Cisco Unified Enhanced Survivable Remote Site Telephony

This chapter describes the Unified Enhanced Survivable Remote Site Telephony (Unified E-SRST) feature which is an enhancement of the SRST feature that provides advanced services compared to the classic Unified SRST.

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Migration from Unified SRST Manager to Unified E-SRST

Cisco Unified Survivable Remote Site Telephony Manager is End-of-Life (EOL). Hence, provisioning for Unified E-SRST through Unified SRST Manager is not supported for Unified E-SRST Release 12.2 and later releases. Unified E-SRST is provisioned only using CLI commands (manual provisioning) to support fall back of phones registered to Unified Communications Manager. For more information on configuring Unified E-SRST, see SIP: Configure Unified E-SRST, page 98 and SCCP: Configure Unified E-SRST, page 114. For information on Cisco Unified Survivable Remote Site Telephony Manager End-of-Life announcement, see Cisco Unified Survivable Remote Site Telephony Manager Product Bulletin.

Unified SRST Manager is a GUI-based tool that helps to monitor, report, and troubleshoot remote sites. It performs automatic sync up between the Unified Communications Manager and the Unified E-SRST gateway that helps in adding, deleting, and modifying the users and phones including dial-plan mapping. It also provides centralized management and control of all remote sites. For more information on the Unified SRST Manager that is End-of-Life, see Administration Guide for Cisco Unified SRST Manager.
Benefits of Unified-ESRST

When you configure Unified E-SRST, it provides the following feature benefits in comparison to the classic Unified SRST:

- Voice Hunt Group
  - Shared Lines
  - Mixed Shared Lines (SIP and SCCP Phones)
  - Hunt Statistics Collection
  - Mixed Deployment (SIP and SCCP Phones)
- Shared Line
- BLF
- Video
- B-ACD

For more information on configuring VHG with Unified E-SRST, see Unified E-SRST with Support for Voice Hunt Group, page 96. For more information on configuring Shared Line, BLF, and Video with Unified E-SRST, see SIP: Configure Unified E-SRST, page 98.

Toll Fraud Prevention for SIP Line Side on Unified E-SRST

Unified E-SRST Release 12.6 enhances the existing Toll Fraud Prevention feature by enforcing security on the SIP line side of Unified E-SRST. The feature enhancement secures the Unified E-SRST system against potential toll fraud exploitation by unauthorized users from the SIP line side.

The configuration and characteristics of toll fraud prevention offered on the SIP line side of Unified E-SRST is same as the support available on Unified SRST. For more information on the feature, see Toll Fraud Prevention for SIP Line Side on Unified SRST, page 60.

Unified E-SRST with Support for Voice Hunt Group

From Unified E-SRST Release 12.2, support is introduced for Voice Hunt Group with Cisco Unified Enhanced Survivable Remote Site Telephony (Unified E-SRST). The deployment is supported on SIP and SCCP phones. The Cisco IP Phone 7800 and 8800 Series are the SIP phones supported for this deployment. The Unified E-SRST deployment for voice hunt group enhancement is introduced on the Cisco 4000 Series Integrated Services Routers.

As part of the enhancement, voice hunt group deployments with Sequential, Parallel, Longest Idle, and Peer call blasting is supported with Unified E-SRST 12.2 and onwards.

During a WAN outage, the SIP phones on the Cisco Unified Communications Manager (Unified Communications Manager) fall back to Unified E-SRST router in mode esrst. The SIP phones are logged in to the hunt group by default in this scenario. However, if the CLI command members logout is configured under the voice hunt group configuration mode, the phones will be in logged out state. In the Unified E-SRST mode, the phone that falls back on Unified E-SRST can toggle state and log in (or log out) to the voice hunt group using HLog via Feature Access Code (FAC). The DN status (logged in or logged out) is displayed on the phones registered with Unified E-SRST. The following FAC codes are available as part of the enhancement introduced on Unified E-SRST:
When the user inputs FAC from a phone with multiple lines, the log out behavior is known to be different across a deployment with common voice register pool configuration and individual voice register pool configuration.

- Common Voice Register Pool Configuration — The DN’s log out individually, and not at the phone level.
- Individual Voice Register Pool Configuration — The DN’s log out at the phone level, irrespective of the DN (primary, secondary, and so on) from which FAC input was provided by the user.

When the WAN is available, the phones register back with Unified Communications Manager. For a sample configuration of Unified E-SRST with voice hunt group enhancements, see Example for configuring Unified E-SRST with Voice Hunt Group Enhancements, page 109.

The Unified E-SRST 12.2 Release introduces support for voice hunt group with shared lines and mixed shared lines (SCCP and SIP phones). For a mixed shared line supported with voice hunt group, only individual voice register pools can be configured. Common voice register pools are not supported. For a sample configuration of mixed shared lines configured for a voice hunt group on Unified E-SRST, see Example for Configuring Shared Line with Voice Hunt Group on Unified E-SRST, page 111.

Also, hunt statistic collection is supported for Unified E-SRST 12.2 and later releases.

A mixed deployment of SIP and SCCP phones is supported on Unified E-SRST, Release 12.2. Hunt Group Logout from a mixed deployment of SIP and SCCP phones is supported using:

- FAC
- Feature Button, or
- DND

Line level logout and phone level logout is supported using FAC (*4).

Note: Hunt Group logout is not supported for shared lines. Shared lines retain their logged in status.

Support for B-ACD in Unified E-SRST

B-ACD is supported as part of the Unified E-SRST enhancement introduced in Release 12.2. For SIP phones that fall back to Unified E-SRST router in mode esrst, you need to ensure that the CLI command members logout is configured. The Members Logout functionality handles login back from the phones using FAC. It also supports call delivery to Voice Hunt Group from B-ACD.

For a sample configuration, see Example for Configuring B-ACD with Unified E-SRST, page 110.

Recommendations for Configuring Voice Hunt Group on Unified E-SRST

The Unified E-SRST Release with Support for voice hunt group has the following design characteristics:
For all the directory numbers falling back from Unified Communications Manager, a common voice register pool configuration as well as an individual voice register pool configuration is supported for this deployment. An individual **voice register pool** configured with the CLI command `id device-id-name`, along with **voice register dn** configuration, is recommended.

- Ensure that the CLI command **mode esrst** is configured under **voice register global** configuration mode for phones to fall back to Unified E-SRST.
- Ensure that the CLI command `id ip` or `id device-id-name` is configured under **voice register pool** configuration mode, along with **voice register dn** configuration, for a deployment with individual voice register pool configuration. For a sample configuration, see Example for configuring Unified E-SRST with Voice Hunt Group Enhancements, page 109.
- Ensure that the CLI command `id device-id-name` is preferred over `id ip` as the CLI command to configure under **voice register pool** configuration mode in scenarios where the IP address of the phone might change due to the DHCP configured on the phone.
- Ensure that the CLI command `id network` is configured under **voice register pool** configuration mode for a deployment with common voice register pool configuration. The recommended configuration is `id network 8.55.0.0 255.255.0.0` so as to facilitate registration of phones falling back on Unified E-SRST from Unified Communications Manager.
- Ensure that the CLI command **members logout** is configured under **voice hunt-group** configuration mode. The CLI is applied by default when the SIP phones fall back to Unified E-SRST from Unified Communications Manager.
- Ensure that the CLI command `fac standard` is configured under **telephony-service** configuration mode. If you want to configure a FAC code other than *5, you need to configure the CLI command `fac custom` under **telephony-service** configuration mode.
- Ensure that the CLI commands `call-park system application` and `hunt-group logout hlog` are configured under **telephony-service** configuration mode. The CLI commands are mandatory configuration for FAC functionality to work.

For steps on configuring voice hunt groups on Unified E-SRST, see Configure Voice Hunt Groups on Unified E-SRST, page 107.

For a sample configuration of voice hunt groups on Unified E-SRST, see Example for configuring Unified E-SRST with Voice Hunt Group Enhancements, page 109.

**Restrictions for Unified E-SRST, Release 12.2**

The Unified E-SRST deployment with voice hunt group is known to have the following restrictions:

- Auto Logout is not supported
- Programmable Line Keys (PLK) are not supported
- HLog Softkey is not supported

**SIP: Configure Unified E-SRST**

The Enhanced SRST for Cisco Unified SIP IP Phones feature supports version negotiation between the SIP phones and ESRST to enable more features in the Cisco Unified ESRST mode. In the current scenario, when the SIP phones fall back to the SRST mode, features such as Shared-Line, Busy-Lamp-Field (BLF), and Video call are disabled on the phones because the features are not...
supported in the SRST mode. However, with the Enhanced Survivable Remote Site Telephony (E-SRST) deployment, you can enable the basic and supplementary call features. Also, you can enable the following features using version negotiation:

- Shared-Line
- Busy-Lamp-Field (BLF)
- Video Calls

Table 3-1 contains a list of supported features and the expected behavior of the features in the E-SRST mode.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Supported Features</th>
<th>Expected Behavior in the E-SRST Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared-Line</td>
<td>cBarge</td>
<td>Not Supported (After the failover, the phone does not retain the key.)</td>
</tr>
<tr>
<td></td>
<td>Privacy-on-hold</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>Transfer</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>Conference</td>
<td>Supported</td>
</tr>
<tr>
<td>BLF</td>
<td>BLF dn monitoring</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>BLF device-based</td>
<td>Not supported (Not supported in RT phones)</td>
</tr>
<tr>
<td></td>
<td>BLF call-list</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>Monitoring of Call-park slot</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>Monitoring of Paging dn</td>
<td>Not supported</td>
</tr>
<tr>
<td></td>
<td>Monitoring of Conference dn</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

- To enable version negotiation feature between ESRST & phone, user needs to configure "mode esrst" under voice register global mode.
- It is recommended to use SRST manager to automate the CLI provisioning of ESRST branch routers.

For more information on SRST, see the Cisco Unified SRST Manager Administration Guide.

Restrictions

- The Version Negotiation feature is supported only on the Cisco Unified 9951, 9971, 8961 SIP IP phones, Cisco IP Phone 7800 and 8800 Series.
- The phone firmware version should be Version 9.4.1 or later versions.
- This feature supports video calls only between the local Cisco Unified SIP IP phones and the No Time-Division Multiplexing (TDM) video calls during the SRST failovers.
• To enable phone specific features like shared-line & BLF work, individual voice register pools need to be configured.

Enable the E-SRST Mode

To enable the version negotiation feature in the Unified E-SRST mode, perform the following procedure.

SUMMARY STEPS

1. enable
2. configure terminal
3. voice register global
4. mode esrst
5. exit

DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1 enable</td>
<td>Enables the privileged EXEC mode. Enter your password if prompted.</td>
</tr>
<tr>
<td>Example: Router&gt; enable</td>
<td></td>
</tr>
<tr>
<td>Step 2 configure terminal</td>
<td>Enters the global configuration mode.</td>
</tr>
<tr>
<td>Example: Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td>Step 3 voice register global</td>
<td>Enters the voice register global configuration mode to set the parameters for all the supported SIP phones in Cisco Unified CME.</td>
</tr>
<tr>
<td>Example: Router(config)# voice register global</td>
<td></td>
</tr>
<tr>
<td>Step 4 mode esrst</td>
<td>Configures the E-SRST mode under the voice register global mode.</td>
</tr>
<tr>
<td>Example: Router(config-register-global)# mode esrst</td>
<td></td>
</tr>
<tr>
<td>Step 5 exit</td>
<td>Exits the voice register-global configuration mode.</td>
</tr>
<tr>
<td>Example: Router(config-register-global)# exit</td>
<td></td>
</tr>
</tbody>
</table>

Configure SIP shared-line

To configure SIP shared-line, perform the following procedure:

1. enable
2. configure terminal
3. voice register dn dn-tag
4. number number
5. shared-line [max-calls number-of-calls]
6. huntstop channel number-of-channels
7. end

Configure BLF

To configure BLF, perform the following procedure:
1. enable
2. configure terminal
3. sip-ua
4. presence enable
5. exit
6. presence
7. max-subscription number
8. presence call-list
9. end

Enable a SIP Directory Number to be Watched

To enable a directory number to be watched, perform the following procedure:
1. voice register dn dn-tag
2. number number
3. allow watch
4. end

Enable BLF on a Voice Register Pool

To enable BLF on a voice register pool, perform the following steps:
1. enable
2. configure terminal
3. voice register pool pool-tag
4. number tag dn dn-tag
5. blf-speed-dial tag number label string [device]
6. presence call-list (To enable Presence feature for all the missed/received/placed calls)
7. end

For configuration information, see the Cisco Unified Communications Manager Administration Guide.

Example: ESRST mode

The following example shows how to enable the E-SRST mode:
Example: Configuring Shared Line

The following example shows how to configure shared-line:

```
Router(config)#voice register dn 1
Router (config-register-dn)#number 1111
Router (config-register-dn)#shared-line max-calls 7

Router(config)#voice register pool 1
Router(config-register-pool)#id mac 002D.264E.54FA
Router(config-register-pool)#type 9971
Router(config-register-pool)#number 1 dn 1

Router(config)#voice register pool 2
Router(config-register-pool)#id mac 000D.39F9.3A58
Router(config-register-pool)#type 7965
Router(config-register-pool)#number 1 dn 1
```

Example: Configuring BLF

The following example shows how to configure BLF:

```
Router(config)#voice register dn 1
Router (config-register-dn)#number 1111
Router (config-register-dn)#allow watch

Router(config)#voice register dn 1
Router (config-register-dn)#number 2222

Router(config)#voice register pool 1
Router(config-register-pool)#id mac 0015.6247.EF90
Router(config-register-pool)#type 7971
Router(config-register-pool)#number 1 dn 1

Router(config)#voice register pool 2
Router(config-register-pool)#id mac 0012.0007.8D82
Router(config-register-pool)#type 7912
Router(config-register-pool)#number 1 dn 2
Router(config-register-pool)#blf-speed-dial 1 1111 label "1111"
```

Note

If the phone and the Unified E-SRST router are in different subnets and you are using `id mac` in the `voice register pool` configuration mode, then the user must configure digest credentials on Unified Communications Manager, and username password configuration under `voice register pool` on Unified E-SRST. Digest Configuration is not required with the `id device-id-name` CLI command introduced in Unified SRST Release 12.2.
Configure Unified E-SRST

The `mode esrst` under `telephony-service` and `voice register global` configuration mode provisions SCCP and SIP phones respectively to enable the enhanced services in Unified E-SRST mode. While Unified SRST supports only the basic voice hunt group features, Unified E-SRST supports advanced voice hunt group features such as HLog, shared lines, and B-ACD. To configure the basic Unified E-SRST, perform the following procedure:

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `telephony-service`
4. `mode esrst`
5. `max-ephones max-phones`
6. `max-dn max-directory-numbers`
7. `ip source-address ip-address [port port] [any-match | strict-match]`
8. `call-park system application`
9. `hunt-group logout HLog`
10. `transfer-system full-consult`
11. `transfer-pattern transfer-pattern`
12. `fac standard`
13. `create cnf-files`
14. `exit`
15. `voice register global`
16. `mode esrst`
17. `max-dn max-directory-numbers`
18. `max-pool max-phones`
19. `exit`
20. `voice register dn dn-tag`
21. `number number`
22. `exit`
23. `voice register pool pool-tag`
24. `id [network address mask mask | ip address mask mask][device-id-name devicename]`
25. `dtmf-relay rtp-nte`
26. `exit`
### DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables the privileged EXEC mode. Enter your password if prompted.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router&gt; enable</td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong> configure terminal</td>
<td>Enters the global configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong> telephony-service</td>
<td>Enters telephony-service configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config)# telephony-service</td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong> mode esrst</td>
<td>Configures the E-SRST mode under the telephony-service configuration mode.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config)# telephony-service</td>
<td></td>
</tr>
<tr>
<td><strong>Step 5</strong> max-ephones max-phones</td>
<td>Configures the maximum number of IP phones that can be supported by the router. The default is 0. The maximum number is platform dependent.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config-telephony)# max-ephones 40</td>
<td></td>
</tr>
<tr>
<td><strong>Step 6</strong> max-dn max-directory-numbers</td>
<td>Sets the maximum number of directory numbers (DNs) that can be supported by the router.</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config-telephony)# max-dn 15</td>
<td></td>
</tr>
<tr>
<td><strong>Step 7</strong> ip source-address ip-address [port port] [any-match</td>
<td>strict-match]</td>
</tr>
<tr>
<td><strong>Example:</strong> Router(config-telephony)# ip source-address 8.39.23.24 port 2000</td>
<td></td>
</tr>
<tr>
<td><strong>Step 8</strong> call-park system {application</td>
<td>redirect}</td>
</tr>
</tbody>
</table>
| **Example:** Router(config-telephony)# call-park system application | **application** — Enables the Call Park features supported in Unified SRST.
<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>hunt-group logout {DND</td>
<td>HLog}</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# hunt-group logout HLog</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>transfer-system full-consult</td>
<td>Specifies the call transfer method.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# transfer-system full-consult</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>transfer-pattern transfer-pattern</td>
<td>Allows transfer of telephone calls by Cisco Unified IP phones to specified phone number patterns. If no transfer pattern is set, the default is that transfers are permitted only to other local IP phones.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# transfer-pattern .T</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>fac { standard</td>
<td>custom { alias alias-tag</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# fac standard</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>create cnf-files</td>
<td>Builds the eXtensible Markup Language (XML) configuration files that are required for IP phones, in telephony-service configuration mode.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# create cnf-files version-stamp</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>exit</td>
<td>Exits the telephony-service configuration mode.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# exit</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>voice register global</td>
<td>Enters the voice register global configuration mode.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config)# voice register global</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>mode esrst</td>
<td>Configures the E-SRST mode under the voice register global mode.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-register-global)# mode esrst</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>max-dn max-directory-numbers</td>
<td>Sets the maximum number of SIP phone directory numbers (extensions) that are supported by a Cisco router in voice register global configuration mode.</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-register-global)# max-dn 40</td>
<td></td>
</tr>
<tr>
<td>Command or Action</td>
<td>Purpose</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td></td>
</tr>
</tbody>
</table>
| **Step 18**  
max-pool max-phones | Sets maximum number of SIP phones to be supported by the Unified SRST router.  
- Version- and platform-dependent; type ? for range. |
| **Example:**  
Router(config-register-global)# max-pool 40 | |
| **Step 19**  
ex | Exits the voice register global configuration mode. |
| **Example:**  
Router(config-register-global)# exit | |
| **Step 20**  
voice register dn dn-tag | Enters voice register dn configuration mode to define a directory number for a SIP phone.  
The voice register dn configured in Unified E-SRST must be the same directory number (dn) configured in Unified Communications Manager. |
| **Example:**  
Router(config)# voice register dn 17 | |
| **Step 21**  
number number | Defines a valid number for a directory number. |
| **Example:**  
Router(config-register-dn)# number 7001 | |
| **Step 22**  
ex | Exits the voice register dn configuration mode. |
| **Example:**  
Router(config-register-dn)# exit | |
| **Step 23**  
voice register pool pool-tag | Enters the voice register pool configuration mode to set phone-specific parameters for a SIP phone. |
| **Example:**  
Router(config)# voice register pool 1 | |
| **Step 24**  
id {[network address mask | ip address mask | mac address]} [device-id-name devicename] | Explicitly identifies a locally available individual or set of SIP IP phones. The keywords and arguments are defined as follows:  
- **network address mask mask**: The network address mask keyword/argument combination is used to accept SIP Register messages for the indicated phone numbers from any IP phone within the indicated IP subnet.  
- **ip address mask mask**: The ip address mask mask keyword/argument combination is used to identify an individual phone.  
- **mac address**: MAC address of a particular Cisco Unified IP Phone.  
- **device-id-name devicename**: Defines the device name to be used to download the phone’s configuration file. |
| **Example:**  
Router(config-register-pool)# id network 8.55.0.0 mask 255.255.0.0 | |
Configure Voice Hunt Groups on Unified E-SRST

To configure Voice Hunt Group feature on Unified E-SRST, perform the following procedure:

**SUMMARY STEPS**

1. `enable`
2. `configure terminal`
3. `voice hunt-group hunt-tag {longest-idle | parallel | peer | sequential}`
4. `members logout` (optional)
5. `list number [, number...]`
6. `timeout seconds`
7. `statistics collect`
8. `pilot 111`

### Command or Action | Purpose
--- | ---
**Step 25** `dtmf-relay rtp-nte` | Forwards DTMF tones by using Real-Time Transport Protocol (RTP) with the Named Telephone Event (NTE) payload type and enables DTMF relay using the RFC 2833 standard method.

**Example:**
Router(config-register-pool)# dtmf-relay rtp-nte

**Step 26** `exit` | Exits the voice register pool configuration mode.

**Example:**
Router(config-register-pool)# exit
## Unified E-SRST with Support for Voice Hunt Group

### DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
</table>
| **Step 1**  
*enable*  

**Example:**  
Router> enable | Enables the privileged EXEC mode. Enter your password if prompted. |
| **Step 2**  
*configure terminal*  

**Example:**  
Router# configure terminal | Enters the global configuration mode. |
| **Step 3**  
*voice hunt-group hunt-tag {longest-idle | parallel | peer | sequential}*  

**Example:**  
Router(config)# voice hunt-group 1 sequential | Enters voice hunt-group configuration mode to define a hunt group.  
- **hunt-tag**—Unique sequence number of the hunt group to be configured. Range is 1 to 100.  
- **longest idle**—Hunt group in which calls go to the directory number that has been idle for the longest time.  
- **sequential**—Hunt group in which directory numbers ring in the order in which they are listed, left to right.  
- **parallel**—Hunt group in which all directory numbers ring simultaneously.  
- **peer**—Hunt group in which the call placed to a directory number rings for the next directory number in line.  
To change the hunt-group type, remove the existing hunt group first by using the no form of the command; then, recreate the group. |
| **Step 4**  
*members logout*  

**Example:**  
Router(config-voice-hunt-group)# members logout | (optional) Configures a Unified SRST system for all non-shared static members or agents in a voice hunt group with the Hlogout initial state. |
| **Step 5**  
*list number [, number...]*  

**Example:**  
Router(config-voice-hunt-group)# list 1812, 1813, 1814 | Defines a list of extensions that are members of a voice hunt group. |
| **Step 6**  
*timeout seconds*  

**Example:**  
Router(config-voice-hunt-group)# timeout 30 | Defines the number of seconds after which a call that is not answered is redirected to the next number in a voice hunt-group list. |
Unified E-SRST with Support for Voice Hunt Group Enhancements

Step 7

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>statistics collect</td>
<td>Enables the collection of call statistics for a voice hunt group.</td>
</tr>
</tbody>
</table>

Example:

Router(config-voice-hunt-group)# statistics collect

Step 8

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>exit</td>
<td>Exits the voice hunt group configuration mode.</td>
</tr>
</tbody>
</table>

Example:

Router(config-voice-hunt-group)# exit

Example for configuring Unified E-SRST with Voice Hunt Group Enhancements

The following is a sample configuration for Unified E-SRST Release 12.2 under `telephony-service`, `voice register global`, `voice register pool`, and `voice hunt-group` configuration modes, for a deployment with common voice register pool configuration.

Router#
telephony-service
call-park system application
hunt-group logout HLog
transfer-system full-consult
fac standard

Router#sh run | sec global
voice register global
mode esrst
max-dn 40
max-pool 40

Router#
voice register pool 1
id network 8.55.0.0 mask 255.255.0.0
dtmf-relay rtp-npe
Router#
telephony-service
max-ephones 40
max-dn 50
ip source-address 8.39.23.24 port 2000
call-park system application
transfer-system full-consult
transfer-pattern .T
fac standard
create cnf-files version-stamp Jan 01 2002 00:00:00

Router#sh run | sec hunt
voice hunt-group 1 sequential
members logout
list 1812,1813,1814
timeout 30
statistics collect
pilot 1111

The following is a sample configuration for Unified E-SRST Release 12.2, for a deployment with individual voice register pool configuration, with the CLI command `id ip` configured.
voice register dn  2
  number 4000

voice register dn  3
  number 4002

voice register pool  2
  busy-trigger-per-button 2
  id device-id-name SEP00EBD5CD77ED
  type 8811
  number 1 dn 2
dtmf-relay rtp-nte
codec g711ulaw

voice register pool  3
  busy-trigger-per-button 2
  id device-id-name SEP0076861A7EDC
  type 7861
  number 1 dn 3
dtmf-relay rtp-nte
codec g711ulaw

The following is a sample configuration for Unified E-SRST Release 12.2, for a deployment with individual voice register pool configuration, with the CLI command `id device-id-name` configured.

Example for Configuring B-ACD with Unified E-SRST

The following is a sample configuration for B-ACD functionality supported with Unified E-SRST:

```
application
service aa-bcd bootflash:/app-b-acd-aa-3.0.0.4_thd_v4.tcl
paramspace english index 0
param second-greeting-time 60
param welcome-prompt _bacd_welcome.au
param call-retry-timer 8
param voice-mail 1811
paramspace english language en
param max-time-call-retry 16
```
Example for Configuring Shared Line with Voice Hunt Group on Unified E-SRST

The following is a sample configuration of Unified E-SRST, Release 12.2 with support for mixed shared lines (SIP and SCCP Phones) in a voice hunt group deployment.

Router# sh run | sec global
voice register global
  mode esrst
  no allow-hash-in-dn
  max-dn 40
  max-pool 40

Router# sh run | sec pool
  max-pool 40
  voice register pool 1
    busy-trigger-per-button 2
    id device-id-name SEP00CCFC4AA4DC
    type 8811
    number 1 dn 1
    number 2 dn 21
dtmf-relay rtp-nte
  username xxxx password uvwx
  codec g711ulaw
  no vad
  voice register pool 2
    busy-trigger-per-button 2
    id device-id-name SEP00CCFC177A4E
    type 8841
number 1 dn 2
dtmf-relay rtp-nte
username xxxx password uvwx
codec g711ulaw
no vad
voice register pool 3
busy-trigger-per-button 2
id device-id-name SEP00076861ADEF0
type 7841
number 1 dn 3
number 2 dn 22
dtmf-relay rtp-nte
username xxxx password uvwx
codec g711ulaw
no vad
voice register pool 4
busy-trigger-per-button 2
id device-id-name SEP0001BD5CD270C
type 8811
number 1 dn 4
number 2 dn 22
dtmf-relay rtp-nte
username xxxx password uvwx
codec g711ulaw
no vad
voice register pool 5
busy-trigger-per-button 2
id device-id-name SEP94D4692A2553
type 8841
number 1 dn 5
dtmf-relay rtp-nte
username xxxx password uvwx
codec g711ulaw
no vad
voice register pool 6
busy-trigger-per-button 2
id device-id-name SEP00CAE540C4B5
type 8811
number 1 dn 6
number 2 dn 21
dtmf-relay rtp-nte
username xxxx password uvwx
codec g711ulaw
no vad
alias exec pool show voice register pool all br

Router# sh run | sec dn
no allow-hash-in-dn
max-dn 40
voice register dn 1
voice-hunt-groups login
number 1811
voice register dn 2
voice-hunt-groups login
number 1812
voice register dn 3
voice-hunt-groups login
number 1813
voice register dn 4
voice-hunt-groups login
number 1814
voice register dn 5
voice-hunt-groups login
number 1815
voice register dn  6
voice-hunt-groups login
number 1816
voice register dn  21
voice-hunt-groups login
number 1821
shared-line
voice register dn  22
voice-hunt-groups login
number 1822
shared-line

Router# sh run | sec ephone
max-ephones 40
ephone-dn  11
number 1911
ephone-dn  12
number 1912
ephone-dn  13
number 1913
ephone-dn  14
number 1914
ephone-dn  21
number 1921
ephone-dn  22
number 1822
shared-line sip
ephone 11
device-security-mode none
mac-address 1111.1111.1911
feature-button 1 HLog
type 7970
button 1:11
ephone 12
device-security-mode none
mac-address 1111.1111.1912
feature-button 1 HLog
type 7970
button 1:12 2:21
ephone 13
device-security-mode none
mac-address 1111.1111.1913
feature-button 1 HLog
type 7970
button 1:13 2:21
ephone 14
device-security-mode none
mac-address 1111.1111.1914
feature-button 1 HLog
type 7970
button 1:14 2:22
alias ephone show ephone summary brief
alias exec ephone show ephone summary brief

Router# sh run | sec tele
telephony-service
conference transfer-pattern
mode esrst
max-ephones 40
max-dn 50
ip source-address 8.39.23.24 port 2000
service phone sshAccess 0
SCCP: Configure Unified E-SRST

You need to configure mode esrst under telephony-service to enable ESRST mode for SCCP Phones.

Prerequisites

- Cisco Unified CME 10.5 or later version
- The telephony-services command must be configured

Note

For SCCP phones, CME-as-SRST mode is provisioned using the srst mode auto-provision command. From 10.5 release onwards, this command will be deprecated. When you try to configure CME-as-SRST mode, the following message will be displayed:

"Note: This configuration is being deprecated. Please configure "mode esrst" to use the enhanced SRST mode".

SUMMARY STEPS

1. enable
2. configure terminal
3. telephony-service
4. mode esrst
5. max-ephones max-phones
6. max-dn max-directory-numbers [preference preference-order] [no-reg primary | both]
7. ip source-address ip-address port port [any-match | strict-match]
8. exit
9. ephone-dn dn-tag [dual-line]
10. number number [secondary number] [no-reg [both | primary]]
11. name name
12. exit
13. ephone phone-tag
14. mac-address [mac-address]
15. type phone-type [addon 1 module-type [2 module-type]]
16. button button-number{separator}dn-tag [dn-tag...] [button-number[x]overlay-button-number] [button-number...]
17. end
## Unified E-SRST with Support for Voice Hunt Group

### DETAILED STEPS

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>enable</td>
<td>Enables the privileged EXEC mode. Enter your password if prompted.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router&gt; enable</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>configure terminal</td>
<td>Enters the global configuration mode.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router# configure terminal</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>telephony-service</td>
<td>Enters telephony-service configuration mode.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config)# telephony-service</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>mode esrst</td>
<td>Configures the E-SRST mode under the telephony-service mode.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# mode esrst</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>max-ephones max-phones</td>
<td>Sets the maximum number of phones that can register to Unified E-SRST.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# max-ephones 24</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>max-dn max-directory-numbers [preference preference-order] [no-reg primary</td>
<td>both]</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# max-dn 24 no-reg primary</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>ip source-address ip-address [port port] [any-match</td>
<td>strict-match]</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# ip source-address 192.168.11.1 port 2000</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>exit</td>
<td>Exits telephony-service configuration mode.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-telephony)# exit</td>
<td></td>
</tr>
</tbody>
</table>
## Unified E-SRST with Support for Voice Hunt Group

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 9</strong></td>
<td>Enters ephone dn configuration mode to define a directory number for an IP phone, intercom line, voice port, or a message-waiting indicator (MWI).</td>
</tr>
<tr>
<td><em>ephone-dn dn-tag [dual-line]</em></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td>Router(config)# ephone-dn 1</td>
</tr>
<tr>
<td><strong>Step 10</strong></td>
<td>Associates an extension number with this directory number.</td>
</tr>
<tr>
<td>*number number [secondary number] [no-reg [both</td>
<td>primary]]*</td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td>Router(config-ephone-dn)# number 1001</td>
</tr>
<tr>
<td><strong>Step 11</strong></td>
<td>(Optional) Associates a name with this directory number.</td>
</tr>
<tr>
<td><em>name name</em></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td>Router(config-ephone-dn)# name Smith, John</td>
</tr>
<tr>
<td><strong>Step 12</strong></td>
<td>Exits ephone-dn configuration mode.</td>
</tr>
<tr>
<td><em>exit</em></td>
<td></td>
</tr>
<tr>
<td><strong>Step 13</strong></td>
<td>Enters ephone configuration mode to set ephone specific parameters.</td>
</tr>
<tr>
<td><em>ephone phone-tag</em></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td>Router(config)# ephone 1</td>
</tr>
<tr>
<td><strong>Step 14</strong></td>
<td>Associates the MAC address of a Cisco IP phone with an ephone configuration in a Unified E-SRST system.</td>
</tr>
<tr>
<td><em>mac-address [mac-address]</em></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td>Router(config-ephone)# mac-address 0022.555e.00f1</td>
</tr>
<tr>
<td><strong>Step 15</strong></td>
<td>Specifies the type of phone.</td>
</tr>
<tr>
<td><em>type phone-type [addon 1 module-type [2 module-type]]</em></td>
<td></td>
</tr>
<tr>
<td><strong>Example:</strong></td>
<td>Router(config-ephone)# type 7960</td>
</tr>
</tbody>
</table>
Unified E-SRST with Support for Voice Hunt Group

Example: Enhanced SRST mode configuration

The following example shows the status of the device in E-SRST mode:

```
show telephony-service

CONFIG (Version=10.5)
======================
Version 10.5
Max phoneload sccp version 17
Max dsfprm sccp version 18
Cisco Unified Enhanced SRST
```

**Note**
For SCCP phones, switching the mode from CME to ESRST and vice versa, results in wiping out the entire CME or ESRST configurations (including ephone, DNs, templates etc.).

Configure Mixed Shared Lines with SCCP Phones

To configure mixed shared lines between SCCP and SIP IP Phones on Unified E-SRST, perform the following procedure:

**SUMMARY STEPS**

1. `enable`
2. `configure terminal`
3. `ephone-dn dn-tag [dual-line]
4. `number number [secondary number] [no-reg [both | primary]]`
5. `shared-line sip`
6. `end`

**Command or Action**

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td><code>button button-number{separator}dn-tag [dn-tag...] [button-number{x}overlay-button-number] [button-number...]</code></td>
<td>Associates a button number and line characteristics with an ephone-dn. Maximum number of buttons is determined by phone type.</td>
</tr>
<tr>
<td>17</td>
<td><code>end</code></td>
<td>Returns to privileged EXEC mode.</td>
</tr>
</tbody>
</table>

**Example:**

```
Example: Enhanced SRST mode configuration

The following example shows the status of the device in E-SRST mode:

Router(config-ephone)# button 1:7

Router(config-telephony)# end
```

**Note**
For SCCP phones, switching the mode from CME to ESRST and vice versa, results in wiping out the entire CME or ESRST configurations (including ephone, DNs, templates etc.).
**DETAILED STEPS**

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong> enable</td>
<td>Enables the privileged EXEC mode. Enter your password if prompted.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router&gt; enable</td>
</tr>
<tr>
<td><strong>Step 2</strong> configure terminal</td>
<td>Enters the global configuration mode.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router# configure terminal</td>
</tr>
<tr>
<td><strong>Step 3</strong> ephone-dn dn-tag [dual-line]</td>
<td>Enters ephone dn configuration mode to define a directory number for an IP phone, intercom line, voice port, or a message-waiting indicator (MWI).</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config)# ephone-dn 1</td>
</tr>
<tr>
<td><strong>Step 4</strong> number number [secondary number] [no-reg [both</td>
<td>primary]]</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-ephone-dn)# number 1001</td>
</tr>
<tr>
<td><strong>Step 5</strong> shared-line sip</td>
<td>Adds an ephone-dn as a member of a shared directory number for a mixed shared line between Unified SIP and Unified SCCP IP phones.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-ephone-dn)# shared-line sip</td>
</tr>
<tr>
<td><strong>Step 6</strong> end</td>
<td>Returns to privileged EXEC mode.</td>
</tr>
<tr>
<td>Example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Router(config-ephone-dn)# end</td>
</tr>
</tbody>
</table>

**Configure BLF for SCCP Phones**

1. enable
2. configure terminal
3. presence
4. max-subscription number
5. presence call-list (To enable Presence feature for all the missed/received/placed calls)
6. end

**Enable an SCCP Directory Number to be Watched**

To enable a directory number to be watched, perform the following procedure:

1. ephone-dn dn-tag
Enable BLF on an Ephone

To enable BLF on an ephone, perform the following steps:

1. enable
2. configure terminal
3. ephone ephone-tag
4. button button-number{separator}dn-tag [,dn-tag...] [button-number[x]overlay-button-number] [button-number...]
5. blf-speed-dial tag number label string [device]
6. presence call-list (To enable Presence feature for all the missed/received/placed calls)
7. end

Configure Digest Credentials On Unified Communications Manager

To configure the username and password with Digest Authentication on Unified Communications Manager, perform the following steps:

Step 1  Login to Cisco Unified Communications Manager.
Step 2  Go to System>Security->Phone Security Profile
       a. Edit the existing configuration, or create a new configuration and associate with the phone
       b. Check the Enable Digest Authentication box
Step 3  Go to User Management > End User
       a. Create a new user
       b. Add the User ID, and digest credentials
Step 4  Go to the Phone Settings page and associate the user in the Digest User field.

Configure Digest Credentials on Unified E-SRST for SIP

To configure credentials under a specific voice register pool, perform the following procedure:

SUMMARY STEPS

1. enable
2. configure terminal
3. voice register pool <pool-tag>
4. username <username> password <password>
5. end
Example: Configuring Digest Credentials on ESRST

The following example shows how to configure digest credentials on ESRST:

```
Router# conf terminal
Router(config)#voice register pool 10
Router (config-register-pool)# username abc password xyz
```

Configure Digest Credentials on Unified E-SRST for SCCP

To configure credentials under a specific ephone, perform the following procedure:

**SUMMARY STEPS**

1. `enable`
2. `configure terminal`
3. `ephone ephone-tag`
4. `username username password password`
5. `end`

Unified E-SRST Scale Support

For Unified E-SRST 10.5 to 12.0, the scale of Unified E-SRST mode is increased to match the scale of Classic SRST for both SIP and SCCP Phones.

*Table 3-2* lists the scale for number of phones and DNs supported in ESRST mode for Release 10.5 to 12.0.

<table>
<thead>
<tr>
<th>Platform</th>
<th>New Phone Scale</th>
<th>New DN Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco 2901</td>
<td>35</td>
<td>200</td>
</tr>
<tr>
<td>Cisco 2911</td>
<td>50</td>
<td>300</td>
</tr>
<tr>
<td>Cisco 2921</td>
<td>100</td>
<td>400</td>
</tr>
<tr>
<td>Cisco 2951</td>
<td>250</td>
<td>500</td>
</tr>
<tr>
<td>Cisco 3925</td>
<td>730</td>
<td>1000</td>
</tr>
<tr>
<td>Cisco 3945</td>
<td>1200</td>
<td>1800</td>
</tr>
<tr>
<td>Cisco 3925E</td>
<td>1350</td>
<td>2000</td>
</tr>
<tr>
<td>Cisco 3945E</td>
<td>1500</td>
<td>2500</td>
</tr>
<tr>
<td>Cisco 4451-X</td>
<td>1500</td>
<td>2500</td>
</tr>
<tr>
<td>ISR 4321</td>
<td>35</td>
<td>200</td>
</tr>
<tr>
<td>ISR 4331</td>
<td>100</td>
<td>400</td>
</tr>
<tr>
<td>ISR 4351</td>
<td>730</td>
<td>1000</td>
</tr>
<tr>
<td>ISR 4431</td>
<td>1200</td>
<td>1800</td>
</tr>
<tr>
<td>ISR 4451</td>
<td>1500</td>
<td>2500</td>
</tr>
</tbody>
</table>
Note  The increase in scale mentioned in the table is only for basic calls. For enhanced feature support such as Shared-line, BLF, Video, and VHG, these numbers are not applicable.

Example: ESRST Scale Increase

The following example shows the increase in scale support in the E-SRST mode for ISR 3945E platform:

ESRST_3945e(config-telephony)#max-dn ?
<1-2500> Maximum single/dual/octo line directory numbers supported

ESRST_3945e(config-telephony)#max-ephones ?
<1-1500> Maximum phones to support

Where to Go Next

Proceed to the “Setting Up the Network” section on page 123.