Videoscape Distribution Suite Service Manager Analytics and Provisioning Portal User Guide

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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

Text Part Number: OL-28650-01

VDS Service Manager Analytics and Provisioning Portal User Guide

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Preface

Audience

The Videoscape Distribution Suite Service Manager (VDS-SM) Analytics and Provisioning Portal User Guide provide instructions to the Operators and Administrators, who are responsible for the management, real-time analysis and monitoring, business policy enforcement, and other critical network intelligence for Videoscape Distribution Suite Internet Streaming (VDS-IS) and other 3rd party Content Delivery Networks (CDNs).

Document Conventions

This document uses the following conventions:

Table 1: Document Conventions

Convention	Description
^ or Ctrl	Both symbols represent the Control (Ctrl) key on the keyboard. For example, the key combinations **^D** or **Ctrl-D** means that you hold down the Control key while you press **D** . (Keys are indicated in capital letters but are not case sensitive.)
bold font	Commands, keywords, and user-entered text appear in **bold** font.
Italic font	Document titles, new or emphasized terms, and arguments for which you need to enter values appear in *italic* font.
`Courier font`	Terminal sessions and information, which the system displays appear in `courier` font.

Convention	Description
Bold Courier font	Bold Courier font indicates the text that you must enter.
[x]	Elements in square brackets are optional.
...	An ellipsis (three consecutive non-bolded periods without spaces) after a syntax element indicates that the element can be repeated.
|	A vertical line, called a pipe, indicates a choice within a set of keywords or arguments.
[x | y]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
{x | y}	Required alternative keywords are grouped in braces and separated by vertical bars.
[x {y | z}]	Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element.
string	A non-quoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
< >	Nonprinting characters such as passwords appear in angle brackets.
[ ]	Default responses to system prompts appear in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Reader Alert Conventions

This document uses the following conventions for reader alerts:

Note Means *reader take note*. Notes contain helpful suggestions or references to material, which is not covered in the manual.

Tip Means *the following information will help you solve a problem.*

Caution Means *reader needs to be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Timesaver Means *the described action saves time.* You can save time by performing the action described in the paragraph.

Warning Means *reader beware.* In this situation, you might perform an action that could result in bodily injury.

Document Organization

This document is organized into the following chapters:

Chapter	Description
Introduction to VDS-SM Analytics and Provisioning Portal's User Interface	Describes the VDS-SM Analytics and Provisioning Portal's user interface and general framework.
Analytics	Provides an overview of the VDS-SM Analytics and Provisioning Portal, which provides the ability to view and analyze the data collected about sessions, content, and resource utilization in text and graphical form.
CDN Administration	The CDN Administration function enables Administration teams to deploy and manage delivery services and new origin servers from the same user interface used for accessing system wide analytics.
Topology	Provides access to create, update, and delete network delivery devices, interfaces, and logical groupings. These topology elements are used to describe the path from the content source to the client devices viewing the content, representing the set of network and media resources that can be allocated to deliver the service.
Administration	Provides information on how to manage users and roles, an overview of the global configuration parameters, and how to configure SNMP.

Reporting Problems

If you have any query or experience problems when installing the VDS Service Manager software, contact your Cisco Technical representative.

CHAPTER 1

Introduction to Videoscape Distribution Suite Analytics and Provisioning Portal's User Interface

VDS-SM Analytics and Provisioning Portal User Interface Overview

Videoscape Distribution Suite Service Manager (VDS-SM) provides configuration, management, real-time analytics and monitoring, business policy enforcement, and other critical network intelligence for VDS-IS and other 3rd party CDNs. The solution installs on a VM infrastructure and operates on a customer's traditional computing system or a Cisco UCS system. This allows more efficient and focused use of computing resources, memory, and disk space; thus resulting in a more efficient ratio of computing resources to application performance.

VDS Manager software includes the following major components:

- Analytics—Creates a fast searchable index of CDN streaming device log files for centralized access.
- Provisioning—Provides the Administration team the rights to create new Delivery Services and policy provisioning for CDN. Also, provides them the rights to control multiple CDNs, from the same interface, which is used for analytics retrieval.
- Reporting—Provides a single interface for provisioning and reporting multiple CDN solutions that may reside in a single provider’s environment (for example, VDS-IS and Microsoft IIS).

The application nodes that comprise the VDS-SM solution are Java applications deployed within a JBOSS application server, and is separated into distinct “solutions”, each of which provides a specific set of services for the overall application.

VDS-SM Application Nodes

VDS-SM supports the following application nodes:

- Core Services
- User Interface
- CDN Manager
- Analytics

Core Services

The Core Services node includes the following:

- Management Interface—This interface provides service registry, SNMP support, and stores global configuration parameters, for the management of solution nodes.
- Database—Hosts the MySQL database that is used to store the configuration information including topology, solution tables, and registry information.

User Interface

Presents a User Interface where status, configuration, and analytics can be viewed by the Operator.

CDN Manager

Provides management services for CDNs including Cisco VDS-IS.

Analytics

The Analytics node includes the following:

- Search Head—Provides search and reporting functions.
- Forwarder—Manages the distribution of log data (transaction logs) from CDN to Analytics Infrastructure for processing.
- Indexer—Processes log data to provide indexes to key names from the log files, which facilitates fast data retrieval and reporting.
- Job Scheduler—Provides job scheduling and functions as a deployment repository for the analytics software.

This following section provides an overview of the VDS-SM Analytics and Provisioning Portal's user interface.

Note Before you access the VDS-SM Portal's user interface, you must deploy, install, and configure, all nodes in your network.

VDS-SM provides for the management of solution nodes, host to service registry, provides solution SNMP support, stores global configuration parameters, and provides solution management information for the user interface.

VDS-SM solution comprises the following functions:

Function	Description
Home	Displays the Home dashboard, which provides the following: • Real-time Edge Bandwidth Usage • Concurrent Client Sessions • Storage Usage
VDS Manager	The VDS Manager is the entry point from the video system into the VDS-SM solution. This function processes the incoming service message requests. The VDS Service Manager makes requests to other elements in the video system, to monitor the resources necessary to service the request. The VDS Manager function includes the following options: • Dashboards—Pre-designed panels that supply various data related to a particular dashboard topic, in a multi-panel chart view. This option allows you to access predefined reports for a specific topic, which displays both graphical and text-based representations of session data. • Search—Allows users to enter specific search criteria and produce reports in tabular format. • Alerts—Displays a list of significant events that have occurred in any node in the system. • CDN Administration—Enables the Administration team to deploy and manage Delivery Services and new Origin Servers from the same user interface, which is used for accessing system wide analytics.
Analytics	VDS-SM Analytics searches and gathers real-time and historical data for various activities, such as the following: • Bandwidth Usage • Quality of Service • Content Provider Activity • Response and Error Codes • Client Requests • Content Popularity

Function	Description
Topology	This function provides access to create, update, and delete network delivery devices, interfaces, and logical groupings. These elements in the topology are used to describe the path from the content source to the client devices viewing the content, representing the set of network, and the media resources that can be allocated to deliver the service. The Topology function includes the following options: Places—Provides different types of locations that can be associated with an element in the topology, which might describe its position in the network or its physical location. To access the Places function, click the arrow next to the Topology function.
Administration	Provides system, solution, and operational administration. • System Load Dashboard—Displays chart, which represents the CPU load, memory usage, disk usage, and network interface utilization, across the nodes in the system. • About User Accounts—Allows Administrators to create, delete, and edit user accounts. • SNMP Trap Destinations—Allows Administrators to configure SNMP clients to receive traps and notifications that contain information, which the SNMP agent sends to notify an SNMP Manager. This information includes the IP address, UDP port, and the Community Name (Community String). • Global Configuration Parameters—Configuration parameters include any settings that exist on an Appliance, which an end-user might modify.

Logging Into the User Interface

Log in to the application by entering the link http://<*UInode IP*>/bnimgmt in a browser.
Where, <UI IP> is the IP address of VDS-SM's User Interface, which uses the default port; for example, http://1.2.3.4/bnimgmt. (If the <UI IP> address does not contain a port number, the system automatically defaults to port 8080).

At the prompt, enter the following credentials in the Login window:

Username: bniadmin and **Password**: admin

Note To log out of the user interface, click **Logout** at the top of the window in the menu bar.

Changing Your Password

To change your password, click the <User Profile> button, located in the menu bar, to open the User Info dialog.

Note The button name is the user login name.

To increase security, we recommend that you use a combination of letters, numbers, and characters.

Access Privileges

Access privileges are determined by the role assigned to the user. A user may be granted privileges for all or some system configuration and management functions.

Table 2: Access Privileges—Configuration and Management Functions

Role	Privilege	Description/Function
CDN Administrator	Read/Write	Full access to all CDN system functions
CDN Operator Viewer	Read-only	Access to only view all Services
Reseller Administrator	Read/Write	Full access to system functions associated to only the Services available to that user

Role	Privilege	Description/Function
Reseller Viewer	Read-only	Access to only view the Services available to that user
Content Provider Administrator	Read/Write	Full access to system functions associated to only the Services available to that user
Content Provider Viewer	Read-only	Access to only view the Services available to that user

In addition to system configuration and management functions, the role determines the report types to which the user has access.

User Interface Components

The user interface components are explained in the following table:

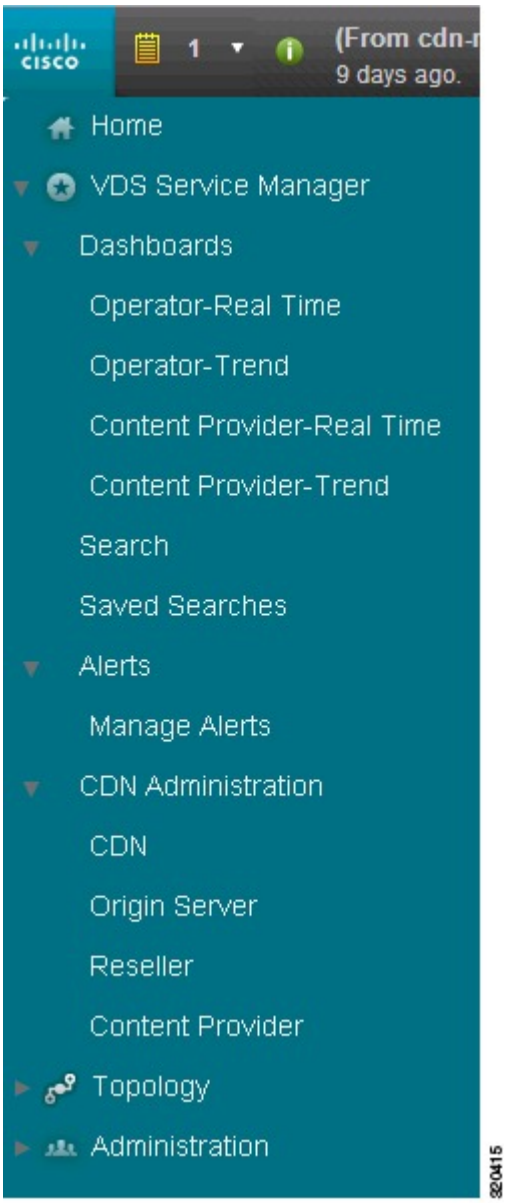
Component	Description
Navigation Bar	Displays the user interface components. It is located on the top left of the window. Click this option to navigate to the different functions.
Alert Counter	Lists the alert notifications. Click **Alerts** which is located above the Navigation bar to display the alerts you set up.
User Profile	Changes the account password of the logged-in user. To change your password, click the <User Profile> button, located in the top-right corner of the window in the menu bar, to open the User Info dialog box. **Note** The button name displays the name of the user logged in.

Component	Description
About Dialog	From the menu bar located at the top-right corner of the window, click **About** to display the About dialog box. The following information about the VDS-SM Analytics and Provisioning Portal's software is mentioned: • Version Number • Name • Timestamp • Build Number • Java Version • Software Licenses • End User Licenses Agreement
Logout	Logs out of the user interface. From the menu bar located at the top-right corner of the window, click **Logout** to log out of the user interface,
Icons	Performs configuration commands or indicates operational status.
Breadcrumbs	Provides quick access to the function's page, which has already been selected. Click the breadcrumbs option to move to that option's page.

Navigation Bar

The Navigation bar, displays all VDS-SM Analytics and Provisioning functions. To display the functions pane, click **Navigation**. The various functions appear. Choose the desired function. Some functions display an arrow to the left. Click the arrow to display the available sub-functions.

The following figure displays the functions pane with VDS-SM function expanded to show its sub-functions:



Alert Counter

The Alert Counter displays a count of events that are generated by the system.

To access this feature, from the main page, click **Alerts**.

The following table describes the fields you can use to filter the alerts:

Table 3: Alert Filter Fields

Field	Description
Create Time	The date and time the event was created or occurred.

Field	Description
Alert Category	Alerts filtered by broader categories (described in the **Alert Categories** table, below.
Alert Type	A specific alert from the list described in the **Alert Types** table, below.
Severity	Describes the impact of the alert listed in the **Alert Severities** table, below.
Node Type	The type of node issuing the alert listed in the **Node Types** table, below.
Node Name	The name assigned to the node.
Acknowledge Status	Indicates if the Alert is acknowledged or unacknowledged.
Acknowledge Time	The date and time when the alarm was acknowledged.
Acknowledge User	The user ID who acknowledged the alarm.

The alert categories cover a broad set of alerts in each category and can be used to find alerts in similar areas, but only within the same category. For example, Connection Lost and Connection Established Alerts are the same category, but different types.

Table 4: Alert Categories

Category	Description
Uncategorized Alert	A general alert that is not specific or an unknown category.
Application State Alert	The alert relates to the change of state of a service or node.
Connection State Alert	The alert relates to the connection state changes of a node or service.
Content State Alert	The alert relates to the change of content state managed by the CMS.
Resource Alert	The alert relates to the resource allocation events.
Session Alert	The alert relates to the events for sessions.

Table 5: Alert Types

Category	Description
Uncategorized	The alert is not categorized or the category is unknown.
Application Available	A service named in an alert has become available, meaning it has been recognized as in service by the system.

Category	Description
Application Unavailable	A service named in an alert became unavailable, meaning it is no longer visible on the network or is out of service.
Application Standby	A named service or node has become available as a standby node that can take over for an unavailable primary.
Connection Established	A named service or node has established a network connection to another service or node.
Connection Lost	A named service or node has lost a previously established network connection to another service or node.
Client Connection Established	A connection from a video client has been established to a Video Client.
Client Connection Lost	A connection previously established from a video client has been lost.
Content Ingested	Content the CMS instructed to be put on a streaming server has been accepted into storage.
Content Ingest Failed	Content the CMS instructed to be put on a streaming server has failed to complete.
Content Deleted	Content the CMS has instructed the streaming server to remove from its storage has been removed.
Content Delete Failed	Content the CMS has instructed the streaming server to remove from its storage failed to be removed.
Resource Allocation Failure	An attempt to allocate a needed resource.
Resource Availability Restored	The availability of a resource that was less than 15% is now greater than 15%.
Request Stats	Reports the time a request to the VNS device takes.
Application In Service	An application or service started and is in service to be able to process requests.
Application Out Of Service	An application or service started that was in service has been transitioned to out of service and will not receive any requests.
Device In Service	A topology device has transitioned to in service and is eligible to service requests, if it is operational.
Device Out Of Service	A topology device has transitioned to out of service and is not eligible to service requests, if it is operational.

Category	Description
Delivery Service Conflict	An alert is created when there is a conflict in the Device Service.
CDN Sync Failure	An alert is created when auto sync of the CDN fails.
CDN Sync Changes	An alert is created when there is a change in the synced CDN data.
Origin Server Sync Failure	An alert is created when auto sync of the Origin Server fails.
Origin Server Sync Changes	An alert is created when there is a change shown up in the synced Origin Server data.
Publishing Point Sync Failure	An alert is created when the auto sync of the Publishing Point sync fails.

Table 6: Alert Severities

Severity	Description
Fatal	Signals a failure of a service or component causing long term service impairment.
Error	The failure of a request to complete that does not impact other services or requests.
Warning	A condition had occurred that may lead to the failure of a component or service request.
Info	An event providing information but has no service impact.

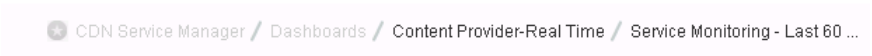
Table 7: Node Types

Node Type	Description
cdnmgr	Creates an alert when there is an issue in cdnmgr.
Unknown	Creates an alert when there is an issue with other nodes.
MgmtSvcs	Creates an alert when there is an issue in mgmt svcs.

Note See the Using Analytics Alerts for Detection section for details on how to create alerts.

Breadcrumbs

Breadcrumbs display as a path located under the Navigation bar, so you can quickly access the function's page; for example, the following displays the breadcrumbs for the **VDS Service Manager** > **Dashboards** > **Content Provider-Real Time** > **Service Monitoring - Last 60 Minutes** page:



Click one of the highlighted functions to move to that function's page.

About Dialog

The VDS-SM Analytics and Provisioning Portal's About dialog lists the following information:

- Product Version Number
- Product Name
- Build Timestamp
- Build Number
- Build Java Version
- Software Licenses
- End User Licenses Agreement

To access this dialog, click **About** at the top of the page.

Click the orange arrow next to the item to see more information.

Configuration Icons

VDS-SM portal provides various icons to perform configuration commands or to indicate operational status. The following table lists all the icons included in the user interface.

Table 8: User Interface Icons

Icon	Description
	Go to Detail page
	Create or Add
	Delete
	Undo
	Refresh
	Disable
	Enable
	Clone
	Import
	Edit: in-line mode: • Select: light gray
	Edit: full-screen mode: • Select: light gray
	Edit: bulk mode: • Select: light gray • Deselect: dark gray

Icon	Description
	Edit: Item Selector
	Information
	Auto Refresh
	Context Sensitive Help
	Search; Filter
	Notice
	Normal
	Added
	Deleted
	Edited
	View
	Export
	Add Volumes
	Remove Volumes
	Operational State: Up
	Operational State: Down
	Synchronization

CHAPTER 2

Analytics

Analytics Overview

This section provides an overview of VDS-SM Analytics, which provides the ability to view and analyze data that are collected about trends, reports, content, and sessions in textual and graphical form.

VDS-SM Analytics search and gather real-time and historical data for various activities, such as the following:

- Bandwidth usage
- Quality of service
- Content Provider activity
- Response and error codes
- Client requests
- Content popularity

Data is pushed from various streaming devices to the Splunk Forwarder, and then to VDS-SM. The data available is used to provide a multitude of near real-time and historical search capabilities. A set of predefined reports are available in two types of formats—Dashboards and Reports, which are described below. Data is

gathered using predefined indexing metrics, designed to provide data that is monitored by service provider operators. The data output is viewed in the form of a dashboard.

The following table provides a list of dashboards supported by VDS-SM:

Dashboard	Description
Operator- Real Time	The Operator-Real Time dashboards provide real-time data for network usage, including: • CDN Usage - provides real-time data (last 5 minutes, 60 minutes, or last 24 hours) for edge bandwidth utilization, concurrent sessions, and data storage usage. • Service Monitoring - provides per service monitoring of the session counts, bandwidth, and storage usage. • Cache Efficiency - provides information about the cache efficiency hit or miss and the origin server offload information. • Quality of Service - provides QoS information (last 5 minutes, 60 minutes, or last 24 hours), as it pertains to the response rate, error rate by service, and by server/router. • ABR Quality of Service - provides QoS information, as it pertains to the ABR request rate, error rate, and the rate shift trend. • ABR Quality of Service Adaptation - provides QoS of Service Adaptation information, as it pertains to the ABR request rate, error rate, and the rate shift trend.

Dashboard	Description
Operator-Trend	The Operator-Trend dashboards provide historical trend information. This provides CDN operators with a means to quickly identify network throughput bottlenecks and correct service quality problems as they happen. The Operator-Trend dashboard includes the following: • Network - provides an historical representation of edge bandwidth, total data delivered, and unknown traffic received. • Quality of Service - provides an historical QoS information, as it pertains to session duration and session download size. • ABR Quality of Service - provides an historical ABR QoS information, as it pertains to the rate shifting rate. • License Usage - provides an historical information, as it pertains to the log file size, allowed per license. • MobiTV Client Log Analysis - provides MobiTV Client Analysis by event type.
Content Provider-Real Time	The Content Provider Real-Time dashboards provide real-time data for provider service monitoring, QoS, and ABR QoS information, including: • Service Monitoring - provides provider session, bandwidth, storage, and session peak time information. • Quality of Service - provides provider response code and error rate information. • ABR Quality of Service - provides provider ABR request rates, error rates, and rate shift trend information.

Dashboard	Description
Content Provider-Trend	The Content Provider-Trend dashboards provide historical trend information. It includes the following: • Network - provides an historical representation of edge bandwidth, total data delivered, and sessions declined due to quota limits. • Client Usage - provides the number of unique clients, top clients, and the clients session rates. • Service and Content Popularity - provides the top providers, services, and titles of the service and content popularity. • Billing - provides historical information, as it pertains to billing statistics.

Operator-Real Time Dashboards

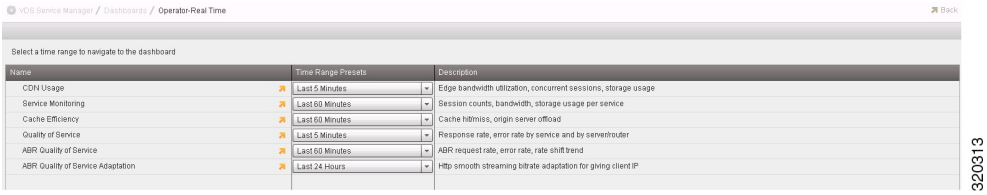
The Operator-Real Time dashboards provide real-time data for network usage, including:

- CDN Usage - provides real-time data (last 5 minutes, 60 minutes, or last 24 hours) for edge bandwidth utilization, concurrent sessions, and data storage usage.
- Service Monitoring - provides per service monitoring of the session counts, bandwidth, and storage usage.
- Cache Efficiency - provides information about the cache efficiency hit or miss and the Origin Server offload information.
- Quality of Service - provides QoS information (last 5 minutes, 60 minutes, or last 24 hours), as it pertains to the response rate, error rate by service, and by server/router.
- ABR Quality of Service - provides QoS information, as it pertains to the ABR request rate, error rate, and the rate shift trend.
- ABR Quality of Service Adaptation - provides QoS information, as it pertains to the http smooth streaming bitrate adaptation for a given Client IP address.

To access the Operator-Real Time Dashboards, complete the following:

Step 1 From the main page, select **Navigation** > **VDS Service Manager** > **Dashboards**.

Step 2 Select **Operator-Real Time**. A list of Operator Real-time dashboards are displayed.



Accessing the CDN Usage Dashboard

The CDN Usage dashboard provides real-time data (last 5 minutes, 60 minutes, or last 24 hours) for edge bandwidth utilization, concurrent sessions, and data storage usage.

To access the CDN Usage dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Real Time** > **CDN Usage**.

Real-time Edge Bandwidth Usage

The following table describes the chart within this dashboard.

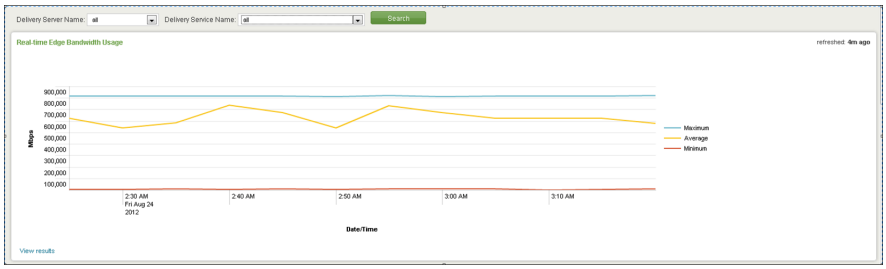


Table 9: Real-time Edge Bandwidth Usage Chart & Description

Chart	Description
Real-time Edge Bandwidth Usage	Illustrates the real-time bandwidth usage for all or each CDN within the system, for the specified time interval.
Chart Information	The information within this chart is a line graph with the Date/Time along the X-axis and the bandwidth in Mbps along the Y-axis. The legends representing the line graph are Maximum, Average, and Minimum.
Chart Formula	The formula used to derive the line graphs is: min/avg/max of the snapshot bandwidth per 1 minute, 5 minute, or 1 hour buckets.
Chart Filters	This chart uses Delivery Service Name and Delivery Server Name as filters.

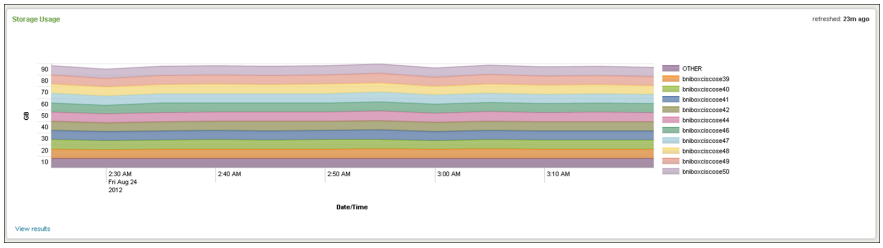
Concurrent Client Sessions

The following table describes the chart within this dashboard.

Table 10: Concurrent Client Sessions Chart & Description

Chart	Description
Concurrent Client Sessions	Illustrates the concurrent client sessions used for all or each CDN within the system, for the specified time interval.
Chart Information	The information within this chart is a line graph with the Date/Time along the X-axis and Count along the Y-axis. The legends representing the line graph are Maximum, Average, and Minimum.
Chart Formula	The formula used to derive the line graphs is: min/avg/max of snapshot client session # per 1 minute or 5 minute bucket.
Chart Filters	This chart uses Delivery Service Name and Delivery Server Name as filters.

Storage Usage



The following table describes the chart within this dashboard.

Table 11: Storage Usage Chart & Description

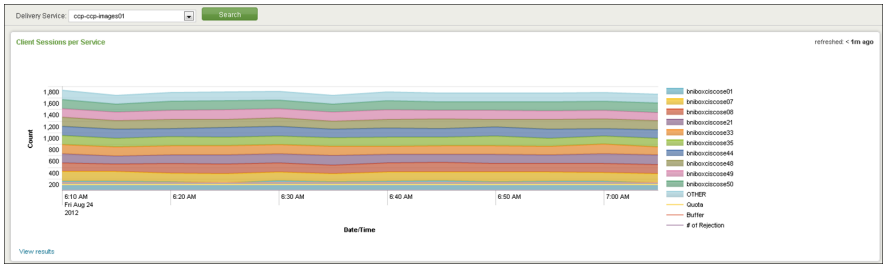
Chart	Description
Storage Usage	Illustrates the storage usage for all or each CDN within the system, for the specified time interval.
Chart Information	The information within this chart is shown in a stacked area graph with the Date/Time along the X-axis and the storage amount in Gigabytes (GB) along the Y-axis. The legends representing the line graph are the Delivery Server Name.
Chart Formula	The formula used to derive the line graph is: average storage usage (prepositioned + dynamic cached) per delivery server per line.
Chart Filters	This chart uses Delivery Service Name and Delivery Server Name as filters.

Accessing the Service Monitoring Dashboard

The Service Monitoring dashboard provides per service monitoring of the session counts, bandwidth, and storage usage.

To access the Service Monitoring dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Real Time** > **Service Monitoring**.

Client Sessions per Service

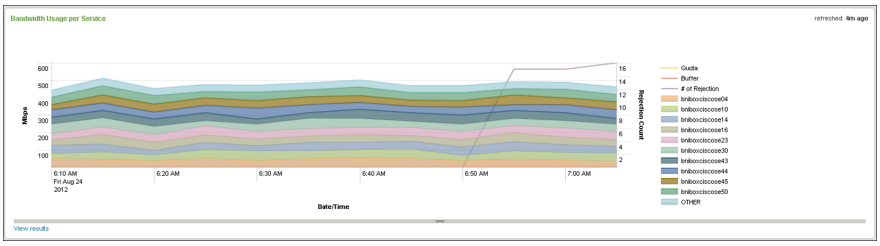


The following table describes the chart within this dashboard.

Table 12: Client Sessions per Service Chart & Description

Chart	Description
Client Sessions per Service	Provides client sessions quota, buffer, and actual count per service and server. The chart also contains the number of request rejections due to the session quota being exceeded.
Chart Information	The information within this chart is shown in line and stacked area graphs with the Date/Time (in user specified minute increments) along the X-axis and the session count per service along the Y-axis. The legends representing the line graph are Quota, Buffer, Delivery Server Names, number of Rejections, and other.
Chart Formula	The formula used to derive the graphs are: • Quota line: Client Session Quota for selected Delivery Service • Quota + augment buffer line: quota * (1+augment percentage) • Each stacked area is the concurrent client session # for an SE • Rejection line: total rejections due to session quota from both or all SE/SR
Chart Filters	This chart uses Delivery Service Name as filter.

Bandwidth Usage per Service

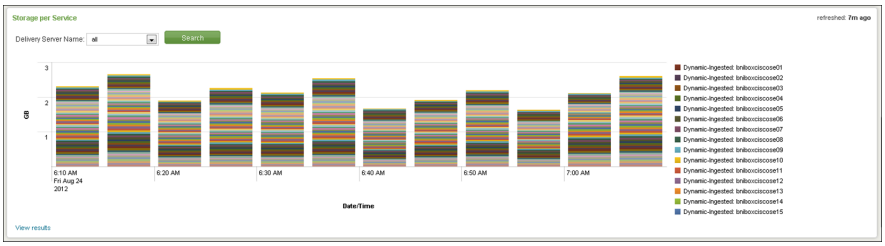


The following table describes the chart within this dashboard.

Table 13: Bandwidth Usage per Service Chart & Description

Chart	Description
Bandwidth Usage per Service	Provides bandwidth quota, buffer, and actual usage per service and server. The chart also contains the number of request rejections due to the bandwidth quota being exceeded.
Chart Information	The information within this chart is shown in line and stacked area graphs with the Date/Time along the X-axis, the bandwidth in Mbps along the Y-axis, and the Rejection Count on the right hand side. The legends representing the line graph are Quota, Buffer, Delivery Server Names, number of Rejections, and other.
Chart Formula	The formula used to derive the graphs are: • Quota line: Client Session Quota for selected Delivery Service • Quota + augment buffer line: quota * (1+augment percentage) • Each stacked area is the bandwidth for an SE • Rejection line: total rejections due to bandwidth quota from both or all SE/SR
Chart Filters	This chart uses Delivery Service Name as filter.

Storage per Service



The following table describes the chart within this dashboard.

Table 14: Storage per Service Chart & Description

Chart	Description
Storage per Service	Provides storage usage in GB per service and per server.

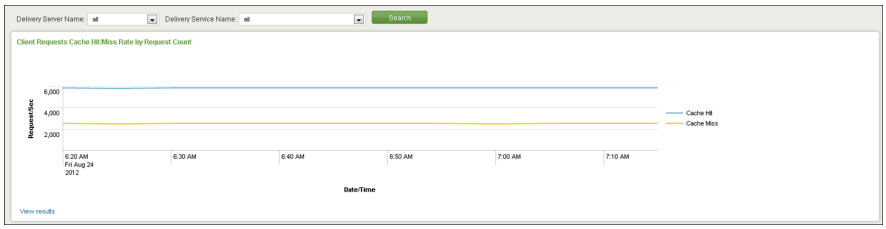
Chart	Description
Chart Information	The information within this chart is shown in stacked column graphs with the Date/Time along the X-axis, the memory usage in GB along the Y-axis. The legends representing the graph are Pre-positioned/Dynamic-ingested.
Chart Formula	The formulas used to derive the line graphs are: • Average of pre-positioned disk space per 5 minute or 1 hour bucket • Average of dynamic-ingested disk space per 5 minute or 1 hour bucket
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Accessing the Cache Efficiency Dashboard

The Cache Efficiency dashboard provides information about the cache efficiency hit or miss and the Origin Server offload information.

To access the Cache Efficiency dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Real Time** > **Cache Efficiency**.

Client Requests Cache Hit/Miss Rate by Request Count



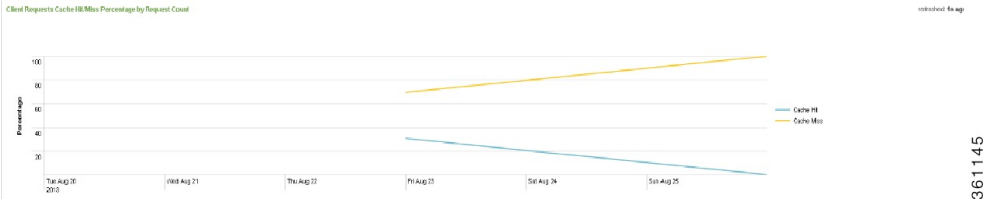
The following table describes the chart within this dashboard.

Table 15: Client Requests Cache Hit/Miss Rate by Request Count Chart & Description

Chart	Description
Client Requests Cache Hit/Miss Rate by Request Count	Provides client request cache hit and miss counts on a selected delivery service and server.
Chart Information	The information within this chart is shown in line graphs with the Date/Time (5 minute, 1 hour, or 1 day) increments along the X-axis, the Requests per Second along the Y-axis. The legends representing the graph are Cache Hit and Cache Miss.
Chart Formula	The formulas used to derive the line graphs are: • # of cache hit/# of (cache hit + cache miss) on SE per 5 minute, 1 hour, or 1 day bucket • # of cache miss/# of (cache hit + cache miss) on SE per 5 minute, 1 hour, or 1 day bucket

Chart	Description
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Client Requests Cache Hit/Miss Percentage by Request Count

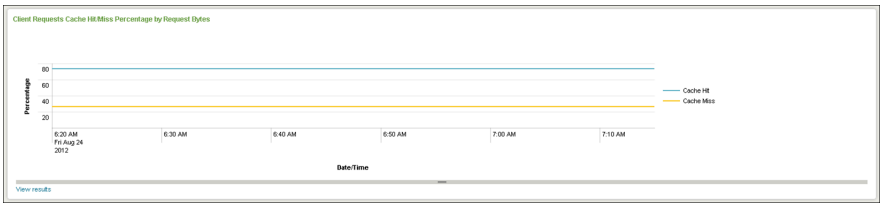


The following table describes the chart within this dashboard.

Table 16: Client Requests Cache Hit/Miss Percentage by Request Count Chart & Description

Chart	Description
Client Requests Cache Hit/Miss Percentage by Request Count	Provides percentage of client request cache hit and cache miss count on selected delivery service and delivery server.
Chart Information	The information within this chart is shown in line graphs with the Date/Time along the X-axis, the percentage of hit or misses per request count along the Y-axis. The legends representing the graph are Cache Hit and Cache Miss.
Chart Formula	The formulas used to derive the line graphs are: • # of cache hit/# of (cache hit + cache miss) on SE per 5 minute, 1 hour, or 1 day bucket • # of cache miss/# of (cache hit + cache miss) on SE per 5 minute, 1 hour, or 1 day bucket
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Client Requests Cache Hit/Miss Percentage by Request Bytes



The following table describes the chart within this dashboard.

Table 17: Client Requests Cache Hit/Miss Percentage by Request Bytes Chart & Description

Chart	Description
Client Requests Cache Hit/Miss Percentage by Request Bytes	Provides percentage of client request cache hit and cache miss bytes on selected delivery service and delivery server.
Chart Information	The information within this chart is shown in line graphs with the Date/Time along the X-axis and the percentage of hit or misses per request count along the Y-axis. The legends representing the graph are Cache Hit and Cache Miss.
Chart Formula	The formulas used to derive the line graphs are: • # of cache hit/# of (cache hit + cache miss) on SE per 5 minute, 1 hour, or 1 day bucket • # of cache miss/# of (cache hit + cache miss) on SE per 5 minute, 1 hour, or 1 day bucket
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Client Requests Cache Miss in Bytes vs. Total Bytes Delivered

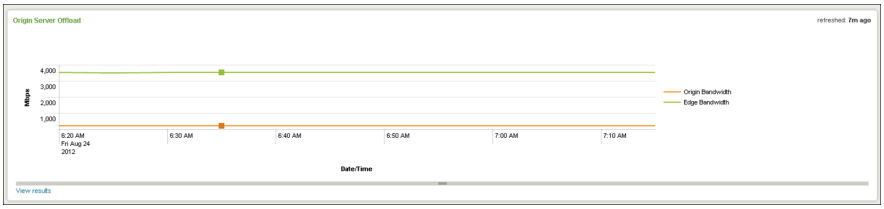
The following table describes the chart within this dashboard.

Table 18: Client Requests Cache Miss in Bytes vs. Total Bytes Delivered Chart & Description

Chart	Description
Client Requests Cache Miss in Bytes vs. Total Bytes Delivered	Provides cache miss bytes and total bytes delivered.
Chart Information	The information within this chart is shown in line graphs with the Date/Time along the X-axis, the cache miss in GB along the Y-axis. The legends representing the graph are Cache Miss and Total GB.
Chart Formula	The formulas used to derive the line graphs are: • Total GB of cache miss per 5 minute, 1 hour, or 1 day bucket • Total GB of (cache hit + cache miss) per 5 minute, 1 hour, or 1 day bucket

Chart	Description
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Origin Server Offload



The following table describes the chart within this dashboard.

Table 19: Origin Server Offload Chart & Description

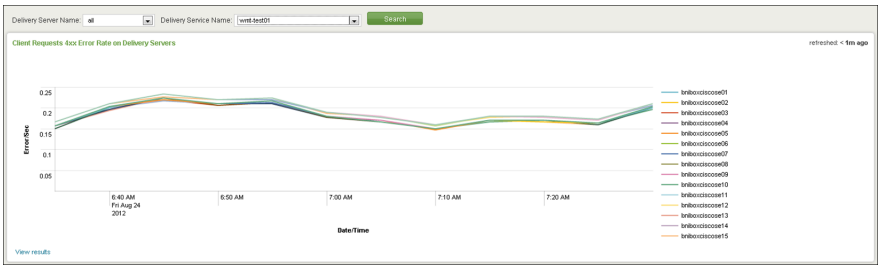
Chart	Description
Origin Server Offload	Provides edge bandwidth vs. origin bandwidth usage to show origin offload.
Chart Information	The information within this chart is shown in line graphs with the Date/Time, in 5 minute, 1 hour, or 1 day increments along the X-axis, the MB per second along the Y-axis. The legend representing the graph is the Delivery Server.
Chart Formula	The formulas used to derive the line graphs are: • Origin bandwidth consumed every 1 hour or 1 day bucket • Edge bandwidth consumed every 1 hour or 1 day bucket
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Accessing the Quality of Service Dashboard

The Quality of Service dashboard provides real-time data (last 5 minutes, 60 minutes, or last 24 hours) for Quality of Service (QoS), as it pertains to the response rate, error rate by service, and by server/router.

To access the Quality of Service dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Real Time** > **Quality of Service**.

Client Requests 4xx Error Rate on Delivery Servers

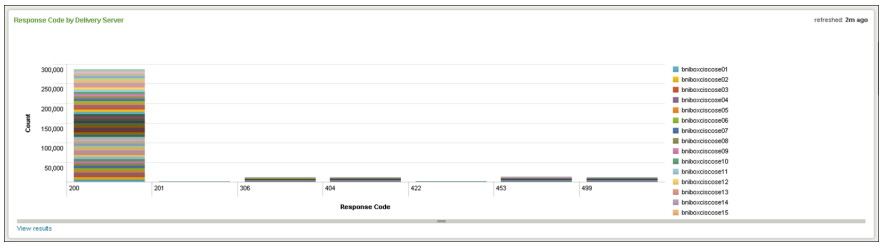


The following table describes the chart within this dashboard.

Table 20: Client Requests 4xx Error Rate on Delivery Servers Chart & Description

Chart	Description
Client Requests 4xx Error Rate on Delivery Servers	Provides client errors rate on each delivery servers.
Chart Information	The information within this chart is shown in line graphs with the Date/Time, in 1 or 5 minute, 1 hour, or 1 day increments along the X-axis and Errors per Second along the Y-axis. The legend representing the graph is the Delivery Server Name.
Chart Formula	The formulas used to derive the line graphs are: • Number of 4xx responses/60 (data point for each 60 seconds period) for the real-time search • Number of 4xx responses/300 per 5 minute bucket • Number of 4xx responses/3600 per 1 hour bucket • Number of 4xx responses/86400 per 1 day bucket
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Response Code by Delivery Server



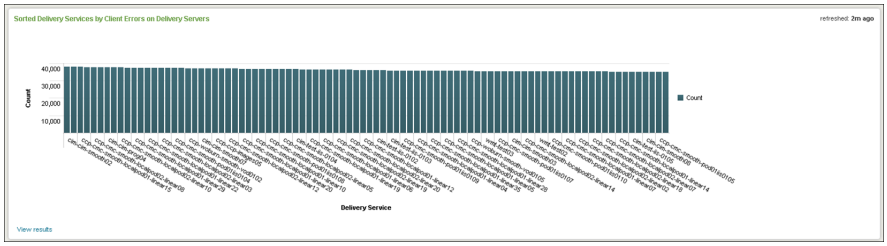
The following table describes the chart within this dashboard.

Table 21: Response Code by Delivery Server Chart & Description

Chart	Description
Response Code by Delivery Server	Provides response codes count on each delivery server.
Chart Information	The information within this chart is shown in stacked columns with response code along the X-axis and response Count along the Y-axis. The legend representing the graph is the Delivery Server Name.
Chart Formula	The formulas used to derive the graphs are: count the total number of each Response code per DS and SE during the selected time period.

Chart	Description
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Sorted Delivery Services by Client Errors on Delivery Servers

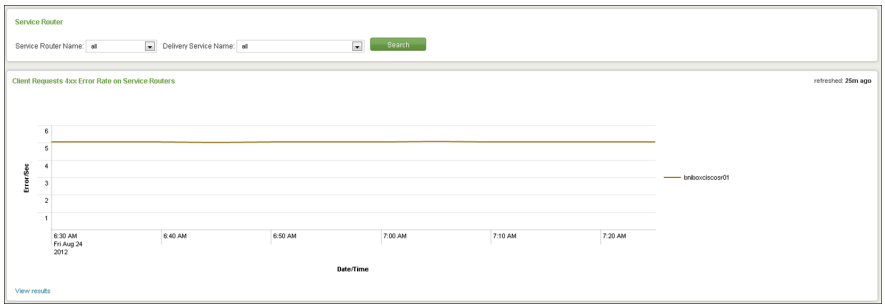


The following table describes the chart within this dashboard.

Table 22: Sorted Delivery Services by Client Errors on Delivery Servers Chart & Description

Chart	Description
Sorted Delivery Services by Client Errors on Delivery Servers	Provides delivery error count by delivery service, in descending order.
Chart Information	The information within this chart is shown in columns with the delivery service along the X-axis and response Count along the Y-axis. The legend representing the graph is the count.
Chart Formula	The formulas used to derive the graphs are: the count of the total number of 4xx Error code sorted by Delivery Service.
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Client Requests 4xx Error Rate on Service Routers

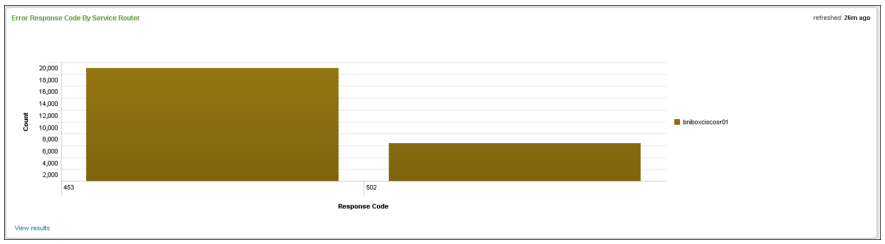


The following table describes the chart within this dashboard.

Table 23: Client Requests 4xx Error Rate on Service Routers Chart & Description

Chart	Description
Client Requests 4xx Error Rate on Service Routers	Provides 4xx error rate on service routers.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and Errors per Second along the Y-axis. The legend representing the graph is the Service Router Name.
Chart Formula	The formulas used to derive the graphs are: • Number of 4xx responses/10 (data point for each 10 seconds period) for the real-time search • Number of 4xx responses/300 per 5 minute, 1 hour, or 1 day bucket
Chart Filters	This chart uses Delivery Service and Service Router Names as filters.

Error Response Code By Service Router

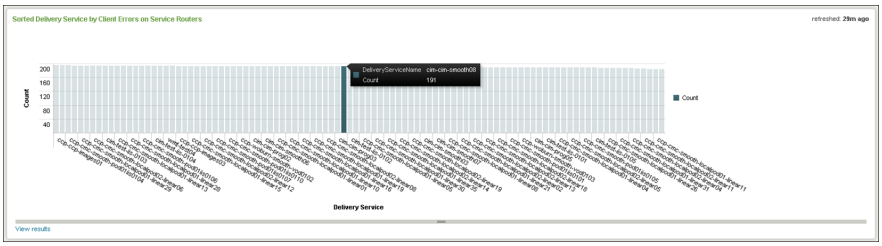


The following table describes the chart within this dashboard.

Table 24: Error Response Code By Service Router Chart & Description

Chart	Description
Error Response Code By Service Router	Provides error response count on selected service routers.
Chart Information	The information within this chart is shown as a stacked column with the Response Code along the X-axis and Error Count along the Y-axis. The legend representing the graph is the Service Router Name.
Chart Formula	The formulas used to derive the graphs are: Count of the total number of each Response Code per DS or SR during the selected time period.
Chart Filters	This chart uses Delivery Service and Service Router Names as filters.

Sorted Delivery Service by Client Errors on Service Routers



The following table describes the chart within this dashboard.

Table 25: Sorted Delivery Service by Client Errors on Service Routers Chart & Description

Chart	Description
Sorted Delivery Service by Client Errors on Service Routers	Provides request error count on service router by delivery service, in descending order.
Chart Information	The information within this chart is shown in columns with the Delivery Service along the X-axis and Error Count along the Y-axis. The legend representing the graph is the error count.
Chart Formula	The formulas used to derive the graphs are: Count of the total number of 4xx Error code on SRs sorted by Delivery Service.
Chart Filters	This chart uses Delivery Service and Service Router Names as filters.

Accessing the ABR Quality of Service Dashboard

The ABR Quality of Service dashboard provides QoS information, as it pertains to the ABR request rate, error rate, and the rate shift trend.

To access the ABR Quality of Service dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Real Time** > **ABR Quality of Service**.

Bitrate information for HLS and MobiTV

Before populating the data, you need to update the profile name and the respective bitrate in the file **profilename_bitrate.csv** in the JS node, at the following location:

/opt/splunk/etc/deployment-apps/appnormalize/lookups

After you open the file, enter the profile name and the respective bitrate. Make sure that you do not remove the comma in the last line.

For example,

File Name: profilename_bitrate.csv

Node: JS Node

File Location: /opt/splunk/etc/deployment-apps/appnormalize/lookups

You need to update the file with the profile name and map it to the respective bitrate, as per the configuration in your setup.

The default content of the file is:

Profile,Bitrate

,

For example, if you need to update the profile name (profile1, profile2 with bitrate 1024 and 2048 respectively), then the file will be:

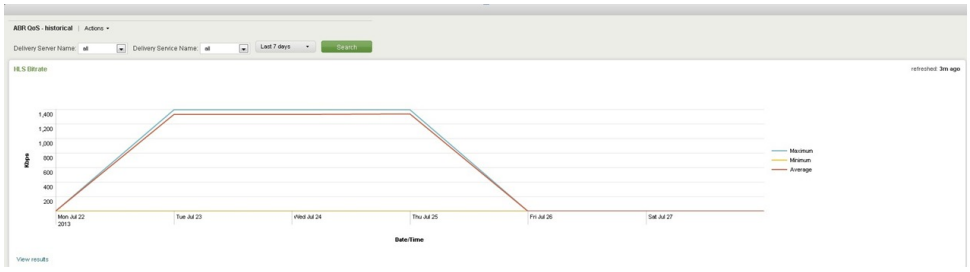
Profile,Bitrate

profile1, 1024

profile2, 2048

,

HLS Bitrate



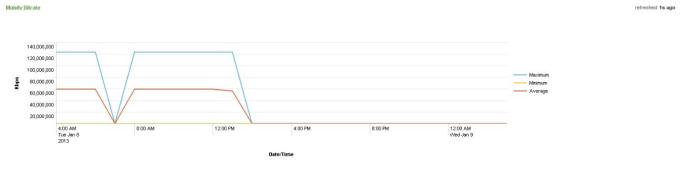
361113

The following table describes the chart within this dashboard.

Table 26: HLS Bitrate Chart & Description

Chart	Description
HLS Bitrate	Provides HLS (live streaming) content delivery bitrate in Kbps.
Chart Information	The information within this chart is shown as a line graph with Date/Time along the X-axis and the bitrate in Kbps along the Y-axis. The legends representing the graph are Maximum, Minimum, and Average.
Chart Formula	The formula used to derive the graph is: minimum/average/maximum of the bitrate for the HLS traffic per 5 minute, 1 hour, or 1 day buckets.
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

MobiTV Bitrate



320317

Table 27: MobiTV Bitrate Chart & Description

Chart	Description
MobiTV Bitrate	Provides MobiTV (smooth streaming) content delivery bitrate in Kbps.
Chart Information	The information within this chart is shown as a line graph with Date/Time along the X-axis and the bitrate in Kbps along the Y-axis. The legends representing the graph are Maximum, Minimum, and Average.
Chart Formula	The formula used to derive the graph is: minimum/average/maximum of the bitrate for the MobiTV traffic per 5 minute, 1 hour, or 1 day buckets.
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

HSS Bitrate

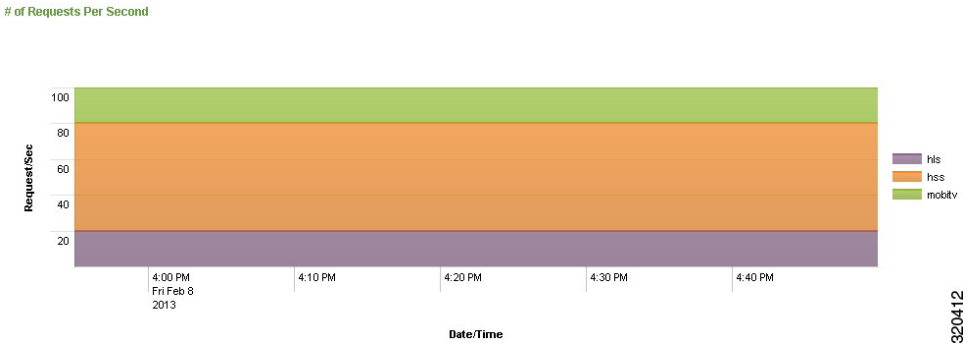
320316

The following table describes the chart within this dashboard.

Table 28: HSS Bitrate Chart & Description

Chart	Description
HSS Bitrate	Provides HSS (smooth streaming) content delivery bitrate in Kbps.
Chart Information	The information within this chart is shown as a line graph with Date/Time along the X-axis and the bitrate in Kbps along the Y-axis. The legends representing the graph are Maximum, Minimum, and Average.
Chart Formula	The formula used to derive the graph is: minimum/average/maximum of the bitrate for the HSS traffic per 5 minute, 1 hour, or 1 day buckets.
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Number of Requests Per Second

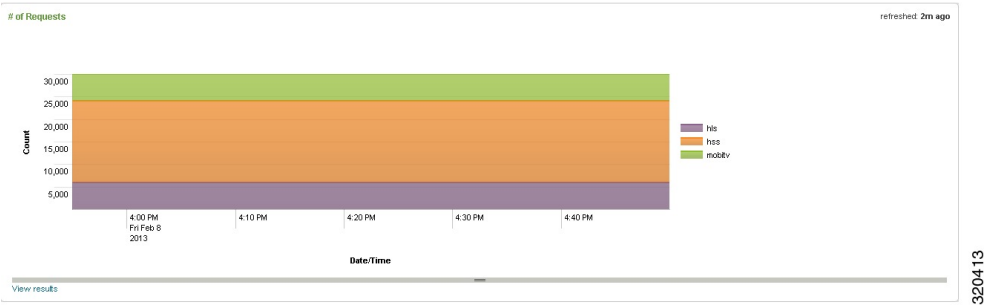


The following table describes the chart within this dashboard.

Table 29: Number of Requests Per Second Chart & Description

Chart	Description
# of Requests Per Second	Provides request rate for HLS, HSS, and MobiTV traffic.
Chart Information	The information within this chart is shown as stacked area graphs with the Date/Time along the X-axis and Request per Second along the Y-axis. The legends representing the graph are HLS, HSS, and MobiTV.
Chart Formula	The formula used to derive the graph is: HSS/HLS/MobiTV requests per second per DS and SE per 5 minutes, 1 hour, or 1 day buckets.
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Number of Requests



The following table describes the chart within this dashboard.

Table 30: Number of Requests Chart & Description

Chart	Description
# of Requests	Provides request count of HLS, HSS, and MobiTV traffic.
Chart Information	The information within this chart is shown in stacked area graphs with the Date/Time along the X-axis, the request Count along the Y-axis. The legends representing the graph are HLS, HSS, and MobiTV.

Chart	Description
Chart Formula	The formula used to derive the graph is: HSS/HLS/MobiTV requests per DS and SE per 5 minutes, 1 hour, or 1 day buckets.
Chart Filters	This chart uses Delivery Service and Delivery Server Names as filters.

Accessing the ABR Quality of Service Adaptation Dashboard

The ABR Quality of Service Adaptation dashboard provides QoS information, as it pertains to the ABR request rate, error rate, and the rate shift trend.

To access the ABR Quality of Service Adaptation dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Real Time** > **ABR Quality of Service Adaptation**.

HLS Bitrate Adaptation

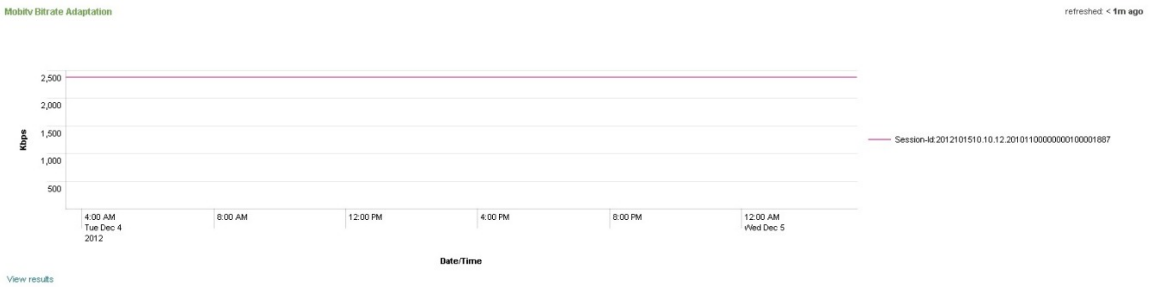
361112

The following table describes the chart within this dashboard.

Table 31: HLS Bitrate Adaptation Chart & Description

Chart	Description
HLS Bitrate Adaptation	Displays the HLS bitrate adaptation for a given client IP.
Chart Information	The information within this chart is shown as a square wave with Date/Time along the X-axis and the bandwidth in Kbps along the Y-axis. The legends representing the graph is the Session ID.
Chart Formula	The formula used to derive the graph is the bitrate shifts for a given client IP over time across sessions.
Chart Filters	This chart uses the Client IP address and Time Range as filters.

MobiTV Bitrate Adaptation



320315

The following table describes the chart within this dashboard.

Table 32: MobiTV Bitrate Adaptation Chart & Description

Chart	Description
MobiTV Bitrate Adaptation	Displays the MobiTV bitrate adaptation for a given client IP.
Chart Information	The information within this chart is shown as a square wave with the Date/Time along the X-axis and the bandwidth in Kbps along the Y-axis. The legends representing the graph is the Session ID.
Chart Formula	The formula used to derive the graph is the bitrate shifts for a given client IP over time across sessions.
Chart Filters	This chart uses the Client IP address and Time Range as filters.

HSS Bitrate Adaptation

320314

The following table describes the chart within this dashboard.

Table 33: HSS Bitrate Adaptation Chart & Description

Chart	Description
HSS Bitrate Adaptation	Displays the HSS bitrate adaptation for a given client IP.

Chart	Description
Chart Information	The information within this chart is shown as a square wave with the Date/Time along the X-axis and the bandwidth in Kbps along the Y-axis. The legends representing the graph is the Session ID.
Chart Formula	The formula used to derive the graph is the bitrate shifts for a given client IP over time across sessions.
Chart Filters	This chart uses the Client IP address and Time Range as filters.

Operator-Trend Dashboards

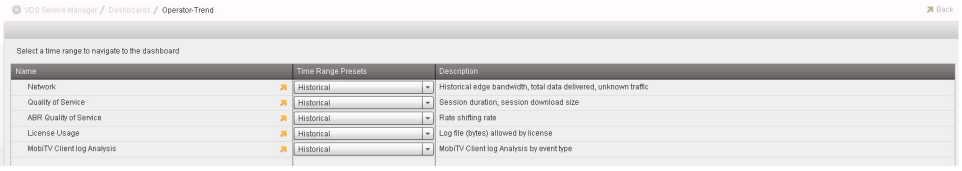
The Operator-Trend dashboards provide historical trend information. This provides CDN operators with a means to quickly identify network throughput bottlenecks and correct service quality problems as they happen. The Operator-Trend dashboard includes the following:

- Network - provides an historical representation of edge bandwidth, total data delivered, and unknown traffic received.
- Quality of Service - provides an historical QoS information, as it pertains to session duration and session download size.
- ABR Quality of Service - provides an historical ABR QoS information, as it pertains to the rate shifting rate.
- License Usage - provides an historical information, as it pertains to log file size, allowed per license.
- MobiTV Client Log Analysis - provides MobiTV Client Analysis by event type.

To access the Operator-Real Time Dashboards, perform the following:

1 From the main page, select , select **Navigation** > **VDS Service Manager** > **Dashboards**.

2 Select **Operator-Trend**. A list of Operator-Trend dashboards are displayed. For example:

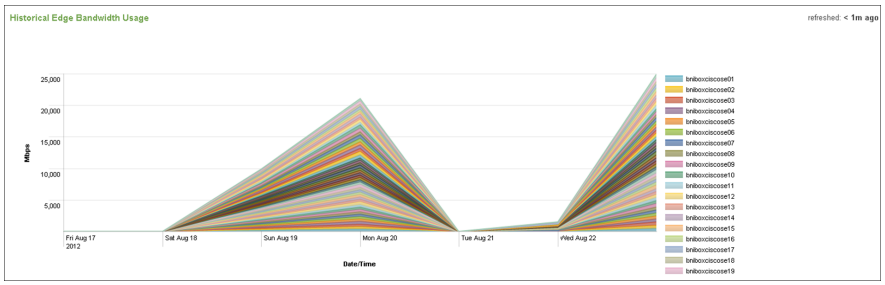


Accessing the Operator-Trend Network Dashboard

The Operator-Trend Network dashboard provides an historical representation of edge bandwidth, total data delivered, and unknown traffic received.

To access the Operator-Trend Network dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Trend** > **Network**.

Historical Edge Bandwidth Usage

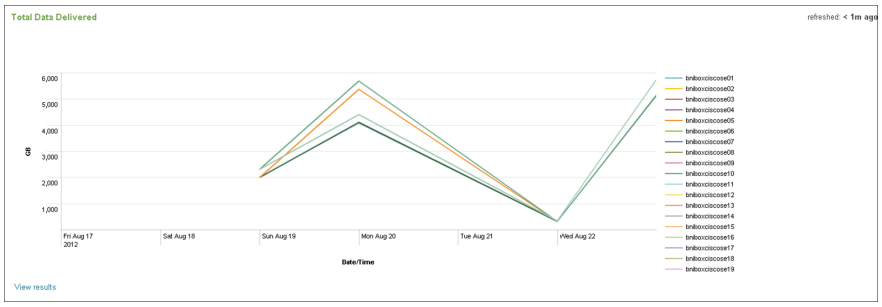


The following table describes the chart within this dashboard.

Table 34: Historical Edge Bandwidth Usage Chart & Description

Chart	Description
Historical Edge Bandwidth Usage	Illustrates the historical bandwidth usage for all or each CDN within the system.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the bandwidth usage in Mbps along the Y-axis. The legends representing the graph are by Delivery Server Name.
Chart Formula	The formula used to derive the graph is: the total data delivered (by session end timestamp) / (24 x 3600), per Delivery Server.
Chart Filters	This chart uses Delivery Server Name, Delivery Service Name, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time, as filters.

Total Data Delivered



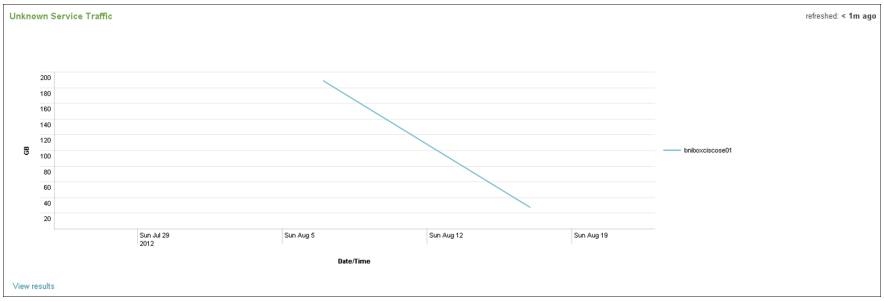
The following table describes the chart within this dashboard.

Table 35: Total Data Delivered Chart & Description

Chart	Description
Total Data Delivered	Illustrates the total data delivered for all or each CDN within the system.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the data delivered in GB along the Y-axis. The legends representing the graph are by Delivery Server Name.

Chart	Description
Chart Formula	The formula used to derive the graph is the total data delivered (by session end timestamp) (unit GB), per Delivery Server.
Chart Filters	This chart uses Delivery Server Name, Delivery Service Name, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time as filters.

Unknown Service Traffic



The following table describes the chart within this dashboard.

Table 36: Unknown Service Traffic Chart & Description

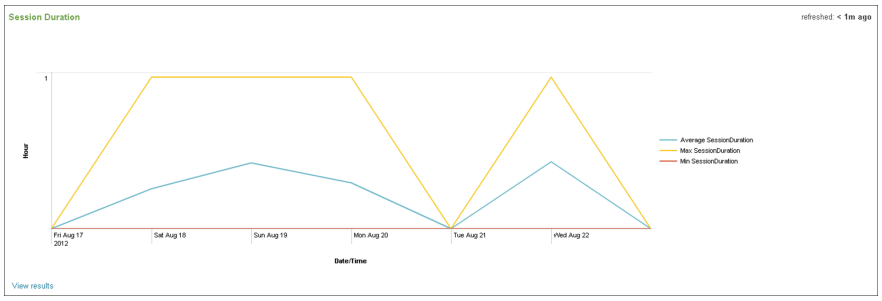
Chart	Description
Unknown Service Traffic	Illustrates the unknown service traffic for all or each CDN within the system.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the unknown service traffic in GB along the Y-axis. The legends representing the graph are by Delivery Server Name.
Chart Formula	The formula used to derive the graph is the total unknown traffic data delivered in GB, per Delivery Server.
Chart Filters	This chart uses Delivery Server Name, Delivery Service Name, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time, as filters.

Accessing the Operator-Trend Quality of Service Dashboard

The Operator-Trend Quality of Service dashboard provides an historical representation of session durations and session download sizes.

To access the Operator-Trend Quality of Services dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Trend** > **Quality of Service**.

Session Duration



The following table describes the chart within this dashboard.

Table 37: Session Duration Chart & Description

Chart	Description
Session Duration	Illustrates the historical session duration for all or each CDN within the system.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the session duration in Hour along the Y-axis. The legends representing the graph are Average, Minimum, and Maximum.
Chart Formula	The formula used to derive the graph is: the total data delivered (by session end timestamp) / (24 x 3600), per Delivery Server.
Chart Filters	This chart uses Delivery Server Name, Delivery Service Name, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time as filters.

Session Download Size

The following table describes the chart within this dashboard.

Table 38: Session Download Size Chart & Description

Chart	Description
Session Download Size	Illustrates the session download size for all or each CDN within the system.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the session download size in MB along the Y-axis. The legends representing the graph are Average, Minimum, and Maximum.
Chart Formula	The formula used to derive the graph is the min/avg/max of the bytes delivered, per session.
Chart Filters	This chart uses Delivery Server Name, Delivery Service Name, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time, as filters.

Accessing the Operator-Trend ABR Quality of Service Dashboard

The Operator-Trend ABR Quality of Service dashboard provides an historical representation of the rate shifting rate within VDS-SM.

To access the Operator-Trend ABR Quality of Service dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Trend** > **ABR Quality of Service**.

HLS Bitrate Oscillation Rate

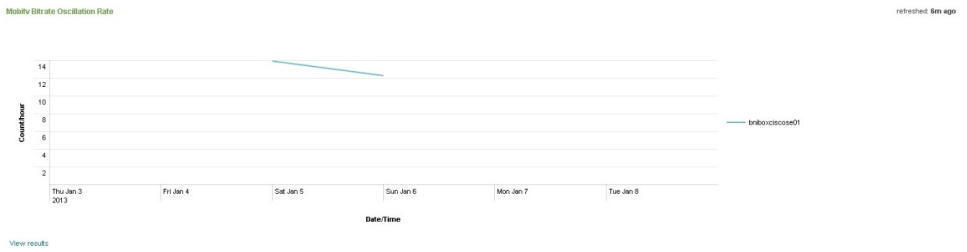
361114

The following table describes the chart within this dashboard.

Table 39: HLS Bitrate Oscillation Rate Chart & Description

Chart	Description
HLS Bitrate Oscillation Rate	Illustrates the historical HLS bitrate oscillation rate for all or each delivery service within the system.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the bitrate Count per hour along the Y-axis. The legends representing the graph are the delivery services.
Chart Formula	The formula used to derive the graph is: the total number of downshifting and upshifting events (between a session start event and session end event).
Chart Filters	This chart uses Delivery Service Name, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time as filters.

MobiTV Bitrate Oscillation Rate



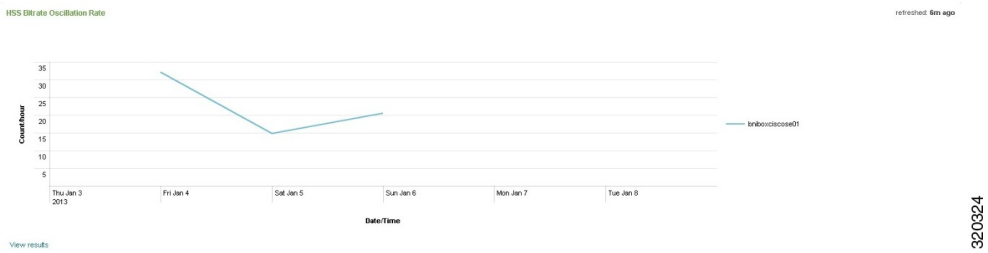
320325

The following table describes the chart within this dashboard.

Table 40: MobiTV Bitrate Oscillation Rate Chart & Description

Chart	Description
MobiTV Bitrate Oscillation Rate	Illustrates the historical MobiTV bitrate oscillation rate for all or each delivery service within the system.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the bitrate Count per hour along the Y-axis. The legends representing the graph are the delivery services.
Chart Formula	The formula used to derive the graph is: the total number of downshifting and upshifting events (between a session start event and session end event).
Chart Filters	This chart uses Delivery Service Name, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time as filters.

HSS Bitrate Oscillation Rate



320324

The following table describes the chart within this dashboard.

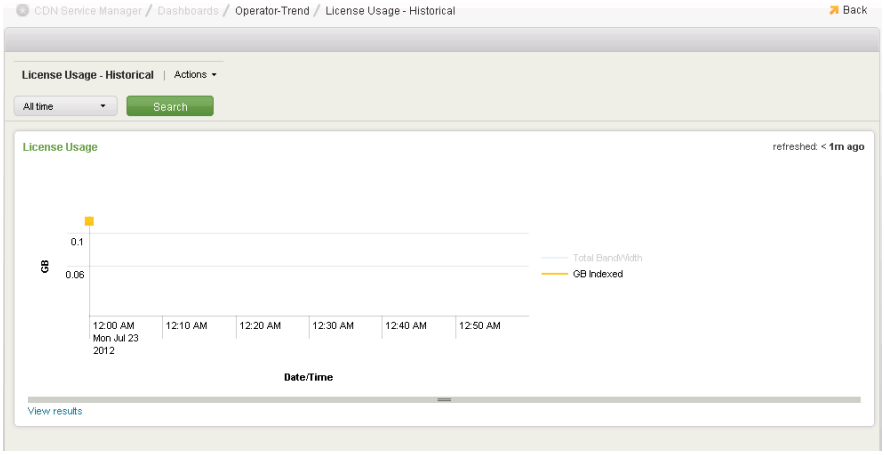
Table 41: HSS Bitrate Oscillation Rate Chart & Description

Chart	Description
HSS Bitrate Oscillation Rate	Illustrates the historical HSS bitrate oscillation rate for all or each delivery service within the system.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the bitrate Count per hour along the Y-axis. The legends representing the graph are the delivery services.
Chart Formula	The formula used to derive the graph is: the total number of downshifting and upshifting events (between a session start event and session end event).
Chart Filters	This chart uses Delivery Service Name, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time as filters.

Accessing the Operator-Trend License Usage Dashboard

The Operator-Trend License Usage dashboard provides an historical representation of the log file size allowed per license.

To access the Operator-Trend License Usage dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Trend** > **License Usage**.



The following table describes the chart available within this dashboard.

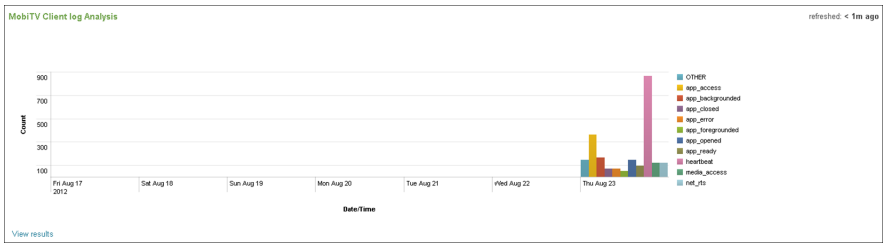
Table 42: License Usage Chart & Description

Chart	Description
License Usage	Illustrates the historical value for the log file usage per license.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the License Usage in GB along the Y-axis. The legends representing the graph are by total data Delivered and GB data indexed.
Chart Formula	The formula used to derive the graph is: total data delivered for all DS and unknown service data per day vs. GB data indexed per day
Chart Filters	This chart uses Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time, as filters.

Accessing the Operator-Trend MobiTV Client Log Analysis Dashboard

The Operator-Trend MobiTV Client Log Analysis dashboard provides an historical representation of the log file size allowed per license.

To access the Operator-Trend MobiTV Client Log Analysis dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Operator-Trend** > **MobiTV Client Log Analysis**. For example:



The following table describes the chart available within this dashboard.

Table 43: MobiTV Client Log Analysis Chart & Description

Chart	Description
MobiTV Client Log Analysis	Provides the statistics for the log event types over a period of time that the user selects.
Chart Information	The information within this chart is shown as a column graph with the Date/Time along the X-axis and the log event Count along the Y-axis. The legend representing the graph is the event type.
Chart Formula	The formula used to derive the graph is: the total count of the number of events by type.
Chart Filters	This chart uses Event Type Categories, Time Range Picker - Last 7 days, Last 30 days, Last 90 days, Last 365 days, and Custom time, as filters.

Exporting MobiTV Client Log in CSV Format

MobiTV client logs are delivered to a designated directory in VDS-SM LWF node. These log files are indexed and CSV files are generated, based on event type. These are transferred through SFTP or FTP to designated server location.

CSV files are generated and exported daily at 3:30 A.M. If the CSV files are already present in this location, it will not be generated again. One CSV file will be created for every MobiTV client log event and the CSV is exported for the missing event types.

To execute the script manually, perform the following steps:

1. Log in to the LWF; **Username**: bnisplunk and **Password**: password

2. Run the following command:

```
/opt/splunk/bin/splunk cmd python /opt/splunkforwarder/etc/apps/Mobitv/bin/mobitv.py
```

The event types from a scheduled day's log file are compared with the predefined set of event types.

CSV files for all event types are created after the script is executed. If there is no data for a particular event type, a CSV file containing only the header and sumline (footer) with no data is created.

Purging CSV Files

When the script is executed, it checks the current disk usage. If the disk usage is more than $max-disk-usage$, the CSV files generated before $quick-start-days$ days will be purged. If not, the CSV files generated before $detail-days$ days will be purged.

Enabling Key-based Authentication Support for MobiTV Logs Upload

1. Log in to primary Job scheduler; **Username**: bnisplunk and **Password**: password and edit the following search configuration file:

/opt/splunk/etc/deployment-apps/appnormalize/bin/common.conf

2. Add the following section to the configuration file:

[mobitv_log_export_server]

SFTPServer.mobitv.ip =

SFTPServer.mobitv.port =

SFTPServer.mobitv.username =

SFTPServer.mobitv.password =

SFTPServer.mobitv.directory =

SFTPServer.mobitv.keyfile.location =

SFTPServer.mobitv.keyfile.passcode =

SFTPServer.mobitv.keyfile.type =

These are explained in detail below.

SFTPServer.mobitv.ip =

This is the IP address of the SFTP server to which logs should be uploaded

SFTPServer.mobitv.port =

This is the connection port to the SFTP server
SFTPServer.mobitv.username =

This is the username to log in to the server
SFTPServer.mobitv.password =

This is the password to log in to the server (for password-based authentication only)

SFTPServer.mobitv.directory =

This is the directory to which the files should be uploaded
SFTPServer.mobitv.keyfile.location =

This is the path to the private key file of the server
SFTPServer.mobitv.keyfile.passcode =

This is the password of the public key file (if required)

SFTPServer.mobitv.keyfile.type =

This is the public key file type, that is, RSA or DSS

Usage of Configuration Options

1. To enable key-based authentication, the following options should be specified:

SFTPServer.mobitv.keyfile.location

SFTPServer.mobitv.keyfile.passcode

SFTPServer.mobitv.keyfile.type

2. To enable password-based authentication, specify 'SFTPServer.mobitv.password' and leave the following options empty:

SFTPServer.mobitv.keyfile.location

SFTPServer.mobitv.keyfile.passcode

SFTPServer.mobitv.keyfile.type

Note When both the options are specified, key-based authentication is attempted. There will be no fall back to password-based authentication, if the key-based authentication fails. Also, if [mobitv_log_export_server] section is not present in the common.conf file, then the connection will be attempted for the FTP server, which will be configured under the "mobitv-client" in **Navigation** > **Administration** > **Global Configurations** of the VDS-SM UI.

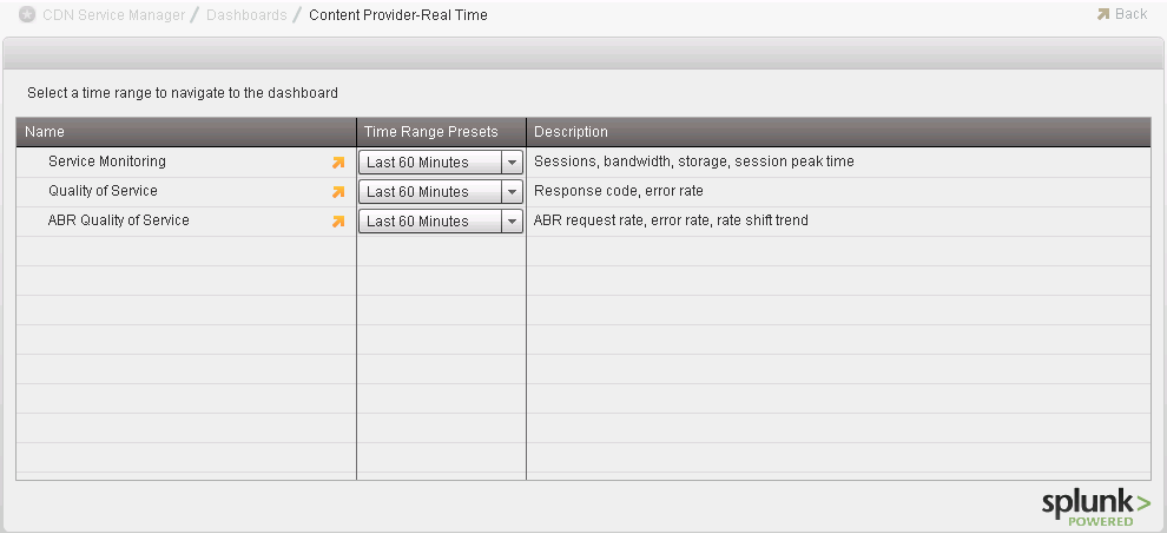
Content Provider-Real Time Dashboards

The Content Provider-Real Time dashboards provide real-time data for provider service monitoring, QoS, and ABR QoS information, including:

- Service Monitoring - provides provider session, bandwidth, storage, and session peak time information.
- Quality of Service - provides provider response code and error rate information.
- ABR Quality of Service - provides provider ABR request rates, error rates, and rate shift trend information.

To access the Content Provider-Real Time Dashboards, perform the following:

1. From the main page, select **Navigation** > **VDS Service Manager** > **Dashboards**.
2. Select **Content Provider-Real Time**. For example:

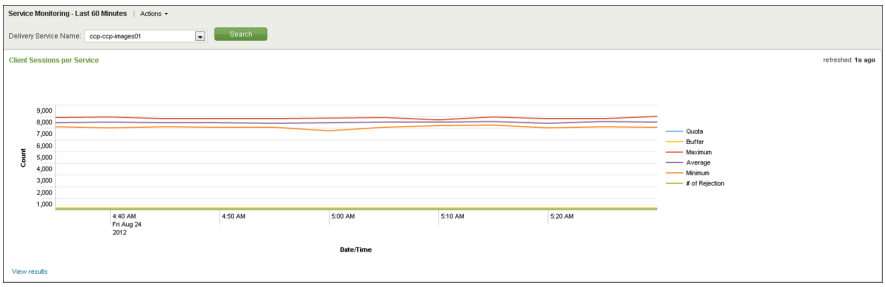


Accessing the Content Provider-Real Time Service Monitoring Dashboard

The Content Provider-Real Time Service Monitoring dashboard provides a representation of the content provider's per service sessions, bandwidth, storage, and session peak time information.

To access the Content Provider-Real Time Service Monitoring dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Content Provider-Real Time** > **Service Monitoring**.

Client Sessions per Service

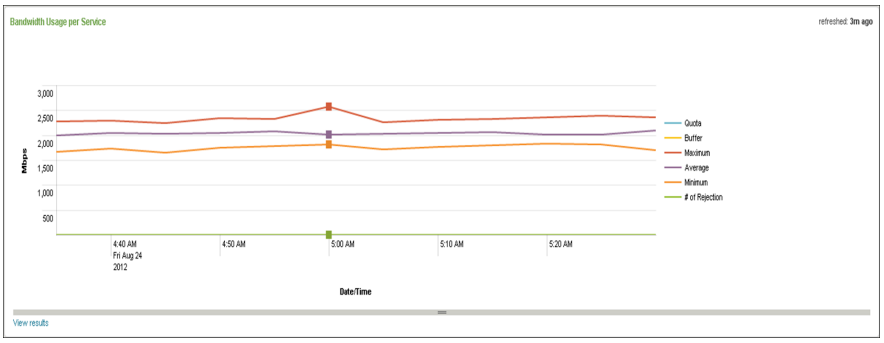


The following table describes the chart within this dashboard.

Table 44: Client Sessions per Service Chart & Description

Chart	Description
Client Sessions per Service	The session count for the sessions per service.
Chart Information	The information within this chart is shown as a line graph with the Date/Time, in 5 minute, one hour, or daily increments along the X-axis and the client sessions Count per service along the Y-axis. The legends representing the graph are quota, buffer, average, maximum, minimum, and rejection.
Chart Formula	The formula used to derive the graph is: • Quota line: Client Session Quota for selected Delivery Service • Quota + augment buffer line: quota * (1+augment percentage) • min/avg/max concurrent client session count • Rejection line: total rejections due to session quota from both all SE/SR
Chart Filters	This chart uses Delivery Service Name as filter.

Bandwidth Usage per Service

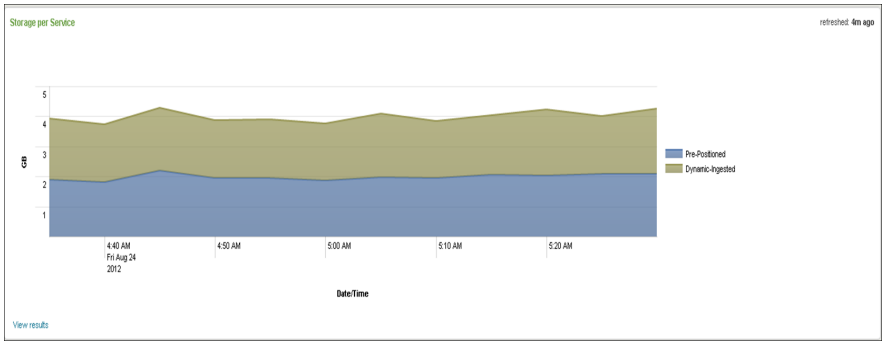


The following table describes the chart within this dashboard.

Table 45: Bandwidth Usage per Service Chart & Description

Chart	Description
Bandwidth Usage per Service	The Megabits per second for the allocated bandwidth usage per service.
Chart Information	The information within this chart is shown as a line graph with the Date/Time, in 5 minute, one hour, or daily increments along the X-axis and the bandwidth used in Mbps along the Y-axis. The legends representing the graph are quota, buffer, average, maximum, minimum, and rejection.
Chart Formula	The formula used to derive the graph is: • Quota line: Client Session Quota for selected Delivery Service • Quota + augment buffer line: quota * (1+augment percentage) • min/avg/max concurrent client session count • Rejection line: total rejections due to session quota from both all SE/SR
Chart Filters	This chart uses Delivery Service Name as filter.

Storage per Service



The following table describes the chart within this dashboard.

Table 46: Storage per Service Chart & Description

Chart	Description
Storage per Service	The data storage per service.
Chart Information	The information within this chart is shown as a line graph with the Date/Time, in 5 minute, one hour, or daily increments along the X-axis and the data storage in GB along the Y-axis. The legends representing the graph are pre-positioned and dynamic-ingested.

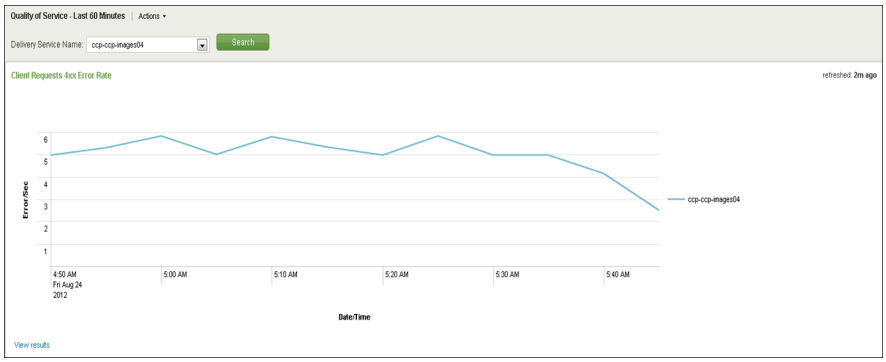
Chart	Description
Chart Formula	The formula used to derive the graph is: • average of pre-positioned disk space per 5 minutes bucket • average of dynamic-ingested disk space per 5 minutes bucket
Chart Filters	This chart uses Delivery Service Name as filter.

Accessing the Content Provider-Real Time Quality of Service Dashboard

The Content Provider-Real Time Quality of Service dashboard provides a representation of the content provider's per service response codes and error rates.

To access the Content Provider-Real Time Quality of Service dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Content Provider-Real Time** > **Quality of Service**.

Client Requests 4xx Error Rate

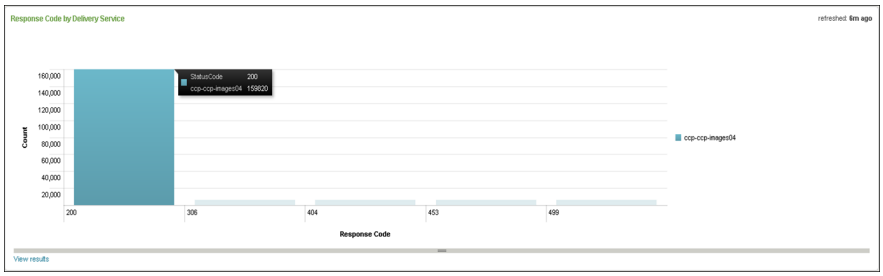


The following table describes the chart within this dashboard.

Table 47: Client Requests 4xx Error Rate Chart & Description

Chart	Description
Client Requests 4xx Error Rate	The client requests 4xx error rate, in errors per second.
Chart Information	The information within this chart is shown as a line graph with the date and time in 5 minute, 1 hour, or daily increments along the X-axis and the Error per Second along the Y-axis.
Chart Formula	The formula used to derive the graph is: the number of 4xx responses/300 per 5 minute interval.
Chart Filters	This chart uses the Delivery Service Name as filter.

Response Code by Delivery Service



The following table describes the chart within this dashboard.

Table 48: Response Code by Delivery Service Chart & Description

Chart	Description
Response Code by Delivery Service	The response code count, per response code.
Chart Information	The information within this chart is shown as a stacked column graph with the response code along the X-axis and the response code Count along the Y-axis. The legend used is the delivery service name.
Chart Formula	The formula used to derive the graph is: the total number of each response codes, per DS, during the selected time period.
Chart Filters	This chart uses the Delivery Service Name as filter.

Sorted Delivery Services by Client Errors

The following table describes the chart within this dashboard.

Table 49: Sorted Delivery Services by Client Errors Chart & Description

Chart	Description
Sorted Delivery Services by Client Errors	The total count of errors in all delivery services.
Chart Information	The information within this chart is shown as a stacked column graph with the delivery service name along the X-axis and the client error Count along the Y-axis.
Chart Formula	The formula used to derive the graph is: the total number of 4xx Error codes sorted by Delivery Service.

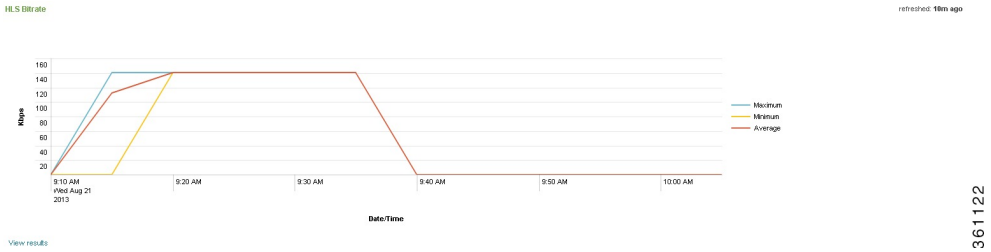
Chart	Description
Chart Filters	This chart uses the Delivery Service Name as filter.

Accessing the Content Provider-Real Time ABR Quality of Service Dashboard

The Content Provider-Real Time ABR Quality of Service dashboard provides a representation of the content provider's ABR request rate, error rate, and rate shift trend.

To access the Content Provider-Real Time ABR Quality of Service dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Content Provider-Real Time** > **ABR Quality of Service**.

HLS Bitrate



361122

The following table describes the chart within this dashboard.

Table 50: HLS Bitrate Chart & Description

Chart	Description
HLS Bitrate	Provides HLS (live streaming) content delivery bitrate in Kbps.
Chart Information	The information within this chart is shown as aline graph with the Date/Time, in 5 minute, 1 hour, or 1 day increments along the X-axis and bitrate in Kbps along the Y-axis. The legends representing the graph are Maximum, Minimum, and Average.
Chart Formula	The formula used to derive the graph is: minimum/average/maximum of the bitrate for the HLS traffic per 5 minute, 1 hour, or 1 day buckets.
Chart Filters	This chart uses the Delivery Service Name as filter.

MobiTV Bitrate

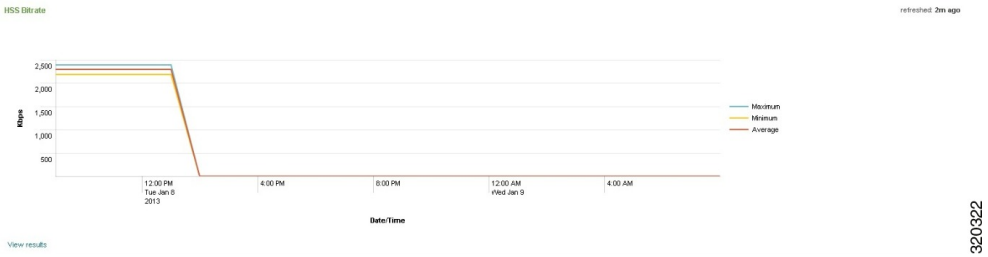
320323

The following table describes the chart within this dashboard.

Table 51: MobiTV Bitrate Chart & Description

Chart	Description
MobiTV Bitrate	The MobiTV bitrate in Kbps over time.
Chart Information	The information within this chart is shown in a line graph with the Date/Time in 5 minute, 1 hour, or daily increments along the X-axis and the bitrate in Kbps along the Y-axis. The legends representing the graphs are average, maximum, and minimum.
Chart Formula	The formula used to derive the graph is: the min/avg/max of the bitrate for the MobiTV traffic per 5 minutes, 1 hour and 1 day interval.
Chart Filters	This chart uses the Delivery Service Name as filter.

HSS Bitrate



The following table describes the chart within this dashboard.

Table 52: HSS Bitrate Chart & Description

Chart	Description
HSS Bitrate	The HSS bitrate in Kbps over time.
Chart Information	The information within this chart is shown as a line graph with the Date/Time in 5 minute, 1 hour, or daily increments along the X-axis and the bitrate in Kbps along the Y-axis. The legends representing the graphs are average, maximum, and minimum.
Chart Formula	The formula used to derive the graph is: the min/avg/max of the bitrate for the HSS traffic per 5 minutes, 1 hour and 1 day interval.
Chart Filters	This chart uses the Delivery Service Name as filter.

of Requests Per Second

The following table describes the chart within this dashboard.

Table 53: # of Requests Per Second Chart & Description

Chart	Description
# of Requests Per Second	The number of requests, per second, handled by the Delivery Server.
Chart Information	The information within this chart is shown as a line graph with the Date/Time in 5 minute, 1 hour, or daily increments along the X-axis and the Requests per Second along the Y-axis. The legends representing the graphs are HSS, HLS, and MobiTV.
Chart Formula	The formula used to derive the graph is: the HSS/HLS/MobiTV divided by 300 per DS or SE, 5 minutes, 1 hour and 1 day interval.
Chart Filters	This chart uses the Delivery Service Name as filter.

of Requests

The following table describes the chart within this dashboard.

Table 54: # of Requests Chart & Description

Chart	Description
# of Requests	The number of requests handled by the delivery server.

Chart	Description
Chart Information	The information within this chart is shown as a line graph with the Date/Time in 5 minute, 1 hour, or daily increments along the X-axis and the Requests per Second along the Y-axis. The legends representing the graphs are HSS, HLS, and MobiTV.
Chart Formula	The formula used to derive the graph is: the HSS/HLS/MobiTV requests, per 5 minutes, 1 hour and 1 day interval.
Chart Filters	This chart uses the Delivery Service Name as filter.

Content Provider-Trend Dashboards

The Content Provider-Trend dashboards provide historical trend information. The Content Provider-Trend dashboard includes the following:

- Network - provides an historical representation of edge bandwidth, total data delivered, and sessions declined due to quota limits.
- Client Usage - provides the number of unique clients, top clients, and the clients session rates.
- Service and Content Popularity - provides the top providers, services, and titles of the service and content popularity.
- Billing - provides historical information, as it pertains to billing statistics.

To access the Content Provider-Trend dashboards, perform the following:

1 From the main page, select **Navigation** > **VDS Service Manager** > **Dashboards**.

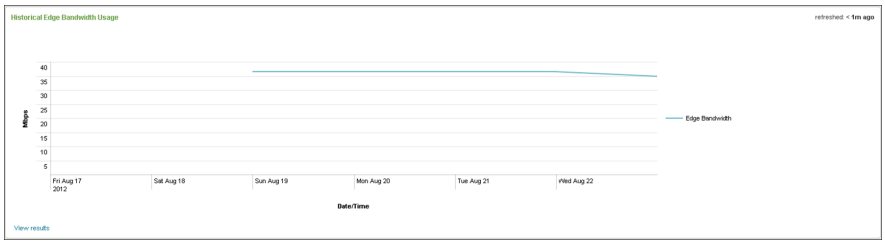
2 Select **Content Provider-Trend**. For example:

Accessing the Content Provider-Trend Network Dashboard

The Content Provider-Trend Network dashboard provides a representation of the content provider's trends in historical data as it pertains to network usage.

To access the Content Provider-Trend Network dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Content Provider-Trend** > **Network**.

Historical Edge Bandwidth Usage

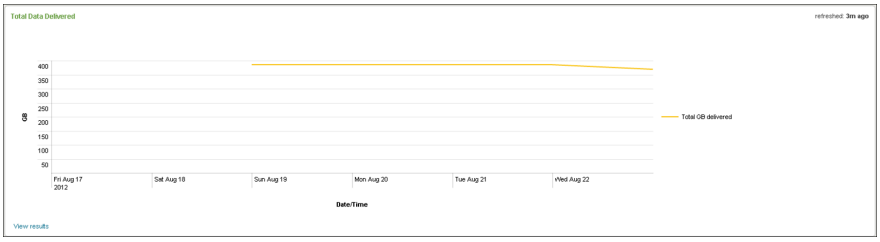


The following table describes the chart within this dashboard.

Table 55: Historical Edge Bandwidth Usage Chart & Description

Chart	Description
Historical Edge Bandwidth Usage	Provides the average bandwidth consumed by client, per day.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the bandwidth usage in Mbps along the Y-axis. The legend representing the graph is the Edge Bandwidth.
Chart Formula	The formula used to derive the graph is: the total content bytes delivered to a client divide 86400 in each day.
Chart Filters	This chart uses Delivery Service as filter.

Total Data Delivered

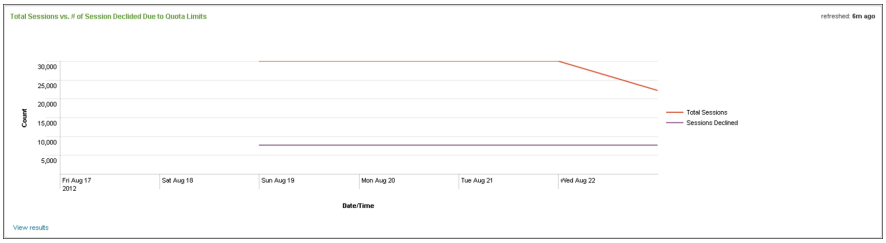


The following table describes the chart within this dashboard.

Table 56: Total Data Delivered Chart & Description

Chart	Description
Total Data Delivered	Provides the total content bytes delivered to a client, per day.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the data delivered in GB along the Y-axis. The legends representing the graph are by Total GB Delivered.
Chart Formula	The formula used to derive the graph is: the total content bytes delivered to client, per day.
Chart Filters	This chart uses Delivery Service as filter.

Total Sessions vs. Number of Session Declined Due to Quota Limits

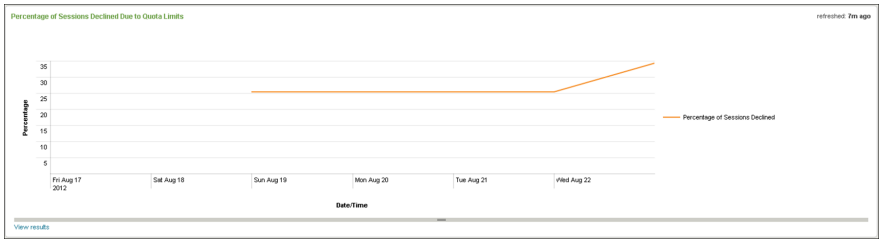


The following table describes the chart within this dashboard.

Table 57: Total Sessions vs. Number of Session Declined Due to Quota Limits Chart & Description

Chart	Description
Total Sessions vs. Number of Session Declined Due to Quota Limits	The session count for the total number of sessions and the sessions, per day, declined due to quota limits.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the session Count along the Y-axis. The legends representing the graph are by Total Sessions and Sessions Declined.
Chart Formula	The formula used to derive the graph is: the total client session number and the declined session number due to session/storage quota limitation within each day.
Chart Filters	This chart uses Delivery Service as filter.

Percentage of Sessions Declined Due to Quota Limits



The following table describes the chart within this dashboard.

Table 58: Percentage of Sessions Declined Due to Quota Limits Chart & Description

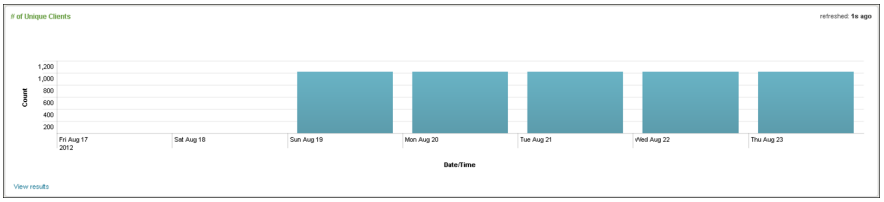
Chart	Description
Percentage of Sessions Declined Due to Quota Limits	The session count percentage declined due to quota limits.
Chart Information	The information within this chart is shown as a line graph with the Date/Time along the X-axis and the Percentage along the Y-axis. The legends representing the graph is the Percentage of sessions declined.
Chart Formula	The formula used to derive the graph is: the percentage of declined sessions due to session/storage quota limitation in total client sessions, per day.
Chart Filters	This chart uses Delivery Service as filter.

Accessing the Content Provider-Trend Client Usage Dashboard

The Content Provider-Trend Client Usage dashboard provides a representation of the content provider's trends in historical data, as it pertains to client usage.

To access the Content Provider-Trend Client Usage dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Content Provider-Trend** > **Client Usage**.

Number of Unique Clients

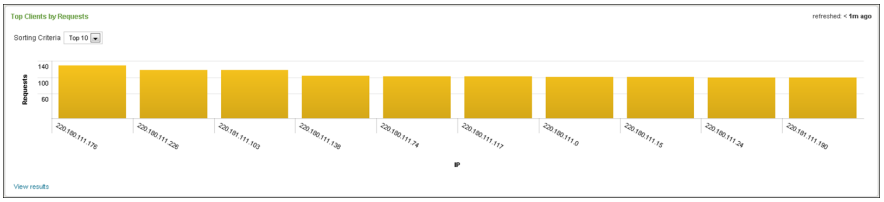


The following table describes the chart within this dashboard.

Table 59: Number of Unique Clients Chart & Description

Chart	Description
Number of Unique Clients	The number of unique clients per day.
Chart Information	The information within this chart is shown as a column chart line graph with the Date/Time along the X-axis and the unique client Count along the Y-axis.
Chart Formula	The formula used to derive the graph is: the total unique clients, per day.
Chart Filters	This chart uses Delivery Service as filter.

Top Clients by Requests



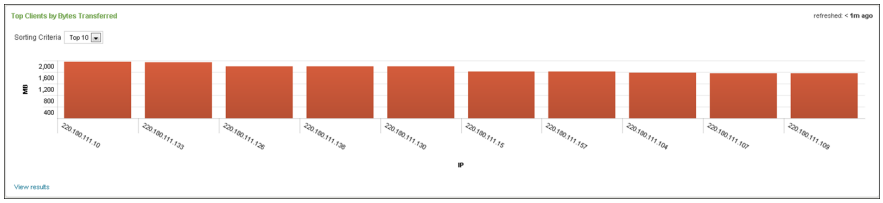
The following table describes the chart within this dashboard.

Table 60: Top Clients by Requests Chart & Description

Chart	Description
Top Clients by Requests	The number of top clients by request, per day.
Chart Information	The information within this chart is shown as a column chart line graph with the Date/Time along the X-axis and the client IP address along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top clients by Client Session number, per day.

Chart	Description
Chart Filters	This chart uses Delivery Service and Sorting Criteria as filters.

Top Clients by Bytes Transferred

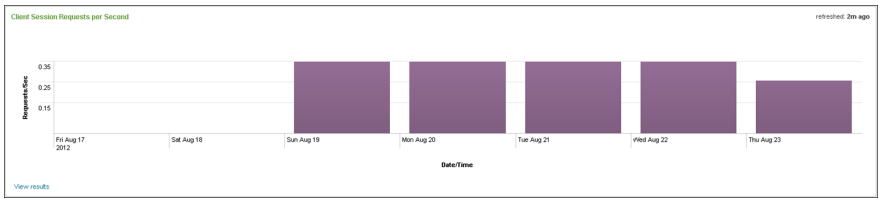


The following table describes the chart within this dashboard.

Table 61: Top Clients by Bytes Transferred Chart & Description

Chart	Description
Top Clients by Bytes Transferred	The number of top clients by bytes transferred, per day.
Chart Information	The information within this chart is shown as a column chart line graph with the Date/Time along the X-axis and the client IP address along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top clients by bytes transferred, per day.
Chart Filters	This chart uses Delivery Service and Sorting Criteria as filters.

Client Session Requests per Second



The following table describes the chart within this dashboard.

Table 62: Client Session Requests per Second Chart & Description

Chart	Description
Client Session Requests per Second	The average client session rate, per day.
Chart Information	The information within this chart is shown as a column chart line graph with the Date/Time along the X-axis and the client requests per second along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top clients by bytes transferred, per day.

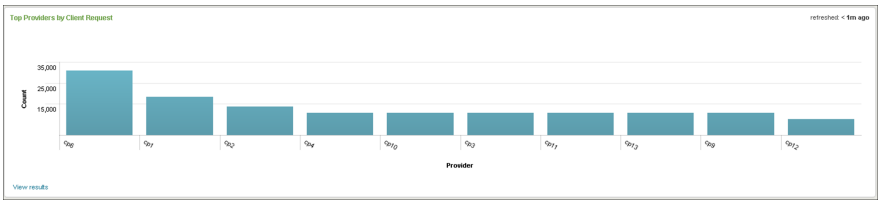
Chart	Description
Chart Filters	This chart uses Delivery Service as filter.

Accessing the Content Provider-Trend Service and Content Popularity Dashboard

The Content Provider-Trend Service and Content Popularity dashboard provides a representation of the content provider's client usage by service and content popularity.

To access the Content Provider-Trend Service and Content Popularity dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Content Provider-Trend** > **Service and Content Popularity**.

Top Providers by Client Request



The following table describes the chart within this dashboard.

Table 63: Top Providers by Client Request Chart & Description

Chart	Description
Top Providers by Client Request	The top providers, determined by the number of client requests per provider, per day.
Chart Information	The information within this chart is shown as a column area graph with the provider name along the X-axis and the top provider count by client request along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top providers by client session number, per day.
Chart Filters	This chart uses media format and sorting criteria as filters.

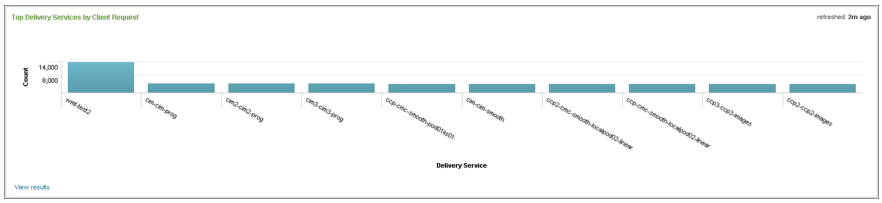
Top Providers by Bytes Transferred

The following table describes the chart within this dashboard.

Table 64: Top Providers by Bytes Transferred Chart & Description

Chart	Description
Top Providers by Bytes Transferred	Top providers by bytes transferred, per day.
Chart Information	The information within this chart is shown as a column area graph with the provider name along the X-axis and the top provider bytes transferred along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top providers by bytes transferred to clients, per day.
Chart Filters	This chart uses media format and sorting criteria as filters.

Top Delivery Services by Client Request



The following table describes the chart within this dashboard.

Table 65: Top Delivery Services by Client Request Chart & Description

Chart	Description
Top Delivery Services by Client Request	Top delivery services by client request, per day.
Chart Information	The information within this chart is shown as a column area graph with the delivery service name along the X-axis and the client request count along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top services by client session number, per day.
Chart Filters	This chart uses media format and sorting criteria as filters.

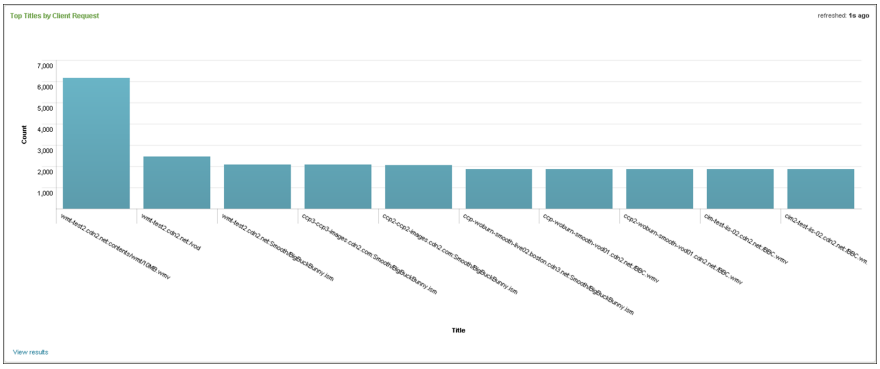
Top Delivery Services by Bytes Transferred

The following table describes the chart within this dashboard.

Table 66: Top Delivery Services by Bytes Transferred Chart & Description

Chart	Description
Top Providers by Bytes Transferred	Top delivery services by bytes transferred, per day.
Chart Information	The information within this chart is shown as a column area graph with the delivery service name along the X-axis and the bytes transferred along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top delivery services by bytes transferred to clients, per day.
Chart Filters	This chart uses media format and sorting criteria as filters.

Top Titles by Client Request

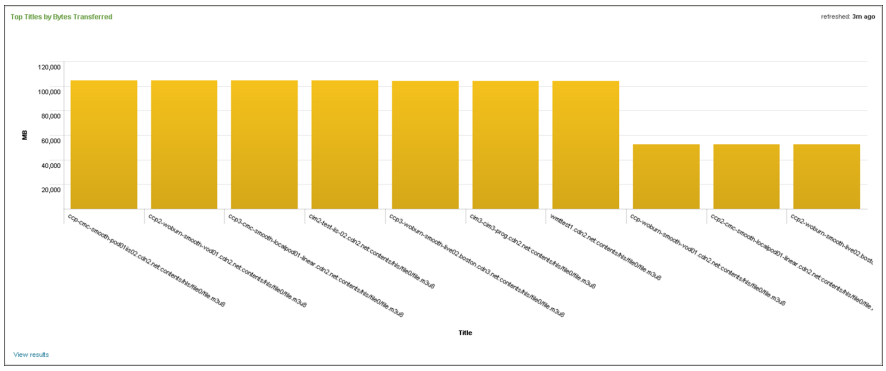


The following table describes the chart within this dashboard.

Table 67: Top Titles by Client Request Chart & Description

Chart	Description
Top Titles by Client Request	The top titles, determined by the number of client requests per title.
Chart Information	The information within this chart is shown as a column area graph with the title name along the X-axis and the client request count along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top titles by client session number, per day.
Chart Filters	This chart uses delivery service, media format, and sorting criteria as filters.

Top Titles by Bytes Transferred



The following table describes the chart within this dashboard.

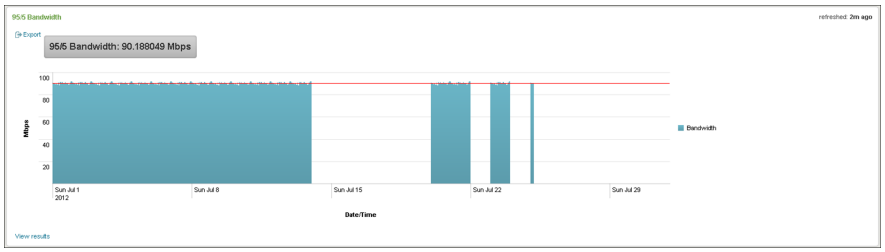
Table 68: Top Titles by Bytes Transferred Chart & Description

Chart	Description
Top Titles by Bytes Transferred	The top titles, determined by the number bytes of data transferred per title.
Chart Information	The information within this chart is shown as a column area graph with the title name along the X-axis and the bytes transferred along the Y-axis.
Chart Formula	The formula used to derive the graph is: the top titles by bytes Transferred to clients, per day.
Chart Filters	This chart uses delivery service, media format, and sorting criteria as filters.

Accessing the Content Provider-Trend Billing Dashboard

The Content Provider-Trend Billing dashboard provides a representation of the content provider's billing, per delivery service.

To access the Content Provider-Trend Billing dashboard, from the main page, select **Navigation** > **VDS Service Manager** > **Dashboards** > **Content Provider-Trend** > **Billing**. For example:

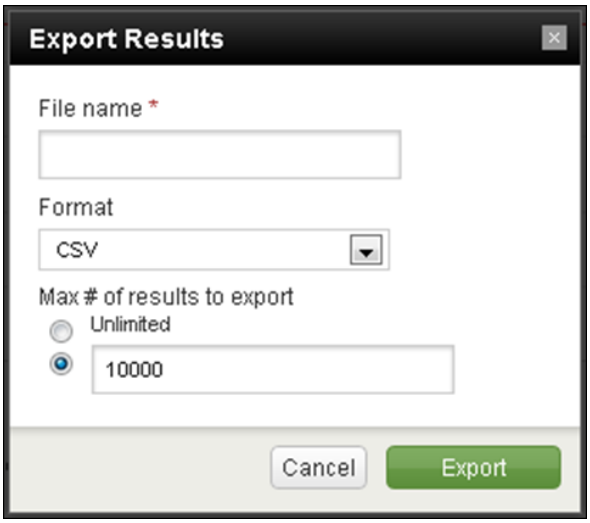


The following table describes the chart available within this dashboard.

Table 69: 95/5 Bandwidth Chart & Description

Chart	Description
95/5 Bandwidth	The 95/5 bandwidth and the average bandwidth, in the past months.
Chart Information	The information within this chart is shown as a column chart graph with the Date/Time along the X-axis and the bandwidth in Mbps along the Y-axis. The legends representing the graph is the Bandwidth.
Chart Formula	The formula used to derive this is: the average bandwidth from SR Snapshot log by hour. The red line is the 95/5 high bandwidth within the whole month.
Chart Filters	This chart uses delivery service as the filter.

Click **Export** link to export the bandwidth details.



Enter the following details in the Export Results dialog:

- File name - specify the name of the output file.
- Format - select the output format (CSV, XML, JSON)
- Max # of results to export - specify a limitation for the exported results

Billing Functionalities

By default, billing will be automatically generated daily at 21:30. It creates the billing csv file (detail, summary) for the delivery services in the delivery_service_topology.csv file, which has the billing item.

The path to view the billing.csv is:

Go to LWF node and navigate to */home/bnisplunk/data/billing*

Running billing manually

To run billing manually, perform the following steps:

1 Log in to the JS node and navigate to *opt/splunk/etc/apps/CDN_JS/bin*

2 In the above path, run *./hourlyDataCheck.sh -F YYYYMMDD* (replace the date for which hourlyDataCheck needs to be executed).

The above mentioned script marks the status as FIXED for every hour of that date in the "cdn_billing_session" index, which means there are NO missing logs.

To verify this, perform the following steps:

a) Log in to JS node and navigate to /*opt/splunk/bin*

b) Run *./splunk search 'index=cdn_billing_session | table Status,TimeId*.

c) Enter the username and password; **Username**: admin and **Password**: Beaumaris1

d) Check the status by verifying that the record is "FIXED YYYYMMDD". This implies that it is in FIXED status for all 24 hours in date YYYYMMDD.

3 In the path mentioned in step 1, run *./repeatCheck.sh -F YYYYMMDD*. (Replace the date for which repeatCheck needs to be executed).

This will mark the status as FORCED for every hour of that date in the "cdn_billing_session" index. Also, an "INDEXED" record for that day is created. This implies that all the logs of that date are indexed. You can verify this by performing the following steps:

a) Log in to the JS node and navigate to */opt/splunk/bin*

b) Run *./splunk search 'index=cdn_billing_session | table Status,TimeId'*

c) Enter the username and password; **Username**: admin and **Password**: Beaumaris1

d) Check the status by verifying that the record is "INDEXED YYYYMMDD. This implies that the date YYYYMMDD is already indexed.

4 Log in to the LWF node and navigate to *opt/splunkforwarder/etc/apps/Billing/bin* and run *./billing.sh*. The billing files will be generated under the dir "/home/bnisplunk/data/billing".

a) Log in to the JS node and navigate to */opt/splunk/bin*

b) Run *./splunk search 'index=cdn_billing_session | table Status,TimeId.*

c) Enter the username and password; **Username**: admin and **Password**: Beaumaris1

d) Check the status by verifying that the record is "BILLED YYYYMMDD". This implies that billing records have been generated for the date YYYYMMDD.

The generated CSV files will have the following fields:

Detailed csv

Delivery_Service:<Delivery Service Name> FQDN:<fqdn> provider:<Provider Name> reseller:<Reseller Name> StartTime,EndTime,ClientIP,ServerIP,URL,MB_Bytes_Delivered,error_code

Summary csv
Date,Total_GB_Bytes_Delivered,Total_Session_Declined_due_to_quota_limits,Total_Sessions_Delivered

North Bound Application Programming Interface

North Bound Application Programming Interface (NB API) is a programming interface for north bound analytics systems to integrate with VDS-SM and leverage the data maintained in VDS-SM for higher level aggregation and analysis. VDS-SM provides a RESTful Web Services API to query data from VDS-SM for analytics. VDS-SM supports predefined queries/searches to query data corresponding to dashboards. Each

predefined query/search is identified by a name, which corresponds to a particular dashboard. You can query the data by specifying the query/search name alone.

For example, in the ABR QoS – HSS Bitrate Oscillation Rate dashboard, the search name is abrqos_hist_hss_bitrate_oscillation_rate.

The data is filtered only by time, by specifying the following parameters in the request:

earliest_time – Start time of period corresponding to search

latest_time – End time of period corresponding to search

Date and time should be in ISO 8601 format (YYYY-MM-DDTHH:mm:ssTZD).

For example, 2012-12-16T19:20:30+01:00.

When you search for historical data without specifying the time period, by default, VDS-SM takes the last 7 days data.

To obtain the result for a query, you need to perform the HTTPS GET request using the following URLs:

Note The URL should be exactly the same as mentioned here and they should be entered in a single line. HTTPS is authenticated through self-signed OpenSSL certificate for NB API.

With earliest_time and latest_time

```
https://< UI
Node IP >:8443/bnimgmt/api/analytics/search/systemdefined/< searchname >?earliest_time=<
starttime >&latest_time=< endtime >
```

Without earliest_time and latest_time

```
https://< UI Node IP >:8443/bnimgmt/api/analytics/search/systemdefined/<searchName>
```

For example, to execute the search “abrqos_hist_hss_bitrate_oscillation_rate”, you need to perform GET request using the following URL:

```
https://<UI Node IP>:8443/bnimgmt/api/analytics/search/systemdefined/
abrqos_hist_hss_bitrate_oscillation_rate?earliest_time
=2013-01-21T12:00:00+0530&latest_time=2013-01-27T12:00:00+0530
https:// <UI Node IP>:8443/bnimgmt/api/analytics/search/systemdefined/
abrqos_hist_hss_bitrate_oscillation_rate?earliest_time
=2013-01-21T12:00:00-0130&latest_time=2013-01-27T12:00:00-0130
```

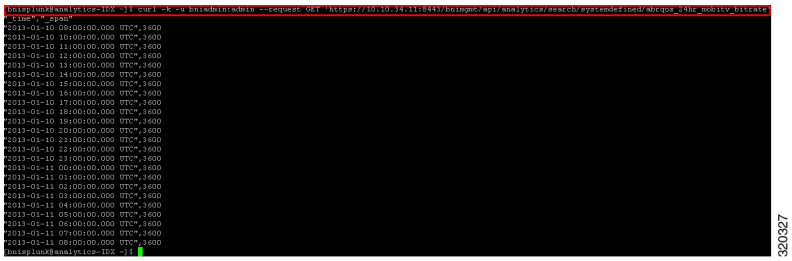
You need to specify the Username and Password for authentication in the “Authorization” header fields of the HTTPS GET request. In command line tools such as curl, provide the following credentials:

```
curl -k -u bniadmin:admin --request GET 'https:// <UI Node IP
>:8443/bnimgmt/api/analytics/search/
systemdefined/abrqos_hist_hss_bitrate_oscillation_rate?
earliest_time=2013-01-21T12:00:00%2B0530&latest_time=2013-01-27T12:00:00%2B0530'
curl -k -u bniadmin:admin --request GET 'https:// <UI Node
IP>:8443/bnimgmt/api/analytics/search/
systemdefined/abrqos_hist_hss_bitrate_oscillation_rate?earliest_time
=2013-01-21T12:00:00Z&latest_time=2013-01-27T12:00:00Z'
```

Note NB API does not support HTTP.

Result Format

Analytics API provides the results in CSV format. The first line is the header line with fields, followed by the data. Following is an example of Console Output.



Supported Predefined Searches

Table 70: Search Name & Optional Parameters

Sl. No.	Search Name	Optional Parameters
1	abr_quality_of_service_adaptation_24hr_hss_bitrate_adaptation	
2	abr_quality_of_service_adaptation_24hr_mobitv_bitrate_adaptation	
3	abrqos_24hr_hss_bitrate	
4	abrqos_24hr_hss_bitrate	
5	abrqos_24hr_no_of_req	
6	abrqos_24hr_no_of_req_per_sec	
7	abrqos_60min_hss_bitrate	
8	abrqos_60min_mobitv_bitrate	
9	abrqos_60min_no_of_req	
10	abrqos_60min_no_of_req_per_sec	
11	abrqos_hist_hss_bitrate_oscillation_rate	earliest_time latest_time
12	abrqos_hist_mobitv_bitrate_oscillation_rate	earliest_time latest_time
13	abrqos_pastday_hss_bitrate	earliest_time latest_time
14	abrqos_pastday_mobitv_bitrate	earliest_time latest_time
15	abrqos_pastday_no_of_req	earliest_time latest_time
16	abrqos_pastday_no_of_req_per_sec	earliest_time latest_time

Sl. No.	Search Name	Optional Parameters
17	billing_hist_955_bandwidth	earliest_time latest_time
18	cache_efficiency_24hr_client_requests_cache_hitmiss_percentage_by_request_bytes	
19	cache_efficiency_24hr_client_requests_cache_hitmiss_percentage_by_request_count	
20	cache_efficiency_24hr_client_requests_cache_hitmiss_rate_by_request_count	
21	cache_efficiency_24hr_client_requests_cache_miss_in_bytes_vs_total_bytes_delivered	
22	cache_efficiency_24hr_origin_server_offload	
23	cache_efficiency_60min_client_requests_cache_hitmiss_percentage_by_request_bytes	
24	cache_efficiency_60min_client_requests_cache_hitmiss_percentage_by_request_count	
25	cache_efficiency_60min_client_requests_cache_hitmiss_rate_by_request_count	
26	cache_efficiency_60min_client_requests_cache_miss_in_bytes_vs_total_bytes_delivered	
27	cache_efficiency_60min_origin_server_offload	
28	cache_efficiency_pastday_client_requests_cache_hitmiss_percentage_by_request_bytes	earliest_time latest_time
29	cache_efficiency_pastday_client_requests_cache_hitmiss_percentage_by_request_count	earliest_time latest_time
30	cache_efficiency_pastday_client_requests_cache_hitmiss_rate_by_request_count	earliest_time latest_time
31	cache_efficiency_pastday_client_requests_cache_miss_in_bytes_vs_total_bytes_delivered	earliest_time latest_time

Sl. No.	Search Name	Optional Parameters
32	cache_efficiency_pastday_origin_server_offload	earliest_time latest_time
33	cdn_usage_24hr_concurrent_client_sessions	
34	cdn_usage_24hr_real-time_edge_bandwidth_usage	
35	cdn_usage_24hr_storage_usage	
36	cdn_usage_5min_concurrent_client_sessions	
37	cdn_usage_5min_real-time_edge_bandwidth_usage	
38	cdn_usage_60min_concurrent_client_sessions	
39	cdn_usage_60min_real-time_edge_bandwidth_usage	
40	cdn_usage_60min_storage_usage	
41	client_usage_hist_client_session_requests_per_second	earliest_time latest_time
42	client_usage_hist_no_of_unique_clients	earliest_time latest_time
43	client_usage_hist_top_clients_by_bytes_transferred	earliest_time latest_time
44	client_usage_hist_top_clients_by_requests	earliest_time latest_time
45	license_usage_hist_license_usage	earliest_time latest_time
46	mobitv_client_log_analysis_hist_mobitv_client_log_analysis	earliest_time latest_time
47	network_hist_historical_edge_bandwidth_usage	earliest_time latest_time
48	network_hist_percentage_of_sessions _declined_due_to_quota_limits	earliest_time latest_time
49	network_hist_total_data_delivered	earliest_time latest_time

Sl. No.	Search Name	Optional Parameters
50	network_hist_total_sessions_vs_no_of_session _declined_due_to_quota_limits	earliest_time latest_time
51	network_hist_unknown_service_traffic	earliest_time latest_time
52	qos_24hr_client_requests_4xx_error_rate	
53	qos_24hr_client_requests_4xx_error_rate_on_delivery_servers	
54	qos_24hr_client_requests_4xx_error_rate_on_service_routers	
55	qos_24hr_error_response_code_by_service_router	
56	qos_24hr_response_code_by_delivery_server	
57	qos_24hr_response_code_by_delivery_service	
58	qos_24hr_sorted_delivery_service_by_client _errors_on_service_routers	
59	qos_24hr_sorted_delivery_services_by_client_errors	
60	qos_24hr_sorted_delivery_services_by _client_errors_on_delivery_servers	
61	qos_5min_client_requests_4xx_error_rate_on_delivery_servers	
62	qos_60min_client_requests_4xx_error_rate	
63	qos_60min_client_requests_4xx_error_rate_on_delivery_servers	
64	qos_60min_client_requests_4xx_error_rate_on_service_routers	
65	qos_60min_error_response_code_by_service_router	
66	qos_60min_response_code_by_delivery_server	
67	qos_60min_response_code_by_delivery_service	
68	qos_60min_sorted_delivery_service_by _client_errors_on_service_routers	
69	qos_60min_sorted_delivery_services_by_client_errors	
70	qos_60min_sorted_delivery_services_by _client_errors_on_delivery_servers	
71	qos_hist_session_download_size	earliest_time latest_time

Sl. No.	Search Name	Optional Parameters
72	qos_hist_session_duration	earliest_time latest_time
73	qos_pastday_client_requests_4xx_error_rate	earliest_time latest_time
74	qos_pastday_client_requests_4xx_error _rate_on_delivery_servers	earliest_time latest_time
75	qos_pastday_client_requests_4xx _error_rate_on_service_routers	earliest_time latest_time
76	qos_pastday_error_response_code_by_service_router	earliest_time latest_time
77	qos_pastday_response_code_by_delivery_server	earliest_time latest_time
78	qos_pastday_response_code_by_delivery_service	earliest_time latest_time
79	qos_pastday_sorted_delivery_service_by _client_errors_on_service_routers	earliest_time latest_time
80	qos_pastday_sorted_delivery_services_by_client_errors	earliest_time latest_time
81	qos_pastday_sorted_delivery_services_by_client _errors_on_delivery_servers	earliest_time latest_time
82	service_and_content_popularity_hist_top_delivery_ services_by_bytes_transferred	earliest_time latest_time
83	service_and_content_popularity_hist_top_delivery _services_by_client_request	earliest_time latest_time
84	service_and_content_popularity_hist_top_providers _by_bytes_transferred	earliest_time latest_time
85	service_and_content_popularity_hist_top_providers _by_client_request	earliest_time latest_time

Sl. No.	Search Name	Optional Parameters
86	service_and_content_popularity_hist_top_titles _by_bytes_transferred	earliest_time latest_time
87	service_and_content_popularity_hist _top_titles_by_client_request	earliest_time latest_time
88	service_monitoring_24hr_bandwidth_reject_peak_period	
89	service_monitoring_24hr_bandwidth_usage_per_service	
90	service_monitoring_24hr_client_sessions_per_service	
91	service_monitoring_24hr_session_ bandwidth_reject_peak_period	
92	service_monitoring_24hr_session_reject_peak_period	
93	service_monitoring_24hr_storage_per_service	
94	service_monitoring_60min_bandwidth_usage_per_service	
95	service_monitoring_60min_client_sessions_per_service	
96	service_monitoring_60min_storage_per_service	

Gencsvfromsearch

Export for search results in CSV format is available in VDS-SM. Specific dashboard searches with default configurations and the search results are exported through FTP, SFTP password-based authentication, and SFTP key-based authentication.

Users can define multiple FTP/SFTP destination servers. If the server is the same, but has different destination directories, then the user needs to define separate SFTP server configuration blocks in the configuration files.

Run the following scripts:

1. *gencsvfromsearch.sh*

This is a wrapper script which is used to execute gencsvfromsearch.py.

This script has to be executed from the Forwarder node. Navigate to the following location and run the script:

/opt/splunkforwarder/etc/apps/Gencsvfromsearch/bin

Usage

Log in to the Forwarder node; **Username**: bnisplunk, **Password**: password

Change the directory **cd /opt/splunkforwarder/etc/apps/Gencsvfromsearch/bin**

Execute the command **sh gencsvfromsearch.sh <Searchname> <Protocol> <FTP/SFTPname>**

Parameters

a. SearchName: This parameter is specified in the search section of search_spec.conf configuration file.

b. SFTPName: This parameter is specified in the sftpserver section of search_spec.conf configuration file.

c. Protocol: This parameter is to set the export protocol as FTP or SFTP.

Note Depending on the protocol that will be used, you need to provide values for the respective section or stanza in the conf file.

Example

./gencsvfromsearch.sh HSSBitRate SFTP SFTP1

2. *gencsvfromsearch.py*

This script searches from Splunk using the specified search query, generates the CSV file, and then upload the CSV to the specified SFTP server.

This script has to be executed from the Forwarder node. Navigate to the following location and run the script:

/opt/splunkforwarder/etc/apps/Gencsvfromsearch/bin

Usage

Log in to the Forwarder node; **Username**: bnisplunk, **Password**: password

Change the directory **cd /opt/splunkforwarder/etc/apps/Gencsvfromsearch/bin**

Execute the command **/opt/splunk/bin/splunk cmd python gencsvfromsearch.py <SearchName> <Protocol> <FTP/SFTPname>**

Parameters

a. SearchName: This parameter is specified in the search section of search_spec.conf configuration file.

b. SFTPName: This parameter is specified in the sftpserver section of search_spec.conf configuration file.

c. Protocol: This parameter is to set the export protocol as FTP or SFTP.

Example

/opt/splunk/bin/splunk cmd python gencsvfromsearch.py HSSBitRate SFTP SFTP1

3. *search_spec.conf*

This file specifies the searches for which the results can be exported and the export server information.

The search_spec.conf file in the JS node has to be updated (/opt/splunkforwarder/etc/apps/Gencsvfromsearch/bin) for the respective protocol (FTP\SFTP) parameters. The parameters are explained below.

List of parameters to be configured in search_spec.conf for FTP or SFTP export are the following:

SFTPServer.SFTP.ip =

This is the SFTP export server IP address

SFTPServer.SFTP.port =

This is the SFTP port number through which export will happen. Default port usage SFTP=22.

SFTPServer.SFTP.username =

This is the SFTP export server username

SFTPServer.SFTP.password =

This is the SFTP export server password

SFTPServer.SFTP.directory =

This is the SFTP export location of the CSV files

SFTPServer.SFTP.keyfile.location =

This is the path to the private key file of the server.

SFTPServer.SFTP.keyfile. passcode =

This is the password of the public key file (if required).

SFTPServer.SFTP.keyfile.type =

This is the type of the public key file, that is, RSA or DSS.

FTPServer.FTP.ip =

This is the FTP export server IP address

FTPServer.FTP.port =

This is the FTP port number through which export will happen. Default port usage FTP=21.

FTPServer.FTP.username =

This is the FTP export server username

FTPServer.FTP.password =

This is the FTP export server password

FTPServer.FTP.directory =

This is the FTP export location of the CSV files

List of searches for which the results can be exported

HSSBitRate

MobitvBitRate

ABRNumberOfRequestPerSecond

ClientRequests4xxErrorRateonDeliveryServers

ResponseCodebyDeliveryServer

RealtimeEdgeBandwidthUsage

ConcurrentClientSessions

HistoricalEdgeBandwidthUsageForLastDay

HistoricalEdgeBandwidthUsageForLast3Day

HistoricalEdgeBandwidthUsageForLast7Day

HSSBitrateOscillationRateForLastDay

HSSBitrateOscillationRateForLast3Day

HSSBitrateOscillationRateForLast7Day

MobitvBitrateOscillationRateForLastDay

MobitvBitrateOscillationRateForLast3Day

MobitvBitrateOscillationRateForLast7Day

ClientDensitybyNumberofRequestsForLastDay

ClientDensitybyNumberofRequestsLast3Day

ClientDensitybyNumberofRequestsForLast7Day

HLSBitRate

HLSBitrateOscillationRateForLastDay

HLSBitrateOscillationRateForLast3Day

HLSBitrateOscillationRateForLast7Day

Note Host can be host name or IP address.

Configuring SFTP Key-based Authentication

1. Log in to Job scheduler; **Username**: bnisplunk and **Password**: password and edit the following search configuration file:

/opt/splunk/etc/deployment-apps/Gencsvfromsearch/bin/search_spec.conf

2. Add the values to the following parameters if you want to enable SFTP key-based authentication:

SFTPServer.SFTP.ip =

SFTPServer.SFTP.port =

SFTPServer.SFTP.username =

SFTPServer.SFTP.directory =

SFTPServer.SFTP.keyfile.location =

SFTPServer.SFTP.keyfile. passcode =

SFTPServer.SFTP.keyfile.type =

Note When both the options are specified (key-based parameter and password-based parameter), key-based authentication is attempted. There will be no fall back to password-based authentication, if the key-based authentication fails.

Configuring SFTP Password-based Authentication

Configure the following parameters for SFTP export using password-based authentication:

SFTPServer.SFTP.ip =

SFTPServer.SFTP.username =

SFTPServer.SFTP.password =

SFTPServer.SFTP.directory =

Note The key file parameters should be empty for password-based authentication.

Configuring FTP-based Authentication

Configure the following parameters for FTP export:

[ftpserver]

FTPServer.FTP.ip =

FTPServer.FTP.port =

FTPServer.FTP.username =

FTPServer.FTP.password =

FTPServer.FTP.directory =

Note You need to ensure that the same parameter values are available in the Secondary Job Scheduler's search_spec.conf in case of ESX failover.

Customizing Dashboards

From within the VDS Service Manager dashboards, you can use the designed features to customize the way the individual charts look and display information.

Using Dashboard Features

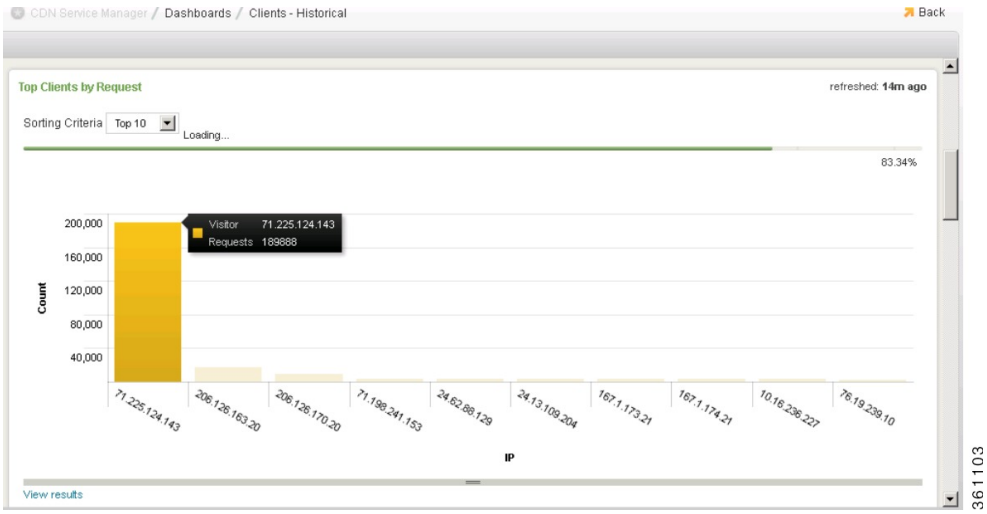
Using the VDS-SM dashboard features, you can display specific information about the data contained on the individual dashboard chart. Specifically, you can:

- Hover and select a specific point within a chart, which displays additional information for the data displayed.
- View results that display source report information used to create the displayed chart.
- View log details.

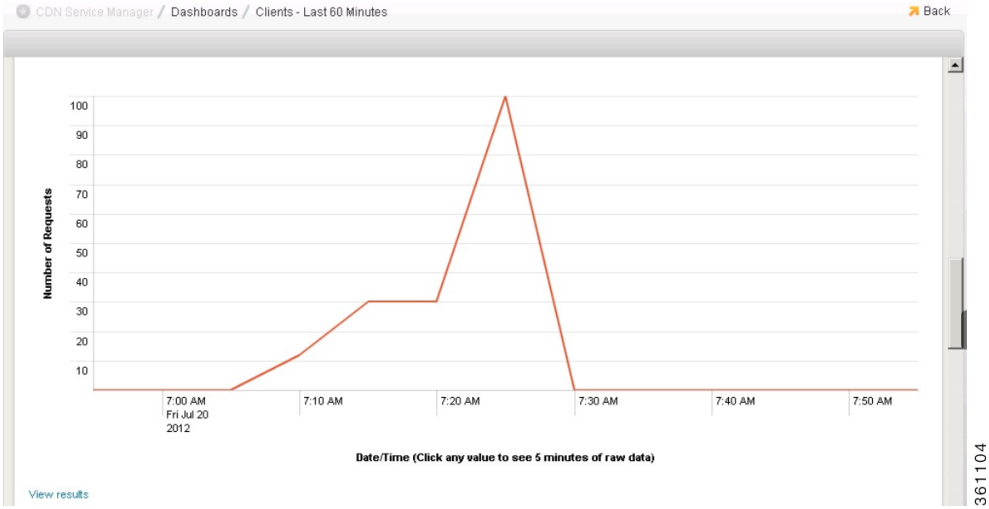
Note A CDN Viewer or Content Provider Viewer can only view Dashboards for the services that are assigned to them.

Selecting Specific Data Within a Dashboard Chart

When you hover or select a specific data within a chart, additional information is displayed.

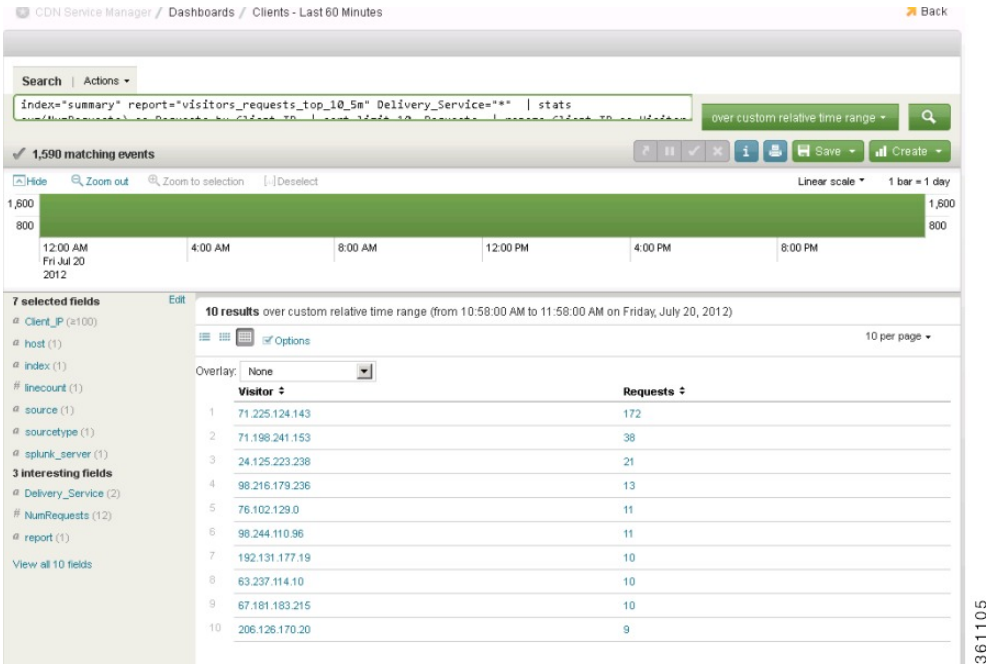


If you then choose the desired client within the previous figure, a chart for that single client, displaying detailed requests for that client, is displayed.

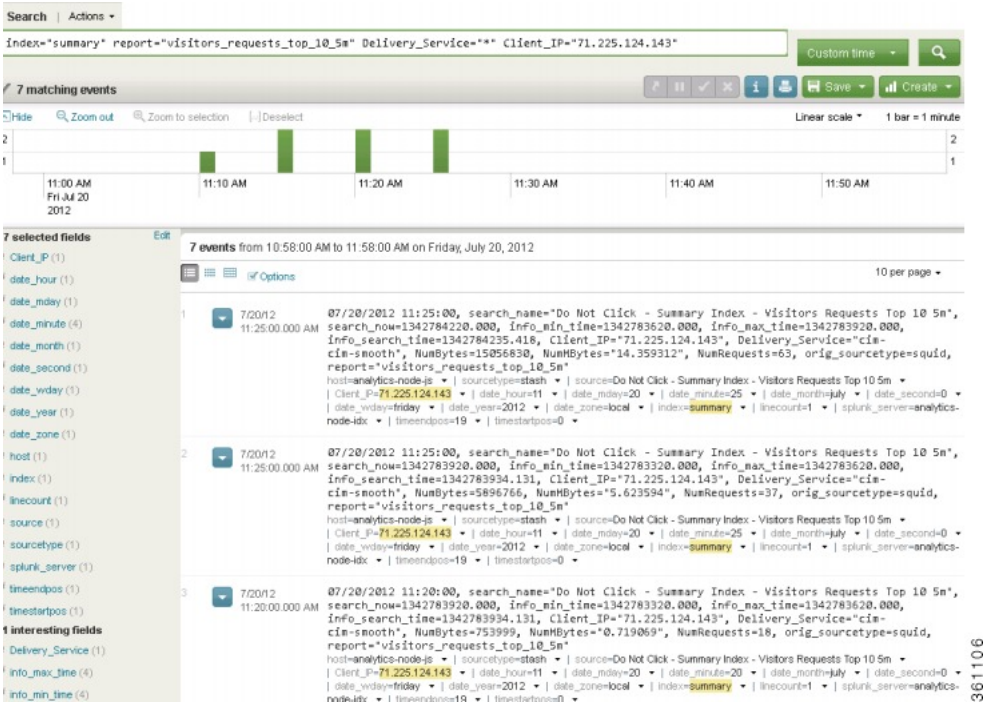


Viewing Specific Results

Each Dashboard provides access to detailed information for a particular report. Click **View results**, located at the bottom left of each Dashboard panel, to view the report. For example, using the chart from our previous example, click **View result**. The data source report is displayed.

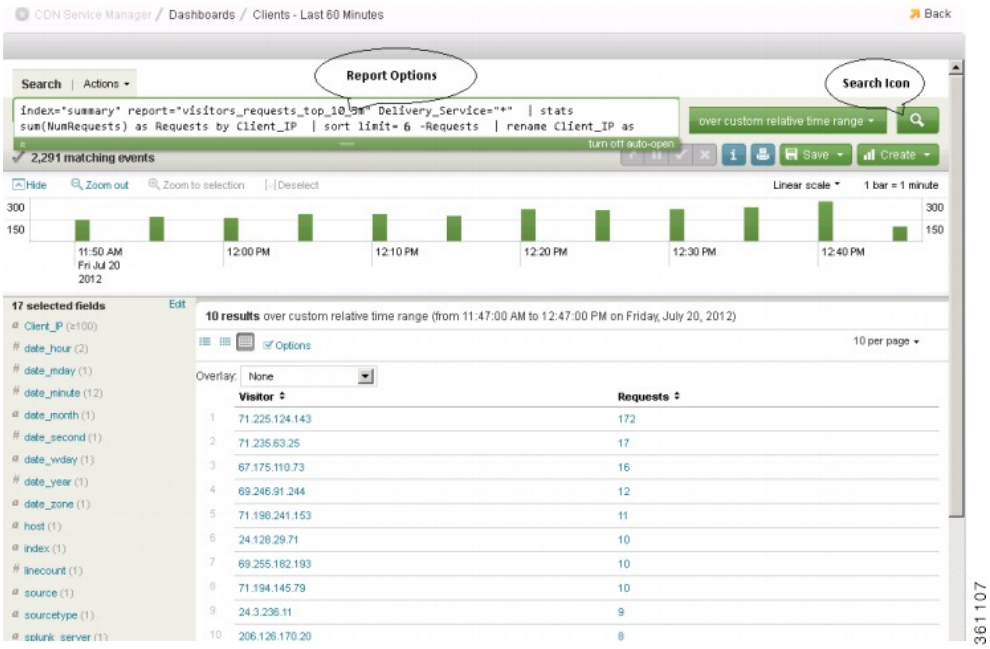


From within the source report, you can choose a desired row to display the log details for the item. For example, from the previous example, click Row 1. The log detail screen, displaying the source detail for the chart, appears. For example:



Using the Splunk Search Feature

Reports can be customized by clicking in the Splunk Search window and modifying the options. For example:



Within this example, the sort limit is reduced from 10 to 6. Click the **Search** Icon to run the new search.

Dashboard Time Period Options

You can query data for various time periods, which are dependent on the dashboard type.

Time Period	Description
Current Event	Data gathered during one of the following periods, from the time you query the report: • 1 minute • 5 minutes • 15 minutes • 30 minutes • 1 hour
Last 24 Hours	Data gathered during the 24 hour period, from the time you query the report.
Last 30 Days	Data gathered for the last 30-day period, starting at 12:00 a.m. on the first day and ending at 11:59 p.m. on the 30th day.

Access Privileges

Access privileges are determined by the role assigned to the user. A user may be granted privileges for all or some system configuration and management functions.

Table 71: Access Privileges—Configuration and Management Functions

Role	Privilege	Description/Function
CDN Administrator	Read/Write	Full access to all CDN system functions
CDN Operator Viewer	Read-only	Access to only view all Services
Reseller Administrator	Read/Write	Full access to system functions associated to only the Services available to that user
Reseller Viewer	Read-only	Access to only view the Services available to that user
Content Provider Administrator	Read/Write	Full access to system functions associated to only the Services available to that user
Content Provider Viewer	Read-only	Access to only view the Services available to that user

In addition to system configuration and management functions, the role determines the report types to which the user has access.

Dashboard Query and Data View Options

The dashboard type determines the report query options and views that are available to a user, in addition to the user's access privilege. The user can query and view reports of the past 365 days.

Query options

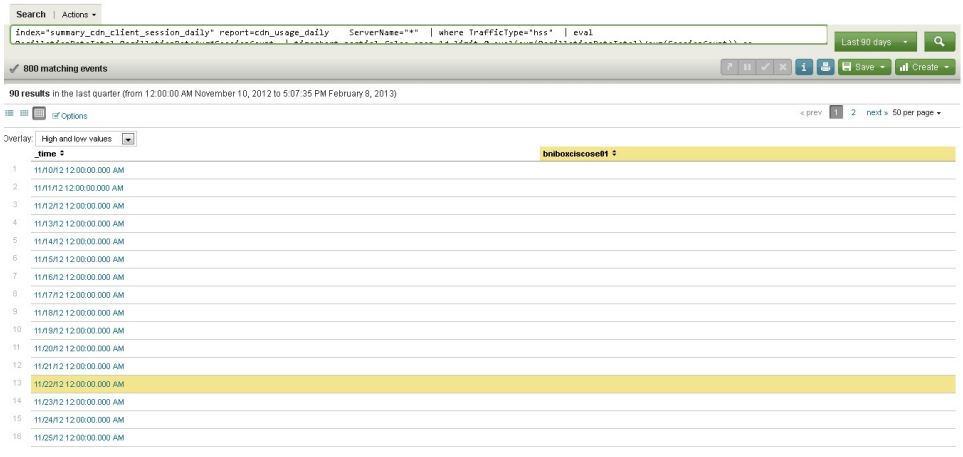
Table 72: Query Options

Option	Description
Delivery Server Name	Choose to display data for all or a particular server, associated with the VDS system.
Delivery Service Name	Choose to display data for all or a particular service, associated with the VDS system.
Time Range	Select the time period for which you want to gather data. Once you select the time, you are automatically brought to the dashboard.
Search	Click **Search** to produce a new report, after you change the current time period.

Legend

Depending on the panel topic, if more than one data set is displayed in a panel, a legend may be located at the right margin of a report. The legend displays a list of servers or value options, for which you can retrieve a table view of the report information, which includes the indexing metrics used to generate the report:

- Mouse hover a legend item to highlight that item in the graph
- Click a legend item to go to the table view of that item



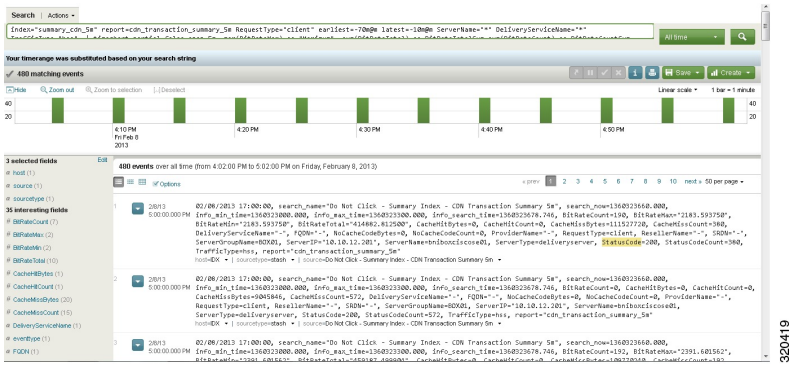
Note This is the same output that you see when you click **View results**, located at the bottom left of each dashboard panel.

Search

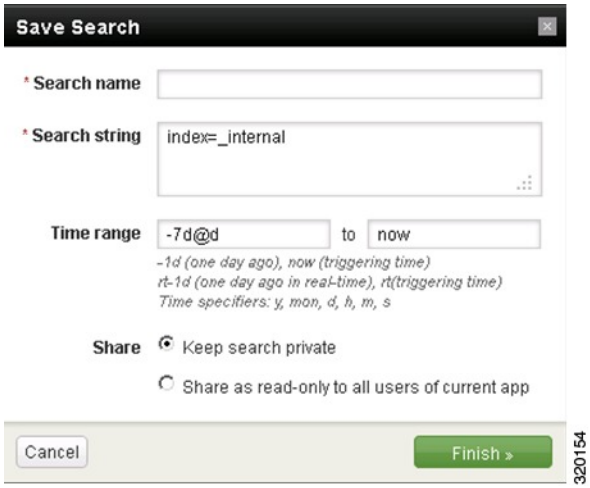
To save a search, perform the following steps:

Step 1 From the main page, select **Navigation** > **VDS Service Manager** > **Search**.

Step 2 Type the query in the Search box and press **Enter**.



Step 3 Click **Save** > **Save Search**..

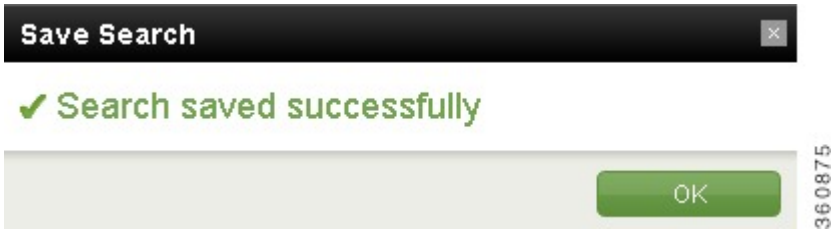


Step 4 Type the details in the Save Search dialog, as follows:

Table 73: Save Search Field & Description

Field	Description
Search name	Provide a name for your search. It can be a combination of alphabets and numbers.
Search string	This is automatically populated. The data populated will be the queried data.
Time range	Select the time period for which you want to gather data.
Share	• Enable the **Keep search private** button, if you do not want to display your search to other users. • Enable the **Share as read-only to all users of current app** button, if you wish to share your search with other users. **Note** The other users will have only the read-only permission.

Step 5 Click **Finish** and then click **OK** in the Search saved successfully dialog.



Saved Searches

This feature displays all the saved searches. The logged in user can view both, public and private searches. However, the logged in user cannot view the private searches saved by another user. In this feature, only the Delete and Refresh options are available. The user will not be able to modify any saved searches. To view the Saved Searches, perform the following step:

From the main page, select **Navigation** > **VDS Service Manager** > **Saved Searches**.

Delete

When a logged in user wants to delete a saved search, the application imposes the following restrictions:

Deleting the search saved by the logged in user

1 After navigating to Saved Searches, select the Search Name, which you want to delete and click **Delete**.

2 Select **Yes** in the Confirmation dialog box.

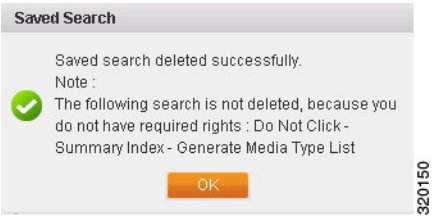
Note Logged in users can delete only the searches saved by them.

Deleting multiple searches

1 After navigating to Saved Searches, select multiple Search Names that you wish to delete and click **Delete** (to select multiple searches, hold down **Shift** and select the search names).

2 Select **Yes** in the Confirmation dialog box.

When you select multiple searches, by selecting searches saved by you and another user, the system will delete only the searches saved by you and the following error message is displayed.



Deleting saved searches of another user

When you delete a custom search saved by another user, the following error message is displayed.

.

Reporting Types

This section provides an overview of the reporting types (display format).

A list of the available formatting options are mentioned here:

- Area
- Bar
- Column
- Line
- Pie
- Ratio
- Scatter
- Table

The available formatting options for each chart type are dependent on the fields and value types you choose to generate a report. For example, a report that is generated to display a count, has different formatting options than a report that is generated to display an average.

Defining Reports

Use the drop-down lists and X- and Y-axis links to define the chart type and format. After you select your options, click Apply to generate the report output you defined.

Note Available **Formatting options** are dependent on the report type you select.

Viewing Report Data

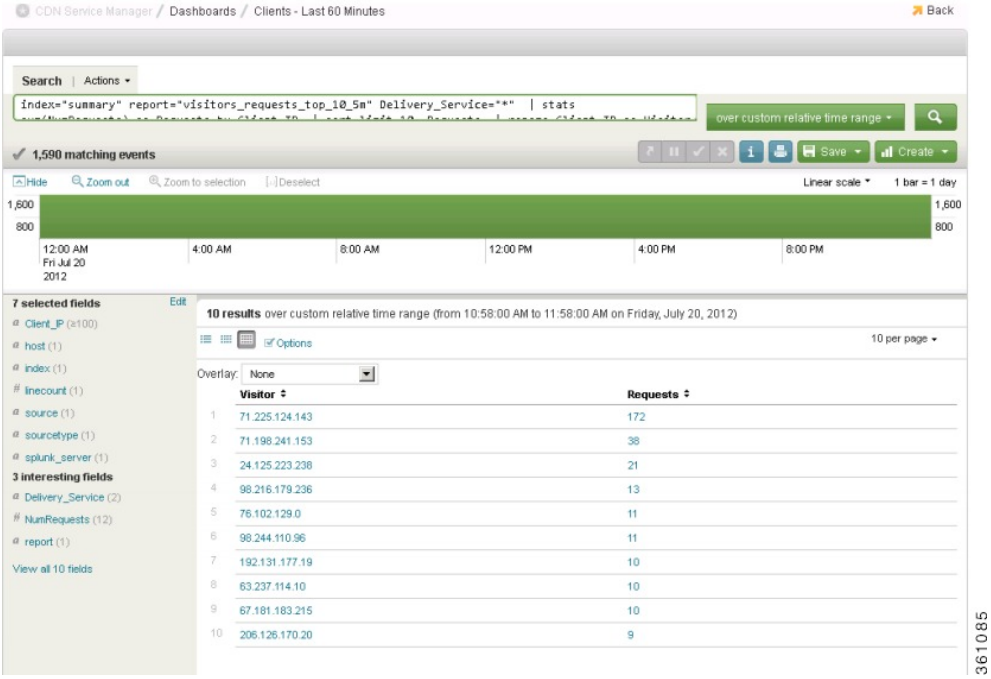
By default, reports are displayed in the column view. To change the view, define another report type.

In addition to viewing the whole report, you can view detailed data for a particular report segment by hovering on that segment.

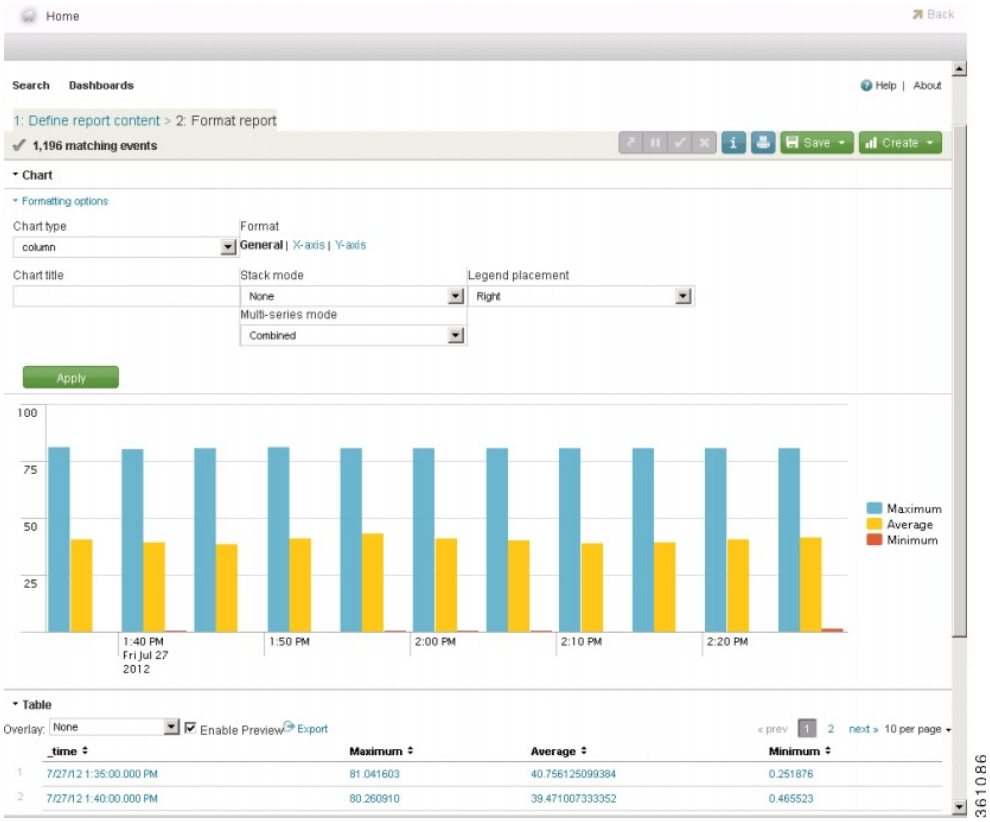
Accessing Dashboard Reports

To access the reports, perform the following:

Step 1 From within the dashboard chart, select **View Results**.



Step 2 Select **Create** > **Reports...** from the drop-down list.



Area Chart Type

The area chart type is used to compare trends between two field values.

The area chart offers the following formatting options:

- X- and Y-axis formatting
- Stack mode
- Multi-series mode
- Legend placement
- Missing values

Column and Bar Chart Types

Column and Bar chart types are used to generate a report that compares field values on the X- and Y- axis. The difference between a column and bar chart is that the X- and Y- axis are reversed.

These charts offer the following formatting options:

- X- and Y- axis formatting
- Stack mode view
- Multi-series mode view
- Legend placement

Line Chart Types

Line chart types are used to generate a report that shows trends.

The line chart offers the following formatting options:

- X- and Y-axis formatting
- Multi-series mode view
- Null values format options
- Legend placement

Pie and Ratio Chart Types

The pie and ratio chart types are used to show proportional relationships between the data. The difference between these charts is that the ratio chart type displays the data in a straight line.

These chart types offer the following formatting options:

- Chart title
- X- and Y-axis formatting
- Legend placement

Table Reports

This section provides an overview of the **Table** report type.

You can sort each column by ascending and descending order, by toggling the arrows in each column.

Table 74: Table Report Filtering

Option	Description
Results per page	Specify how many lines of data you want to display

Option	Description
Overlay	Specify if you want to highlight certain data. Options are: • **None**: Do not highlight data • **Heat Map**: Produces a gradient color overlaid on a table of counts, where the highest values are highlighted in red, the lowest values are in white, and the values in-between are shaded in graduated colors from white to red. • **High and low values**: Highlight the highest and lowest values in the whole data set. (Refer to example, above.)

Viewing Table Reports

By default, summary information is displayed for each row of data. To view detailed information, double-click the row for which you want detailed information. To return to the summary view, close the detailed window by clicking the **Close** (x) icon.

Using Analytics Alerts for Detection

The analytics system provides the means to create alerts for any search that is defined in the system. Alerts can be defined, based on a variety of conditions, which are discussed here. Alerts can aid troubleshooting in a number of ways:

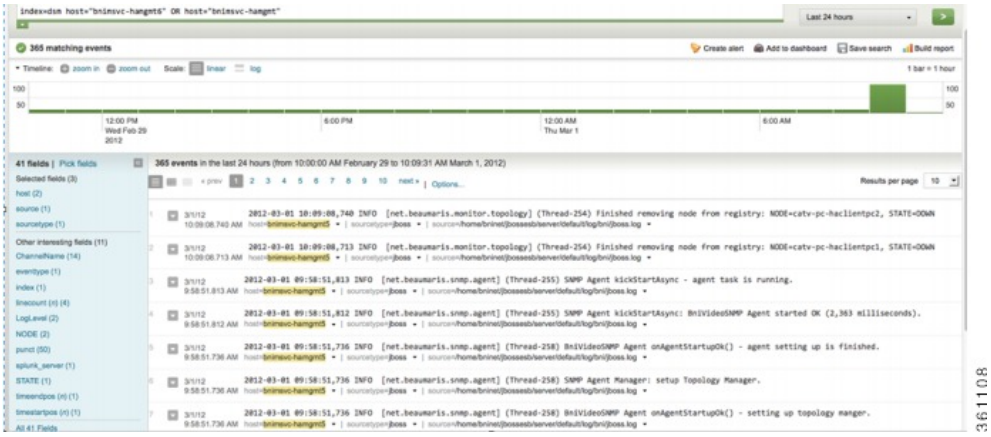
- For situations that do not occur frequently, an alert can be created to make the Operations team aware of the issue, and thereby start the root cause analysis.
- An alert can initiate a script to collect information that might be needed to help find out the root cause an issue, after the issue has been mitigated.
- Alerts can be used to warn of impending problems to prepare the operations personnel before the actual occurrence.

To create an alert, complete the following:

Step 1 In the Search view, create a search that produces the desired results.

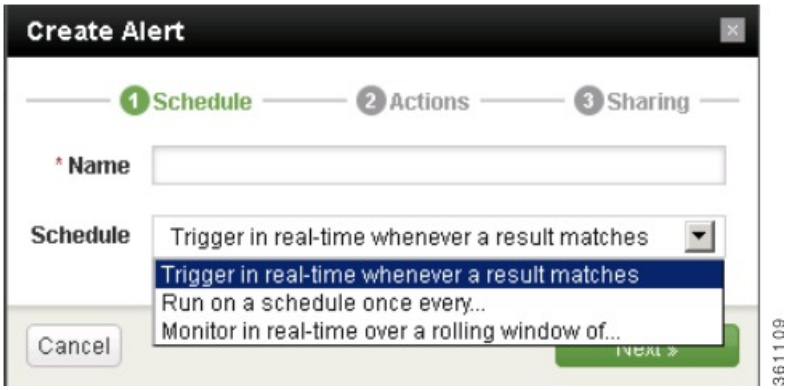
Example:
For example, to look for all errors related to CEMP, the search would look similar to the following:
```
index=dsm LogLevel=ERROR cemp
```

Step 2 Select **Create Alert** from the upper right side of the Search view. This launches the Create Alert Wizard window.



Selecting the Alert Wizard

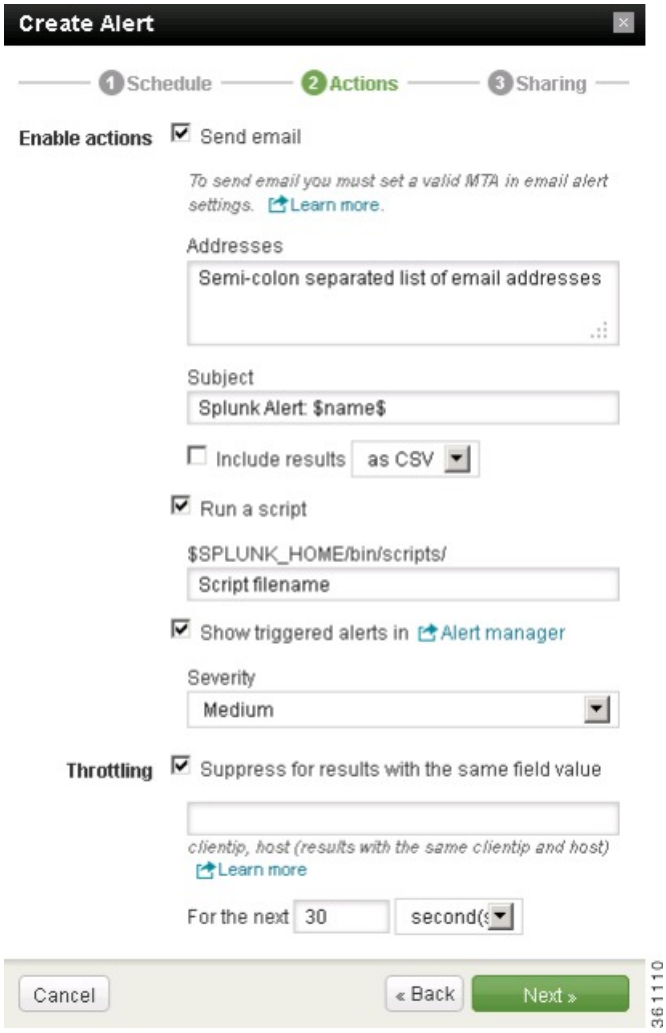
Step 3 The first step in the Create Alert wizard is **Schedule** the alert; here the user selects a name for the search, the time range that the search should cover, and the visibility of the search.



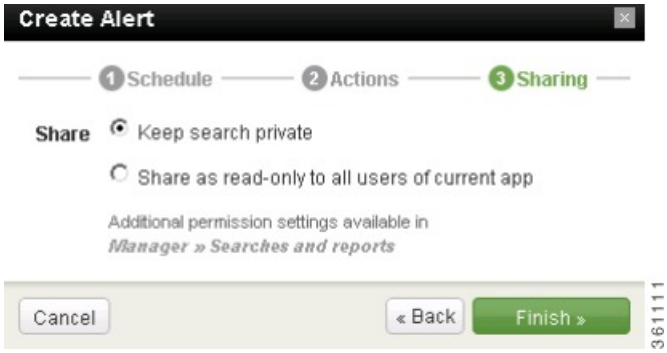
Create Alert Wizard

Step 4 The second step in the Create Alert wizard is to **Define Actions**; here the user determines what actions are to be taken when the conditions defined in step 2 are met.

- Email can be sent to multiple recipients, and optionally can include the search results in one of several formats.
- The search results can be sent to a RSS feed.
- A script can be initiated; the triggered script will pass the search context and the search results. Scripts must be placed on the CDN Analytics node, and can be written in any script or programming language that is executable on that system.



Step 5 Define how the alert will be **Shared** and click **Finish**.



CHAPTER 3

Provisioning

VDS Manager Provisioning

VDS Provisioning enables Administration teams to deploy and manage delivery services and new origin servers from the same user interface used for accessing system wide analytics. Using a single interface, the VDS Manager provides provisioning for multiple VDS solutions that may reside in a single provider's environment including:

- VDS-IS
- Microsoft IIS

The VDS Manager has the capability of managing provisioning for VDS-IS and VDS-SM Delivery Services and streamer content assignment.

Multi-Tiered and Multi-Tenancy

The Operator can manage the simple profile (name, contact info), users for content providers (CP). Once a CP user is created, the newly created user can log in and view its own report/dashboards. The VDS Operator can manage the hierarchical relationship among CDN, CP, and Services. The CP user can view reports/dashboards at the Delivery Service level for all Delivery Services under its domain.

Services (1-to-1 with Delivery Service) are synchronized from the Content Delivery Service Manager (CDSM) periodically. All Delivery Services should be synchronized from the CDSM to the VDS Manager, including both live and Content Delivery Services.

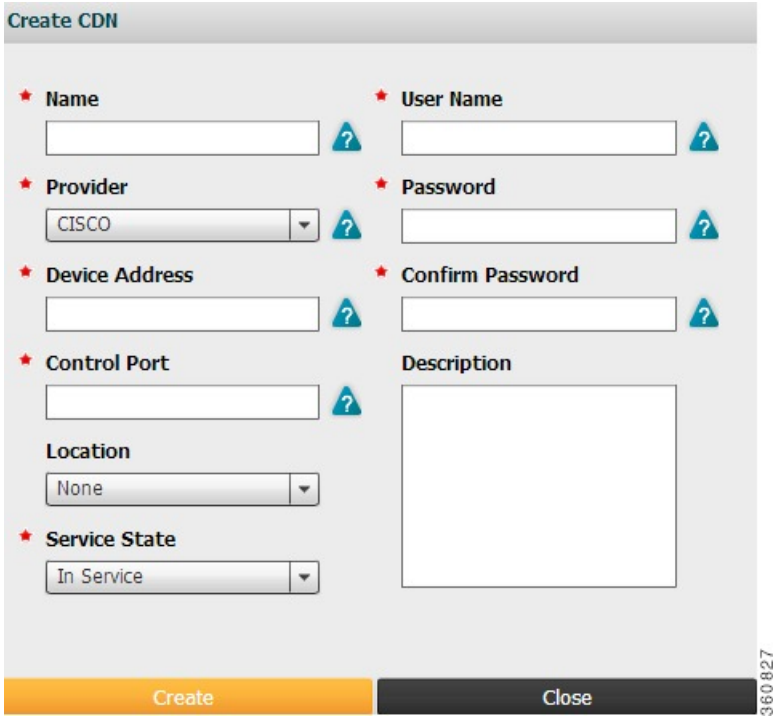
Adding a CDN

To deploy VDS-SM, you must configure CDN. CDN enables VDS-SM to gather topology information from the Service and allows the service to be controlled by VDS Service Manager solution.

To add a CDN, perform the following:

Step 1 From the main page, select **Navigation** > **VDS Service Manager** > **CDN Administration** > **CDN**.
The CDN page, listing all configured CDN devices and their status is displayed.

Step 2 Click + to create a new CDN. The Create CDN popup displays.



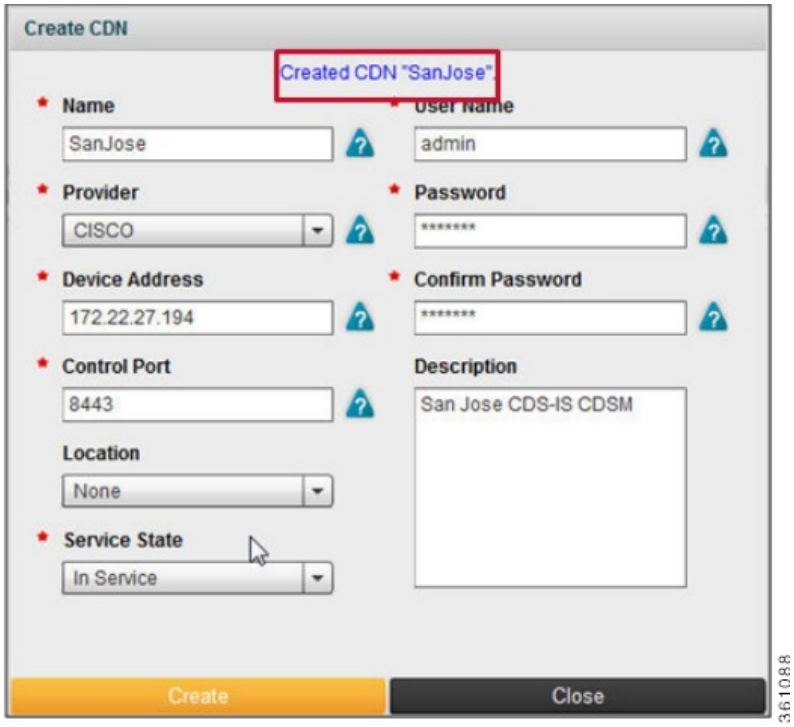
Enter the appropriate CDN information for the VDS-IS CDSM as mentioned here.

Table 75: Create CDN Field & Description

Field	Description
Name	A unique name for the device.
Provider	The content provider for this CDN.

Field	Description
Device Address	The IP address or Fully Qualified Domain Name (FQDN) of this device.
Control Port	A pre-existing port number specified for this device. Contact your System Administrator for this information.
Location	The location to which this device is associated.
Service State	The service state of the service: • In Service: Enables the service When a device is in this state, all read and write operations to this device are allowed. • Out of Service: Disables the service When a device is in this state, all write operations are not allowed. However, the read operation is still allowed, whereby the periodic sync, operational state check, and manual sync will still happen.
Username	The user name associated with the device.
Password/Confirm Password	The password associated with the username for this CDN service.
Description	Optional. User defined description for the CDN service.

Step 3 On completion, click **Create**. The CDN is created and a validation message is displayed. For example:



Step 4 Click **Close**.

Step 5 From within the CDN screen, click **Refresh** to view the newly added CDN service. For example:

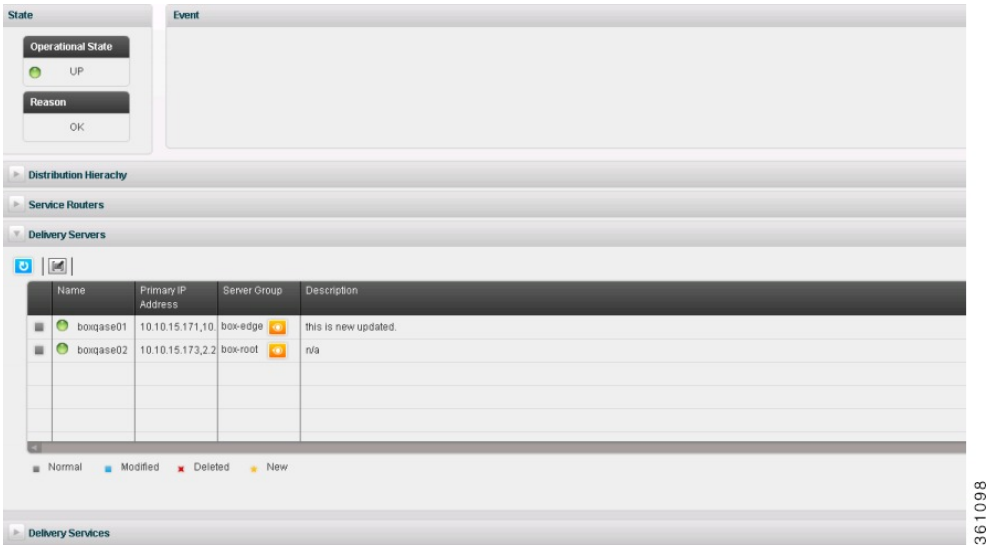
The new CDN service is added. Note that the CDN synchronization will take a few minutes.

Managing a VDS-IS CDN

To manage a VDS-IS CDN, complete the following:

Step 1 Select **Navigation** > **VDS Service Manager** > **CDN Administration** > **CDN**.

Step 2 Click on the arrow next to the name of the CDN you want to manage. The Distribution Hierarchy maps to the VDSM location. For example:



The following table provides a description of the key elements contained within the selected CDN page.

Element	Description
Distribution Hierarchy	The Distribution Hierarchy maps to the VDSM locations. (See Distribution Hierarchy Function Overview).

Element	Description
Service Routers	The VDS-SM Service Routers map to the VDSM devices (SRs).
Delivery Servers	The VDS-SM Delivery Servers map to the VDSM devices (SEs). (See Delivery Servers).
Delivery Services	The VDS-SM Delivery Services map to the VDSM Delivery Services. (See Delivery Services).

Distribution Hierarchy Function Overview

Adding a Distribution Hierarchy

To add a Distribution Hierarchy, perform the following steps:

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration > CDN**.

Step 2 Select the CDN to which you want to add Distribution Hierarchy and click .

Step 3 In the Distribution Hierarchy tab, click .

Step 4 In the dialog box that appears on the right-hand pane, enter the following details:

Table 76: Adding Distribution Hierarchy - Field & Description

Field	Description
Name	Specify the Server Group name.
Parent Server Group	Specify the Parent Server Group.
Topology Location	Specify the Topology Location.
Level	Specify the level to which the Delivery Server belongs.
Description	Optional. Additional information about the Distribution Hierarchy.

Step 5 Click **OK**.

Step 6 Click **Save**.

Modifying a Distribution Hierarchy

To modify a Distribution Hierarchy, perform the following steps:

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration > CDN**.

Step 2 Select the CDN that you want to modify and click .

Step 3 From the Distribution Hierarchy tab, select the Distribution Hierarchy that you want to modify and click .

Step 4 Enter the modification in the dialog box that appears on the right pane and click **OK**.

Step 5 Click **Save**.

Cloning a Distribution Hierarchy

This feature helps you to replicate an existing Distribution Hierarchy. This is helpful when you want to create the same Distribution Hierarchy again.

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration > CDN**.

Step 2 Select the CDN that you want to clone and click .

Step 3 From the Distribution Hierarchy tab, select the Distribution Hierarchy, which you want to clone and click .

Step 4 Click and then click **OK**.

Step 5 Click **Save**.

Deleting a Distribution Hierarchy

To delete a Distribution Hierarchy, perform the following steps:

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration > CDN**.

Step 2 From the Distribution Hierarchy tab, select the Distribution Hierarchy that you want to delete and click .
You can also undo a task that you have just performed. This option is not feasible for an existing Delivery Hierarchy. For example, you can undo a Distribution Hierarchy, immediately after it has been added. For this, select the task that you want to undo (the task that you just performed), and click .

Delivery Servers

Modifying a Delivery Server

To modify a Delivery Server, perform the following steps:

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration > CDN**.

Step 2 Select the CDN that you want to modify and click .

Step 3 In the Delivery Servers tab, select the Delivery Server that you want to modify and click .

Step 4 Enter the modification and click **OK**.

Step 5 Click **Save**.

Note You can only modify the Description and Server Group fields.

Delivery Services

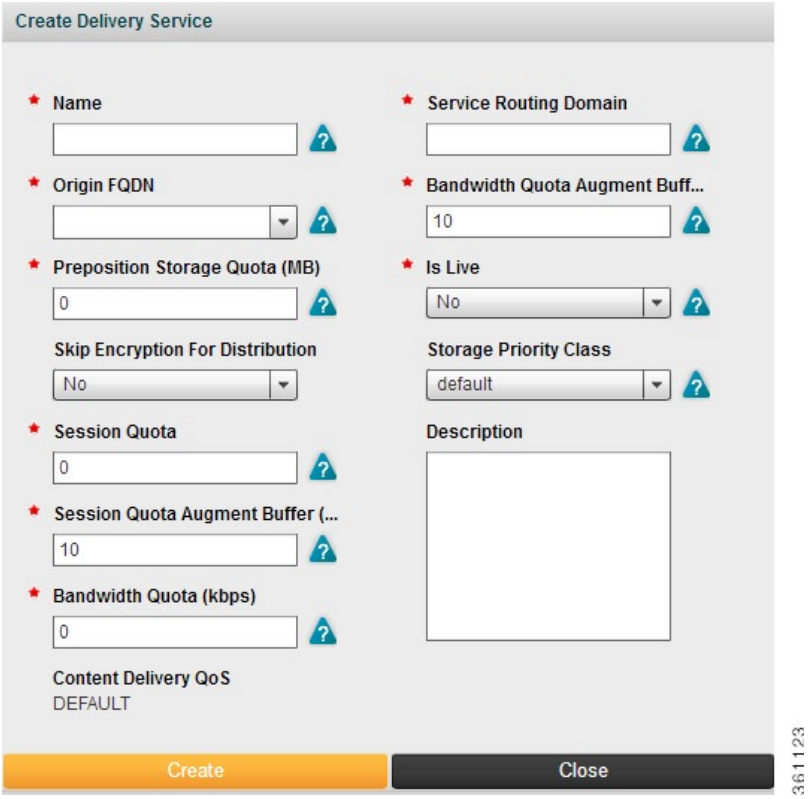
Adding a Delivery Service

To add a Delivery Service, perform the following steps:

Step 1 From the main page, select **Navigation** > **VDS Service Manager** > **CDN Administration** > **CDN**.

Step 2 Select the CDN to which you want to add a Delivery Service and click .

Step 3 On the Delivery Services tab, click .



Step 4 Enter the following details in the Create Delivery Service dialog:

Table 77: Adding Delivery Service - Field & Description

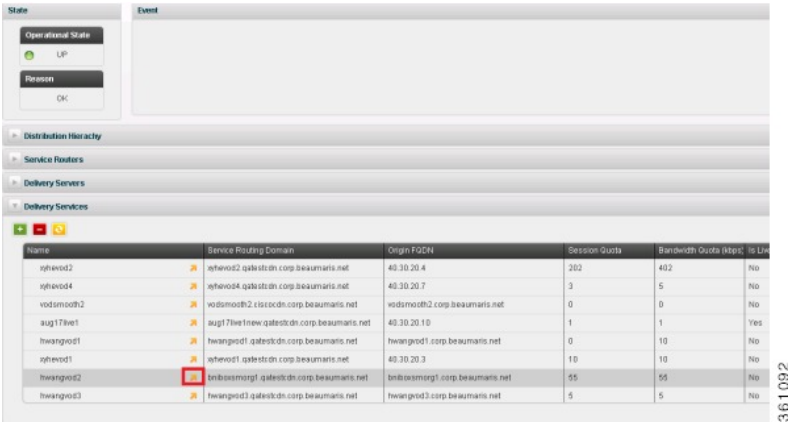
Field	Description
Name	Specify the Delivery Service name.
Origin FQDN	Specify the FQDN (Fully Qualified Domain Name) of the Content Provider.

Field	Description
Preposition Storage Quota (MB)	Maximum content disk storage size for each SE, in megabytes, for pre-fetched content and metadata, and hybrid metadata for this delivery service. **Note** The configured Preposition Storage Quota does not affect cache content quota size; it only restricts prefetched content storage for each SE. If the total prefetched content storage size is less than the configured quota, then the extra storage is used for dynamic cache files.
Skip Encryption for Distribution	Specify whether you need to skip encryption for distribution. Select **No** for encryption and **Yes** to skip encryption.
Session Quota	Maximum number of concurrent sessions allowed for this delivery service. The default is zero, which means no session limits are set for this delivery service.
Session Quota Augment Buffer (%)	Buffer, as a percentage, of the maximum number of concurrent sessions allowed over the Session Quota. If this threshold is exceeded, no new sessions are created until the number of concurrent sessions is below this threshold. The range is from 0 to 1000. The default is 10.
Bandwidth Quota (kbps)	Maximum bandwidth allowed for this delivery service. The default is zero, which means no bandwidth limits are set for this delivery service.
Content Delivery QoS	This is automatically set as default.
Service Routing Domain	Specify the Service Routing Domain Name.
Bandwidth Quota Augment Buffer (%)	Buffer, as a percentage, of the maximum bandwidth allowed over the Bandwidth Quota. If this threshold is exceeded, no new sessions are created until the bandwidth used is below this threshold. The range is from 0 to 1000. The default is 10.
Is Live	When checked, this service creates a live program to distribute live or scheduled programs to the SEs associated with this delivery service and with the live program. This delivery service does not have a related Manifest file and cannot be used to distribute file-based content as regular delivery services do. The live program learns about a live stream through a program file that describes the attributes of the program. Checking this check box disables the Delivery Service Quota field and fields in the Acquisition and Distribution Properties section.

Field	Description
Storage Priority Class	Select the correct option from the drop-down list. **Note** This is configured in CDS-IS and is synced automatically.
Description	Optional. Additional information about the Delivery Service.

Step 5 Click **Create**.

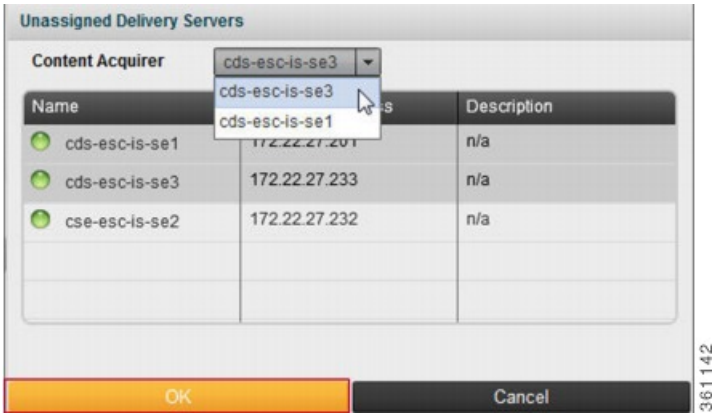
Step 6 Verify that the Delivery Service has been created successfully by selecting **Delivery Services** within the CDN page and then verifying that the newly created Delivery Service is present.



Step 7 Click next to the newly created delivery service to associate delivery servers to it.

Step 8 Display a list of available delivery servers by clicking .

Step 9 Select one or multiple delivery servers that will be associated to the delivery service. Then, select the delivery server, which will be the Content Acquirer, from the drop-down list and then click **OK**.



The Content Acquirer can be changed at any time from the main Delivery Service configuration page, using the **Assign Content Acquirer** icon.

Deleting a Delivery Service

To delete a Delivery Service, perform the following steps:

Step 1 From the main page, select **Navigation** > **VDS Service Manager** > **CDN Administration** > **CDN**.

Step 2 Select the CDN that you want to delete and click .

Step 3 In the Delivery Services tab, select the Delivery Service that you want to delete.

Step 4 Click and in the confirmation dialog, click **Yes** to permanently delete the Delivery Service, and click **No** to cancel the deletion.

CHAPTER 4

CDN Administration

CDN Administration Overview

The CDN Administration function enables Administration teams to deploy and manage delivery services and new origin servers from the same user interface used for accessing system wide analytics.

Click on a function to open the landing page. The landing page provides summary information specific to that function.

Note Access the CDN Administration function by clicking the arrow next to the VDS Service Manager function.

The following table describes the list of functions available from the CDN Administration page:

Table 78: CDN Administration - Functions

Function	Description
CDN	See Adding a CDN, on page 90 for more information.
Origin Server	See Origin Server Function Overview, on page 102 for more information.
Reseller	See Reseller Function Overview, on page 104 for more information.
Content Provider	See Content Provider Function Overview, on page 106 for more information.

To access the detail window for an item, navigate to the row of the item and click .

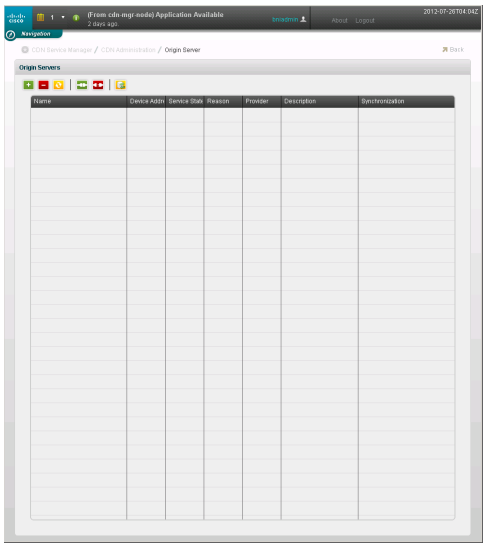
Origin Server Function Overview

Adding an Origin Server

To add an origin server, complete the following:

Step 1 From the main page, click **Navigation**, located at the top left corner of the page.

Step 2 Select **VDS Service Manager** > **CDN Administration** > **Origin Server**.



Step 3 Click + to open the **Create Origin Server** dialog.

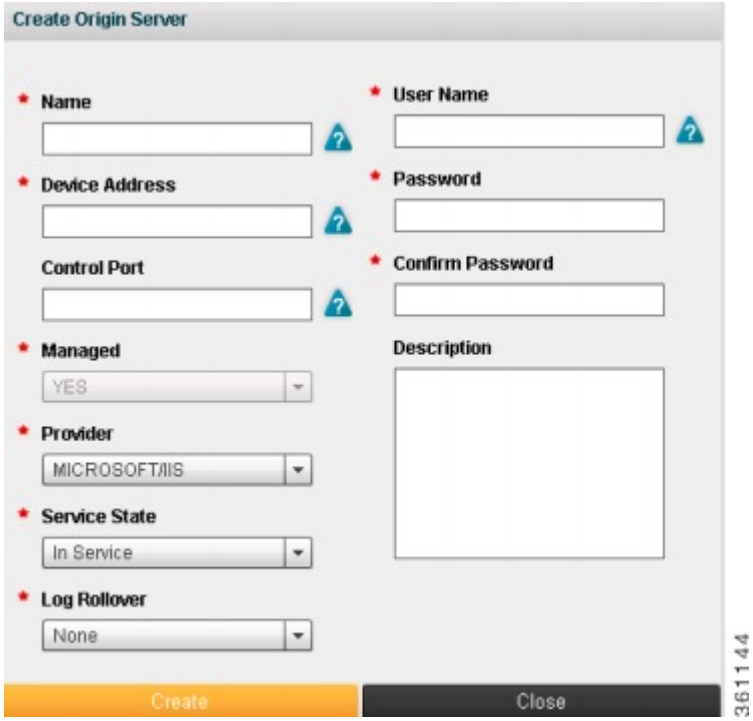


Table 79: Creating Origin Server - Field & Description

Field	Description
Name	Specify a unique name for the device.
Device Address	Specify the IP address or FQDN of this device.
Control Port	A pre-existing port number specified for this device. Contact your system administrator for this information.
Managed	Specify whether or not this server is managed.
Provider	Specify the provider for the device.
Service State	Specify the service state of the service: • In Service: Enables the service. • Out of Service: Disables the service.
Log Rollover	Specify a log rollover time for the device.
User Name	Specify a user name associated with the device.
Password	Specify the user's password associated with this device.
Confirm Password	Re-enter the user's password associated with this device.
Description	Optional. Additional information about the Origin Server.

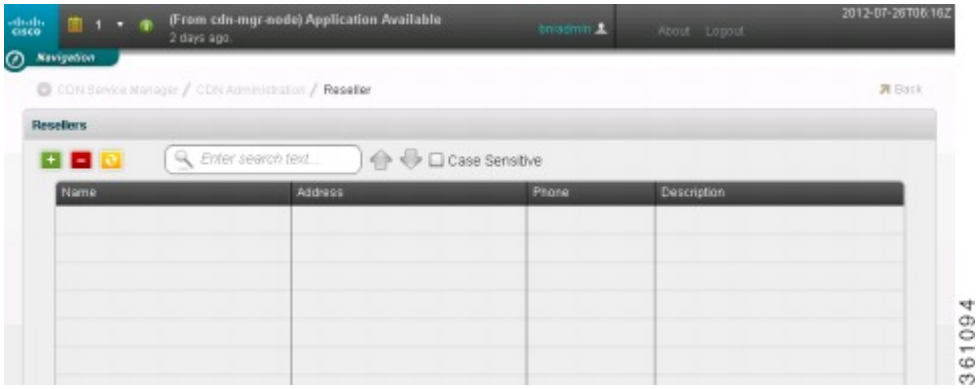
Step 4 Click **Create** to add the device.

Reseller Function Overview

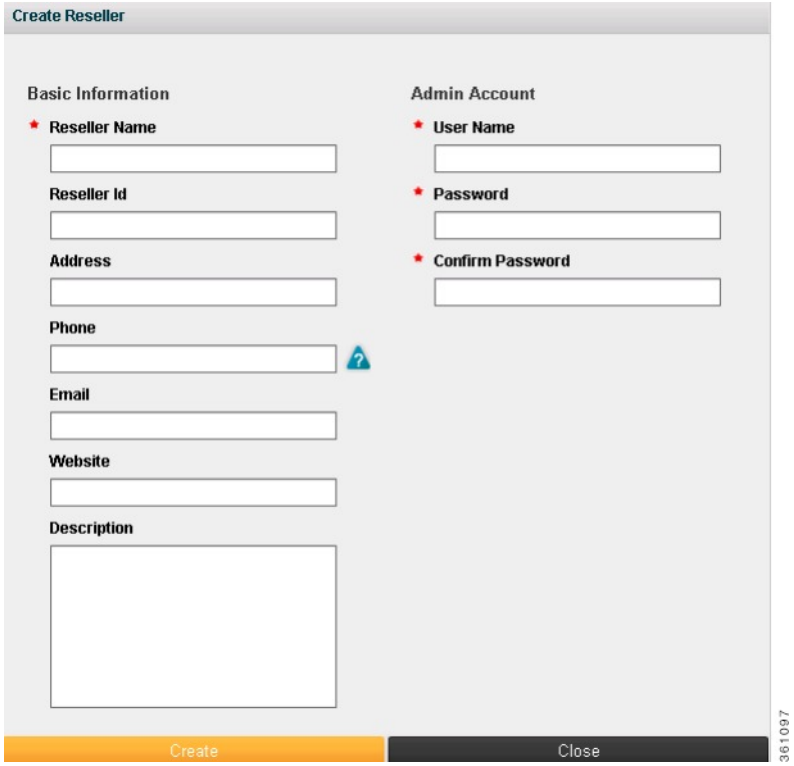
Adding a Reseller

To add a reseller, complete the following:

Step 1 From the main page, select **Navigation** > **VDS Service Manager** > **CDN Administration** > **Reseller**.



Step 2 Click ⊞ to open the **Create Reseller** dialog. Specify the field values and click **Create** to add the Reseller.



Adding a Reseller involves configuring or modifying the following fields:

Table 80: Adding a Reseller - Field & Description

Field	Description
Reseller Name	Specify a unique name for the reseller.
Reseller Id	Specify the ID for the reseller.
Address	Specify the IP address or Fully Qualified Domain Name (FQDN) of this reseller.
Phone	Specify the phone number for the reseller.
Email	Specify the email address for the reseller.
Website	Specify the website URL for the reseller.
Description	Optional. Additional information about the reseller.
User Name	Specify a user name associated with the reseller.
Password	Specify the user's password associated with this reseller.
Confirm Password	Re-enter the user's password associated with this reseller.

Modifying a Reseller

To modify a Reseller, perform the following steps:

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration** > **Reseller**.

Step 2 Select the Reseller that you want to modify and click .

Step 3 On the left pane, enter the modification and click **Save**.

Deleting a Reseller

To delete a reseller, perform the following steps:

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration** > **Reseller**.

Step 2 Select the Reseller that you want to delete and click .

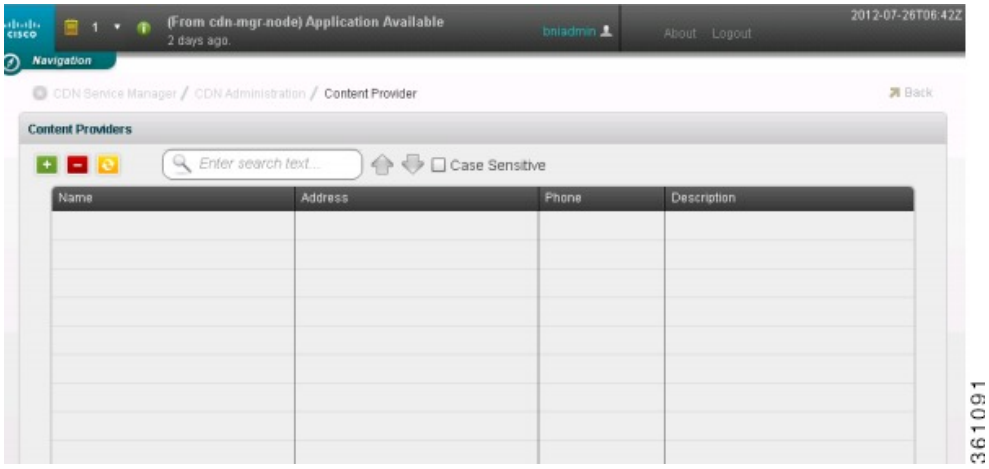
Step 3 Click **Yes** to permanently delete the Reseller, and click **No** to cancel the deletion.

Content Provider Function Overview

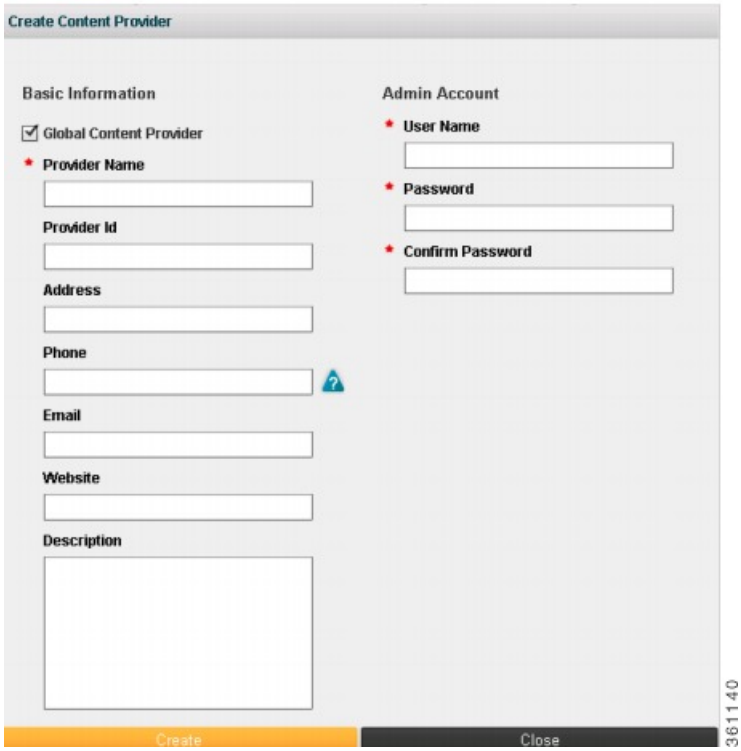
Adding a Content Provider

To add a content provider, complete the following steps:

Step 1 From the main page, select **Navigation** > **VDS Service Manager** > **CDN Administration** > **Content Provider**.



Step 2 Click ⊞ to open the **Create Content Provider** dialog.



Adding a Content Provider involves configuring or modifying the following fields:

Table 81: Adding a Content Provider - Field & Description

Field	Description
Provider Name	Specify a unique name for the content provider.
Provider Id	Specify the ID for the content provider.

Field	Description
Address	Specify the IP address or FQDN of this content provider.
Phone	Specify the phone number for this content provider.
Email	Specify the email address for this content provider.
Website	Specify the web site URL for this content provider.
Description	Optional. Additional information about the content provider.
User Name	Specify a user name associated with the content provider.
Password	Specify the user's password associated with this content provider.
Confirm Password	Re-enter the user's password associated with this content provider.

A Content Provider that is not a global Content Provider, will be available under the Reseller option. To view the Reseller option, uncheck Global Content Provider. From the Reseller drop-down list, choose the Reseller, which you want to associate the Content Provider to.

Step 3 Click **Create** to add the Content Provider.

Mapping a Content Provider and Delivery Service

Before You Begin

Before you map a Content Provider and Delivery Service, you need to first create the Delivery Service in CDN. For this, you need to add CDN (see Adding a CDN, on page 90). After adding CDN, you need to add a Delivery Service (see Adding a Delivery Service, on page 96).

Step 1 From the main page, select **Navigation** > **VDS Service Manager** > **CDN Administration** > **Content Provider**.

Step 2 Select the Content Provider that you want to assign Delivery Service, and click .

Step 3 Click and select the Delivery Service that you need to map.

Step 4 Select the CDN that you want to map and click .

Step 5 Click **Save**.
If you want to assign multiple Content Providers to a single Delivery Service, you must not map Content Provider and Delivery Service.

Assigning Multiple Content Providers to a Single Delivery Service

This feature enables the user to set up multiple Content Providers to a single Delivery Service. This is feasible by providing custom Regex option, wherein the CDN Operator can provide the Regex for new field CP_ID. This custom regex is used to extract CP_ID from the URL and then perform a lookup to get a meaningful CP name. If the CDN Operator needs to use Asset ID to obtain meaningful CP name, then the Asset ID and CP_ID will have the same Regex for token extraction from the URL. CDN Operators can either create or update Regex for CP_ID extraction. Regex is maintained in props.conf, a Splunk configuration file.

To create or update Regex for CP_ID, perform the following steps:

Step 1 Log in to the analytics JS node using the following credentials:
Username: **bnisplunk**

Password: **password**

Step 2 Execute the script configure_regex.py using the following command to add/update:
$SPLUNK_HOME/bin/splunk cmd python $SPLUNK_HOME/etc/apps/CDN_JS/bin/configure_regex.py add <sourcetype> <fieldname> "<regex>"

Where, <sourcetype> is the sourcetype for which the regex is provided.

The valid source types are: fms_disconnect, wmt_logplaystats, we_access, abr_session and sr_transaction

<regex>—regex to extract the Content Provider information from the log data

<fieldname>—the valid field names are CP_ID and Asset

Example:
For the following log file entry:
[28/Nov/2012:23:54:42.315+0000] 1799 74.126.71.217 TCP_HIT/206 2458 GET http://ccp-cmc-smooth-localpod02-linear.cdn2.net/content/CP1/hls/file0/file_500.m3u8 application/x-mpegURL - hls 0 - 20121129100000000100000001 [29/Nov/2012:00:00:02.317+0000] External –

Case1: If you want to extract content/CP1 as CP_ID, then the Regex is:

“(?i)^(?:[^]*({1,2})){6}(?:[a-z]+://)(?:[^ /:]+[^ /]+/)(?P<CP_ID>[^ /]+/[^ /]+)”

Case 2: If you want to extract CP1 as CP_ID, then the Regex is:

“(?i)^(?:[^]*({1,2})){6}(?:[a-z]+://)(?:[^ /:]+[^ /]+/[^ /]+/)?(?P<CP_ID>[^ /]+)”

Case 3: If you want to extract file_500.m3u8 as Asset, then the Regex is:

“(?i)^(?:[^]*({1,2})){6}(?:[a-z]+://)(?:[^ /:]+[^ /]+/[^ /]+/[^ /]+/[^ /]+/[^ /]+/)(?P<Asset>[^]+)”

Once this script is executed, redeployment of the server is initiated automatically.

To delete Regex for CP_ID, use the following command:

#$SPLUNK_HOME/bin/splunk cmd python configure_regex.py <remove> <sourcetype> <fieldname>

Modifying a Content Provider

To modify a Content Provider, perform the following steps:

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration** > **Content Provider**.

Step 2 Select the Content Provider that you want to modify and click .

Step 3 On the left pane, enter the modification and click **Save**.

Deleting a Content Provider

To delete a Content Provider, perform the following steps:

Step 1 From the main page, click **Navigation** > **VDS Service Manager** > **CDN Administration** > **Content Provider**.

Step 2 Select the Content Provider that you want to delete and click .

Step 3 Click **Yes** to permanently delete the Content Provider, and click **No** to cancel deletion.

CHAPTER 5

Topology

Topology Overview

The Topology function provides access to create, update, and delete locations.

The following table describes the list of functions available from the Topology page:

Function	Description
Places	Provides different types of locations that can be associated with an element in the topology, which might describe its position in the network or its physical location. **Note** To access the Places function, click the arrow next to the Topology function and then click **Geographic Locations**.

To access the detail window for an item, click .

Places

The Places function provides different types of locations that can be associated with an element in the topology, which might describe its position in the network or its physical location. The location type supported is the Geographic Locations function.

Geographic Locations

Geographic locations contain only geographic information (longitude and latitude) that can be used to describe the physical location of a topology element, such as a Streaming Service Device. (It is used for informational purposes).

To access Geographic Location, perform the following steps:

1. From the main menu, select **Navigation** > **Topology** > **Places** > **Geographic Locations**.
2. From within the Geographic Locations screen, select .
3. In the configuration screen, enter the geographic location details (refer Adding Geographic Locations - Field & Description).
4. When finished, click **OK**. The geographic location is added to the list of Geographic Locations. Click **Save**.

Adding Geographic Location involves configuring the following fields:

Table 82: Adding Geographic Locations - Field & Description

Field	Description
Name	Specify the name of the device
Latitude	Specify the latitudinal distance
Longitude	Specify the longitudinal distance
Metro Code	Specify the metro code
Description	Specify the description, if any

CHAPTER 6

Administration

System Load Dashboard

Displays charts that represents the CPU load, memory usage, disk usage, and network interface utilization, across the nodes in the system.

Managing Users and Roles Overview

Administrators can create specific users and set their roles from the User Management page located within the Administration item.

About User Accounts

User accounts define user roles and access privileges to system configuration and management functional areas. The CDN Manager includes a default user profile with Cisco Administrator access privileges, to provide the Network Administrator first-time access to the CDN Manager system. Administrator privileges provide full rights to all system functions. You must have Administrator privileges to define roles and grant access permissions to system functions.

Note For added security, we recommend that you replace the Cisco Administrator account with a new Administrator user account, specific to only your network management.

Roles

A user's role dictates the functional area and level of access that is granted to the user.

Following is a list of the supported roles:

- CDN Operator Administrator
- CDN Operator Viewer
- Reseller Administrator
- Reseller Viewer
- Content Provider Administrator
- Content Provider Viewer

Adding a User

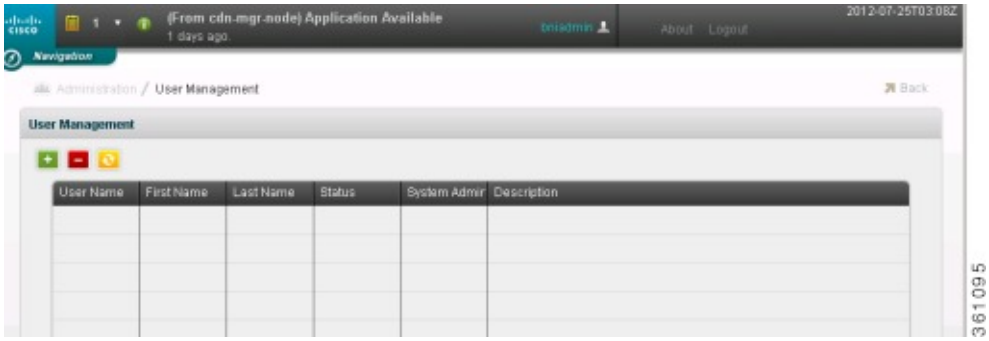
Adding a user involves:

- Creating the user
- Defining the user's role

Note You must have Administrator rights to add a user.

To add a user, perform the following steps:

Step 1 From the main page, select **Navigation** > **Administration** > **User Management**.



Step 2 Add the user and define the user's role.

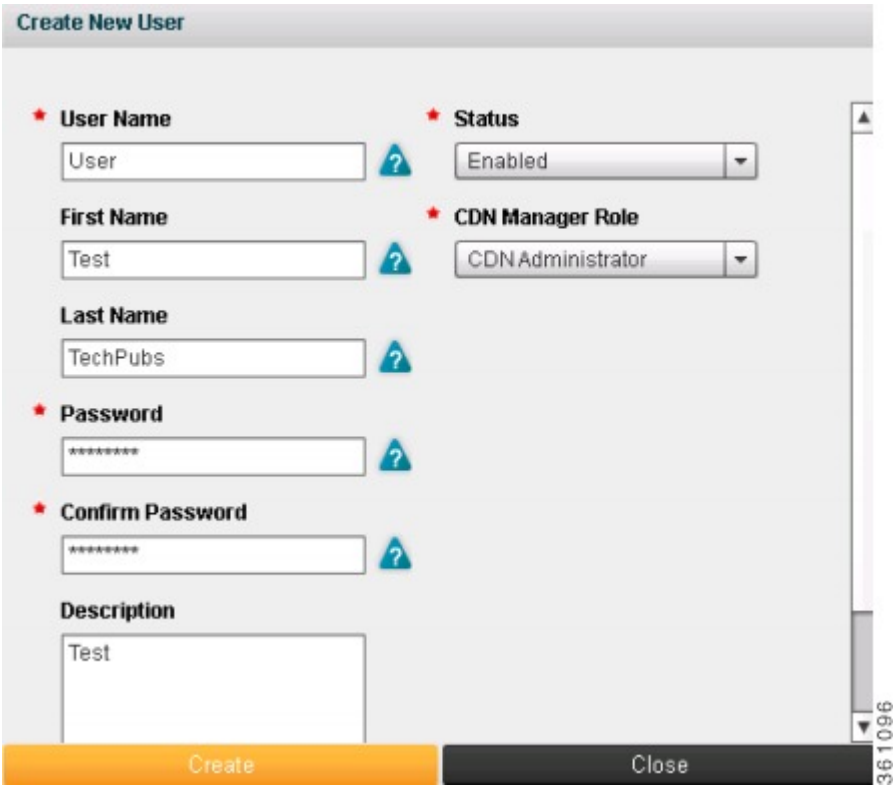
a. Click .

b. In the Create New User dialog, type the values in the fields or select an option from the drop-down list.

Step 3 Add the user's name and password. By default, the role is set to Admin.

Step 4 Click **Create**.

Example:
The following example creates a user with CDN Administrator privileges.



SNMP Trap Destinations

The SNMP Trap Destinations function monitors solution nodes and operational status.

The SNMP trap destination contains the information that the SNMP agent sends notifications to an SNMP manager. This information includes the IP address, UDP port, and the Community Name (Community String).

Global Configuration Parameters

Configuration parameters include any settings that exist on an Appliance, which an end-user might modify in the following ways:

- Using the Appliance Agent (rAPA) User Interface (UI) or Manager User Interface.
- A manual edit to a specific file using a documented procedure; for example, file system modification of jboss-log4j.xml or workflows.
- By copying a modified file onto the appliance from elsewhere.

Important!Modifying a Global Configuration parameter can have a major impact on the running system. A parameter change should only be made by a System Administrator who has a detailed understanding about the impact of the change on the running system.

A baseline configuration is established at the conclusion of installing each appliance. Any parameters not mentioned in this document (for example, tty device definitions) should be considered non-modifiable.

The following lists the configuration parameter elements:

- **Configuration Elements**: Kinds of configuration settings used by the system; for example, topology or configuration database, SNMP, workflow, and so on.
- **Appliance Configuration Parameters**: Summary of all parameters used in configuring appliances with description, value type, and so on.
- **Solution Node Settings**: Settings recorded on each node, which define that node's specific role in the overall solution.
- **Global Configuration Settings**: Globally visible configuration sections, each containing a description of all parameters in the section, including the product defaults.
- **System Topology**: Topology data and its usage, import/export operations and the export schema.
- **Configuration Files**: Essential files for each appliance that contain the configuration for the appliance.

  To access Global Configuration Parameters, click **Administration** > **Global Configuration Parameters**.

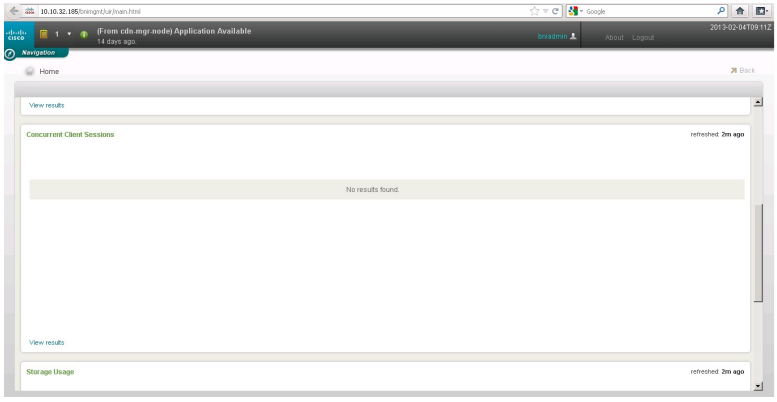
CHAPTER 7

Troubleshooting

Troubleshooting Analytics Dashboards

The analytics system is a critical tool for troubleshooting run-time issues, as well as providing trending information that can be used for capacity planning and other purposes. If it is not properly operating, the ability to use it for troubleshooting is lost.

The most commonly observed behavior of the analytics system that is not working, is a lack of data. If any of the above functions are not operating properly, the Dashboards and Reports data may not appear, and the message “no result found” is displayed.



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The following list provides possible problems that could arise while using the VDS-SM Analytics:

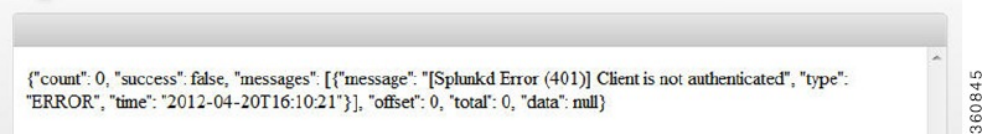
- Splunk licensing
- Splunk Forwarder not operating correctly
- Analytics Indexer not operating
- Search Head not operating

Troubleshooting Splunk Licensing Issues

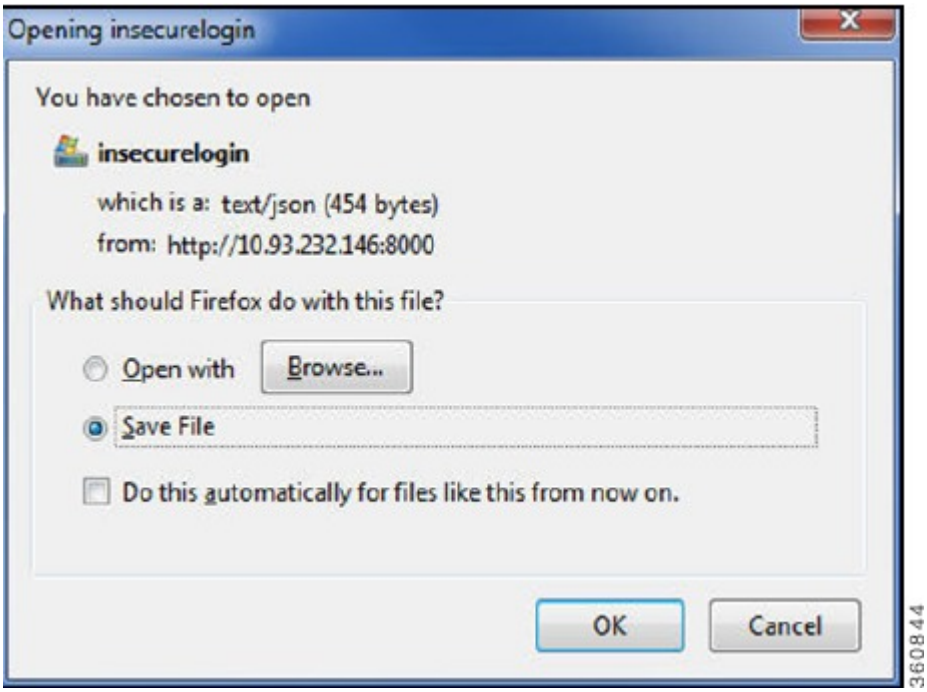
Depending on the browser being used, either Internet Explorer (IE) or Firefox, Splunk licensing issues may cause different errors to appear.

The following are examples of Splunk licensing errors.

- Splunk licensing issues in IE.



- Splunk licensing issues in Firefox. In Firefox, an insecurelogin file will start to download. For example:



If a Splunk licensing issue occurs, use the following procedure to create a new Splunk license.

Step 1 Copy the Splunk license file to your local machine, taking care to note the location, which will be used later in this procedure.

Step 2 Open the Splunk manager app on the Job Scheduler. Using the following:

Example:
`http://<IP of Job Sched>:8000/en-us/manager`
Username: **Admin** or **admin**

Example:
Password: **Beaumaris1**

Step 3 Select **Licensing**.

Step 4 Select **Add License**.

Step 5 Browse your machine to the location where you copied the license file. **Note:** Do not change the filename.

Step 6 Select **Install**.

Step 7 Return to the Licensing page and confirm whether the new license is added and is valid.

Troubleshooting Splunk Forwarder Issues

To verify that the Splunk Forwarder is functioning correctly, ensure that the application node expected to supply data, has an active forwarder. To do this, complete the following:

Step 1 SSH to the Forwarder.

Step 2 Log in to the Forwarder using, username: **bninet** and password: **password**.

Step 3 At the Forwarder prompt, enter the PS command to verify that the Splunk Forwarder is running. For example:

Example:
[bninet@FW ~]$ **ps eax | grep splunkd | grep 8088**

2256 ? Sl 0:52 splunkd -p 8088 start CONSOLE=/ dev /console SELINUX_IN IT=YES SHELL=/bin/bash TERM= linux USER= bninet INIT_VERSION=sysvinit-2.86 PATH=/h ome / bninet / splunkforwarder /bin:/ sbin :/ usr / sbin :/bin:/ usr /bin _=/home/ bninet / splu nkforwarder /bin/ splunk runlevel =3 RUNLEVEL=3 PWD=/ LANG=en_US.UTF-8 previous=N P REVLEVEL=N SHLVL=3 HOME=/home/ bninet LOGNAME= bninet HOSTNAME=FW SPLUNK_HOME=/ hom e/ bninet / splunkforwarder SPLUNK_DB=/home/ bninet / splunkforwarder / var /lib/ splunk S PLUNK_SERVER_NAME= splunkforwarder SPLUNK_WEB_NAME= splunkweb LD_LIBRARY_PATH=/ hom e/ bninet / splunkforwarder /lib LDAPCONF=/home/ bninet / splunkforwarder / etc / openldap / ldap.conf

2257 ? Ss 0:04 splunkd -p 8088 start CONSOLE=/ dev /console SELINUX_IN IT=YES SHELL=/bin/bash TERM= linux USER= bninet INIT_VERSION=sysvinit-2.86 PATH=/h ome / bninet / splunkforwarder /bin:/ sbin :/ usr / sbin :/bin:/ usr /bin _=/home/ bninet / splu nkforwarder /bin/ splunk runlevel =3 RUNLEVEL=3 PWD=/ LANG=en_US.UTF-8 previous=N P REVLEVEL=N SHLVL=3 HOME=/home/ bninet LOGNAME= bninet HOSTNAME=FW SPLUNK_HOME=/ hom e/ bninet / splunkforwarder SPLUNK_DB=/home/ bninet / splunkforwarder / var /lib/ splunk

S PLUNK_SERVER_NAME= splunkforwarder SPLUNK_WEB_NAME= splunkweb LD_LIBRARY_PATH=/ hom e/ bninet / splunkforwarder /lib LDAPCONF=/home/ bninet / splunkforwarder / etc / openldap / ldap.conf

[bninet@FW ~]$

Step 4 If Splunk Forwarder is not running, restart it by using the following command. In the following example, a Splunk Forwarder restart example is shown.

Example:
/ etc / init.d / splunkforwarder restart

Restarting Splunk ...

Password:

Stopping splunkd ...

Shutting down. Please wait, as this may take a few minutes.

. [OK]

Stopping splunk helpers...

[OK]

Done.

Splunk > Needle. Haystack. Found.

Checking prerequisites...

Checking mgmt port [8088]: open

Checking conf files for typos...

All preliminary checks passed.

Starting splunk server daemon (splunkd)...

[OK]

Done.touch : cannot touch `/ var /lock/ subsys / splunk ': Permission denied

If the nodes are forwarding, there should be constant updates in the splunkd log file located in "/opt/splunkforwarder/var/log/splunk". If the processes are running and the log is not being updated, contact Cisco Customer Support.

Troubleshooting the Splunk Indexer

Once the Analytic Forwarder is verified to be functioning properly, verify the operation of Splunk Indexer. To do this:

Step 1 ssh into the IP address of the Indexer.

Step 2 Using the **netstat** command, list the monitoring ports. For example:

Example:
[bninet@IDX **netstat -a 2>>/ dev /null | grep 8089t**

tcp 0 0 *:8089 *:* LISTEN

[bninet@IDX ~]$

Step 3 If there are no jobscheduler processes listening on port 8089, then the indexer is not functioning. Restart the indexer. For example:

Example:
[bninet@IDX ~]$ **sudo / etc / init.d / splunk restart**

Restarting Splunk ...

splunkweb is not running.

Stopping splunkd ...

Shutting down. Please wait, as this may take a few minutes.

..... [OK]

Stopping splunk helpers... [OK]

Done.

Splunk > The IT Search Engine.

Checking prerequisites...

Checking mgmt port [8089]: open

Checking configuration... Done.

Checking index directory...

Validated databases: _audit _ blocksignature _internal _ thefishbucket cdn-mgr cdnmanager cms dsm history main os summary

Done

Bypassing local license checks since this instance is configured with a remote license master.

Success

Checking conf files for typos...

All preliminary checks passed.

Starting splunk server daemon (splunkd)...

[OK]

Done.

Troubleshooting the Analytics Search Head

To verify that the Analytics Node (often referred to as the search head) is operating properly, complete the following:

Step 1 ssh into the IP address of the analytics node.

Step 2 Using the **netstat** command, list the monitoring ports. For example:

Example:
[bninet@IDX **netstat -a 2>>/ dev /null | grep 8089**

tcp 0 0 *:8089 *:* LISTEN

[bninet@IDX ~]$

Step 3 If there are no analytics node processes listening on port 8089, then the nodes are not functioning. Restart Splunk. For example:

Example:
[bninet@IDX ~]$ **sudo / etc / init.d / splunk restart**

Restarting Splunk ...

splunkweb is not running.

Stopping splunkd ...

Shutting down. Please wait, as this may take a few minutes.

..... [OK]

Stopping splunk helpers... [OK]

Done.

Splunk > The IT Search Engine.

Checking prerequisites...

Checking mgmt port [8089]: open

Checking configuration... Done.

Checking index directory...

Validated databases: _audit _ blocksignature _internal _ thefishbucket cdn-mgr cdnmanager cms dsm history main os summary

Done

Bypassing local license checks since this instance is configured with a remote license master.

Success

Checking conf files for typos...

All preliminary checks passed.

Starting splunk server daemon (splunkd)...

[OK]

Done.

In addition, the command **sudo /home/ bninet /splunk/bin/splunk search 'index= dsm | stats count' - auth admin:changeme** can be run to show that the analytics node is capable of processing data from the indexer, as shown below. This command sends scrolling data to the screen, which is compressed in the output below:

Example:

[bninet@Search ~]$ /home/bninet/splunk/bin/splunk search 'index= dsm | stats count' -auth admin:changeme

count

0

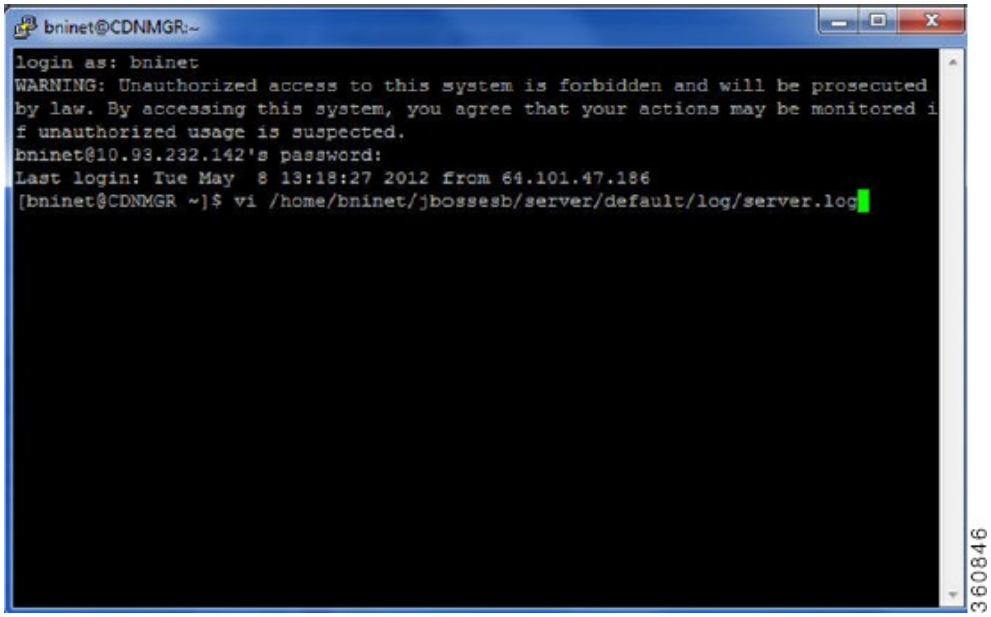
Troubleshooting VDS-IS Provisioning

The server.log file, located within the /home/bninet/jbossesb/server/default/log/ folder, can be used to troubleshoot VDS-IS provisioning problems.

To access the server.log file, perform the following step:

ssh into the VDS Manager node and then enter the following command:

```
/home/bninet/jbossesb/server/default/log/server.log
```



Deleting Summarized Data

To delete the summarized data, perform the following:

Step 1 Launch the JS node web interface http://<JSipaddress>:8000

Step 2 Login to the Splunk web interface by providing the credentials; Username: **admin** and Password: **Beaumaris1**

Step 3 Select **App** and then select **Search**

Step 4 Execute the search query [index=summary report="<Report Name>" host="<JS Host Name>" | delete]
Provide the appropriate report name and hostname in the query.

Example:
[index=summary report=mobitv_client_daily host= secondary-JS | delete]

Step 5 Validate the count by issuing the search query [index=summary report=mobitv_client_daily]

Note can_delete role is already added for Admin. However, the above query will not work in a normal search page.

Splunk License Violation

Violations occur when you exceed the maximum indexing volume allowed for your license. If you exceed your licensed daily volume on any one calendar day, you will get a violation *warning*. The message persists for 14 days. If you have 5 or more warnings on an Enterprise license or 3 warnings on a Free license in a rolling 30-day period, you are in *violation* of your license and search will be disabled.

Note Summary index volume is not counted against your license.

If you get a violation warning, you have until midnight (going by the time on the license master) to resolve it before it counts against the total number of warnings within the rolling 30-day period.

During a license violation period:

- Splunk does not stop indexing your data. Splunk only blocks search while you exceed your license.
- Searches to the _internal index are not disabled. This means that you can still access the Indexing Status dashboard or run searches against _internal to diagnose the licensing problem.

For any queries on licensing, contact the Cisco Accounting team.