



# Service Distribution Group

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The Service Distribution Group (SDG) is a collection of one or more RF ports and defines the physical slot/bay/port to be used in a video service.

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## Information About Service Distribution Group

The following are the required components for configuring an SDG:

- **Multiple Ports**—Multiple ports in an SDG replicate all QAMs from the Virtual Carrier Group (VCG) to every port.
- **Unicast**—Unicast (VoD) services cannot be replicated across line cards.
- **TSID**—The TSIDs should always be unique (North American MSO). Non-unique TSIDs can be used if the ONID is changed from the default value of zero (0).

The convention slot/bay/port represents the following:

- **Slot**—Slot is the line card slot number. Slot can be configured 0–3 or 6–9. Slots 4 and 5 are the supervisor slots.
- **Bay**—Bay is the Cisco cBR-8 chassis number. This parameter is always configured as 0.
- **Port**—Port is the RF port number. This parameter can be configured 1–8.

**Note**

- For a Remote PHY line card, the SDG does not describe a collection of RF ports. SDG specifies the line card, bay, and downstream cable controller where the video will be destined. Use **rpdc downstream-cable slot/bay/controller** command instead of **rf-port integrated-cable slot/bay/port** command. Only one downstream cable controller can be specified for an SDG, so QAM replication is not supported. (However, the controller can be multicast to multiple remote PHY devices which is similar to QAM replication but occurs external to the cBR-8.)
- Cisco Remote PHY Device 1x2 can join up to 30 multicast streams simultaneously for video.
- Cisco HA Shelf can join up to 30 multicast streams simultaneously per RPD for video.

## How to Configure the Service Distribution Group

This section describes how to configure SDGs for the video session on Cisco cBR-8.

### Defining the Physical Slot/Bay/Port

To define the Service Distribution Group (SDG), you must define the physical *slot/bay/port* to be used in a video service.

#### Before You Begin

Make sure that the controller type is **video** for the *slot/bay/port* that you use for the SDG. Errors due to the incorrect controller type used in the SDG appear during the bind operation.

To define the physical *slot/bay/port*, complete the following procedure:

```
configure terminal
cable video
service-distribution-group sdg name
rf-port integrated-cable slot/bay/port
```

### Configuring QAM Replication

To configure QAM replication for service group size alignment between the DOCSIS and video services to one or more ports, you can add more ports into the service distribution group configuration.

#### Before You Begin

Make sure that the controller type is **video** for the *slot/bay/port* that you would use for the SDG. For more information, see the **Video QAM Carriers** section. Errors due to the incorrect controller type used in the SDG appear during the bind operation.

To configure QAM replication, complete the following procedure:

```
configure terminal
cable video
service-distribution-group service distribution group name
rf-port integrated-cable slot/bay/port
rf-port integrated-cable slot/bay/port
```

## Overriding the Default ONID

You can override the default ONID, by defining a new ONID value in the SDG configuration. If you perform this configuration, all channels associated with the configured SDG will have the new ONID value. By default, the system ONID is 0, which is commonly used in North America.

To override the default ONID, complete the following procedure:

```
configure terminal
cable video
service-distribution-group service distribution group name
onid onid number
```

## Overriding the Default PSI Value

To override the default PSI value, complete the following procedure:

```
configure terminal
cable video
service-distribution-group service distribution group name
psi-interval psi-interval msec
```

## Configuring the Serving Area

Configure the serving area to enable the set tops to discover VOD content.

```
configure terminal
cable video
service-distribution-group service distribution group name id id
serving-area value
```

To configure the service descriptor default, complete the following procedure:

```
configure terminal
cable video
service-descriptor-default
service-id id
service-name string
service-type id
provider-name string
```

If the serving area is specified and there are no defaults specified, the service name should be set as **VOD** and provider name should be set as **VOD-SERVER**, service id set as **1**, service type set as **1**.

## Verifying the Serving Area Configuration

If the serving area is configured, session detail output will list the SDT information.

```
Router# show cable video session logical-edge-device id 2 session-id 270532608
Session Name      : mpts1.2.199
Session Id       : 270532608
Creation Time    : Fri Oct 12 22:07:03 2018

Output Port      : 41
```

```

TSID                : 41
Override TSID      : not specified
ONID               : 2
Number of Sources  : 1
  Source IP        : 176.51.1.2
  Group IP         : 238.11.1.106
  UDP Port         : 0
Config Bitrate     : not specified
Jitter             : 100 ms
Processing Type    : Passthru
Stream Rate        : CBR
Program Number     : -
Idle Timeout       : 2000 msec
Init Timeout       : 2000 msec
Off Timeout        : 60 sec
Encryption Type    : Pre-encrypted
Encryption Status  : Encrypted

Input Session Stats:
=====
State: ACTIVE-PSI, Uptime: 0 days 02:50:59
IP Packets: In 2569416, RTP 0, Drop 0
TP Packets: In 16910560, PCR 262629, PSI 292104, Null 1075352
             Unreference 102351, Discontinuity 0
Errors: Sync loss 0, CC error 0, PCR Jump 4,
        Underflow 2, Overflow 0, Block 0
Bitrate: Measured 2463450 bps, PCR 2637379 bps

Output Session Stats:
=====
State: ON, Uptime: 0 days 02:50:59
TP Packets: In 17056642, PCR 262628, PSI 292102,
             Drop 0, Forward 16764540, Insert 0
Errors: Info Overrun 0, Info Error 0, Block 0, Overdue 0,
        Invalid Rate 0, Underflow 0, Overflow 0
Bitrate: Measured 2439152 bps

SDT Info:
=====
Version 2, TSID 10, len 41, carousel 450

PAT Info:
=====
Version 18, TSID 1, len 16, section 0/0
Program 1: PMT 16

Input PMT Info:
=====
Program 1, Version 1, PCR 17, Info len 0
PID 17: Type 2, Info len 9, (CA SYS-ID 3584, PID 1, Private data: 010101)
PID 18: Type 4, Info len 15, (lang eng), (CA SYS-ID 3584, PID 1, Private data: 010102)
PID 19: Type 4, Info len 15, (lang spa), (CA SYS-ID 3584, PID 1, Private data: 010103)
PID 20: Type 4, Info len 15, (lang fre), (CA SYS-ID 3584, PID 1, Private data: 010104)

Output PMT Info:
=====
Program 1, Version 1, PCR 17, Info len 0
PID 17: Type 2, Info len 9, (CA SYS-ID 3584, PID 1, Private data: 010101)
PID 18: Type 4, Info len 15, (lang eng), (CA SYS-ID 3584, PID 1, Private data: 010102)
PID 19: Type 4, Info len 15, (lang spa), (CA SYS-ID 3584, PID 1, Private data: 010103)
PID 20: Type 4, Info len 15, (lang fre), (CA SYS-ID 3584, PID 1, Private data: 010104)

```

To verify the service descriptor default value, use the command as shown in the following example:

```
Router# show run | s service-descriptor-default
Service-descriptor-default
Service-id 200
Service-name HD-Service
Service-type 1
Provider-name NEWS-channel
```

## Verifying Service Distribution Group Configuration

To verify the SDG configuration, use the **show cable video service-distribution-group** command as shown in the example below:

```
Router# show cable video service-distribution-group all
Number of Service Distribution Groups: 1
ID Name      Virtual-Carrier-Group Logical-Edge-Device RF-Port  ONID  PSI   Serving
-----
          Name                Name
-----
1  sdg1   vcg1                table-based      9/0/0   0     100   10
```

```
Router# show cable video service-distribution-group id 1
Name:  sdg1
      Id:  1
      ONID: 0
      PSI Interval: 100
      Serving Area: 10
```

```
RF Ports:
  Integrated-Cable 9/0/0
```

```
Number of Virtual Carrier Groups: 1
```

VCG ID	VCG Name	LED ID	LED Name
1	vcg 1	1	table-based

## Troubleshooting Tips

To undo any configuration, use the **no** form of the command. This command is useful if you have configured something by mistake. The errors are not apparent until you perform the bind operation.

## Configuration Examples

This section provides example configurations for the service distribution group.

### Configuring a Service Distribution Group

```
configure terminal
cable video
service-distribution-group vod id 1
onid 100
rf-port integrated-cable 7/0/0
rf-port integrated-cable 7/0/1
```

```
rf-port integrated-cable 7/0/2  
rf-port integrated-cable 7/0/3
```

## Feature Information for Service Distribution Group

*Table 1: Feature Information for Service Distribution Group*

Feature Name	Releases	Feature Information
Service Distribution Group	Cisco IOS XE Everest 16.6.1	This feature was integrated on the Cisco cBR Series Converged Broadband Routers.
SDT	Cisco IOS XE Gibraltar 16.10.1c	This feature was introduced on the Cisco cBR Series Converged Broadband Routers.