Recommendations for Data Carousel Rate Management

Overview

Introduction

Operators of our service-delivery system have flexibility in managing both the content and the performance characteristics of their data carousels. This technical bulletin provides background information and recommendations for managing inband and out-of-band (OOB) data carousel rates on the DNCS. It also provides a procedure for verifying data carousel rate settings and changing them, if necessary.

Note: The terms *data carousels* and *data pumps* are sometimes used interchangeably.

Scope

The information in this technical bulletin pertains to sites that support either the SA Resident Application (SARA) or the Passport resident application.

Note: Engineers at Rovi Corporation have reviewed the data carousel rates and recommendations in this technical bulletin that pertain to the Passport resident application. Before implementing the Passport data carousel rates, however, we recommend that you first contact Rovi Corporation to confirm that the recommended rates have not changed.

Audience

This document was written for headend technicians. Field service engineers and Cisco® Services engineers may also find the information in this document helpful.

Document Version

This is the seventh formal release of this document. In addition to minor text and graphic changes, the following table provides the technical changes to this document.

Description	See Topic
Added section for SR 4.5 and later systems	■ ***Change the Data Carousel Rates for an SR 4.5 System*** (on page 16)

Data Carousel Rate Recommendations

Introduction

Use the information in this section to decide how to adjust your data carousel rate settings. This section contains two tables to aid in your decision. The following list describes the two tables:

- The table in ***SARA Data Carousel Rate Settings*** (on page 4) provides recommended data carousel rates for systems that use the SA Resident Application (SARA).
- The table in ***Passport Resident Application Data Carousel Rate Settings*** (on page 7) provides recommended data carousel rates for systems that use the Passport resident application.

Important: The table that you choose is determined by the **resident application** in use on your system. **Do not** choose a table based upon the manufacturer of set-tops in use on your system.

After examining the appropriate table, carefully read the associated recommendations in this section, as well as in the following section, ***General Guidelines for Configuring Data Carousels*** (on page 11).

Instructions for actually examining and changing (if necessary) your data carousel settings are then found in one of the following sections, depending upon the version of system software you have:

- ***Change the Data Carousel Rates for an SR 4.5 System*** (on page 16), if you have SR 4.5 or later system software
- ***Change the Data Carousel Rates for an SR 2.5/3.5 and Later System*** (on page 19), if you have SR 2.5/3.5 or later system software
- ***Change the Data Carousel Rates for a Pre-SR 2.5/3.5 System*** (on page 23), if you have system software earlier than SR 2.5/3.5

SARA Data Carousel Rate Settings

The following table lists the default data carousel rate settings for systems that use SARA. The footnote numbers are explained on the following page. Also, refer to ***General Notes About the SARA Data Carousel Rate Settings*** (on page 6) for more general information about the SARA carousels and source IDs.

Source ID	Data Carousel	Data Rate (Mbps)	Block Size (Bytes)	Indication Interval (ms)	Enabled/Run (see note 1)
0	System Carousel	0.01	1024	200	x
1	Out-of-Band	0.05 See note 6	1024	200	x
2	Inband	1.00	4000	100	x
3	CAM OOB	0.01	1024	200	x
4	CAM IB	1.00	4000	100	See note 2
5	IPG OOB	0.05	1024	200	x
6	IPG1 IB	1.00	4000	100	x
7	PPV OOB	0.01	1024	200	x
8	PPV IB	1.00	4000	100	x
9	SAM	0.05	1024	200	x
10	IPG2 IB	1.00	4000	100	x
11	podData	0.03	1024	200	x
12	IPG3 IB	1.00	4000	100	x
14	IPG4 IB	1.00	4000	100	x
16	IPG5 IB	1.00	4000	100	x
18	IPG6 IB	1.00	4000	100	x
20	IPG7 IB	1.00	4000	100	x
21	MMM OOB	0.10	1024	200	x
22	PPV IB2	1.00	4000	100	x
24	SGM IB1	1.00	4000	100	See note 4
26	SGM IB2	1.00	4000	100	See note 4
28	SGM IB3	1.00	4000	100	See note 4
30	SGM IB4	1.00	4000	100	See note 4
32	SGM IB5	1.00	4000	100	See note 4
199	bootloader	3.00	4000	100	See note 3
	Default IB Total:	14			See note 5
	Default OOB Total	0.310			

Specific Notes About the SARA Data Carousel Rate Settings

Each item in the following list pertains to the corresponding footnote number in the preceding table.

1 The **Enabled/Run** column pertains to the **Sources** field on the Set Up BFS Source window on systems supporting SR 2.5/3.5/4.0 and later software. After an inband source is disabled, the session for that source is torn down (if active), and the session will not be restored until the BFS source is re-enabled. Also, note that the data pumps for inband and out-of-band sources will not restart until the BFS source is re-enabled.

Notes:

- When you disable (or stop) a source, you free up its associated bandwidth.
- For systems using SR 4.3 and later, the parameter has changed from "enable/disable" to "run/stop".

2 Follow these guidelines to configure the Data Rate for the **CAM IB** data carousel:

- If your site uses the camFastRefresh feature, set the Data Rate for the CAM IB data carousel to 1.0 Mbps and enable (or run) the source.
- If your site does not use the camFastRefresh feature, follow these guidelines:
  - For SR 2.5/3.5/4.0 and later software, disable (or stop) the source.
  - For system software earlier than SR 2.5/3.5/4.0, set the Data Rate for the CAM IB data carousel to 0.50 Mbps.

3 For system releases prior to SR 2.5/3.5/4.0, the bootloader carousel is managed by the OSM process and is not visible on the BFS user interface. The 3.00 Mbps data rate of the bootloader carousel, however, must be considered as part of the total inband data carousel rate.

Note: For SR 2.5/3.5/4.0 and later, the bootloader carousel is managed by the bfsServer process and is visible on the BFS user interface.

4 SGM IB carousels are added to the default carousels when Switched Digital Video (SDV) is enabled on the system. These carousels provide the mini-carousel discovery files to the SDV client to determine the mini-carousel frequencies available. This method of mini-carousel discovery is used only by SARA SDV clients.

In addition, SARA SDV client software supports an alternate means of obtaining its mini-carousel, which does not require downloading the mini-carousel discovery file. If the SDV client does not require the mini-carousel discovery file, then all SGM IB carousels should be disabled/stopped. If the SARA SDV client uses the mini-carousel discovery file method, then you will enable these carousels based on the number of SDV-enabled service groups are defined on the system.

Each SGM IB carousel supports a maximum of 476 SDV-enabled service groups. Refer to the DNCS release notes for your system release for more details on enabling these carousels.

5 The BFS IB total includes CAM IB, but does not include any SGM IB carousels.

6 The servicegroupmap.dat file is distributed using the OOB carousel. With systems expanding the number of service groups and/or number of QAMs per service group, the default recommendation may need to be increased for better service group discovery. The following table provides some guidelines on when to increase this rate.

Number of Service Groups	Number of QAMs per Service Group	Recommended Rate
< 400	16	50 Kbps
< 800	8	50 Kbps
400 – 800	16	100 Kbps
800 – 1600	8	100 Kbps
800 – 1200	16	150 Kbps
1600 – 2400	8	150 Kbps

Note: 150 Kbps is the maximum recommended rate for the OOB carousel to ensure sufficient QPSK downstream bandwidth for other OOB messaging.

For systems that surpass the above number of service groups and QAM combinations, DNCS SR 4.2.1.30 (and later) allows you to select the number of QAMs that are included in the servicegroupmap file. The following table provides our rate recommendations, assuming that each service group is limited to 3 QAM carriers in the servicegroupmap file.

Number of Service Groups	Number of QAMs per Service Group	Recommended Rate
< 2000	3	50 Kbps
2000 – 4000	3	100 Kbps
4000 – 6000	3	150 Kbps

General Notes About the SARA Data Carousel Rate Settings

Note these general points about the data in the SARA Data Carousel Rate Settings table:

- The rows highlighted in gray represent inband data carousels.
- The rows without the gray highlighting represent out-of-band (OOB) data carousels.
- We recommend that you use even-numbered source IDs for inband carousels and odd-numbered source IDs for OOB carousels.

Passport Resident Application Data Carousel Rate Settings

The following table contains the recommended data carousel rates for a system that uses the Passport resident application. The footnote numbers are explained on the following page. Also, refer to ***General Notes About the Passport Resident Application Data Carousel Rate Settings*** (on page 10) for more general information about the carousels and source IDs.

Source ID	Data Carousel	Data Rate (Mbps)	Block Size (Bytes)	Indication Interval (ms)	Enabled/Run (see note 1)
0	System Carousel	0.01	1024	200	x
1	Out-of-Band	0.05 See note 6	1024	200	x
2	Inband	1.00	4000	100	x
3	CAM OOB	0.01	1024	200	x
4	CAM IB	1.00	4000	100	See note 2
5	IPG OOB	0.05	1024	200	x
6	IPG IB	0.50	4000	100	x
7	PPV OOB	0.01	1024	200	
8	PPV IB	0.50	4000	100	
9	SAM	0.01	1024	200	See note 3
10	IPG2 IB	0.50	4000	100	x
11	POD_Data	0.03	1024	200	x
12	IPG3 IB	0.50	4000	100	x
14	IPG4 IB	0.50	4000	100	x
16	IPG5 IB	0.50	4000	100	x
18	IPG6 IB	0.50	4000	100	x
20	IPG7 IB	0.50	4000	100	x
21	MMM OOB	0.10	1024	200	x
22	PPV2 IB	0.50	4000	100	
24	SGM IB1	1.00	4000	100	See note 5
26	SGM IB2	1.00	4000	100	See note 5
28	SGM IB3	1.00	4000	100	See note 5
30	SGM IB4	1.00	4000	100	See note 5
32	SGM IB5	1.00	4000	100	See note 5
199	bootloader	3.00	4000	100	See note 4
2500	PDT OOB	0.06	1024	200	x

Source ID	Data Carousel	Data Rate (Mbps)	Block Size (Bytes)	Indication Interval (ms)	Enabled/Run (see note 1)
2501	PDT Medium	0.06	1024	200	x
2502	PDT Small	0.01	1024	200	x
2503	PDT IB	1.00	4000	100	x
	OOB Total	0.40 Mbps			
	IB Total	10.5 Mbps			See note 7

Specific Notes About the Passport Resident Application Data Carousel Rate Settings

Each item in the following list pertains to the corresponding footnote number in the preceding table.

1 The **Enabled/Run** column pertains to the **Sources** field on the Set Up BFS Source window on systems supporting SR 2.4/3.4 and later software. After an inband source is disabled, the session for that source is torn down (if active), and the session will not be restored until the BFS source is re-enabled. Also, note that the data pumps for inband and out-of-band sources will not restart until the BFS source is re-enabled.

Notes:

- When you disable (or stop) a source, you free up its associated bandwidth.
- For systems using SR 4.3 and later, the parameter has changed from "enable/disable" to "run/stop".

2 Follow these guidelines to configure the Data Rate for the **CAM IB** data carousel:

- If your site uses the camFastRefresh feature, set the Data Rate for the CAM IB data carousel to 1.0 Mbps and enable the source.
- If your site does not use the camFastRefresh feature, follow these guidelines:
  - For SR 2.4/3.4 and later software, disable (or stop) the source.
  - For system software earlier than SR 2.4/3.4, set the Data Rate for the CAM IB data carousel to 0.50 Mbps.

3 Follow these guidelines to configure the Data Rate for the **SAM** data carousel:

- Set the SAM Data Rate to 0.01 Mbps if your system supports software earlier than SR 2.5/3.5.
- Disable (or stop) the source and leave the field blank if your system supports SR 2.5/3.5 or later software.

4 For system releases earlier than SR 2.4/3.4, the bootloader carousel is managed by the OSM process and is not visible on the BFS user interface. The 3.00 Mbps data rate of the bootloader carousel, however, must be considered as part of the total inband data carousel rate.

Note: For SR 2.4/3.4 and later, the bootloader carousel is managed by the bfsServer process and is visible on the BFS user interface.

5 SGM IB carousels are added to the default carousels when Switched Digital Video (SDV) is enabled on the system. These carousels provide the mini-carousel discovery files to the SDV client to determine the mini-carousel frequencies available. This method of mini-carousel discovery is used only by SARA SDV clients.

In addition, SARA SDV client software supports an alternate means of obtaining its mini-carousel, which does not require downloading the mini-carousel discovery file. If the SDV client does not require the mini-carousel discovery file, then all SGM IB carousels should be disabled/stopped. If the SARA SDV client uses the mini-carousel discovery file method, then you will enable these carousels based on the number of SDV-enabled service groups are defined on the system.

Each SGM IB carousel supports a maximum of 476 SDV-enabled service groups. Refer to the DNCS release notes for your system release for more details on enabling these carousels.

6 The servicegroupmap.dat file is distributed using the OOB carousel. With systems expanding the number of service groups and/or number of QAMs per service group, the default recommendation may need to be increased for better service group discovery. The following table provides some guidelines on when to increase this rate.

Number of Service Groups	Number of QAMs per Service Group	Recommended Rate
< 400	16	50 Kbps
< 800	8	50 Kbps
400 – 800	16	100 Kbps
800 – 1600	8	100 Kbps
800 – 1200	16	150 Kbps
1600 – 2400	8	150 Kbps

Note: 150 Kbps is the maximum recommended rate for the OOB carousel to ensure sufficient QPSK downstream bandwidth for other OOB messaging.

For systems that surpass the above number of service groups and QAM combinations, DNCS SR 4.2.1.30 (and later) allows you to select the number of QAMs that are included in the servicegroupmap file. The following table provides our rate recommendations, assuming that each service group is limited to 3 QAM carriers in the servicegroupmap file.

Number of Service Groups	Number of QAMs per Service Group	Recommended Rate
< 2000	3	50 Kbps
2000 – 4000	3	100 Kbps
4000 – 6000	3	150 Kbps

7 The BFS IB total includes CAM IB, but does not include any SGM IB carousels.

General Notes About the Passport Resident Application Data Carousel Rate Settings

Note these general points about the data in the Passport Resident Application Data Carousel Rate Settings table:

- The rows highlighted in gray represent inband data carousels.
- The rows without the gray highlighting represent out-of-band (OOB) data carousels.

General Guidelines for Configuring Data Carousels

Introduction

This section contains general guidelines for configuring the Broadcast File Server (BFS), as well as for managing inband and out-of-band data carousels.

BFS Performance Recommendations

When setting your inband and out-of-band data carousel rates, consider the following points as they pertain to the configuration of your BFS:

- The presence of third-party applications does not require that you configure one data carousel per application. You may assign multiple files to the same carousel, as long as you consider the specific performance requirements of the network. The more files you assign to a given data carousel, the longer it will take for the files to transfer to the set-top.
- You can redistribute existing application files among the data carousels as you add new application files to your system. Consider the specific transfer speed requirements of the files when deciding whether to redistribute the application files.
- Do not use any system default data carousels for third-party application files. We reserve default carousels for system files only. Consider carousels that are set up automatically by the DNCS and have a source ID of less than 200 to be default carousels.

Inband Data Carousel Recommendations

Consider these recommendations for managing inband data carousels on the service-delivery system:

- For third-party applications, use these guidelines when adding inband carousels:
  - The data rate should be either 1 Mbps or 2 Mbps (megabits per second).
  - The block size should be 4000 bytes.
  - The indication interval should be 100 ms (milliseconds).
- Depending upon your QAM modulation mode, the sum of your inband data carousel rates (including source 199), plus any additional audio-visual content that is combined on the modulator, should not exceed the following totals:

	Direct ASI	BFS BIG
64-QAM modulation	26 Mbps	25 Mbps
256-QAM modulation	37 Mbps	36 Mbps

Out-of-Band Data Carousel Recommendations

Use these guidelines when configuring OOB data carousels:

- The indication interval should be 200 ms.
- The default block size should be within the range of 1024 bytes to 1470 bytes. The default setting of 1024 bytes should be sufficient, and should not require adjustment. However, if you want to decrease the number of packets per second on your network and/or received by set-tops, you can increase this value up to 1470 bytes.

  This maximum value is based on a standard maximum transmission unit (MTU) of 1500 bytes for **all** links between the DNCS and the QPSK modulator or CMTS. Consult with your IP engineering team before adjusting this value in case your network uses a lower MTU.
- The data rate should be kept as low as possible to maximize the amount of data available for applications.

Data Rate Recommendations

Each digital video system has unique characteristics that affect the settings of the OOB carousel rates.

For example, some systems might have a large number of service groups which require an increase from the recommended values for the OOB carousel. Another system might have a number of applications whose performance relies on the set-top receiving the OOB data at a reasonable rate. This might cause the operator to reduce the default OOB carousel rates to set higher rates for the third-party applications.

Essentially, setting the OOB data carousel rates involves making choices on how to segment a finite, somewhat limited, resource for your individual system's needs.

The Doctor utility provides a good estimate of the download times for all carousels and can assist you in selecting a data rate. For many third party applications, the file delivered to the client is small (usually a few hundred bytes), so you should select the minimum download rate of 0.01 Mbps for these carousels.

DAVIC vs. DOCSIS Considerations

You need to configure bridges on the DNCS to initiate the forwarding of OOB data to a group of set-tops associated with the bridge. The bridge can be either a DAVIC QPSK modulator or a CMTS. For this discussion, the important difference between the two devices is the maximum OOB data rate that these devices support.

- The maximum bit rate for the DAVIC QPSK modulator on the DAVIC RF downstream path is 1.544 Mbps. When you consider overhead (such as DAVIC framing, DAVIC messages, and ATM overhead, etc.), the maximum IP packet rate is approximately 1.2 Mbps.
- The downstream data rate for the CMTS DOCSIS® is not the limiting factor. Instead, the DOCSIS Set-top Gateway (DSG) specification limits each DSG tunnel to 2 Mbps. A typical DSG configuration associates all DNCS-sourced OOB data to its own tunnel; therefore, you can use 2 Mbps as the maximum OOB rate that the DNCS can forward to a single CMTS DSG bridge.
- Due to the FCC requirement mandating the existence of a DAVIC QPSK OOB transmission path, 1.2 Mbps is the maximum IP data rate that the digital video system can configure for OOB data. BFS is a significant part of this OOB data.

DNCS-Sourced Non-BFS Data (to a Bridge)

The DNCS also forwards OOB data (other than BFS) to the bridges.

The major contributors of this data are System Information (SI), Conditional Access (CA), DSM-CC UnCfgIndication (UnCfgInd), and DSM-CC UnPassThrough messages (UnPassThru). Although there are numerous types of messages, the maximum cumulative data rate of all these sources of data is estimated to be no greater than 50 Kbps for each bridge.

DNCS to Set-Top Unicast

The DNCS also communicates directly to each set-top. These communications use the OOB path.

Examples of these communications are DSM-CC UnCfgConfirms, SNMP, and cmd2000 diagnostics. This traffic is asynchronous and difficult to average, but this guideline uses an average rate of 10 Kbps for each bridge as a maximum.

Tru2way Application Platform OOB Data

Set-tops running tru2way™ (formerly OCAP™) software receive OOB data from both the DNCS and a separate tru2way server.

- **For DAVIC QPSK modulators:** You must factor the tru2way OOB data sourced from the tru2way server when configuring the OOB data carousel rates.
- **For DOCSIS/DSG:** tru2way OOB data is assigned to a different tunnel than the DNCS sourced OOB data, and does not factor when configuring data carousel rates.

Data Rate Worksheet

The following table provides a worksheet for you to use when determining the optimal data carousel rate settings for your system. This table uses the DAVIC QPSK modulator to determine the maximum OOB rate.

Item	Rate (Mbps)	Notes
Maximum OOB rate	1.200	QPSK modulator maximum DAVIC downstream
Default Data Carousel Rate	0.310	Adjust this value if the default guidelines are not used due to specific download requirements
Non-BFS OOB (bridge)	0.050	SI, CA, UnCfgInd estimate
DNCS to set-top unicast	0.010	
DNCS OOB contribution (subtotal)	0.370	The total of (Default Data Carousel Rate + Non-BFS OOB + DNCS to set-top unicast) data rates
tru2way OOB	X	Obtain from the tru2way server
Third-party applications (BFS)	Y	Determine the minimum rate for all third-party OOB carousels and enter the sum here
Remaining OOB rate for third-party applications	1.200 – 0.370 (subtotal) 0.830 (– X – Y)	This is the amount of OOB data (0.830 Mbps – X – Y) remaining for interactive application data on the OOB path (maximum OOB rate – DNCS OOB contribution) = (remaining OOB rate – true2way OOB – third-party applications)

Inband vs. Out-of-Band Considerations

When deciding whether to assign files to an inband carousel or to an OOB carousel, keep the following points in mind:

- OOB data transfer rates are considerably slower than inband data transfer rates. Consider the amount of time you can allocate to transferring data. If a fast data transfer rate is essential, then assigning the file to an inband data carousel may be more beneficial than assigning that file to an OOB data carousel.
- If an application requires access to files while simultaneously allowing the user to watch video, then you should assign files for that application to an OOB carousel. If these application files are assigned to an inband carousel, video will be interrupted during file retrieval.

  Note: In a dual-tuner Digital Video Recorder (DVR) configuration, if the second tuner is available, that set-top can access application files from an inband carousel without interrupting video. If both tuners are in use, however, video will be interrupted during inband file retrieval.
- You can assign files to either the inband or OOB carousel for applications that do not allow the user to watch video while using the application, depending upon the size and the performance requirements of the application.

VPI / VCI Pairing

Note: This discussion of VPI/VCI pairing pertains only to sites that use a BFS BIG and does not pertain to sites that use an ASI/HMUX card. The Direct ASI implementation does not use ATM.

We recommend that you map at least 20 VPI/VCI pairs in your Asynchronous Transfer Mode (ATM) switch for inband data when initially configuring the system. The DNCS port on the ATM switch uses VPI/VCI permanent virtual circuits (PVCs) 0/256 through 0/275. These PVCs must be mapped to VPI/VCI pairs x/256 through x/275 respectively, (where x represents any available VPI) on the Broadband Integrated Gateway (BIG) port of the ATM switch. There is one VPI/VCI PVC for each inband data carousel for up to 20 inband carousels.

If you plan to support more than 20 inband data carousels, you need additional PVCs on the ATM switch. Begin configuring your additional PVCs at 0/276.

The BIG ATM module has no awareness of the VPI. Hence, the ATM switch can map the incoming service control platform PVCs to any VPI on the outgoing BIG PVCs. For simplicity, we recommend that you use VPI of 0.

Change the Data Carousel Rates for an SR 4.5 System

Introduction

The instructions in this section guide you through the steps of editing the data carousel rates (and related fields) on a system that supports SR 4.5 system software.

Notes:

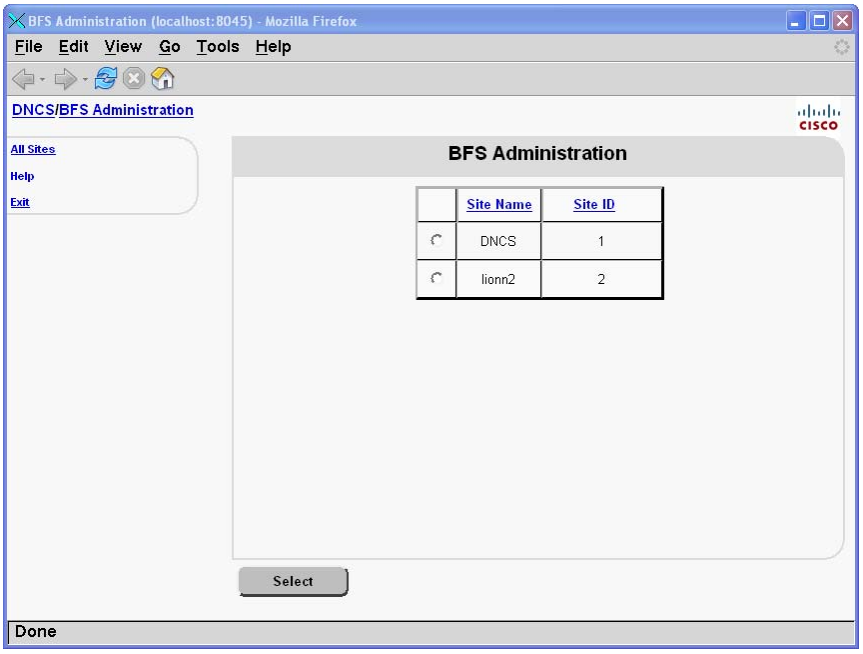
- The staging process could be affected when you change data rates. The download interruption is brief, as the session restarts in a few minutes.
- The *Change the Data Carousel Rates for an SR 2.5/3.5 and Later System* (on page 19) section guides you through similar steps on a system that supports SR 2.5/3.5 and later software.
- The *Change the Data Carousel Rates for a Pre-SR 2.5/3.5 System* (on page 23) section guides you through similar steps on a system that supports software earlier than SR 2.5/3.5.

Changing the Data Carousel Rates

Follow these instructions to change the data carousel rates for a system that is running SR 4.5.

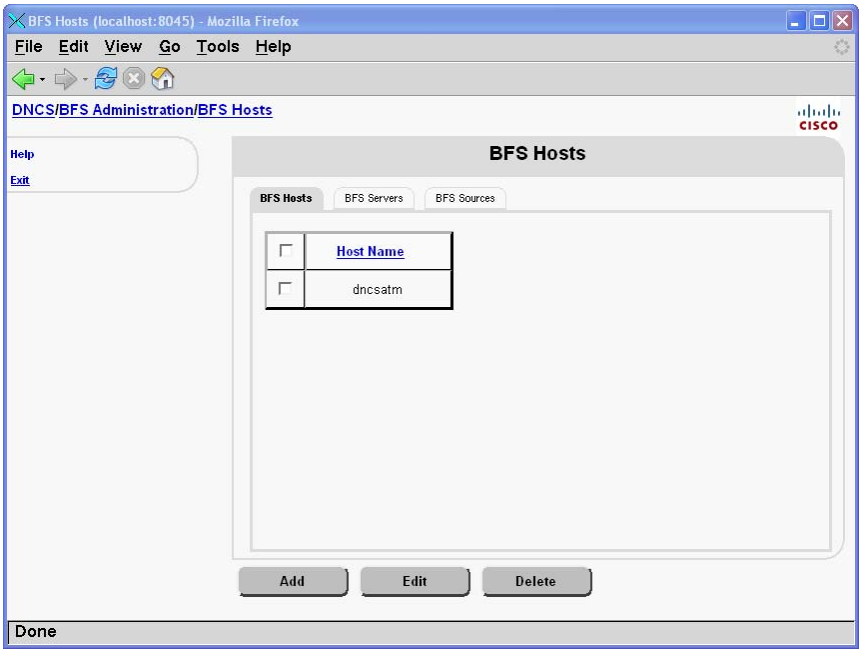
1 From the Administrative Console, select the **Application Interface Modules** tab.

2 Click **BFS Admin**. The BFS Admin Sites window opens.

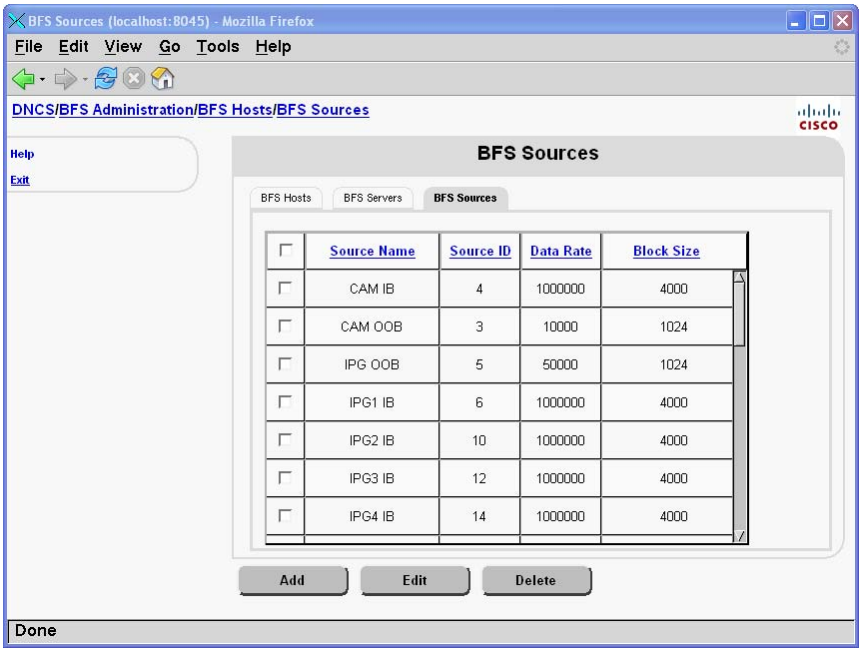


Note: The system used in this example supports the Regional Control System (RCS) feature that uses the service control platform to manage several remote headends. The lionn2 site (shown in this example) is a remote headend. Your system may support more remote headends or might not support the RCS feature at all.

3 Select the **DNCS** site and click **Select**. The BFS Hosts window opens.

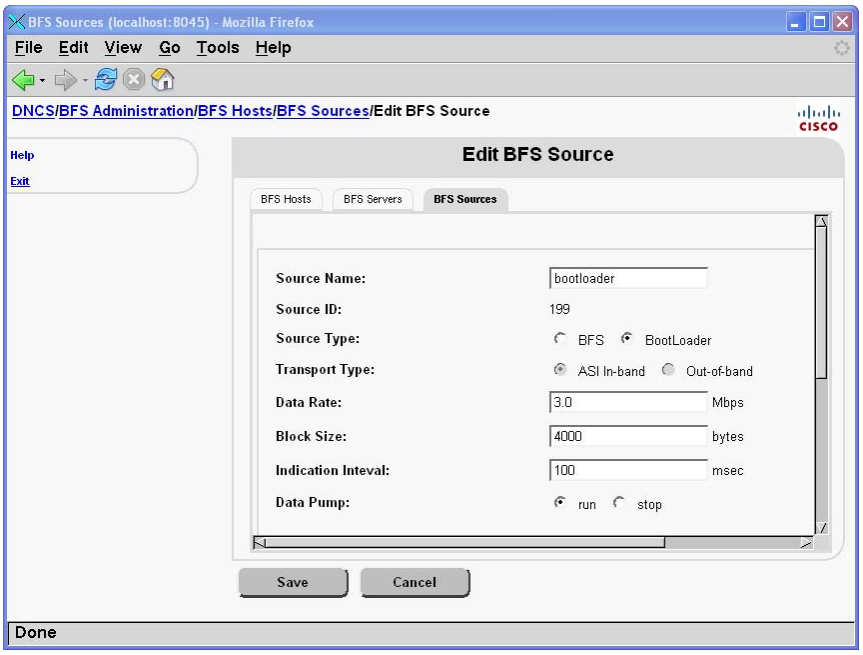


4 Click the **BFS Sources** tab. The window updates to display a list of BFS source names and associated configuration data.



5 Select a source and click **Edit**. The Set Up BFS Source window opens.

Example: The following example shows the bootloader source in SR 4.5.



6 Write down the current values for the **Source Name**, **Source ID**, **Data Rate**, **Block Size**, **Indication Interval**, and **Source** fields.

Important: Save this information; you may need these settings should you ever want to restore your original values.

7 Use the data from the appropriate data rate table, earlier in this technical bulletin, to configure the **Data Rate**, **Block Size**, **Indication Interval**, and **Source** fields with the new recommended data.

Note: You might have to scroll the window to see all of the available fields.

8 Click **Save**.

Results:

- The Edit BFS Source window closes.
- The service control platform saves the new settings.
- The BFS automatically repopulates the data carousel. During this period, the carousel may be down for a few minutes.

Note: The staging process could be affected when you change data rates. The download interruption is brief, as the session restarts in a few minutes.

9 Repeat steps 5 through 8 for the remaining sources on the BFS Sources tab.

10 After examining and changing (if necessary) the carousel data for each source on the service control platform site, go back to step 3 and repeat this procedure for each of the remote sites supported by the system.

11 After you have changed all the data carousel rates, click **Exit**.

Change the Data Carousel Rates for an SR 2.5/3.5 and Later System

Introduction

The instructions in this section guide you through the steps of editing the data carousel rates (and related fields) on a system that supports SR 2.5/3.5 or later system software.

Notes:

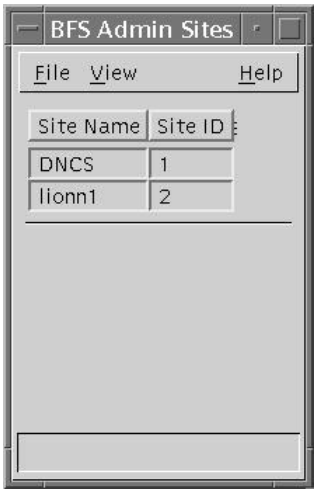
- The staging process could be affected when you change data rates. The download interruption is brief, as the session restarts in a few minutes.
- The ***Change the Data Carousel Rates for an SR 4.5 System*** (on page 16) section guides you through similar steps on a system that supports SR 4.5 and later software.
- The ***Change the Data Carousel Rates for a Pre-SR 2.5/3.5 System*** (on page 23) section guides you through similar steps on a system that supports software earlier than SR 2.5/3.5.

Changing the Data Carousel Rates

Follow these instructions to change the data carousel rates for a system that is running SR 2.5/3.5 or later.

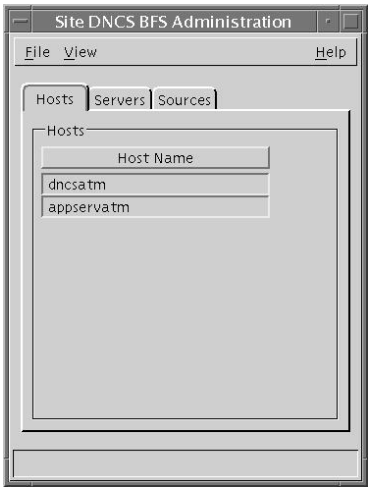
1 From the Administrative Console, select the **Application Interface Modules** tab.

2 Click **BFS Administration**. The BFS Admin Sites window opens.



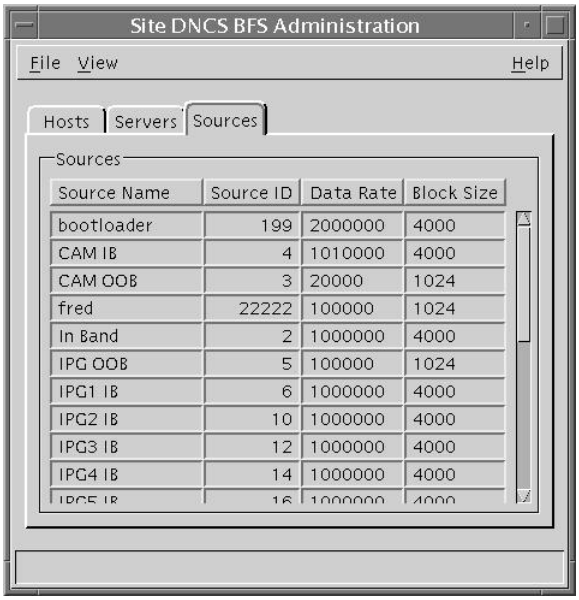
Note: The system used in this example supports the Regional Control System (RCS) feature that uses the service control platform to manage several remote headends. The lionn1 site (shown in this example) is a remote headend. Your system may support more remote headends or might not support the RCS feature at all.

3 Double-click the **DNCS** site. The Site DNCS BFS Administration window opens.



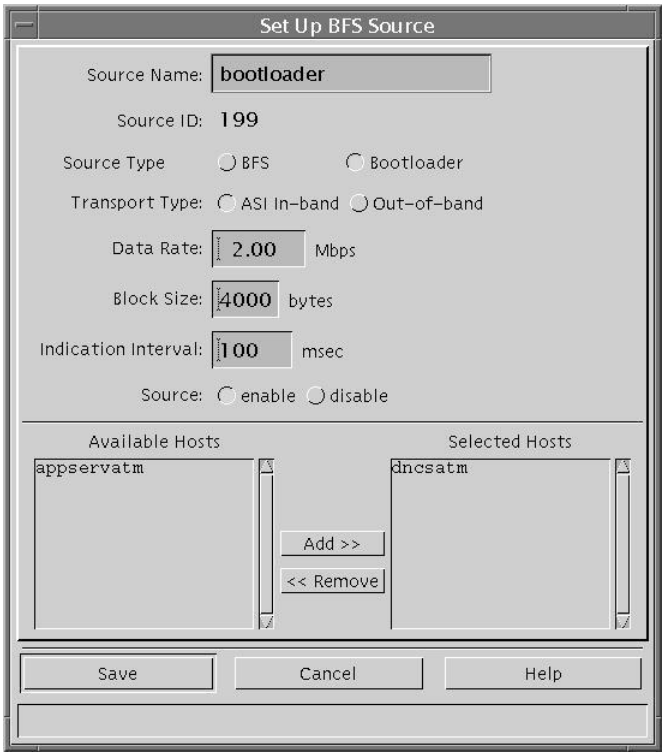
Note: The name of this window will vary, based on the site you select.

4 Click the **Sources** tab. The window updates to display a list of BFS source names and associated configuration data.

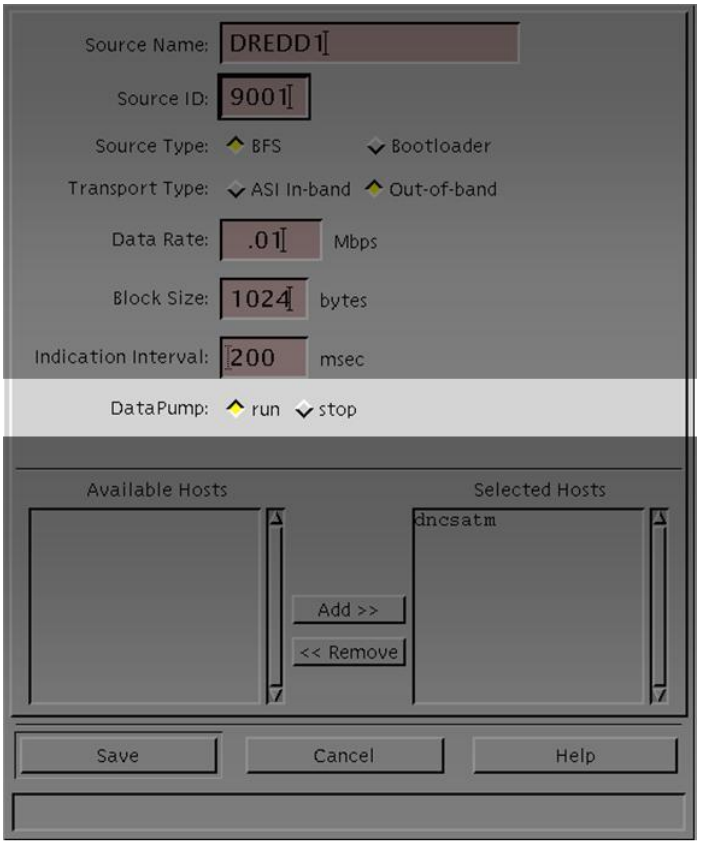


5 Double-click a source. The Set Up BFS Source window opens.

Example: The following example shows the bootloader source in SR 4.2.



Example: The following example shows the bootloader source in SR 4.3.



6 Write down the current values for the **Source Name**, **Source ID**, **Data Rate**, **Block Size**, **Indication Interval**, and **Source** fields.

Important: Save this information; you may need these settings should you ever want to restore your original values.

7 Use the data from the appropriate data rate table, earlier in this technical bulletin, to configure the **Data Rate**, **Block Size**, **Indication Interval**, and **Source** fields with the new recommended data.

8 Click **Save**.

Results:

- The Set Up BFS Source window closes.
- The service control platform saves the new settings.
- The BFS automatically repopulates the data carousel. During this period, the carousel may be down for a few minutes.

Note: The staging process could be affected when you change data rates. The download interruption is brief, as the session restarts in a few minutes.

9 Repeat steps 5 through 8 for the remaining sources on the Site DNCS BFS Administration window.

10 After examining and changing (if necessary) the carousel data for each source on the service control platform site, go back to step 3 and repeat this procedure for each of the remote sites supported by the system.

11 After you have changed all the data carousel rates, click **File > Close** on the Site [Site Name] BFS Administration window.

Change the Data Carousel Rates for a Pre-SR 2.5/3.5 System

Introduction

The instructions in this section guide you through the steps of editing the data carousel rates (and related fields) on a system that supports software earlier than SR 2.5/3.5.

Notes:

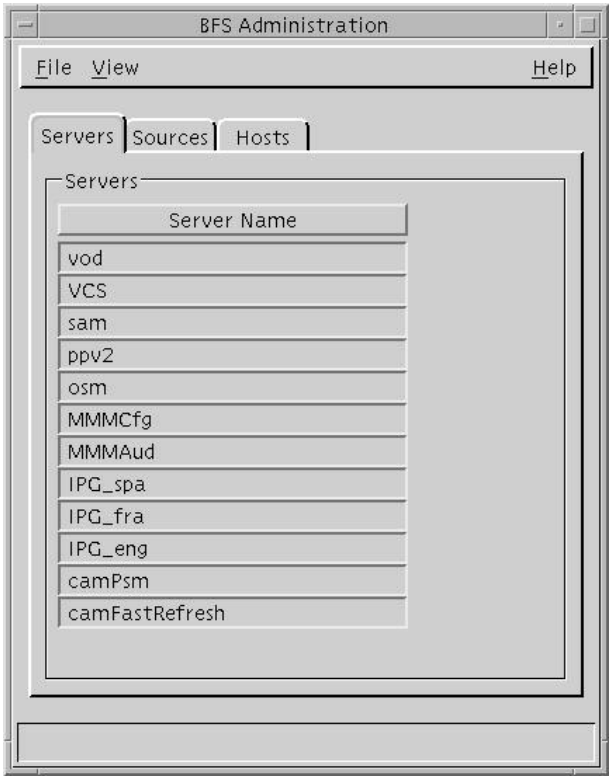
- The staging process could be affected when you change data rates. The download interruption is brief, as the session restarts in a few minutes.
- The ***Change the Data Carousel Rates for an SR 4.5 System*** (on page 16) section guides you through similar steps on a system that supports SR 4.5 and later software.
- The ***Change the Data Carousel Rates for an SR 2.5/3.5 and Later System*** (on page 19) section guides you through similar steps on a system that supports SR 2.5/3.5 or later system software.

Changing the Data Carousel Rates

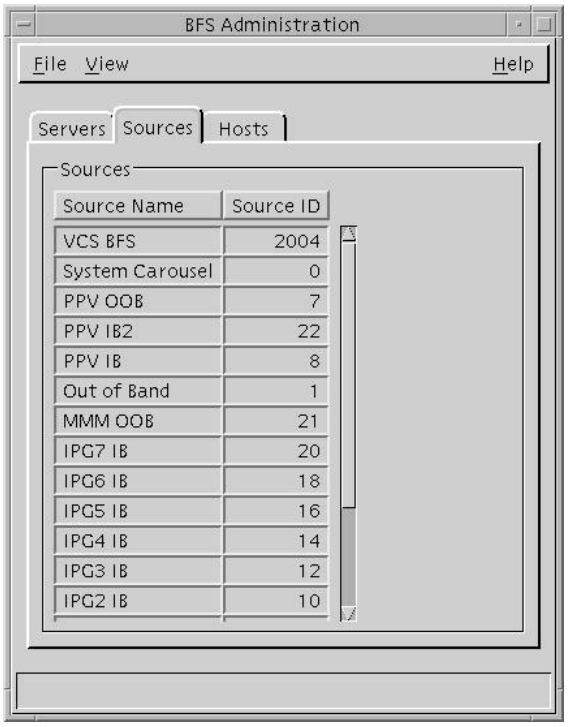
Follow these instructions to change the data carousel rates in a system that is running a System Release **prior to** SR 2.5/3.5.

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

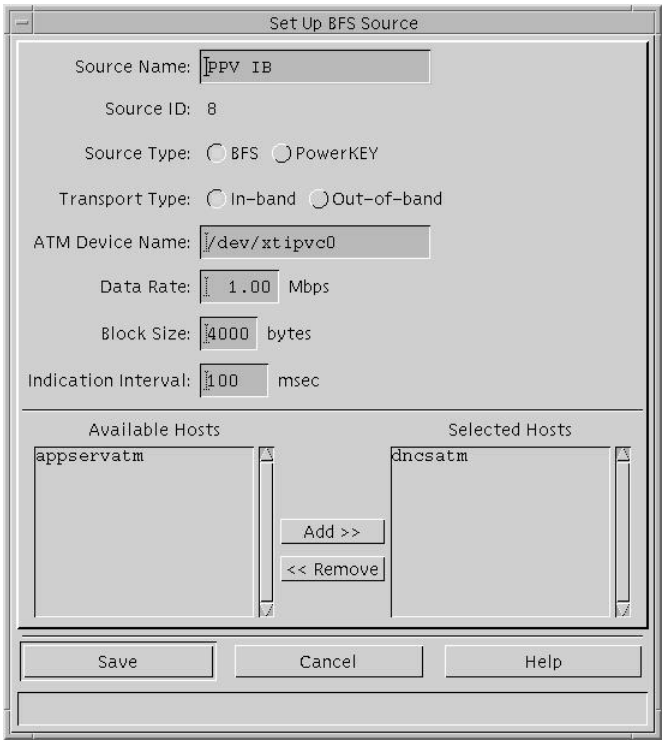
2 Click **BFS Administration**. The BFS Administration window opens.



3 Click the **Sources** tab. The BFS Administration window displays a list of BFS source names and source IDs.



4 Double-click a source in the **Source Name** column. The Set Up BFS Source window opens.



5 Write down the current values for the **Source Name**, **Source ID**, **Data Rate**, **Block Size**, and **Indication Interval** fields.

Important: Save this information; you may need these settings should you ever want to restore your original values.

6 Use the data from the data rate table to configure the **Data Rate**, **Block Size**, and **Indication Interval** fields with the new data rates set forth in this technical bulletin.

7 Click **Save**.

Results:

- The Set Up BFS Source window closes.
- The service control platform saves the new settings.
- The BFS automatically repopulates the data carousel. During this period, the carousel may be down for a period of up to 2 minutes.

Note: The staging process could be affected when you change data rates. The download interruption is brief, as the session restarts in a few minutes.

8 Repeat steps 3 through 7 for the remaining sources on the BFS Administration window.

9 After you have changed all the data carousel rates, click **File > Close** on the BFS Administration window.

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. Use the following table to find the center in your area.

Region	Assistance Centers	Telephone and Fax Numbers
North America South America Central America	Atlanta, Georgia United States	**Technical Support** For *Digital Broadband Delivery System* products only, call: ■ Toll-free: 1-866-787-3866 ■ Local: 770-236-2200 ■ Fax: 770-236-2488 For all products *other than* Digital Broadband Delivery System, call: ■ Toll-free: 1-800-722-2009 ■ Local: 678-277-1120 ■ Fax: 770-236-2306 **Customer Service** ■ Toll-free: 1-800-722-2009 ■ Local: 678-277-1120 ■ Fax: 770-236-5477
Europe	European Technical Assistance Center (EuTAC), Belgium	Telephone: 32-56-445-197 or 32-56-445-155 Fax: 32-56-445-061
Asia-Pacific	Hong Kong, China	Telephone: 011-852-2588-4745 Fax: 011-852-2588-3139
Australia	Sydney, Australia	Telephone: 011-61-2-8446-5374 Fax: 011-61-2-8446-8015
Japan	Tokyo, Japan	Telephone: 011-81-3-5322-2067 Fax: 011-81-3-5322-1311

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