Cisco TelePresence Video Communication Server Basic Configuration (Single VCS Control)

Deployment Guide

Cisco VCS X8.1

D14524.04

December 2013

Contents

Introduction

The Cisco TelePresence Video Communication Server (VCS) software simplifies session management and control of telepresence conferences. It provides flexible and extensible conferencing applications, enabling organizations to benefit from increased employee productivity and enhanced communication with partners and customers.

The VCS delivers exceptional scalability and resiliency, secure communications, and simplified large-scale provisioning and network administration in conjunction with Cisco TelePresence Management Suite (Cisco TMS).

The VCS interworks transparently with Cisco Unified Communications Manager (Unified CM), bringing rich telepresence services to organizations with Unified CM. It also offers interoperability with third-party unified communications, IP telephony networks, and voice-over-IP (VoIP) systems.

This document describes how to configure a single VCS Control platform for use in a basic video infrastructure deployment. If your deployment includes a VCS Expressway, use *VCS Basic Configuration (Control with Expressway) Deployment Guide* instead.

Detailed reference information is contained in this document’s appendices:

- Appendix 1: Configuration details [p.25] lists the VCS configuration details used in this document.
- Appendix 2: DNS records [p.27] describes the DNS records required for this example deployment.

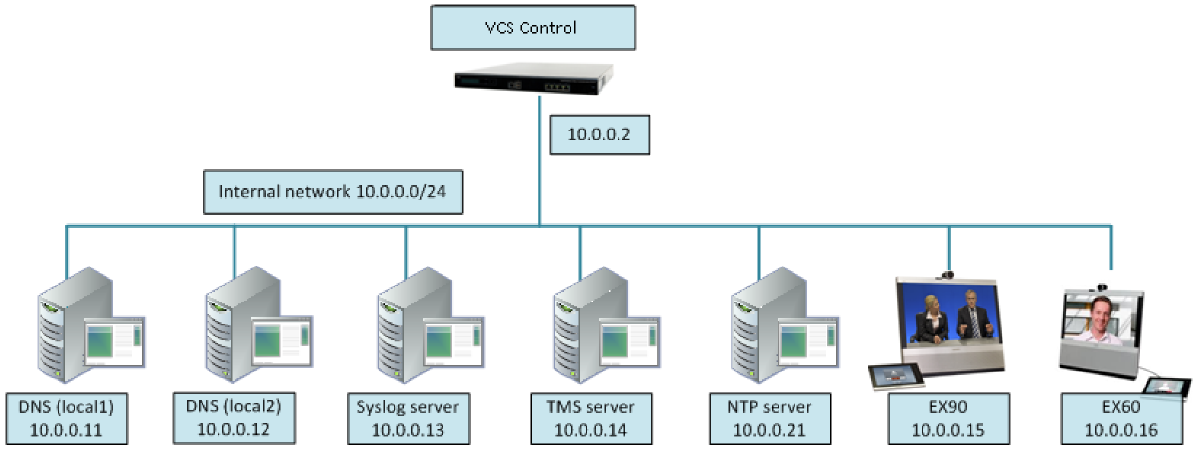
Descriptions of system configuration parameters can be found in *VCS Administrator Guide* and the VCS web application’s online field help ⓘ and page help ?.

This document does not describe details of how to deploy a cluster of VCSs, or systems running device provisioning, device authentication or FindMe applications. For more details on these features, see the following documents:

- *VCS Cluster Creation and Maintenance Deployment Guide*
- *Cisco TMS Provisioning Extension Deployment Guide*
- *FindMe Express Deployment Guide*
- *Device Authentication on VCS Deployment Guide*

Example network deployment

The example network shown below is used as the basis for the deployment described in this document.



Network elements

Internal network elements

The internal network elements are devices which are hosted on the organization’s local area network.

Elements on the internal network have an internal network domain name. This internal network domain name is not resolvable by a public DNS. For example, the VCS Control is configured with an internally resolvable name of vcsc.internal-domain.net (which resolves to an IP address of 10.0.0.2 by the internal DNS servers).

VCS Control

The VCS Control is a SIP Registrar & Proxy and H.323 Gatekeeper for devices which are located on the internal network.

EX90 and EX60

These are example endpoints hosted on the internal network which register to the VCS Control.

DNS (local 1 & local 2)

DNS servers used by the VCS Control, to perform DNS lookups (resolve network names on the internal network).

DHCP server

The DHCP server provides host, IP gateway, DNS server, and NTP server addresses to endpoints located on the internal network.

Cisco TMS server

A management and scheduling server (see Task 9: Configuring Cisco TMS (optional) [p.18]).

Syslog server

A logging server for Syslog messages (see Task 10: Configuring logging (optional) [p.20]).

NTP server

An NTP server which provides the clock source used to synchronize devices.

SIP and H.323 domain

The example deployment is configured to route SIP (and H.323) signaling messages for calls made to URIs which use the domain example.com.

The DNS SRV configurations are described in Appendix 2: DNS records [p.27].

Prerequisites and process summary

Prerequisites

Before starting the system configuration, make sure you have access to:

- the *VCS Administrator Guide* and *VCS Getting Started Guide* (for reference purposes)
- your VCS system
- a PC connected via Ethernet to a LAN which can route HTTP(S) traffic to the VCS
- a web browser running on the PC
- a serial interface on the PC and cable (if the initial configuration is to be performed over the serial interface)

Summary of process

The configuration process consists of the following tasks.

VCS system configuration:

- Task 1: Performing initial configuration [p.6]
- Task 2: Setting the system name [p.6]
- Task 3: Configuring DNS [p.7]
- Task 4: Replacing the default server certificate [p.8]
- Task 5: Configuring NTP servers [p.9]
- Task 6: Configuring SIP domains [p.10]

Routing configuration:

- Task 7: Configuring transforms [p.11]
- Task 8: Configuring Local Zone search rules [p.12]

Optional configuration tasks:

- Task 9: Configuring Cisco TMS (optional) [p.18]
- Task 10: Configuring logging (optional) [p.20]
- Task 11: Configuring registration restriction policy (optional) [p.20]
- Task 12: Configuring device authentication policy (optional) [p.21]
- Task 13: Restricting access to ISDN gateways (optional) [p.22]

VCS system configuration

Task 1: Performing initial configuration

Assuming the VCS is in the factory delivered state, follow the Initial configuration steps described in the *VCS Getting Started Guide* to configure the basic network parameters:

- LAN1 IP (IPv4 or IPv6) address
- Subnet mask (if using IPv4)
- Default Gateway IP address (IPv4 or IPv6)

Note that VCS requires a static IP address (it will not pick up an IP address from a DHCP server).

The initial configuration can be performed in one of three ways:

- using a serial cable
- via the front panel of the VCS appliance
- via the default IP address of 192.168.0.100

See the “Initial configuration” section in *VCS Getting Started Guide* for details.

This deployment guide is based on configuration using the web interface. If you cannot access the VCS using the web interface after completing the initial configuration (assigning the IP address), speak to your network administrator.

The follow configuration values are used in the example deployment:

LAN1 IPv4 address	10.0.0.2
IPv4 gateway	10.0.0.1
LAN1 subnet mask	255.255.255.0

Task 2: Setting the system name

The **System name** defines the name of the VCS.

The **System name** appears in various places in the web interface, and in the display on the front panel of the appliance (so that you can identify it when it is in a rack with other systems). The system name is also used by Cisco TMS.

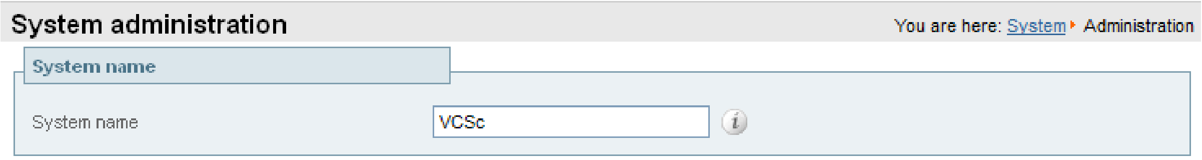
You are recommended to give the VCS a name that allows you to easily and uniquely identify it. If the system name is longer than 16 characters, only the last 16 characters will be shown in the display on the front panel.

To configure the **System name**:

1. Go to **System > Administration**.
2. Configure the **System name** as follows:

System name	Enter `vcsc`

3. Click **Save**.


System administration

You are here: System ▸ Administration

System name

System name: VCSc

Task 3: Configuring DNS

System host name

The **System host name** defines the DNS hostname that this system is known by. Note that this is not the fully-qualified domain name, just the host label portion.

Note that <**System host name**>.<**Domain name**> = FQDN of this VCS.

To configure the **System host name**:

1. Go to **System > DNS**.
2. Configure the **System host name** as follows:

System host name	Enter `vcsc`

3. Click **Save**.

Domain name

The **Domain name** is the name to append to an unqualified host name before querying the DNS server.

To configure the **Domain name**:

1. Go to **System > DNS**.
2. Configure the **Domain name** as follows:

Domain name	Enter `internal-domain.net`

3. Click **Save**.

DNS servers

The DNS server addresses are the IP addresses of up to 5 domain name servers to use when resolving domain names. You must specify at least one default DNS server to be queried for address resolution if you want to either:

- use FQDNs (Fully Qualified Domain Names) instead of IP addresses when specifying external addresses (for example for LDAP and NTP servers, neighbor zones and peers)
- use features such as URI dialing or ENUM dialing

The VCS only queries one server at a time; if that server is not available the VCS will try another server from the list.

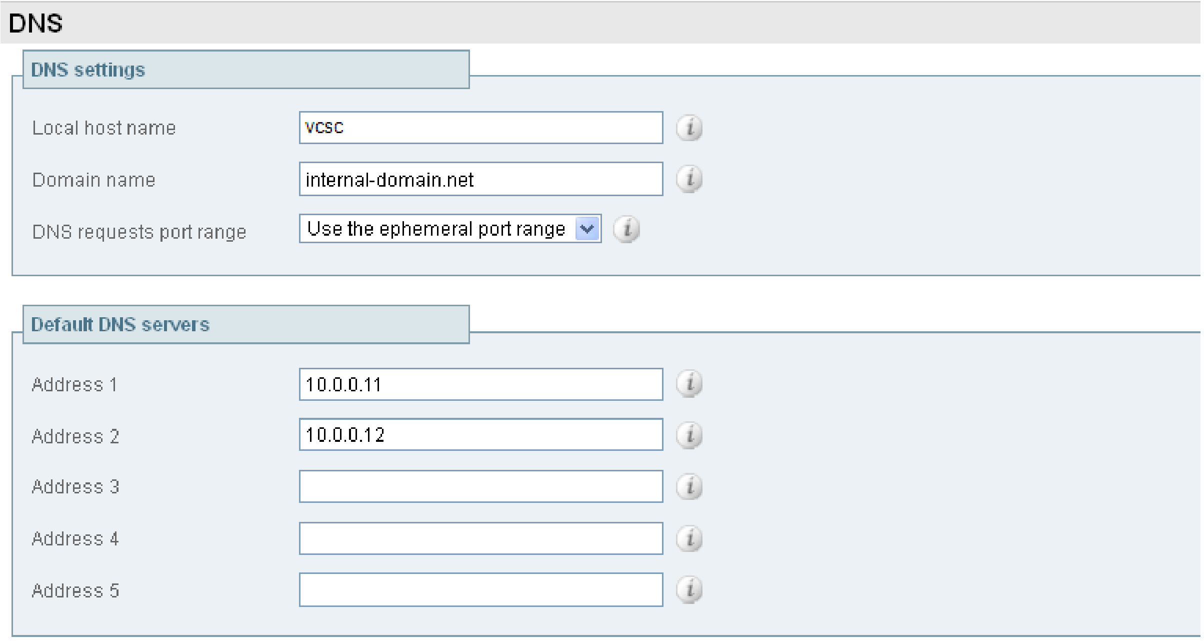
In the example deployment 2 DNS servers are configured for each VCS, which provides a level of DNS server redundancy. The VCS Control is configured with DNS servers which are located on the internal network.

To configure the **Default DNS server** addresses:

1. Go to **System > DNS**.
2. Configure the DNS server **Address** fields as follows:

Address 1	Enter `10.0.0.11`
Address 2	Enter `10.0.0.12`

3. Click **Save**.



DNS

DNS settings

Local host name: vcsc

Domain name: internal-domain.net

DNS requests port range: Use the ephemeral port range

Default DNS servers

Address 1: 10.0.0.11

Address 2: 10.0.0.12

Address 3:

Address 4:

Address 5:

Task 4: Replacing the default server certificate

For extra security, you may want to have the VCS communicate with other systems (such as LDAP servers, neighbor VCSs, or clients such as SIP endpoints and web browsers) using TLS encryption.

For this to work successfully in a connection between a client and server:

- The server must have a certificate installed that verifies its identity. This certificate must be signed by a Certificate Authority (CA).
- The client must trust the CA that signed the certificate used by the server.

The VCS allows you to install appropriate files so that it can act as either a client or a server in connections using TLS. The VCS can also authenticate client connections (typically from a web browser) over HTTPS. You can also upload certificate revocation lists (CRLs) for the CAs used to verify LDAP server and HTTPS client certificates.

The VCS can generate server certificate signing requests (CSRs). This removes the need to use an external mechanism to generate and obtain certificate requests.

For secure communications (HTTPS and SIP/TLS) we recommend that you replace the VCS default certificate with a certificate generated by a trusted certificate authority.

Note that in connections:

- to an endpoint, the VCS acts as the TLS server
- to an LDAP server , the VCS is a client
- between two VCS systems, either VCS may be the client with the other VCS being the TLS server
- via HTTPS, the web browser is the client and the VCS is the server

TLS can be difficult to configure. For example, when using it with an LDAP server we recommend that you confirm that your system is working correctly before you attempt to secure the connection with TLS. You are also recommended to use a third party LDAP browser to verify that your LDAP server is correctly configured to use TLS.

Note: be careful not to allow your CA certificates or CRLs to expire as this may cause certificates signed by those CAs to be rejected.

To load the trusted CA list, go to **Maintenance > Security certificates > Trusted CA certificate**.

To generate a CSR and/or upload the VCS's server certificate, go to **Maintenance > Security certificates > Server certificate**.

For full information, see *VCS Certificate Creation and Use Deployment Guide*.

Task 5: Configuring NTP servers

The **NTP server** address fields set the IP addresses or Fully Qualified Domain Names (FQDNs) of the NTP servers to be used to synchronize system time.

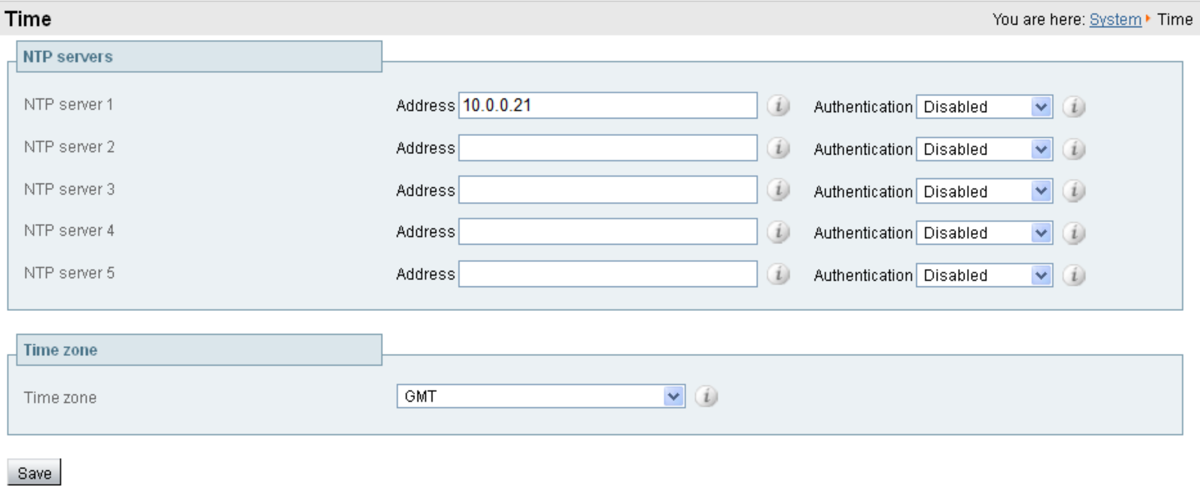
The **Time zone** sets the local time zone of the VCS.

To configure the NTP server address and Time zone:

1. Go to **System > Time**.
2. Configure the fields as follows:

NTP server 1	Enter `10.0.0.21`
Time zone	*GMT* in this example

3. Click **Save**.



Time

You are here: System ▸ Time

NTP servers

NTP server 1	Address 10.0.0.21	Authentication	Disabled
NTP server 2	Address	Authentication	Disabled
NTP server 3	Address	Authentication	Disabled
NTP server 4	Address	Authentication	Disabled
NTP server 5	Address	Authentication	Disabled

Time zone

Time zone: GMT

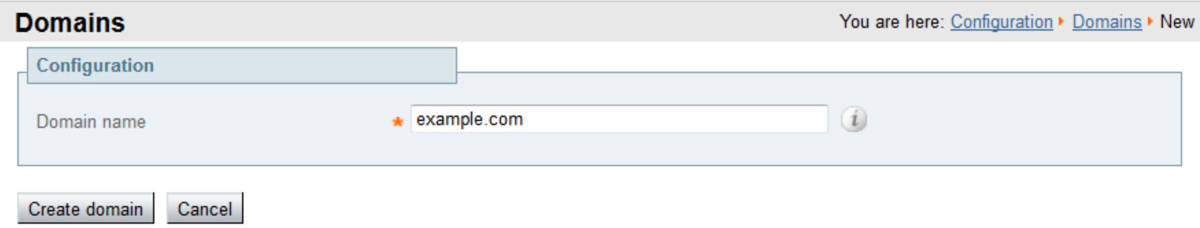
Task 6: Configuring SIP domains

The VCS acts as a SIP Registrar for configured SIP domains, accepting registration requests for any SIP endpoints attempting to register with an alias that includes these domains.

- Registration restriction (Allow or Deny) rules can be configured to limit acceptable registrations. See Task 11: Configuring registration restriction policy (optional) [p.20].
- If authentication is enabled, only devices that can properly authenticate themselves will be allowed to register.

To configure a SIP domain:

1. Go to **Configuration > Domains**.
2. Click **New**.
3. Enter the domain name into the **Name** field, such as **`example.com`**.
4. Click **Create domain**.
5. The **Domains** page displays all configured SIP domain names.



Domains

You are here: Configuration ▸ Domains ▸ New

Configuration

Domain name * example.com

Routing configuration

Pre-search transforms

Pre-search transform configuration allows the destination alias (called address) in an incoming search request to be modified. The transformation is applied by the VCS before any searches take place, either locally or to external zones.

The pre-search transform configuration described in this document is used to standardize destination aliases originating from both H.323 and SIP devices. This means that the same call searches will work for calls from both H.323 and SIP endpoints.

For example, if the called address is an H.323 E.164 alias “01234”, the VCS will automatically append the configured domain name (in this case example.com) to the called address (that is, 01234@example.com making it into a URI), before attempting to set up the call.

- Pre-search transforms should be used with care because they apply to all signaling messages – if they match, they will affect the routing of Unified Communications messages, provisioning and presence requests as well as call requests.
- Transformations can also be carried out in search rules – consider whether it is best to use a pre-search transform or a search rule to modify the called address to be looked up.

Search rules

Search rules define how the VCS routes calls (to destination zones) in specific call scenarios. When a search rule is matched, the destination alias can be modified according to the conditions defined in the search rule.

The search rules described in this document are used to ensure that SIP (and H.323) endpoints can dial H.323 devices that have registered E.164 numbers or H.323 IDs without a domain portion. The search rules first search for received destination aliases without the domain portion of the URI, and then search with the full URI.

The routing configuration in this document searches for destination aliases that have valid SIP URIs (that is, using a valid SIP domain, such as id@domain).

You can configure routing which enables calls to unregistered devices on an internal network (routing to the addresses of IP of the devices) by configuring a search rule with a mode of *Any IP address* with target Local Zone. However this is not recommended (and not described in this document). The best practice is to register all devices and route using destination aliases.

Task 7: Configuring transforms

The pre-search transform configuration described in this document is used to standardize destination aliases originating from both H.323 and SIP devices.

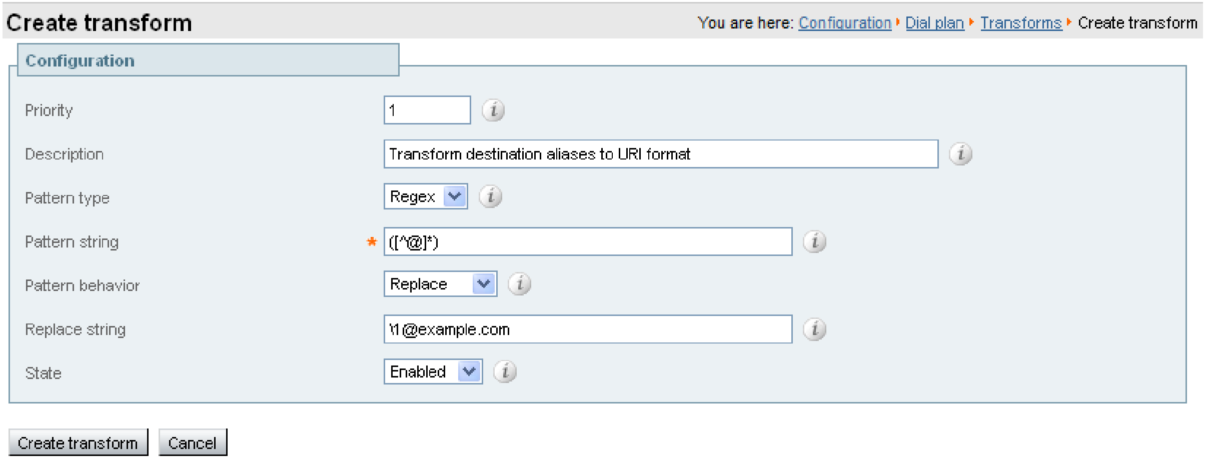
The following transform modifies the destination alias of all call attempts made to destination aliases which do not contain an ‘@’. The old destination alias has @example.com appended to it. This has the effect of standardizing all called destination aliases into a SIP URI format.

To configure the transform:

1. Go to **Configuration > Dial plan > Transforms**.
2. Click **New**.
3. Configure the transform fields as follows:

Priority	Enter `1`
Description	Enter `Transform destination aliases to URI format`
Pattern type	*Regex*
Pattern string	Enter `([^@]*)`
Pattern behavior	*Replace*
Replace string	Enter `\1@example.com`
State	*Enabled*

4. Click **Create transform**.



Create transform

You are here: Configuration ▸ Dial plan ▸ Transforms ▸ Create transform

Configuration

Priority	1
Description	Transform destination aliases to URI format
Pattern type	Regex
Pattern string *	([^@]*)
Pattern behavior	Replace
Replace string	\1@example.com
State	Enabled

Task 8: Configuring Local Zone search rules

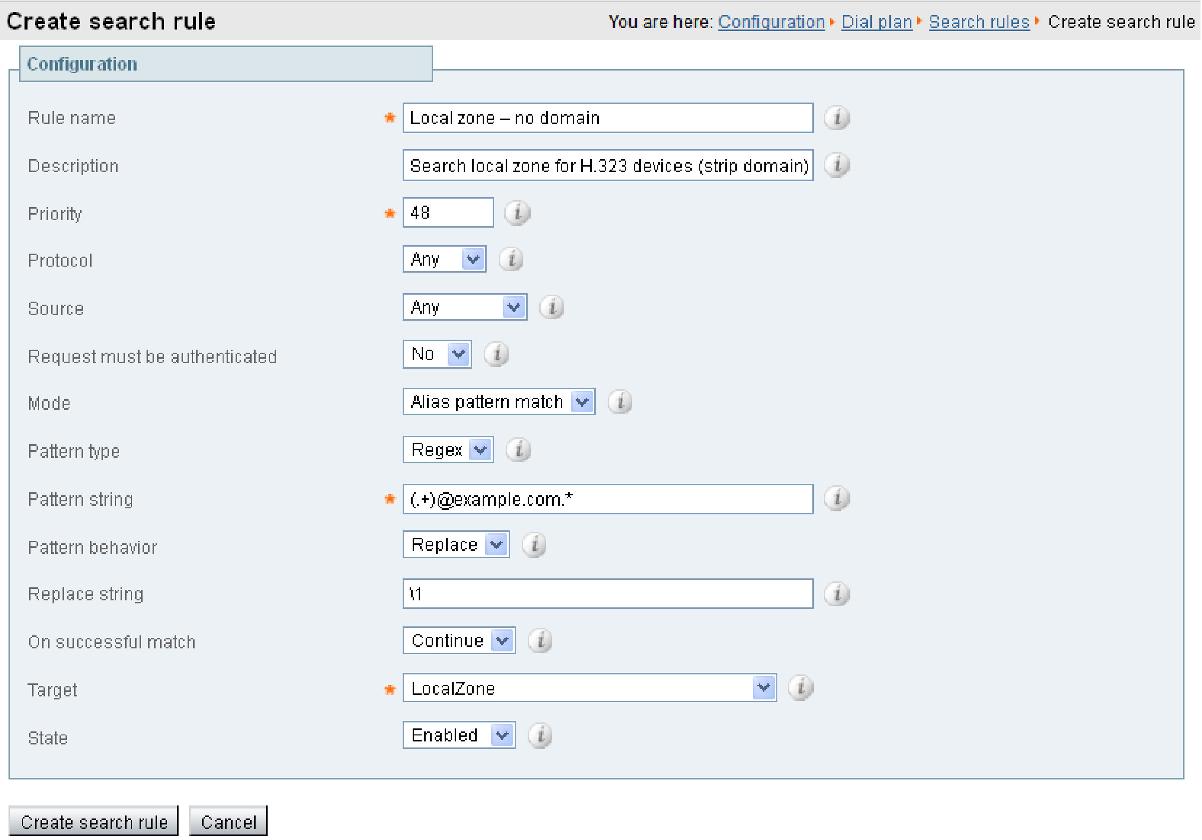
To configure the search rules to route calls to the Local Zone (to locally registered endpoint aliases):

1. Go to **Configuration > Dial plan > Search rules**.
2. Select the check box next to the default search rule (**LocalZoneMatch**).
3. Click **Delete**.
   (The default search rule is being deleted and replaced with a more specific configuration.)
4. Click **OK**.
5. Click **New**.
6. Configure the search rule fields as follows:

Rule name	Enter `Local zone – no domain`
Description	Enter `Search local zone for H.323 devices (strip domain)`
Priority	Enter `48`

Protocol	*Any*
Source	*Any*
Request must be authenticated	*No*
Mode	*Alias pattern match*
Pattern type	*Regex*
Pattern string	Enter `(.+)@example.com.*`
Pattern behavior	*Replace*
Replace string	Enter `\1`
On successful match	*Continue*
Target	*LocalZone*
State	*Enabled*

7. Click **Create search rule**.



Create search rule

You are here: Configuration ▸ Dial plan ▸ Search rules ▸ Create search rule

Configuration

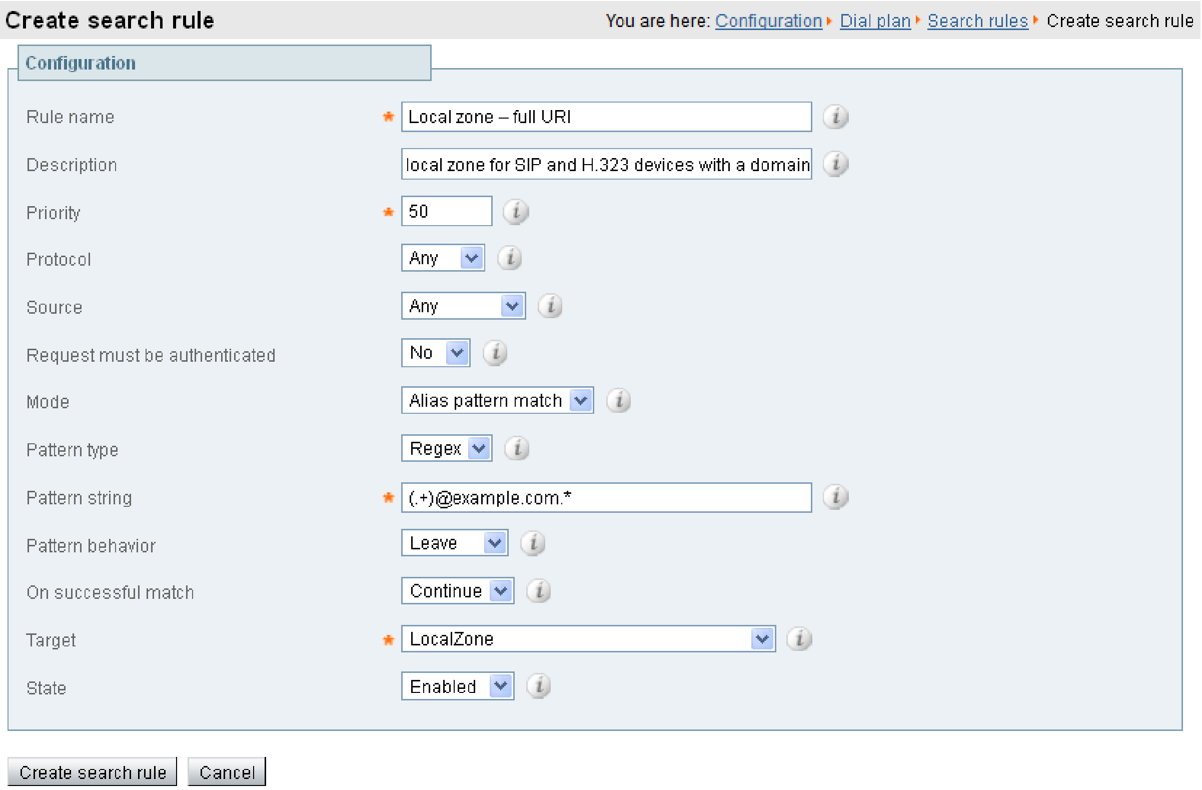
Rule name *	Local zone – no domain
Description	Search local zone for H.323 devices (strip domain)
Priority *	48
Protocol	Any
Source	Any
Request must be authenticated	No
Mode	Alias pattern match
Pattern type	Regex
Pattern string *	(.+)@example.com.*
Pattern behavior	Replace
Replace string	\1
On successful match	Continue
Target *	LocalZone
State	Enabled

8. Click **New**.
9. Configure the search rule fields as follows:

Rule name	Enter `Local zone – full URI`

Description	Enter **`Search local zone for SIP and H.323 devices with a domain`**
Priority	Enter **`50`**
Protocol	*Any*
Source	*Any*
Request must be authenticated	*No*
Mode	*Alias pattern match*
Pattern type	*Regex*
Pattern string	Enter **`(.+)@example.com.*`**
Pattern behavior	*Leave*
On successful match	*Continue*
Target	*LocalZone*
State	*Enabled*

10. Click **Create search rule**.



Create search rule

You are here: Configuration ▸ Dial plan ▸ Search rules ▸ Create search rule

Configuration

Rule name	*	Local zone – full URI
Description		local zone for SIP and H.323 devices with a domain
Priority	*	50
Protocol		Any
Source		Any
Request must be authenticated		No
Mode		Alias pattern match
Pattern type		Regex
Pattern string	*	(.+)@example.com.*
Pattern behavior		Leave
On successful match		Continue
Target	*	LocalZone
State		Enabled

Endpoint registration

There are two endpoints shown in the example network configuration diagram.

Endpoint	IP address	Network
EX90	10.0.0.15	Internal network
EX60	10.0.0.16	Internal network

Following the system configuration, endpoint registration should be possible using the following endpoint configuration details:

EX90 (uses SIP protocol)	
SIP URI	user.one.ex90@example.com
SIP Proxy1	vcsc.internal-domain.net
EX60 (uses H.323 and SIP protocol)	
H.323 ID	user.two.mxp@example.com
H.323 E.164	7654321
Gatekeeper IP Address	vcsc.internal-domain.net
SIP URI	user.two.mxp@example.com
SIP Proxy1	vcsc.internal-domain.net

System checks

Registration status

Check that all endpoints which are expected to be registered are actually registered to the relevant VCS, and that they are registering the expected aliases. All successfully registered endpoints are listed on **Status > Registrations > By device**.

If the expected endpoints are not registered:

- Review the endpoint’s registration configuration: is it configured to register with the VCS Expressway if located on the external network / internet, and to register with the VCS Control if located on the internal network?
- Review the SIP domains (Task 6: Configuring SIP domains [p.10]).
- Review any registration restriction configuration applied to the VCS (optional, see Task 11: Configuring registration restriction policy (optional) [p.20]).

Call signaling

If calls do not complete, despite the endpoints being successfully registered to a VCS:

- Review the VCS Control search rule configuration.
- Check the search history page for search attempts and failures (**Status > Search history**).
- Check the Event Log for call connection failure reasons (**Status > Logs > Event Log**).

Maintenance routine

Creating a system backup

To create a backup of VCS system data:

1. Go to **Maintenance > Backup and restore**.
2. Optionally, enter an **Encryption password** with which to encrypt the backup file.
   If a password is specified, the same password will be required to restore the file.
3. Click **Create system backup file**.
4. After the backup file has been prepared, a pop-up window appears and prompts you to save the file (the exact wording depends on your browser). The default name is in the format:
   <software version>_<hardware serial number>_<date>_<time>_backup.tar.gz.
   (The file extension is normally **.tar.gz.enc** if an encryption password is specified. However, if you use Internet Explorer to create an encrypted backup file, the filename extension will be **.tar.gz.gz** by default. These different filename extensions have no operational impact; you can create and restore encrypted backup files using any supported browser.)
   The preparation of the system backup file may take several minutes. Do not navigate away from this page while the file is being prepared.
5. Save the file to a designated location.

Log files are not included in the system backup file.

Optional configuration tasks

Task 9: Configuring Cisco TMS (optional)

The following configuration enables the VCS systems to be integrated to a Cisco TelePresence Management Server (Cisco TMS).

Further configuration tasks are required on Cisco TMS to fully integrate the VCS with the Cisco TMS server – see *Cisco TMS Administrator Guide*.

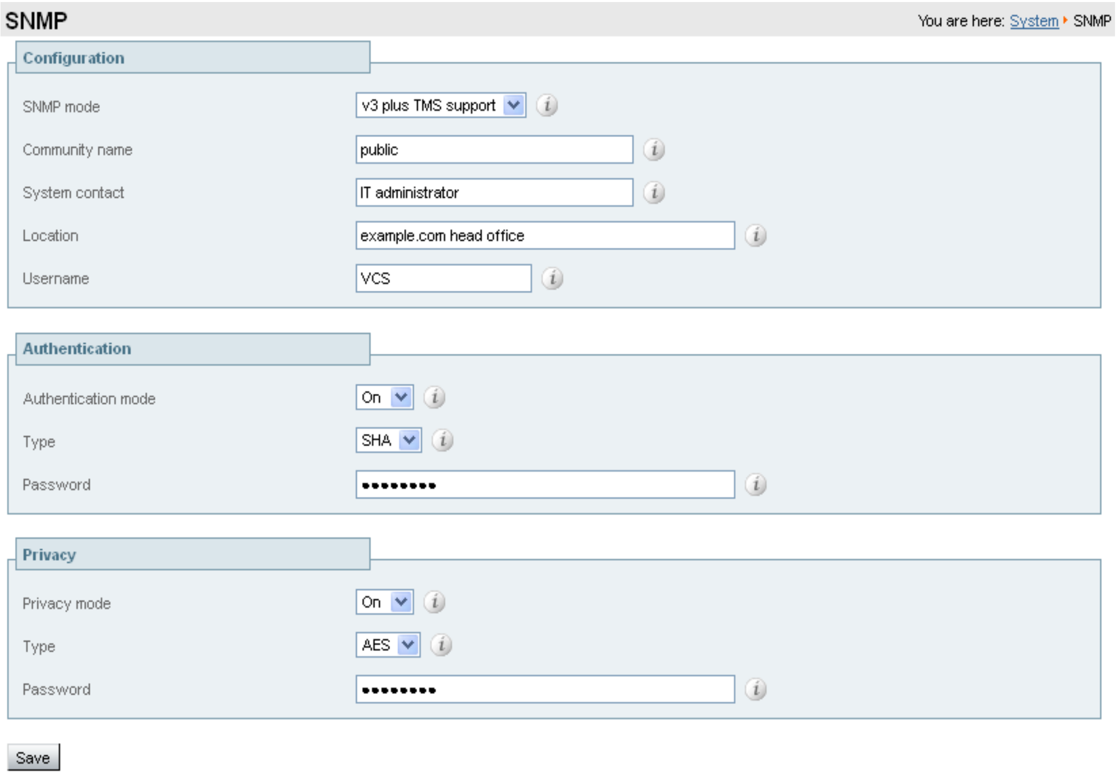
- Enabling SNMP speeds up the VCS - Cisco TMS integration process but is not essential.

To enable and configure SNMP:

1. Go to **System > SNMP**.
2. Configure the SNMP fields as follows:

SNMP mode	*v3 plus TMS support*
Community name	Check that it is `public`
System contact	Enter `IT administrator`
Location	Enter `example.com head office`
Username	Enter `VCS`
Authentication mode	*On*
Type	*SHA*
Password	Enter `ex4mpl3.c0m`
Privacy mode	*On*
Type	*AES*
Password	Enter `ex4mpl3.c0m`

3. Click **Save**.



SNMP

You are here: System ▸ SNMP

Configuration

SNMP mode	v3 plus TMS support
Community name	public
System contact	IT administrator
Location	example.com head office
Username	VCS

Authentication

Authentication mode	On
Type	SHA
Password	••••••••

Privacy

Privacy mode	On
Type	AES
Password	••••••••

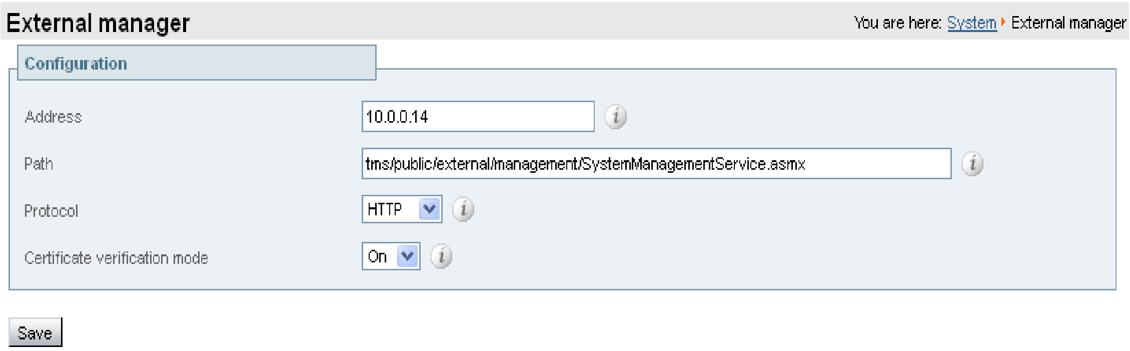
To configure the necessary external manager (Cisco TMS) parameters:

1. Go to **System > External manager**.
2. Configure the fields as follows:

Address	Enter `10.0.0.14`
Path	Enter `tms/public/external/management/SystemManagementService.asmx`
Protocol	Select *HTTP* or *HTTPS*
Certificate verification mode	Select *On* or *Off* (see Note below)

Note that the certificate is only verified if the value is *On* and the protocol is set to *HTTPS*. If you switch this on then Cisco TMS and VCS must have appropriate certificates.

3. Click **Save**.



External manager

You are here: System ▸ External manager

Configuration

Address	10.0.0.14
Path	tms/public/external/management/SystemManagementService.asmx
Protocol	HTTP
Certificate verification mode	On

Task 10: Configuring logging (optional)

The following configuration will enable event logs to be sent to an external logging server (using the SYSLOG protocol).

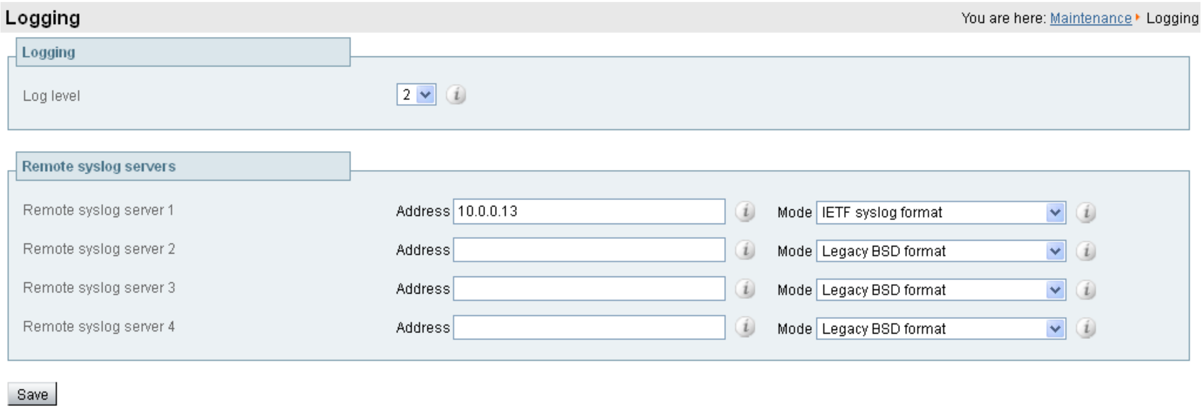
- The **Log level** controls the granularity of event logging. 1 is the least verbose, 4 the most.
- A minimum log level of 2 is recommended, as this level provides both system and basic signaling message logging.

To configure a logging server:

1. Go to **Maintenance > Logging**.
2. Configure the fields as follows:

Log level	*2*
Remote syslog server 1: Address	Enter `10.0.0.13`
Remote syslog server 1: Mode	*IETF syslog format*

3. Click **Save**.



Logging

You are here: Maintenance ▸ Logging

Logging

Log level: 2

Remote syslog servers

Remote syslog server 1	Address 10.0.0.13	Mode IETF syslog format	
Remote syslog server 2	Address	Mode Legacy BSD format	
Remote syslog server 3	Address	Mode Legacy BSD format	
Remote syslog server 4	Address	Mode Legacy BSD format	

Task 11: Configuring registration restriction policy (optional)

The aliases that endpoints can register can be limited using either an Allow list or a Deny list.

The following configuration will limit registrations to endpoints which register with an identity that contains "@example.com".

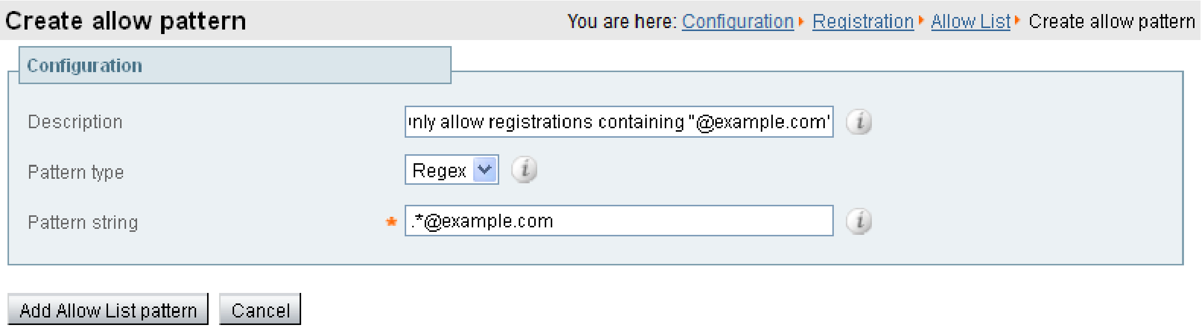
To configure Allow List registration restrictions:

1. Go to **Configuration > Registration > Allow List**.
2. Click **New**.
3. Create an allow pattern by configuring the fields as the follows:

Description	Enter **`Only allow registrations containing "@example.com"`**

Pattern type	*Regex*
Pattern string	Enter `.*@example.com`

4. Click **Add Allow List pattern**.



Create allow pattern

Configuration

Description: ınly allow registrations containing "@example.com'

Pattern type: Regex

Pattern string *: .*@example.com

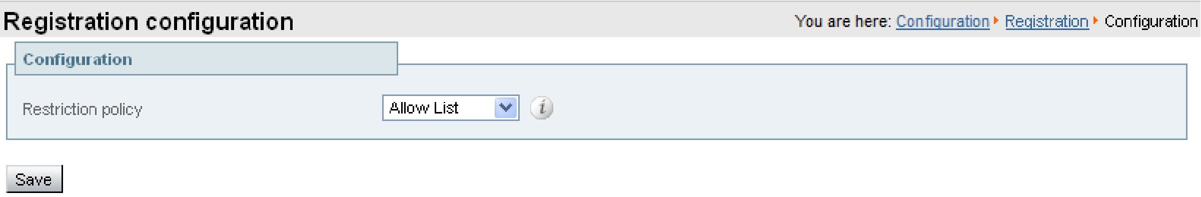
You are here: Configuration ▸ Registration ▸ Allow List ▸ Create allow pattern
Add Allow List pattern
Cancel

To activate the registration restriction:

1. Go to **Configuration > Registration > Configuration**.
2. Configure the **Restriction policy** as follows:

Restriction policy	*Allow List*

3. Click **Save**.



Registration configuration

Configuration

Restriction policy: Allow List

Task 12: Configuring device authentication policy (optional)

Authentication policy is applied by the VCS at the zone and subzone levels. It controls how the VCS challenges incoming messages (for provisioning, registration, presence, phone books and calls) from that zone or subzone and whether those messages are rejected, treated as authenticated, or treated as unauthenticated within the VCS.

Each zone and subzone can set its **Authentication policy** to either *Check credentials*, *Do not check credentials*, or *Treat as authenticated*.

- Registration authentication is controlled by the Default Subzone (or relevant alternative subzone) configuration.
- Initial provisioning subscription request authentication is controlled by the Default Zone configuration.
- Call, presence, and phone book request authentication is controlled by the Default Subzone (or relevant alternative subzone) if the endpoint is registered, or by the Default Zone if the endpoint is not registered.

By default, zones and subzones are configured as *Do not check credentials*.

Task 13: Restricting access to ISDN gateways (optional)

VCS users are recommended to take appropriate action to restrict unauthorized access to any ISDN gateway resources (also known as toll-fraud prevention). This optional step shows some methods in which this can be achieved.

In these examples, an ISDN gateway is registered to the VCS Control with a prefix of 9 (and/or has a neighbour zone specified that routes calls starting with a 9).

This example shows how to configure the VCS Control to stop calls coming in via the gateway from being able to route calls back out of the gateway. This is done by loading some specially constructed CPL onto the VCS Control and configuring its **Call policy mode** to use *Local CPL*.

Creating a CPL file

The CPL file to be uploaded onto the VCS can be created in a text editor.

Here are 2 example sets of CPL. In these examples:

- “GatewayZone” is the neighbour zone to the ISDN gateway
- “GatewaySubZone” is the subzone to the ISDN gateway (required if the gateway registers the 9 prefix to the VCS)
- Calls coming into the ISDN gateway and hitting a FindMe will not ring devices that use the gateway – for example, calls forwarded to a mobile phone will be disallowed

This example CPL excludes any checking of whether the calling party is authenticated or not:

```
<?xml version="1.0" encoding="UTF-8" ?>
<cpl xmlns="urn:ietf:params:xml:ns:cpl"
xmlns:taa="http://www.tandberg.net/cpl-extensions"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:ietf:params:xml:ns:cpl cpl.xsd">
<taa:routed>
  <taa:rule-switch>
    <!--Check that gateway is not hairpinning call - Neighbor zone -->
    <taa:rule originating-zone="GatewayZone" destination="9.*">
      <!-- Calls coming from the gateway may not send calls back out of this gateway -->
      <!-- Reject call with a status code of 403 (Forbidden) -->
      <reject status="403" reason="ISDN hairpin call denied"/>
    </taa:rule>
    <!-- Check that gateway is not hairpinning call - Subzone for registered gateway -->
    <taa:rule originating-zone="GatewaySubZone" destination="9.*">
      <!-- Calls coming from the gateway may not send calls back out of this gateway -->
      <!-- Reject call with a status code of 403 (Forbidden) -->
      <reject status="403" reason="ISDN hairpin call denied"/>
    </taa:rule>
    <taa:rule origin=".*" destination=".*">
      <!-- All other calls allowed -->
      <proxy/>
    </taa:rule>
  </taa:rule-switch>
</taa:routed>
</cpl>
```

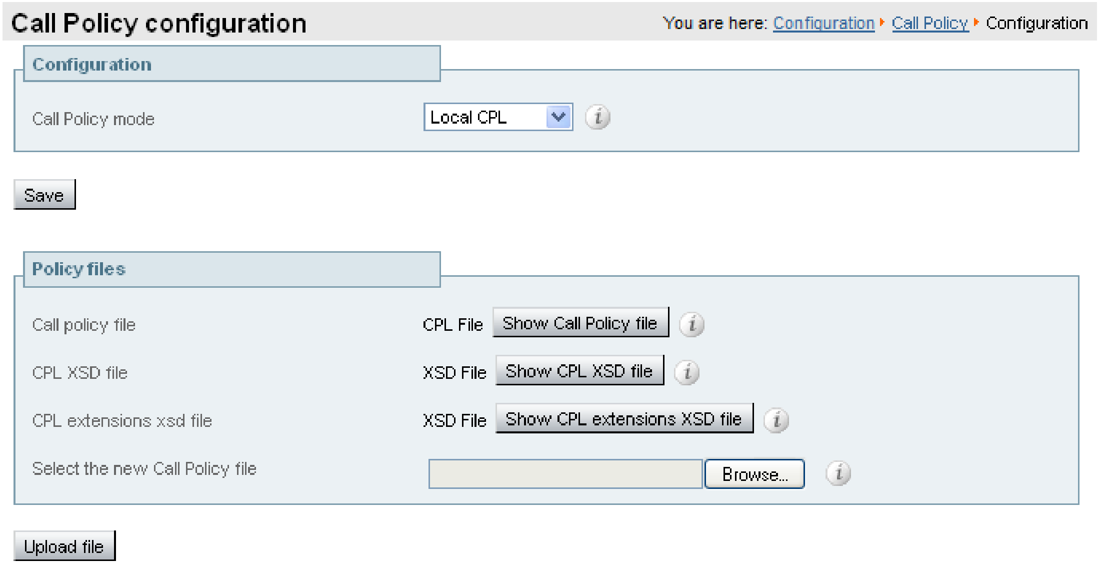
This example CPL also ensures that the calling party is authenticated:

```
<?xml version="1.0" encoding="UTF-8" ?>
<cpl xmlns="urn:ietf:params:xml:ns:cpl"
xmlns:taa="http://www.tandberg.net/cpl-extensions"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:ietf:params:xml:ns:cpl cpl.xsd">
<taa:routed>
  <taa:rule-switch>
    <!-- Check that calling party is authenticated -->
    <taa:rule authenticated-origin="" destination="9.*">
      <!-- Reject call with a status code of 403 (Forbidden) -->
      <reject status="403" reason="ISDN call denied as unauthenticated caller"/>
    </taa:rule>
    <!-- Check that gateway is not hairpinning call - Neighbor zone -->
    <taa:rule originating-zone="GatewayZone" destination="9.*">
      <!-- Calls coming from the gateway may not hairpin and send calls back out -->
      <!-- Reject call with a status code of 403 (Forbidden) -->
      <reject status="403" reason="ISDN hairpin call denied"/>
    </taa:rule>
    <!-- Check that gateway is not hairpinning call - Subzone for registered gateway -->
    <taa:rule originating-zone="GatewaySubZone" destination="9.*">
      <!-- Calls coming from the gateway may not hairpin and send calls back out -->
      <!-- Reject call with a status code of 403 (Forbidden) -->
      <reject status="403" reason="ISDN hairpin call denied"/>
    </taa:rule>
    <taa:rule origin=".*" destination=".*">
      <!-- All other calls allowed -->
      <proxy/>
    </taa:rule>
  </taa:rule-switch>
</taa:routed>
</cpl>
```

Loading the CPL onto VCS Control

To configure the VCS Control to use the CPL:

1. Go to **Configuration > Call Policy > Configuration**.
2. Click **Browse...** and select your CPL file (created above) from your file system.
3. Click **Upload file**.
   - You should receive a "File upload successful" message.
   - If you receive an "XML invalid" message then you must correct the problems with the CPL file and upload it again.
4. Select a **Call policy mode** of *Local CPL*.
5. Click **Save**.



Call Policy configuration

You are here: Configuration ▸ Call Policy ▸ Configuration

Configuration

Call Policy mode	Local CPL

Policy files

Call policy file	CPL File
CPL XSD file	XSD File
CPL extensions xsd file	XSD File
Select the new Call Policy file	

Appendix 1: Configuration details

This appendix summarizes the configuration required for the VCS Control.

VCS Control system configuration

Configuration item	Value	VCS page
System configuration		
System name	VCSc	System > Administration
LAN1 IPv4 address	10.0.0.2	System > IP
IPv4 gateway	10.0.0.1	System > IP
LAN1 subnet mask	255.255.255.0	System > IP
DNS server address 1	10.0.0.11	System > DNS
DNS server address 2	10.0.0.12	System > DNS
DNS Domain name	internal-domain.net	System > DNS
DNS System host name	vcsc	System > DNS
NTP server 1	10.0.0.21	System > Time
Time zone	GMT	System > Time
Protocol configuration		
SIP domain name	example.com	Configuration > Domains

VCS Control transforms and search rules

Configuration item	Value	VCS page
Transform		
Pattern string	([^@]*)	Configuration > Dial plan > Transforms
Pattern type	Regex	Configuration > Dial plan > Transforms
Pattern behavior	Replace	Configuration > Dial plan > Transforms
Replace string	\1@example.com	Configuration > Dial plan > Transforms
Local search rule 1		
Rule name	Local zone – no domain	Configuration > Dial plan > Search rules
Priority	48	Configuration > Dial plan > Search rules
Source	Any	Configuration > Dial plan > Search rules
Mode	Alias pattern match	Configuration > Dial plan > Search rules
Pattern type	Regex	Configuration > Dial plan > Search rules
Pattern string	(.+)@example.com.*	Configuration > Dial plan > Search rules
Pattern behavior	Replace	Configuration > Dial plan > Search rules
Replace string	\1	Configuration > Dial plan > Search rules
On successful match	Continue	Configuration > Dial plan > Search rules

Configuration item	Value	VCS page
Target	LocalZone	Configuration > Dial plan > Search rules
Local search rule 2		
Rule name	Local zone – full URI	Configuration > Dial plan > Search rules
Priority	50	Configuration > Dial plan > Search rules
Source	Any	Configuration > Dial plan > Search rules
Mode	Alias pattern match	Configuration > Dial plan > Search rules
Pattern type	Regex	Configuration > Dial plan > Search rules
Pattern string	(.+)@example.com.*	Configuration > Dial plan > Search rules
Pattern behavior	Leave	Configuration > Dial plan > Search rules
On successful match	Continue	Configuration > Dial plan > Search rules
Target	LocalZone	Configuration > Dial plan > Search rules

Appendix 2: DNS records

The following records are required in the local DNS which hosts the internally routable domain: internal-domain.net to allow internal messages to be routed to the VCS Control.

Local DNS A record

Host	Host IP address
vcsc.internal-domain.net	10.0.0.2

Local DNS SRV records

Name	Service	Protocol	Priority	Weight	Port	Target host
internal-domain.net.	h323cs	tcp	10	10	1720	vcsc.internal-domain.net.
internal-domain.net.	h323ls	udp	10	10	1719	vcsc.internal-domain.net.
internal-domain.net.	h323rs	udp	10	10	1719	vcsc.internal-domain.net.
internal-domain.net.	sip	tcp	10	10	5060	vcsc.internal-domain.net.
internal-domain.net.	sip	udp *	10	10	5060	vcsc.internal-domain.net.
internal-domain.net.	sips	tcp	10	10	5061	vcsc.internal-domain.net.

* SIP UDP is disabled on VCS by default.

For example, the DNS records would be:

```
_h323cs._tcp.internal-domain.net. 86400 IN SRV 10 10 1720 vcsc.internal-domain.net.
_h323ls._udp.internal-domain.net. 86400 IN SRV 10 10 1719 vcsc.internal-domain.net.
_h323rs._udp.internal-domain.net. 86400 IN SRV 10 10 1719 vcsc.internal-domain.net.
_sip._tcp.internal-domain.net.    86400 IN SRV 10 10 5060 vcsc.internal-domain.net.
_sip._udp.internal-domain.net.    86400 IN SRV 10 10 5060 vcsc.internal-domain.net.
_sips._tcp.internal-domain.net.   86400 IN SRV 10 10 5061 vcsc.internal-domain.net.
vcsc.internal-domain.net.         86400 IN A 10.0.0.2
```

Checking for updates and getting help

If you experience any problems when configuring or using the product, consult the online help available from the user interface. The online help explains how the individual features and settings work.

If you cannot find the answer you need, check the web site at http://www.cisco.com/cisco/web/support/index.html where you will be able to:

- make sure that you are running the most up-to-date software,
- find further relevant documentation, for example product user guides, printable versions of the online help, reference guides, and articles that cover many frequently asked questions,
- get help from the Cisco Technical Support team. Click on Technical Support Overview for information on Accessing Cisco Technical Services. Make sure you have the following information ready before raising a case:
  - the serial number and product model number of the unit (if applicable)
  - the software build number which can be found on the product user interface (if applicable)
  - your contact email address or telephone number
  - a full description of the problem

Document revision history

Revision	Date	Description
04	December 2013	Updated for X8.1.
03	August 2012	Revised document structure and updated for X7.2.
02	October 2010	New document template applied.
01	September 2009	Initial release.

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.