



SCCP Protocol

Teldat-Dm 782-I

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I Related Documents

Teldat-Dm 722-I Telephony over IP

Chapter 1 Introduction

1.1 SCCP Protocol: Description

The Skinny Client Control Protocol (SCCP) is a proprietary terminal control protocol originally developed by Selsius Corporation. It now belongs to Cisco Systems Inc., and defines a messaging set between an IP telephone with a skinny client and a Call Manager.

Skinny is a lightweight signaling protocol which allows for efficient communication with the server using TCP/IP. The server opens a TCP port (normally port 2000) and receives the events from the registered clients, sending in turn the responses and commands for these said events. Call audio is transmitted using RTP/UDP/IP.

SCCP is a stimulus based protocol and is designed as a communications protocol for clients with very limited hardware both regarding the CPU as well as the memory.

1.2 Functionality available in the router

Our router implements an SCCP server to provide IP telephony functionalities for Skinny telephones. This simultaneously supports two operating modes.

- When there is a main Call Manager, you can provide IP telephony survival functionalities for Skinny terminals which have the *Survival Remote Site Telephony* (SRST) functionality configured. When there are connectivity losses with the Call Manager, the telephones connect to the router and continue executing calls between them as well as incoming and outgoing calls through the PSTN/ISDN interfaces the device has. It is not necessary to configure the telephone extensions in this mode as the router is capable of ascertaining each of the telephones extensions used with the Call Manager.
- This can also operate autonomously as Call Manager Express. In this case the router acts as the main Call Manager and you need to configure the extensions associated to each terminal. To do this you need to configure an SCCP dial-peer with the target equal to the telephone mac and configure a destination-pattern equal to the extension of each telephone line in the said dial-peer (see the *target mac* command in the telephony manual: Teldat-Dm722-I Telephony over IP).

When a telephone is registered in the router, a check is carried out to see if the terminal mac is configured as the *target mac* of a dial-peer. If it is, the configured extensions are assigned and if not this checks, by asking the telephone, the extensions used with the main Call Manager. In both cases a dynamic dial-peer is created for each telephone extension.

Below you can see a list of the services provided for these terminals:

- When operating in SRST mode, the terminal extensions and the types of terminals are automatically detected so you don't have to enter the terminals in the router's configuration.
- Calls between SCCP telephones.
- Calls such as incoming and outgoing Media Gateway SCCP.
- Calls between SCCP telephones and SIP devices.
- Caller/calling name and number identification.
- CDR storing.
- Maintenance of date.
- Call back.
- Receiver and hands free.
- DND key.
- Unconditional call forwarding.
- Call on hold, generating music in PSTN/ISDN interfaces while waiting.
- Ring groups (simultaneously calling various mixed telephones; SCCP, SIP, FXS).
- Hunt groups if busy.
- Pickup groups and directed pickup.
- Call transfer between SCCP terminals.
- Call transfer between SCCP terminals and PSTN/ISDN interfaces.

Chapter 2 SCCP Protocol Configuration

2.1 Configuring the SCCP Protocol

To configure the SCCP protocol, enter **PROTOCOL SCCP** from the general configuration menu.

Syntax:

```
Config>protocol sccp
-- Skinny protocol configuration --
SCCP Config>
```

The options given in the SCCP protocol configuration menu are as follows:

```
SCCP Config>?
  application      Set sccp configuration parameters
  no               Negate a command or set its defaults
  pick-up         Pick-up softkey emulation
  system-message  Set survival system messages
  exit
SCCP Config>
```

2.1.1 [NO] APPLICATION

This command configures the global parameters relative to the SCCP protocol operations.

2.1.1.1 [NO] APPLICATION ADDRESS

Configures the IP going to be used for the packets sent by the SCCP server. If nothing is configured, the device's internal IP is used.

Syntax:

```
SCCP Config>APPLICATION ADDRESS <ip>
SCCP Config>
```

2.1.1.2 [NO] APPLICATION KEEP-ALIVE

Configures the time interval between sccp clients sending keep-alive packets to the server. In the registration process, the server informs the clients the time configured through this parameter and if a telephone stops sending these messages during a period exceeding the said value, the server considers the connection is dead and eliminates it. Default is 2 minutes.

Syntax:

```
SCCP Config>APPLICATION KEEP-ALIVE <time>
SCCP Config>
```

2.1.1.3 [NO] APPLICATION PORT

Configures the port where the device SCCP server listens. Default is port 2000.

Syntax:

```
SCCP Config>APPLICATION PORT <port-number>
SCCP Config>
```

2.1.1.4 [NO] APPLICATION SERVER

Enables the SCCP server in the device.

Syntax:

```
SCCP Config>APPLICATION SERVER
SCCP Config>
```

2.1.2 [NO] IP-TOS

This command permits you to configure the TOS for the SCCP packets sent by the device. The complete TOS byte is configured through its value in hexadecimal. Default is 0.

Syntax:

```
SCCP Config$ip-tos ?
<hex 0x0..0xff>   Hexadecimal value in the specified range
```

2.1.3 [NO] SOFTKEY

Telephone soft keys configuration.

2.1.3.1 [NO] SOFTKEY PICKUP

This command indicates the digits where the Pickup key stroke is mapped in an SCCP telephone. Pressing this key is the same as pressing the digits configured through this command thus permitting pickup through the Pickup key and a pickup facility dial-peer.

Syntax:

```
SCCP Config>SOFTKEY PICK-UP <telephone>
SCCP Config>
```

Example:

This configuration means that when you press the Pickup key on any sccp telephone, a pickup from peer-group 1 is executed.

```
protocol sccp
  application address 172.24.100.133
  application survival
  softkey pick-up *88
exit
telephony
  ...
  dial-peer 1000 facility
    destination-pattern *88
    target group-pickup peer-group 1
  exit
  ...
exit
```

2.1.3.2 [NO] SOFTKEY MESSAGES

This command indicates the digits where the Messages key stroke is mapped in an SCCP telephone. Pressing this key is the same as pressing the digits configured through this command thus permitting calls to the voice mail extension.

Syntax:

```
SCCP Config>SOFTKEY MESSAGES <telephone>
SCCP Config>
```

2.1.4 SYSTEM-MESSAGE

Configures the SCCP global messages.

2.1.4.1 [NO] SYSTEM-MESSAGE PRIMARY

Configures the message to be shown on the SCCP telephones when they are registered in the device server.

Syntax:

```
SCCP Config>SYSTEM-MESSAGE PRIMARY <message>
SCCP Config>
```


Chapter 3 SCCP Protocol Monitoring

3.1 Monitoring the SCCP Protocol

3.1.1 Accessing the monitoring prompt

To access the SCCP protocol monitoring prompt, enter **PROTOCOL SCCP** from the root monitoring menu.

```
+PROTOCOL SCCP
SCCP Monitor
SCCP Mon+
```

3.1.2 Monitoring Commands

All the SCCP protocol monitoring commands must be entered at the prompt specified above: SCCP Mon+.

These commands are described below.

3.1.2.1 LIST

Displays information on the SCCP protocol.

3.1.2.1.1 LIST REGISTERED

The **LIST REGISTERED** command displays information on the sccp telephones registered in the device.

Syntax:

```
SCCP Mon+LIST REGISTERED
```

Example:

```
SCCP Mon+LIST REGISTERED
Device Info:
Mac: 000CF174D3BC      Type: CIPC (30016)
Fd: 7 Dnd: off        Address: 172.24.100.130:2047
Queue: 50/50 (available/max)  msg size: 4
  Line:      212      dial-peer: 10003      forward:
  Line:      211      dial-peer: 10002      forward:
  Line:      210      dial-peer: 10001      forward:
SCCP Mon+
```

3.1.2.2 RESTART

The **RESTART** command allows you to restart one or all the telephones registered in the device.

3.1.2.2.1 RESTART ALL

Restarts all the telephones.

Syntax:

```
SCCP Mon+RESTART ALL
SCCP Mon+
```

3.1.2.2.2 RESTART <mac>

Restarts the telephone with a specified mac address.

Syntax:

```
SCCP Mon+RESTART <mac-address>
SCCP Mon+
```

Chapter 4 Configuration Example

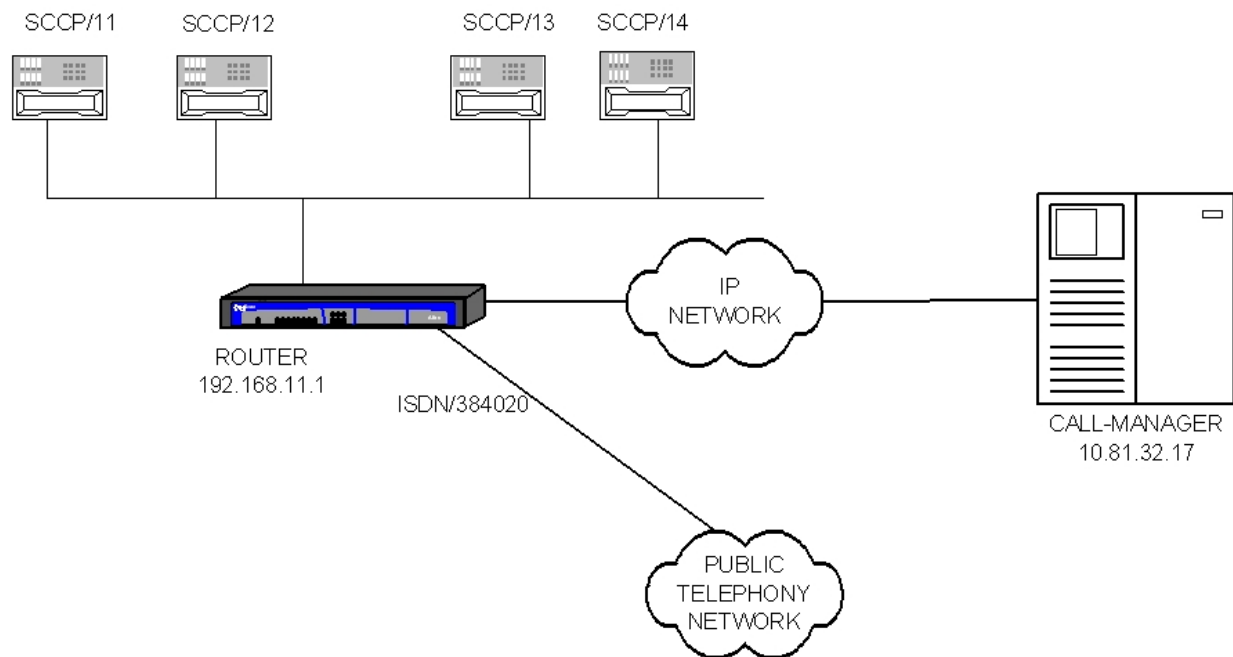
4.1 Configuration example: SRST scenario

Let's assume we have a scenario such as the one in the below figure. This entails a device acting as an office router. The said office has four SCCP telephones and an ISDN line to receive or make calls over the public network.

In the central headquarters there is a Call Manager with IP 10.81.32.17 address, this server being accessible through an IP network.

What we want is that when the Call Manager is available the telephones register in it and it is this server which controls the calls meaning the router does not intervene. When the Call Manager is unavailable, the SCCP telephones detect this and automatically pass to the configured SRST survival server, which is the router itself. In this way calls can be executed between the telephones and also incoming and outgoing calls over the device's ISDN interface.

In survival mode, when a call comes in over ISDN, all the SCCP telephones registered in the router ring.



This is the resulting configuration:

```
log-command-errors
no configuration
add device voip-isdn 100
set data-link x25 serial0/0
set data-link x25 serial0/1
set data-link x25 serial0/2
;
global-profiles dial
; -- Dial Profiles Configuration --
  profile audio default
  profile audio inout
  profile audio isdn-type audio
;
exit
;
telephony
; -- Telephony configuration --
  dial-peer 2 voice-port
    description "outgoing public calls in emergency mode "
    destination-pattern 9.....
    destination-pattern 6.....
    target voice-port voip100 1
  exit
;
```

```
dial-peer 30 group
  description "incoming public calls in emergency mode ring every phone"
  destination-pattern 917171717
  target group 1
  exit
;
peer-group 1
  dynamic-peers
  exit
;
exit
;
;
network ethernet0/0
; -- Ethernet Interface User Configuration --
  ip address 192.168.11.1 255.255.255.0
;
exit
;
;
network voip100
; -- VoIP interface Configuration --
  base-interface
; -- Base Interface Configuration --
  base-interface bri0/0 255 link
  base-interface bri0/0 255 profile audio
  base-interface bri0/0 255 number-of-circuits 1
;
  exit
;
exit
;
protocol ip
; -- Internet protocol user configuration --
  internal-ip-address 192.168.11.1
;
  route 0.0.0.0 0.0.0.0 172.24.100.129
;
;
exit
;
protocol sccp
  application address 192.168.11.1
  application server
  system-message primary "Emergency mode"
exit
;
dump-command-errors
end
; --- end ---
```