



# Configuring the Cisco StadiumVision Mobile Streamer

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This module contains information on configuring video and data sessions on the Cisco StadiumVision Mobile Streamer, and contains the following sections:

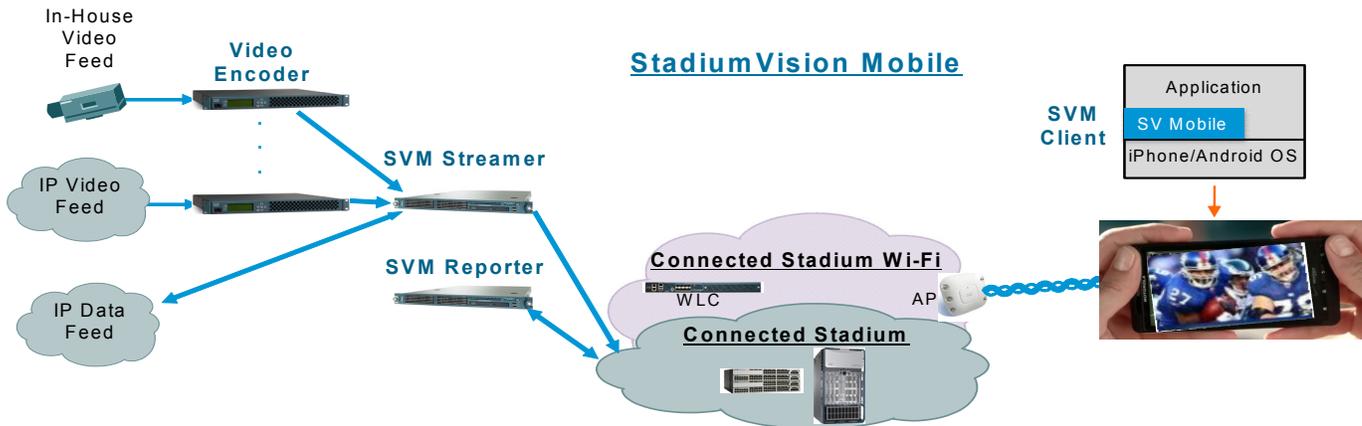
- [Cisco StadiumVision Mobile Overview, page 1](#)
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## Cisco StadiumVision Mobile Overview

The Cisco StadiumVision Mobile (SVM) solution enables the reliable delivery of low-delay video and data streams to fans' Wi-Fi devices at venues. [Figure 2-1](#) illustrates a high-level view of the Cisco StadiumVision Mobile solution, which has the following attributes:

- Consists of Video Encoder, Streamer and Reporter products
- Requires integration of Cisco Client SDK in the mobile application
- Built upon Cisco Connected Stadium and Cisco Connected Stadium Wi-Fi solutions

Figure 2-1 Cisco StadiumVision Mobile Architecture



## Mobile Streamer Overview

The Cisco StadiumVision Mobile Streamer is a critical component in the Cisco StadiumVision Mobile solution that provides the following benefits:

- Aggregates video streams and data session objects
- Associates sessions with a specific Content Owner/App Developer to limit video and data content consumption to authorized mobile apps
- Enhances stream transport robustness by adding repair packets
- Sends the enhanced streams to the Connected Stadium network for delivery to mobile devices
- A single Streamer can handle all Cisco StadiumVision Mobile video and data content for a venue

## Mobile Streamer Functionality Highlights

### Functionality:

- Receives, prepares and sends up to 4 video streams for consumption by Cisco StadiumVision Mobile clients
- Handles video streams that may be at similar or different video encoding rates
- Handles video streams that may optionally include embedded audio streams
- Fetches, prepares and sends up to four data streams for consumption by Cisco StadiumVision Mobile clients
- Configurable bandwidth per data stream
- Allows for a configurable link robustness per stream
- Allows for a configurable delay at the client in presenting recovered streams (e.g., lower delay for live video streams, higher delay for IP video streams and automatic session announcement and transmission of all necessary session metadata)
- Limits session discovery and consumption to authorized mobile applications
- Allows for real-time generation of session statistics, including warning and error indicators

**Management:**

- Authenticated interface to control access to Cisco StadiumVision Mobile Streamer
- Intuitive UI for easy session creation, activation and monitoring
- Extensive use of session defaults, without limiting operator fine-tuning

## Key Terms and Concepts

**Cisco Sample App:** A standalone mobile application available to a Stadium Operator for testing and evaluating the Cisco StadiumVision Mobile solution.

**Repair:** In the context of Cisco StadiumVision Mobile, an application-layer mechanism that allows Cisco StadiumVision Mobile Clients to recover lost packets

**Stadium Operator:** The entity hosting and configuring the Cisco StadiumVision Mobile solution

**SVM:** Cisco StadiumVision Mobile

**SVM Reporter:** A standalone appliance used to collect of Cisco StadiumVision Mobile Client statistics

**SVM Session:** The protocol and associated parameters which define the sender and receiver configuration for the streaming of content

**SVM Session Announcement/Discovery:** Methods used by the Cisco StadiumVision Mobile Streamer and SVM Client to allow a mobile device to obtain the list of available sessions and associated session metadata

**SVM Session Triplet key:** A specific combination of “Venue”, “Content Owner”, and “App Developer” used by the SVM Streamer and SVM Client to limit session discovery and content consumption to authorized applications. The triplet key components are defined as follows:

- **App Developer:** The text string associated with the Application Developer authorized by a Content Owner to consume the Content Owner’s content over the SVM solution
- **Content Owner:** A text string associated with an entity that wishes to distribute content over the SVM solution
- **Venue:** A text string associated with the venue where an Cisco StadiumVision Mobile Streamer is hosted.

**SVM Streamer:** A standalone appliance used to aggregate and send content to mobile applications with an embedded Cisco StadiumVision Mobile Client.

**SVM System:** An end-to-end solution for the delivery of video and data streams, consisting of specific products (Video Encoder, Cisco StadiumVision Mobile Streamer, Cisco StadiumVision Mobile Reporter), wireline and wireless infrastructure (Connected Stadium, Connected Stadium Wifi) and mobile apps with an embedded Cisco StadiumVision Mobile Client.

## Content Access Control

An important feature of the Cisco StadiumVision Mobile solution is to limit the consumption of Cisco StadiumVision Mobile encoded video and data content to authorized mobile applications. Consider the following situation:

Content Owner A (e.g., sports team) wishes to use the Cisco StadiumVision Mobile solution to deliver live camera feeds to fans throughout a venue during the team’s home games. Content Owner B (e.g., entertainment company) plans to host events at the same venue at a different time and also wishes to

deliver live feeds to their fans. The two Content Owners each want to limit content consumption to their chosen and therefore authorized, Application Developer. The reasons for needing to limit content consumption to authorized mobile apps are many. For example, the app may need to be purchased or it may be sponsored by an advertiser. As a result, Cisco StadiumVision Mobile video and data streams configured for Content Owner A's mobile app must not be consumed by Content Owner B's mobile app and vice-versa.

The Cisco StadiumVision Mobile Streamer includes a (Venue/Content Owner/App Developer) Triplet in each announced video and data session. Only mobile apps with the identical Triplet will be able to discover Cisco StadiumVision Mobile sessions and consume the associated content. The Streamer may be configured to support multiple "Content Owner" and "App Developer" combinations, though only a single Triplet may be active at any one time.

**Note**


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The Stadium Operator is responsible for correctly configuring the Streamer and working with Content Owners / App Developer to enable content consumption.

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The manner in which video and data sessions are associated with a specific Triplet is covered in the ["Session Configuration"](#) section.

## Using the Cisco StadiumVision Mobile Streamer

The following sections provide instructions for using the Cisco StadiumVision Mobile Streamer.

Each of the referenced windows and the associated fields are described in detail in the [Accessing the Cisco StadiumVision Mobile Streamer UI](#) section.

- [Accessing the Cisco StadiumVision Mobile Streamer UI, page 4](#)
- [Performing the Initial Setup, page 6](#)
- [Defaults Screen, page 6](#)
- [Stopping or Deleting a Session, page 15](#)
- [Viewing Session Content Owners, page 15](#)
- [Session Configuration, page 11](#)

## Accessing the Cisco StadiumVision Mobile Streamer UI

To access the Cisco StadiumVision Mobile Streamer, use the following procedure:

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**Step 1** Enter the following URL in a web browser:

`http://[Streamer IP Address]/streamer`

**Step 2** Specify the login ID and password

`admin / cisco!123`

## Cisco StadiumVision Mobile Streamer UI reference

The Cisco StadiumVision Mobile UI includes four screens to view, configure and analyze Cisco StadiumVision Mobile sessions:

- Session Summary: Create, start, stop, delete and view active/inactive sessions
- Session Configuration: Edit individual session parameters for a specific session
- Defaults: Edit global default parameter values inherited when creating new sessions
- Session Statistics: View periodic, real-time updates of essential session statistics

Figure 2-2 shows the Cisco StadiumVision Mobile Streamer window with one active stream.

Figure 2-2 Streaming Sessions Summary Window

Number	Name	Action	Type	Source IP/URL	Destination Multicast IP	Wind
1	<a href="#">IP-850-ESPN</a>	Stop Status	Video	239.194.32.3	239.100.32.1	400
2	<a href="#">IP-500-ESPN</a>	Stop Status	Video	239.194.32.5	239.100.32.2	400
3	<a href="#">IP-500-NBC-Sports</a>	Stop Status	Video	239.194.32.2	239.100.32.3	400
4	<a href="#">d1</a>	Stop Status	Data	http://omo.cloud.opta.net/?game_...	239.100.32.11	1000
5	<a href="#">d2</a>	Stop Status	Data	http://omo.cloud.opta.net/?game_...	239.100.32.12	1000

## Performing the Initial Setup

Use the following steps to set up the initial configuration of the streamer. You can also use these steps to:

- Add a content owner/app developer pairing



**Note** The content owner/app developer pairing must match the values hard coded into the specific SDK for the app developer contracted for a particular venue.

- Modify the default settings for future sessions

Step	Description	Action
1	Define the venue name.	Specify the venue name in the Defaults window.
2	Add a content owner and app developer.	Click <b>Add New</b> in the Defaults window.
3	Review and modify session defaults.	Modify defaults as needed in the defaults window.
4	Save changes.	Click <b>OK</b> .
5	Save the configuration.	Click <b>Save configuration file</b> in the Streaming Sessions window.

## Defaults Screen

The Defaults screen is used to view/modify the **Venue** name and **Content Owner/App Developer** pairs (all three together are called the triplet key). [Figure 2-3](#) shows an example of the Defaults screen.

The Defaults screen is also used to view/ modify the default settings to be applied when creating a session. Changing the default settings applies only to sessions to be created, and does not affect previously created sessions. Note that all sessions must be stopped before default setting changes may be applied.

The Venue, Content Owner, Application Developer (also referred to as a Triplet key) settings are critical to enabling content consumption on mobile devices. The Streamer settings must match those used by the App Developer for content to be discovered and consumed by a mobile app. App Developers must be notified of a change in Venue name so that their app may be updated. Conversely, if the App Developer has already deployed the app, app developers must also be notified if the associated App Developer / Content Owner setting on the Streamer is modified.

Figure 2-3 Defaults Window

StadiumVision Mobile Streamer

Welcome admin

Streaming Sessions Defaults

Stop running sessions first to change default settings.

**!** Venue is required  
Content Owner is required  
App Developer is required

Venue  [Change Venue Name](#)

Content Owner/App Developer  [Add New](#) [Delete](#) [Edit App Developer](#)

### Session Defaults

#### Session Ports

Input Stream Port (video only):

Output Source Stream Port:

Output Repair Stream Port:

#### Protection

Video		Data	
Protection Window (ms):	<input type="text" value="400"/> [50-2000]	Protection Window (ms):	<input type="text" value="1000"/>
Protection Amount (%):	<input type="text" value="67"/> [20-100]	Protection Amount (%):	<input type="text" value="50"/>
Recovery Duration (ms):	<input type="text" value="100"/> [0-1000]	Recovery Duration (ms):	<input type="text" value="250"/>

#### Statistics Upload

Client Stats Sample Interval (s):  [1-1000]

Client Stats Upload Interval (s):  [1-1000]

Client Stats URL:

Streamer Stats Upload Interval (s):  [1-1000]

#### Wifi Config

Multicast Buffers:  [30-50]

Beacon Interval (ms):  [1-250]

Max Available Bandwidth (Mbps):

Max Data Bandwidth (Mbps)  [1.0 Mbps max]

Available Video Bandwidth (Mbps):

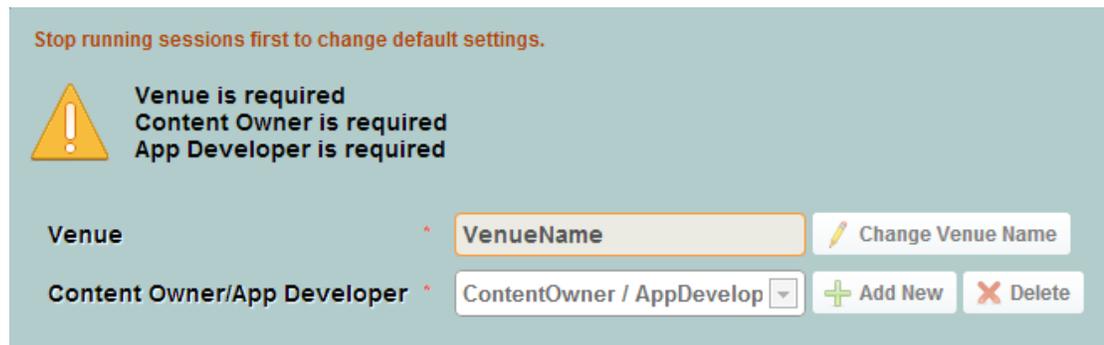
## Venue, Content Owner, and Application Developer Settings

The triplet key (Venue, Content Owner, and Application Developer) are configured in the Defaults screen. [Figure 2-4](#) shows an example of the triplet key settings fields.

**Table 2-1** Triplet Field Descriptions

Field	Description
Venue	The name of the venue. Only one <b>Venue</b> name per Streamer is permitted at any one time.
Content Owner/App Developer	The content owner/application developer pairing. There can be multiple <b>Content Owner/App Developer</b> pairings for a given venue. Only sessions for one Content Owner/App Developer can be active at a time.

**Figure 2-4** Triplet Settings



Modify the Triplet setting using the following procedure:

Task	Instructions
Modify the Venue Name.	Click <b>Change Venue Name</b> and enter the new venue name.
Create a new Content Owner/Application developer pairing.	Click <b>Add New</b> .
Delete the owner/application developer pairing.	Click <b>Delete</b> .
Modify a Content Owner.	First delete the Content Owner/App Developer pair, and then click <b>Add New</b> to create a new pair.

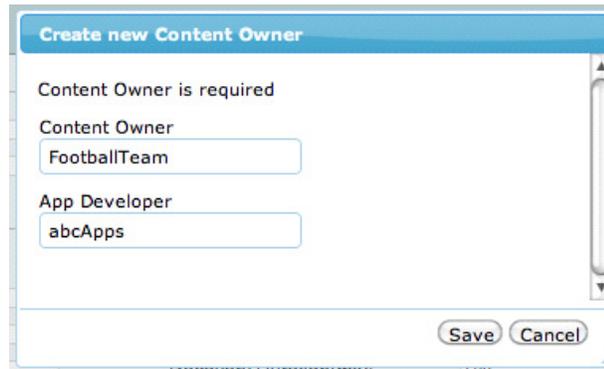
Selecting the **Add New** button displays a dialog box that allows you to enter new Content Owner and App Developer names. [Figure 2-5](#) shows an example of the Creating the New Content Owner dialog box.



**Note**

The Content Owner cannot be edited. The Content Owner / App Developer pair should be deleted if the Content Owner is modified.

**Figure 2-5** Creating the New Content Owner



Content Owner is required

Content Owner  
FootballTeam

App Developer  
abcApps

Save Cancel

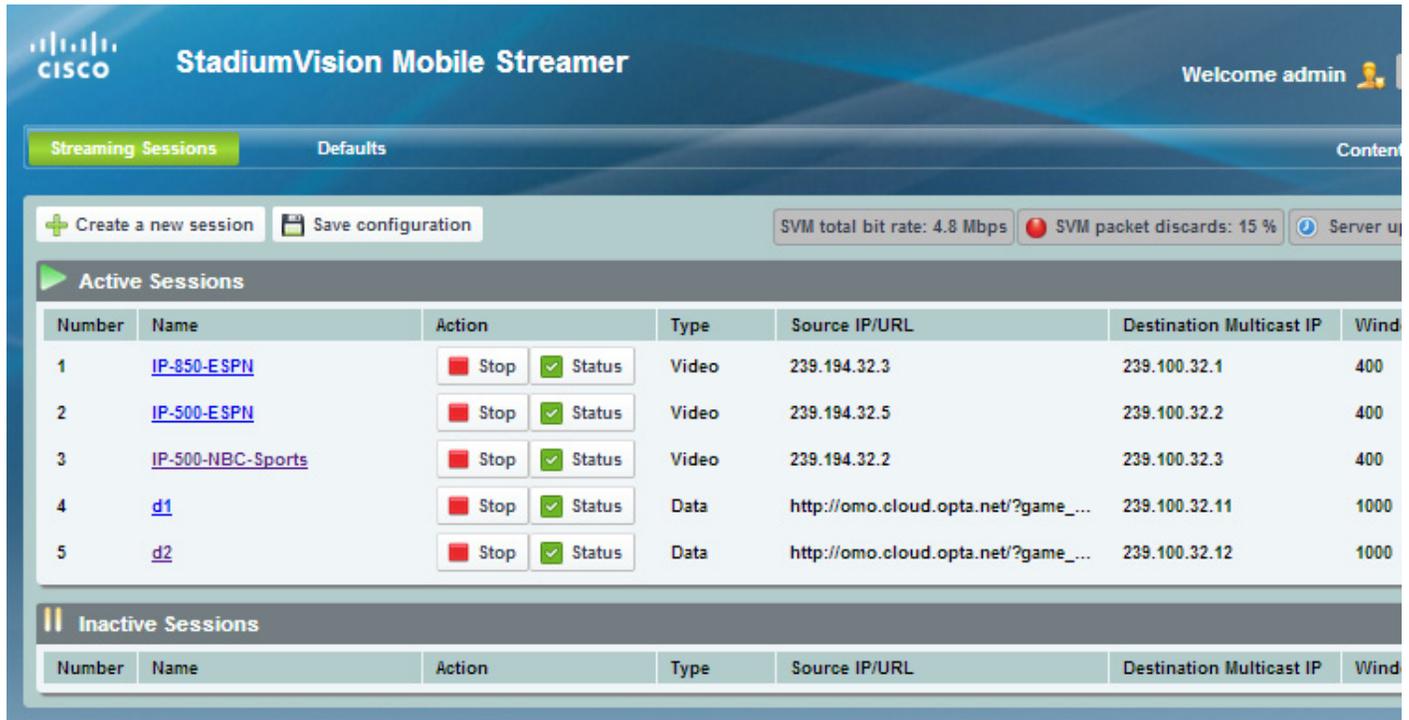
## Working With Streamer Sessions

This section describes how to create, configure, start, and stop streamer sessions.

### Creating a New Session

The **Create a New Session** dialog box is displayed upon selecting the **Create a new session** button. [Figure 2-6](#) shows an example of the Streaming Session screen. The operator must enter all new session parameters to successfully create a new session. All other session attributes are inherited from the Defaults screen.

Figure 2-6 Streamer Session Creation



Follow these steps to create and start a session:

Step	Description	Action
1	Create a video or data session.	Click <b>Create a New Session</b> in the Streaming Sessions window.
2	Configure the session.	Click <b>Create Session</b> and specify the parameters in the Streaming Sessions window.
3	Start the session.	Click <b>Start</b> next to the desired inactive session in the Streaming Sessions window.

Table 2-2 lists the Streaming Session field descriptions.

**Table 2-2 Streaming Session Field Descriptions**

Field	Description
Number	Number associated with this session. Must be unique per Content Owner.
Name	Name associated with this session. Must be unique per Content Owner.
Type	Indicates whether a Video (default) or Data session. Affects defaults to be applied to the created session.

**Table 2-2 Streaming Session Field Descriptions (continued)**

Field	Description
Source	For video sessions, indicates the IP multicast address of the video feed from the encoder. Note that port number is configured on the Defaults screen.  For data sessions, indicates the URL of the data source (e.g., RSS feed)
Destination	The IP multicast address for the session to be transmitted by the Streamer. Must be unique per Content Owner. Note that the port number is configured on the Defaults screen.

## Session Configuration

Clicking on a session name on the Session Summary screen displays the associated Session Configuration screen. Displayed fields are dependent on the session type (video or data). All modifications made on this screen are for the selected session only. [Figure 2-7](#) shows the session configuration window.

Figure 2-7 Session Configuration Screen

The screenshot displays the 'Session Configuration Screen' for the StadiumVision Mobile Streamer. The interface includes a header with the Cisco logo, the product name, and user information (Welcome admin). Navigation tabs for 'Streaming Sessions' and 'Defaults' are visible. A warning message states: 'Venue is required', 'Content Owner is required', and 'App Developer is required'. Below this, the 'Venue' is set to 'Cisco' and the 'Content Owner/App Developer' is 'Cisco / sesg'. The 'Session Defaults' section contains several configuration panels:

- Session Ports:** Input Stream Port (video only): 4000; Output Source Stream Port: 5002; Output Repair Stream Port: 5003.
- Protection:**
  - Video:** Protection Window (ms): 400 [50-2000]; Protection Amount (%): 67 [20-100]; Recovery Duration (ms): 100 [0-1000].
  - Data:** Protection Window (ms): 1000 [50-2000]; Protection Amount (%): 50 [20-100]; Recovery Duration (ms): 250 [0-1000].
- Statistics Upload:** Client Stats Sample Interval (s): 3 [1-1000]; Client Stats Upload Interval (s): 30 [1-1000]; Client Stats URL: http://10.194.168.131:8080/reporter/upload; Streamer Stats Upload Interval (s): 60 [1-1000].
- Wifi Config:** Multicast Buffers: 50 [30-50]; Beacon Interval (ms): 100 [1-250]; Max Available Bandwidth (Mbps): \* 5.0; Max Data Bandwidth (Mbps): 0.0 [1.0 Mbps max]; Available Video Bandwidth (Mbps): \* 5.0.

\* Read only parameters

## Video Session Configuration

Table 2-3 lists the video session configuration field descriptions for both input and output sources.

**Table 2-3 Video Session Field Descriptions**

Field	Description
<b>Input</b>	
Input Name	Name of input data source. It may reflect the encoder name or the actual video source (e.g., EndZone, ESPN).
Input Group	The IP multicast address on which the input video stream is received.
Input Port	The UDP port on which the input video stream is received.
<b>Output</b>	
Announcement Title	The name of the session. Must be unique per Content Owner. Choose a descriptive name as this is the name that will be shown on the client.
Destination Group	The IP Multicast address of the session to be transmitted by the streamer.
Session Number	The number associated with this session. Must be unique per Content Owner.

## Advanced Session Configuration

Refer to the “[Streamer Session Default Field Descriptions](#)” section on page 16, as the Advanced Session fields are identical to those listed in this section.

## Data Session Configuration

Data sessions are generally assumed to complement the video streaming experience. The transmission of data session packets is consequently controlled to minimize Wi-Fi multicast congestion and ease client reception/recovery of data objects.

Two parameters play a critical role in controlling the data session transmission:

The **Session Bandwidth** for each data session determines the rate at which source and repair stream packets are sent for the data session. A Session Bandwidth value of 100 kbps is typical and helps to minimize burst transmissions which could otherwise impact video sessions.

The **Protection Window** for each data session is important in signaling to a Cisco StadiumVision Mobile Client the duration to wait before recovering a data session object. If the Protection Period is too small the Cisco StadiumVision Mobile Client may not receive enough packets before attempting to recover the object. Too large a value and the mobile can unnecessarily delay when an object is recovered and presented to the application. A value of 1-2 seconds is reasonable, but as shown on the next page, the Stats Summary must be checked to confirm correct operation.

The product of the Session Bandwidth and Protection Window effectively specifies the maximum amount of source and repair data that may be sent for each object within a data session. It is therefore important to know the approximate size of objects to be sent over the network. The Stats Summary provides a quick view on the data session packet statistics.

Objects fetched for data sessions (e.g., out of town scores) are generally expected to be small, e.g., 20-200 KB, and are further reduced when compressed by the Streamer for a typical delivered size of 2-50 KB.

Configuring the Session Bandwidth and Protection Window requires some trial and error since data objects typically vary in size and the compression achieved for each object can also vary. As noted on the previous page, the Stats Summary provides guidance on the size of the delivered object and appropriate configuration settings. Here is an example to illustrate this point:

- Assume a data session packet size of 1,500 bytes = 12,000 bits
- Assume a Session Bandwidth of 120 kbps. Packets would then be sent every 100 ms
- Assume a total of 30 source and repair packets for every data object (from example below)

A three second protection window would be required to extend the StadiumVision Mobile client's reception window to match the Streamer transmission window. [Table 2-5](#) contains the data session configuration field descriptions.

**Table 2-4 Data Session Configuration Fields**

Field	Description
<b>Input</b>	
Input Name	Name of input data source. It may reflect the encoder name or the actual video source (e.g., EndZone, ESPN).
Input URL	Input data source URL. This could be an RSS feed, for example: <code>http://rss.cnn.com/rss/cnn_topstories.rss</code>
Polling Interval (s)	The interval, in seconds, at which the Streamer polls the input URL.
<b>Output</b>	
Announcement Title	The name of the session. Must be unique per Content Owner.
Destination Group	The IP Multicast address of the session to be transmitted by the streamer.
Session Number	The number associated with this session. Must be unique per Content Owner.
Session Bandwidth (kbps)	The maximum data rate per second to be allocated for sending the session.

**Advanced**

Refer to the [“Streamer Session Default Field Descriptions”](#) section on page 16, as the Advanced Session fields are identical to those listed in this section.

## Viewing Session Statistics

To view the statistics gathered for each session, click **Statistics** beside the desired button in the streaming session window under **Active sessions**. Statistics can be viewed only for active sessions. [Figure 2-9](#) shows an example of a Session Statistics screen.

## Stopping or Deleting a Session

Before you delete a session, you must stop the session. Use the following procedure to stop or delete a session:

Step	Description	Action
1	Stop a session.	Click <b>Stop</b> next to the desired Active session in the Streaming Sessions window.
2	Delete a session.	Click <b>Delete</b> next to the desired inactive session in the Streaming Sessions window.

## Viewing Session Content Owners

To view the session content owners, use the following procedure:

Step	Description	Action
1	View the sessions for a content owner.	Go to the Steaming Sessions window
2	View the sessions for a different content owner.	Select the desired content owner in the content owner drop-down menu in the Streaming Sessions window.

## Viewing and Modifying Session Configuration Information

To view or modify the session configuration, use the following procedure. [Figure 2-8](#) shows an example of the session configuration window.

Step	Description	Action
1	View the configuration of any session.	Click on the session name in the Streaming Sessions window.
2	Modify the configuration of an inactive session.	Select the desired content owner in the content owner drop-down menu in the Streaming Sessions window.

Figure 2-8 Session Configuration Window

Streaming Sessions Defaults

Stop the session first to make changes.

IP-500-ESPN

Session Type Video

**Input**

Input Name: Source input name

Input Group: 208.108.32.9

Input Port: 4000

**Output**

Announcement Title: IP-500-ESPN

Destination Group: 208.108.32.2

Session Number: 2

**Advanced**

Source Stream Port: 5002

Repair Stream Port: 5003

Protection Window (ms): 400 [50-2000]

Recovery Duration (ms): 100 [0-1000]

Protection Amount (%): 67

## Reference

This section contains descriptions of the various fields used to configure the Cisco StadiumVision Mobile Streamer.

### Streamer Session Default Field Descriptions

Table 2-5 lists the streamer session default fields and a description of each field.

**Table 2-5 Streamer Session Defaults Field Descriptions**

Field	Description
<b>Session Ports</b>	
Input stream port (video only)	The UDP port on which the source video stream is received.
Output Source Stream Port	The UDP port on which the source stream is sent.

**Table 2-5 Streamer Session Defaults Field Descriptions (continued)**

Field	Description
Output Repair Stream Port	The UDP port on which the source repair stream is sent.
<b>Protection</b>	
Protection Window	<p>The window of time in milliseconds over which source stream packets and repair packets are associated.</p> <p>For video sessions, a smaller window (e.g., 250 ms) reduces the end-to-end delay at the expense of greater exposure to burst loss. Typical range for video sessions is 250-400 ms.</p> <p>For data sessions, the value must be large enough to allow the transmission of all data object source and repair packets. Typical range for data sessions is 1,000-2,000 ms, depending object size and data rate. The valid range is 50-2000ms.</p>
Protection Amount	The amount of repair data in percentage to be sent for each Protection Window. A greater Protection Amount value provides increased robustness to packet loss at the expense of increased Wi-Fi bandwidth. Video and data sessions have their own default values. The valid range is 0-100%.
Recovery Duration	The period of time over which lost packets in a Protection Window are recovered. A greater Recovery Duration reduces the mobile's peak CPU load in recovery dropped packets at the expense of increased delay before the object is recovered and eventually displayed. Video and data sessions have their own default values.
<b>Statistics Upload</b>	
Client Stats Sample Interval(s)	The time interval, in seconds, at which the client SDK samples it's internal counters.
Client Stats Upload Interval(s)	The interval, in seconds, at which the client SDK uploads statistics to the Reporter.
Client Stats URL	The StadiumVision Mobile Reporter URL to which clients will periodically upload their statistics.
Streamer Stats Upload Interval (s)	The time interval, in seconds, at which the Streamer uploads statistics to the Reporter.
<b>Wifi Config</b>	
 <b>Note</b>	The settings in the Wifi Config should be set to reflect the actual configuration in the wifi network. The Streamer uses these values to shape traffic so bursts that could cause AP buffer overruns are eliminated.

**Table 2-5 Streamer Session Defaults Field Descriptions (continued)**

Field	Description
Multicast Buffers	Set this to match the multicast buffer setting on the wifi access points (AP).
Beacon Interval (ms)	Set this to match the beacon interval configured in the wifi network. This value is also known as the Delivery Traffic Indication Message (DTIM).
Max Available Bandwidth (Mbps)	This value is calculated by the Streamer based on the configured values for Multicast Buffers and Beacon Interval. It indicates to total Wifi bandwidth available for Streamer sessions.
Max Data Bandwidth (Mbps)	Use this field to reserve a set amount of bandwidth for data sessions.
Available Video Bandwidth (Mbps)	This value is calculated by the Streamer by subtracting the Max Data BW from Max Available BW, and indicates the amount of bandwidth available for video sessions.

## Configuring Failover Between Cisco StadiumVision Mobile Streamers

To configure the initial failover setup for between two Cisco StadiumVision Mobile Streamers, use the following procedures.

Initial setup:

- 
- Step 1** Install two Cisco StadiumVision Mobile Streamers, referred to here as primary and secondary. Assign each Cisco StadiumVision Mobile Streamer its own unique IP address.
  - Step 2** Configure all streams, triplets, etc on the primary Cisco StadiumVision Mobile Streamer only.
- 

## Performing a Manual failover

To perform a manual failover from one Cisco StadiumVision Mobile Streamer to another, use the following procedure:

- 
- Step 1** Copy the primary Cisco StadiumVision Mobile Streamer configuration file to your laptop using the documented backup procedure (see the [“Performing a Manual Backup or Restore”](#) section).



**Note**

If the reason for initiating a failover is that the primary server has failed, then you may not be able to retrieve the config file. Hence it is recommended to perform a backup everytime a config change is made to the primary.

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- Step 2** Copy the primary config file from your laptop to secondary Streamer, using the documented restore procedure (see the [“Performing a Manual Backup or Restore”](#) section).
- Step 3** To failover simply stop the SVM streaming service from the TUI (see the [“Services Control”](#) section on page 35), and start the same service on the secondary.



**Note** Never have the SVM streaming service running simultaneously on both the primary and secondary Cisco StadiumVision Mobile Streamers.

- Step 4** Start the relevant streaming sessions from the web UI on the secondary streamer(see the [“Working With Streamer Sessions”](#) section).

## Troubleshooting

### Warning and Error Stats

- Session statistics should be periodically monitored to confirm general health of an active session. [Figure 2-9](#) shows an example of a session statistics window.
- The orange warning and red error icons identify counters that should be zero under normal circumstances. If they are not then action should be taken.
- Confirm that the input and output packet rate is consistent with the Video Encoder and Streamer configurations. For example, an increase in the number of received packets should be consistent with the Video Encoder setting, e.g., 60 packets/second for a 500 kbps video stream.
- Check the 'SVM total bit rate' at the top of the Session screen and make sure it does not exceed the 'Max Available Bandwidth' calculated value on the defaults screen.
- Check the 'SVM packet discards' at the top of the Session screen. Anything other than 0% is a sign of a problem.
- For encoder or client related issues, refer to the *Cisco StadiumVision Design and Implementation Guide*.

**Figure 2-9** Session Statistics Window

d1 - Stats

Parameter	Value	Description
Session Uptime (s)	7,086	Time since session started
Protection Windows	7,085	Protection Window count since session started
Video Drops	0	Number of Protection Windows with no source video
Large Blocks	0	Number of blocks with more than 64 packets
Block Overflow	0	Number of blocks with more than 128 packets
Received Packets	0	Number of Received Packets
Malformed Video Packets	0	Number of non transport stream packets received
Malformed Packets Received	0	Number of received packets with unexpected length
Transport Stream Discontinuities Detected	0	Number of transport stream discontinuities detected
Source Packets Sent	2,127	Source Packets Sent
Repair Packets Sent	0	Number of Repair Packets sent
Data Objects Received	709	Number of received data objects
Data Objects Sent	709	Number of transmitted data objects
Data Objects Discarded	0	Number of discarded data objects

 Error indicator. The operator is advised to take action to minimize or eliminate conditions which can cause non-zero values.

 Warning indicator. The operator is advised to take action to minimize or eliminate conditions which can lead to a non-zero value.