



SCCP (Skinny) Phone/Endpoint Troubleshooting

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Overview

The Skinny Client Control Protocol (SCCP) comprises of a messaging set between a skinny client and the Cisco CallManager call-processing server and is a lightweight alternative to H.323. All of the Cisco IP Phones communicate with the Cisco CallManager through SCCP.

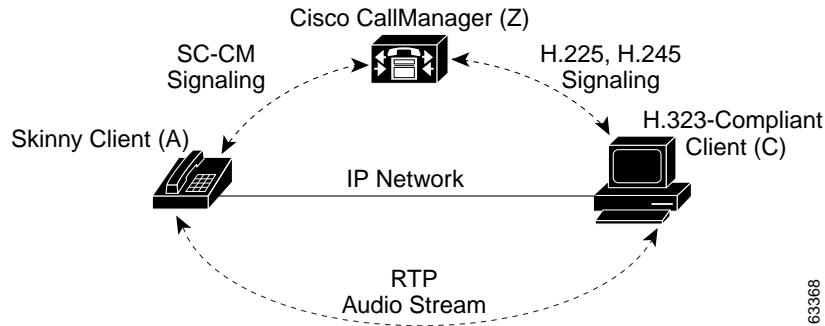
A skinny client uses:

- TCP/IP to and from one or more Cisco CallManagers to transmit and receive stimulus.
- RTP/UDP/IP to and from a similar skinny client or H.323 terminal for audio.

SCCP is a stimulus-based protocol and is designed as a communications protocol for hardware endpoints and other embedded systems, with significant CPU and memory constraints.

Architecture

[Figure 27](#) shows the interaction between skinny and H.323 clients through the Cisco CallManager server. The skinny client signaling is from the phone to the Cisco CallManager server. The Cisco CallManager server in turn translates the call-control messages to the H.323 client using H.225 for call routing and H.245 for negotiation. After the call is established, the RTP audio stream runs directly between both clients.

Figure 27 Skinny Client to/from H.323 Client Example**Note**

SCCP is a Cisco proprietary protocol. Special approval and technology licensing agreements are required in order to receive access to SCCP development resources.

Troubleshooting Tools

Commercially-available tools, such as Sniffer Pro or Ethereal, need to be used for collecting the packets exchanged between the skinny client and the Cisco CallManager server. The skinny client uses TCP/IP for transport. While configuring the network analysis software for capturing the packets, it is important to specify a filter between the the client and the Cisco CallManager sever.

Error Reporting

The Cisco CallManager traces can also be used to troubleshoot. Collect the Cisco CallManager CCM & SDL traces by setting them to detailed level. The section below details Cisco CallManager trace configuration.

Configuring Cisco CallManager Trace Parameters

This section describes how to configure trace parameters for the Cisco CallManager service.

Procedure

- Step 1** From the Cisco CallManager Administration window, choose **Application > Cisco CallManager Serviceability**.
The Cisco CallManager Serviceability window displays.
- Step 2** Choose **Trace > Configuration**.
- Step 3** From the Servers column, choose the server.
The server that you chose displays next to the Current Server title and a box with configured services displays.
- Step 4** From the Configured Services box, choose the Cisco CallManager service.

The service that you chose displays next to the Current Service title, along with the current server that you chose. The trace parameters display for the service that you chose.



Note Only the trace parameters for the service you chose are displayed. The display shows all other parameters grayed out.

- Step 5** Check the *Trace On* checkbox.
- Step 6** If you want trace to apply to all Cisco CallManager servers in the cluster, check the *Apply to All Nodes* checkbox.
- Step 7** In the *Debug Trace Level* selection box, click the Down arrow.
A list with six debug trace levels displays.
- Step 8** Click the desired debug trace level as described in [Table 4](#).

Table 4 *Debug Trace Levels*

Level	Description
Error	Traces alarm conditions and events. Used for all traces generated in abnormal path. Uses minimum amount of CPU cycles.
Special	Traces all Error conditions plus process and device initialization messages.
State Transition	Traces all Special conditions plus subsystem state transitions that occur during normal operation. Traces call- processing events.
Significant	Traces all State Transition conditions plus media layer events that occur during normal operation.
Entry/Exit	Traces all Significant conditions plus entry and exit points of routines. Not all services use this trace level (for example, Cisco CallManager does not).
Arbitrary	Traces all Entry/Exit conditions plus low-level debugging information. Note Do not use this trace level with the Cisco CallManager service or the Cisco IP Voice Media Streaming Application service during normal operation.
Detailed	Traces all Arbitrary conditions plus detailed debugging information. Note Do not use this trace level with the Cisco CallManager service or the Cisco IP Voice Media Streaming Application service during normal operation.

- Step 9** Check the *Cisco CallManager Trace Fields* check box. [Table 5](#) describes the 17 options from which to choose.

Table 5 *Cisco CallManager Trace Fields*

Field Name	Description
Enable H245 Message Trace	Activates trace of H245 messages.
Enable DT-24+/DE-30+ Trace	Activates the logging of ISDN type of DT-24+/DE-30+ device traces.
Enable PRI Trace	Activates trace of primary rate interface (PRI) devices.
Enable ISDN Translation Trace	Activates ISDN message traces. Used for normal debugging.

Table 5 Cisco CallManager Trace Fields (continued)

Field Name	Description
Enable H225 & Gatekeeper Trace	Activates trace of H.225 devices. Used for normal debugging.
Enable Miscellaneous Trace	Activates trace of miscellaneous devices. Note Do not check this check box during normal system operation.
Enable Conference Bridge Trace	Activates trace of conference bridges. Used for normal debugging.
Enable Music on Hold Trace	Activates trace of music on hold (MOH) devices. Used to trace MOH device status such as registered with Cisco CallManager, unregistered with Cisco CallManager, and resource allocation processed successfully or failed.
Enable CM Real-Time Information Server Trace	Activates Cisco CallManager real-time information traces used by the real-time information server.
Enable CDR Trace	Activates traces for CDR.
Enable Analog Trunk Trace	Activates trace of all analog trunk (AT) gateways.
Enable All Phone Device Trace	Activates trace of phone devices. Trace information includes SoftPhone devices. Used for normal debugging.
Enable MTP Trace	Activates trace of media termination point (MTP) devices. Used for normal debugging.
Enable All Gateway Trace	Activates trace of all analog and digital gateways.
Enable Forward and Miscellaneous Trace	Activates trace for call forwarding and all subsystems not covered by another check box. Used for normal debugging.
Enable MGCP Trace	Activates trace for media gateway control protocol (MGCP) devices. Used for normal debugging.
Enable Media Resource Manager Trace	Activates trace for media resource manager (MRM) activities.

Step 10 If you want trace information for specific Cisco CallManager devices, check the *Device Name Based Trace Monitoring* check box.

If you want trace to apply to non-devices in addition to devices, check the *Include Non-device Traces* check box. If check box is checked, set the appropriate debug trace level as described in [Table 4](#).

Step 11 Check the *Enable File Trace Log* check box to enable the log file to receive trace information.

The default log filename and the default parameters display in the fields. If you want to send the trace information to another file, specify the filename and pathname by clicking the *filename* field. Change the default parameters by clicking the appropriate field and entering the information.



Note Trace validates the filename and ensures that the filename has a .txt extension. Do not use a filename that exists on another computer. Use a filename that exists on the computer that is running the trace.

The following default trace log filename applies for the Cisco CallManager:

C:\ProgramFiles\Cisco\Trace\CCM\ccm.txt. See [Table 6](#) for the trace log file default parameters.

- Step 12** If you want the trace information to be available for trace analysis, check the *Enable XML Formatted Output* check box. If this check box is not checked, the log file compiles in text format and will not be available for trace analysis.
- Step 13** If you are a Cisco engineer debugging the system, check the *Enable Debug Output String* check box; otherwise, continue with the following steps.
- Step 14** To configure SDL Trace parameters, click **SDL Configuration**. See [“Configuring SDL Trace Parameters” on page 49](#).
- Step 15** To save your trace parameters configuration, click the **Update** button.

The changes to trace configuration take effect immediately for Cisco CallManager.



Note To set the default, click the **SetDefault** button. To apply the current settings for chosen services to all nodes in a cluster, check the *Apply to all Nodes* check box.

Table 6 Trace Log File Description

Field	Description
Maximum number of files	The total number of trace files for a given service. Cisco CallManager automatically appends a sequence number to the filename to indicate which file it is; for example, ccm299.txt. When the last file in the sequence is full, the trace data begins writing over the first file. The default is 300 files.
Maximum number of lines	The maximum number of lines of data stored in each trace file. The default is 10000 lines for text files and 2000 for XML files.
Maximum number of minutes	The maximum minutes of data stored in each trace file. The default is 1440 minutes.

When the trace data exceeds either the maximum number of lines or the maximum minutes for one file, Cisco CallManager closes that file and writes the remaining trace data to the next file in the sequence. For example, you can set up trace files to store a full week of data, with one day of data in each file. To do this, set the number of files to 7, the minutes to 1440 (one day), and the number of lines to a large value such as 10000 (or larger for a busy system).

Configuring SDL Trace Parameters

This section describes how to configure the SDL trace parameters for the Cisco CallManager and Cisco CTIManager services.

Procedure

- Step 1** From the Cisco CallManager or Cisco CTIManager trace configuration window, click the **SDL Configuration** link.
- The SDL Trace Configuration window displays.
- Step 2** Check the *Trace On* check box.
- Step 3** If you are configuring SDL parameters for the Cisco CallManager service, check the *Trace Filter Settings* check boxes that you want to apply to this trace as described in [Table 7](#). If you are configuring the SDL parameters for the Cisco CTIManager service, check the *Trace Filter Settings* check boxes that you want to apply to this trace as described in [Table 8](#).



Note

Cisco recommends that you use the defaults unless a Cisco engineer instructs you to do otherwise.

Table 7 Cisco CallManager SDL Configuration Filter Settings

Setting Name	Description
Enable All Layer 1 Trace	Activates traces for Layer 1.
Enable Detailed Layer 1 Trace	Activates detailed Layer 1 traces.
Enable All Layer 2 Trace	Activates traces for Layer 2.
Enable Layer 2 interface Trace	Activates Layer 2 interface traces.
Enable Layer 2 TCP Trace	Activates Layer 2 Transmission Control Program (TCP) traces.
Enable Detailed Dump Layer 2 Trace	Activates detailed traces for dump Layer 2.
Enable All Layer 3 Trace	Activates traces for Layer 3.
Enable All Call Control Trace	Activates traces for call control.
Enable Miscellaneous Polls Trace	Activates traces for miscellaneous polls.
Enable Miscellaneous Trace (Database Signals)	Activates miscellaneous traces such as database signals.
Enable Message Translation Signals Trace	Activates traces for message translation signals.
Enable UUIE Output Trace	Activates traces for user-to-user informational element (UUIE) output.
Enable Gateway Signals Trace	Activates traces for gateway signals.
Enable CTI Trace	Activates CTI trace.
Enable Network Service Data Trace	Activates network service data trace.
Enable Network Service Event Trace	Activates network service event trace.
Enable ICCP Admin Trace	Activates admin trace for ICCP.
Enable Default Trace	Activates default trace.

Table 8 Cisco CTIManager Trace SDL Configuration Filter Settings

Setting Name	Description
Enable Miscellaneous Polls Trace	Activates traces for miscellaneous polls.
Enable Miscellaneous Trace (Database Signals)	Activates miscellaneous traces such as database signals.
Enable CTI SDL Trace	Activates CTI SDL trace.
Enable CTI Application Trace	Activates trace for CTI applications.
Enable CTI Information Trace	Activates trace for CTI information.
Enable CTI Warning Trace	Activates warning trace for CTI.
Enable CTI Error Trace	Activates error trace for CTI.
Enable Network Service Data Trace	Activates network service data trace.
Enable Network Service Event Trace	Activates network service event trace.
Enable ICCP Admin Trace	Activates admin trace for ICCP.
Enable Default Trace	Activates default trace.

- Step 4** If you are configuring SDL parameters for the Cisco CallManager service, check the *Trace Characteristics* check boxes that you want to apply to this trace as described in [Table 9](#). If you are configuring the SDL parameters for the Cisco CTIManager service, check the *Trace Characteristics* check boxes that you want to apply to this trace as described in [Table 10](#).

Table 9 Cisco CallManager SDL Configuration Trace Characteristics

Characteristics	Description
Enable SDL Link States Trace	Activates trace for intracenter communication protocol (ICCP) link state.
Enable Low-Level SDL Trace	Activates trace for low-level SDL.
Enable SDL Link Poll Trace	Activates trace for ICCP link poll.
Enable SDL Link Messages Trace	Activates trace for ICCP raw messages.
Enable Signal Data Dump Trace	Activates traces for signal data dump.
Enable Correlation Tag Mapping Trace	Activates traces for correlation tag mapping.
Enable SDL Process States Trace	Activates traces for SDL process states.
Disable Pretty Print of SDLTrace	Disables trace for pretty print of SDL. Pretty print adds tabs and spaces in a trace file without performing post processing.
Enable SDL TCP Event Trace	Activates trace for SDL TCP event.

Table 10 Cisco CTIManager SDL Configuration Characteristics

Characteristics	Description
Enable SDL Link States Trace	Activates trace for ICCP link state.
Enable Low-level SDL Trace	Activates trace for low-level SDL.
Enable SDL Link Poll Trace	Activates trace for ICCP link poll.
Enable SDL Link Messages Trace	Activates trace for ICCP raw messages.
Enable Signal Data Dump Trace	Activates traces for signal data dump.
Enable Correlation Tag Mapping Trace	Activates traces for correlation tag mapping.
Enable SDL Process States Trace	Activates traces for SDL process states.
Disable Pretty Print of SDL Trace	Disables trace for pretty print of SDL. Pretty print adds tabs and spaces in a trace file without performing post processing.
Enable SDL TCP Event Trace	Activates trace for SDL TCP event.

Step 5 If you want the trace information available for trace analysis, check the *Enable XML Formatted Output* check box. If this check box is not checked, the log file compiles in text format and will not be available for trace analysis.

The default trace directory path and the default parameters display in the fields. If you want to send the trace information to another file, enter the filename and pathname in the *Trace Directory Path* field. Change the default parameters by clicking the appropriate field and entering the information.

The following default trace log filename applies for SDL Trace Configuration: C:\Program Files\Cisco\Trace\SDL. See [Table 6](#) for the Trace log file default parameters.

Step 6 To save your SDL trace parameters configuration, click the **Update** button.

The changes to trace configuration take effect immediately for SDL Trace Configuration.

**Note**

To set the default, click the SetDefault button. To apply the current settings for chosen services to all nodes in a cluster, check the Apply to all Nodes check box.

Step 7 To continue with SDL Trace Configuration for another service, choose the service from the *Configured Services* box; otherwise, continue with [Step 8](#).

Step 8 To return to the Cisco CallManager or Cisco CTIManager SDI Trace Configuration window, click the **SDI Configuration** link.