Verastream Host Integrator Administrative Console

Administrative Console Guide

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1. The Administrative Console

The Verastream Administrative Console is an Eclipse-based management hub that puts monitoring and management tasks at your fingertips. The Administrative Console uses perspectives, views, and overviews to provide a configurable and totally customizable user experience.

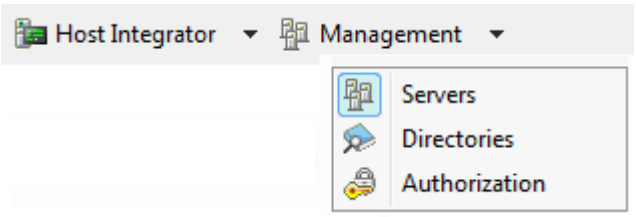
1.1 Using Perspectives

The Administrative Console hosts different perspectives, each one containing different views and editors. This lets you switch from one application to another and to adapt your workspace to your own administrative needs.

You can save perspectives, modify a perspective and then revert to the last one saved, or create a custom perspective. Each perspective group remembers the last perspective and you can switch quickly from one perspective to another.

1.2 Custom Perspectives

To tailor the console to your own workflow and needs, you can combine views and editors from different perspectives and create a custom perspective. These custom perspectives are easy to create; after you've modified the console layout, just open the Perspective menu, and select **Add Custom Perspective**.



1.3 Using the Management Perspectives

Using the Management perspectives, you can configure and monitor your management servers, handle authorization and authentication, and administer directory services. These perspectives are: - **Servers**: Load distribution domains and data replication with management server peers in a cluster. - **Directories** The Administrative Console uses LDAP as a directory service provider. When you configure an LDAP provider in the console, user and group directory services for management server clients are authenticated by an LDAP service provider. - **Authorization** Access control and authentication. The type of access allowed on the server is determined by the security profile that is assigned to the user ID.

1.4 Using Views

Views provide information about components you are working with in the console. Each perspective has views associated with it, by default. You can open or close views using the View menu or add views from other perspectives by selecting **Other views** from the View menu.

You can resize, minimize, maximize, restore, and detach views. Some views have their own toolbars which provide additional functionality. Some toolbar options are dependent on particular items within the view being selected.

Selecting an object in one view can affect what is displayed in other views. Often there is a description of what is displayed in the view.

More information

What is a Directory?

Using Authorization and Authentication

2. Host Integrator Management

2.1 Managing Host Integrator

The Verastream Host Integrator management server and Administrative Console provides directory services, authorization, and server management and monitoring for Host Integrator deployments. The Administrative Console tracks servers and domains in your installation and the management server provides authorization, authentication, and directory services.

By installing more than one management server you can establish replication and failover support.

How do things fit together?

When a session server starts, it registers with the management server.

When a connector connects to the session server with security enabled, the session server authenticates with the management server on behalf of the client.

When a non-connector connection is made to the session server with security enabled (such as a connection from the Administrative Console, or activatemodel command), it authenticates directly with the management server.

If a connector performs a connection via domain, the connector uses the management server for directory services. The management server provides the connector with the address of the session server that is functioning as the domain server.

2.1.1 Host Integrator components

This component	Does this...
Session server	Use the VHI session server to access data on a variety of host systems, including IBM mainframes and AS/400s, VAX/Open VMS and other ASCII hosts using the VT-420 terminal protocol (including VT-52 and VT-100), and HP 3000 hosts.
Web server	The Web server runs Java or HTML5 Web application projects deployed from within Web Builder, as well as the Zero-footprint terminal session Web applications.

This component	Does this...
Administrative Console	Use to remotely view and configure server information. The console contains both the Host Emulator and logging functions.
Management server	Use to provide security and directory services, and track servers and domains for Host Integrator installations.
Host Emulator	Use to test an application without a host connection. This tool is accessed through the Administrative Console.
Logging	Use to perform detailed queries against the Host Integrator. Logging is accessed through the Admininstrative Console.

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2.1.2 Introduction to the Host Integrator Administrative Console

The Host Integrator Administrative Console is an Eclipse-based management hub that puts monitoring and management tasks at your fingertips. The Administrative Console uses perspectives, views, and overviews to provide a configurable and totally customizable user experience.

2.1.3 Using Host Integrator Perspectives

Using Host Integrator perspectives, you can configure and monitor your session servers, handle logging, and configure the Host Emulator. These perspectives include:

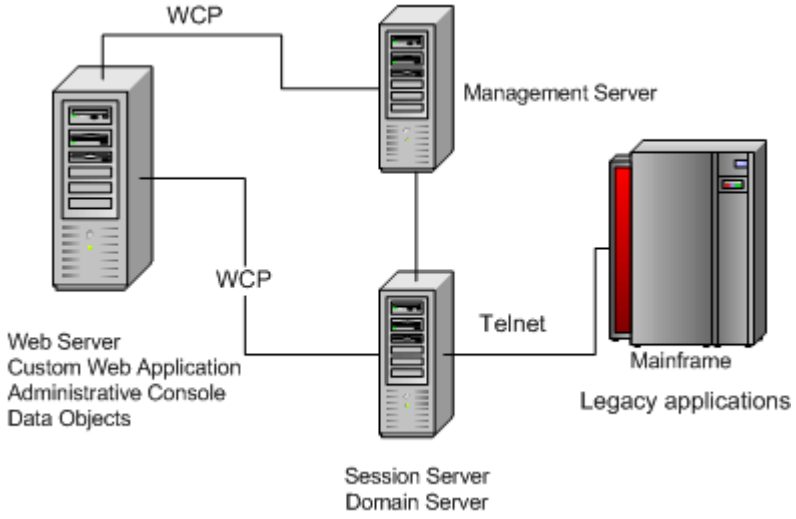
- **Session Servers** The Administrative Console provides a central hub where you can manage and monitor your session servers. You can add, remove, and configure directories, load distribution domains, security, and logging for session servers.
- **Logging** Host Integrator can log server errors and can issue warnings and informational messages as it runs.
- **Host Emulator** The Host Emulator runs 3270 and 5250 models without having a live connection to a mainframe.

More information

How to Use Host Integrator

2.1.4 How to Use Host Integrator

The diagram below shows a Host Integrator installation in which users can access legacy application data using a Web browser. Although each component is represented as running on separate machines, more than one component can run on the same machine. It is important to note, however, that although it is possible to run all Host Integrator components on the same machine, this is usually only done for development and testing.



2.1.5 Accessing Legacy Host Data from a Web Application

Although Web applications are the most common way to access Host Integrator server, you can also create client/server applications. You can have an installation in which users access host data by running client applications that communicate directly with Host Integrator Server over WCP.

In this type of deployment, the client application on the computer must contain all the logic for accessing the host data, which includes connecting to the Host Integrator Server, requesting the model, providing the user interface between the model and the client, managing the session, and trapping and resolving errors.

2.1.6 Sessions

In this documentation, the term "session" is a general term that describes a single session between a client or Web application and the host. The term "host session" refers to the connection between a Host Integrator Server and the host; host sessions run over Telnet.

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2.1.7 Working Securely

By default, Host Integrator access control is disabled. When access control is enabled for a session server, an administrative login, while always required for the Administrative Console, will also be required for deploying models, generating Web applications, and executing connectors. Encryption is always enabled.

Host Integrator access control includes authentication and authorization.

> **Note**
>
> You can also use SSL to ensure security between the Host Integrator server and an IBM 3270 or AS/400 host. To use SSL, configure your model to use Telnet SSL or Extended Telnet SSL as a transport when you set your connection properties. If you are connecting to a VT host, you can use SSH to ensure a secure connection. To use SSH, configure your model to use SSH when you set your connection properties.

Authentication and Authorization

The management server provides authorization and authentication for both the Administrative Console and Host Integrator. When you first install Host Integrator, you provide a password for the "admin" user. The "admin" user is a built-in user that has access to all the features of the Administrative Console, including Host Integrator configurations. You use the "admin" credentials to log onto the Administrative Console and then assign additional users and groups from configured external LDAP capable directories to authorization profiles. If a management server needs to be manually reset, then the default password of ‘=secretpassword ’ is restored.

How do I configure Access Control?

Using the Administrative Console:

1. Add sources for security users and groups by either configuring directories or by enabling OS Groups in the Directory perspective.
2. Assign users and groups to the authorization profiles, Administrator, Developer, and User, available in the Authorization perspective.
3. Check the security option for each selected session server on the server property page. Since the Administrative Console is the only way to configure Host Integrator servers, enabling security controls access to servers for configuration purposes and establishes access control for data objects and client programs.
4. The management server always is running in secure mode (requires a username/password to connect) and is independent of session server security.

The built-in "admin" user is automatically part of all authorization profiles and has access to all areas of the system. To enable security follow the steps above to provide system access to additional users.

Security Profiles

The Host Integrator provides three different security profiles; user, developer, and administrator. The type of access allowed on the server is determined by the security profile the user ID belongs to. This access control is separate from and in addition to the access control provided by the host. There are scenarios in which host user ID's and passwords are sufficient for controlling access; in these cases you may decide not to enable authentication on your servers.

Configuring Server Authentication

Although the management server always runs in secure mode and a user name and password is required to access the Administrative Console and configure session server properties, this security does not control access to servers by data objects and client programs. You can establish this access control by enabling security on individual servers.

Encryption

The channel between the server and the clients that connect to it is always encrypted. A server forces encryption over SSL with every client that connects to it.

In previous versions, the RequireSecureConnection API in the connectors would be used to enable encryption between the client and the Session Server without also enabling authentication and authorization. In the current version, encryption is always enforced by the Session Server, and the value of the RequireSecureConnection flag in the connectors no longer has any effect.

Federal Information Processing Standards (FIPS) are guidelines established by the United States government to standardize computer systems. To use FIPS 140-2 validated TLS version 1 encryption for SSL support, in a Windows environment, you must first define an environment variable, VHI_FIPS = 1. After this variable is set all SSL support will use the FIPS 140-2 Crypto Libraries.

2.1.8 Using Profiles

The Host Integrator provides three different security profiles.

This security profile	Can do this....
User	Users can load Host Integrator models, create and attach to sessions, and interact with the host system. Client application user IDs are typically assigned this profile. Members of the User profile cannot log on to the Administrative Console to view or configure Host Integrator servers and cannot deploy models.
Developer	Developers can do everything users can do, as well as log on to the Administrative Console. Developers can see server configurations and status information, but cannot make configuration changes. Developers of client applications are typically assigned to this profile.
Administrator	Administrators (those logging on with an Administrator profile) can create and attach to sessions, interact with the host system, and access the console. An administrator can view and configure servers, domains, and security.

In the Administrative Console, open the Management prospective, and then the Authorization Explorer to add members to the security profiles.

More information

Working Securely

2.1.9 Deploying a Model

Deployment is the process of transferring a model and its associated files and settings to the production server or servers where it's going to run. You deploy a model from the Design Tool or you can use command-driven deployment.

After a models is deployed, it is visible in the Models view of the Administrative Console. To open the Models view, from the View menu, select Models.

You can use the Design Tool to deploy a model with one configuration to one server, in this case a development server, running on the same computer as the Design Tool,for test purposes. In a command-driven deployment, you use Verastream Host Integrator's deployment commands from a command line or in a batch or shell file to deploy a model with one or more configurations to one or more production servers.

> **Note**
>
> If your integration solution includes a Web application created with Verastream's Web Builder, you must also separately deploy the Web application files. See Deploy Web Applications in the Web Builder help for information.

Using the Design Tool to deploy

If you are deploying a model with one configuration to the development server for test purposes, it's easiest to use the Design Tool.

With this approach, you use the Design Tool's Deployment Options command on the File menu to designate any session pool and model variable list settings. Next, you use the File menu's Deploy to Local Server or Deploy to Remote Server command to deploy the model. If Verastream security is enabled on the server, you are prompted for credentials. Unlike the command-driven method described below, you can only deploy the model to one server, using one model configuration. See Using the Design Tool to Deploy a Model in the Design Tool help for more information.

Using commands to deploy

If you are deploying a model with one or more configurations to one or more production servers, you should use Verastream Host Integrator's deployment commands from a command line or in a shell or batch or shell file.

With this approach, you create a model package and then use commands or a batch or shell file to deploy that model package. Your batch file can automate the deployment to multiple Host Integrator Servers. In the model package, the model file can be combined with event handler .JAR files and descriptors that tell the servers how to provide access to the model -- such as via a session pool of a certain size, or by using specific requests for a new session. See About Model Packages and Using Commands to Deploy a Model Package for more information about this deployment method.

More information

There are topics on deploying model packages and working with descriptor files and commands in the Design Tool help. See Deploying Model Packages.

Updating models deployed with earlier versions of Host Integrator

If you're upgrading from an earlier version of Host Integrator, you may have a lot of model or session pool configuration information in the Administrative Console. If you want to update a model without affecting existing configuration information, do not include descriptor files in your model package.

Once you deactivate a model that has configuration information in the console, that configuration information is lost. So if you're creating new models, you should put such information in a configuration descriptor file and then build it into your model package.

More information

How to Use Host Integrator

2.1.10 Working with Load Distribution Domains

Host Integrator load distribution domains provide load balancing and failover support for installations that contain multiple Host Integrator session servers.

The Domain Session Server view displays session servers that are associated with a load distribution domain, called domain session servers, as opposed to the Session Server view which displays all session servers in an installation, regardless if they are associated with a domain. A session server can be associated with multiple load distribution domains, or none at all. In the Domain Session Server view you can monitor all of your domain session servers, their properties, and the number of sessions that are currently active.

To open the view, on the Host Integrator perspective, from the View menu, choose Domain Session Servers.

How does it work?

When you configure a load distribution domain client, applications can connect to a domain instead of connecting to individual session servers. The management server will apply logic based on the domain configuration to distribute load among the session servers in the domain, and if a session server in a domain becames inactive for whatever reason, client applications will still be able to connect to their active session servers in the domain.

To achieve session server load distribution and failover at runtime, your client should connect "via domain":

If you write your own client application code, use the `ConnectToModelViaDomain()` or `ConnectToSessionViaDomain()` connector API method calls.

If you generate a client in Web Builder, select **Connect to model via domain** or **Connect to session pool via domain** as the connect method in your project properties.

If you use the embedded Web service, configure the domainName property.

Management Server domain handling logic or what happens at runtime?

The basic process that occurs at runtime to achieve session server load distribution and failover is:

- The management server runs a domain server for each configured domain. The management server also monitors the online status of session servers by receiving status updates and proactively checking at regular intervals.
- The client application calls the connector with `ConnectToModelViaDomain()` or `ConnectToSessionViaDomain()` API method. The arguments specify the management server address, domain name, and model or pool name. If security is enabled in the session server, then the Host Integrator user ID and password credentials are also specified.
- The connector (data object) sends a request to the management server for a session from the specified domain.
- The management server first determines which servers in the domain contain the specified model or pool and thus are eligible to fulfill the request.
- The management server then takes all eligible servers with the lowest priority value and adds up their weight values. A random number is generated between 1 and the weight total. This number is used to determine which server will be asked to fulfill the request. For example, if there is Server A with a weight of 80, and Server B with a weight of 20, then a random number is generated between 1 and 100. If the number is between 1 and 80, then Server A is asked, and if the number is between 81 and 100, then Server B is asked.
- If the server is unable to fulfill the request because it has reached the server session limit or, in the case of session pools, it has reached the pool limit, then the server is considered not eligible to fulfill the request and the process repeats with the remaining servers in the priority group. If the

server is unable to fulfill the request because it is offline, then it will not be considered eligible for future requests until it becomes online again. Online status is automatically monitored by the management server.

- If all servers in the priority group are unable to fulfill the request then the whole process is repeated for server in the next higher priority group.
- When a server is able to fulfill the request, it allocates a session for the client to connect to, and responds to the management server with its address and session ID.
- The management server returns the connection information to the connector client, which connects to the session server that has the allocated session. If security is enabled for the session server, the channel is encrypted and credentials are provided to the session server. The session server also contacts the management server for authentication and authorization.
- The session server replies to the connector with the status of the initialization.

More information

Adding, Removing, and Configuring Load Distribution Domains

2.1.11 Adding, removing and configuring load distribution domains

You add load distribution domains and session servers to a domain in the Session Server Explorer of the Administrative Console.

Session servers and management servers have different failover mechanisms.

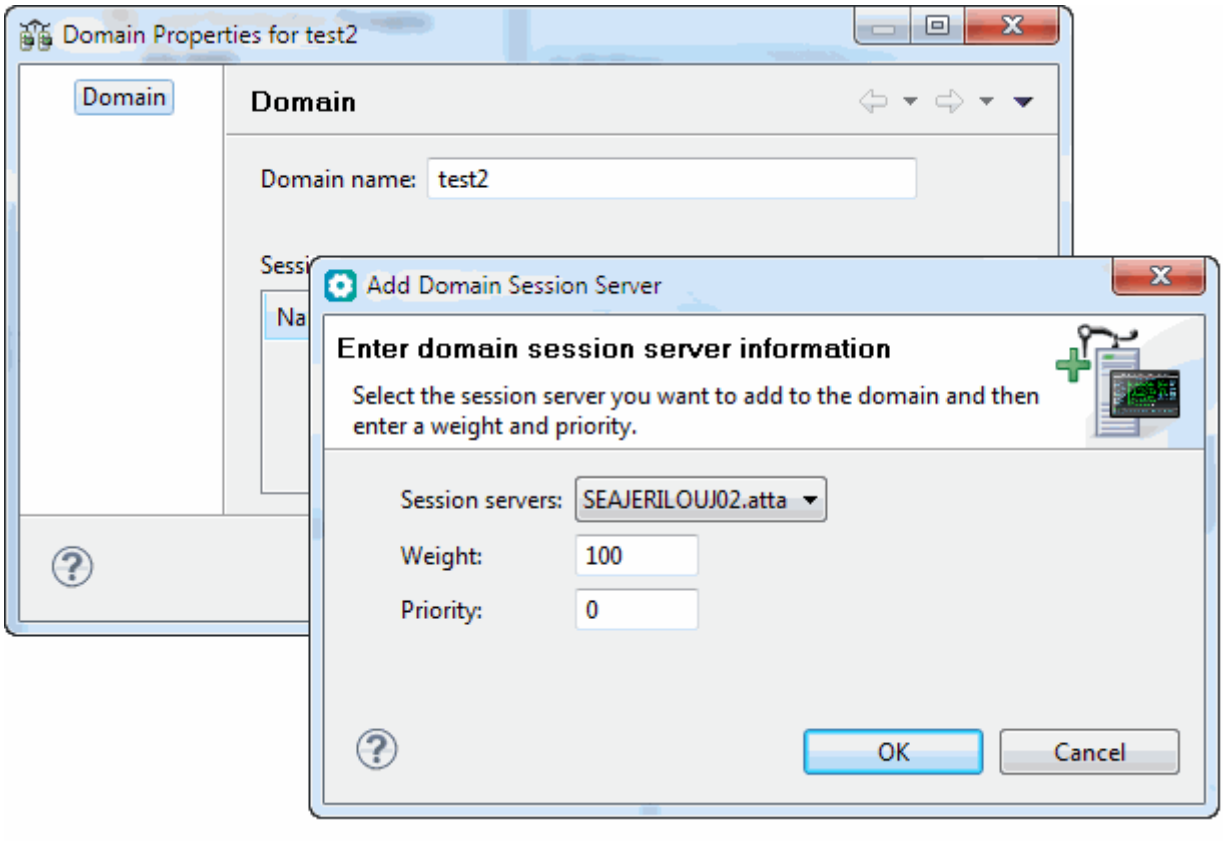
> **Note**
>
> After installing Host Integrator on the first system, install subsequent servers using the Join an existing installation option. Use the management server name and password set in the first installation.

To add and edit a domain

In the Administrative Console, connect to the management server cluster with the user name admin and the password set during installation or other administrative credentials set in the Administrative Console. From the Host Integrator perspective, choose Session Servers.

2. In the Session Server Explorer tree, right-click **Load Distribution Domains**, and choose **Add domain**. The **Add Domain** dialog box displays.

3. Type a name for the new session server load distribution domain, and click OK. The new domain is listed under Load Distribution Domains in the Session Server Explorer.
4. In the Session Server Explorer, select the new domain, right-click and choose **Properties**. The properties page for this domain displays.
5. Click Add to identify the session servers that will be used by this domain. In the **Add Domain Session Server** dialog box, select the session server you want to add to the domain and then enter a weight and priority.



6. The session server has two properties associated with it; weight and priority.

- **Weight**— This property controls the amount of load that the session server will handle within a given domain and a given priority. The value is relative to the weight values for other servers in the same domain with the same priority. Weight values are used for load distribution.
- **Priority**— This property controls when a session server is considered eligible to handle a request for a session. A session server with a higher priority value will only be asked to fulfill a session request if ALL the servers with a lower priority value are unable to handle the request. The value ‘0’ is the highest priority for this property. The higher the number, the lower the priority. Priority values are used for failover.

For each set of servers with the same priority, make their weight vlaues total to 100. This makes it easier to identify each server's load as a percent of the total.

For example:

With this domain setup Server A handles approximately 80% of the session requests and Server B handles approximately 20%. If Server A is unavailable, then Server B will handle 100% of the session requests. Server C will only be asked to handle a session request if both Server A and Server B are unavailable. As soon as Server A or Server B becomes available then Server C will no longer be asked to handle a session request.

Server	Weight	Priority
Server A	80	0
Server B	20	0
Server C	100	1

Editing and Removing Session Servers and Domains

To....	In the Session Server Explorer, do this....
Edit domain session server properties	Select the domain whose server properties you want to edit, right-click and choose Properties. On the Properties page, select the session server, and then click Edit.
Remove a domain	Select the domain you want to remove, right-click, and choose Remove.
Remove session servers from a domain	Select the domain whose server properties you want to remove, right-click and choose Properties. On the Properties page, select the session server, and then click Remove.

More information

Working with Load Distribution Domains

2.1.12 Working with Host Integrator Session Servers

The Host Integrator Session Server provides seamless integration of host application data and business logic into client/server and Web applications. The session server supports multi-tier client/server and Web application architecture and is designed to provide concurrent access by thousands of Web application users to host information systems and applications. Using the Host Integrator Session Server, a single Web or client/server application can concurrently access data on a variety of host systems, such as:

- IBM mainframes and compatibles, using the Telnet and TN3270E (Telnet Extended) protocols.
- IBM AS/400 systems, using the 5250 terminal protocol via Telnet.
- VAX/OpenVMS and other ASCII hosts using the VT-420 terminal protocol, which includes VT-52 and VT-100 via Telnet.
- HP 3000 hosts, using the 700/92 terminal protocol via Telnet or NS/VT.

The Host Integrator Session Server works in conjunction with the Host Integrator Design Tool and the Host Integrator Software Connectors to integrate host application data and business logic into client/server and Web applications.

Using the Design Tool, a developer builds a model of a host application, accessing fields that contain information needed by the client application. The model is then loaded into Host Integrator Session Server. The model contains all the information about the host application, including its traversal logic, application screen signatures, and data attributes, and can be accessed from a variety of software development environments using an Application Programming Interface (API) included in the Host Integrator Development Kit. When the Host Integrator Session Server receives a request from a client application, it instantiates a host session using the logic stored in the model specified in the request. Host Integrator Session Server navigates through the host application, fetches the requested data, and returns it to the client application.

For more information about creating and working with models and working with Host Integrator connectors, see the Design Tool online help, which is included in the Host Integrator Development Kit.

2.1.13 Managing the Session Server

The Administrative Console provides a central hub where you can manage and monitor your session servers. You can add, remove, and configure directories, load distribution domains, security, and logging for session servers.

To have complete administrative control over the session server you must be logged in with an administrator profile.

To start managing your session servers, from the Host Integrator perspective, choose Session Servers, and open the Session Server Explorer. From here you can view and configure logging, notification, and various session server properties. Additionally, you can view and configure models that are deployed to the session server, model variable lists associated with the session server, and session pools.

More information

Viewing Server Properties

Adding a Session Server

2.1.14 Adding a Session Server

In the Administrative Console you add session servers that you want to manage. When you install the session server it is either registered with an existing management server or with the management server that is also being installed. You can only register a session server with one management cluster at a time.

To add a session server

1. From the Session Server Explorer Servers node, click to add a session server. The Add Session Server dialog box displays.
2. Type the name of the session server you want to manage, and then click OK. The server displays in the Session Server Explorer tree. You can now configure the properties associated with the server.

Adding additional session servers

To add a session server post-install you must supply the address of the session server, either the machine name or IP address. A session server that can be contacted and is not already a part of another management cluster is added and the name will default to the address you supplied.

If the session server can be contacted, but is already part of a management cluster, an error message displays since a session server can only be a part of one management cluster.

If the session server cannot be contacted you can add it anyway. If you do so, it will not be added to a cluster until the server is online. When the server comes online and is part of another management cluster, error messages will display in the log, and the server will be offline to the second management server.

Load balancing and failover

In order to configure session servers in a Host Integrator load distribution domain:

All session servers in a load distribution domain must share the same management server cluster.

Each session server can be registered with only one management server cluster.

Session servers can be members of multiple load distribution domains.

See Adding,Removing and Configuring Load Distribution Domains for instructions on setting up load distribution.

More information

- Working with Host Integator Session Servers
- Adding, Removing and Configuring Load Distribution Domains

2.1.15 Removing a session server from a cluster

A session server can only be registered with one management server cluster. If you want to register a session server with a different management server cluster, you must first remove it from the existing cluster.

If you uninstall a session server while it is registered with a management cluster that is not uninstalled, you must remove the session server from the management server cluster before reinstalling the session server on the same machine. If this is not done, the management cluster thinks the session server is registered, but may not be able to communicate with it. If this occurs just remove the session server and re-add it.

Removing a session server from a management cluster does not affect its configuration.

To remove a session server from a management server cluster

If the session server is...	Then this...
Online	Select the session server you want to remove, right-click and choose Remove.
Offline	Depending on your operating system, run either the `HostIntegrator/bin/resetsessionserver.bat` or `resetsessionserver.sh` script before you add the session server to a different management cluster.

If the session server is...	Then this...
	- You can run the script while the session server is online, but the session server must be restarted for the script actions to take effect.
	- If you run the resetsessionserver.bat script on a system with UAC enabled, then you must run the script with administrator privileges.

More information

Adding a Session Server

Removing a Management Server From a Cluster

2.1.16 Configuring the session server to run as a system daemon

To have installed services start automatically when your system boots up

Command line options	Description
atstart -d	-d before other options logs debugging info
atstart -install `<component>`	install component as a daemon process
atstart -uninstall `<component>`	uninstall the daemon process
atstart -start `<component>`	start the daemon process
atstart -stop `<component>`	stop the daemon process
atstart -status `<component>`	display current status of component

Start and stop "all" starts or stops all five services and -status displays the status of all five components. For example:

```
    <user>:/opt/rocketsoftware/verastream/hostintegrator/bin # ./atstart -
status
    LogMgr      Started
    Server      Started
    HostEmul    Started
    MgmtServer  Started
    WebServer   Started
```

1. Create a file called `vhi` containing the following and entering your installation directory: These instructions will start all services, including the management server if it is installed. To start a particular service, replace the parameters (`<component>`) with one of the following:

   `server` —VHI session server

   `mgmtserver` —VHI management server

   `logmgmr` —VHI log manager

   `hostemul` —VHI host emulator

   `webserver` —VHI web server

   `all` —all installed services (start and stop only)

```
### BEGIN INIT INFO
# Provides: VHI
# Required-Start: $network
# Should-Start: $network
# Required-Stop: $network
# Should-Stop: $network
# Default-Start: 3 5
# Default-Stop: 0 1 2 4 6
# Description: Verastream Host Integrator Services
### END INIT INFO

INSTALL_DIR=<enter installation directory>
BIN_DIR=$INSTALL_DIR/hostintegrator/bin
case "$1" in
start)
echo "Starting Verastream"
$BIN_DIR/atstart -start all

RETVAL=0
;;
stop)
echo "Stopping Verastream"
$BIN_DIR/atstart -stop all

RETVAL=0
;;
status) echo "Current Verastream status"
$BIN_DIR/atstart -status

RETVAL=0
;;
restart) echo "Restart Verastream"
echo "-- stopping all components --"
$BIN_DIR/atstart -stop all
echo "-- starting all components --"
$BIN_DIR/atstart -start all

RETVAL=0
;;
*)
echo "Usage: $0 {start|stop|status|restart}"
RETVAL=1
;;
esac

exit $RETVAL
```