



# Sequential Network Consultation Transfer Feature Module

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## Document Release History.

Publication Date	Comments
November 7, 2008	Initial release of document

## Feature History

Release	Modification
9.7(3)	The Sequential Network Consultation Transfer feature was introduced on the Cisco PGW 2200 Softswitch.

This document describes the Sequential Network Consultation Transfer (Sequential NCT) feature and includes the following sections:

- [Feature Description, page 1](#)
- [Provisioning Tasks, page 4](#)
- [Troubleshooting This Feature, page 4](#)
- [Obtaining Documentation, Obtaining Support, and Security Guidelines, page 8](#)
- [Provisioning Examples for Take Back and Transfer Services, page 9](#)
- [Glossary, page 12](#)

## Feature Description

This feature, sequential NCT, enables the Cisco PGW 2200 Softswitch to perform sequential network consultation transfer (NCT) calls. That is, the Cisco PGW 2200 Softswitch can perform another NCT after the first NCT is completed. With this new feature introduced, to invoke a second NCT, call agents don't have to invoke a network blind transfer (NBT) or an intelligent take back and transfer (iTNT) before the second NCT. Call agents are able to start a second NCT right after the first NCT is completed.



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**Americas Headquarters:**  
**Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA**

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The sequential NCT feature is an enhancement to the previous feature, SIP Support of Take Back and Transfer in the Cisco Unified Contact Center.

## Benefits

This feature provides enhanced sequential network consultation transfer capabilities to the Cisco Unified Contact Center solution. The call center operator is able to invoke the second NCT call directly after the first NCT is completed. Therefore this feature can improve the efficiency of the call center operators and increase customer satisfaction.

## Prerequisites

The Cisco PGW 2200 Softswitch must be running Cisco MGC software Release 9.7(3). Additional prerequisites for this release can be found in the *Release Notes for the Cisco Media Gateway Controller Software Release 9.7(3)* at

[http://www.cisco.com/en/US/partner/docs/voice\\_ip\\_comm/pgw/9/release/note/rn973.html](http://www.cisco.com/en/US/partner/docs/voice_ip_comm/pgw/9/release/note/rn973.html)

## Limitations

The sequential NCT feature has the following limitations:

- Transaction Capabilities Application Part (TCAP) dialogues are not failed over. Calls in the connected state are failed over and remain in conversation, but the TCAP dialogue is lost. Only two-party connected calls are preserved if a call failover occurs without further services available. Other calls are released from the connected state in the normal manner upon user request.



### Note

In XECfgParm.dat, the parameter, engine.RelINAPCallsAfterSwOver, controls if the Cisco PGW 2200 Softswitch releases connected INAP calls after a switchover. If this parameter is set to true, the Cisco PGW 2200 Softswitch releases all the connected INAP calls after the switchover. If this parameter is set to false, INAP calls in the connected state are failed over and remain in conversation after the switchover. The default value for the parameter engin.RelINAPCallsAfterSwOver is true.

- If the transferring agent is a SIP trunk and the transferred-to agent is a SIP or H.323 trunk, the transferring agent cannot hear the ringback tone unless there is a remote ringback tone.
- The codec selection on the three call legs is based on the current simplified best fit practice of using the codec list provided by party A to party C for the B-C call leg setup. When the call is transferred, this same codec is used for the A-C setup. That is, there is no codec renegotiation for either the B-C call leg or the A-C call leg. If party C does not support the codec negotiation result by parties A and B, the Cisco PGW 2200 Softswitch cannot set up the transferred-to leg.
- No conferencing capability is available.
- An H.323 endpoint cannot be a calling party or a transferring party for the sequential NCT.

## Related Features and Technology

Table 1 lists the feature guide URLs for the related features. Table 2 describes the related technology.

**Table 1**      **Related Features**

Feature Name	Feature Guide URLs
Blind Take Back and Transfer Replacement	<a href="http://www.cisco.com/en/US/docs/voice_ip_comm/pgw/9/feature/module/9.7_3_/FMbdbtx.html">http://www.cisco.com/en/US/docs/voice_ip_comm/pgw/9/feature/module/9.7_3_/FMbdbtx.html</a>
Take Back and Transfer Phase 2	<a href="http://www.cisco.com/en/US/docs/voice_ip_comm/pgw/9/feature/module/9.7_3_/Dmite2.html">http://www.cisco.com/en/US/docs/voice_ip_comm/pgw/9/feature/module/9.7_3_/Dmite2.html</a>
SIP Support of Take Back and Transfer in the Cisco Unified Contact Center	<a href="http://www.cisco.com/en/US/docs/voice_ip_comm/pgw/9/feature/module/9.7_3_/Fireworks.html">http://www.cisco.com/en/US/docs/voice_ip_comm/pgw/9/feature/module/9.7_3_/Fireworks.html</a>

**Table 2**      **Related Services**

Acronym	Expansion	Brief Description
TNT	Take back and transfer	A user dials dual-tone multifrequency (DTMF) digits in the middle of a call to start a call transfer to a new destination without intervention. (There is no way for the caller to know if the new destination can be reached or not.)
iTNT	Intelligent blind transfer	The transferring party in a call dials DTMF digits during the call to start a blind transfer to the new destination without intervention. Cisco Unified Intelligent Contact Management (Cisco Unified ICME) instructs the Cisco PGW 2200 Softswitch to disconnect the transferring attendant and establish a new outbound call to another attendant group.
NBT	Network blind transfer	An operator enters a new target number on the Cisco Agent Desktop (an interface to Cisco Unified ICME on the operator side). After analyzing the number that it receives from the Cisco Agent Desktop, the Cisco Unified ICME instructs the Cisco PGW 2200 Softswitch to disconnect the transferring attendant (the operator) and establish a new outbound call to another attendant group without intervention.
NCT	Network consultation transfer	An operator enters a new target number on the Cisco Agent Desktop (an interface to Cisco Unified ICME on the operator side). After analyzing the number that it receives from the Cisco Agent Desktop, the Cisco Unified ICME instructs the Cisco PGW 2200 Softswitch to hold the current call and establish a new outbound call to another attendant group. The operator is able to alternate between the two connections if the new call is successfully established.

## Related Documents

This document contains information that is strictly related to this feature. The documents that contain additional information related to the Cisco PGW 2200 Softswitch are at the following URL.

[http://www.cisco.com/en/US/products/hw/vcallcon/ps2027/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/hw/vcallcon/ps2027/tsd_products_support_series_home.html)

## Supported Standards, MIBs, and RFCs

This section identifies the new or modified standards, MIBs, and RFCs that are supported by this feature.

### Standards

This feature is in compliance with the following standard:

- ITU Q.1228 Interface Recommendation for Intelligent Network Capability Set 2

### MIBs

No new or modified MIBs are supported by this feature.

### RFCs

This feature is in compliance with the following RFC:

- RFC 3261 SIP: Session Initiation Protocol

## Provisioning Tasks

There are no additional provisioning requirements for the sequential NCT feature on your existing NCT service.

## Troubleshooting This Feature

If the sequential NCT does not work, use the following procedure:

	Action	Description
<b>Step 1</b>	Check if the INAP connection between the Cisco PGW 2200 Softswitch and the Cisco Unified ICME is active.	<p><b>a.</b> Enter the following MML command and press <b>Enter</b>:</p> <pre><b>rtrv-lssn:all</b></pre> <p>Text similar to the following is displayed:</p> <pre>MGC-01 - Media Gateway Controller 2008-09-23 08:37:53.100 CST M RTRV "TCAP-01:SSN=12,PST=IS" ;</pre> <p><b>b.</b> Enter the following MML command and press <b>Enter</b>:</p> <pre><b>rtrv-rssn:all</b></pre> <p>Text similar to the following is displayed:</p> <pre>MGC-01 - Media Gateway Controller 2008-09-23 08:38:19.490 CST M RTRV "scp1:PC=003.008.003,SSN=12,PST=IS" "scp2:PC=003.009.003,SSN=12,PST=IS" ;</pre> <p><b>Note</b> The state of the local and remote subsystem numbers (SSNs) must be in-service (IS).</p>
<b>Step 2</b>	Check the Cisco Unified ICME configuration.	<p><b>a.</b> Start the Configuration Manager application on the Cisco Unified ICME Admin station. See the Configuration Manager window in <a href="#">Figure 1</a>.</p> <p><b>b.</b> Click the icon to the left of Enterprise to expand the Enterprise hierarchical menu.</p> <p><b>c.</b> Click the icon to the left of ICM Instance.</p> <p><b>d.</b> Double-click the <b>ICM Instance Explorer</b> to open the ICM Instance Explorer window. See the ICM Instance Explorer window in <a href="#">Figure 2</a>.</p> <p><b>e.</b> Click <b>Retrieve</b> in the Select filter data area.</p> <p><b>f.</b> Select the active ICM in the lower-left pane.</p> <p><b>g.</b> Click the <b>Customer options</b> tab in the lower-right area.</p> <p><b>h.</b> See if the <b>Bill for VRU time</b> check box is checked. (If the Bill for VRU time check box is not checked, you must check it and click <b>Save</b> at the bottom of the ICM Instance Explorer window.)</p> <p><b>Note</b> VRU stands for Voice Response Unit. If the Bill for VRU time check box is checked, the Cisco Unified ICME sends a CONNECT message to the VRU, which is required by this feature. The switch records the period when the caller is at the VRU and generates billing information for that period.</p>

	Action	Description
<b>Step 3</b>	Check the dial plan provisioning.	<p>Use the following MML command to check if the B-number digit string is provisioned for the transferred-to party:</p> <pre>numan-rtrv:bdigtree:custgrpId="1111",callSide="originating",digitstring="6691"</pre> <p>Text similar to the following is displayed:</p> <pre> MGC-01 - Media Gateway Controller 2008-09-23 08:38:51.422 CST M RTRV   "session=fireworks_ccb1:bdigtree"   /* digitString          callSide ----- 6691                 originating PointInDigitString ----- 6691 ResultSetName ----- ccm6sip2 resultName          resultType          dw1          dw2 dw3                dw4                nextResult ----- ---                ---                ---                --- ccm6sip2           ROUTE                rtlist1703 0 0                  0                  0   */ ;</pre>
<b>Step 4</b>	Check the status of the Cisco Agent Desktop	Make sure the agent state of the Cisco Agent Desktop is Ready before a call comes in.

Figure 1 Configuration Manager

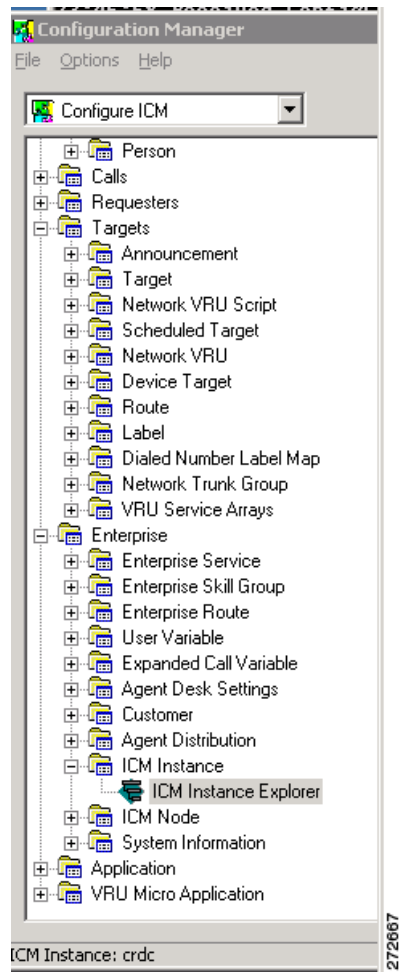
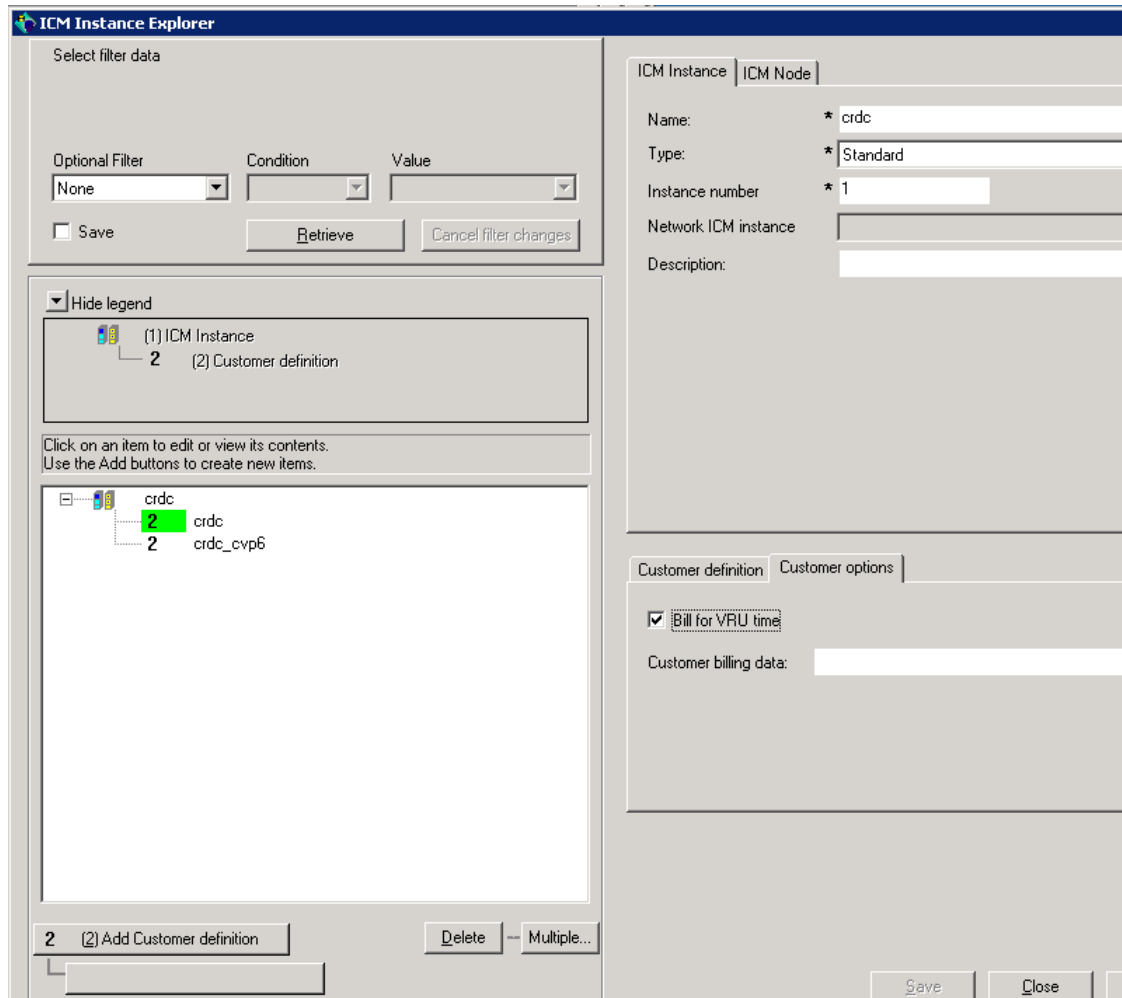


Figure 2 ICM Instance Explorer



If you still have problems with this feature, get the MDL trace and contact Cisco TAC. More than one call instance is involved in sequential NCT calls. You must get MDL traces for all of the call instances.

For more information on how to get the MDL trace and other troubleshooting tasks for the rest of the Cisco MGC software, see the *Cisco Media Gateway Controller Software Release 9 Operations, Maintenance, and Troubleshooting Guide*.

## Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>



# Provisioning Examples for Take Back and Transfer Services

This section contains the provisioning examples which are useful for you to provision various take back and transfer services on the Cisco PGW 2200 Softswitch. (See the “[Related Features and Technology](#)” section on page 2.)

Table 3 describes the provisioning requirements for TNT, iTNT, NBT, and NCT services.

**Table 3**      **Provisioning Requirements**

Service	Provisioning Requirement		
	TCAP-related	Mid-call Dial Plan	Announcement
TNT		X	X
iTNT	X	X <sup>1</sup>	
NBT	X		
NCT	X		

1. The route list provisioned for TNT must be a real route list, whereas the route list provisioned for iTNT can be any existing route list. This difference is also pointed out in the following example.

The following examples are composed of four provisioning parts:

- TCAP-related provisioning
- 800 service provisioning



**Note** The provisioning of 800 service is not mandatory for TNT, iTNT, NBT, and NCT services. You can use the provisioning example as a reference if you need to add 800 services.

- Mid-call dial plan provisioning
- Announcement provisioning

You can determine the provisioning requirements for the service you want to use in Table 3. Then you use the corresponding parts of the provisioning examples as reference.

;;;;;;;;;;;;; TCAP-related Provisioning ;;;;;;;;;;;;;;

```

; SS7 OPC
;;;;;;;;;;;;;
prov-add:OPC:NAME="opc453",DESC="sh-cox",NETADDR="4.5.3",NETIND=2,TYPE="TRUEOPC"

```

```

; SS7 DPC
;;;;;;;;;;;;;
prov-add:DPC:NAME="dpc454",NETADDR="4.5.4",NETIND=2

```

```

; SS7 APC
;;;;;;;;;;;;;
prov-add:APC:NAME="scp1",DESC="Point code ICM NIC card",NETADDR="3.8.3",NETIND=2

```

```

; External Node ITP
;;;;;;;;;;;;;
prov-add:EXTNODE:NAME="sh-2651-518",DESC="Connect to ICM",TYPE="ITP",ISDNSIGTYPE="N/A",
GROUP=1

```



```
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:dialplan:custgrpid="2222",overdec="yes"
prov-ed:TRNKGRPPRO:NAME="9005",MIDCALLSERVICECUSTID="2222"

-----

; 2222 - iTNT Result Set
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:RESULTSET:CUSTGRPID="2222",NAME="toiTNT"

-----

; 2222 - iTNT Results
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:RESULTTABLE:CUSTGRPID="2222",NAME="bmod",RESULTTYPE="BMODDIG",DW1="1",DW2="2",SETNAME="toiTNT"
numan-add:RESULTTABLE:CUSTGRPID="2222",NAME="tnt",RESULTTYPE="DIGIT_REQ",DW1="6",SETNAME="toiTNT"
; The total length of digits is 6 (including the length of the string "*8") for the iTNT
service.

numan-add:RESULTTABLE:CUSTGRPID="2222",NAME="virtual2",RESULTTYPE="ROUTE",DW1="rtlist1703,
SETNAME="toiTNT"
; For TNT, a real route list name is required in the above command; for iTNT, you
can enter any existing route list name in the above command.

-----

; 2222 - iTNT B-number Digit String
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:BDIGTREE:CUSTGRPID="2222",CALLSIDE="originating",DIGITSTRING="B8",SETNAME="toiT
T"
; The digit string "*8xxxx" invokes the mid-call service and transfers the call. The
string "*8" is removed from the digits after the digit analysis.

;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;; Announcement Provisioning ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

-----

; 2222 - Announcement Result Set
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:resultset:custgrpid="2222",name="rset-err"

-----

; 2222 - Announcement Results
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:resulttable:custgrpid="2222",name="max-len",resulttype="INC_NUMBERING",
setname="rset-err",dw1="0",dw2="2",dw3="2"
; The result type INC_NUMBERING is used to return an announcement immediately.

numan-add:resulttable:custgrpid="2222",name="itnt-ann",resulttype="ANNOUNCEMENT",
setname="rset-err",dw1="33",dw2="0",dw4="2"
;For the mid-call announcement, the dw2 must be 0 and dw4 must be 2 (local and final
announcement). This announcement is played to the transferring party if the digit string
is matched.

-----

; 2222 - Announcement B-number Digit String
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:bdigtree:custgrpid="2222",callside="originating",digitstring="B9",
setname="rset-err"
; The string "*9" is not a valid transferred-to number prefix. The provisioned
announcement is played when "*9" is dialed.

-----

; 2222 - Announcement ID in the TimesTen Database Announcement Table
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
numan-add:announcement:annId=33,gwtype="AS5350",locationstring="ann_id_22.au",
playduration=10,repeat=1,interval=20
```

# Glossary

**Table 4**      **Acronym Expansions**

Acronym	Expansion
Cisco Unified CCE	Cisco Unified Contact Center Enterprise
Cisco Unified ICME	Cisco Unified Intelligent Contact Management Enterprise
DTMF	dual-tone multifrequency
INAP	Intelligent Network Application Part
iTNT	intelligent take back and transfer
MGC	Cisco Media Gateway Controller
NBT	network blind transfer
NCT	network consultation transfer
PGW	PSTN Gateway
SIP	Session Initiation Protocol
SSN	subsystem number
TCAP	Transaction Capabilities Application Part
TNT	take back and transfer

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