



StadiumVision



Cisco StadiumVision Mobile Streamer Administration Guide

March 28, 2013

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The following information is for FCC compliance of Class A devices: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

The following information is for FCC compliance of Class B devices: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by using one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications to this product not authorized by Cisco could void the FCC approval and negate your authority to operate the product.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

CCDE, CCENT, Cisco Eos, Cisco HealthPresence, the Cisco logo, Cisco Lumin, Cisco Nexus, Cisco StadiumVision, Cisco TelePresence, Cisco WebEx, DCE, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn and Cisco Store are service marks; and Access Registrar, Aironet, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, EtherFast, EtherSwitch, Event Center, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, iQuick Study, IronPort, the IronPort logo, LightStream, Linksys, MediaTone, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, Network Registrar, PCNow, PIX, PowerPanels, ProConnect, ScriptShare, SenderBase, SMARTnet, Spectrum Expert, StackWise, The Fastest Way to Increase Your Internet Quotient, TransPath, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0812R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

Cisco StadiumVision Mobile Streamer Administration Guide
© 2013 Cisco Systems, Inc. All rights reserved.



Preface

Revised: March 28, 2013,
Cisco StadiumVision Mobile Release 1.2.0

Table 1 *Document Revision History*

| Date | Description |
|----------------|---|
| March 28, 2013 | Initial release of Cisco StadiumVision Mobile Streamer. |

Document Purpose

This document describes how to administer the Cisco StadiumVision Mobile Streamer on a Cisco UCS C220 server.

Document Audience

The intended audience is StadiumVision Mobile (also referred to as SVM) Reporter system administrators, Cisco Technical Field Engineers who are responsible for designing and deploying StadiumVision Mobile, and Cisco Partners. It is expected that readers of this document are familiar with basic IP networking and video technology, have a general understanding of the sports and entertainment business, and understand the objectives and operations of live events.

Related Documentation

See the *Cisco StadiumVision Mobile Reporter and Cisco StadiumVision Mobile Streamer Installation and Upgrade Guide* for information about installing the StadiumVision Mobile Streamer software.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as an RSS feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS Version 2.0.



CONTENTS

| | |
|-----------------------|-------|
| Document Purpose | i-iii |
| Document Audience | i-iii |
| Related Documentation | i-iii |

CHAPTER 1

Cisco StadiumVision Mobile Streamer Administration Guide 1-1

| | |
|--|------|
| Contents | 1-1 |
| About This Guide | 1-1 |
| Intended Audience | 1-1 |
| Related Documentation | 1-2 |
| Cisco StadiumVision Mobile Overview | 1-2 |
| Mobile Streamer Overview | 1-2 |
| Mobile Streamer Functionality Highlights | 1-3 |
| Key Terms and Concepts | 1-3 |
| Content Access Control | 1-4 |
| Using the Cisco StadiumVision Mobile Streamer | 1-5 |
| Accessing the Cisco StadiumVision Mobile Streamer UI | 1-5 |
| Cisco StadiumVision Mobile Streamer UI reference | 1-5 |
| Performing the Initial Setup | 1-7 |
| Defaults Screen | 1-7 |
| Venue, Content Owner, and Application Developer Settings | 1-9 |
| Mobile Streamer Session Default Field Descriptions | 1-10 |
| Viewing Session Statistics | 1-12 |
| Creating New Sessions | 1-12 |
| Stopping or Deleting a Session | 1-12 |
| Viewing Session Content Owners | 1-13 |
| Viewing and Modifying Session Configuration Information | 1-13 |
| Switching Between Screens | 1-15 |
| Creating a New Session | 1-15 |
| Session Configuration | 1-17 |
| Video Session Configuration | 1-19 |
| Advanced Session Configuration | 1-19 |
| Data Session Configuration | 1-19 |
| Troubleshooting | 1-21 |



CHAPTER 1

Cisco StadiumVision Mobile Streamer Administration Guide

march 28, 2013
Last Updated: March 28, 2013
Release: 1.2.0

Contents

- [About This Guide, page 1-1](#)
- [Cisco StadiumVision Mobile Overview, page 1-2](#)
- [Key Terms and Concepts, page 1-3](#)
- [Content Access Control, page 1-4](#)
- [Using the Cisco StadiumVision Mobile Streamer, page 1-5](#)
- [Performing the Initial Setup, page 1-7](#)
- [Mobile Streamer Session Default Field Descriptions, page 1-10](#)
- [Troubleshooting, page 1-20](#)

About This Guide

This document describes how to configure, operate and monitor the Cisco StadiumVision Mobile Streamer 1.2 appliance.

Intended Audience

The document is intended for venue operators who are responsible for administering and operating the StadiumVision Mobile Streamer.

Related Documentation

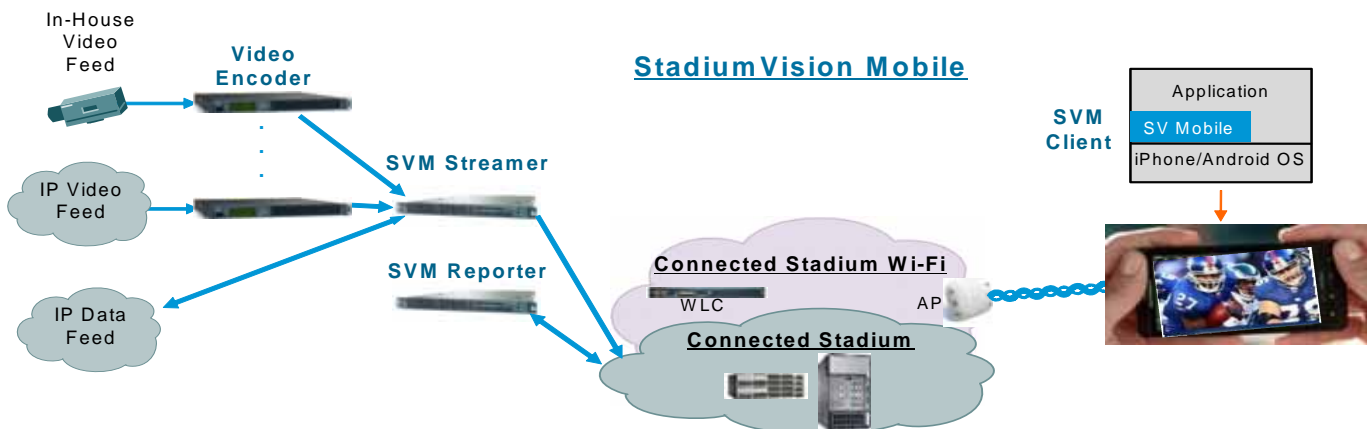
- *Cisco StadiumVision Mobile Streamer Software Installation and Upgrade Guide* - This guide contains instructions on how to install the StadiumVision Mobile Streamer software.
- *Cisco UCS C200 Installation and Service Guide* - This hardware guide contains information and instructions for installing and servicing the Cisco UCS C200 server. The UCS C200 is the server on which the StadiumVision Mobile Streamer and Reporter each run.
- *Cisco StadiumVision Mobile Design and Implementation Guide* – This guide provides additional information regarding the Streamer parameters described in this document (e.g., video encoding rate).
- *Cisco StadiumVision Mobile Reporter Administration Guide* – This guide describes how to install, configure and operate the StadiumVision Mobile Reporter server.
- *Cisco StadiumVision Mobile iOS and Android SDK Guide* – This guide describes how to use the library elements provided in the SDK (Software Development Kit) to create a venue application for mobile devices that accesses the Cisco StadiumVision Mobile feeds.

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 1-1](#) 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 1-1 Cisco StadiumVision Mobile Architecture



Mobile Streamer Overview

The Cisco StadiumVision Mobile Streamer is a critical component in the Cisco StadiumVision Mobile solution:

- 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 SVM 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
- Video streams may be at similar or different video encoding rates
- Video streams may optionally include embedded audio streams
- Fetches, prepares and sends up to 4 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
- 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: StadiumVision Mobile

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

SVM Session: 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

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

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 1-5](#)
- [Performing the Initial Setup, page 1-7](#)
- [Defaults Screen, page 1-7](#)
- [Stopping or Deleting a Session, page 1-12](#)
- [Viewing Session Content Owners, page 1-13](#)
- [Session Configuration, page 1-17](#)

Accessing the Cisco StadiumVision Mobile Streamer UI

To access the Cisco StadiumVision Mobile Streamer, enter the following URL in a web browser:

- `http://[StreamerAddress]/server`
- 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 1-2](#) shows the Cisco StadiumVision Mobile Streamer window with one active stream.

Figure 1-2 Streaming Sessions Summary Window

The screenshot displays the Cisco StadiumVision Mobile Streamer interface. At the top, the Cisco logo and 'StadiumVision Mobile Streamer' are visible. The 'Streaming Sessions' tab is selected. The interface includes a 'Content Owner' dropdown set to 'Cisco' and a status bar showing system metrics. The main area is divided into 'Active Sessions' and 'Inactive Sessions' sections. The 'Inactive Sessions' table lists 16 sessions with columns for Number, Name, Action, Type, Source IP/URL, Destination Multicast IP, Window (ms), and Protection Amount (%). Callout boxes 1, 2, and 3 highlight the 'Streaming Sessions' button, the 'Inactive Sessions' table, and the 'Start' and 'Delete' buttons in the 'Action' column, respectively.

| Number | Name | Action | Type | Source IP/URL | Destination Multicast IP | Window (ms) | Protection Amount (%) |
|--------|---------|--------------|-------|------------------------------------|--------------------------|-------------|-----------------------|
| 1 | v1-1.2 | Start Delete | Video | 239.194.32.5 | 239.100.32.1 | 400 | 67 |
| 2 | v2-1.2 | Start Delete | Video | 239.194.32.5 | 239.100.32.2 | 400 | 67 |
| 3 | v3-1.2 | Start Delete | Video | 239.194.32.5 | 239.100.32.3 | 400 | 67 |
| 4 | v4-1.2 | Start Delete | Video | 239.194.32.5 | 239.100.32.4 | 400 | 67 |
| 5 | v5-1.2 | Start Delete | Video | 239.194.32.5 | 239.100.32.5 | 400 | 67 |
| 6 | v6 | Start Delete | Video | 239.194.32.5 | 239.100.32.6 | 400 | 67 |
| 12 | d12-1.2 | Start Delete | Data | http://omo.cloud.opta.net/?game_id | 239.100.32.12 | 1000 | 50 |
| 13 | d13-1.2 | Start Delete | Data | http://omo.cloud.opta.net/?game_id | 239.100.32.13 | 1000 | 50 |
| 14 | d14-1.2 | Start Delete | Data | http://omo.cloud.opta.net/?game_id | 239.100.32.14 | 1000 | 50 |
| 15 | d15-1.2 | Start Delete | Data | http://omo.cloud.opta.net/?game_id | 239.100.32.15 | 1000 | 50 |
| 16 | d16 | Start Delete | Data | http://omo.cloud.opta.net/?game_id | 239.100.32.16 | 1000 | 50 |

| | | | |
|---|--------------------------------|---|----------------------|
| 1 | Streaming Sessions button | 2 | Stream configuration |
| 3 | Start and Stop session buttons | | |

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 or modify 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 Add New in the Defaults window |
| 3 | Review and modify session defaults | Modify defaults as needed in the defaults window |
| 4 | Save changes | Click the OK button |
| 5 | Save the configuration | Click the Save configuration file button 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 1-3](#) shows a screenshot 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 1-3 Defaults Window

StadiumVision Mobile Streamer Welcome admin [Change Password](#)

Streaming Sessions **Defaults**

Venue is required
Content Owner is required
App Developer is required

Venue: Cisco [Change Venue Name](#)

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

Session Default

Session Ports [Save](#) [Cancel](#)

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

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):

** Read only parameters*

| | | | |
|---|--|---|---|
| 1 | Venue Name | 2 | Change Venue Name button |
| 3 | Content Owner/App Developer drop-down menu | 4 | Add New/Delete/Edit App Developer buttons |
| 5 | Session Port configuration fields | 6 | Protection configuration fields |
| 7 | Statistics Upload configuration fields | 8 | Wifi configuration fields |

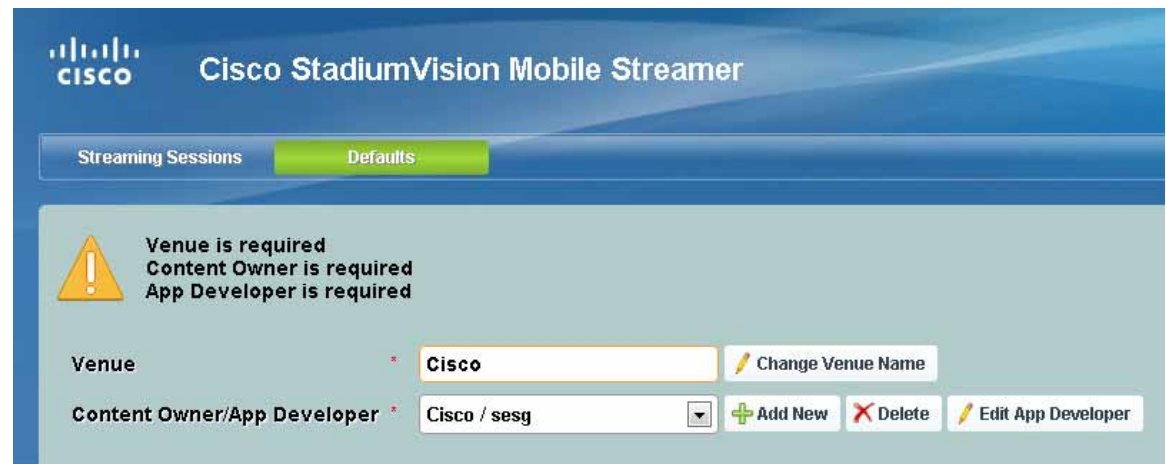
Venue, Content Owner, and Application Developer Settings

The triplet key (Venue, Content Owner, and Application Developer) are configured in the Defaults screen. [Figure 1-4](#) shows a screenshot of the triplet key settings fields.

Table 1-1 triplet Field Descriptions

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

Figure 1-4 triplet Settings



| Task | Instructions |
|--|---|
| Modify the Venue Name | Click the Change Venue Name button and enter the new venue name |
| Create a new Content Owner/Application developer pairing | Click the Add New button |
| Delete the owner/application developer pairing | Click the Delete button |
| Change the Application Developer associated with a content owner | Click the Edit App Developer button |
| Modify a Content Owner | First delete the Content Owner/App Developer pair, and then click Add New 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 1-5](#) shows a screenshot of the Creating the New Content Owner dialog box.

Selecting the Edit App Developer button displays a dialog box that allows you to modify the App Developer name. [Figure 1-6](#) shows a screenshot of the Edit App Developer 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 1-5 *Creating the New Content Owner*

Figure 1-6 *Editing the App Developer*

Mobile Streamer Session Default Field Descriptions

[Table 1-2](#) lists the streamer session default fields and a description of each field.

Table 1-2 *Streamer Session Defaults Field Descriptions*

| Field | Description |
|--------------------------------|--|
| Session Ports | |
| 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. |
| Output Repair Stream Port | The UDP port on which the source repair stream is sent. |

Table 1-2 Streamer Session Defaults Field Descriptions (continued)


| Field | Description |
|---|--|
| Protection | |
| 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. |
| Statistics Upload | |
| 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. |
| Wifi Config | |
|  Note | 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. |
| Multicast Buffers | Set this to match the multicast buffer setting on the wifi access points (AP). |

Table 1-2 Streamer Session Defaults Field Descriptions (continued)

| Field | Description |
|----------------------------------|--|
| 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. |

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 1-10](#) shows an example of a Session Statistics screen.

Creating New Sessions

Follow these steps to view all currently configured sessions – both active and inactive.

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

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 Stop next to the desired Active session in the Streaming Sessions window |
| 2 | Delete a session | Click Delete 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 1-7](#) 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 1-7 Session Configuration Window

The screenshot displays the 'Session Configuration Window' for a content owner named 'Cisco'. The window is divided into several sections:

- Session Type:** A drop-down menu set to 'Data' (callout 1).
- Input Section:** Contains 'Input Name' (Source input name), 'Input URL' (http://omo.cloud.opta.net/?game_id=429979&feed_type), and 'Polling Interval (s)' (10) (callout 2).
- Output Section:** Contains 'Announcement Title' (d8), 'Destination Group' (239.100.32.16), 'Session Number' (16), and 'Session Bandwidth (kbps)' (100) (callout 3).
- Advanced Section:** Contains 'Source Stream Port' (5002), 'Repair Stream Port' (5003), 'Protection Window (ms)' (1000), 'Recovery Duration (ms)' (250), and 'Protection Amount (%)' (50) (callout 4).

At the bottom of the window, it shows 'Version 1.2.0 Build 19 © 2012-2013 Cisco Systems, Inc. All rights reserved.'

| | | | |
|---|-------------------------------------|---|---------------------------------------|
| 1 | Session type drop-down menu | 2 | Input session configuration fields |
| 3 | Output session configuration fields | 4 | Advanced session configuration fields |

Switching Between Screens

When first accessing the Cisco StadiumVision Mobile Streamer, the Session Summary screen is displayed. Accessing other Streamer screens from the Session Summary screen and returning to this screen is shown below.

Use the following instructions to view sessions, to start, or stop a session.

| Task | Instructions |
|---|---|
| View the sessions for a content owner | Go to the Steaming Sessions window |
| 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 |

| Task | Instructions |
|------------------------|---|
| Save the configuration | Click the Save configuration file button in the Streaming Sessions window |
| Start the session | Click Start next to the desired inactive session in the Streaming Sessions window |
| Stop a session | Click Stop next to the desired Active session in the Streaming Sessions window |

Creating a New Session

The **Create a New Session** dialog box is displayed upon selecting the **Create a new session** button. [Figure 1-8](#) shows a screenshot 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 1-8 Streamer Session Creation

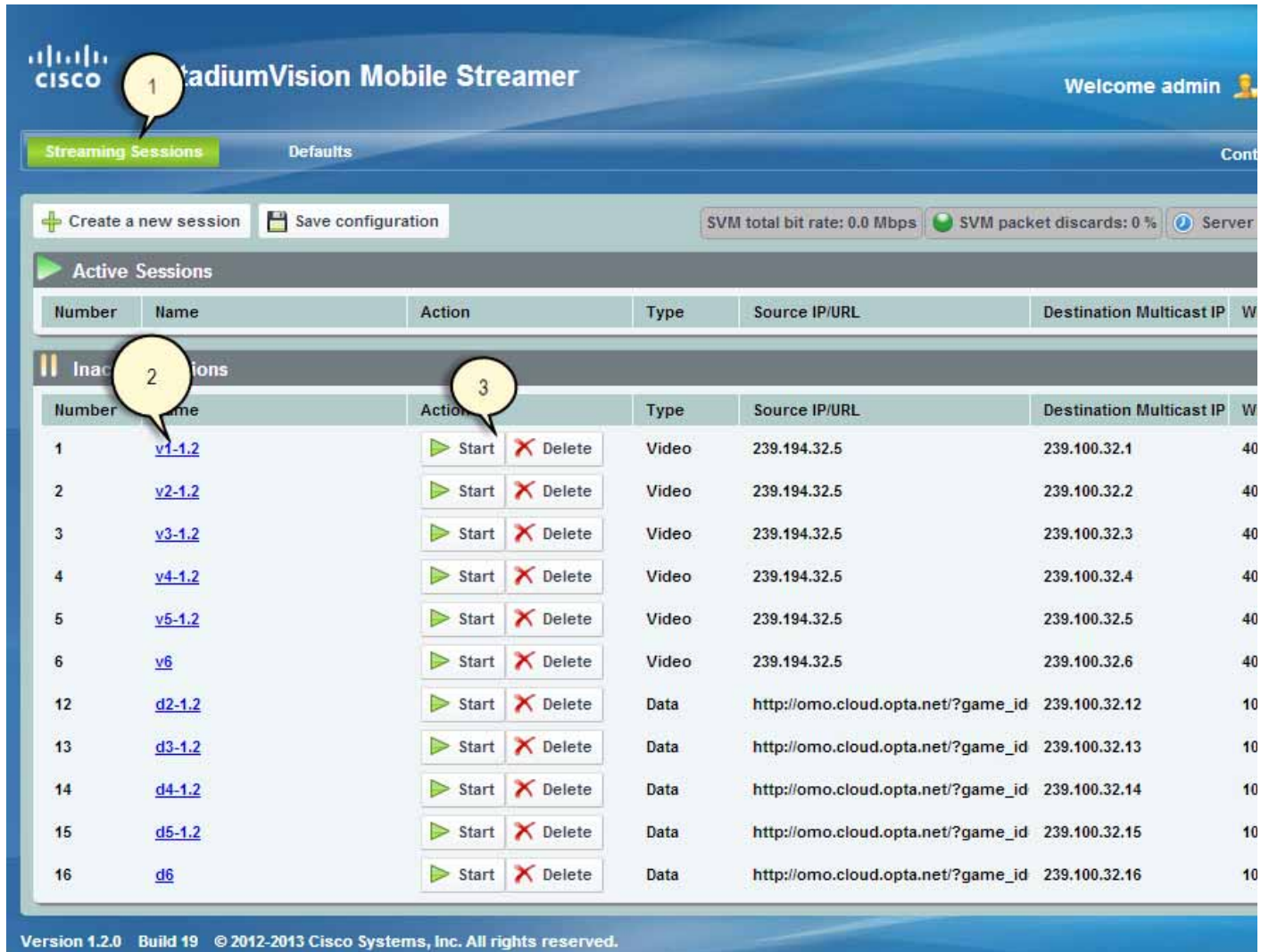


Table 1-3 Streaming Session Field Descriptions

| 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 1-3 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. |

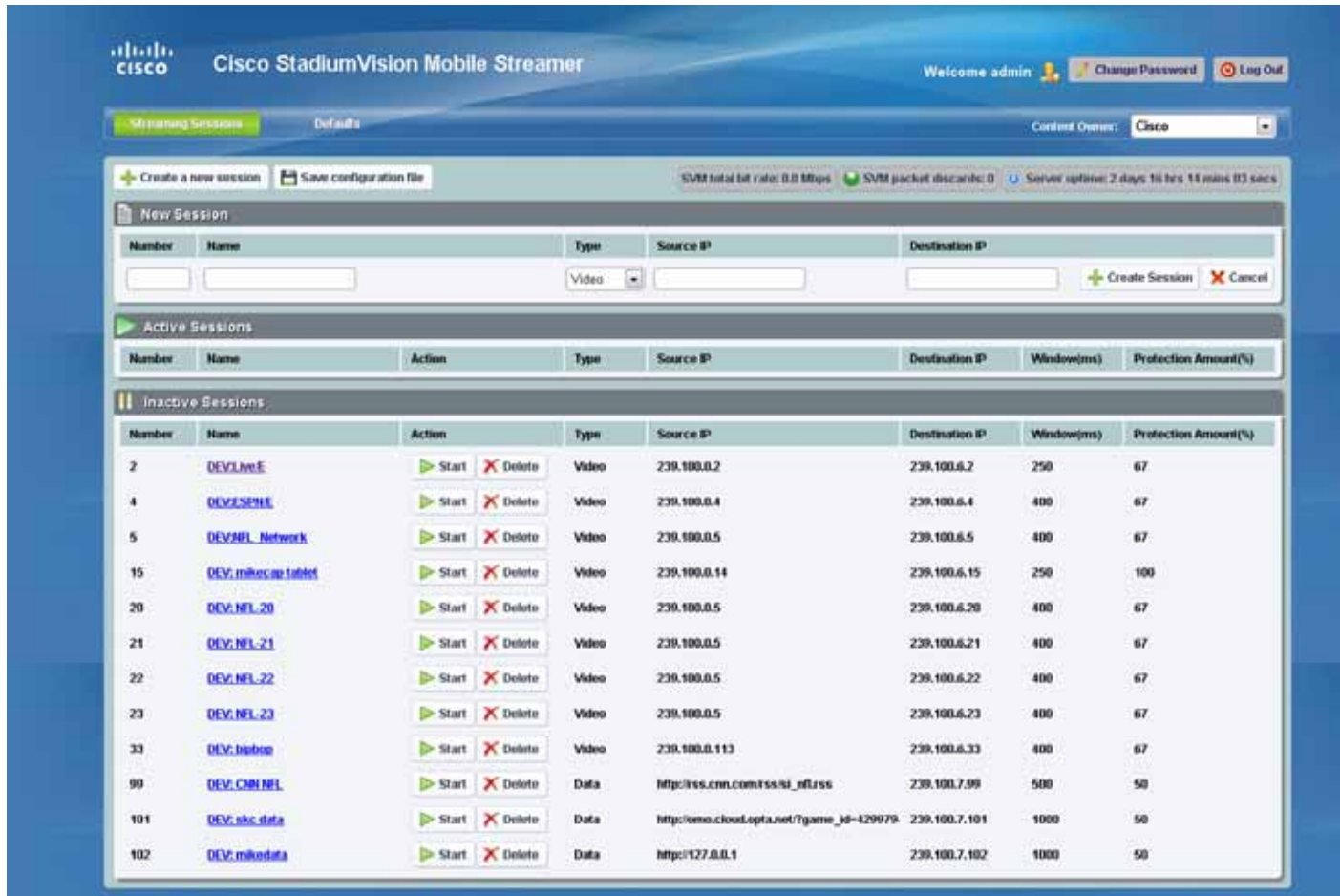
Session Configuration

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 1-9](#) shows the session configuration window.

**Note**

To make any changes to the session configuration, you must first stop the session. Otherwise, this window is view-only.

Figure 1-9 Session Configuration Screen



Video Session Configuration

Table 1-4 Video Session Field Descriptions

| Field | Description |
|--------------------|--|
| Input | |
| 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. |
| Output | |
| 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. |

Table 1-4 Video Session Field Descriptions (continued)

| Field | Description |
|-------------------|--|
| 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 Bandwidth | The maximum data rate per second to be allocated for sending the session. |

Advanced Session Configuration

Refer to the “[Mobile Streamer Session Default Field Descriptions](#)” section on page 1-10, 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 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 1-5 Data Session Configuration Fields

| Field | Description |
|---|--|
| Input | |
| 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. |
| Output | |
| 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 “Mobile Streamer Session Default Field Descriptions” section on page 1-10, as the Advanced Session fields are identical to those listed in this section. | |

Troubleshooting

Warning and Error Stats

- Session statistics should be periodically monitored to confirm general health of an active session. [Figure 1-10](#) 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 1-10 Session Statistics Window

| Parameter | Value | | Description |
|----------------------------|-----------|--|---|
| Session Uptime | 82,586 | | Time since session started |
| Protection Windows | 206,462 | | Protection Window count since session started |
| Video Drops | 1 | | Number of Protection Windows with no source video content |
| Large Blocks | 535 | | Number of blocks with more than 64 packets |
| Block Overflow | 0 | | Number of blocks with more than 128 packets |
| Received Packets | 5,425,858 | | Number of Received Packets |
| Malformed Video Packets | 0 | | Number of video stream packets received without proper TS packet header |
| Malformed Packets Received | 0 | | Number of received packets with unexpected length |
| Source Packets Sent | 5,425,849 | | Source Packets Sent |
| Repair Packets Sent | 3,754,927 | | Number of Repair Packets sent |
| Data Objects Received | 0 | | Number of received data objects |
| Data Objects Sent | 0 | | 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.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as an RSS feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS Version 2.0.

This document is to be used in conjunction with the documents listed in the “[Session Configuration](#)” section.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2012 Cisco Systems, Inc. All rights reserved.

Printed in the USA on recycled paper containing 10% postconsumer waste.

