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# Preventing the Miscalculation of Bandwidth on the BFS QAMs

## Overview

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### Introduction

Cisco® engineers have discovered that the qamManager is miscalculating the bandwidth associated with inband system information (SI) on System Release (SR) 2.x/3.x. The miscalculation is reserving more bandwidth than is needed. In instances where there are a large number of hubs in the network, the bandwidth numbers are significantly high compared with the actual bandwidth being used on the distinguished quadrature amplitude modulation (QAM) modulator.

**Note:** The distinguished QAM is typically the BFS QAM.

When large amounts of bandwidth are reported and the system believes that the QAMs are nearing their maximum limits, data cannot be added to the BFS carousels. Although we have determined the cause of this miscalculation, the updated software has not yet been released. In the interim, we encourage all sites using SR 2.x/3.x that are experiencing problems adding new BFS carousels to disable inband SI, and therefore eliminate the miscalculation of bandwidth on the BFS QAMs.

When inband distribution of SI is turned off, out-of-band SI is automatically used by the Digital Home Communications Terminal (DHCT). Using out-of-band distribution of SI does not adversely affect your system because the DNCS sends both inband and out-of-band SI. Therefore, turning off inband SI actually reduces the amount of work imposed on the DNCS.

### Purpose

This technical bulletin assists system operators who are having difficulty adding data to the BFS carousels as a result of an inaccurate bandwidth calculation.

## Scope

The instructions in this technical bulletin pertain to sites that are using SR 2.x/3.x, or later.

## Audience

This technical bulletin is intended for system operators of Cisco's Digital Broadband Delivery System (DBDS). Cisco field service engineers who help system operators manage their systems may also find the contents of this technical bulletin useful.

## Overview, Continued

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### Document Version

This is the second release of this technical bulletin.

### In This Technical Bulletin

This technical bulletin contains the following topics.

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# Before You Begin

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## Introduction

If you were unable to add a new BFS carousel, Cisco recommends that you check the digital resource manager (DRM) log file. If there is not enough bandwidth available for the data you want to add, the DRM log file includes a message stating:

**Bandwidth is NOT available**

To check the DRM log file for this message, go to **Checking the DRM Log Files**, next in this section.

## Checking the DRM Log Files

Complete these steps to view the DRM log file and determine if a bandwidth issue exists on the system.

1. From the DNCS Administrative Console, click the **Utilities** tab and then click **xterm** from the System Utilities section.
2. Type **cd /dvs/dncs/tmp** and then press **Enter**.
3. Type **grep -i "Bandwidth is NOT available" drm.\*** and then press **Enter**.

**Result:** If the text string is found, each appearance of the string is shown in the window.

4. Did the **Bandwidth is NOT available** text string appear in the log file?
  - If **yes**, open the most recent drm log file to look at the two lines above this message and to verify that the session number related to this message is the session you are trying to build and *not* a video-on-demand (VOD) session. If this is the session you are trying to build, your system is currently miscalculating the amount of bandwidth needed for SI and BFS. You will be unable to create new inband BFS sessions and must turn off inband SI in order to free bandwidth for the new session.
  - If **no**, your system is currently operating acceptably and you may be able to create new inband BFS sessions (depending on the required bandwidth). However, Cisco recommends that you turn off inband SI before attempting to create new inband BFS sessions as it provides a more stable and efficient system environment.
5. Go to **Disable Inband SI Signaling**, next in this bulletin.

# Disable Inband SI Signaling

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## Introduction

These procedures provide the solution recommended by Cisco for disabling the inband SI signal. Disabling the generation of inband SI stops the qamManager from miscalculating bandwidth on the BFS.

To disable inband SI, you must complete the following procedures in the order shown. For detailed instructions on these procedures, refer to the appropriate procedures, later in this section.

1. Disable inband SI.
2. Ensure that at least one BFS QAM is set to enable SI.
3. Stop and start the siManager and the qamManager.
4. Reboot the distinguished QAM (identified in step 2).

**Note:** The procedure takes one hour to complete and *will* interrupt BFS operation; therefore, it is recommended that you perform these procedures during non-peak hours.

## Disabling Inband SI

Complete the following steps to disable inband SI.

**Important:** Even though the DNCS will not send inband SI data (to QAMs), at least one QAM must be configured to send SI. This setting impacts other aspects of the system and failure to configure this setting can cause DHCTs to reboot or not boot at all.

1. From the DNCS Administrative Console, click the **Utilities** tab and then click **xterm** from the System Utilities section.

**Result:** An xterm window opens.

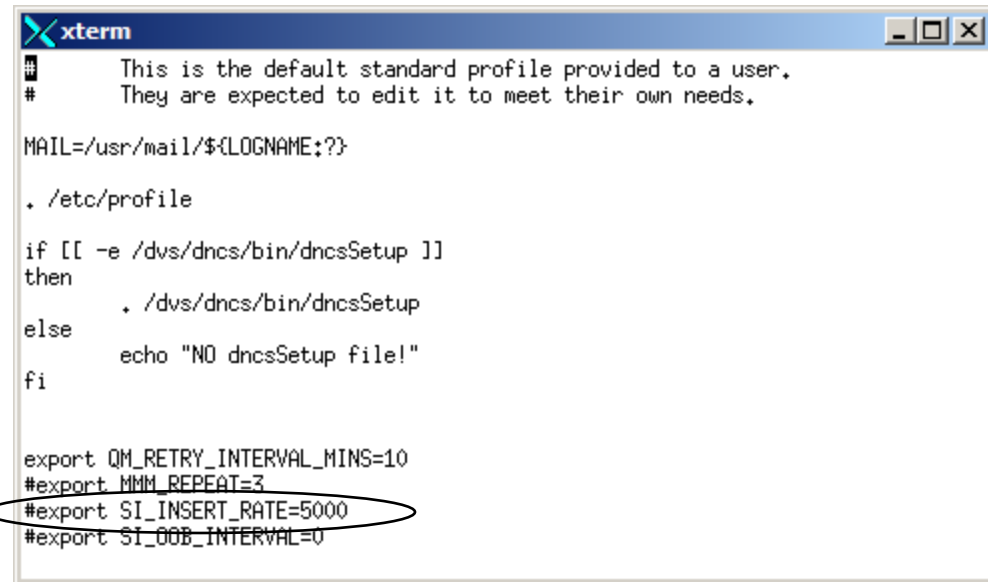
2. Type **echo \$SI\_INSERT\_RATE** and then press **Enter**.
3. Which of the following results for SI\_INSERT\_RATE appears?
  - If a **non-zero** number (for example, 2500), go to step 4.
  - If **nothing** appears, go to step 4.
  - If **0**, you must confirm that at least one BFS QAM is carrying SI. Go to **Ensuring That a BFS QAM is Configured for SI**, later in this section.

## Disable Inband SI Signaling, Continued

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- Using the text editor you prefer, open the file: **.profile** (located in the **/export/home/dnscs** directory).

**Result:** The contents of the .profile file appear.



```
xterm
This is the default standard profile provided to a user.
# They are expected to edit it to meet their own needs.

MAIL=/usr/mail/${LOGNAME:?}

. /etc/profile

if [[ -e /dvs/dnscs/bin/dnscsSetup ]]
then
    . /dvs/dnscs/bin/dnscsSetup
else
    echo "NO dnscsSetup file!"
fi

export QM_RETRY_INTERVAL_MINS=10
#export MMM_REPEAT=3
#export SI_INSERT_RATE=5000
#export SI_OOB_INTERVAL=0
```

- Is there a line in .profile where the SI\_INSERT\_RATE variable is set to a specific value?

- If **yes**, edit the entry so that the SI\_INSERT\_RATE is set to 0 (zero).
- If **no**, add the following line to set the rate to zero:  
**export SI\_INSERT\_RATE=0**

**Note:** Setting the SI\_INSERT\_RATE to zero prevents the siManager from generating SI data for inband use.

**Important:** If a line is preceded with a # symbol, it is *commented out* and, as a result, has no impact in the file.

- Save the changes to the .profile file and go to **Ensuring That a BFS QAM is Configured for SI**, next in this section.

## Disable Inband SI Signaling, Continued

### Ensuring That a BFS QAM is Configured for SI

Complete the following steps to ensure that at least one QAM is configured for SI.

1. Click the **Element Provisioning** tab and then click **QAM**.

**Result:** The QAM List window appears.

2. Select a BFS QAM, click **File**, and select **Open**.

**Result:** The Set Up QAM window appears.

The screenshot shows the 'Set Up QAM' window with the 'Basic Parameters' tab selected. The window contains the following fields and controls:

- Headend Name:** Headend1
- QAM Name:** BFSQAM1
- MAC Address:** 00:02:DE:91:27:EA
- IP Address:** 172.16.4.3
- Subnet Mask:** 255.255.255.0
- Modulation Type:** ITU J.83 Annex B (6 MHz)
- Default Gateway:** 172.16.4.254
- Administrative State:** Offline (selected) / Online
- Allow SI:** No (circled in red)
- Ports:** SA Reserved TSID Range: 70 - 65535
- Input Port:** ASI (selected) / DHEI / SWIF
- INPUT Transport Stream ID:** 77
- ASI OUTPUT Transport Stream ID:** 77
- Port to Hubs:** (button)
- RF OUT:** 256-QAM (selected) / 202 / 561.00 / Continuous Wave Mode / Mute RF Output / Interleaver Depth: 128,1

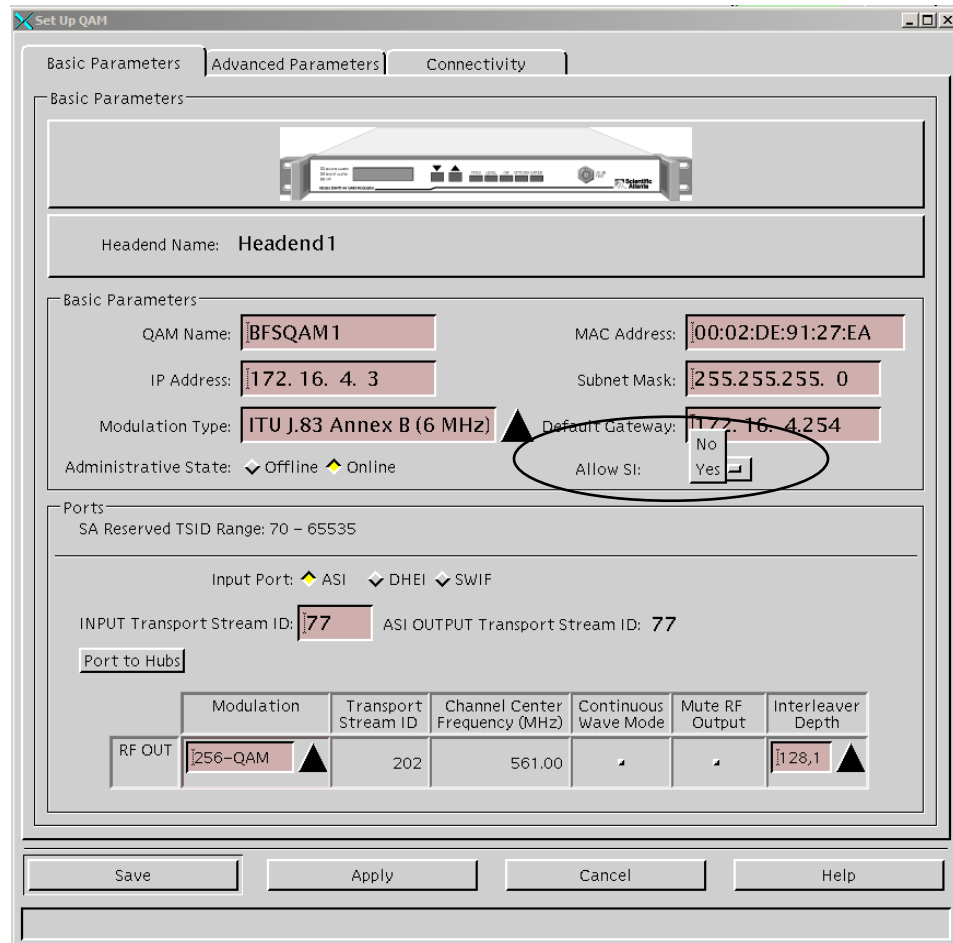
At the bottom of the window are buttons for **Save**, **Apply**, **Cancel**, and **Help**.

3. Is **Allow SI** enabled?
  - If **yes**, click **Cancel** and go to step 7.
  - If **no**, go to step 4.

## Disable Inband SI Signaling, Continued

- Click the button to the right of **Allow SI**.

**Result:** A selection menu appears.



The screenshot shows the 'Set Up QAM' dialog box with the 'Basic Parameters' tab selected. The 'Headend Name' is 'Headend1'. The 'QAM Name' is 'BFSQAM1', 'IP Address' is '172.16.4.3', 'MAC Address' is '00:02:DE:91:27:EA', 'Subnet Mask' is '255.255.255.0', and 'Modulation Type' is 'ITU J.83 Annex B (6 MHz)'. The 'Default Gateway' is '172.16.4.254'. The 'Administrative State' is 'Offline'. The 'Allow SI' dropdown menu is open, showing 'No' and 'Yes' options. The 'Yes' option is highlighted with a red circle. Below the 'Basic Parameters' section is the 'Ports' section, which includes 'SA Reserved TSID Range: 70 - 65535', 'Input Port: ASI', 'INPUT Transport Stream ID: 77', and 'ASI OUTPUT Transport Stream ID: 77'. At the bottom is a table with columns: 'RF OUT', 'Modulation', 'Transport Stream ID', 'Channel Center Frequency (MHz)', 'Continuous Wave Mode', 'Mute RF Output', and 'Interleaver Depth'. The table contains one row with values: '256-QAM', '202', '561.00', 'No', 'No', and '128,1'.

RF OUT	Modulation	Transport Stream ID	Channel Center Frequency (MHz)	Continuous Wave Mode	Mute RF Output	Interleaver Depth
	256-QAM	202	561.00	No	No	128,1

- Select **Yes**.
- Click **Apply** and then click **Save**.
- If you have more than one QAM carrying BFS, repeat steps 1 through 6 for each BFS QAM.
- Go to **Restarting siManager and qamManager**, next in this section.



## Disable Inband SI Signaling, Continued

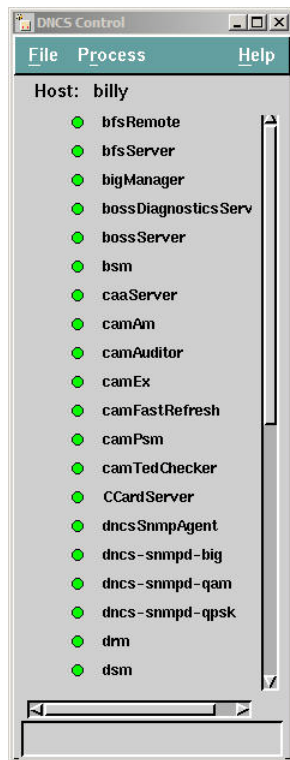
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### Restarting siManager and qamManager

Complete the following steps to restart the siManager and the qamManager.

1. From the DNCS Administrative Console Status window, click **Control** from the **DNCS** section.

**Result:** The DNCS Control window opens.



2. Select **siManager**, click **Process**, and then select **Stop Process**.

**Result:** A confirmation window opens.

3. Click **Yes** to stop the siManager.

**Result:** A red icon appears next to the siManager that indicates the process has stopped running.

4. Select **siManager**, click **Process**, and then select **Start Process**.

**Result:** A green icon appears next to siManager that indicates the process is now running.

5. Repeat steps 2 through 4 to stop and start the **qamManager**.
6. Go to **Rebooting the BFS QAMs**, next in this section.

## Disable Inband SI Signaling, Continued

### Rebooting the BFS QAMs

Complete the following steps to reboot each BFS QAM in your system.

1. Check the number of sessions connected on the BIG QAM.

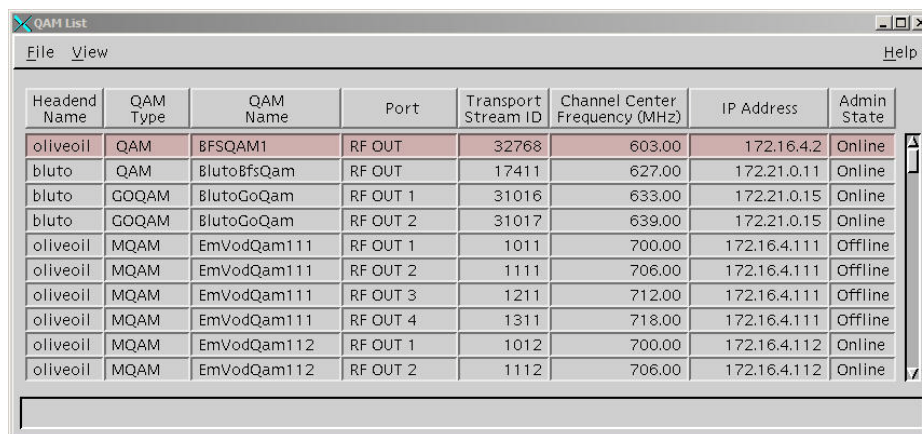
**Note:** Refer to *Troubleshooting and Resetting QAMs and MQAMs With auditQAM* for detailed instructions.

2. From the DNCS Administrator Console, click the **Element Provisioning** tab and then click **QAM**.

**Result:** The QAM List window appears.

3. Select the **BFS QAM**.

**Result:** The row for the BFS QAM becomes highlighted.



Headend Name	QAM Type	QAM Name	Port	Transport Stream ID	Channel Center Frequency (MHz)	IP Address	Admin State
oliveoil	QAM	BFSQAM1	RF OUT	32768	603.00	172.16.4.2	Online
bluto	QAM	BlutoBfsQam	RF OUT	17411	627.00	172.21.0.11	Online
bluto	GOQAM	BlutoGoQam	RF OUT 1	31016	633.00	172.21.0.15	Online
bluto	GOQAM	BlutoGoQam	RF OUT 2	31017	639.00	172.21.0.15	Online
oliveoil	MQAM	EmVodQam111	RF OUT 1	1011	700.00	172.16.4.111	Offline
oliveoil	MQAM	EmVodQam111	RF OUT 2	1111	706.00	172.16.4.111	Offline
oliveoil	MQAM	EmVodQam111	RF OUT 3	1211	712.00	172.16.4.111	Offline
oliveoil	MQAM	EmVodQam111	RF OUT 4	1311	718.00	172.16.4.111	Offline
oliveoil	MQAM	EmVodQam112	RF OUT 1	1012	700.00	172.16.4.112	Online
oliveoil	MQAM	EmVodQam112	RF OUT 2	1112	706.00	172.16.4.112	Online

4. Click **File** and then select **Reset**.

**Result:** A confirmation window appears.



5. Click **Yes**.

**Result:** The following message appears in the QAM List window:  
**The reset request has been received by QAM '<Name of QAM>'**

**Note:** The <Name of QAM> represents the name of the BFS QAM modulator that you just reset.

## Disable Inband SI Signaling, Continued

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6. If you have multiple QAMs carrying inband SI (distributed BFS configuration), repeat steps 2 through 5 to reboot each BFS QAM.
7. Click **File** and then select **Close**.
8. Recheck the number of sessions that are active on the BFS QAM.  
**Result:** The number of sessions should be the same or greater than the number received in step 1. If this number is higher than the initial number (typically is *value+1*), it indicates that the new BFS session has started.
9. If you have more than one QAM carrying BFS, repeat steps 1 through 8 for each BFS QAM.

## For Information

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### If You Have Questions

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



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