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Enhanced Channel Maps User's Guide

Overview

Introduction

In earlier system releases, customers could only assign channel maps to a Digital Home Communication Terminal (DHCT) based on the hub where the DHCT was located. At that time, all of the DHCTs in any hub shared the same channel map. However, beginning with Cisco Resident Application (SARA) version 1.58, DVR version 1.5, or HD version 1.5, you can use enhanced channel maps to provide greater flexibility in assigning channel maps. For example, you can now add a channel that is visible to all high-definition (HD) DHCTs but does not appear on standard-definition (SD) DHCTs.

In System Release (SR) 2.7/3.7/4.2, the Digital Broadband Delivery System (DNCS) was modified as follows to support the enhanced channel maps feature:

- The Service Administration Manager (saManager) now allows you to define channel maps based on an expanded set of criteria, which is centered on the concept of a Lineup Group (LUG).

- The Channel Map Definition GUI now allows you to associate channel maps with a Lineup Group Identifier (LUG ID).

- The DNCS now allows you to enter group definition rules through a new Web-based user interface (WUI) to specify which channel map a group of DHCTs should display.

It is also possible to set up enhanced channel maps manually using SR 2.5/3.5/4.0 or earlier. To use this approach, you must associate channel maps with a "Virtual Hub." See *Create Group Definition Rules Manually in SR 2.5/3.5/4.0 and Earlier* (on page 12) for more information.

Purpose

This document describes the procedures to set up enhanced channel maps for your site in SR 2.7/3.7/4.2. It also includes instructions to set up enhanced channel maps manually in SR 2.5/3.5/4.0 or earlier.

Audience

This document is written for DBDS system operators using SARA.

Related Publications

You may find the following publications useful as resources when you implement the procedures in this document. Check the copyright date on your resources to assure that you have the most current version. The publish dates for the following documents are valid as of this printing. However, some of these documents may have since been revised:

■ *How Set-Tops Respond to Configuration Changes* (part number 4012369, published December 2005)

■ *Digital Network Control System Online Help (PC) Version 3.5.0.3* (part number 4002881, published February 2005, released November 2005*)

* The SR 2.7/3.7/4.2 Online Help (UNIX Version), *Digital Network Control System Online Help for System Release 2.5/3.5 (UNIX Version),* and the *Digital Network Control System Online Help (UNIX) Version 3.2.0.3 for SR 2.2/3.2* should already be installed on your DNCS. The PC version is a separate CD that allows you to view the same online Help on a PC separate from the DNCS workstation.

Document Version

This is the second release of this document.

In This Document

About Enhanced Channel Maps

If the set-top box contains the prerequisite client software listed in *Prerequisites for Enhanced Channel Maps* (on page 4), you can use enhanced channel maps to assign channel maps based on a number of criteria:

- PowerKEY® package authorization or Entitlement ID (EID)

- Digital Home Communication Terminal (DHCT) model

- DHCT version

- Physical hub assignment, virtual hub assignment, or bouquet assignment

- MAC address

Group Definition Rules

When you set up enhanced channel maps for your facility, you must build a set of group definition rules. Beginning in SR 2.7/3.7/4.2, you can use a DNCS WUI to build these rules. If you are using an earlier system release, you can create the group definition rules manually. When you create these rules using the WUI, the following events occur:

1   The DNCS stores these rules in a file and posts the group definition rules file on the BFS for the DHCT to read.

2   When the DHCT boots up, it looks for this file on the Broadcast File Server (BFS) and reads the file if it exists. During normal operation, the DHCT also monitors this file for modifications, so that the DHCT does not need to reboot in order to receive any changes.

3   If the DHCT finds a rule that matches the DHCT's configuration, then it uses the *first* rule that matches to apply the channel map associated with that rule. If the DHCT does *not* find a rule that matches its configuration, it uses the channel map for the hub where it resides.

Important: The order of the rules in the group definition rules file is very important: the DHCT stops searching as soon as it finds a matching group definition rule. Therefore, if a DHCT matches more than one rule, it chooses the channel map associated with the *first* matching rule in the list. Be sure that you build the group definition rules file with this property in mind.

This document explains how to associate channel maps rules and how to define group definition rules.

Set Up Enhanced Channel Maps

In order to set up an enhanced channel map for your site, you must first do one of the following:

- In SR 2.7/3.7/4.2 and later, you must create a LUG-based channel map using the WUI.

- In SR 2.5/3.5/4.0 and earlier, you must create a virtual-hub-based channel map.

Then, you must create a Group Definitions file to assign that channel map to a group of DHCTs. The Group Definitions window allows you to create rules and place them in a file on the BFS for propagation to the set-top boxes.

This section contains procedures to create the LUG-based channel map or the virtual-hub-based channel map as well as an associated Group Definition file.

Prerequisites for Enhanced Channel Maps

In order to use enhanced channel maps and the Group Definitions window as described in this section, you must have the following client code installed on the DHCT:

Set-top Model	Required Client Code Version
Explorer 2000/2010	SARA 1.58
Explorer 3000	SARA 1.58
Explorer 2100 or 3100	SARA 1.58
Explorer 2200 or 3200	SARA 1.58
Explorer 2300	SARA 1.58
Explorer 3100HD	HD 1.5
Explorer 3170HD	HD 1.5
Explorer 3240HD	HD 1.5
Explorer 3250HD	HD 1.5
Explorer 4200	SARA 1.58
Explorer 4250	SARA 1.58
Explorer 4250HD	HD 1.5
Explorer 8000	DVR 1.5
Explorer 8000HD	DVR 1.5

Set-top Model	Required Client Code Version
Explorer 8240	DVR 1.5
Explorer 8240HD	DVR 1.5
Explorer 8300	DVR 1.5
Explorer 8300HD	DVR 1.5

Notes:

■ Before you create enhanced channel maps for your system, your DNCS should be enabled to support enhanced channel maps. Call Cisco Services to enable this environment. If enhanced channel maps are not enabled for your system, you will only be able to placed hub-based (or virtual hub-based) channel maps on the BFS. If your DNCS is enabled to support enhanced channel maps, then the Applications Interface Modules tab on the DNCS Administrative Console will contain a button called **Group Definitions**.
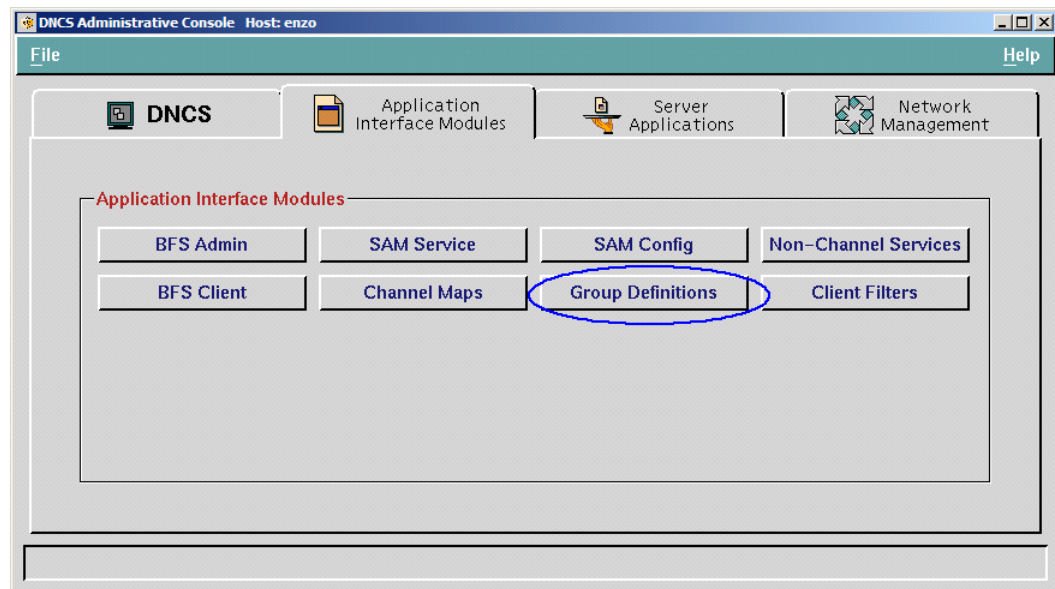
■ You can create enhanced channel maps without associating them with hubs, but the DNCS environment must be enabled to support enhanced channel maps that are not associated with hubs.

Creating a Channel Map

Your first step in using enhanced channel maps is to create the new channel maps that you want to use. These channel maps may be LUG-based or virtual-channel-based. Refer to the DNCS online help for procedures to create the new channel maps.

After you create the new channel maps, complete the steps in this section to add the new channel maps to your system.

Determining the LUG ID

When you finish creating the new channel maps, open the Set Up Display Channel Map window for one of the channel maps that you just created. Make note of the lineup group (LUG) ID that the DNCS assigned to this channel map. You must know this LUG ID when you begin to create rules in the Group Definition Rules window. The LUG ID in the following example is 3.
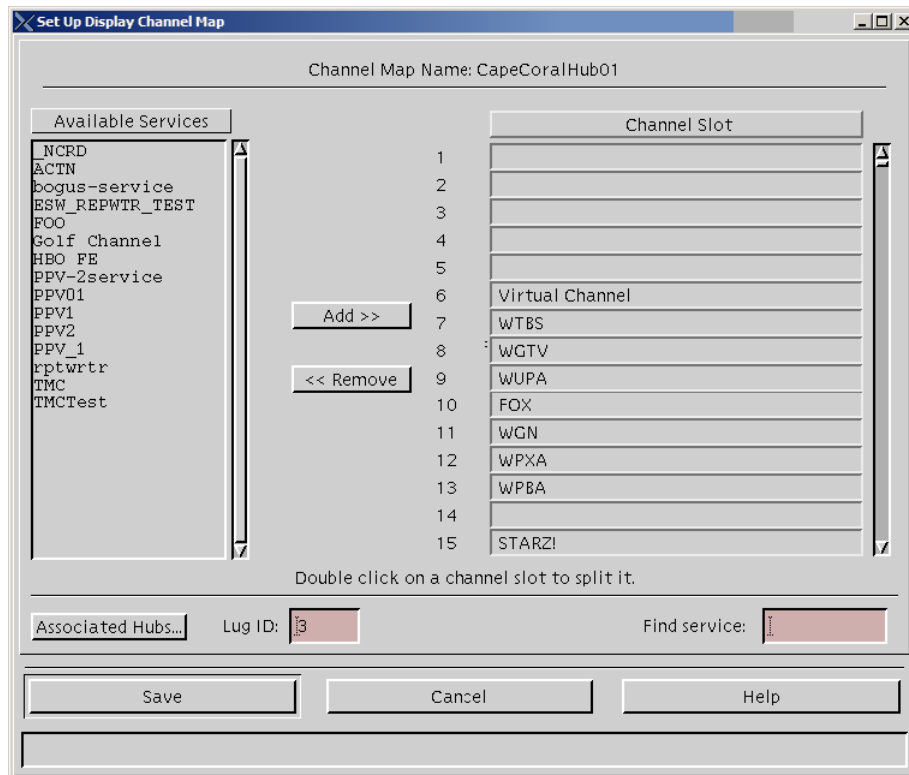
Note: If you associate hubs with this channel map, then any DHCT that does not match a group definition rule will use the channel map associated with its hub.

Determining the LUG ID in SR 2.5/3.5/4.0 and Earlier

Older DNCS releases do not display the LUG ID in the Set Up Display Channel Map window. To find a LUG ID in SR 2.5/3.5/4.0 or earlier, complete the following steps:

1 Open an xterm window on the DNCS Administrative Console.

2 Type **dbaccess dncsdb<<%** and press **Enter**.

3 Type **select * from lug order by lug_id;** and press **Enter**.

4 Type % and press **Enter**. In the following example, the system displays LUG IDs for three different LUGs

```
Database selected.
      lug_id lug_name
           0    Default
           1    Atlanta
           2    Macon
3 row(s) retrieved.
Database closed.
```

Using the WUI to Create Group Definition Rules

In SR 2.7/3.7/4.2 and later, after you create channel maps and determine the LUG ID that was assigned to the channel map, you must define a set of group definition rules. The DNCS places these rules on the out-of-band BFS carousel as a file for propagation to the DHCTs. The DHCT receives and parses this file to determine the LUG ID for the channel map that it should use, based on the first rule that the DHCT matches. The DHCT then downloads the appropriate channel map for its LUG ID.

These rules may be based on the following parameters:

- Package Entitlement ID (EID)

- Hardware model

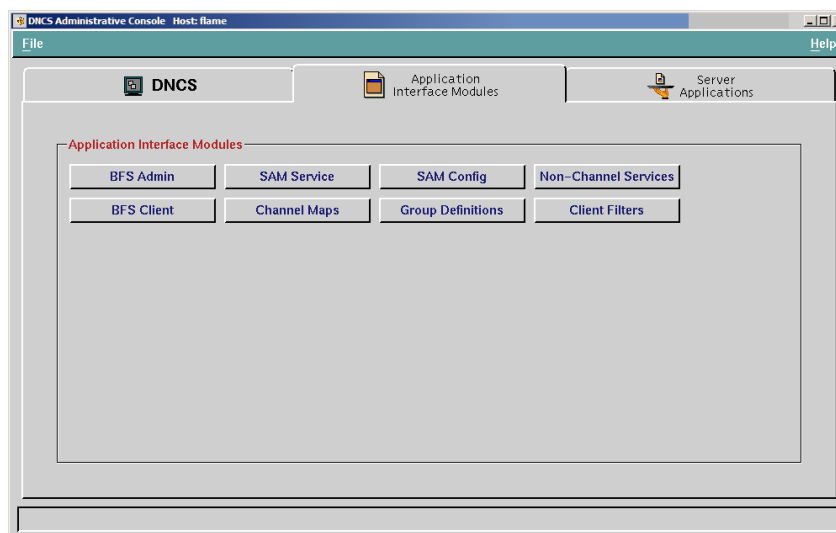- Hardware version

- Physical hub or bouquet

- MAC address

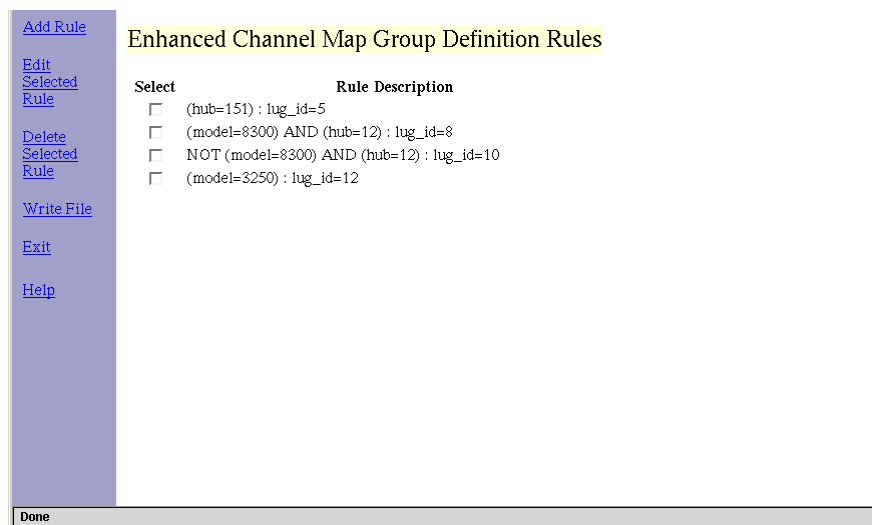This section includes procedures to create group definition rules in SR 2.7/3.7/4.2 and later.

Creating Map Usage Rules

To create a new map usage rule, complete the following steps.

1   In the DNCS Administrative Console, click the **Application Interface Modules** tab.

2   Click **Group Definitions**. The Enhanced Channel Map Group Definition Rules window opens.

3   Click **Add Rule**. The Conditions and Actions window appears.

```
Save Rule                          Conditions                              Actions
Exit            Powerkey Package Authorization (hex)   □ not   EID = [      ]      lug_id = [      ]
                DHCT Hardware Model (decimal)           □ not  model = [      ]   virtual_hub = [      ]
Help            DHCT Hardware Version (dotted decimal) □ not version = [        ]
                MAC Address (NN:NN:NN:NN:NN:NN)         □ not    mac = [          ]
                Physical Hub (decimal)                  □ not    hub = [    ]
                OUI (NN:NN:NN)                          □ not    oui = [      ]
                Bouquet Assignment (decimal)            □ not bouquet = [    ]

                Enhanced Channel Map Group Definition Rules

                    Select              Rule Description
                      □       (model=44) : lug_id=3
                      □       (version=33.7) : lug_id=5




Done
```

4   Do *only one* of the following:

- In the **lug_id** field, type the number of the LUG ID that you want to assign to these rules. This is the number that the DNCS assigned when you created the channel map.

- In the **virtual_hub** field, type the number of the virtual hub that you want to assign to these rules.

5   In the **Conditions** area of the screen, verify the following criteria fields that a set-top box must satisfy to receive this channel map:

- The **Powerkey Package Authorization** field specifies the Entitlement ID (EID) for this LUG. Enter this number as a hexadecimal value.

- The **DHCT Hardware Model** field specifies the DHCT model for this LUG. See *Hardware Types* (on page 16) for a list of values to be used with certain models.

- The **DHCT Hardware Version** field specifies the hardware version for this LUG.

- The **MAC Address** specifies the MAC address for this LUG.

- The **Physical Hub** field specifies the hub for this LUG.

- The **OUI** field specifies the Organizationally Unique Identifier for this LUG.

- The **Bouquet Assignment** field specifies the bouquet for this LUG.

Notes:

- Check the box labeled **not** to exclude any criteria. For example, if you want a channel map to be used by every DHCT model *except* for the Explorer 2000, set the DHCT Hardware Model to 2000 and select the box labeled **not**.

- Two or more sets of rules can use the same LUG ID or virtual hub.

- You can find the EID for a package in the Set Up Package dialog box.

6   Click **Save Rule**, and then click **Exit**.

Notes:

- The set-top must meet all criteria conditions in a rule in order to receive this channel map.

- If a set-top meets more than one rule (and is eligible for more than one channel map), the set-top will be assigned to the first channel map in the list for which it meets the conditions.

7   Click **Write File** to place the modified file on the BFS.

Note: The file will be called bfs:///osm/group_defs.txt. It may take up to 15 minutes for this file to appear on the BFS.

8   Click **Exit** to close the window.

Changing Rules

To change an existing rule, complete the following steps.

1   In the DNCS Administrative Console, click the **Application Interface Modules** tab.

2   Click **Group Definitions**. The Enhanced Channel Map Group Definition Rules window opens.

3   Select the check box beside the rule that you want to change.

4 Click **Edit Selected Rule**. The Conditions and Actions window appears.

5 In the Conditions area of the screen, set the criteria fields that a set-top box must satisfy to be assigned to this LUG.

6 Click **Save Rule**, and then click **Exit**.

7 Click **Write File** to place the modified file on the BFS.

Create Group Definition Rules Manually in SR 2.5/3.5/4.0 and Earlier

SR 2.7/3.7/4.2 provides a WUI to help you set up enhanced channel maps. However, if the set-top box contains the prerequisite client software, you can *manually* create group definition rules using a system release earlier than SR 2.7/3.7/4.2. The procedures in this section ensure that the group_defs.txt file is not removed from the bfs:///osm directory after restarting DNCS processes.

Important: If you create a group definition rules file according to the manual procedure that follows, you should undo this procedure when you upgrade to SR 2.7/3.7/4.2 or later. If the manually-created file already exists when the enhanced channel map WUI is installed, there may be a conflict with the files or the links on the BFS osm cabinet.

Creating Group Definition Rules Manually

To create a group definition rules file manually, complete the following steps.

1   Create a virtual hub (not tied to a physical hub). A virtual hub is a hub that is not assigned to a QPSK modulator. By doing so, you can create a Display Channel Table (DCT) that is not automatically visible to any group of DHCTs.

2   Create a virtual-hub-based channel map as described in *Creating Map Usage Rules* (on page 7). In that procedure, be sure to add the newly created virtual hub as a selected hub. This step assigns the channel map to the virtual hub.

3   On the DNCS, create a file called group_defs.txt in the bfs:///osm directory. This file is called a Group Definition File (GDF). You will use this file to assign a virtual hub ID for each DHCT that you want to use an alternate Display Channel Table (DCT). For more information about the group definition file format, see *Group Definition File Format* (on page 13).

4   Your next step is to post the file to the BFS. Go to *Posting a New Group Definition Rules File* (on page 12).

Posting a New Group Definition Rules File

To post a new group definition rules file to the BFS, complete the following steps.

1   On the **DNCS Administrative Console**, under the **Element Provisioning** tab, click **OS**. The DHCT OS List window opens.
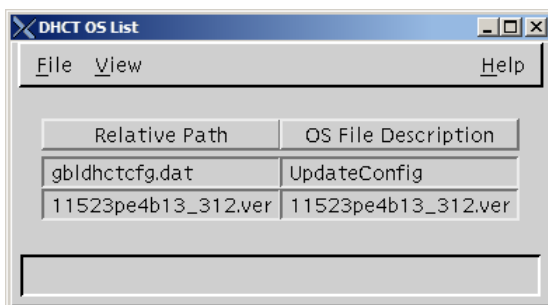
2   Click **File** and select **New**. The Set Up DHCT OS window opens.

3   Set up the Group Definitions File as shown below.
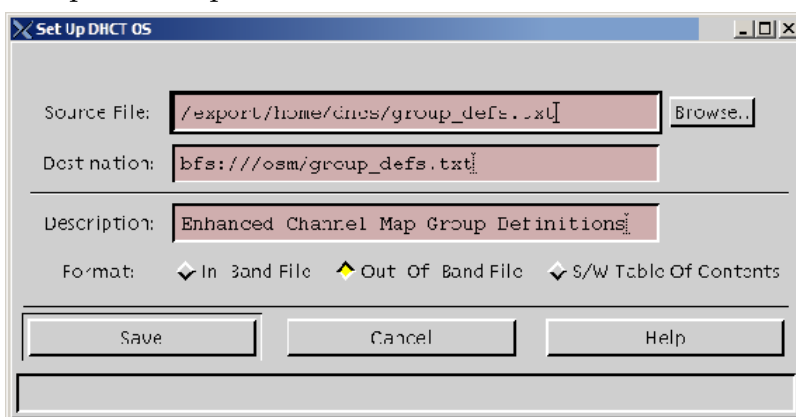
4   When you are finished, click **Save**.

Group Definition File Format

The GDF consists of one or more lines, each of which follows this form:

[NOT](condition1) [[AND] [NOT](condition2) …] : action

Rules

- The brackets [ ] denote optional text.

- White space is allowed.

- Lines must end in either a carriage return (0x0D), linefeed (0x0A), or both.

- Comments may be included, if preceded by the '#' character. Comments may also appear at the end of a line.

- There is no limit to line length.

- Compound logical expressions (for example, "x AND y AND z") are supported, but note that the "OR" operator is not directly supported. To accomplish "x OR y:action", split the conditions over two lines: "x:action" on one line, and "y:action" on the next line.

Conditions

Conditions must be enclosed in parentheses to be considered valid.

PowerKEY Package Authorization

- **Format:** EID=<hexadecimal number>

- **Example:** EID=0x82

- **Meaning:** The DHCT is authorized for the specified PowerKEY EID

DHCT Hardware Model

- **Format:** model={8300,3200,4300,...}

- **Example:** model=8300

- **Meaning:** The DHCT has the specified model, as indicated by sys_GetTableEntry (kSys_OEMPlatformTableID, "ModelID")

STB Hardware Version

- **Format:** version=<version string>

- **Example:** version=1.2

- **Meaning:** The DHCT has the specified version, as indicated by sys_GetTableEntry (kSys_OEMPlatformTableID, "HWVers")

Physical Hub or Bouquet Assignment

- **Format:** hub=<decimal number> *or* bouquet=<decimal number>

- **Example:** hub=2 *or* bouquet=1

- **Meaning:** The DHCT is in the specified hub or bouquet

Actions

Use Virtual Hub for DCT/SCT

- **Format:** "virtual_hub=<decimal number>"

- **Example:** "virtual_hub=100"

- **Meaning:** The SAM client shall use the specified hub ID for the purpose of loading the DCT and SCT. The URLs to be used are:
    - bfs:///sam/<virtual_hub>/dispchan.tblo
    - bfs:///sam/<virtual_hub>/splitchan.tblo

Sample Group Definition File

```
(EID=0x42) AND (mac=00:02:DE:00:02:13) : virtual_hub=1
(model=3250) AND (version=1.5) : virtual_hub=1
(model=8300) AND (hub=12) : virtual_hub=8
NOT (model=8300) AND (hub=12) : virtual_hub=10
```

Note: If you want to define multiple rules for the same hub, bouquet, or virtual hub, just create a new rule definition with the new hub number. For example, if you want to define one rule for hub 100, and another rule for hub 200, your GDF file will contain one line that begins hub=100 and another line that begins hub=200.

Hardware Types

The left-hand column in the following table lists some of the hardware types that you should use to define group definition rules. The right-hand column lists the model numbers associated with those hardware types.

For example, if you need to set up a rule for 3250HD DHCTs, use hardware type 3040.

Hardware Type	What is included in the ROM name
1850	1850
3040	3250HD
4200	4200SD
4210	4200HD
8000	8000
8010	8000HD
8240	8300 **Note:** Applies to 8300HD and 8300SD models
8300	8300 **Note:** Applies to 8300HD, 8300SD, 8300HDM, and 8300SDM models

For Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.