



Closed User Group Selection Facility Suppress Option

This feature module describes the Closed User Group Selection Facility Suppress Option feature and includes the following sections:

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Feature Overview

A closed user group (CUG) selection facility is a specific encoding element that can be presented in a call request or an incoming call. A CUG selection facility in a call request allows the source data terminal equipment (DTE) to identify the CUG within which it is placing the call. A CUG selection facility in an incoming call allows the destination DTE to identify the CUG to which both DTEs belong.

The Closed User Group Selection Facility Suppress Option feature enables a Cisco X.25 data communications equipment (DCE) interface or an X.25 profile with a DCE station type to selectively remove the CUG selection facility before presenting an incoming call packet to a subscribed DTE. CUG selection facility suppression applies to incoming calls only.

With this new feature, you can configure an X.25 DCE interface or X.25 profile to remove the CUG selection facility from incoming call packets destined for the preferential CUG only or for all CUGs. You can also remove the selection facility from a CUG with outgoing access (CUG/OA). The Closed User Group Selection Facility Suppress Option feature does not distinguish between CUGs and CUG/OAs.



Note

The CUG Selection Facility Suppress Option feature will not in any way compromise CUG security.

Benefits

Many legacy X.25 DTE devices cannot process the CUG selection facility in incoming call packets, so the devices reject the calls with the CUG selection facility. The Closed User Group Selection Facility Suppress Option feature allows Cisco X.25 DCE devices to remove the CUG selection facility before presenting the call to the DTE, enabling Cisco routers to operate transparently with existing legacy devices.

Restrictions

- This feature can be configured on an X.25 DCE interface or X.25 profile only.
- If Annex G (X.25 over Frame Relay) is being used, this feature must be configured on the X.25 profile.

Related Documents

- *Cisco IOS Wide-Area Networking Configuration Guide*, Release 12.1
- *Cisco IOS Wide-Area Networking Command Reference*, Release 12.1

Supported Platforms

- Cisco 800
- Cisco 1005
- Cisco 1400
- Cisco 1600
- Cisco 1700
- Cisco 2500 series
- Cisco 2600
- Cisco 3600 series
- Cisco 3800 series
- Cisco 4000 series (Cisco 4000, 4000-M, 4500, 4500-M, 4700, 4700-M)
- Cisco 6400 NRP
- Cisco 7100
- Cisco 7200 series
- Cisco 7500 series
- Cisco 7700
- Cisco AS5300
- Cisco AS5400
- Cisco MC3810
- Cisco UBR7200

Supported Standards, MIBs, and RFCs

Standards

- ITU-T Recommendation X.25, *Interface Between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Terminals Operating in the Packet Mode and Connected to Public Data Networks by Dedicated Circuit*, 10/96.
- ITU-T Recommendation X.301, *Description of the General Arrangements for Call Control Within a Subnetwork and Between Subnetworks for the Provision of Data Transmission Services*, 10/96.

MIBs

No new or modified MIBs are supported.

For descriptions of supported MIBs and how to use MIBs, see the Cisco MIB web site on Cisco Connection Online (CCO) at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

RFCs

No new or modified RFCs are supported.

Configuration Tasks

See the following sections for configuration tasks for the CUG Facility Selection Suppress Option feature. Each task in the list is identified as optional or required.

- Configuring CUG Selection Facility Suppression on an Interface (Required)
- Configuring CUG Selection Facility Suppression on an X.25 Profile (Required)
- Verifying CUG Selection Facility Suppression (Optional)

Configuring CUG Selection Facility Suppression on an Interface

To configure the Closed User Group Selection Facility Suppress Option feature on an interface, use the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	Router(config)# interface type number	Configures an interface type and enters interface configuration mode.
Step 2	Router(config-if)# encapsulation x25 dce	Specifies that a serial interface will operate as an X.25 DCE device.
Step 3	Router(config-if)# x25 subscribe cug-service [incoming-access outgoing-access] [suppress preferential suppress all]	Enables and controls standard CUG behavior on an X.25 DCE interface.

Configuring CUG Selection Facility Suppression on an X.25 Profile

To configure the Closed User Group Selection Facility Suppress Option feature on an X.25 profile, use the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	<code>Router(config)# x25 profile name dce</code>	Configures an X.25 profile and specifies a DCE station type.
Step 2	<code>Router(config-x25)# x25 subscribe cug-service [incoming-access outgoing-access] [suppress preferential suppress all]</code>	Enables and controls standard CUG behavior on an X.25 DCE interface.

Verifying CUG Selection Facility Suppression

To verify the Closed User Group Selection Facility Suppress Option feature, use the following privileged EXEC command:

Command	Purpose
<code>Router# show x25 cug {local-cug number network-cug number}</code>	Displays information about all or specific CUGs.

Monitoring and Maintaining CUG Selection Facility Suppression

To monitor CUG Selection Facility Suppress Option, use one or both of the following privileged EXEC commands:

Command	Purpose
<code>Router# debug x25 events</code>	Displays information about all X.25 traffic except data and resource record packets.
<code>Router# show x25 cug {local-cug number network-cug number}</code>	Displays information about all or specific CUGs.

Configuration Examples

This section provides the following configuration examples:

- CUG Selection Facility Suppression for the Preferential CUG Configuration Example
- CUG Selection Facility Suppression for All CUGs Configuration Example

CUG Selection Facility Suppression for the Preferential CUG Configuration Example

In the following example, CUG selection facility suppression is configured for the preferential CUG only on serial interface 0:

```
interface serial0
  encapsulation x25 dce
  x25 subscribe cug-service suppress preferential
  x25 subscribe local-cug 0 network-cug 10 preferential
  x25 subscribe local-cug 50 network-cug 500
```

CUG Selection Facility Suppression for All CUGs Configuration Example

In the following example, CUG selection facility suppression and incoming access are configured for all CUGs, including the preferential CUG on the X.25 profile:

```
x25 profile CUG-SUPRS-ALL dce
  x25 subscribe cug-service incoming-access suppress all
  x25 subscribe local-cug 0 network-cug 10 preferential
  x25 subscribe local-cug 20 network-cug 202
  x25 subscribe local-cug 40 network-cug 40
```

Command Reference

This section documents the modified commands that configure the Closed User Group Selection Facility Suppress Option feature.

show x25 cug

To display information about all closed user groups (CUGs) or specific CUGs (defined by the local or network CUG number), use the **show x25 cug** EXEC command.

```
show x25 cug {local-cug number | network-cug number}
```

Syntax Description

local-cug	Locally significant CUG identifier.
<i>number</i>	Local CUG number (0 to 9999).
network-cug	Network translated CUG identifier.
<i>number</i>	Network CUG number (0 to 9999).

Command Modes

EXEC

Command History

Release	Modification
12.0(7)T	This command was introduced.
12.1(5)T	This command was modified to show information about CUG selection facility suppression.

Usage Guidelines

You must designate either the **local-cug** or the **network-cug** keyword with this command. Within these designations you can view all CUGs or a specific CUG defined by its local or network CUG identifier.

Examples

CUG Selection Facility Suppress Option Example

The following is sample output for the **show x25 cug** command when CUG selection facility is suppressed for all CUGs on serial interface 1/2 and for the preferential CUG on the X.25 profile named "cug".

```
Router# show x25 cug local-cug
X.25 Serial1/2, 2 CUGs subscribed with no public access
  CUG selection facility suppressed for all CUGs
  local-cug 100 <-> network-cug 10
  local-cug 1 <-> network-cug 11
PROFILE cug, 2 CUGs subscribed with incoming public access
  CUG selection facility suppressed for preferential CUG
  local-cug 0 <-> network-cug 0 , preferential
  local-cug 100 <-> network-cug 100
  local-cug 200 <-> network-cug 200
```

Local CUG Example

The following is sample output from the **show x25 cug local-cug** command, displaying information about all local CUGs on X.25 serial interface 0. Four CUGs have been subscribed to on serial interface 0, and they all have been configured for incoming and outgoing public access.

```
Router# show x25 cug local-cug

X.25 Serial0, 4 CUGs subscribed with incoming and outgoing public access
  local-cug 100 <-> network-cug 11
  local-cug 200 <-> network-cug 22
  local-cug 300 <-> network-cug 33
  local-cug 5000 <-> network-cug 55, preferential
```

Network CUG Example

The following is sample output from the **show x25 cug network-cug** command specifically for network number 33 showing that local CUG 300 is associated with it.

```
Router# show x25 cug network-cug 33

X.25 Serial1/2, 5 CUGs subscribed with no public access
  network-cug 33 <-> local-cug 300
```

Table 1 describes the fields shown in the display for the **show x25 cug** command.

Table 1 *show x25 cug Field Descriptions*

Field	Description
X.25 Serial 0	DCE interface with X.25 CUG service subscription.
local-cug	Local CUG details.
network-cug	Network CUG details.
preferential	Identifies which CUG, if any, is preferential. A single CUG listed for an interface is assumed to be preferential.

Related Commands

Command	Description
x25 subscribe cug-service	Enables and controls standard CUG behavior on an X.25 DCE interface.
x25 subscribe local-cug	Configures a DCE X.25 interface for a specific CUG subscription.

x25 subscribe cug-service

To enable and control standard closed user group (CUG) behavior on an X.25 DCE interface or X.25 profile, use the **x25 subscribe cug-service** interface configuration command. To disable standard CUG behavior on an X.25 DCE interface, use the **no** form of this command.

x25 subscribe cug-service [**incoming-access** | **outgoing-access**] [**suppress preferential** | **suppress all**]

no x25 subscribe cug-service [**incoming-access** | **outgoing-access**] [**suppress preferential** | **suppress all**]

Syntax Description

incoming-access	(Optional) Allows incoming access from the open network to the DTE device.
outgoing-access	(Optional) Allows outgoing access from the DTE device to the open network.
suppress preferential	(Optional) Suppresses CUG selection facility for the preferential CUG.
suppress all	(Optional) Suppresses CUG selection facility for all CUGs.

Defaults

No incoming access and no outgoing access. (This is the most restrictive setting.)
CUG selection facilities are not suppressed.

Command Modes

Interface configuration
X.25 profile configuration mode

Command History

Release	Modification
12.0(7)T	This command was introduced.
12.1(5)T	The suppress preferential and suppress all keywords were added to enable CUG selection facility suppression.

Usage Guidelines

When entering this command, specify either the **incoming-access** or the **outgoing-access** keyword, unless you intend to have neither incoming nor outgoing access on that interface.

This command assumes that an X.25 network connection is being implemented and observes rules defined by X.25 and X.301 for CUG access. This command is enabled on a per-interface basis. Use this command to modify existing specified options without otherwise affecting the CUGs already defined.

The following restrictions apply to the **x25 subscribe cug-service** command:

- Disabling this command deconfigures all the CUGs defined for the device and disables all CUG-related commands, but it does not terminate the associated CUG switched virtual circuit (SVC) connections.
- The DTE cannot call the open part of the network unless the **outgoing-access** option is configured. Even if **outgoing-access** is permitted, the DCE will enforce any additional CUG requirements when handling an outgoing call (call request) from the DTE.
- The DTE will not receive calls from the open part of the network unless the **incoming-access** option is configured. Even if **incoming-access** is permitted, the DCE will enforce any additional CUG requirements before presenting an incoming call to the DTE.

Examples

CUG Service with CUG Selection Facility Suppression and Incoming Access Example

In the following example, CUG selection facility suppression and incoming access are configured for all CUGs, including the preferential CUG on the X.25 profile:

```
x25 profile CUG-SUPRS-ALL dce
  x25 subscribe cug-service incoming-access suppress all
  x25 subscribe local-cug 0 network-cug 10 preferential
  x25 subscribe local-cug 20 network-cug 202
  x25 subscribe local-cug 40 network-cug 40
```

CUG Service with Incoming and Outgoing Access Example

The following example shows subscribing to both incoming and outgoing CUG service on the interface:

```
interface serial0
  encapsulation x25 dce
  x25 subscribe cug-service incoming-access outgoing-access
```

Related Commands

Command	Description
show x25 cug	Displays information about all CUGs or specific CUGs (defined by the local or network CUG number).
x25 subscribe cug-service	Configures a DCE X.25 interface for a specific CUG subscription.
x25 map	Sets the maximum number of virtual circuits that a protocol can have open simultaneously to one host.
x25 facility	Forces facilities on a per-call basis for calls originated by the router (switched calls are not affected).

Glossary

call request—An X.25 call packet sent from a DTE to a DCE that initiates a connection to a destination DTE.

closed user group—A collection of DTE devices for which the network controls access between members and between members and nonmembers. A DTE may subscribe to zero, one, or more CUGs. A DTE that does not subscribe to a CUG is referred to as being in the *open* part of the network.

closed user group selection facility—A specific encoding element that can be presented in a call request or incoming call. A CUG selection facility in a call request allows the source DTE to identify the CUG within which it is placing the call. A CUG selection facility in an incoming call allows the destination DTE to identify the CUG to which both DTEs belong.

closed user group with outgoing access (CUG/OA)—A CUG that allows subscribing DTEs to place calls to the open part of the network.

CUG—See closed user group.

CUG/OA—See closed user group with outgoing access.

DTE—data terminal equipment. A network subscriber that can be reached at a specific network attachment point. A network identifies each DTE by assigning an X.121 address.

DCE—data communications equipment. A network connection where a subscriber can be attached. A DCE is configured with the operational details that a given subscriber (DTE) has contracted for.

incoming call—An X.25 call packet sent from a DCE to a DTE that presents a connection requested by the source DTE.

preferential closed user group—The CUG that is assumed when a CUG is not specified in call setup. A DTE that subscribes to more than one CUG and does not have incoming or outgoing access must designate a preferential CUG.