HP Service Virtualization

For the Windows ® operating system

Software Version: 3.01

Installation Guide

Document Release Date: July 2013

Software Release Date: July 2013

Legal Notices

Warranty

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

Restricted Rights Legend

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Copyright Notice

Trademark Notices

Adobe™ is a trademark of Adobe Systems Incorporated.

Internet Explorer®, SQL Server®, Microsoft®, Windows®, Windows Server®, Windows® XP, and Windows® 7 are U.S. registered trademarks of Microsoft Corporation.

Oracle, Java, and JDBC are registered trademarks of Oracle and/or its affiliates.

IBM®, WebSphere®, IMS™, and CICS® are trademarks or registered trademarks of International Business Machines Corporation, IBM, in the United States and in other countries.

TIBCO® is either the registered trademark or the trademark of TIBCO Software, Inc. and/or its subsidiaries in the United States and /or other countries.

Intel®, Core™2, and Xeon® are trademarks of Intel Corporation in the U.S. and/or other countries.

SAP® and SAP NetWeaver® are registered trademarks of SAP AG in Germany and in several other countries.

Documentation Updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

To check for recent updates or to verify that you are using the most recent edition of a document, go to:

http://h20230.www2.hp.com/selfsolve/manuals

This site requires that you register for an HP Passport and sign in. To register for an HP Passport ID, go to:

http://h20229.www2.hp.com/passport-registration.html

Or click the **New users - please register** link on the HP Passport login page.

You will also receive updated or new editions if you subscribe to the appropriate product support service. Contact your HP sales representative for details.

Support

Visit the HP Software Support Online web site at:

http://www.hp.com/go/hpsoftwaresupport

This web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software online support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the support web site to:

- Search for knowledge documents of interest
- Submit and track support cases and enhancement requests
- Download software patches
- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. To register for an HP Passport ID, go to:

http://h20229.www2.hp.com/passport-registration.html

To find more information about access levels, go to:

http://h20230.www2.hp.com/new_access_levels.jsp

Contents

Welcome to Service Virtualization

HP Service Virtualization provides a framework for creating virtual services for use in testing your applications under development.

You can create virtual services to simulate the behavior of services with limited access, such as unavailable or expensive services. Service Virtualization places a virtual service between the client application (application under test) and the real service to which you require access. Once you create virtual services to simulate the real services that you require, you reconfigure your client applications to use the virtual services, instead of the real services.

Service Virtualization Components

Service Virtualization consists of the following applications:

- **Designer.** A client application enabling you to create virtual services, and run simulations of real service behavior. The Service Virtualization Designer The Designer is used for design and validation of virtual services within the same desktop environment, and includes an embedded server for hosting virtual services.
- **Server.** *(Optional.)* A standalone server application which hosts the running of virtual services. The Service Virtualization Server is optimized for performance, can contain many more services than the Designer, and can be accessed by multiple Designers.

  For details on configuring the Service Virtualization Server, see "HP Service Virtualization Server" on page 36.
- **Management Interface.** *(Optional.)* A web application enabling you to view and manage all services from Service Virtualization configured servers, without opening the Designer or individual projects. The Service Virtualization Management is installed by default when you install the Service Virtualization Server.

Note:

- You can choose to install the Designer alone, or both the Designer and the standalone Server. These applications can be installed together on a single machine or separately as a distributed application.
- Service Virtualization Management is installed by default when you install the Service Virtualization Server.
- Service Virtualization Management runs inside Tomcat server, which is installed together with the Service Virtualization Server. To uninstall Service Virtualization Management, you must uninstall the Service Virtualization Server.

How This Guide is Organized

Name	Description
"Prerequisites" on page 8	Prerequisite information for the various supported hardware and software systems.
"Installation" on page 12	Step-by-step instructions to install and configure Service Virtualization.
"Command Line Installation" on page 16	Instructions for installing the Service Virtualization components from the command line.
"Upgrade and Migration" on page 20	Overview of the process for upgrading to a new version of Service Virtualization.
"Virtual Service Deployment" on page 26	Deploying services on the Service Virtualization Server.
"HTTP Port Configuration" on page 30	Information on manually configuring the HTTP ports that Service Virtualization uses.
"HP Service Virtualization Server" on page 36	Additional configuration information for the Service Virtualization Server.
"How to Start Service Virtualization" on page 44	Instructions on starting the Service Virtualization components: Designer, Server, and Service Virtualization Management.

Chapter 1

Prerequisites

Hardware

Minimal Hardware Configuration:

The HP Service Virtualization Server 3.01 and HP Service Virtualization Designer 3.01 can run on any hardware configuration that is using a supported operating system and has at least 1GB of physical memory installed and available for each product.

With the minimal hardware configuration, you can perform all functional testing scenarios and some basic performance testing scenarios, provided that they do not create too much load on virtualized services.

Recommended Hardware Configuration:

Virtualization hardware sizing is complicated and may include many factors. For detailed sizing recommendations, contact HP Customer Support. For contact information, see "Support" on page 4.

The following hardware configurations provide a good performance balance for normal usage scenarios, where each product is installed on a separate machine.

HP Service Virtualization Designer 3.01

- Intel® Core™2 Duo T7500 @ 2.2GHz or similar
- 4GB physical memory
- Free physical disk storage space

The Designer typically uses less than 1GB of space for installation and all Service Virtualization projects, as follows:

- 250 MB for the Designer installation
- 10 MB for each service, where this figure can grow as recorded traffic increases

Use the following calculation to calculate your required size:

15*MSG_SIZE*MSG_COUNT

where:

MSG_SIZE = learned message size in kilobytes

MSG_COUNT = the number of unique messages learned during the learning process

HP Service Virtualization Server 3.01 (32-bit edition)

- Intel® Xeon® 5140 @ 2.33GHz or similar
- 4GB physical memory
- Free physical disk storage space:
  - 250 MB for the Server installation.
  - The Server does not maintain any data on the local disk. Data are loaded from and saved to the Database Server.

HP Service Virtualization Server 3.01 (64-bit edition)

- Intel® Xeon® 5140 @ 2.33GHz or similar
- 8GB physical memory
- Free physical disk storage space:
  - 250 MB for the Server installation.
  - The Server does not maintain any data on the local disk. Data are loaded from and saved to the Database Server.

Database Server

- Intel® Xeon® 5140 @ 2.33GHz or similar
- 8GB physical memory
- Database storage:

  The database typically requires 1GB of disk space, but this figure can grow as recorded traffic increases.

  Use the following calculation to calculate your required size:

  30*MSG_SIZE*MSG_COUNT

  where:

  MSG_SIZE = learned message size in kilobytes

  MSG_COUNT = the number of unique messages learned during the learning process

Software

- Before installing this product, it is recommended to contact HP Customer Support to check for any available software updates. For contact information, see "Support" on page 4.
- For the full list of supported environments, refer to the support matrix on the HP Software Support site at: http://h20230.www2.hp.com/sc/support_matrices.jsp, or contact support.

Supported Operating Systems

- Microsoft® Windows® XP Professional (Service Pack 3 or higher)
- Microsoft® Windows® 7 (32-bit and 64-bit)
- Microsoft® Windows® 8 (64-bit)
- Microsoft® Windows Server® 2003 R2 32-bit (Standard/Enterprise Editions)
- Microsoft® Windows Server® 2008 (32-bit and 64-bit)
- Microsoft® Windows Server® 2008 R2 (64-bit)
- Microsoft® Windows Server® 2012 64-bit

Database Server

- Microsoft® SQL Server® 2008 R2
- Microsoft® SQL Server® 2008 R2 Express
- Microsoft® SQL Server® 2012
- Microsoft® SQL Server® 2012 Express

Access Rights

The following permissions are required:

Installation	• Windows administrator rights.
	• The following MS-SQL account **Server Roles**:
	  ▪ dbcreator
	  ▪ public

To run the Service Virtualization Server	• Windows administrator rights on the Server machine.
	• The following MS-SQL **User Mapping** user privileges to access the database:
	  ▪ db_owner
	  ▪ public

To run the Service Virtualization Designer	• The following MS-SQL **User Mapping** user privileges to access the database:
	  ▪ db_owner
	  ▪ public
	• To configure the Service Virtualization HTTP/S agent, Windows administrator rights are required on the Designer machine.

Chapter 2

Installation

When you insert the HP installation DVD into your drive, the Welcome screen should display automatically. If it does not, navigate to the DVD root folder and run **autorun.exe**.

The installation Welcome screen enables you to install the following products:

- HP Service Virtualization Server 3.01
- HP Service Virtualization Designer 3.01
- HP Autopass License Server

  Note:

  - For details, refer to the HP Autopass License Server documentation, included with the Service Virtualization installation files.
  - For details on working with the License Server in Service Virtualization, see the *HP Service Virtualization User Guide*.

- Microsoft® SQL Server® 2008 R2 Express

  Note:

  - Installation of Microsoft® SQL Server® 2008 R2 Express is required only if no other database is available for the HP Service Virtualization installation.
  - SQL Server must be installed by an admin user, or by a user with the following user rights:
    - Backup files and directories
    - Debug Programs
    - Manage auditing and security log

    Details can be found at http://support.microsoft.com/kb/2000257.
  - To run the installation, you must have Administrator access rights.

Select an option to start the installation. Follow the installation wizard instructions to install the product and all required prerequisites that are not yet installed.

Service Virtualization Server: A valid product license is required to start the application. The installation wizard installs a 30-day trial license. After successful server installation,see "Server License Installation" on page 37 for the additional steps required for license installation.

Installation Wizard Options

The following section describes the options available during installation:

- **Installation destination folder**. In the Feature Selection page, you can change the installation destination folder using the **Change** button.
- **Database configuration parameters**. Fill in values for the following parameters. If the database does not exist, the installation wizard creates it with the name you specify.

> **Caution:**
>
> -Each HP Service Virtualization product must use a unique database configuration. Sharing of the same database by multiple products is not supported.
>
> -The HP Service Virtualization Designer requires a separate database for each user. The database is mainly used by the embedded server running inside the Designer, and also for caching recent projects.

Name	Description
Server	The name or network address of the SQL server.
Instance	The name of the database instance. Leave this blank to use the default instance.
Properties	**Optional:** Additional database connection properties. The properties you specify are appended to the connection string after the server and instance parameters. For more details, see "Common database configuration properties" on the facing page
Name	The database name.

Name	Description
Create	Creates the database during product installation and removes the database when the product is uninstalled. Clear the Create checkbox to use the existing database. **Note:** In order to install the product successfully, the database user must have the proper privileges. If you select the option to create the database automatically during installation, the database user must have sufficient privileges to create the database – the SQL server roles dbcreator and public, and the database role db_owner. If you are using an existing database, the database user must have sufficient privileges to create the database schema -- the SQL server role public and the database role db_owner.
Authentication	The database server authentication type.
User	The database server authentication user. For SQL authentication only.
Password	The database server authentication password. For SQL authentication only.
Test Connection	Tests the database connection.
Connection String	Displays the complete database connection string.

- **Common database configuration properties**

Value	Description
,1433;	Use database port 1433.
,1433;Encrypt='true';	Use database port 1433 and SSL connection to database server.
;Encrypt='true';	Use SSL connection to database server.

- **Additional installation options:**

  - **Performance Monitor Remote Access.** To create a new user with privileges to remotely read the performance monitor, select **Create performance monitor user**. This account can be used for remote access to the application's performance monitor counters. For details on the Service Virtualization performance counters, see the *HP Service Virtualization User Guide*.

    The following options are available when installing the **Service Virtualization Server** only.

- **Server Windows Service.** Installs the Windows service that starts the Service Virtualization Server with each computer startup. This option is selected by default. You can also run the Server as a standalone console application.
- **Server Authentication.** Prevents unauthorized service management of the Service Virtualization Server, and encrypts the communication between the Service Virtualization Server and clients using TLS/SSL security. For more details on server authentication, see "Server Authentication" on page 37.

  Note: Working with a secured HP Service Virtualization Server is not supported for integrations with some older versions of HP Service Test or HP LoadRunner.

- **Management Interface.** Configures the port for the Service Virtualization Management Interface. The Management Interface uses HTTPS communication. The default port is 6086. For details on working with the Management Interface, see the *HP Service Virtualization User Guide*.

Chapter 3

Command Line Installation

The installers can be executed from the command line by running **msiexec** with the following properties:

Note:

- Command Line Installation does not verify prerequisites.
- Each property may apply to the Service Virtualization Designer, Server, or to both.
- In order to install the product successfully, the database user must have the proper privileges. If you use the DB_CREATE property to create the database automatically during installation, the database user must have sufficient privileges to create the database – the SQL server roles dbcreator and public, and the database role db_owner. If you are using an existing database, the database user must have sufficient privileges to create the database schema -- the SQL server role public and the database role db_owner.

Property	Installer	Description	Defined in UI
DB_SERVER	Both	Database server host name. Use **localhost** for local database. **Default:** localhost	YES
DB_INSTANCE	Both	Database instance. Must be blank in case of default instance. **Default:** SQLExpress_SV	YES
DB_PROPERTIES	Both	Additional connection properties such as port and SSL. Example: `,1234;Encrypt='true';`	YES
DB_NAME	Both	Database name. **Default:** • Designer installation: **<username>_designer** • Server installation: **<username>_server**	YES

Property	Installer	Description	Defined in UI
DB_CREATE	Both	Create database. Set to **true** to create the database during product installation, and remove the database when the product is uninstalled. Set to **false** to use the existing database. **Values:** true/false **Default:** true	YES
DB_ AUTHENTICATION	Both	Database authentication uses either Windows or database credentials. **Values:** WinAuth / SqlAuth **Default:** WinAuth	YES
DB_USERNAME	Both	Database user name. Used only when using database credentials mode of authentication.	YES
DB_USERPASS	Both	Database user password. Used only when using database credentials mode of authentication.	YES
INSTALLLOCATION	Both	Installation target directory. **Default:** • **Designer:** c:\Program Files\HP\HP Service Virtualization Designer (On a 64-bit Windows systems, replace "Program Files" with "Program Files (x86)") • **Server (32-bit):** c:\Program Files\HP\HP Service Virtualization Server (On a 64-bit Windows systems, replace "Program Files" with "Program Files (x86)") • **Server (64-bit):** c:\Program Files\HP\HP Service Virtualization Server	YES
IGNORE_DB_ ERROR	Both	• Set *true* to install product despite database errors. • Set *false* to fail installation in the event of a database error. **Values:** true/false **Default:** false	NO

Property	Installer	Description	Defined in UI
CREATE_USER_ ENABLE	Both	Set true to create a new local user for remote Performance Monitor access. For details on the Service Virtualization performance counters, see the *HP Service Virtualization User Guide*. **Values:** true/false **Default:** false	YES
PERFORMANCE_ MONITOR_ USERNAME	Both	Login name of Performance Monitor user. For details on the performance counters, see the *HP Service Virtualization User Guide*. **Default:** SVMonitor	YES
PERFORMANCE_ MONITOR_ USERPASS	Both	Password of Performance Monitor user.	YES
CREATE_SERVER_ SERVICE	Server	Create service HP Service Virtualization Server. **Values:** true/false **Default:** true	YES
MANAGEMENT_ ENDPOINT_AUTH	Server	Set authentication on HP Service Virtualization Server management endpoint. **Values:** true/false **Default:** true	YES
MANAGEMENT_ INTERFACE_PORT	Server	Port number for the Service Virtualization Management Interface. **Values:** May be in the range 1 to 65535. **Default:** 6086	YES
INSTALL_ DESKTOP_ DESIGNER_ SHORTCUT	Designer	Create desktop icon for Designer. **Values:** true/false **Default:** true	YES
CULTURE	Both	Set installation language. **Values:** Supported values correspond to product localization variants. **Default:** en	NO

Below are examples of quiet installations:

Quiet Server installation with the following parameters:

- Installs 32-bit Server with SQL database authentication
- Creates Performance monitor user and Windows Service Virtualization
- Sets Management endpoint authentication.
- Logs installer output in the **installer-server-x86.log** file

```
msiexec /i HPServiceVirtualizationServer-x86.msi /l*V "installer-server-x86.log" /passive DB_
SERVER=czb240 DB_INSTANCE="" DB_PROPERTIES=",1433;Encrypt='false';" DB_
AUTHENTICATION=SqlAuth DB_USERNAME="guest" DB_USERPASS="guest" CREATE_
USER_ENABLE="true" PERFORMANCE_MONITOR_USERNAME="SVMonitor"
PERFORMANCE_MONITOR_USERPASS="changeit"
```

Quiet Designer installation with the following parameters:

- Installs Designer with Windows database authentication
- Logs installer output in the **installer-designer.log** file

```
msiexec /i HPServiceVirtualizationDesigner.msi /l*V "installer-designer.log" /passive DB_
SERVER=localhost DB_INSTANCE=SQLExpress_SV DB_PROPERTIES=";Encrypt='false';"
DB_AUTHENTICATION=WinAuth
```

Chapter 4

Upgrade and Migration

This chapter includes:

The Upgrade Process

If you were working with an earlier version of Service Virtualization, follow the upgrade process to install and start working with a new version.

1. **Preparation.** When you install a new version of the Service Virtualization Server, all services deployed on the server are undeployed. To assist you with the upgrade process, do the following:

   a. Run the backup tool to backup the Service Virtualization Server state before upgrade. For details, see "Server Backup and Restore" on page 41.

   b. Record the list of other virtualization projects and their locations, such as in shared repositories in the file system or in HP ALM, so that you can redeploy them after upgrade.

2. **Installation.**

   a. Install the new version of the Service Virtualization Server.

   b. Install the new version of the Service Virtualization Designer on client machines.

   For details, see "Installation" on page 12.

3. **Restore.** Run the restore tool to restore virtual services and other configuration information to the server. For details, see "Server Backup and Restore" on page 41.

4. **Migration.** Migrate projects from the previous version. Migration updates your projects and services, enabling them to work with the new version. For details, see "Project Migration" on the facing page.

5. **Deployment.** Redeploy services on the Service Virtualization Server. For details, see "Virtual Service Deployment" on page 26.

Use-case scenario:

The following example demonstrates how you might implement the upgrade process in your organization.

1. **Server administrator:** Upgrade all Service Virtualization Servers in the department to the new version.

2. **Server administrator:** Using the Resource Manager migration tool, migrate all virtual services located in shared repositories, such as on a network file system, or in HP ALM.

   Note: You cannot deploy services to the upgraded server until they are migrated.

3. **Server administrator:** Using the Resource Manager deployment tool, deploy migrated services to your Service Virtualization Servers.

4. **Designer user:** Upgrade the Service Virtualization Designer on your local machine.

   Note: You cannot work with upgraded projects or services until you upgrade the Designer.

5. **Designer user:** Using the Designer or the Resource Manager tool, migrate and deploy virtual services that are stored locally on your machine.

Project Migration

When you upgrade Service Virtualization to a new version, you must also migrate your virtual services. Migration updates your projects and services, enabling them to work with the new version. You cannot use the projects until they are migrated.

There are two methods for migrating virtualization projects:

- **From the Designer.** When you open a project in the Designer after installing a new Service Virtualization version, you are prompted to allow Service Virtualization to migrate the project.

  This is useful, for example, if you are going to work on a specific project in the new version of the Designer, and the project is not yet migrated. For details, see the *HP Service Virtualization User Guide*.

- **Using the Resource Manager migration tool.** After installing a new version of Service Virtualization, you can use the Resource Manager command line migration tool to migrate projects.

  You can migrate projects and services stored in the file system or in HP Application Lifecycle Management (ALM). This is especially useful, for example, if you have a number of projects stored in the file system or ALM, and want to migrate them without opening each one in the Designer.

  Note: Installation of the ALM client is not a prerequisite for working with the Resource Manager. The ALM client is downloaded automatically if it is required.

The Resource Manager migration tool enables you to migrate the following:

- A virtualization project (.vproj files). The .vproj file includes information on all project entities (virtual services, service descriptions, simulation models, etc.) included in the project.

- A project archive (.vproja files). A .vproja archive file is created when you export a project from within the Service Virtualization Designer.

You can also specify a folder to migrate. If you specify a folder, all relevant project entities inside the folder are migrated. For example, you may have a folder that contains multiple archived projects.

For details on using the Resource Manager migration tool, see "How to Migrate Virtualization Projects" below.

How to Migrate Virtualization Projects

You can migrate virtualization projects and archived projects located in the file system or in ALM.

Note:

- If migration fails, the entities are not modified. You can fix the problem, and run the Resource Manager migration tool again.
- To migrate projects or files stored in an ALM version-control enabled project, the ALM resources must be checked in. Resource Manager checks out the resources, and checks them back in after migration.
- The migration process generates a log file, which indicates the success or failure status of each entity. The log file is located in the \bin folder under the Service Virtualization Server or Designer installation folder.

1. Do one of the following:
   - On the Service Virtualization Server, open a command prompt. Navigate to the \bin folder under the Service Virtualization Server installation folder. By default, C:\Program Files\HP\HP Service Virtualization Server\Server.
   - On the Service Virtualization Designer machine, open a command prompt. Navigate to the \bin folder under the Service Virtualization Designer installation folder. By default,C:\Program Files\HP\HP Service Virtualization Designer\Designer.
2. Run **ResourceManager.exe -migrate** at the command line, using the following options:

   Note: If an argument contains spaces, it must be enclosed in quotation marks. For example, "Resources\My Project".

Option	Description
General Options	

Option	Description
/f [source_ path]	**Source path.** The path to the project file (.vproj) or project archive file (.vproja). ▪ If you specify a folder, all relevant project entities inside the folder are migrated. ▪ The files may be located in the file system or in ALM. ▪ To specify a resource stored in ALM, use the following format: Resources\ [path to file or folder] For example, Resources\MyVirtualProject\VirtualProject1.vproja **Tip:** To locate and copy an ALM folder path, in the Designer, from the main menu, select **File > Open Project/Solution**. On the sidebar, select ALM Resources, and navigate to the desired folder. Copy the path from the **Look in** box.
ALM Connection Options	
/s [ALM_ URL]	**ALM URL.** The URL of the ALM server on which the files are located, in the following format: <ALM server IP or hostname>:<port number>/qcbin. The path must contain /qcbin at the end.
/d [ALM domain]	**ALM domain.** The ALM domain name in which the files are located.
/p [ALM project]	**ALM project.** The ALM project name in which the files are located.
/u [ALM user]	**ALM user.** The ALM user for the ALM connection.
/pw [ALM user password]	**ALM user password.** The password for the ALM user. The password is case-sensitive.
/c [Check-in comment]	**Check-in comment.** When migration is performed in a version-control enabled ALM project, a default check-in comment is added, indicating that the resource was modified by the Service Virtualization migration tool. Use this option to override the default comment and enter your own comment.

Example:

ResourceManager.exe -migrate /f Resources\MyVirtualProject /s http://MyALMServer:8080/qcbin /d Default /p MyProject /u alex_alm /pw alexalex11

This command migrates projects and services located on the ALM Server **http://MyALMServer:8080/qcbin**, in the domain **Default**, in the project **MyProject**, in the Resources module under the folder **MyVirtualProject**.

Chapter 5

Virtual Service Deployment

This chapter includes:

Virtual Service Deployment

There are several ways to deploy virtual services on the Service Virtualization Server:

Per project. In the Service Virtualization Designer, you can open a project and assign it to a Service Virtualization Server. All services in the project are deployed on the specified server. For details, see the *HP Service Virtualization User Guide*.

Per server. As a Service Virtualization Server administrator, you can use the Resource Manager to deploy virtual services.

The Resource Manager is a command line tool enabling you to deploy services in multiple projects, without the need to open each project in the Designer. You can deploy services stored in the file system, or in ALM.

Note: The Resource Manager deployment tool does not require installation of the ALM client .

The Resource Manager deployment tool can deploy services from the following file types:

- A virtualization project (.vproj files). The .vproj file includes information on all project entities (virtual services, service descriptions, simulation models, etc.) included in the project.
- A project archive (.vproja files). A .vproja archive file is created when you export a project from within the Service Virtualization Designer.

The Resource Manager can be particularly useful during the upgrade process. When you upgrade the Service Virtualization Server to a new version, all deployed services are undeployed. After the new version is installed, you need to redeploy all of the virtual services.

You run the Resource Manager from the command line on a Service Virtualization Server. You can deploy services on the same machine, or on any Service Virtualization Server located on another network machine.

Note: You can also deploy services to your server using Service Virtualization Management. For details on Service Virtualization Management, see the *HP Service Virtualization User Guide*.

For details on using the Resource Manager deployment tool, see "How to Deploy Virtual Services" below.

How to Deploy Virtual Services

You can deploy virtual services located in the file system or in ALM to any Service Virtualization Server.

Note: The deployment process generates a log file, which indicates the success or failure of deployment for each entity. The log file is located in the \bin folder under the Service

Virtualization Server installation folder. By default, C:\Program Files\HP\HP Service Virtualization Server\Server\bin.

1. Do one of the following:

   - On the Service Virtualization Server, open a command prompt. Navigate to the \bin folder under the Service Virtualization Server installation folder. By default, C:\Program Files\HP\HP Service Virtualization Server\Server.
   - On the Service Virtualization Designer machine, open a command prompt. Navigate to the \bin folder under the Service Virtualization Designer installation folder. By default,C:\Program Files\HP\HP Service Virtualization Designer\Designer.

2. Run **ResourceManager.exe -deploy** at the command line, using the following options:

   Note: If an argument contains spaces, it must be enclosed in quotation marks. For example, "Resources\My Project".

Option	Description
Source and Destination Options	
/f [source_ path]	**Source path.** The path to the project file (.vproj) or project archive file (.vproja. - If you specify a folder, all services inside the folder are deployed. - The files may be located in the file system or in ALM. - To specify a resource stored in ALM, use the following format: Resources\ [path to file or folder] For example, Resources\MyVirtualProject\VirtualProject1.vproja **Tip:** To locate and copy an ALM folder path, in the Designer, from the main menu, select **File > Open Project/Solution**. On the sidebar, select ALM Resources, and navigate to the desired folder. Copy the path from the **Look in** box.
/sa [Server URL]	**Server URL.** Specify the Service Virtualization Server on which to deploy the services. By default, Service Virtualization attempts to deploy the services on the server specified in the project. Use the /sa option if you want to specify a different server on which to deploy the services.
/sau [User]	**User.** A user account with access to the Service Virtualization Server.

Option	Description
/sapw [Password]	**Password.** The user password for accessing the Service Virtualization Server. The password is case-sensitive.
/simulate	Deploy the services and places them into simulation mode.
/skip	Services that are already deployed are not redeployed. Use this option, for example, if you are running the deploy tool on a folder containing some services that are already deployed.
ALM Connection Options	
/s [ALM_ URL]	**ALM URL.** The URL of the ALM server, in the following format: <ALM server IP or hostname>:<port number>/qcbin. The path must contain /qcbin at the end.
/d [ALM domain]	**ALM domain.** The ALM domain name in which the files are located.
/p [ALM project]	**ALM project.** The ALM project name in which the files are located.
/u [ALM user]	**ALM user.** The ALM user for the ALM connection.
/pw [ALM user password]	**ALM user password.** The password for the ALM user. The password is case-sensitive.

Example:

ResourceManager.exe -deploy /f Resources\MyVirtualProject /s http://MyALMServer:8080/qcbin /d Default /p MyProject /u alex_alm /pw alexalex11 /sa https://demoserv:6085/management /sau alex /sapw alexalex11

This command deploys services located in the ALM Server **http://MyALMServer:8080/qcbin**, in the domain **Default**, in the project **MyProject**, in the Resources module under the folder **MyVirtualProject**.

The services are deployed to the Service Virtualization Server **https://demoserv:6085/management**.

Chapter 6

HTTP Port Configuration

Service Virtualization provides a set of tools to ease the configuration of HTTP ports that are used by the application.

These tools help the user to enable/disable HTTP ports, create a self-signed certificate, import a certificate (self-signed or custom) to the certificate store, and register certificates to HTTP port and applications.

This chapter includes:

Service Virtualization Network Ports

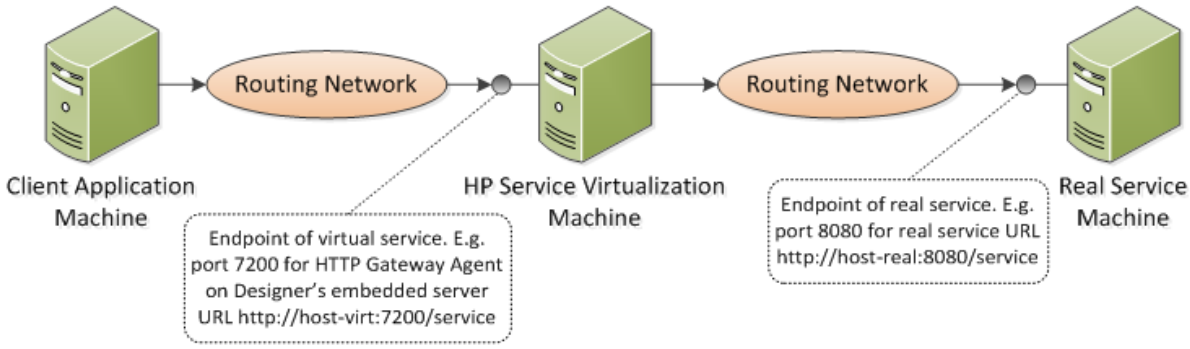
HP Service Virtualization uses several HTTP/HTTPS ports for communication. To configure Service Virtualization to work correctly in a protected network environment, you must verify that all required network ports are open.

This section describes the communication paths in Service Virtualization, and the ports that are used. For details on HTTP port configuration support in Service Virtualization, see " How to Configure Ports and Generate Certificates" on page 33.

This section includes:

Virtual Service Endpoint

In order to record and simulate the communication between a client application and a real service endpoint, you must place Service Virtualization between them. In this scenario, communication from the client application to the virtual service, and from the virtual service to the real service is as follows:



In this figure, the client application is reconfigured to communicate with the virtual service instead of the real service. The virtual service can be deployed on one of the following:

- the Service Virtualization Designer's embedded server
- the Service Virtualization Server

The HTTP port that Service Virtualization uses depends on the Service Virtualization agent that the virtual service is using. (Service Virtualization Agents handle communication between a client and a real or virtual service.)

Service Virtualization agents use the following default HTTP ports:

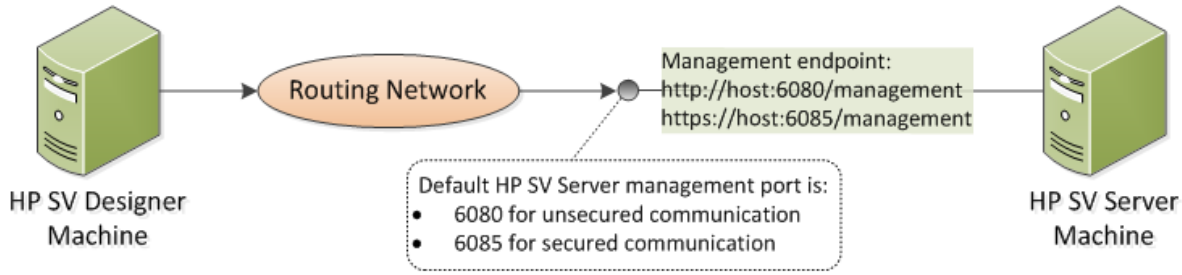
Agent	Protocol Type	Service Virtualization Designer	Service Virtualization Server
Gateway	HTTP	7200	6070
	HTTPS	7205	6075
Proxy	HTTP	7201	6071
	HTTPS	7206*	6076*
JDBC	HTTP	7288	6088

** The HTTPS Proxy Agent accesses this port directly using TCP.*

The virtual service communicates with the real service's original endpoint. This is the same endpoint that the client application used before the client was reconfigured to communicate with the virtual service endpoint.

Service Virtualization Management Endpoint

The Service Virtualization Designer communicates with the Service Virtualization Server using the Service Virtualization management endpoint. This communication is required when deploying virtual services on the Service Virtualization Server. Communication between the Service Virtualization Designer and the remote Service Virtualization Server using the management endpoint is as follows:



The Service Virtualization Designer also provides a management port, used mainly for connecting to integration testing tools.

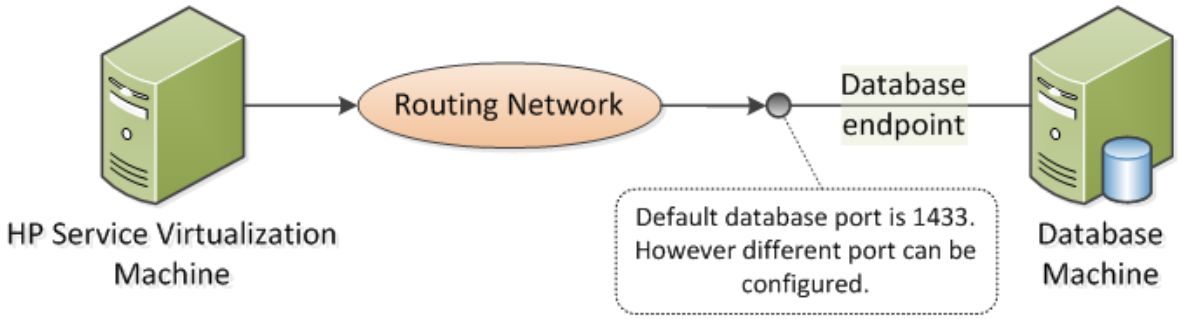
The Service Virtualization management endpoint uses the following default HTTP/HTTPS port values:

Management API	Protocol Type	Service Virtualization Designer	Service Virtualization Server
Not Secured	HTTP	7280	6080
Secured	HTTPS	-	6085

Database Endpoint

Both the Service Virtualization Designer and the Service Virtualization Server require a database for

data storage. The communication scenario between Service Virtualization and the database is as follows:



The default port of the database endpoint is **1433**. However, the database administrator can reconfigure the database to use a different port.

Service Virtualization Management Interface Endpoint

The Service Virtualization Management interface enables you to view and manage all services from Service Virtualization configured servers, without opening the Designer or individual projects.

The Management interface endpoint communicates with the Service Virtualization Server on which it is configured using the server's Management API endpoint (ports 6085 or 6080).

The default port of the Service Virtualization Management interface endpoint is **6086**.

For more details on Service Virtualization Management, see the *HP Service Virtualization User Guide*.

How to Configure Ports and Generate Certificates

Installing Self-Signed Certificate

To configure HTTP ports and to install a self-signed SSL certificate, use the configureHttpAgent.bat tool . This script is installed in the *ConfigurationTools* sub-directory in the HP Service Virtualization installation directory. This script is executed during the product installation using the default ports.

Running this script manually from the command line generates a self-signed certificate and installs for the HP Service Virtualization application listening on the SSL Port. ACLs are added for user=Everyone to allow listening on the HTTP ports. The script also allows listening on default or specified HTTP ports and adds Windows Firewall exceptions for HP Service Virtualization applications and HTTP Proxy ports. The script should be run from its directory.

Syntax

configureHttpAgent.bat [-log] -Option [Parameter]

Options

-log: Log outputs to a log file in the temporary directory %TEMP%\configureHttpAgent.xx.log

-es: Allow/disallow HTTP ports, add firewall exceptions and install certificate used by Designer's embedded server

-ss: Allow/disallow HTTP ports, add firewall exceptions and install certificate used by standalone server

-d: Allow/disallow HTTP ports used by Demos

-u: Uninstall

-esHttpPort [Port Number]: Non-secure port number for HTTP Gateway on Designer's embedded server; default is 7200

-esHttpProxyPort [Port Number]: Non-secure port number for HTTP Proxy on Designer's embedded server; default is 7201

-esHttpsPort [Port Number]: SSL port number for HTTPS Gateway on Designer's embedded server; default is 7205

-esRestPort [Port Number]: Management Service port number for Designer's embedded server; default is 7280

-ssHttpPort [Port Number]: Non-secure port number for HTTP Gateway on standalone Server; default is 6070

-ssHttpProxyPort [Port Number]: Non-secure port number for HTTP Proxy on standalone Server; default is 6071

-ssHttpsPort [Port Number]: SSL port number for HTTPS Gateway on standalone Server; default is 6075

-ssRestPort [Port Number]: Management Service port number for standalone Server; default is 6080

-h [Host Name]: Host computer name

Example 1

Install certificate, add firewall exceptions and allow the default HTTP ports for both servers (for Designer embedded server and standalone Server) and for Demos and log output.

configureHttpAgent.bat -log -es -ss -d

Example 2

Uninstall certificate, remove firewall exceptions and disallow all default HTTP ports.

configureHttpAgent.bat -u -es -ss -d

How to Install a Custom Certificate

Installing Custom Certificate

Running the addCustomCertificate.bat script manually from the command line installs the provided custom certificate for HP Service Virtualization application listening on the SSL Port. ACLs are added for user=Everyone to allow listening on the HTTP ports. The script should be run from its directory.

Syntax

addCustomCertificate.bat [-log] -Option [Parameter]

Options

-log: Log outputs to a log file in the temporary directory %TEMP%\ addCustomCertificate.xx.log

-es: Add custom certificate on SSL port used by Designer's embedded server

-ss: Add custom certificate on SSL port used by standalone Server

-esHttpsPort [Port Number]: SSL port number for HTTPS Gateway on Designer's embedded server; default is 7205

-ssHttpsPort [Port Number]: SSL port number for HTTPS Gateway on standalone Server; default is 6075

-certificate [Thumbprint]: Thumbprint of the custom certificate to be used on SSL ports. The certificate must be installed in credential store.

Example 1

This command adds a custom certificate on SSL port 6161 used by standalone Server and logs output.

addCustomCertificate.bat -log -ss -ssHttpsPort 6161 -certificate 1021c70be806baebefc53b728d6bfd3dc1708eec

Example 2

This command adds a custom certificate on default SSL ports used by standalone Server and Designer's embedded server.

addCustomCertificate.bat -es -ss -certificate 1021c70be806baebefc53b728d6bfd3dc1708eec

Chapter 7

HP Service Virtualization Server

HP Service Virtualization Server is a version of the runtime that is completely separate from the Service Virtualization Designer. It provides the same functionality as the Embedded Server running in the Designer, such as creating and learning services and simulating the use of learned rules or rules provided by the user, without the need to run the Designer.

Being separate from the Designer means that the Service Virtualization Runtime is no longer limited to use by one designer; it can be used by multiple HP Service Virtualization Designers or even by custom 3rd party tools, as it uses its own database separate from the Designer database.

Service Virtualization Server is installed by the installer as a Windows service, but can also be run on demand as a console application by running the same .exe file associated with the Windows service.

Note: Every deployed virtual service requires 4-5 database connections.

This chapter includes:

Server License Installation

A valid license must be installed in order to work with HP Service Virtualization Server. The license must be installed on the same machine on which the Service Virtualization Server is installed. You install the new license using the License Utility.

You receive your license from the HP License Delivery Center, either in a **.dat** file or a license key. You then install the license using the License Utility. In addition, the License Utility enables you to view all installed licenses. It also displays the Host ID required for product licensing.

To install a new license:

1. To run the License Utility, from the Windows Start menu, select All Programs > HP Service Virtualization > Server > License Utility.
2. In the License Utility window, click **Install New Licenses**. The New License dialog box opens.
3. To install the license from a **.dat** license file:
   a. Select **Install licenses using a license file**.
   b. Click **Browse** to navigate to and select your .dat license file.
   c. If your license file contains multiple licenses, click **View License File Content** to display all available licenses. Select the desired licenses.
4. To install the license as a text string:
   a. Select **Install a license using a license key**.
   b. Copy your License Key string and paste it into the **License Key** box.
5. In the New License dialog box, click **Install** to install the license.
6. Click **Close** to close the Install License dialog box. The new license is displayed in the License Utility window.

Server Authentication

To prevent unauthorized service management of the HP Service Virtualization Server, you can limit access to the server through user authentication.

The Service Virtualization Designer accesses the Service Virtualization Server using HTTP Basic Authentication, over HTTPS. The Server grants access to the Designer based on one of the following:

- A local Windows users account, located on the Server machine.
- A Windows domain account in a trusted domain, or in the same domain as the Service Virtualization Server.

During installation of the Service Virtualization Server, the following groups are created on the server:

- **SV Operators.** Members can view virtual services deployed on the Service Virtualization Server, switch service simulation modes, and unlock services. SV Operators can view only partial agent configuration information.
- **SV Publishers.** Members have the same access as members of Service Virtualization Operators group, and can also deploy, update, and undeploy services. SV Publishers can view only partial agent configuration information.
- **SV Runtime Administrators.** Members can view, create, configure, and delete agent configurations on the Service Virtualization Server. SV Runtime Administrators do not have permissions for viewing or managing services.

By default, the Windows **Everyone** group is a member of the Service Virtualization user groups.

- To limit access, remove the **Everyone** group and add only specific user accounts or other Windows domain groups to the Service Virtualization user groups.
- To provide users with full permissions, add them to multiple groups.
- A user who is not assigned to any of the groups cannot view any agent data or any services deployed on the server.

Note:

- Every authenticated Windows user has access to /ping and /info resources. This does not depend on Service Virtualization authentication.
- The groups are created regardless of whether the Server Authentication option is selected during the Server installation. This enables you to reconfigure at a later stage.
- Uninstalling or reinstalling Service Virtualization does not affect these groups. Your changes to group membership are maintained between installations.
- **Server upgrade:** If you are upgrading from a Service Virtualization Server earlier than version 3.00, all users and groups that were members of the **Service Virtualization Users** group are placed in the new Service Virtualization groups.

Server Configuration

There are several options for configuring a Service Virtualization Server:

Configuration File

As the Service Virtualization Server is a .NET application, it can be configured by editing the standard .config file. The only relevant entry you should customize is the address of the management endpoint. As Windows Communication Foundation framework is exposing the management API, the address can be easily changed by editing the corresponding WCF section of

the configuration file. For example, to change the address to http://localhost:7700/hpsv, the corresponding entry in .config file should look like this:

```
<configuration>
  …
  <system.serviceModel>
    …
     <service name="RestManagementService">
       <host>
        <baseAddresses>
          <add baseAddress="http://localhost:7700/hpsv"/>
          <!--<add baseAddress="https://localhost:6085/management"/>-->
        </baseAddresses>
       </host>
       <endpoint binding="webHttpBinding" contract="ServerManagement.IRestClient"
           bindingConfiguration="unsecured"
           behaviorConfiguration="restDispatchBehavior"/>
     </service>
        …
 </system.serviceModel>
 …
</configuration>
```

Command Line Parameters

Service Virtualization Server also accepts command line parameters. Currently, the only supported command line parameter option is the ability to recreate the database used by Service Virtualization Server. This can be useful when testing the application, as it enables the user to quickly wipe the database without the need to manually remove each service from the Designer. To recreate the Service Virtualization Server database, add recreateDatabase=true to the command line when running the Server, as in the following example:

HP.SV.StandaloneServer.exe recreateDatabase=true

Agent Configuration

You can configure Service Virtualization Agents for a standalone Service Virtualization Server using the Designer. For details, see the Service Virtualization Agents section in the *HP Service Virtualization User Guide*.

When the server is not running, you can edit the agent configuration manually for the server. The agent configuration file is **%ProgramData%\Hewlett-Packard\HP Service Virtualization Server\Agents\configurations.xml**.

Tip: To reset the default agent configurations, delete this file.

Changing Server Security Settings

If you choose to change security settings after installing the Service Virtualization Server, you must manually edit the **HP.SV.StandaloneServer.exe.config** configuration file. The file is located in the <**HPService Virtualization Server installation directory>\bin** subdirectory. By default, the

Server installation path is **C:\Program Files\Hp\HP Service Virtualization Server\Server**. In the system.serviceModel configuration section, you must edit the settings for the exposed REST management service.

This section includes:

- REST management service configuration for disabled authentication
- REST management service configuration for enabled authentication

REST management service configuration for disabled authentication

To disable authentication, set the following:

1. Under the **endpoint** element, set the **bindingConfiguration** attribute to **unsecured**.
2. Make sure that the **HTTP** address is not commented out, and the **HTTPS** address is commented out.
3. After reconfiguration, restart the Service Virtualization Server.
4. In order to enable the new configuration, you must redirect all of your projects to the updated URL. For details, see the section on how to change servers in the HP Service Virtualization User Guide.

```
<configuration>
  …
  <system.serviceModel>
    …
     <service name="RestManagementService">
       <host>
         <baseAddresses>
           <add baseAddress="http://localhost:6080/management"/>
           <!--<add baseAddress="https://localhost:6085/management"/>-->
         </baseAddresses>
       </host>
       <endpoint binding="webHttpBinding" contract="ServerManagement.IRestClient"
            bindingConfiguration="unsecured"
            behaviorConfiguration="restDispatchBehavior"/>
     </service>
        …
  </system.serviceModel>
  …
</configuration>
```

REST management service configuration for enabled authentication

To enable authentication, set the following:

1. Under the **endpoint** element, set the **bindingConfiguration** attribute to **secured**.
2. Make sure that the **HTTPS** address is not commented out, and the **HTTP** address is commented out.
3. After reconfiguration, restart the Service Virtualization Server.
4. In order to enable the new configuration, you must redirect all of your projects to the updated URL. For details, see the section on how to change servers in the HP Service Virtualization User Guide.

```
<configuration>
 …
 <system.serviceModel>
  …
   <service name="RestManagementService">
    <host>
     <baseAddresses>
      <!--<add baseAddress="http://localhost:6080/management"/>-->
      <add baseAddress="https://localhost:6085/management"/>
     </baseAddresses>
    </host>
    <endpoint binding="webHttpBinding" contract="ServerManagement.IRestClient"
        bindingConfiguration="secured"
        behaviorConfiguration="restDispatchBehavior"/>
   </service>
     …
 </system.serviceModel>
 …
</configuration>
```

Server Backup and Restore

The backup and restore tool enables you to create a backup archive file of your Service Virtualization Server, and then to restore the content to any Service Virtualization Server machine. It is a command line tool installed as part of the Service Virtualization Server installation. You can run it on the Server machine only.

You might use the backup and restore tool for the following:

- **During Server upgrade.** Before you install a new version of the Service Virtualization Server, run the backup tool to backup the server state. After you install the new version, run the restore tool on the upgraded server. For more details on upgrade, see "The Upgrade Process" on page 21.
- **For general backup.** Create a backup when you plan to make changes in your virtual services and may want to roll back.

- **When moving to a new server machine.** Backup the Service Virtualization Server, and restore it on the new server machine.

The following data is backed up and restored:

- Virtual services that are deployed on the server and their data.
- Virtual service mode. Services that are in Simulation or Standby modes are backed up and then restored to those same modes. Services that are in Learning mode at the time of backup are removed from the server and must be manually redeployed after the restore process is complete.
- Service Virtualization agent configurations defined on the server.
- The list of servers that are accessed and managed through the Service Virtualization Management interface.

Note: If you restore the backup to a later version of the Service Virtualization Server, the backed up content is automatically migrated to the new version. For more details on migration, see "Project Migration" on page 22.

To backup or restore the state of the Service Virtualization Server:

1. On the Service Virtualization Server machine, stop the server service. From the Windows Start menu, select **All Programs > HP Service Virtualization > Server 3.01 > Server - Stop Service**.
2. Open a command prompt and navigate to the \bin folder under the Service Virtualization Server installation folder. By default, C:\Program Files\HP\HP Service Virtualization Server\Server\bin.
3. At the command line, run **BackupandRestore.exe** using the following options:

Option	Description
/b: [archive_ path]	Creates a backup file, and saves it in a location you specify. **[archive_path]** Specify a file system location and a name for the backup file. For example, **C:\Server_backups\backup_june17**.
/r: [archive_ path]	Restores the server state from the backup file you specify in [archive_path].
/q:true	Runs the backup or restore process in silent mode. No user interaction is required. Use this option when you are working with automation.

Example:

When moving to a new server machine:

a. On the current server machine, navigate to C:\Program Files\HP\HP Service Virtualization Server\Server\bin and run the following command to backup the server:

   backupandrestore.exe /b:C:\Server_backups\backup_June17

b. Install Service Virtualization Server on the new machine.

c. Copy the backup file from the old machine to the same location on the new machine.

d. On the new server machine, navigate to C:\Program Files\HP\HP Service Virtualization Server\Server\bin and run the following command to restore the server:

   backupandrestore.exe /r:C:\Server_backups\backup_June17

4. After you restore a Service Virtualization Server, you may want to do the following:

   a. Redeploy additional services stored in shared repositories, such as in the file system or in ALM. For details, see "Virtual Service Deployment" on page 26.

   b. Review group memberships for Service Virtualization user groups. For details, see "Server Authentication" on page 37.

Chapter 8

How to Start Service Virtualization

This section explains how to start the Service Virtualization applications. For more details on each component, see "Welcome to Service Virtualization" on page 6.

Service Virtualization Designer	From the Windows Start menu, select **All Programs > HP Service Virtualization > Designer 3.01 > HP Service Virtualization Designer**.
Service Virtualization Server	Do one of the following: • Start the Server as a Windows service: From the Windows Start menu, select **All Programs > HP Service Virtualization > Server 3.01 > Server - Start Service**. • Start the Server as a standalone console application: From the Windows Start menu, select **All Programs > HP Service Virtualization > Server 3.01 > Service Virtualization Server** The Service Virtualization Server can be configured as either secured or unsecured. To prevent unauthorized access, it may be configured as secured. For additional details and configuration information on the Service Virtualization Server, see "Server Authentication" on page 37. For details on working with a Service Virtualization Server, see the *HP Service Virtualization User Guide*.

Service Virtualization Management	**To start the Service Virtualization Management service:** 1. Prerequisite: Make sure that the Service Virtualization Server is running. 2. On the Service Virtualization Server machine, from the Windows Start menu, select **All Programs > HP Service Virtualization > Server 3.01 > Management Interface - Start Service**. **To access the Service Virtualization Management interface:** Open a browser window and enter one of the following URLs: • **The Service Virtualization Management URL:** https://<Service Virtualization Server IP or hostname>:<Service Virtualization Management port> By default, the Service Virtualization Management port is 6086. • **The Service Virtualization Server URL:** <Service Virtualization Server IP or hostname>:<HTTP/HTTPS port number>/management For more details on Service Virtualization network ports, see "Service Virtualization Network Ports" on page 31.