

Cisco Stadiumvision Mobile Software Development Kit



Cisco Systems® introduces Cisco StadiumVision™ Mobile Software Development Kit 1.2

Introduction to Cisco StadiumVision Mobile

The Cisco StadiumVision Mobile solution allows sports and entertainment business's to take the in venue fan experience to the next level. By leveraging the multicast capabilities of the Cisco Connected Stadium WI-FI network, distribution of live low delay video can be scaled to tens of thousands of users. The power of scalable content delivery to mobile devices enables a sports and entertainment business to complement the live experience in new ways, promote merchandize and future events, and along the way build a more intimate relationship with each guest in the venue.

Cisco StadiumVision Mobile Software Development Kit

The StadiumVision Mobile Software Development Kit is a set of software libraries that enable developers to quickly develop engaging applications for fan on iOS and Android mobile devices. The libraries provide the necessary functionality to take advantage of the StadiumVision Mobile Streamer services, and also provide performance metrics to the StadiumVision Mobile Reporter.

Transport Protection

A primary Software Development Kit function is transport protection. Protection enables recovery from packets lost in transit across the Wi-Fi network. The Software Development Kit uses the in-stream repair packets added by the StadiumVision Mobile Streamer to reconstitute the original media stream. This protection mechanism is able to recover the complete media stream in a variety of scenarios, and can be tuned to match the unique characteristics of each venue network.

Media Types

The Software Development Kit supports both video and data streams. Up to 4 video channels and 4 data channels may be active at any one time, subject to an aggregate bandwidth limit of 5 Mbps.

Video Channels

Included in the Software Development Kit is an H.264 mpeg decoder. This relieves the application itself from having to deal with the complexities of video decoding. The decoder is single channel, allowing one of the four video channels can be decoded and displayed at a time. The video decoder supports H.264 baseline profile, along with an optional channel of AAC audio.

Data Channels

Each data channel is mapped to an http URL on the Streamer. The Streamer polls this URL at a preconfigured interval, and delivers the retrieved data transparently to those mobile devices listening on that channel. Since data is passed through transparently there are no limitations on data format, the only requirement being that the data is available via http/https. All 4 data channels can be active at the same time. It's up to the application to combine and present data from multiple channels in a way meaningful to the end user.

Service Announcements and Channel Guide

The StadiumVision Mobile Streamer periodically announces a list of active channels via a well-known multicast IP address. By listening on this multicast address the StadiumVision Mobile Software Development Kit automatically discovers StadiumVision Mobile service when its host device roams onto a Wi-Fi network that offer StadiumVision Mobile service. No pre-configuration or seed information is required. The StadiumVision Mobile Software Development Kit provides the application with a simple interface for receiving the list of available video and data channels within the venue.

Content Access Control

Content Access Control allows a team, venue or content owner to control which mobile applications are allowed to receive their content. This is particularly important in multi-team venues where each team has their own application that they want to encourage their fan base to use. Content Access Control applies to both data and video channels, and uses a three part password generally referred to as the triplet key. The client app must be in possession of the same triplet key as the Streamer in order to decode any of the received media.

Rewind and Replay

The StadiumVision Mobile Software Development Kit maintains a sliding video buffer that contains the most recent 30 seconds of video. The API provides the application with the necessary controls for buffer rewind, buffer play out and live video resume. The compelling use case here is providing fans with on demand replays.

Platform Support

The StadiumVision Mobile Software Development Kit has been verified to work with a variety of both iOS and Android devices. This includes tablets as well as smartphones. The live video is automatically scaled to fit the screen size of a device.

The StadiumVision Mobile Software Development Kit is continuously being qualified with the latest iOS and Android OS versions. This includes iOS5 and iOS6, as well as Android Gingerbread 2.3, Ice Cream Sandwich 4.0 and Jelly Bean 4.1. For the latest list of supported device types and OS versions please consult the StadiumVision Mobile release notes.

The StadiumVision Mobile Software Development Kit is compatible with the main integrated development environments for iOS and Android. These are Xcode for Apple iOS and Eclipse for Android.

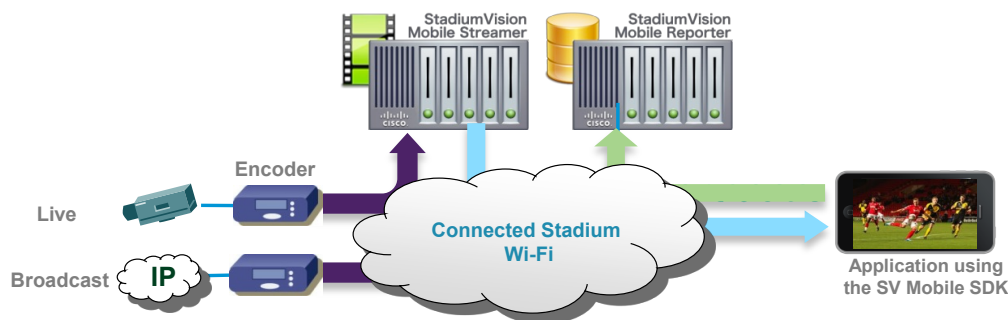
Application Development

In order to be useful the StadiumVision Mobile Software Development Kit must be embedded in an application that is custom built for the venue, team or content provider. For best results the help of an experienced application developer should be enlisted.

Solution Dependencies

The StadiumVision Mobile Software Development Kit is just one component of the larger StadiumVision Mobile solution. In order to function as expected it needs to be deployed alongside the StadiumVision Mobile Streamer, the StadiumVision Mobile Reporter, the StadiumVision Mobile Encoder and the Connected Stadium Wi-Fi network. Figure 1 below illustrates how the various StadiumVision Mobile components fit together.

Figure 1. Cisco StadiumVision Mobile solution



The StadiumVision Mobile Software Development Kit works in close partnership with the StadiumVision Mobile Streamer. The Streamer uses an algorithm to calculate payload redundancy and adds this to the media stream in the form of repair packets. The Software Development Kit receives this stream, and uses the repair packets to reconstitute any missing payload packets. In addition the Streamer periodically announces a list of active channels via a well-known multicast address, thus allowing the Software Development Kit to do channel discovery without needing any seed information. For more information about the Streamer please refer to the StadiumVision Mobile Streamer datasheet.

The Cisco StadiumVision Mobile Software Development Kit also integrates with the Cisco StadiumVision Mobile Reporter. The Cisco StadiumVision Mobile Reporters primary function is to collect performance and utilization metrics from the StadiumVision Mobile Software Development Kit running on tens of thousands of mobile devices in the venue, and distill these into easy to understand charts and reports. For more information about the Reporter please refer to the StadiumVision Mobile Reporter datasheet.

The Cisco SVM Software Development Kit has been validated to perform optimally with the L152AE-C mpeg video encoder from Elemental Technologies. This encoder meets the requirement of low latency video encoded as MPEG4/H.264 and encapsulated in a Transport Stream container. Furthermore it can deliver quality video at a bit rate that is compatible with the bandwidth constraints of a wireless network, as well as the relatively small screen sizes of the target mobile devices. No other encoder is supported at this time. For more information about the encoder please visit the www.elementaltechnologies.com web site.

The Cisco StadiumVision Mobile Streamer is fully standards compliant. However, applications using the Cisco SVM Software Development Kit must be serviced by a Cisco Connected Stadium Wi-Fi network. Connected Stadium Wi-Fi is designed for high density coverage in challenging RF environments, is multicast enabled and has Quality of

Service optimized for live streaming video. The Connected Stadium Wi-Fi solution centrally manages all aspects of wireless infrastructure, including access and security. These capabilities are all critical for a successful StadiumVision Mobile deployment. For more information about Connected Stadium Wi-Fi please refer to the Connected Stadium Wi-Fi datasheet.

Key Features and Benefits

Cisco StadiumVision Mobile Software Development Kit offers the following features and benefits:

- Uses multicast over Wi-Fi to scale live video to mobile devices in high density environments.
- Unique transport protection ensures reliable delivery of video and data to tens of thousands of wireless devices.
- Dynamic service announcements provide users with immediate access when content or channels are changed on the fly.
- Content Access Control ensures that's only your application has access to your content.
- Detailed periodic reporting back to the StadiumVision Mobile Reporter makes it easy to measure channel popularity, or to identify sections in the venue with Wi-Fi issues.
- A 30 second rewind buffer provides fans with on demand replay capabilities.
- Multicast over Wi-Fi scalable data distribution enhances the fan experience by enabling live stats updates, trivia contests and multi-player games.
- Compatible with both iOS and Android mobile devices and tablets.

Product Specifications

Table 1. Cisco StadiumVision Software Development Kit 1.2—Features and Capabilities

Platform support	Apple iOS and Android
Apple iOS versions supported	iOS 5.x and 6.x
Android versions supported	Gingerbread 2.3, Ice Cream Sandwich 4.0 and Jelly Bean 4.1
Video codecs	MPEG4/H.264
Audio codecs	AAC
Container	Transport Stream
Number of video channels	4
Number of data channels	4
Data channel payload	RSS, ATOM, XML and any other payload available via HTTP/HTTPS
Channel integrity mechanism	Forward Error Correction (FEC)
Content Access Control	Triplet key shared by Streamer and Client

Ordering Information

Before placing an order for the StadiumVision Mobile Software Development Kit we recommend you use the Guided System Selling (GSS) tool at www.cisco.com to design your solution. This will help ensure an accurate bill of materials.

The StadiumVision Mobile Software Development Kit is licensed on a per seat basis. Seat licenses must be purchased for the entire venue. The licensing agreement does not allow partial licensing of a venue. Use the web

site www.worldstadiums.com to obtain an approx. venue seat count for planning purposes. The final license count should be validated with the Cisco account team.

Access to the StadiumVision Mobile Software Development Kit by the application developer is free of charge. However, the application developer is required to sign a partner agreement with Cisco Systems. Contact your Cisco account team for details.

Table 2. Cisco StadiumVision Mobile Software Development Kit 1.2—Product Identification

Product Name	Product ID
Cisco StadiumVision Mobile Software Development Kit – 1,000 (1K) Seat License	SV-M-AGENT-1
Cisco StadiumVision Mobile Software Development Kit – 10,000 (10K) Seat License	SV-M-AGENT-10

For More Information

For more information about Cisco StadiumVision Mobile and the enhanced fan experience it provides, please visit <http://www.cisco.com/web/strategy/sports/> or contact your local account representative.



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