

How to Determine the SS7 Call Correlation Between the NAS and Signaling Controller

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Introduction

This document explains how to determine the circuit identification code (CIC) and destination point code (DPC) on a signaling controller that correlate to the digital service zero (DS0) channel on a network access server (NAS). The document also explains the reverse process: how to determine the DS0 channel and controller interface on a NAS, given the CIC and DPC on the signaling controller.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on the hardware versions:

- all versions of Cisco Signaling Controller (known as Cisco PGW 2200, used in signaling mode)

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

Correlating a DS0 Channel on a NAS to an SS7 CIC and DPC on the Signaling Controller

In this section, you are presented with information to map a specific DS0 on the NAS to a Signaling System 7 (SS7) CIC and DPC on the signaling controller.

Step-by-Step Instructions

In the example below, assume that you want to determine the CIC and DPC associated with DS0 channel 17 on controller T1 0. Follow these steps:

1. Determine the Signaling Controller 2200 (SC2200) that services this NAS.

Issue the Cisco IOS® command **show rlm group 0 status**, and obtain the IP address of the SC2200 for which the session is active. If you find a redundant pair of signaling controllers, you can obtain the CIC mapping information from either of them.

Some actual output from issuing this command is shown below. The IP address of the SC2200 is shown in boldface.

```
tokyo-5300# show rlm group 0 status
RLM Group 0 Status
User/Port: RLM_MGR/3000 ISDN/3001
RLM Version : 2
Link State: Up Last Link Status Reported: Up
Next tx TID: 1 Last rx TID: 0
Server Link Group[beavis]: Last Reported Priority: HIGH
link [172.18.196.224(FastEthernet0), 172.18.196.203] = socket[active]
```

2. Determine the Non-Facility Associated Signaling (NFAS) interface (nfas_int) value on the controller by viewing the Cisco IOS Software configuration on the NAS.

In the output below, the NFAS interface value (**0**) is shown in boldface.

```
controller T1 0
framing esf
clock source line primary
linecode b8zs
pri-group timeslots 1-24 nfas_d primary nfas_int 0 nfas_group 0
```

3. On the signaling controller, issue the Cisco PGW 2200 Man-Machine Language (MML) command **prov-rtrv:nailedtrnk:"all"** to retrieve the nailed trunk information.

Since, in this example, you are determining the CIC and DPC associated with DS0 channel 17 on controller T1 0, look for the SRCTIMESLOT (which is the CIC) and the destination service (DSTSVC) that matches DSTSPAN of 0 and TIMESLOT of 17.

Note: The DSTSPAN value is the same as the nfas_int value determined in Step 2, above.

```
beavis mml> prov-rtrv:nailedtrnk:"all"
vsc-01 - Media Gateway Controller 2000-11-03 10:24:21
M RTRV
"session=active:nailedtrnk"
/*
```

NAME	SRCSVC	SRCPAN	SRCTIMESLOT	DSTSVC	DSTSPAN	TIMES
----	-----	-----	-----	-----	-----	-----
:	:	:	:	:	:	:
:	:	:	:	:	:	:

7	ss7-magic	ffff	107	nas-tokyo	0	7
8	ss7-magic	ffff	108	nas-tokyo	0	8
9	ss7-magic	ffff	109	nas-tokyo	0	9
10	ss7-magic	ffff	110	nas-tokyo	0	10
11	ss7-magic	ffff	111	nas-tokyo	0	11
12	ss7-magic	ffff	112	nas-tokyo	0	12
13	ss7-magic	ffff	113	nas-tokyo	0	13
14	ss7-magic	ffff	114	nas-tokyo	0	14
15	ss7-magic	ffff	115	nas-tokyo	0	15
16	ss7-magic	ffff	116	nas-tokyo	0	16
17	ss7-magic	ffff	117	nas-tokyo	0	17
18	ss7-magic	ffff	118	nas_tokyo	0	18
:	:	:	:	:	:	:
:	:	:	:	:	:	:

4. Issue the MML command **rtrv-dest:all** to find the DPC associated with the destination service.

In the output below, the DPC name for this destination service (*nas-tokyo*, as determined in Step 3, above) is *dest*.

```
beavis mml> rtrv-dest:all
vsc-01 - Media Gateway Controller 2000-11-03 10:52:00
M RTRV
"dest:PKG=SS7-ANSI,ASSOC=nas-tokyo,PST=IS,SST=RSTO"
"nas-tokyo:PKG=ISDNPRI,ASSOC=dest,PST=IS,SST=RSTO"
```

5. Issue the MML command **rtrv-spc:all** to determine the actual DPC and the associated origination point code (OPC).

```
beavis mml> rtrv-spc:all
vsc-01 - Media Gateway Controller 2000-11-03 10:55:25
M RTRV
"dest:DPC=001.001.001,DNW=2:OPC=002.002.002:IS"
```

6. Put the information together to determine the CIC and DPC.

In this example, DS0 channel 17 on controller T1 0 maps to SS7 CIC 117 (determined in Step 3, above) with the DPC equal to 1.1.1 (determined in Step 5, above) and OPC equal to 2.2.2 (also determined in Step 5) on the signaling controller with IP address 172.18.196.203 (determined in Step 1, above).

Correlating an SS7 CIC and DPC on the Signaling Controller to a DS0 Channel and Interface on a NAS

In this section, you are presented with information to correlate an SS7 CIC and DPC on the signaling controller to a specific DS0 on a NAS.

Step-by-Step Instructions

In the example below, assume that the CIC is 113 and the DPC is 1.1.1. Follow these steps:

1. Issue the MML command **rtrv-spc:all** to map the DPC to a name.

In this example, the name associated with the DPC (1.1.1) is *dest*, as shown in boldface below.

```
beavis mml> rtrv-spc:all
vsc-01 - Media Gateway Controller 2000-11-03 13:03:09
M RTRV
"dest:DPC=001.001.001,DNW=2:OPC=002.002.002:IS"
```

2. Issue the MML command **rtrv-dest:all** to map the DPC name to the associated NAS service.

In this example, the NAS service associated with the name `dest` is `nas-tokyo`, as shown in boldface below.

```
beavis mml> rtrv-dest:all
vsc-01 - Media Gateway Controller 2000-11-03 13:06:03
M RTRV
"dest:PKG=SS7-ANSI,ASSOC=nas-tokyo,PST=IS,SST=RSTO"
"nas-tokyo:PKG=ISDNPRI,ASSOC=dest,PST=IS,SST=RSTO"
```

3. Issue the MML command **prov-rtrv:all** to find the parent for the NAS service (the IP link that services this NAS).

In the example below, the IP link that services the NAS (named `nas-tokyo`, as determined in Step 2, above) is `lnk-tokyo`.

```
beavis mml> prov-rtrv:all
vsc-01 - Media Gateway Controller 2000-11-03 13:07:55
M RTRV
"session=active:all"
/*
NAME          Parent Name      TID      Description
-----
"pri-en"      "vsc-01"          CARD     "Primary ethernet card"
"sec-en"      "vsc-01"          CARD     "Secondary ethernet card"
"hme0"        "pri-en"          ENETIF   "Primary Ethernet"
"hme1"        "sec-en"          ENETIF   "Secondary Ethernet"
"ls-magic"    "dest"            LNKSET   "SS7 Linkset to magic"
"lnk-tokyo"  "nas-tokyo"      IPLNK    "NAS Service lnk to Tokyo"
"rte-magic"   "vsc-01"          SS7ROUTE "SS7 Route to magic via Ls-magic"
"opc"         "vsc-01"          PTCODE   "Point code for Beavis"
"dest"        "vsc-01"          PTCODE   "magic point code"
"nas-tokyo"   "Tokyo"           NASPATH  "NAS service to Tokyo"
"ss7-magic"   "dest"            SS7PATH  "SS7 Service to magic"
"Tokyo"       "vsc-01"          EXTNODE  "Voice gateway"
"warsawlnk"   "Ls-magic"        C7IPLNK  "IP Link to warsaw"
```

4. Issue the MML command **prov-rtrv:iplnk:name="ip link name from Step 3"** to obtain the IP address of the NAS.

In the example below, the IP address is `172.18.196.224`, as determined by the `PEERADDR` value.

```
beavis mml> prov-rtrv:iplnk:name="lnk-tokyo"
vsc-01 - Media Gateway Controller 2000-11-03 13:11:01
M RTRV
"session=active:iplnk"
/*
NAME = lnk-tokyo
DESC = NAS Service lnk to Tokyo
SVC = nas-tokyo
IF = hme0
IPADDR = IP_Addr1
PORT = 3001
PEERADDR = 172.18.196.224
PEERPORT = 3001
PRI = 1
SIGSLOT = 0
SIGPORT = 0
```

5. Issue the MML command **prov-rtrv:nailedtrnk:"all"** to find the `nfas_int` value (which indicates the physical interface) and the actual timeslot (the DS0 channel on the NAS).

If the `DSTSVC` name (the NAS service name) is `nas-tokyo` (which was determined in Step 2, above) and the `SRCTIMESLOT` is 113 (the CIC), the `DSTSPAN` is 0 and the `TIMESLOT` is 13, as shown in boldface, below.

```

beavis mml> prov-rtrv:nailedtrnk:"all"
vsc-01 - Media Gateway Controller 2000-11-03 10:24:21
M RTRV
"session=active:nailedtrnk"
/*
NAME  SRCSVC      SRCSPAN  SRCTIMESLOT  DSTSVC  DSTSPAN  TIMES
-----
:    :           :         :         :         :         :
:    :           :         :         :         :         :
7    ss7-magic  ffff    107        nas-tokyo 0         7
8    ss7-magic  ffff    108        nas-tokyo 0         8
9    ss7-magic  ffff    109        nas-tokyo 0         9
10   ss7-magic  ffff    110        nas-tokyo 0        10
11   ss7-magic  ffff    111        nas-tokyo 0        11
12   ss7-magic  ffff    112        nas-tokyo 0        12
13   ss7-magic  ffff    113        nas-tokyo 0        13
14   ss7-magic  ffff    114        nas-tokyo 0        14
15   ss7-magic  ffff    115        nas-tokyo 0        15
16   ss7-magic  ffff    116        nas-tokyo 0        16
17   ss7-magic  ffff    117        nas-tokyo 0        17
18   ss7-magic  ffff    118        nas_Tokyo 0        18
:    :           :         :         :         :         :
:    :           :         :         :         :         :

```

- View the Cisco IOS Software configuration on the NAS to determine the physical interface that terminates this DS0.

The interface is the one for which `nfas_int` is set to 0 (determined by `DSTSPAN` in Step 5), as seen in the following output:

```

controller T1 0
  framing esf
  clock source line primary
  linecode b8zs
  pri-group timeslots 1-24 nfas_d primary nfas_int 0 nfas_group 0
  description Bearer channels from Manila

```

In this example, the CIC is 113 and the DPC is 1.1.1 on the signaling controller, which maps to DS0 channel 13 (determined in Step 5) on controller T1 0 (determined in the output above) on the NAS with IP address 172.18.196.224 (determined in Step 4).

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [MML Commands](#)
 - [MML Command Reference](#)
 - [Cisco Media Gateway Controller Release 7 Documentation](#)
 - [Voice and Unified Communications Product Support](#)
 - [Recommended Reading: Troubleshooting Cisco IP Telephony](#)
 - [Technical Support – Cisco Systems](#)
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