



StadiumVision



Cisco StadiumVision Mobile Streamer Administration Guide

Release 2.0
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Preface

This document describes how to configure, operate and monitor the Cisco StadiumVision Mobile Streamer in Release 2.0. The document is intended for venue operators who are responsible for administering and operating the Cisco StadiumVision Mobile Streamer.

Document Revision History

Table 1 lists the technical changes made to this document since it was first published.

Table 1 Document Revision History

Date	Change Summary
August 12, 2014	Initial version for Cisco StadiumVision Mobile Streamer Release 2.0.

Document Organization

Chapter	Description
“Configuring the Cisco StadiumVision Mobile Streamer”	Describes how to configure the Cisco StadiumVision Mobile Streamer.
“Cisco StadiumVision Mobile Streamer Text Utility Interface”	Provides an overview of the Text Utility Interface (TUI) for the Cisco StadiumVision Mobile Streamer. The TUI provides a console-based interface for use by system installers, administrators, and troubleshooting personnel to perform routine system tasks such as modifying system configurations, changing passwords, and checking system logs.
“Backing Up and Restoring the Cisco StadiumVision Mobile Streamer”	Describes how to backup and restore the Cisco StadiumVision Mobile Streamer.

Related Documentation

For the listing page of all Cisco StadiumVision documentation, go to:

<http://www.cisco.com/c/en/us/support/video/stadiumvision/tsd-products-support-series-home.html>

- *Cisco StadiumVision Mobile Release Notes*

The following documents are available on Cisco.com at:

<http://www.cisco.com/c/en/us/support/video/stadiumvision/products-maintenance-guides-list.html>

- *Cisco StadiumVision Mobile Reporter and Cisco StadiumVision Mobile Streamer Software Installation and Upgrade Guide*—This guide contains instructions on how to install the StadiumVision Mobile Streamer software.
- *Cisco StadiumVision Mobile Reporter Administration Guide*—This guide describes how to install, configure and operate the StadiumVision Mobile Reporter server.
- *Cisco StadiumVision Mobile Streamer Administration Guide*—This guide describes how to install, configure and operate the StadiumVision Mobile Streamer server.
- *Cisco StadiumVision Mobile SDK Guide for Apple iOS and Google Android*—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 UCS C220 Installation and Service Guide*—This hardware guide contains information and instructions for installing and servicing the Cisco UCS C220 server. The UCS C220 is the server on which the StadiumVision Mobile Streamer and Reporter each run.
- *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.

The following document is available by contacting your Cisco sales representative:

- *Cisco StadiumVision Mobile Design and Implementation Guide*—This guide provides additional information regarding the Streamer parameters described in this document.

Obtaining Documentation and Submitting a Service Request

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StadiumVision



PART 1

Cisco StadiumVision Mobile Streamer Configuration



Configuring the Cisco StadiumVision Mobile Streamer

First Published: August 12, 2014

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

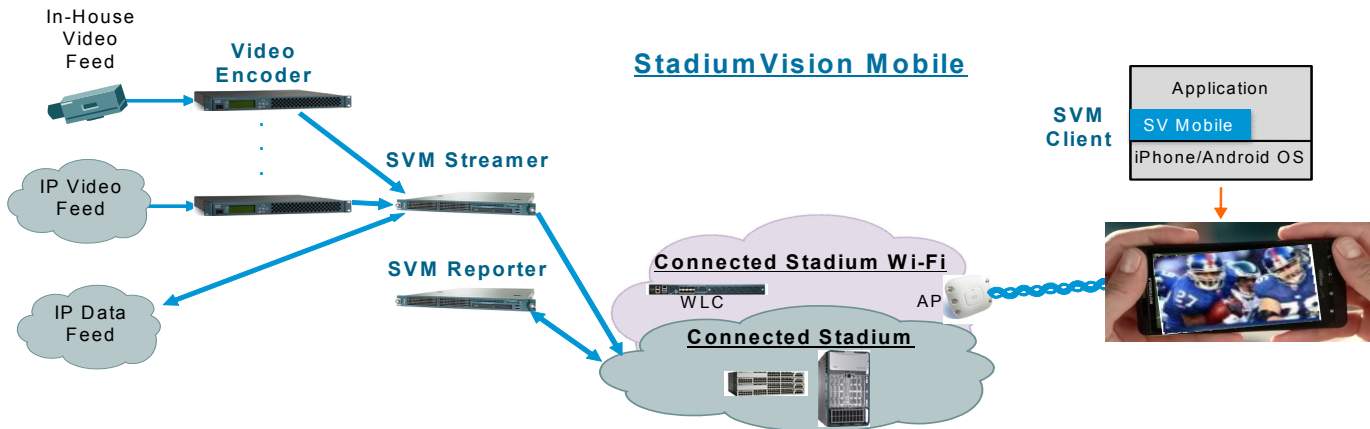
- [Cisco StadiumVision Mobile Overview, page 1](#)
- [Key Terms and Concepts, page 3](#)
- [Content Access Control, page 3](#)
- [Using the Cisco StadiumVision Mobile Streamer, page 4](#)
- [Performing the Initial Setup, page 6](#)
- [Streamer Session Default Field Descriptions, page 16](#)
- [Configuring Failover Between Cisco StadiumVision Mobile Streamers, page 18](#)

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](#) 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 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 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**

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 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, complete the following steps:

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

Figure 2 Streaming Sessions Summary Window



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 Add New in the Defaults window.
3	Review and modify session defaults.	Modify defaults as needed in the defaults window.
4	Save changes.	Click OK .
5	Save the configuration.	Click Save configuration file 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 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 3 Defaults Window

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

Streaming Sessions **Default Configuration** System Tools

Warning: Venue is required
Content Owner is required
App Developer is required

Venue: [Change Venue Name](#)

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

Session Defaults [Apply](#) [Cancel](#)

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"/> [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 Reservation (Mbps) [5.0 Mbps max]

Available Video Bandwidth (Mbps): *

* Read only parameters

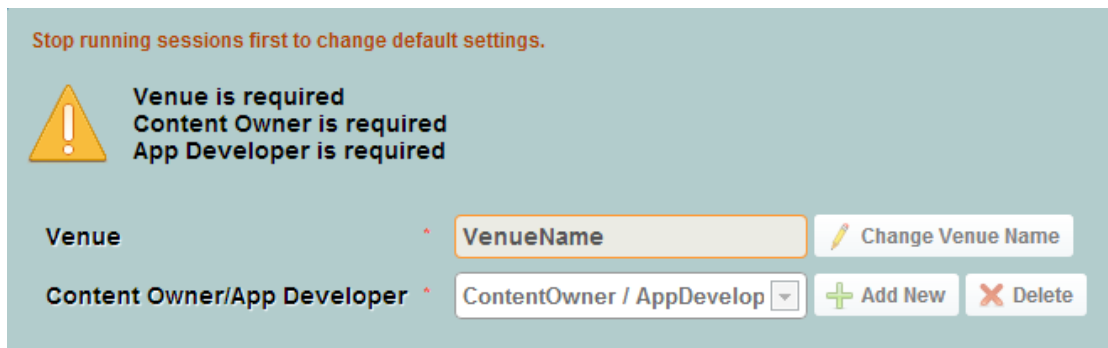
Venue, Content Owner, and Application Developer Settings

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

Table 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 Triplet Settings



Modify the Triplet setting using the following procedure:

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

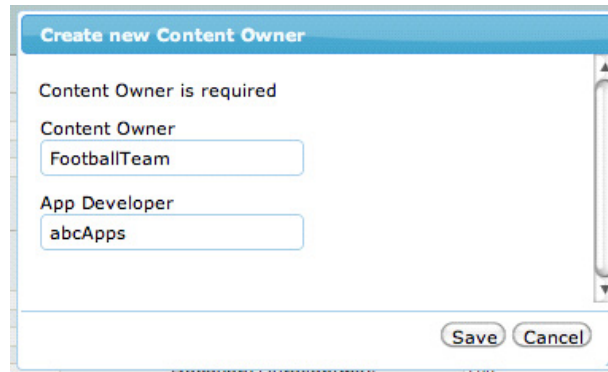
Selecting the **Add New** button displays a dialog box that allows you to enter new Content Owner and App Developer names. [Figure 2](#) shows an example of the Creating the New Content Owner dialog box.



Note

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

Figure 2 **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 3](#) 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 3 Streamer Session Creation

The screenshot displays the Cisco StadiumVision Mobile Streamer administration console. The top navigation bar includes 'Streaming Sessions' (selected), 'Defaults', and 'Content'. Below the navigation, there are buttons for 'Create a new session' and 'Save configuration'. A status bar shows 'SVM total bit rate: 4.8 Mbps', 'SVM packet discards: 15 %', and 'Server up'. The main content area is divided into two sections: 'Active Sessions' and 'Inactive Sessions'. The 'Active Sessions' table lists five sessions with columns for Number, Name, Action, Type, Source IP/URL, Destination Multicast IP, and Wind. The 'Inactive Sessions' table is partially visible below.

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

Follow these steps to create and start a session:

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.

Table 2 lists the Streaming Session field descriptions.

Table 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 **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 4](#) shows the session configuration window.

Figure 4 Session Configuration Screen

StadiumVision Mobile Streamer

Welcome admin [Change Password](#) [Log Out](#)

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 [Save](#) [Cancel](#)

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"/> [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

Video Session Configuration

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

Table 3 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.
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 5](#) contains the data session configuration field descriptions.

Table 4 **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 [“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 6](#) 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 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 5](#) 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 5 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: 208 104 32 9

Input Port: 4000

Output

Announcement Title: IP-500-ESPN

Destination Group: 208 104 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 5 lists the streamer session default fields and a description of each field.

Table 5 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.

Table 5 Streamer Session Defaults Field Descriptions (continued)


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

Table 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.

- 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 6](#) 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 6 **Session Statistics Window**

d1 - Stats

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

 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.



StadiumVision



PART 2

Cisco StadiumVision Mobile Streamer System Management



Backing Up and Restoring the Cisco StadiumVision Mobile Streamer

First Published: August 12, 2014

This module describes how to perform a manual backup and restore, and how to setup automatic data archiving, and contains the following sections:

- [What Cisco StadiumVision Mobile Streamer Data is Backed Up, page 23](#)
- [Performing a Manual Backup or Restore, page 23](#)
- [Setting Up Automatic Data Archiving, page 24](#)
- [Disk Storage and Maintenance, page 25](#)

What Cisco StadiumVision Mobile Streamer Data is Backed Up

The following data is copied during a backup:

- Data and video channel configuration
- Session configuration defaults

It is recommended to perform a backup periodically, and prior to upgrading the Cisco StadiumVision Mobile Streamer software.

Performing a Manual Backup or Restore

The following commands allow a user on a desktop/laptop computer with an ssh/scp client to backup and restore a Cisco StadiumVision Mobile Streamer. This procedure must be performed using an SNE TAC account. The operator must enter the password set by the SNE TAC account.

To backup the Cisco StadiumVision Mobile Streamer, use the following command:

```
scp snetac-user@ip-address:/opt/sv/servers/svm/conf/streamer.cfg mybackup.cfg
```

The file "mybackup.cfg" can be any name. It is recommended to use a descriptive name.

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

```
scp mybackup.cfg snetac-user@ip-address:
ssh snetac-user ip-address
```

```
sudo cp mybackup.cfg /opt/sv/servers/svm/conf/streamer.cfg
sudo /sbin/service svm-stream restart
exit
```

Setting Up Automatic Data Archiving

On a nightly basis, backups are done of the Cisco StadiumVision Mobile Streamer configuration files. The file archives are automatically removed from the StadiumVision Mobile Streamer after 20 days.

- Step 1** To access the TUI, you need either physical console access or an SSH client such as PUTTY. Log in from the console or over SSH with the following credentials, using the IP address of the Cisco StadiumVision Mobile Streamer:

```
username = installer
password = cisco!123
```

- Step 2** From the Main Menu, go to **Server Administration > Setup automatic data archive**.

Figure 1 TUI Setup Automatic Data Archive

```

          .:|:|:| | |:|:|:| | | |:|.
             C i s c o  S y s t e m s
      StadiumVision Mobile Streamer Configuration Menu

Hostname:      streamer
IP address:    10.194.172.14
Software version: 1.3.0 build 19           Time: Thu Sep 19 20:36:22 PDT
013

-----

Main Menu > Server Administration

Please choose one of the following menu options:

a) Display software version
b) Upgrade server
c) Setup automatic data archive
d) Reboot
e) Power off
R or < or ,) Return to prior menu

```

- Step 3** At the prompt, enter the username to be used for the backup.
- Step 4** Enter the IP address of the original Cisco StadiumVision Mobile Streamer server.
- Step 5** Enter the IP address of the destination Cisco StadiumVision Mobile Streamer server.

Disk Storage and Maintenance

The Cisco StadiumVision Mobile Streamer automatically deletes backup files after 20 days. However, you should continue to monitor disk space because this removal is based on a time period and is not run based on any automatic monitoring of disk space.

You can use the Disk Monitoring option from the TUI Troubleshooting menu (shown in [Figure 2](#)) to get file system usage.

Figure 2 TUI File System Disk Usage

```

.:||| | ||:..:| | | |
  C i s c o S y s t e m s
StadiumVision Mobile Reporter Configuration Menu

Hostname:      SVM-05
IP address:    10.194.168.136
Software version: 2.0.0 build 58           Time: Thu Sep 19 13:49:17
013

-----
Filesystem      1K-blocks      Used Available Use% Mounted on
/dev/mapper/vgroup1-root
                279930456    26953868 238527540   11% /
/dev/mapper/vgroup1-temp
                253871       10359    230405     5% /tmp
/dev/mapper/vgroup1-home
                1015704     391320    571956    41% /home
/dev/mapper/vgroup1-varlog
                507748     311417    170117    65% /var/log
/dev/sda1       505604     24813    454687     6% /boot
tmpfs           8178124      0    8178124     0% /dev/shm
Press any key to return to the menu.

```




StadiumVision



PART 2

Cisco StadiumVision Mobile Streamer System Tools



Cisco StadiumVision Mobile Streamer Text Utility Interface

First Published: August 12, 2014

The StadiumVision Mobile Streamer Text Utility Interface (TUI) provides a console-based text interface for use by system installers and on-site troubleshooting personnel. The TUI can be used to perform routine system tasks such as modifying system configurations, changing passwords, and checking system logs. Remote TAC access and troubleshooting can both be facilitated from the TUI in the event of a Cisco StadiumVision Mobile Streamer outage or failure.

This module contains information that system administrators will use to configure and maintain the StadiumVision Mobile Reporter, and contains the following sections:

- [Logging into the TUI, page 29](#)
- [Using the TUI, page 31](#)

Logging into the TUI

To access the TUI, you need either physical console access or an SSH client such as PUTTY. Log in from the console or over SSH with the following credentials:

```
username = installer
password = cisco!123
```

You will be prompted to change the password on your first successful login. You also have the option of changing the password via the TUI.

File Editor

Several of the TUI options open server system files for you to modify using the Unix system vi editor. The following configuration files are editable from the TUI:

- DNS information—`/etc/resolv.conf`
- NTP server information—`/etc/ntp.conf`
- Server host information—`/etc/hosts`

Before modifying configuration files, you should be familiar with the simple editing techniques used within the vi editor. [Table 1](#) describes some of the more common vi Editor commands.

Table 1 Common vi Editor Commands

Command	Description
ZZ or :wq	Exit vi and save changes.
:q!	Exit vi without saving changes.
Esc key	Exit current mode and enter vi command mode.
Cursor Movement	
h	Move left (backspace).
j	Move down.
k	Move up.
l	Move right.
Enter key	Move to the beginning of the next line.
Inserting	
a	Append character after cursor.
i	Insert character before cursor. Enters INSERT mode.
r	Replace character under cursor with next character typed.
R	Keep replacing character until [Esc] is pressed.
Deleting	
db	Delete word before cursor.
dd	Delete line under cursor.
dw	Delete word under cursor.
x	Delete character under cursor.
P	Undo deletion of characters, words, or lines before cursor.
p	Undo deletion of characters, words, or lines after cursor.

Using the TUI

Figure 1 shows an overall view of the StadiumVision Mobile Streamer TUI. The following sections provide a brief description of each TUI menu item.

- [System Settings, page 34](#)
- [System Accounts, page 34](#)
- [Services Control, page 35](#)
- [Server Administration, page 35](#)
- [Troubleshooting, page 36](#)

Figure 1 Cisco StadiumVision Mobile Streamer TUI Hierarchy

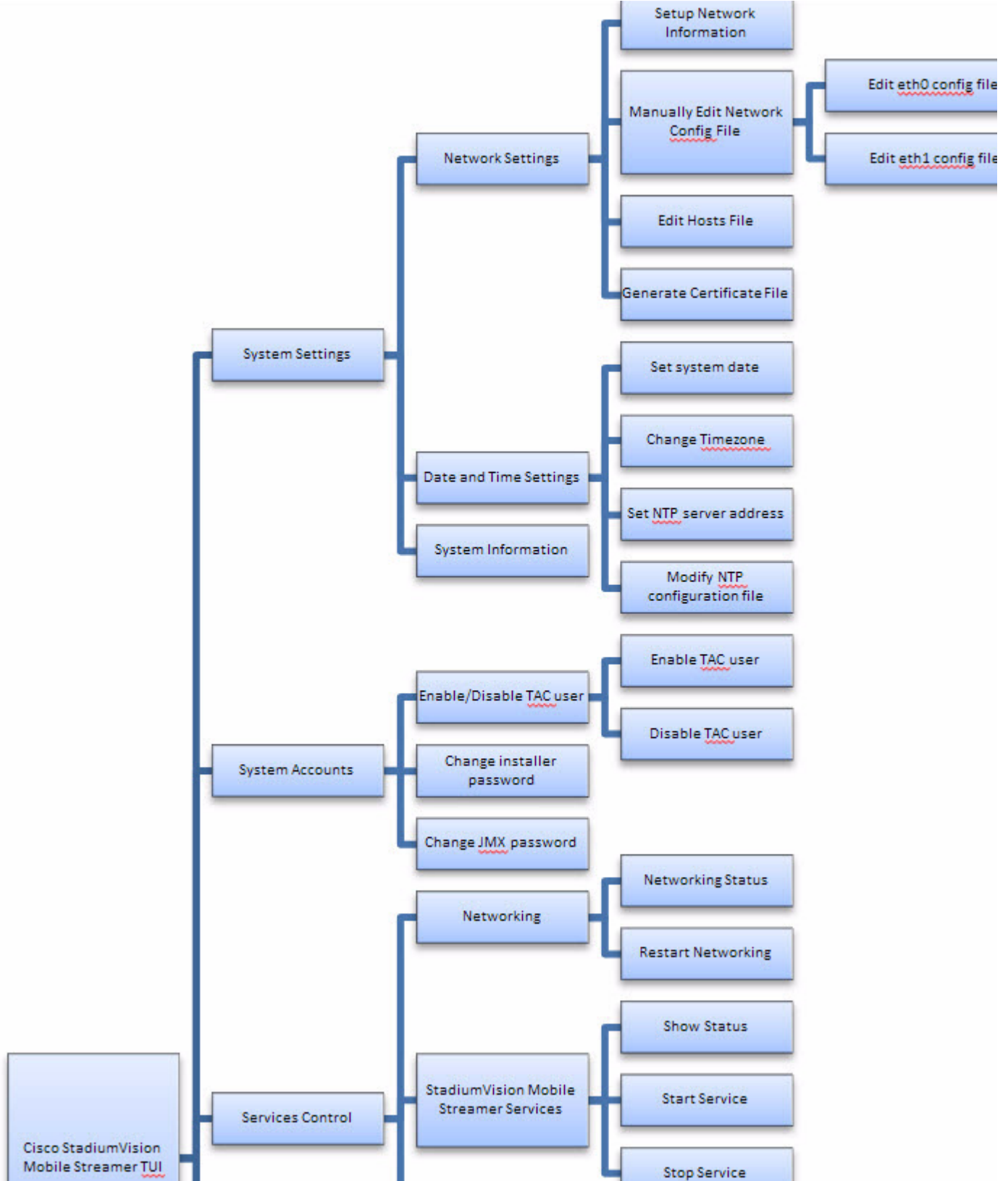
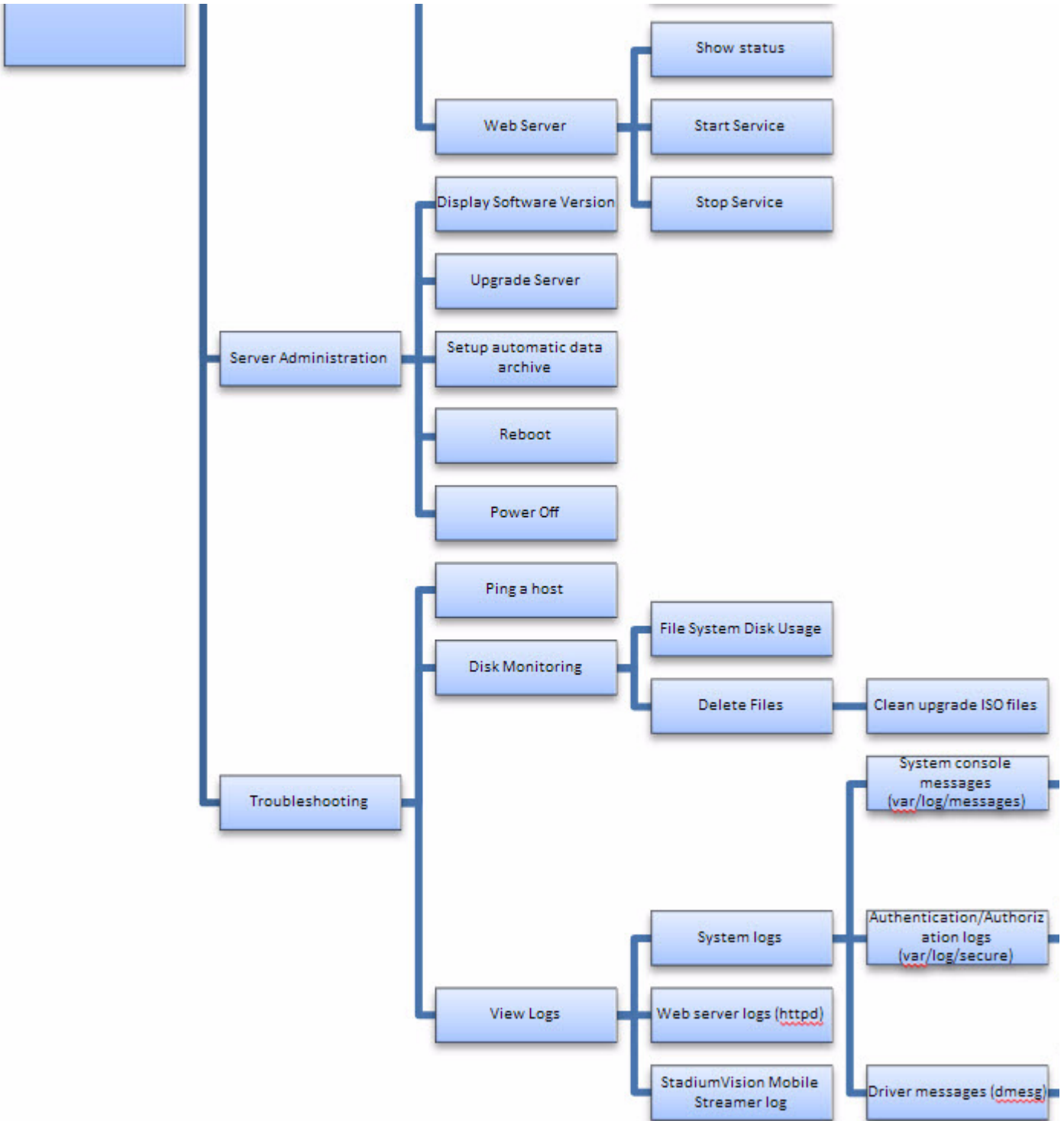


Figure 2 Cisco StadiumVision Mobile Streamer TUI Hierarchy (continued)



System Settings

Network Settings

Setup Network Information

Allows for configuration of network devices and the DNS server

Manually edit network config file

- Edit eth0 config file - allows for configuration of Ethernet port 0
- Edit eth1 config file - allows for configuration of Ethernet port 1

Edit hosts file

Uses the vi editor to modify the /etc/hosts file

Generate certificate file

Generates a new networked certificate file

Data and Time Settings

The system date, timezone, and NTP server address should be set during the installation process. If these items were not configured during installation, it is critical to configure these items to avoid time drift and to ensure accurate reporting.

Set system date

Manually sets the date.

Change timezone

Allows for setting the timezone. Choose a number next to the correct timezone.

Set NTP server address

Allows for setting the Network Time Protocol (NTP). Enter an IP address for a valid NTP server.

Modify NTP configuration file

Allows for manually editing the NTP configuration file.

System Information

Displays network information for eth0 and eth1 ports, hosts file, DNS information, and NTP server information.

System Accounts

Enable/Disable TAC user

- Enable TAC user

Enables a Cisco TAC representative to remotely troubleshoot the StadiumVision Mobile Streamer. This will allow for remote shell access which will be used for remote troubleshooting purposes. Always disable this access once you complete troubleshooting the system.

- Disable TAC user
Disables remote shell access.

Change installer password

Changes the installer password.

Change JMX password

Changes the Java Management Extensions password, which may be used to allow JMX clients to monitor and troubleshoot the Streamer.

Services Control

Networking

- Networking status - displays the status of ports eth0 and eth1
- Restart networking - restarts the networking service

StadiumVision Mobile Streamer Services

- Show Status - displays the streamer service status
- Start Service - starts the streamer service
- Stop Service - stops the streamer service

Web Server

- Show Status - displays the httpd service status
- Start Service - starts the httpd service
- Stop Service - stops the httpd service

Server Administration

Display Software Version

Displays the installed software version.

Upgrade Server

Provides a way to upgrade the StadiumVision Mobile Streamer software by choosing an ISO image from a list. See the [“Upgrading StadiumVision Mobile Streamer Using the Web Browser User Interface”](#) section in the *Cisco StadiumVision Mobile Reporter and Cisco StadiumVision Mobile Streamer Installation and Upgrade Guide*.

Setup automatic data archive

On a nightly basis, backups are done of the Streamer configuration files. The file archives are automatically removed from the StadiumVision Mobile Streamer after 20 days. See the [“StadiumVision Mobile Streamer Log”](#) section on page 36 for more information about backup and restore procedures.

Reboot

Reboots the StadiumVision Mobile Streamer.

Power Off

Powers the StadiumVision Mobile Streamer off.

Troubleshooting

Ping a host

Allows for connectivity testing by pinging an IP address.

View logs

Log files are written as events transpire. The log files are available to be downloaded via HTTP. The log files are intended for a Cisco TAC representative to aid in troubleshooting. The log files are rotated out of the system, typically after 20 days.

- System logs
 - System console messages (/var/log/messages)
 - Authentication/Authorization logs (/var/log/secure)
 - Driver messages (dmesg)
 - Tail log
 - View log
 - Authentication/Authorization logs
- Web Server logs (httpd)
 - Web Server access log (/var/log/httpd/error_log)
 - Tail log
 - View log
 - Web Server error log
 - Tail log
 - View log
- StadiumVision Mobile Streamer Log