



Cisco Single VCS Control – Basic Configuration

Deployment Guide

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Cisco VCS X8.11.1

Preface

Change History

Table 1 Deployment Guide Change History

Date	Change
September 2018	Updated software version from X8.11 to X8.11.1, as version X8.11 is no longer available.
July 2018	Republished for X8.11. Removed duplicate port reference information
December 2016	Republished for X8.9.
July 2016	Republished for X8.8.
November 2015	New template applied.
July 2015	Updated for X8.6.
April 2015	Menu path changes for X8.5. Republished with X8.5.2.
December 2014	Republished for X8.5.
June 2014	Republished for X8.2.
December 2013	Updated for X8.1.
August 2012	Revised document structure and updated for X7.2.
October 2010	New document template applied.
September 2009	Initial release.

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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. It takes you through the following tasks:

1. Using the Service Setup Wizard to select the services you want to use and to apply the corresponding keys (licenses).
2. Configuring system parameters and routing information.
3. Checking that the system is working as expected.
4. Configuring optional items such as Cisco TMS, system logging, and access restrictions.

If your deployment includes a VCS Expressway, use the *VCS Basic Configuration (Control with Expressway) Deployment Guide* on the [VCS configuration guides page](#) instead.

The appendices to the document provide detailed reference information, as follows:

- VCS configuration details used in this document are listed in [Appendix 1: Configuration Details, page 29](#).
- DNS records required for the example deployment used in this document are in [Appendix 2: DNS Records, page 31](#).

For descriptions of all system configuration parameters, see the *VCS Administrator Guide* and the VCS web application's online field help [?](#) and page help [?](#).

Example configuration values used in this guide

For ease of reading this guide is based around an example deployment, which uses the following assumed configuration values throughout:

LAN1 IPv4 address	10.0.0.2
IPv4 gateway	10.0.0.1
LAN1 subnet mask	255.255.255.0
Domain name	<i>internal-domain.net</i>

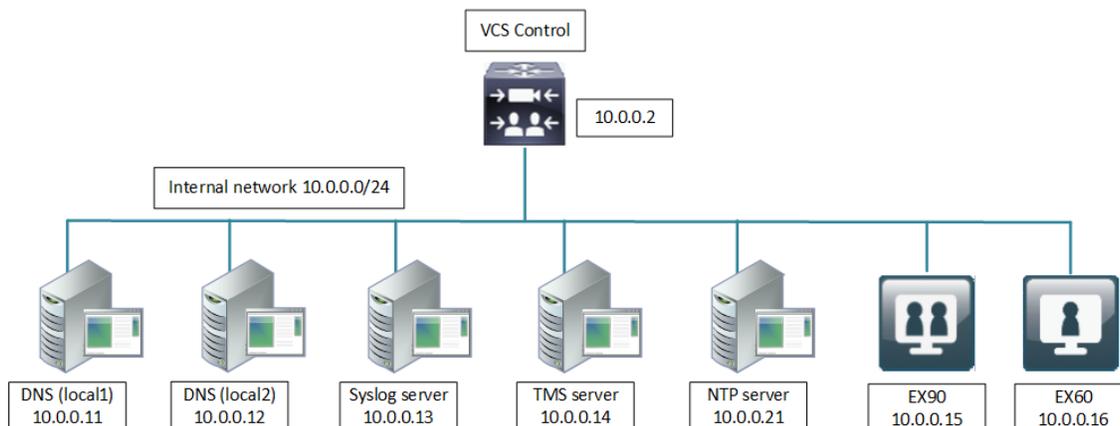
Information in other deployment guides

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

- *VCS Cluster Creation and Maintenance Deployment Guide* on the [VCS configuration guides page](#)
- *Cisco TMS Provisioning Extension Deployment Guide* on the [VCS configuration guides page](#)
- *FindMe Express Deployment Guide* on the [VCS configuration guides page](#) (to deploy FindMe with the Cisco TMSPE see the *Cisco TMS Provisioning Extension Deployment Guide* instead)
- *Cisco VCS Authenticating Devices* on the [VCS configuration guides page](#)

Example Network Deployment

Figure 1 Example Network for the Deployment Described in this Document



Network Elements

Internal Network Elements

The internal network elements are devices which are hosted on your local area network. Elements on the internal network have an internal network domain name. This 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).

Element	Role
VCS Control	SIP Registrar & Proxy and H.323 Gatekeeper for devices which are located on the internal network.
EX90 and EX60	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	Provides host, IP gateway, DNS server, and NTP server addresses to endpoints located on the internal network.
Cisco TMS Server	Management and scheduling server. See Task 10: Configuring Cisco TMS (Optional), page 23 .
Syslog Server	Logging server for Syslog messages. See Task 11: Configuring Logging (Optional), page 25 .
NTP Server	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, page 31](#).

Process Summary

Before You Begin

- [Prerequisites, page 8](#)

Run the Service Setup Wizard

- [Task 1: Accessing and Navigating the Wizard, page 9](#)
- [Task 2: Running the Service Setup Wizard and Applying Licenses, page 11](#)
- [Examples for Running the Service Setup Wizard, page 1](#)

VCS system configuration tasks

- [Task 3: Setting the System Name, page 12](#)
- [Task 4: Configuring DNS, page 12](#)
- [Task 5: Replacing the Default Server Certificate, page 13](#)
- [Task 6: Configuring NTP Servers, page 14](#)
- [Task 7: Configuring SIP Domains, page 15](#)

Routing configuration tasks

- [Task 8: Configuring Transforms, page 16](#)
- [Task 9: Configuring Local Zone Search Rules, page 17](#)

Optional configuration tasks

- [Task 10: Configuring Cisco TMS \(Optional\), page 23](#)
- [Task 11: Configuring Logging \(Optional\), page 25](#)
- [Task 12: Configuring Registration Restriction Policy \(Optional\), page 25](#)
- [Task 13: Configuring Device Authentication Policy \(Optional\), page 26](#)
- [Task 14: Restricting Access to ISDN Gateways \(Optional\), page 26](#)

Prerequisites

Prerequisites

Before you begin any of the tasks in this guide, make sure that the following prerequisites are complete.

General prerequisites

- We recommend that you use the VCS web user interface to do the system configuration. This guide assumes that you are using a web browser running on a PC. The PC needs an Ethernet connection to a LAN which can route HTTP(S) traffic to the VCS.
- Review the relevant release notes on the [VCS release notes page](#).
- Have the *VCS Administrator Guide* on the [VCS maintenance and operation guides page](#) available for reference before you start.

IP address and password prerequisites

This guide also assumes that you have already configured a static IP address and changed the default passwords, as described in the appropriate installation guide:

Cisco Video Communication Server CE1100 Appliance Installation Guide on the [VCS installation guides page](#).

Note: VCS requires a static IP address. It doesn't use DHCP/SLAAC to get an IP address.

Run the Service Setup Wizard

Overview

The Service Setup Wizard makes it easier to configure and license the VCS for its chosen purpose in your environment. It also simplifies the user interface. You select from a list of popular VCS services and the wizard then prompts you with the licensing requirements for those services. You can also use the wizard to review and edit the VCS basic network settings (typically already configured during initial installation).

When you restart the VCS, the user interface is tailored to match your service selections. You only see menus and pages for the services you chose.

Note: Some services are incompatible and cannot be selected together. The [VCS Administrator Guide](#) and the online help provide a matrix of compatible services. The matrix specifies which services you can use together on the same system or cluster.

What If I Don't Want to Use the Wizard?

A skip option exists if you don't want to use the wizard. If you change your mind later, you can go back and run it at any time (**Status > Overview** page; click **Run service setup**).

If you opt to skip the wizard, you need to deal with the VCS licensing setup requirements manually before you start the configuration tasks in this guide. Also, the user interface isn't customized to reflect your specific service selections.

Task 1: Accessing and Navigating the Wizard

There are multiple ways to access the wizard:

- As of X8.8, you'll automatically see the Service Setup Wizard when you first log in to the VCS user interface. You don't need to launch it.
- If you previously logged in or have upgraded, you'll see the **Status > Overview** page as usual. Click **Run service setup** to launch the wizard.
- If you've already run the wizard you can rerun it at any time. From the **Status > Overview** page, click **Return to service setup**.

To navigate the wizard:

- Click **Skip Service Setup Wizard** if you want to back out of the wizard completely, or **Back** to return to the previous page.
- Click **Continue** to save and move to the next wizard page.

Run the Service Setup Wizard

Figure 2 Service Setup Wizard Example – Selection Page

Welcome to Cisco Collaboration services ? Help Logout

Select Series

Expressway series	<input checked="" type="radio"/> <small>i</small>
VCS series	<input type="radio"/>

Select Type

Expressway-C	<input checked="" type="radio"/> <small>i</small>
Expressway-E	<input type="radio"/>

Select Services

After you select services, you get a simplified menu that is relevant to your selection. i

Cisco Spark Hybrid Services	<input type="checkbox"/>
Mobile and remote access	<input type="checkbox"/>
Jabber Guest services	<input type="checkbox"/>
Microsoft interoperability	<input type="checkbox"/>
Registrar	<input type="checkbox"/>
Collaboration Meeting Rooms (CMR) Cloud	<input type="checkbox"/>
Business to business calls	<input type="checkbox"/>
Proceed without selecting services	<input type="checkbox"/>

If you proceed without selecting services, you will get the full menu.

Task 2: Running the Service Setup Wizard and Applying Licenses

This guide applies to deployments with local networking only (with the VCS Control but no VCS Expressway). For these deployments, choose the *Registrar* service in the wizard. This is the core video conferencing service.

Note: If you try to add more than 65 option keys (licenses), they appear as normal on the **Option keys** page. However, only the first 65 keys take effect. Additional keys from 66 onwards appear to be added, but actually the VCS does not process them. CDETS [CSCvf78728](#) refers.

Process

1. Choose *VCS series*.
2. Choose *VCS Control*.
3. Check the box for the *Registrar* service.
4. Click **Continue** to move to the **Option keys** page of the wizard.
5. On the **Option Keys** page, click the [Product License Registration Portal](#) link to go to the licensing portal. (For this step you need to work away from the wizard to obtain the necessary licenses, and you need the serial number of the system.) In the licensing portal, enter the necessary details for the required licenses.

Detailed information about using the licensing portal is in the online help or the [VCS Administrator Guide](#). An ordering guide for our products is available on the Cisco [Collaboration Ordering Guides page](#).
6. Wait for system-generated emails from the licensing portal with the release key and option key.
7. Back in the wizard, paste the text from the release key email into the first text area. The system reads the release key out of the pasted text and displays it next to the text area.
8. Paste the text from the option keys email into the second text area. The system reads the option keys out of the pasted text and displays them next to the text area.
9. Create a new paste area and paste in your room or desktop system registration license keys.
10. Click **Add Keys**.
11. Click **Continue**.
12. Review the network configuration and modify the settings if necessary. Save any changes before you continue the wizard.
13. Click **Finish**.
14. Restart the system when prompted.

Result: When you log in, the user interface is tailored to match your service selections. You only see menus and pages for the services you chose.

What to do next

The Service Setup Wizard part of the configuration process is now complete. Go to the next section in this guide "[VCS System Configuration](#)."

VCS System Configuration

Task 3: Setting the System Name

The **System name** defines the name of the VCS. It appears in various places in the web interface and is also used by Cisco TMS. We recommend using a name that lets you easily and uniquely identify the VCS.

To configure the **System name**:

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

System name	Enter <code>vcsc</code>
--------------------	-------------------------

3. Click **Save**.



Task 4: 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 <code>vcsc</code>
-------------------------	-------------------------

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 <code>internal-domain.net</code>
--------------------	--

3. Click **Save**.

The fully qualified domain name for the VCS Control is now `vcsc.internal-domain.net`

VCS System Configuration

DNS Servers

The DNS server addresses specify the IP addresses of up to five domain name servers to be used for resolving domain names. In either of the following cases you must specify at least one default DNS server for address resolution:

- To use fully qualified domain names instead of IP addresses when specifying external addresses. For example, for LDAP and NTP servers, neighbor zones and peers.
- To use features such as URI dialing or ENUM dialing.

The VCS queries one server at a time. If that server is unavailable the VCS tries another server from the list.

In the example deployment two 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 ⓘ

Domain name ⓘ

DNS requests port range ⓘ

Default DNS servers

Address 1 ⓘ

Address 2 ⓘ

Address 3 ⓘ

Address 4 ⓘ

Address 5 ⓘ

Task 5: 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. The certificate must be signed by a Certificate Authority (CA).
- The client must trust the CA that signed the certificate used by the server.

VCS System Configuration

The VCS lets you install a certificate that can represent the VCS 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 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.

Table 2 VCS Role in Different Connection Types

In connections...	The VCS acts as...
To an endpoint.	TLS server.
To an LDAP server.	Client.
Between two VCS systems.	Either VCS may be the client. The other VCS is the TLS server.
Over HTTPS.	Web browser is the client. VCS is the server.

TLS can be difficult to configure. For example, when using it with an LDAP server we recommend verifying that the system works correctly over TCP, before you attempt to secure the connection with TLS. We also recommend using a third-party LDAP browser to verify that your LDAP server is correctly configured for TLS.

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

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

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

For full information, see *VCS Certificate Creation and Use Deployment Guide* on the [VCS configuration guides page](#).

Task 6: 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**.

VCS System Configuration

Time You are here: [System](#) > [Time](#)

NTP servers

NTP server 1	Address	<input type="text" value="10.0.0.21"/>		Authentication	<input type="text" value="Disabled"/>	
NTP server 2	Address	<input type="text"/>		Authentication	<input type="text" value="Disabled"/>	
NTP server 3	Address	<input type="text"/>		Authentication	<input type="text" value="Disabled"/>	
NTP server 4	Address	<input type="text"/>		Authentication	<input type="text" value="Disabled"/>	
NTP server 5	Address	<input type="text"/>		Authentication	<input type="text" value="Disabled"/>	

Time zone

Time zone

Task 7: 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 12: Configuring Registration Restriction Policy \(Optional\)](#), page 25.
- 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

What To Do Next

The VCS system configuration is now complete. Go to the next section, "[Routing Configuration](#)."

Routing Configuration

Pre-search Transforms

Pre-search transform configuration allows the destination alias (called address) in an incoming search request to be modified. The VCS applies the transformation 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 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 automatically appends 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.

- Use pre-search transforms with care. They apply to *all* incoming signaling messages, not just to call requests.
- Transformations can also be carried out in search rules. Consider whether it's 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 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 8: 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, thus standardizing all called destination aliases into a SIP URI format.

To configure the transform:

1. Go to **Configuration > Dial plan > Transforms**.
2. Click **New**.

- Configure the transform fields as follows:

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

- Click **Create transform**.

Create transform You are here: [Configuration](#) > [Dial plan](#) > [Transforms](#) > Create transform

Configuration

Priority	<input type="text" value="1"/> ⓘ
Description	<input type="text" value="Transform destination aliases to URI format"/> ⓘ
Pattern type	Regex ⓘ
Pattern string	* <input type="text" value="([^\@]*)"/> ⓘ
Pattern behavior	Replace ⓘ
Replace string	<input type="text" value="\1@example.com"/> ⓘ
State	Enabled ⓘ

Task 9: Configuring Local Zone Search Rules

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

- Go to **Configuration > Dial plan > Search rules**.
- First disable the supplied default search rule (**LocalZoneMatch**), as follows:
 - Select the check box next to **LocalZoneMatch**.
 - Click **Disable**.
 - Click **OK**.
- Click **New**.

Routing Configuration

4. 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

5. Click **Create search rule**.

Create search rule You are here: [Configuration](#) > [Dial plan](#) > [Search rules](#) > Create search rule

Configuration

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

Routing Configuration

6. Click **New**.
7. 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	<i>Any</i>
Source	<i>Any</i>
Request must be authenticated	<i>No</i>
Mode	<i>Alias pattern match</i>
Pattern type	<i>Regex</i>
Pattern string	Enter <code>(.+@example.com.*</code>
Pattern behavior	<i>Leave</i>
On successful match	<i>Continue</i>
Target	<i>LocalZone</i>
State	<i>Enabled</i>

8. Click **Create search rule**.

Endpoint Registration

The example network configuration diagram shows two endpoints.

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

After system configuration, endpoint registration should be possible using these 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

What To Do Next

The VCS routing configuration is now complete. Go to the next section, "*System Checks*."

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 following items:

- The endpoint's registration configuration. Is it configured to register with the VCS Control if located on the internal network?
- The SIP domains ([Task 7: Configuring SIP Domains, page 15](#)).
- Any registration restriction configuration applied to the VCS (optional, [Task 12: Configuring Registration Restriction Policy \(Optional\), page 25](#)).

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**).

Connectivity Test Tool

The SRV connectivity tester is a network utility that tests whether the VCS can connect to particular services on a given domain. You can use this tool to proactively test your connectivity while configuring VCS-based solutions such as Cisco Webex Hybrid Call Service or business-to-business video calling. You specify the DNS Service Record Domain and the Service Record Protocols you want to query for that domain. The VCS does a DNS SRV query for each specified protocol, and then attempts TCP connections to the hosts returned by the DNS. If you specify TLS, the VCS only attempts a TLS connection after the TCP succeeds. The VCS connectivity test page shows the DNS response and the connection attempts. For any connection failures, the reason is provided along with advice to help with resolving specific issues. To troubleshoot connectivity, you can download the TCP data from your test in *.pcap* format. You can selectively download a dump of the DNS query, or a specific connection attempt, or you can get a single *.pcap* file showing the whole test.

What To Do Next

When you've completed the system checks and are satisfied that the system is working as expected, [create a system backup](#) and then go on to "[Optional Configuration Tasks](#)".

Maintenance Routine

Creating a System Backup

Before You Begin

- From X8.11, backup files are always encrypted. In particular because they include the bootstrap key, and authentication data and other sensitive information.
- Backups can only be restored to a system that is running the **same version of software from which the backup was made**.
- You can create a backup on one VCS and restore it to a different VCS. For example if the original system has failed. Before the restore, you must install the same option keys on the new system that were present on the old one.

If you try to restore a backup made on a different VCS, you receive a warning message, but you will be allowed to continue.

(If you use FIPS140-2 cryptographic mode) You can't restore a backup made on a non-FIPS system, onto a system that's running in FIPS mode. You can restore a backup from a FIPS-enabled system onto a non-FIPS system.

- Do not use backups to copy data between VCSs. If you do so, system-specific information will be duplicated (like IP addresses).
- Because backup files contain sensitive information, you should not send them to Cisco in relation to technical support cases. Use snapshot and diagnostic files instead.

Passwords

- From X8.11, all backups must be password protected.
- If you restore to a previous backup, and the administrator account password has changed since the backup was done, you must also provide the old account password when you first log in after the restore.
- Active Directory credentials are **not** included in system backup files. If you use NTLM device authentication, you must provide the Active Directory password to rejoin the Active Directory domain after any restore.
- For backup and restore purposes, emergency account passwords are handled the same as standard administrator account passwords.

Process

To create a backup of VCS system data:

1. Go to **Maintenance > Backup and restore**.
2. Enter an **Encryption password** to encrypt the backup file.
Caution: The password will be required in future if you ever want to restore the backup file.
3. Click **Create system backup file**.
4. Wait for the backup file to be created. This may take several minutes. Do not navigate away from this page while the file is being prepared.
5. When the backup is ready, you are prompted to save it. The default filename uses format: **<software version>_<hardware serial number>_<date>_<time>_backup.tar.gz.enc**. Or if you use Internet Explorer, the default extension is **.tar.gz.gz**. (These different filename extensions have no operational impact, and you can create and restore backups using any supported browser.)
6. Save the backup file to a secure location.

Optional Configuration Tasks

Task 10: Configuring Cisco TMS (Optional)

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

Points to note:

- Further configuration tasks are also required on Cisco TMS to fully integrate the VCS with the TMS server. For details, see *Cisco TMS Administrator Guide* on the [TMS Maintain and Operate Guides page](#).
- Enabling SNMP speeds up the VCS - TMS integration process, but is not essential.

To enable and configure SNMP:

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

SNMP mode	<i>v3 plus TMS support</i>
Community name	Check that it is <code>public</code>
System contact	Enter <code>IT administrator</code>
Location	Enter <code>example.com head office</code>
Username	Enter <code>vcs</code>
Authentication mode	<i>On</i>
Type	<i>SHA</i>
Password	Enter <code>ex4mp13.c0m</code>
Privacy mode	<i>On</i>
Type	<i>AES</i>
Password	Enter <code>ex4mp13.c0m</code>

- Click **Save**.

Optional Configuration Tasks

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 <i>HTTP</i> or <i>HTTPS</i>
Certificate verification mode	Select <i>On</i> or <i>Off</i> The certificate is only verified if the value is <i>On</i> and the protocol is set to <i>HTTPS</i> . If you switch this on then Cisco TMS and VCS must have appropriate certificates.

3. Click **Save**.

Optional Configuration Tasks

External manager You are here: [System](#) > External manager

Configuration

Address: ⓘ

Path: ⓘ

Protocol: HTTP ⓘ

Certificate verification mode: On ⓘ

Task 11: Configuring Logging (Optional)

The following configuration enables event logs to be sent to an external logging server using the SYSLOG protocol.

- The **Local event log verbosity** setting controls the granularity of event logging. 1 is the least verbose, 4 the most.
- We recommend a minimum level of 2. This provides both system and basic signaling message logging.

To configure a logging server:

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

Local event log verbosity	2
Remote syslog server 1: Address	Enter 10.0.0.13
Remote syslog server 1: Message Format	<i>IETF syslog format</i>

3. Click **Save**.

Task 12: Configuring Registration Restriction Policy (Optional)

You can limit the aliases that endpoints can register, using either an Allow list or a Deny list. This is an example of how to configure Allow list registration restrictions:

1. Go to **Configuration > Registration > Allow List**.
2. Click **New**.
3. Create an allow pattern by configuring the following fields. This example limits registrations to endpoints which register with an identity that contains “@example.com”.

Description	Enter Only allow registrations containing “@example.com”
Pattern type	<i>Regex</i>
Pattern string	Enter .*@example\.com

Optional Configuration Tasks

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

Create allow pattern You are here: [Configuration](#) > [Registration](#) > [Allow List](#) > Create allow pattern

Configuration

Description i

Pattern type i

Pattern string i

To activate the registration restriction:

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

Restriction policy	<i>Allow List</i>
---------------------------	-------------------

3. Click **Save**.

Registration configuration You are here: [Configuration](#) > [Registration](#) > Configuration

Configuration

Restriction policy i

Task 13: 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 *Check credentials*, *Do not check credentials*, or *Treat as authenticated*.

- Registration authentication is controlled by the Default Subzone configuration (or the relevant alternative subzone).
- 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 14: Restricting Access to ISDN Gateways (Optional)

We recommend that you restrict unauthorized access to any ISDN gateway resources (also known as toll-fraud prevention). This section describes one way to achieve this.

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

This example describes how to configure the VCS Control to stop calls that come in through the gateway, from being able to route calls back out of the gateway.

Optional Configuration Tasks

To do this, you load some specially constructed CPL onto the VCS Control and configure its **Call policy mode** to use *Local CPL*.

Creating a CPL File

The CPL file can be created in a text editor.

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

- “GatewayZone” is the neighbor 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 do not ring devices that use the gateway. So for example, calls forwarded to a mobile phone are disallowed.

This example CPL excludes any checking of whether 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 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>
  </taa:rule-switch>
</taa:routed>
</cpl>
```

Optional Configuration Tasks

```

</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....** Select the CPL file you created in the previous step from your file system.
3. Click **Upload file**.
 - If the file upload succeeds, you see a "File upload successful" message.
 - If you receive an "XML invalid" message, 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	VCS	System > Administration
LAN1 IPv4 address	10.0.0.2	System > Network interfaces > IP
IPv4 gateway	10.0.0.1	System > Network interfaces > IP
LAN1 subnet mask	255.255.255.0	System > Network interfaces > 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

Appendix 1: Configuration Details

Configuration item	Value	VCS page
Replace string	\1	Configuration > Dial plan > Search rules
On successful match	Continue	Configuration > Dial plan > Search rules
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
```

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