Overview of Data Integration in Cisco Vision Director
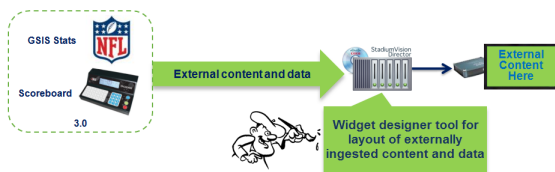
This module includes the following topics:

Introduction

Figure 1 on page 13 shows a high-level overview of the content and new feature support.

Figure 1   Data Integration High-Level Overview

Enhancements

The following tools are available:

- Data Integration

- Widget Tool

- Template Tool

Data Integration Enhancements

Cisco Vision Director supports the following updates for Data Integration:

- Database Support Changes

  - Support for PostgreSQL

  - Ability to deploy more than one database in the system for new data sources

- JSON support

  Support for JavaScript Object Notation (JSON) data format has been added for Generic Data Sources. More and more external data providers are moving to JSON format instead of XML format due primarily to the compactness of the format. This feature increases the flexibility of our generic data source integration to support upload of content with this format.

  Note: The JSON is internally converted to XML for use by Cisco Vision Director.

- System data source type

  This new data source type is introduced to add IP addresses to the Data Integration feature to support implementation of custom suite welcome messages.

- Table Lookup support

  The primary use case for this feature is to support creation of custom welcome messages. For more information on a configuration example for custom welcome messages and the table lookup feature, see Custom Welcome Messages Configuration Example, page 119.

  This feature allows users to create multiple mapping tables, each having multiple key-value mappings. User can upload tables from a TSV file or can create tables and mappings from the UI. Once tables are created, you can use the Table Lookup options or a custom XPath function can be defined, to look up values from these tables for specified keys for output field mapping.

Widgets Tool Enhancements

Cisco Vision Director Release 6.0 introduced the following Widgets tool enhancements:

- Default canvas background color is changed from white to gray.

- Default alignment for the List component is changed from horizontal to vertical.

- Multiple fonts are supported.

Supported External Content Sources

The following external content sources are supported:

- Atom Feed

- Daktronics All Sport 5000 Scoreboard Controller (basketball, hockey, and football only)

- National Football League (NFL) Game Statistics and Information System (GSIS) Cumulative Statistics

- NFL GSIS Game Clock

- OES ISC9000 Intelligent Scoreboard Controller (basketball and hockey only)

- POS data sources:

  - Generic PoS

  - Internal Database PoS

  - Menu Theme

- RSS Feed (RSS 2.0)

In addition to these predefined data sources, Cisco Vision Director also can support Generic Data Sources in JSON or XML format from the following source types:

- Database—Supports automatic translation of MySQL, PostgreSQL, and SQLServer database formats to XML data in Cisco Vision Director.

- FTP

- HTTP

- TCP

- UDP

Restrictions for Data Integration

Before you configure Data Integration, consider the following restrictions:

- The Data Integration feature is not venue aware. This means that any configuration applies to all venues and cannot be made venue-specific.

- The frequency of the scoreboard clock updates is no more than once per second and a delay of up to 2 seconds can occur.

- Basketball, hockey and football scoreboard statistics are currently supported.

- RSS feed approvals must be done pre-ingestion of the content into Cisco Vision Director.

- Up to 5 images can be supported from a data source using the PicToScreen widget. For more information on the Widgets tool, see Designing the Layout of Content Using the Widgets Tool, page 71.

- Data from a generic data source is not cached in Cisco Vision Director. This means that DMPs must be able to reach any externally referenced source data (for example, referenced images) on the network. If the DMPs do not have access to the external data source, then you need to set up an intermediary server to cache external data internally to the Cisco Vision Director network.

- The total data source data pushed for a single event script cannot exceed 16 KB in size when using Data Integration due to a limitation in the multicast packet size for pushing data to the DMP.

  If total data sources for a given script exceed 16 KB and you do not need to synchronize data across many DMPs, then you can configure the new Data Pull component with your other configured components in the widgets tool. The Data Pull component causes the DMP to pull data from Cisco Vision Director rather than have data be pushed by Vision Director over multicast, which overcomes the 16 KB maximum multicast packet size.

Information About NFL GSIS Integration in Cisco Vision Director

This section includes the following topics:

Network Considerations for NFL GSIS Integration

The NFL GSIS statistics supported by the Data Integration feature are transferred from data stored on an NFL Stats-in-a-Box (SIAB) server installed at the venue using an FTP connection to the Cisco Vision Director server. The NFL SIAB server is a local server that connects to the central NFL GSIS database external to the venue and managed by the NFL.

Figure 2 on page 16 shows a sample network architecture for NFL GSIS integration with Cisco Vision Director.

Note: The actual network configuration with the NFL network is site-dependent and could vary at your venue.

Figure 2   Network Architecture for NFL GSIS Integration
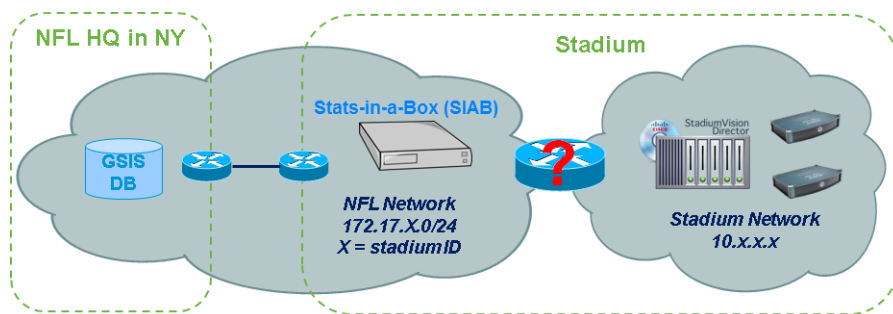
It is important to note that the network where the SIAB server is installed is not necessarily (and likely not) on the same network where the Cisco Vision Director server is installed. Therefore, depending on your specific network configuration, you might have some network configuration to do to ensure that the SIAB server is reachable by the Cisco Vision Director server.

To configure the network connectivity to the NFL SIAB server you must specify the IP address, port, data path, username, and password for the NFL SIAB server on the Cisco Vision Director server.

Supported NFL GSIS Data

Cisco Vision Director supports the NFL GSIS Game Clock and all of the statistics in the Cumulative Statistics XML file (CumulativeStatisticsFile). For more information and documentation for these statistics, go to:

http://www.nflgsis.com/gsis/

From the NFL GSIS Home page, click **Documentation**. Click the corresponding documentation links for the Cumulative Statistics Report and the Real-time Game Information (Game Clock).

Scoreboard Integration in Cisco Vision Director

This section includes the following topics:
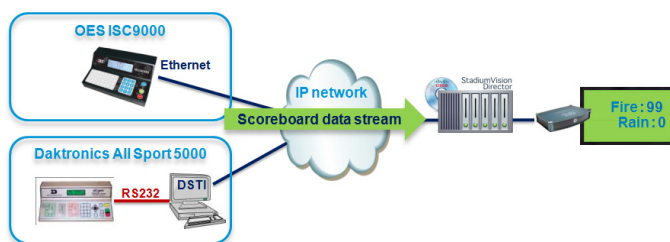
Scoreboard Integration Support Overview

Cisco Vision Director scoreboard integration allows you to display real-time information (such as period, score, and clock) on Cisco Vision Director TV displays.

Figure 3 on page 17 shows a high-level overview of the scoreboard integration support. Cisco Vision Director supports the following devices and sports:

■ Daktronics All Sport 5000 Scoreboard Controller (basketball, hockey, and football only)

■ OES ISC9000 Intelligent Scoreboard Controller (basketball and hockey only)

Note: Support for Daktronics scoreboard integration requires the addition of the Lantronix UDS1100-PoE box. This device must be configured to allow connectivity to the Cisco Vision Director server.

Figure 3   Scoreboard Integration High-Level Overview

Network Considerations for Scoreboard Integration

Cisco Vision Director communicates with the supported scoreboard controllers through a User Datagram Protocol (UDP) port connection. Both the corresponding controller interface and the Cisco Vision Director server must be configured to establish the network connectivity between these devices.

Overview of the Data Integration Interface

The Data Integration feature is implemented using two basic areas of the UI:

■ **Configuration > Data Integration** (Figure 4 on page 18)

Use this interface to configure the network connection for the data source and to select and map statistics for output display.

■ **Designer > Widgets** (Figure 5 on page 18)

Use the Widgets screen to add graphics and design the layout for the statistics that you want to display.

The remainder of the tasks associated with publishing data to a TV display use the existing Cisco Vision Director playlist and script creation interfaces.
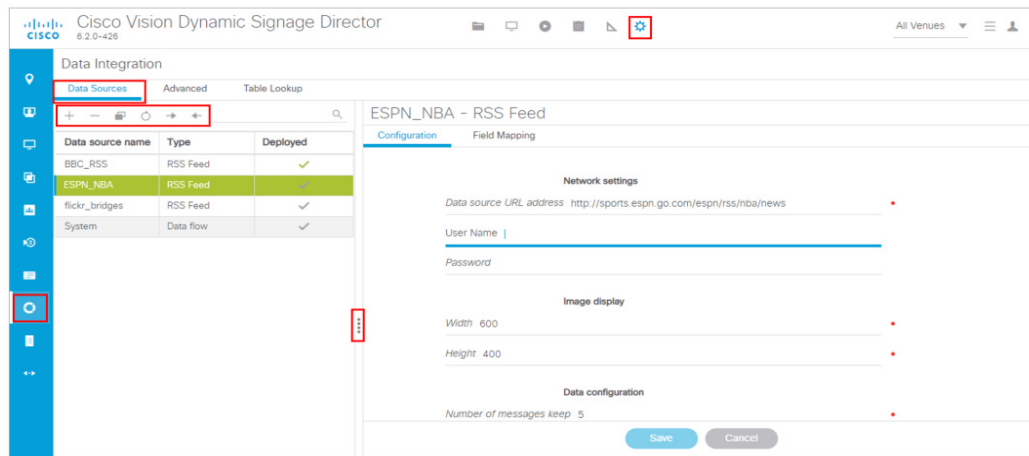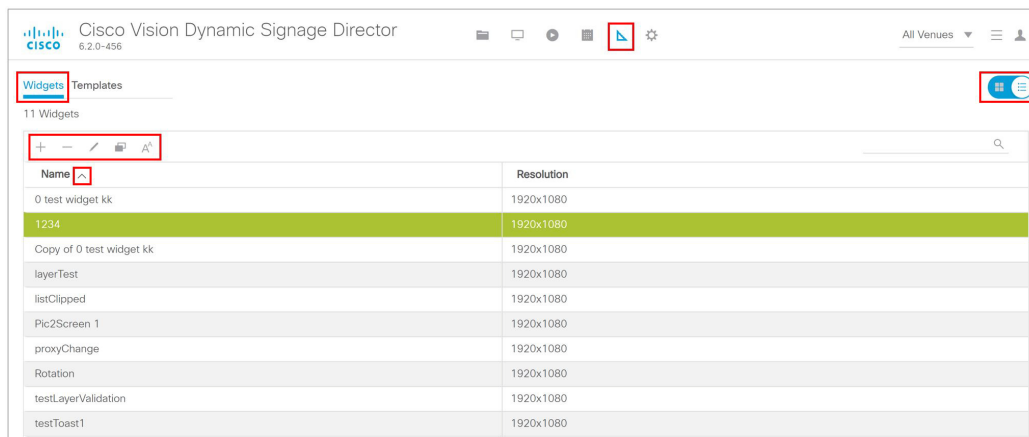
Figure 4   Data Integration Interface

Figure 5   Designer Widget Screen

Information About Generic Data Sources in Cisco Vision Director

Cisco Vision Director supports data integration with generic data sources. Generic data sources can be used for other forms of XML sources that you want to ingest into Cisco Vision Director whose format does not conform to some of the standard out-of-the-box data source types such as RSS 2.0.

Note: If your data feed does not strictly conform to the standard format of the predefined data source types in the Data Integration feature, then the Generic Data Source type is recommended for best results.

This section includes the following topics:

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Generic Data Source Message Types

The generic data source can be configured as one of the following message types:

- Database—Supports automatic translation of MySQL, PostgreSQL, and SQLServer database formats to XML data in Cisco Vision Director.

- FTP

- HTTP (including HTTPS)

- TCP

- UDP

Generic Data Source Data Formats

Cisco Vision Director supports JavaScript Object Notation (JSON) data format for generic data sources, in addition to XML. More and more external data providers are moving to JSON format instead of XML format due primarily to the compactness of the format.

Data Views

Data views can be configured to support ingestion of multiple feeds as an advanced data configuration option. Data views allow you to merge data from multiple feeds and use an expression editor to select certain data elements from those feeds to be put into a single combined data source for presentation. The data source can be laid out for presentation using the PicToScreen or TextToScreen components of the **Designer > Widgets** tool.

Figure 6 on page 19 shows receipt of two independent RSS feed sources into Cisco Vision Director with data integration of those sources into a data view that is then re-ingested into the **Configuration > Data Integration** feature as a single data source of the combined feeds.

Figure 6   Multiple RSS Feeds Combined into Single Data Source
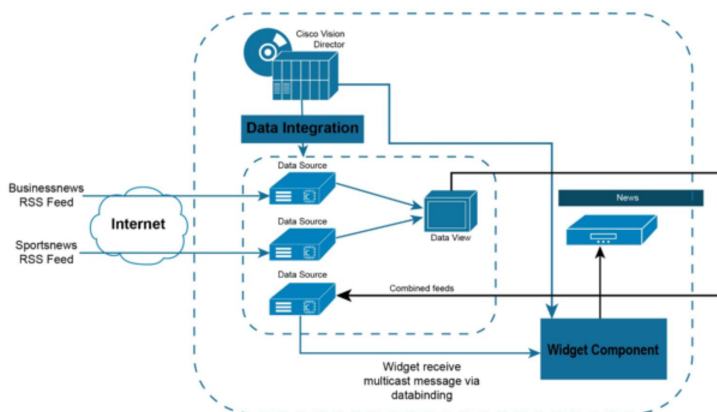
XML or JSON Schema for Generic Data Sources

If you want to use a generic data source in the Data Integration feature, then you must be able to provide the XML or JSON schema for a single sector (that is representative of all of the sectors) in the data feed. This sample data can then be used for the configuration of your data source.

JSON feeds that have repeating elements must be encapsulated in a container element—that is, they need to have a root element.

Note: The JSON is internally converted to XML for use by Cisco Vision Director.

The newly combined data source of the two RSS feeds can be bound to a TextToScreen component in the **Designer > Widgets** tool to lay out its final presentation for use in the standard script/playlist publishing methods of Cisco Vision Director.

For more information about configuring data views, see Working with Data Views, page 61.

Content Feeds in Cisco Vision Director

There is enhanced support for RSS feed design using the **Configuration > Data Integration** feature. It includes support for a predefined RSS data feed and an Atom feed.

This section includes the following topics:

- Data Integration for RSS Support, page 20

- Predefined Feed Sources, page 20

Data Integration for RSS Support

Table 1 on page 20 provides the RSS feed support available from the **Configuration** > **Data Integration** screen.

Table 1   Data Integration with RSS Support

Feature	Customized Layout	UI Support for Content Approvals	Media Player Support
Data Integration RSS (**Configuration > Data Integration**)	Yes	No	All Media Players

When using Data Integration to configure your RSS feeds, approvals must be done outside of the Cisco Vision Director software and prior to its ingestion by Cisco Vision Director. However, the Data Integration feature allows you to customize the layout of your RSS information on the display using the PicToScreen and TextToScreen components of the **Designer > Widgets** tool.

Predefined Feed Sources

Support is available for the following predefined data sources for RSS and Atom support:

- Atom Feed

- RSS Feed

Atom Feed Data Fields

describes the data fields that are supported in Cisco Vision Director for the predefined Atom feed data source.

Table 2   Data Fields for Mapping Atom Feeds

Data Field	Description
Title	Title element in original Atom feed.
Content	Content element in original Atom feed.
Id	Id element in original Atom feed.
Image	First enclosure URL within a link element, if available. Otherwise, source URL of the first HTML image element within content.

Table 3   Data Fields for Mapping RSS Feeds (Generic)

Data Field	Description
Title	Title element in original RSS feed.
Description	Description element in original RSS feed.
Link	Link element in original RSS feed.
Image	First enclosure URL, if available. Otherwise, source URL of the first HTML image element within description.

POS Data Sources in Cisco Vision Director

Three POS data sources are supported:

■ Generic PoS

Allows any external POS data source that meets the XML schema requirements of the Cisco Vision Director POS API to be ingested for use in the **Configuration > Data Integration** feature.

■ Internal Database PoS

Allows POS data from stores that have been configured in Cisco Vision Director to be made available as a data source to be used and modified in the **Designer > Widgets** tool.

■ Menu Theme

Allows the default menu theme data from the Cisco Vision Director DMB application to be made available as a data source so that this DMB theme content can be used and modified in the **Designer > Widgets** tool.

Differences Between the DMB Application and Data Integration for POS Data and Menu Board Creation

The Dynamic Menu Board (DMB) application is still supported. If you have integrated with a supported POS vendor using the DMB application in Cisco Vision Director, then you can continue to use that application to support your menu boards.

The **System Integration > Data Integration** feature provides a way for you to configure POS data sources that make the DMB store data available for use within the **Designer > Widgets** tool to create and publish your menus.

Summary of DMB and Data Integration Differences for Menu Creation

Table 4 on page 22   provides a summary of the key functional differences between the DMB application and the Data Integration feature for POS data and menu creation.

Table 4   DMB Application and Data Integration Differences for Menu Creation

Characteristic	DMB Application	Data Integration
Concessionaire Role Support	Yes	No
Dynamic Menu Content Updates	Yes	Yes
Flexible Menu Design	Yes	Yes
Font Control	No	Yes
In Suite Ordering	Yes	No
Vendor-dependent Integration	Yes	No—Vendor must meet the XML schema requirements for the generic POS data source
Widget Layout Tool Support	No	Yes

Deployment Guidelines for POS Data Integration and the Widgets Tool for Menu Creation

Table 5 on page 23 provides a summary of each POS data integration method for menu creation and when to use it along with information about dependencies and other guidelines. The last row of the table describes use of a manual method of menu creation where no data integration is used.

Table 5 Deployment Guidelines and Dependencies for POS Data Integration Methods

Data Integration Method	When to Use	DMB Dependency?	Other Dependencies?	Guidelines/ Best Practices
Generic POS	■ Support POS data from a vendor other than Quest or Micros. ■ Use Data Integration and the Widgets tool for your menu creation.	No	■ POS vendors host an API over HTTP/HTTPS for menu retrieval. ■ POS data must conform to Cisco Vision Director POS API XML schema.	To categorize menu items into groups, use a data source for each menu category from the POS vendor.

Table 5   Deployment Guidelines and Dependencies for POS Data Integration Methods

Data Integration Method	When to Use	DMB Dependency?	Other Dependencies?	Guidelines/ Best Practices
Internal Database POS	You have very simple menu data. You only need your menu data to appear in a single list. You already use Quest or Micros POS but want to build Menu Boards using Widgets instead of the DMB application.	No	Category groupings are not supported. All menu data is ingested as one data source.	This is similar to Generic POS method, except that you use existing Quest or Micros installation instead of a new POS vendor.
Menu Theme	You already support menus in DMB using Cisco or POS stores. You have created menus for the stores using DMB themes. You want to support groups on your menu and use the Widgets tool to design the layout of your menu.	Yes	Data changes, such as price updates, must be made in the DMB application.	You can use your own background for the menu board, or use the theme background from DMB.
None– Manual menu creation in Widgets tool with static data	You have simple menus with a limited amount of data. You do not have many menus to maintain. Your menu data does not change frequently, or, you have the resources to make manual menu updates prior to events. You do not want to use the DMB application.	No	Any data changes must be made manually in the Widgets tool.	This method does not use any data integration source.

System Data Source

Cisco Vision Director includes the System data source, which is installed by default. When used as part of your field mapping for data integration, the System data source enables retrieval of media player IP address information from Cisco Vision Director for use by your widget.

In combination with the Table Lookup feature, this allows you to map IP addresses in the system with associated content for that IP address. You can use this feature to display custom suite welcome messages, or other widget content that you want to associate with a particular media player IP address location.

Table Lookup Feature

The Table Lookup feature allows you to associate two elements for data integration as a key-value pair. The "key" is data within the Cisco Vision Director system, and the "value" is the filename, text string, or other content to be associated with the key.

Associate digital media player IP addresses with a content file or a text string. The primary use case is to support custom welcome messages in luxury suites or other locations at a venue.

There are two ways that you can create these tables of multiple key-value pairs:

■ Manual creation of the table and data.

■ Upload of a TSV file that can automatically create multiple tables with corresponding data by IP address.

Once tables are created, you can use the Table Lookup options (or a custom XPath function can be defined), to look up values from these tables that correspond to the specified keys for output field mapping using data integration and the widgets tool.

System Data Source