the EasyCall icon and select **Exit**.
12. In the New Profile Wizard, select **Finish installation** and then click **Next**.
13. On the Run Application page of the wizard you can run EasyCall in the profiler to verify that it is working as expected. Select **Next** and then **Finished**.
14. On the Select Applications page, click **Next**.
15. On the Build Profile page, click **Finish**.

## Adding a Pre-Launch Script

Next you will add a pre-launch script that installs the required 2008 Microsoft Visual C++ Redistributable. By using a pre-launch script in the profiler, the required redistributable will be installed before EasyCall is run.

1. In the Streaming Profiler window, open the **Edit** menu and select **Profile Properties**.
2. In the navigation pane, click **Pre-launch and Post-exit Scripts** and then click **Add Item**.
3. In the Add Script dialog, click **Do not isolate script** to ensure that the redistributable is installed to the client machine and not in the isolation environment.
4. In the Add Script dialog, click **Browse**, locate the script, and click **Open**. The script name appears in the Pre-launch scripts list.
5. Click **Apply** and then click **OK**. Your profile is now complete.
6. Select **File > Save As**. In UNC Path, enter `\\path` and then click **Save**.
7. After you create a profile, make it available for publishing by saving it to a network file share.

## Saving the Profile to a File Share

When saving a profile to a file share, enter for **UNC Path** the path to the network file share where you want to store the profile. Note that **Save To** displays the location where you are saving the profile based on what you provide for the UNC path and the name you provide for the profile. Here is an example of what might be entered for the UNC path:

```
\\citrixserver\profiles
```

Here is the actual storage location based on the values of UNC Path and Profile Name:

```
\\citrixserver\profiles\EasyCallGateway\EasyCallGateway.profile
```

You can also at this point change the name of the profile.

After you save your profile to a file share, you can use other workstations to add unique targets to the profile.

## System Drive Letter

For best practices, Citrix recommends that you install all applications on the primary system drive. By packaging and executing using the primary system drive, you can define a set of criteria that best associates a given target with a given client workstation.

The system drive letter must be a match between the target and the client system drive for a target to be the correct match for executing an application. There is no provision for the client drive to be variable. The system drive used on the profiler workstation must match the system drive on the execution workstation.

---

# Deploying with Citrix XenApp Publishing or XenDesktop

You can publish EasyCall via Citrix XenApp or XenDesktop, just as you would any other application.

1. Install EasyCall on the XenApp Server.
2. Set the user permissions for EasyCall.

---

# Supporting Users Who Install from a Download Page

End users can download and install the EasyCall client from a download page. The EasyCall Gateway host name is automatically pre-populated in the configuration dialog box. The download page also provides access to the EasyCall demo.

You must provide the following information to users so that they can access and use the download page:

- The download page is located at <https://gatewayAddress/download>. Users need to know the *gatewayAddress* or host name of the EasyCall Gateway.
- Users who have disabled JVM or the execution of embedded code can download the installer but not run it from the download page. The EasyCall Gateway host name will not be automatically pre-populated.

---

# Deploying via Push Installation

You can deploy EasyCall by downloading the installer from the download page and then pushing the client to users via a push installation method such as the Microsoft Systems Management Server (SMS).

**To update the MSI file with your EasyCall Gateway hostname, use the following command:**

```
msiexec /i path_to_MSI_file HOST="\hostname"
```

---

# Managing EasyCall Conferences

The EasyCall conference feature enables EasyCall users to create and join conference calls through simple web-based screens. To create a conference, the conference chair enters a subject for the conference and then invites participants through an automatically generated email which the conference chair can change.

To join a conference, a participant clicks the conference URL in the email and follows the on-screen instructions.

For information about creating and joining conferences, refer to the Help available from the EasyCall client.

EasyCall Conference has the following operating characteristics:

- Requires that a browser's email client is configured.
- After 2 hours, conference participants are prompted to continue. All participants can choose to continue or leave the call.
- A user can participate in an unlimited number of conferences.
- Participant user names and phone numbers are saved to the CDR for billing and monitoring purposes.

These topics describe conference operation and administration:

<a href="#">Controlling Access to Conference Creation</a>	Prevent users from creating conference calls.
<a href="#">To specify the URL used for conference pages</a>	Specify a public domain or public IP address used to create URLs to conference pages.
<a href="#">To configure a conference dial-in number</a>	Configure a conference dial-in number, useful when a user does not have web access.
<a href="#">To limit the conference activity per node</a>	Change the conference activity maximums.
<a href="#">To delete conference calls</a>	Delete selected or all conferences.

---

# Controlling Access to Conference Creation

You can prevent a group of users from creating conference calls as follows.

**Note:** To make EasyCall conferencing available to users outside of your firewall, you must configure a Web proxy to (1) forward https requests for EasyCall from external parties to the EasyCall Gateway and (2) route the client responses back to the external parties.

1. Configure a group that does not include the CONFERENCE role, as described in [To add a group](#).
2. Associate that group with one or more directory sources, as described in [To configure an LDAP/AD directory source](#).



---

# To specify the URL used for conference pages

When you create a conference, EasyCall generates a conference URL used for the Join Conference page. The conference URL is included in the email invitation automatically composed by EasyCall. The conference URL includes an External Cluster Address, which you must configure.

1. Log in to the master node and click **Cluster Configuration**.
2. Click **Cluster**.
3. Specify an **External Cluster Address**, which is a public domain or public IP address used to create URLs to conference pages. The External Cluster Address must be forwarded to a static IP address of one of the cluster nodes. Important: The node which services the External Cluster Address must have a valid SSL certificate to avoid certificate warnings from web browsers.
4. Click **Submit**.

---

# To configure a conference dial-in number

EasyCall users typically initiate a conference call through the EasyCall user portal web page. However, for cases in which an EasyCall user wants to start a conference but does not have web access, you can configure a dial-in number. When an EasyCall user calls the dial-in number, the user must enter a conference ID and PIN.

**Note:** The Conference Dial-in Number must be set up from your telephony system so that it knows how to route all calls to the number to your EasyCall Gateway.

1. Log in to the master node and click **Cluster Configuration**.
2. Click **Cluster**.
3. Specify the **Conference Dial-in Number** and **Conference Extension** and click **Submit**.

---

# To limit the conference activity per node

For information on how conference activity impacts EasyCall Gateway performance, see [Capacity Guidelines](#).

1. Log in to the master node and click **Cluster Configuration**.
2. Click **Cluster**.
3. Change the values for **Maximum Number Per Node of Conferences** and **Maximum Number Per Node of Conference Participants** and click **Submit**.

---

# To delete conference calls

The administration tool displays conferences by conference name. From that page you can delete selected or all conferences.

1. In the administration tool, click **Conferencing**.
2. Select the checkbox beside each conference name you want to delete. To select all conferences, click the checkbox at the top of the list.
3. Click **Delete**.

---

# Maintaining and Monitoring the EasyCall Gateway

These topics describe how to maintain and monitor the EasyCall Gateway:

<a href="#">To change the root administrator password</a>	Change the default administrator password.
<a href="#">To set the date and time</a>	Change the default NTP server or enter the date and time manually.
<a href="#">To back up or restore the configuration</a>	Save the gateway configuration and restore a saved configuration.
<a href="#">To upgrade EasyCall</a>	Read about the eligibility requirements for upgrading the EasyCall Gateway and about upgrading the client if you do not use Citrix Receiver.
<a href="#">To restart or shut down the EasyCall Gateway</a>	Learn the proper way to shut down the gateway and an alternate method for restarting.
<a href="#">To export or delete CDRs</a>	Learn about Call Detail Records and how to export and delete them.
<a href="#">To get information about the EasyCall Gateway</a>	Read about the information provided on the Dashboard.
<a href="#">To use network diagnostic tools</a>	Read about the ping, traceroute, and tcpdump tools available from the administration tool.
<a href="#">Working with the Call and System Logs</a>	View recent call activity; view, open, download, and interpret the system log.

---

# To change the root administrator password

The default user name for the EasyCall Gateway is "root" and the default password is "rootadmin". We recommend that you change the root password during the installation process by using the **Maintenance > Password** page.

The password, which can contain special characters, must have:

- At least eight characters.
- At least one capitalized letter.
- At least one number.

---

# To set the date and time

By default, the EasyCall Gateway uses the time.nist.gov NTP (Network Time Protocol) server. Use the **Maintenance > Date/Time** page to specify a different NTP server or enter the date and time manually if the EasyCall Gateway cannot reach a time server.

**Note:** The EasyCall Gateway defaults to the GMT0 time zone. The EasyCall Gateway stores all time stamps in UTC (Coordinated Universal Time) format, regardless of the Time Zone setting.

Complete the settings on the **Date/Time** page as described in the following table.

Setting	Description
Time Zone	Needed only if you choose <b>Manually</b> from the Set Time list.
Set Time	Specifies the method for updating the date and time on the appliance, either via an NTP server or manually.
Time Server	The fully qualified domain name of an NTP server. For a list of time servers, see <a href="http://ntp.isc.org/bin/view/Servers/WebHome">http://ntp.isc.org/bin/view/Servers/WebHome</a> . This field is initialized to the time.nist.gov time server.
Use Privileged Port	Appears if you select <b>Use Time Server</b> from the Set Time list. Select if you have opened a port in your firewall for NTP.
Update Schedule	The frequency with which the appliance synchronizes with the time server.
Local Date/Time	Appears if you select <b>Manually</b> from the Set Time list. The on-screen example shows the required syntax.

---

# To back up or restore the configuration

Before upgrading or reinstalling the EasyCall Gateway software, save your configuration. Upgrading and reinstalling the software returns the appliance to its pre-configured state. If you have saved your configuration settings, you can easily restore them.

## To back up the configuration

1. Click **Maintenance** > **Backup/Restore**.
2. Click **Backup** to create the backup file.
3. Click **Download** to download the backup file. You will be prompted to open or save the file. Click **Save**. The default filename is backup.tar.gz. You can change the name, provided that you retain the extension tar.gz.
4. Choose a download location and click **Save**.

## To restore a saved configuration

1. Click **Maintenance** > **Backup/Restore**.
2. Click **Browse**, locate the backup file, and then click **Open**.
3. Click **Restore** to upload the file. After the configuration file is uploaded, the EasyCall Gateway restarts.



---

# To upgrade EasyCall

The server software that resides on the EasyCall Gateway can be upgraded when new releases are made available. You will be notified about server software upgrades. You can upgrade to a new release only if you have a current Citrix Subscription Advantage membership when the update is released. Subscription Advantage can be renewed at any time. For more information, see the Citrix Support Web site at <http://support.citrix.com/licensing/> under the “Top Licensing Resources” title.

If you do not use Citrix Receiver to deploy the communications plug-in, you must upgrade the client software that resides on the EasyCall Gateway. This topic covers both server and client upgrades.

## To upgrade the EasyCall Gateway from Release 3.0 to 3.0.1

**Note:** When you upload a server upgrade, the EasyCall Gateway drops the active sessions, so it is best to upgrade the appliance when you know that traffic is at a minimum.

1. Download the RPM files from the [Citrix support site](#).
2. Log in to the EasyCall Gateway Administration Tool.
3. Go to **Maintenance > Upgrades**.
4. Click **Browse**, navigate to the downloaded files, choose one of the upgrade RPM files, and click **Open**. We recommend upgrading with the RPMs in the following order:
  - a. citrix-base-ecg-3.0.1-xxx.i386.rpm
  - b. citrix-apps-ecg-3.0.1-xxx.i386.rpm
5. Click **Upgrade** to upload the file.
6. Repeat Steps 4, 5 and 6 for both of the files.

After upgrading from Release 3.0 to 3.0.1:

- To log in to the administration tool, use the new URL <https://gatewayAddress/admin>. To log in to the EasyCall user portal, use the new URL <https://gatewayAddress>. (The URL <https://gatewayAddress/userPortal> also still works.)
- If your site does not use Citrix Receiver, use the new **Maintenance > Clients** page to upgrade the EasyCall client on the EasyCall Gateway. Use the force upgrade option to ensure that all users are upgraded to the latest EasyCall. The Dashboard page shows the Mac and Windows client versions loaded on the EasyCall Gateway.
- If your telephony system does not allow re-INVITEs to be sent, use the new Can Send SIP Re-INVITEs setting on the **Cluster Configuration > Trunks** page to allow the telephony system to drop out of the call after bridging it.

## To upgrade the EasyCall Gateway from Release 2.1/2.2.x to 3.0.1

**Note:** When you upload a server upgrade, the EasyCall Gateway drops the active sessions, so it is best to upgrade the appliance when you know that traffic is at a minimum.

Verify that your EasyCall Gateway is running release 2.1 or 2.2.x before proceeding. The following instructions apply only to upgrades from release 2.1/2.2.x to 3.0.1. Contact support before upgrading older releases.

1. If there were any customization done to the configuration XML files (such as special recognition rules), make sure that you have a backup copy. You will need to upload those files again after the upgrade.
2. Download the RPM files from the [Citrix support site](#).
3. Log in to the EasyCall Gateway Administration Tool.
4. Go to **Maintenance > Upgrades**.
5. Click **Browse**, navigate to the downloaded files, choose one of the upgrade RPM files, and click **Open**. We recommend upgrading with the RPMs in the following order:
  - a. citrix-base-ecg-3.0.1-xxx.i386.rpm
  - b. citrix-apps-ecg-3.0.1-xxx.i386.rpm
6. Click **Upgrade** to upload the file.
7. Repeat Steps 4, 5 and 6 for both of the files.
8. Go to **Maintenance > Upgrades** and click **Restart**.

## Tasks to Perform After Upgrading from Release 2.1/2.2.x

After you upgrade the EasyCall Gateway from Release 2.1/2.2.x, log in to the Administration Tool and perform the following tasks.

1. Specify the Conference Dial-in Number and Conference Extension on the **Cluster Configuration > Cluster** page. The Conference number and extension can be used by EasyCall users who want to start a conference but do not have Web access. Note: The Conference Dial-in Number must be set up from your telephony system so that it knows how to route all calls from that number to your EasyCall Gateway.
2. Add Groups and set the Group Policy on the **Directory Source Configuration > Groups** page.
3. Update your directory sources on the **Directory Source Configuration > Directory Sources** page. Specify the priority of directory sources by using the **Up** and **Down** links. If you prefer to review the results of a synchronization without having user information overwritten, change the **Directory Source Setting** to **Never overwrite**.

4. For each directory source, do the following:
  - a. Specify the **User Domain Prefix** for users in the directory source.
  - b. If you want the directory source to apply to a specific node or trunk, make a selection from the **Node Name** or **Trunk Name** menus.
  - c. Specify a Group for the directory source.
5. Configure Call Forwarding:
  - a. Determine if your telephony system supports redirection. For example, SIP carriers do not support this feature.
  - b. Refer to the *EasyCall Gateway Telephony System Integrator's Guide* for your telephony system for any configuration needed to support Call Forwarding. Those guides are available from <http://support.citrix.com/product/cg> (follow the links to the release and Documentation).
  - c. Verify that the **Extension** attribute is defined on the LDAP **Directory Source Configuration - Details Configuration** page. (If the extension is provided in the work phone field only, Call Forwarding will not work.)
  - d. Enable the **Use Diversion** option on the **Add/Edit Trunk** page.
  - e. Specify the **Voice Mail Extension** on the **Cluster Configuration > Trunks** tab. The Voice Mail Extension is used to forward a call to voice mail when an EasyCall user with Call Forwarding enabled does not answer any of the configured phone locations.
6. Configure Net Call: Specify the alias and phone number for any numbers that you want to include on your Web site on the **Net Call Configuration** page.
7. Also, refer above to the items in "After upgrading from Release 3.0 to 3.0.1."

## Upgrading the EasyCall Plugin

Make sure that your users are aware of what they need to do to upgrade EasyCall, as follows.

- Although Citrix Receiver users do not have to do anything to receive upgrades, they must quit the previous EasyCall client for the upgrade to take effect.
- Users who self-installed can upgrade EasyCall by going to the download page at <https://EasyCallServer/download/win.jsp> or <https://EasyCallServer/download/mac.jsp>. To look up the *EasyCallServer*, Windows users can choose **Edit Settings** from the EasyCall menu. Mac users can choose **Preferences** and then click **Login Settings**.

**Note:** Windows users who have disabled JVM or the execution of embedded code can download the installer but not run it from the download page. The EasyCall Gateway host name will not be automatically pre-populated.

- To support your EasyCall users, also be aware of this issue: In Windows XP Service Packs 2 and 3 and Windows Server 2003, overlapping layered windows are not displayed in the correct order and can cause display problems when using EasyCall. A hotfix released by

Microsoft resolves this issue. The hotfix and more information about this issue are available from <http://support.microsoft.com/kb/943326/en-us>

- Users obtaining the Setup.exe installer from the [Citrix support site](#) can perform an attended or silent install as follows:
  - To install EasyCall by running an attended installation program, double-click the Setup.exe file to launch the installation program.
  - To install EasyCall silently (unattended), open the Command Prompt window, navigate to the directory where you copied Setup.exe, and enter:

```
setup.exe /S /v"/qn HOST=EasyCall_Gateway_Host_Name
```

For example, if the host name is easycall.net, you would enter:

```
setup.exe /S /v"/qn HOST=easycall.net
```

If you do not use Citrix Receiver to deploy the communications plug-in, update the client version that resides on the EasyCall Gateway as follows:

1. Download the client upgrade files (for Mac and Windows) from the [Citrix support site](#).
2. Log in to the EasyCall Gateway Administration Tool.
3. Go to **Maintenance > Clients**.
4. Following the instructions on the Windows and Mac tabs, complete the fields, navigate to the upgrade files, and then click **Upgrade**.

---

# To restart or shut down the EasyCall Gateway

## To restart the EasyCall Gateway

After making changes to the EasyCall Gateway, you might need to restart the server.

1. Click **Maintenance > Services**.
2. Under Server Control, click **Restart**. You can also use the Reset button on the front of the EasyCall Gateway to perform a soft reboot.

## To shut down the EasyCall Gateway

Never shut down the EasyCall Gateway by powering it off. Use the administration tool to shut down the device. Use the power switch only to power on the device.

1. Click **Maintenance > Services**.
2. Under Server Control, click **Shut Down**.

---

# To export or delete CDRs

A Call Detail Record (CDR) is a file that contains information about calls placed through the EasyCall Gateway. Information provided in the CDRs can be used for billing calls to cost centers and for auditing potential abuse.

When the CDR table reaches 10 million records, the oldest record in the table is deleted each time a new record is created. You can also delete all CDRs through the administration tool.

You can export CDRs to a comma-separated values (CSV) format from the administration tool. The default filename is `cdr.csv`; it contains the following columns:

Column Name	Description	Max. Length
CALL_START_TIME	String. The date and time that the call originated. Formatted as mmm dd yyyy hh:mm:ss zzz. For example, Sep 3 2008 15:54:03 PDT.	24
CALL_END_TIME	String. The date and time that the phone call was ended. Formatted as mmm dd yyyy hh:mm:ss zzz. For example, Sep 3 2008 15:54:03 PDT.	24
CALL_DURATION_SEC	String. The length, in seconds, of the call connection.  Call duration begins when the call is connected to the call originator's phone. Thus a call that fails in waiting for caller input will have a non-zero duration.	24
FROM_NUMBER	String. The phone number from which the call is dialed.	64
TO_CALL_ID	String. The phone number displayed on the target phone. This is the caller's phone number Call ID.	128
TO_NUMBER	String. The telephone number that was called (as dialed).	64
FROM_CALL_ID	String. The call ID seen on the target phone as the number called. Also referred to as the "fromCallID." Call IDs do not represent the actual number dialed. That is, they would not show the trunk access code 9, for example.	128
USERNAME	String. The domain logon name of the user who made the call. Required for the Call Detail Record associated with the call.	515
CLIENT_IP_ADDRESS	String. The caller's IP Address.	64

TERM_CAUSE_CODE	The call termination reason from the ISDN cause code.	24
TERM_CAUSE_STATE	String. The last call state (provided by the EasyCall Gateway):  NEW_CALL  CALLER_PARTY_RINGING  WAITING_FOR_CALLER_INPUT  CALLED_PARTY_RINGING  CALL_CONNECTED	24
CALL_DESCRIPTION	String. Allows a client to record any information related to the call in the click-to-call request. This information will be stored in the CDR for that call. If the CDR is for a conference participant, the conference name will be stored in the call description.	256
CALL_GUID	String. A unique ID number assigned to a call.	128

Sample entries from a cdr.csv file follow:

CALL\_START\_TIME,CALL\_END\_TIME,CALL\_DURATION\_SEC,FROM\_NUMBER,TO\_CALL\_ID,TO\_NUMBER,  
FROM\_CALL\_ID,USERNAME,CLIENT\_IP\_ADDRESS,TERM\_CAUSE\_CODE,TERM\_CAUSE\_STATE,  
CALL\_DESCRIPTION,CALL\_GUID

Jan 17 2008 17:39:25 PDT,Jan 17 2008 17:39:40 PDT,15.183,95558950,14085558950,919257882620,19257882  
Jan 13 2008 15:20:05 PDT,Jan 13 2008 15:20:12 PDT,6.712,95558948,14085558948,912092679100,1209267910  
Jan 13 2008 14:17:44 PDT,Jan 13 2008 14:18:09 PDT,25.195,912345678901,12345678901,91234567890,12345  
Jan 13 2008 10:36:20 PDT,Jan 13 2008 10:37:42 PDT,81.818,912147707954,12147707954,912145031688,1214  
Jan 11 2008 12:44:01 PDT,Jan 11 2008 12:44:17 PDT,15.575,95558948,14085558948,21950,21950,,CN=Mandy

## To export CDRs

1. In the administration tool, click **Maintenance > CDR**.
2. Specify the start and end dates for the records to be exported.
3. Click **Export**.
4. Specify an export location and click **Save**.

**Note:** Excel displays a FROM\_NUMBER or TO\_NUMBER that exceeds eight digits as long numbers (for example, 919257851234 displays as 9.19258E+11). To correct the display in Excel, select the column, right-click it, and choose **Format Cells**. In the **Number** tab, change the Category to **Number**, with 0 decimal places.

## To delete all CDRs

1. In the administration tool, click **Maintenance > CDR**.
2. Click **Delete All** and then respond to the prompt to verify the deletion. All CDRs are deleted.



---

# To get information about the EasyCall Gateway

The EasyCall Gateway **Dashboard** page displays the information described in the following table.

Setting	Description
Click-to-Call Usage	<ul style="list-style-type: none"><li>• The number of click-to-call requests received by the EasyCall Gateway since it was started.</li><li>• The number of calls successfully connected (including calls answered by voice mail) since the Gateway was started.</li><li>• Total number of Click2Call call legs. Note that two Click-to-Call call legs count as one phone call. For SIP trunks, the count includes both calls in progress and connected calls.</li></ul>
Conference Usage	<ul style="list-style-type: none"><li>• The number of conference call requests received by the EasyCall Gateway since it was started.</li><li>• The number of conference calls successfully connected since the Gateway was started.</li><li>• The number of conference calls in progress.</li><li>• The number of conference participants on in progress conference calls.</li></ul>
User Information	<ul style="list-style-type: none"><li>• The number of logged in users.</li></ul>
Client Version Information	For the Windows and the Mac plug-ins: <ul style="list-style-type: none"><li>• The client version loaded on the EasyCall Gateway.</li><li>• Whether the client on user computers will be automatically upgraded. To change the related setting, go to the <b>Maintenance &gt; Clients</b> page, select the <b>Force client to upgrade</b> setting, and upload the client upgrade file again.</li><li>• When a new client was last uploaded to the EasyCall Gateway.</li></ul>

To get information about the EasyCall Gateway

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Telephony Service Status: Node Status	<ul style="list-style-type: none"><li>• The node name, IP address, and type. Click the node name to view its system log.</li><li>• The node capacity.</li><li>• The node status: ACTIVE or SUSPENDED.</li><li>• The EasyCall Gateway software version running on the node.</li></ul>
Telephony Service Status: Trunk Status	<ul style="list-style-type: none"><li>• The trunk and node names. Click the trunk name to view its status.</li><li>• Protocol being used.</li><li>• The trunk capacity.</li><li>• The IP address of the telephony system.</li><li>• The trunk status: ACTIVE or SUSPENDED. When the telephony service is stopped, dialing from EasyCall and EasyCall Web Services is unavailable.</li></ul>
Server Uptime	<ul style="list-style-type: none"><li>• The number of seconds since the service was started.</li></ul>

---

# To use network diagnostic tools

The **Monitoring > Network Tools** page provides the following tools:

- Ping

Ping tests the network connection between the EasyCall Gateway and the device that you specify.

If the two devices are successfully communicating, messages indicate that the same number of packets were transmitted and received, and zero packets were lost.

If the two devices are not successfully communicating, messages indicate that zero packets were received and all the packets were lost.

- Traceroute

Traceroute checks the network connection between the EasyCall Gateway and the destination host that you specify. After it determines the address of each network hop between the devices, traceroute sends a sequence ICMP ECHO request to each one to determine the quality of the link to each device. Traceroute prints running statistics about each device.

- Network Capture

Network Capture logs network activity using tcpdump. Network Capture is available only if the Trunk Type on the **Trunk Configuration** page is set to SIP. After you start the Network Capture, you can perform needed tests, stop the capture, download the file, and then use third-party tools to analyze the data.

---

# Working with the Call and System Logs

## To view the most recent call activity

- In the administration tool, click **Monitoring > Call Log**.

## To view the system log

- In the administration tool, click **Monitoring > System Log**. Click **Refresh** to update the display.

System message logs contain information that can help technical support personnel assist you with troubleshooting. The EasyCall Gateway uses syslog to generate log files, enabling you to manage and view the system logs with familiar third-party tools. The log levels included are warning, error, and critical.

Much of the information in the system log is informational and can be ignored. Errors at the beginning of the log do not necessarily indicate problems with the EasyCall Gateway. However, a log of only a few lines upon startup of the EasyCall Gateway indicates a possible problem with the logging service. If the initial log does not include at least 50 or so entries, restart the server. If that does not correct the problem, contact your support representative.

## To open or download the system log

- In the administration tool, click **Monitoring > System Log**, click **Download**, and then click **Open** (to open the log in Notepad) or **Save**.

The EasyCall Gateway displays the most recent activity when the entire log is too large to display.

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# Using the Web Services API to Build Web Apps

You can use the EasyCall Web Services APIs to build Web applications that enable users to:

- Place calls by clicking a telephone number displayed in a Windows application. Clients use the Telephony Web Service to manage click-to-call requests and responses.
- Set up and join ad-hoc conference calls. Clients use the Telephony Web Service to manage conference call setup and initiation.
- Search a corporate directory for contact information by clicking a directory entry on a web page. The phone number returned in the contact information could then be used to initiate a call. Clients use the Directory Web Service to acquire directory information used to look up user phone numbers or telephony system extensions. Clients use the Directory Web Service to load a directory on the EasyCall Gateway and enable directory searches.

The web services APIs are published via the XML-based Web Services Description Language (WSDL) so that external clients can access the web services via standard Simple Object Access Protocol (SOAP) requests.

These topics provide the information you need to use the EasyCall Web Services APIs.

<a href="#">EasyCall Web Services</a>	Learn about the telephony and directory web services, including the APIs that they use and how they handle requests.
<a href="#">Data Types Available to Web Services APIs</a>	Get information about the data types available to the Web Services APIs.
<a href="#">Versioning API</a>	Look up details about the methods available for each API, along with the request and response parameters for each method.
<a href="#">Authentication API</a>	
<a href="#">Telephony Client API</a>	
<a href="#">Call Detail Record (CDR) API</a>	
<a href="#">Directory API</a>	
<a href="#">Locations API</a>	
<a href="#">Global Properties API</a>	
<a href="#">WSDLs and Example Code</a>	

---

# EasyCall Web Services

## Telephony Web Service

The Telephony Web Service leverages a site's telephony system and its Public Switched Telephone Network (PSTN) connectivity. The Citrix EasyCall Gateway uses a QSIG or SIP trunk connection to the telephony system to initiate calls to the calling and called parties.

A Telephony Web Service client uses these APIs:

- Telephony client: manages phone calls and conference calls.
- Call Data Records (required): stores and retrieves call data; returns call cause code.
- Locations (required): used to maintain the locations from which a user can make calls. Location information includes an array of location names and phone numbers.
- Directory (optional): manages directory searches.
- Versioning (required): provides a method for the client to dynamically discover API versions supported by the server.
- Login (required): used to generate a login handle. (Previously referred to as the Licensing API.)

Click-to-call requests are handled by Telephony Web Services as follows:

1. A telephony client gets a login handle and then passes a click-to-call request to the EasyCall Gateway.
2. The directory information is used by the Telephony Web Service to resolve user identity to a phone number or telephony system extension.
3. The EasyCall Gateway then places an outbound call to the user extension.
4. After the user picks up the phone, the EasyCall Gateway places a call to the external number.
5. After both parties are connected the EasyCall Gateway is released from the call path.
6. The client, optionally, can store/retrieve Call Data Records.

## Directory Web Service

A Directory Web Service client enables a user to search a corporate directory for contact information by clicking a directory entry on a web page. The phone number returned in the contact information can then be clicked to initiate a call. A Directory Web Service client uses these APIs:

- Directory (required): manages directory searches
- Versioning (required): provides a method for the client to dynamically discover API versions supported by the server.
- Login (required): used to grant access to the Web Services. (Previously referred to as the Licensing API.)

Directory requests are handled by Directory Web Services as follows:

1. A directory client gets a login handle and then passes a directory search request to the EasyCall Gateway.
2. The EasyCall Gateway performs the search and returns results.

---

# Data Types Available to Web Services APIs

All data types are defined in the [WSDLs](#). The data types available to the Web Services APIs are described in the following topics.

## Call Detail Record (CDR)

A Call Detail Record (CDR) object contains the following information about a call. These parameters are provided by the `Click2Call` request and are returned by the `getCDREntriesByIndex` and `getCDREntryByCall` requests.

Name	Description	Max. Length
<code>StartDateTime</code>	Long; signed 64-bit value. The date and time that the call originated. Formatted as mmm dd yyyy hh:mm:ss zzz. For example, Sep 3 2008 15:54:03 PDT.	
<code>EndDateTime</code>	Long; signed 64-bit value. The date and time that the phone call was ended. Formatted as mmm dd yyyy hh:mm:ss zzz. For example, Sep 3 2008 15:54:03 PDT.	
<code>FromNumber</code>	String. The phone number of the caller (the first leg of the call).	64
<code>FromCallID</code>	String. The caller ID of the caller (first leg of the call). Call IDs do not represent the actual number dialed. That is, they would not show the trunk access code 9, for example.	127
<code>TermCauseCode</code>	String. Either CANCELLED if the call was cancelled by the user or a standard ISDN termination cause code. (Your switch vendor can provide a list of code translations.)	127
<code>TermCauseState</code>	String. State the call was in when it ended. One of the following:  NEW_CALL  CALLER_PARTY_RINGING  WAITING_FOR_CALLER_INPUT  CALLED_PARTY_RINGING  CALL_CONNECTED	127



UserName	String. The domain login name of the user who made the call. Required for the Call Detail Record associated with the call.	511
CallGUID	String. A unique ID number assigned to a call.	64
ClientIPAddress	String. The IP address of the caller. Required for the Call Detail Record associated with the call.	64
ToNumber	String. The telephone number that was called (as dialed).	64
ToCallID	String. The phone number displayed on the target phone. This is the caller's phone number Call ID.	127
CallDescription	String. Allows a client to record any information related to the call in C2C request. This information will be stored in the CDR for that call. If the CDR is for a conference participant, conference name will be stored in the call description.	255

## DirectoryEntry

A DirectoryEntry object contains the following information. These parameters are returned with the `getDirectoryEntriesByIndex` request.

Name	Description	Max. Length
userName	String. The user's domain logon name. Must be unique.	511
displayName	String. User information.	100
firstName		50
lastName		50
title		127
department		127
telephone1	String. These are telephone number and label pairs.	64
telephone2		64
telephone3		64

## UserLocations

A UserLocations object contains the following information. These parameters are returned with the `getUserLocations`, `getUserNameLocations` and `updateUserLocations` requests.

Name	Description	Max. Length
defaultProfileName	String. Default location for this user.	127

restricted	Boolean. Controls whether this user is allowed to update locations. (A user can always update the default location.)	
defaultCountryCode	String. Can be updated through <code>updateDefaultCountryCode</code> .	127
defaultAreaCode	String. Can be updated through <code>updateDefaultAreaCode</code> .	127
defaultLocationName	String.	
locations	Array of location entries ( <code>LocationEntry</code> ).	
userName	String.	

## LocationEntry

A `ProfileEntry` object contains the following information for a user. These parameters are provided with the `AddProfileEntry` request and are returned with the `GetProfileEntries` request.

Name	Description	Max. Length
locationName	String. A label for the location, such as “office” or “mobile”.	127
phoneNumber	String. The number to dial to reach this location.	64
enableCallerID	Boolean. Controls whether this location phone number is displayed in the caller ID when dialed.	

---

# Versioning API

The Versioning API provides a method for the client to dynamically discover API versions supported by the EasyCall Gateway. In addition, the Authentication API also provides methods for advertising API versions supported by the clients. This allows both the client and the server to check compatibility with the other side. The recommended flow of events is:

1. Prior to login, the client discovers the API versions supported by the server by issuing a `GetAPIVersion()` request. If none of the API versions supported by the server is supported by the client, it does not proceed with the login.
2. When the client performs login, it advertises in the `apiVersion` parameter of the `Login()` request the version of the web services API it will use. If the client does not pass the `apiVersion`, the server assumes that the client uses version 1.0 of the web services API. If the server does not support the API version advertised by the client, it may respond with a `INCOMPATIBLE_API_VERSION` error and not issue a login handle to the client.

## GetAPIVersion method

`GetAPIVersion` returns a comma-delimited list of the client API versions supported by the EasyCall Gateway. There are no request parameters.

Response Parameters	Description
<code>apiVersion</code>	String. For example, "3.0". Note that the response parameter is now "out." "apiVersion" is for backward compatibility.

## GetClientVersion method

`GetClientVersion` returns the client version for a given operating system.

Request Parameters	Description
<code>ClientOS</code>	String. Either "WINDOWS" or "MAC".

Response Parameters	Description
<code>currentClientVersion</code>	String. The client version, in the form of n.n.nnnn, where the last four digits are the client build number.
<code>forceUpgrade</code>	Boolean. For future use. Indicates to the client whether to perform a forced upgrade. Defaults to false.

errorCode	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS A client for the requested OS exists on the server. The client version is returned.</li><li>• SERVER_ERROR No client is on the server for the requested OS.</li></ul>
-----------	---

---

# Authentication API

Web service clients are not required to not present credentials. However, client requests must include a login handle. A client does not look at the contents of a login handle. If a client fails to properly renew the login handle, the session will eventually expire.

The additional objects used by the API, described next, include generic key/value pairs which are useful for integrating the EasyCall with your authentication mechanism, as described in [Configuring Authentication](#).

## Additional Objects Used by the API

### Object class: KeyValue

Field name: key

Description: String. Generally used as a request parameter. Can also be used anywhere that a generic key/value pair is needed.

Field name: value

Description: String. Generic value that corresponds to the key. Any object value must be converted to a string.

### Object class: NodeAddress

Field name: hostname

Description: String. The node's hostname; returned by the `Login` request.

Field name: port

Description: Integer. The node's port number; returned by the `Login` request.

## Login method

`Login` is the general method called when a client negotiates its login to the EasyCall Gateway.

A client should specify the `apiVersion` and `KeyValue` pairs when calling `Login` for the first time. Subsequent processing mostly depends on the error code returned by the server.

Request parameters and descriptions:

### `apiVersion`

String returned by `GetAPIVersion`.

### handle

String. Unique identifier for the request. The login handle object should be used by all subsequent communications with the server, until the `Logout` request is called.

### KeyValue

Array of key/value pairs. The following constants are defined for the key/value pairs that clients may send to the server:

- `user_name`

The username of the user logging in to the gateway. The username must be in the form of `DOMAIN\USERNAME` or `USERNAME`. This field is required when logging in. The default authentication script does not validate the domain/username. If you want to verify domain/username against an authentication mechanism, you must customize the authentication script and implement a web services client. For information about the script, refer to [Configuring Authentication](#).

- `password`

The MD5-encrypted password. The client can omit the password from the initial login attempt (and send only `user_name`). If the server needs a password, it will return the `NEED_MORE_INFO` error code.

- `plain_password`

The plain text password. If the authentication server does not support MD5 password authentication, the server may request that the password is provided in plain text.

- `redirect_count`

The client must increase the redirection count to “1” any time it is following a redirection as a result of encountering a `REDIRECT` result. This count should never be set otherwise.

Response parameters and descriptions:

### result

**Note:** Response is in the form:

```
loginResponse =  
{  
  handle : string  
  nodeList : NodeAddress[ ]  
  requests : KeyValue[ ]  
  result : string  
  roles : string[ ]  
}
```

String. One of the following:

- `SUCCESS`

The client has successfully logged in to the EasyCall Gateway.

If the API version is 3.0 or over, the server will send a property back in the response, with name `login_expire_period`, and value of the time period, in seconds, in which the server will retire this client's login session if it is not renewed.

- **ACCESS\_DENIED**

The credentials specified by the client caused the server to reject the login. This decision is final; the client must restart login negotiations.

- **INCOMPATIBLE\_API\_VERSION**

The client has attempted to use a version protocol that is incompatible with the client. No further action can be taken.

- **INVALID\_ARGUMENT**

The client specified a value in "values" that cannot be understood by the server. The name of the value is returned in the `requests[0]` key. Login negotiations must be restarted after this, however this result code usually indicates an error in the client logic.

- **INVALID\_HANDLE**

The server did not recognize the client-specified "handle" parameter in the request. The handle might be expired. The client must restart login negotiations.

- **NEED\_MORE\_INFO**

The server needs more information from the client to be able to log in the client. Once the client receives this result code, it should always use the "handle" value returned by the server along with that code in any further `Login` calls. The server will send the list of required parameter names in the "requests" field. If any parameter needs a value to be able to calculate the response, the "value" field will be filled in for the corresponding key-value pair. The client should fill in all the missing fields in the "values" array. The client does not need to re-transmit the fields it has already transmitted.

- **REDIRECT**

The server will not log in the client locally; the client must execute the request elsewhere. The server will return the `nodeList` array consisting of a single element. That element will contain the node address for the client to connect instead.

- **SERVER\_ERROR**

There was an internal unrecognized server failure attempting to log in the client. This error usually indicates a transient error in the server, or a problem in the server software.

- **TEMPORARILY\_UNAVAILABLE**

The server can not log you in at the moment. The "nodeList" structure will contain all the nodes that are currently available in the cluster. The current node will not be in that list. The client should pick a different node from the list and attempt to log in to that node.

**handle**

String. The login handle.

**requests**

Array of KeyValue pairs. The following key-value pair may be in the server response:

- login\_expire\_period

The login expiration period in seconds. The login handle must be renewed by the client before this period expires.

- cluster\_external\_address

The external IP address (such as 1.2.3.4:433) or domain name to use for the cluster when directing the user to the user portal.

**nodeList**

Array of the latest list of known node addresses for this cluster. The list includes the node to which the client is connected.

**roles**

An array of the operations that are allowed for the client. The following roles are currently defined for the client:

- CALL

The client is allowed to place calls.

- CONFERENCE

The client is allowed to create conferences.

- CREATE\_LOCATIONS

The client is allowed to add/edit locations.

- FIND\_ME

The client is allowed to redirect a telephony system extension to a sequence of locations which are tried sequentially.

- VOIP

Not supported in this release. The client is allowed to create, register, and manage unlimited mobile SIP or IAX locations (extensions) per user with this role.

The CALL and CONFERENCE values provide the following permissions:

**CALL**

Full EasyCall capabilities; cannot create conferences.

**CALL and CONFERENCE**



Full EasyCall capabilities; can create conferences.

**None**

EasyCall will not start.

## Renew20 method

The `Renew20` call renews the login handle. Client login handles expire after a maximum of 60 seconds, thus they must be renewed.

Request parameter and description:

**handle**

String. The login handle.

Response parameter and description:

**result**

String. One of the following:

- SUCCESS

The handle has been successfully renewed. The client can continue to use it.

- INVALID\_HANDLE

The specified handle was invalid, or was declared invalid during execution of this call. The client should attempt to log in again.

- SERVER\_ERROR

There was an internal error executing this call. The client could try logging in to the server again.

## Logout method

The `Logout` call logs out the specified handle. There are no response parameters.

Request parameter and description:

**handle**

String. After logout, this login handle cannot be used for any other call.

---

# Telephony Client API

## Click2Call method

`Click2Call` passes a phone call request from a client to the EasyCall Gateway. `Click2Call` returns a call handle that is valid while the call is on the EasyCall Gateway. During that time, the call handle can be used to return real-time call status or to cancel the call. When the call ends, the call handle becomes invalid and the call termination cause can be retrieved from the Call Detail Record in the database, via `GetCDREntryByCall`.

Request Parameters	Description
handle	String. The login handle.
location	String.
phone	String. The phone number being called.
locale	One of the following three-letter codes:  ENG: International English  ESP: Spanish  DEU: German  FRA: French  Locale value defaults to ENG.
description	String.

Response Parameters	Description
callHandle	String. Is returned if the call is successful and is empty if the call fails. The callHandle is required to get call status or to cancel the call.
errorCode	String. One of the following: <ul style="list-style-type: none"><li>INVALID_USER</li><li>TELEPHONY_SERVER_ERROR</li></ul>

## GetCallStatus method

`GetCallStatus` reports the status of a call. An invalid call handle may be an indication that the call has ended or that the EasyCall Gateway has been removed from call path due to path replacement. Status of the ended call is available after the telephony system has returned the call handle; use the CDR web service call `GetCDREntryByCall`.

Request Parameters	Description
<code>callHandle</code>	String.

Response Parameters	Description
<code>callStatus</code>	String. One of the following if the <code>errorCode</code> is SUCCESS: <ul style="list-style-type: none"><li>NEW_CALL</li><li>CALLER_PARTY_RINGING</li><li>WAITING_FOR_CALLER_INPUT</li><li>CALLED_PARTY_RINGING</li><li>CALL_CONNECTED</li></ul>
<code>errorCode</code>	String. One of the following: <ul style="list-style-type: none"><li>SUCCESS</li><li>INVALID_CALL_HANDLE</li><li>TELEPHONY_SERVER_ERROR</li></ul>

## CancelCall method

`CancelCall` terminates a call request.

Request Parameters	Description
<code>callHandle</code>	String.

Response Parameters	Description
---------------------	-------------

errorCode	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS</li><li>• INVALID_CALL_HANDLE</li><li>• TELEPHONY_SERVER_ERROR</li></ul>
-----------	---

---

# Call Detail Record (CDR) API

## findCDREntries method

`findCDREntries` returns the number of CDRs for a particular user. You can optionally filter the results by specifying a start and/or stop date/time.

Request Parameters	Description
<code>licenseHandle</code>	String.
<code>startDateTime</code>	(Optional) Integer.
<code>endDateTime</code>	(Optional) Integer.

Response Parameters	Description
<code>numberOfMatches</code>	Integer. Returned if the <code>errorCode</code> is SUCCESS. Use <code>getCDREntriesByIndex</code> to obtain a subset of the matches.
<code>CDRSearchHandle</code>	String. Returned if the <code>errorCode</code> is SUCCESS.
<code>errorCode</code>	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS</li><li>• NO_MATCHES_FOUND</li><li>• DB_SERVER_ERROR</li><li>• INVALID_HANDLE</li><li>• INVALID_DATE</li></ul>

## getCDREntriesByIndex method

`getCDREntriesByIndex` returns an array of Call Detail Records.

Request Parameters	Description
<code>searchHandle</code>	String.
<code>startIndex</code>	Integer.
<code>endIndex</code>	Integer.

Response Parameters	Description
CDR[ ]	Array of CDR records is returned if the errorCode is SUCCESS.
errorCode	String. One of the following: <ul style="list-style-type: none"> <li>• SUCCESS</li> <li>• INVALID_SEARCH_HANDLE</li> <li>• INVALID_INDEX</li> <li>• DB_SERVER_ERROR</li> </ul>

## releaseSearchHandle method

`releaseSearchHandle` checks in the search handle, indicating that the client is finished with the directory search.

Request Parameters	Description
searchHandle	String.

Response Parameters	Description
errorCode	String. One of the following: <ul style="list-style-type: none"> <li>• SUCCESS</li> <li>• INVALID_SEARCH_HANDLE</li> </ul>

## getCDREntryByCall method

`getCDREntryByCall` returns the detailed call status of the ended call. If `GetCallStatus` returns an invalid call handle (meaning that the call is no longer on the telephony server), the client can use `getCDREntryByCall` for the cause of the call termination.

Request Parameters	Description
licenseHandle	String.
callHandle	String.

Response Parameters	Description
CDR	Complex type. One CDR is returned if the errorCode is SUCCESS.

## Call Detail Record (CDR) API

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errorCode	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS</li><li>• INVALID_CALL_HANDLE</li><li>• DB_SERVER_ERROR</li></ul>
-----------	---

---

# Directory API

## findDirectoryEntries method

`findDirectoryEntries` returns the number of search string matches in the directory uploaded to the EasyCall Gateway directory.

Request Parameters	Description
<code>searchText</code>	String. The search text entered by the user. Required.
<code>licenseHandle</code>	String.

Response Parameters	Description
<code>numberOfMatches</code>	Integer. Returned if the search string is found in the directory. Use <code>getDirectoryEntriesByIndex</code> to obtain a subset of the matches.
<code>directorySearchHandle</code>	String. Returned if the search string is found in the directory.
<code>errorCode</code>	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS</li><li>• INVALID_ENTRY</li><li>• INVALID_LICENSE</li><li>• NO_MATCHES_FOUND</li><li>• DB_SERVER_ERROR</li><li>• INVALID_SEARCH_HANDLE</li><li>• INVALID_INDEX</li><li>• SERVER_ERROR</li></ul>

## getDirectoryEntriesByIndex method

`getDirectoryEntriesByIndex` returns returns an array of Directory entries.

Request Parameters	Description
<code>searchHandle</code>	String. Returned by <code>findDirectoryEntries</code> .



startIndex	Integer. Directory entries from startIndex (min 0) to endIndex (max NUM_ENTRIES-1).
endIndex	

Response Parameters	Description
DirectoryEntry[ ]	Array of directory entries for the requested indexes.
errorCode	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS</li><li>• INVALID_INDEX</li><li>• DB_SERVER_ERROR</li><li>• INVALID_SEARCH_HANDLE</li></ul>

## releaseSearchHandle method

`releaseSearchHandle` checks in the search handle, indicating that the client is finished with the Directory search.

Request Parameters	Description
searchHandle	String.

Response Parameters	Description
errorCode	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS</li><li>• INVALID_SEARCH_HANDLE</li><li>• DB_SERVER_ERROR</li></ul>

---

# Locations API

## getUserLocations method

`getUserLocations` returns the `UserLocations` object for the logged in user.

Request Parameters	Description
<code>licenseHandle</code>	String.

Response Parameters	Description
<code>locations</code>	The <a href="#">UserLocations</a> entry for the user.
<code>errorCode</code>	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS</li><li>• INVALID_LICENSE</li><li>• INVALID_USER</li><li>• DEFAULTS_ONLY</li><li>• BAD_AUTH</li><li>• DB_SERVER_ERROR</li></ul>

## getUserNameLocations method

`getUserNameLocations` returns the `UserLocations` object for the requested user.

Request Parameters	Description
<code>userName</code>	String. The user for which locations are to be returned.

Response Parameters	Description
<code>locations</code>	The <a href="#">UserLocations</a> entry for the user.

errorCode	String. One of the following: <ul style="list-style-type: none"> <li>• SUCCESS</li> <li>• INVALID_LICENSE</li> <li>• INVALID_USER</li> <li>• DEFAULTS_ONLY</li> <li>• BAD_AUTH</li> <li>• DB_SERVER_ERROR</li> </ul>
-----------	--

## updateUserLocations method

`updateUserLocations` returns the new `UserLocations` structure when the update was successful or when an update is not allowed (for restricted users).

Request Parameters	Description
licenseHandle	String.
locations	The <a href="#">UserLocations</a> entry for the user.

Response Parameters	Description
locations	The <a href="#">UserLocations</a> entry for the user, if the update was successful.
errorCode	String. One of the following: <ul style="list-style-type: none"> <li>• SUCCESS</li> <li>• INVALID_LICENSE</li> <li>• INVALID_USER</li> <li>• DEFAULTS_ONLY</li> <li>• BAD_AUTH</li> <li>• DB_SERVER_ERROR</li> </ul>

## updateDefaultAreaCode method

`updateDefaultAreaCode` updates the default area code in `UserLocations`.

Request Parameters	Description
licenseHandle	String.

defaultAreaCode	String. Obtained from a user's Windows configuration.
-----------------	---

Response Parameters	Description
locations	The <a href="#">UserLocations</a> entry for the user.
errorCode	String. One of the following: <ul style="list-style-type: none"> <li>• SUCCESS</li> <li>• INVALID_LICENSE</li> <li>• INVALID_USER</li> <li>• DEFAULTS_ONLY</li> <li>• BAD_AUTH</li> <li>• DB_SERVER_ERROR</li> </ul>

## updateDefaultCountryCode method

`updateDefaultCountryCode` updates the default country code in `UserLocations`.

Request Parameters	Description
licenseHandle	String.
defaultCountryCode	String. Obtained from a user's Windows configuration.

Response Parameters	Description
locations	The <a href="#">UserLocations</a> entry for the user.
errorCode	String. One of the following: <ul style="list-style-type: none"> <li>• SUCCESS</li> <li>• INVALID_LICENSE</li> <li>• INVALID_USER</li> <li>• DEFAULTS_ONLY</li> <li>• BAD_AUTH</li> <li>• DB_SERVER_ERROR</li> </ul>

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# Global Properties API

## GetGlobalProperty method

`GetGlobalProperty` allows an EasyCall client to retrieve the following cluster-wide properties:

- `CONFERENCE_DIAL_IN_NUMBER` (the phone number that EasyCall conference users can dial to access a conference)
- `CONFERENCE_EXTENSION` (the extension that EasyCall conference users can dial to access a conference)
- `NORMALIZER_DATA` (an XML file that contains country-specific data)
- `NORMALIZER_DATA_LAST_UPDATE` (the date/time of the last update of the normalizer data XML file; shown as UNIX time)
- `NORMALIZER_CONFIG` (an XML file that contains normalizer rules for telephone number recognition, formatting, and restrictions)
- `NORMALIZER_CONFIG_LAST_UPDATE` (the date/time of the last update of the normalizer config XML file; shown as UNIX time)

Request Parameters	Description
<code>propertyName</code>	String. One of the following (described above):  <code>CONFERENCE_DIAL_IN_NUMBER</code>  <code>CONFERENCE_EXTENSION</code>  <code>NORMALIZER_DATA</code>  <code>NORMALIZER_DATA_LAST_UPDATE</code>  <code>NORMALIZER_CONFIG</code>  <code>NORMALIZER_CONFIG_LAST_UPDATE</code>

Response Parameters	Description
<code>propertyValue</code>	String.

errorCode	String. One of the following: <ul style="list-style-type: none"><li>• SUCCESS</li><li>• DB_SERVER_ERROR</li><li>• PROPERTY_NOT_FOUND</li></ul>
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# WSDLs and Example Code

The following table contains the URLs where the latest Web Services Description Language (WSDL) and test code are located for each EasyCall Web Service. In the URLs, *EasyCallGW* is a placeholder for the host name or IP address of your gateway.

The example test programs use the XFire library to access the Web Services. The URL for XFire is <http://xfire.codehaus.org/>.

EasyCall Web Services	EasyCall WSDL and Test Code File Locations
Call Detail Record	<a href="https://EasyCallGW:443/services/CDR?wsdl">https://EasyCallGW:443/services/CDR?wsdl</a> <a href="https://EasyCallGW:443/docs/guides/sampleTests/CDR.java">https://EasyCallGW:443/docs/guides/sampleTests/CDR.java</a>
Directory	<a href="https://EasyCallGW:443/services/Directory?wsdl">https://EasyCallGW:443/services/Directory?wsdl</a> <a href="https://EasyCallGW:443/docs/guides/sampleTests/Directory.java">https://EasyCallGW:443/docs/guides/sampleTests/Directory.java</a>
GlobalProperties	<a href="https://EasyCallGW:443/services/GlobalProperties?wsdl">https://EasyCallGW:443/services/GlobalProperties?wsdl</a> <a href="https://EasyCallGW:443/docs/guides/sampleTests/GlobalProperties.java">https://EasyCallGW:443/docs/guides/sampleTests/GlobalProperties.java</a>
LicenseManager	<a href="https://EasyCallGW:443/services/LicenseManager?wsdl">https://EasyCallGW:443/services/LicenseManager?wsdl</a>
Locations	<a href="https://EasyCallGW:443/services/Locations?wsdl">https://EasyCallGW:443/services/Locations?wsdl</a> <a href="https://EasyCallGW:443/docs/guides/sampleTests/Locations.java">https://EasyCallGW:443/docs/guides/sampleTests/Locations.java</a>
Telephony	<a href="https://EasyCallGW:443/services/Telephony?wsdl">https://EasyCallGW:443/services/Telephony?wsdl</a> <a href="https://EasyCallGW:443/docs/guides/sampleTests/Telephony.java">https://EasyCallGW:443/docs/guides/sampleTests/Telephony.java</a>
Version	<a href="https://EasyCallGW:443/services/Version?wsdl">https://EasyCallGW:443/services/Version?wsdl</a> Sample code is not available for the Version service.