imprivata®

Product Documentation

Imprivata PatientSecure High Availability Support for Load Balancing

Imprivata PatientSecure® 6.13

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High Availability Support

This document describes how to configure a sample load balancing configuration and failover support for many of the Imprivata PatientSecure services.

In this configuration, the load balancer server serves two purposes:

- Directing incoming PatientSecure requests to a server farm, which allows Imprivata PatientSecure to handle a greater volume of requests by balancing the load.
- Ensuring higher PatientSecure service uptime with failover clusters.

Imprivata PatientSecure supports high availability configurations using the following technologies:

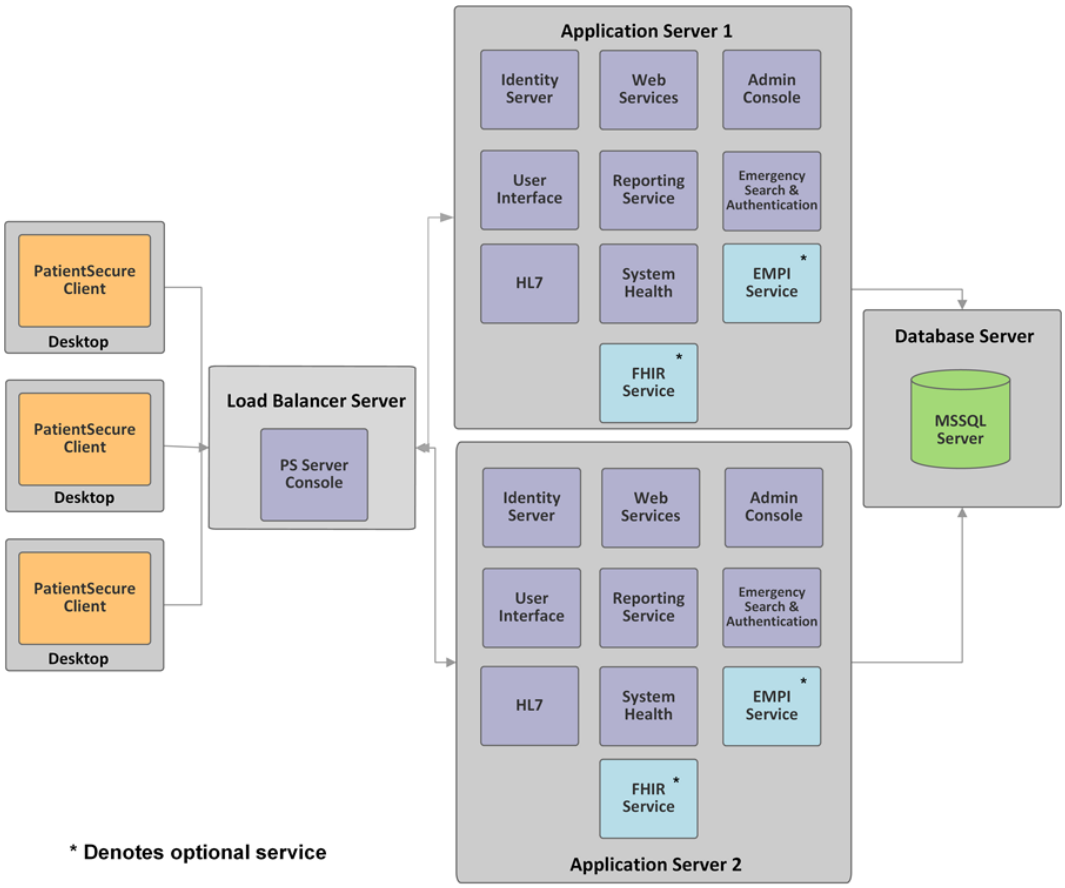
- Application Request Routing (ARR) on Microsoft's IIS web server
- Citrix ADC (formerly Netscaler) appliance with the ADC management GUI
- F5 BIG-IP GTM/LTM load balancers and their management UI

IMPORTANT:
Imprivata has tested the high availability configurations documented in the procedures below. Use them as guidance when configuring high availability, adjusting as necessary to meet your organization's high availability strategies and policies.

For detailed information, see your load balancer vendor's documentation.

Architecture

The following diagram represents the Imprivata PatientSecure service components deployed in a load-balanced configuration, with one Load Balancer server, two application servers and one database server.



Terminology

In this guide, the following terms are used, especially in the configuration steps and examples:

- **Load Balancer server** - the server runs the PatientSecure Server Console component and one of the supported load balancer technologies:
  - Microsoft Internet Information Services (IIS) with Application Request Routing (ARR).
  - Citrix ADC (formerly Netscaler) appliance
  - F5 BIG-IP GTM/LTM - F5's GTM (global traffic managers) provide load balancing services between two or more sites. F5's LTM (local traffic managers) provide load balancing services between two or more servers/applications in the event of a local system failure.
- **Application Server 1** - the server running the PatientSecure service components as the **first** application server in the configuration.
- **Application Server 2** - the server running the PatientSecure service components as the **second** application server in the configuration.

PatientSecure Services Supported for High Availability

Imprivata PatientSecure supports the deployment of the following components in a load-balancing configuration:

- PatientSecure Identity Server
- PatientSecure Web Services
- PatientSecure Reporting Service
- PatientSecure User Interface
- PatientSecure Admin Console
- PatientSecure Emergency Search & Palm Vein Authentication Service
- PatientSecure System Health Service
- PatientSecure HL7 Services (HL7 Listener, HL7 Processor, and HL7 Sender) keep the patient data in your Imprivata PatientSecure database in sync with the data in your EMR application.

  The HL7 services are designed for failover support. They are not designed for the load balancing of connections. The HL7 services use TCP/IP protocols for communication.

  - HL7 Sender and Processor services.

    The services automatically pick an application server to be their active server, and switch to another healthy server when they detect that the current active server has stopped sending messages.
  - HL7 Listener service.

    The Listener service should only be actively managing traffic on one application server at a time. When the HL7 Listener service fails on Application server 1, you must re-route traffic to Application server 2.

Depending on your environment needs, the optional PatientSecure components can be deployed in a load-balancing configuration:

- PatientSecure EMPI Service. Allows PatientSecure to integrate with EMPIs such as Verato MPI or IBM Initiate.
- PatientSecure FHIR Service.

Before You Begin

Before you begin, consider the following items:

Review System Requirements

Review the system requirements and required software for the Load Balancer and PatientSecure application servers on the Imprivata Environment Reference portal.

Gather Server Information

Gather application server information for your PatientSecure environment, including server names, fully qualified domain names (FQDNs) and administrator credentials for the two Application servers.

Review Additional References

We strongly encourage you to review the following documentation on load balancer servers.

Microsoft's ARR Documentation

ARR allows for a great deal of customization, and understanding this functionality will help you use it to its full potential.

Download and install the IIS ARR module	https://www.iis.net/downloads/microsoft/application-request-routing
Guide for configuring ARR from Microsoft Learning	https://www.iis.net/learn/extensions/planning-for-arr
Additional Microsoft resources on configuring a web farm	https://technet.microsoft.com/en-us/library/jj129385(v=ws.11).aspx

Citrix ADC Documentation

https://docs.citrix.com/en-us/citrix-adc/

F5 BIG-IP GTM/LTM Documentation

https://my.f5.com/manage/s/tech-documents

Review the PatientSecure Communication Ports

Review the default PatientSecure communication port values.

> **NOTE:**
> The values may change based on the ports you use for installation in subsequent steps and the order in which you install various components.

PatientSecure Component	Default Port	Type
Identity Server	7001	HTTPS
Web Services	7002	HTTPS
User Interface	7003	HTTPS
Reporting Service	7004	HTTPS
Admin Console	80, 443 **NOTE**: These ports cannot change.	Port 443 must be HTTPS.
Emergency Search & Palm Vein Authentication Service	7005 and 7006	HTTPS
System Health Service	7007	HTTPS

PatientSecure Component	Default Port	Type
HL7 Listener Services	2244	TCP/IP
FHIR Service (optional)	7008	HTTPS
EMPI Service (optional)	7009	HTTPS

IMPORTANT:
HTTPS bindings require a valid certificate.

Ensure that the correct certificate is bound to the associated port.

Installation Sequence

Step 1: Obtain and Import Certificate Authority to the Load Balancer Server

Obtain the certificate authority used to sign the application servers' certificates and import it to the local machine’s trusted root authority on the load balancer server.

Third-party certificates used by the load balancer must have a Subject Alternative Name (SAN).

IMPORTANT:
Production PatientSecure environments must use third-party SSL certificates. Self-signed certificates generated by PatientSecure should only be used in test environments.

For more information on importing certificates to your load balancer server, see your load balancer server's platform documentation.

- **Citrix ADC:** Import the certificate using the **Traffic Management > Load Balancing > SSL > Certificates > Client Certificate** workflow.

Step 2: Install Required Software on Load Balancer Server

Install the required software onto the Load Balancer server.

Microsoft IIS and ARR

- Microsoft IIS configured. Review the Microsoft documentation that corresponds to the version of Windows Server and IIS Manager in your environment.
- Application Request Routing 3.0 module installed.

Citrix ADC

For system requirements, see your Citrix ADC documentation.

F5 BIG-IP GTM/LTM Load Balancer

For system requirements, see your F5 BIG-IP GTM/LTM documentation.

Step 3: Install PatientSecure Server Console on the Load Balancer Server

> **NOTE:**
> Imprivata recommends that the PatientSecure Server Console be installed on the Load Balancer server to keep it separate from the PatientSecure application servers, to ensure service reliability.

To install Imprivata PatientSecure on the Load Balancer server:

1. Install the Imprivata PatientSecure Server Console.
   a. Download the PSI package provided by your Imprivata PatientSecure representative.
   b. Click `PatientSecureServerSetup.exe`, and then click **Run**.
      The InstallShield Wizard opens.
   c. Follow the wizard prompts to install the PatientSecure Server Console.
      i. To set up the environment as a Production environment, select **Production**.
      ii. To set up the environment as a test or other non-production environment, select **Non-Production**.
      This setting is used in coordination with the PatientSecure Site Monitoring (PSSM) component to collect data as either a production or test environment.
      ii. When the installation is complete, you see a success or failure message.
      - The **Launch Imprivata PatientSecure Server Console** checkbox is selected by default, so you can continue installing Imprivata PatientSecure components when you exit the Installer.
      - To launch the Server Console later, clear the **Launch Imprivata PatientSecure Server Console** checkbox and make a note of the address provided on the screen.
      - To review log entries for the installation when you exit the Installer, select the **Show the Windows Installer log** checkbox.
      iii. Click **Finish**.

      > **TIP**: If you selected the **Launch Imprivata PatientSecure Server Console** checkbox and the Server Console does not launch successfully, refresh your browser.

2. Click **+ Set up new installation** and follow the instructions on the screen to complete the initial setup of the database and Active Directory.
3. On the Installation Type page, select **Advanced**.

The Server Dashboard opens.

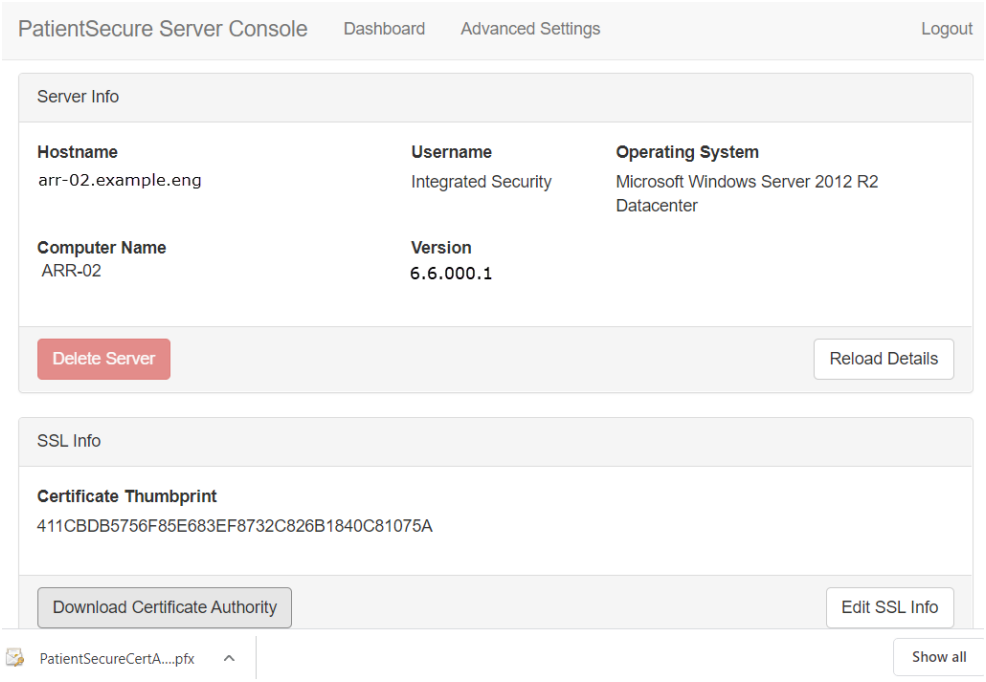
Next, add the two PatientSecure Application servers to the Server Console.

Step 4: Add the Application Servers to PatientSecure Server Console

To add the two application servers in PatientSecure Server Console:

1. On the Server Dashboard page, in the Server Status section, click **Add a Server**.
   a. Type the **fully-qualified domain name** (FQDN) for Application Server 1 and click **Next**.
   b. Enter the Windows administrator credentials for the server, and then click **Confirm**.
   c. Complete the certificate workflow. Select an existing one for the application server's hostname in FQDN.
   d. When you are done, click **Save**.

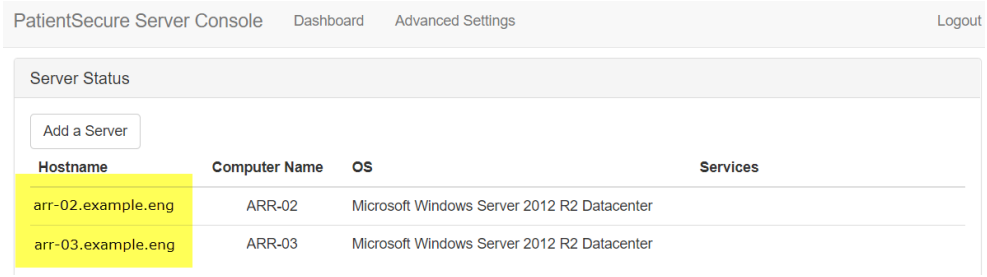
      The server is added to the Server Dashboard.
2. Click the server row for Application Server 1 to open its Server Details page.
   a. Click **Download Certificate Authority** to download the certificate to the Load Balance server.



   b. Install and trust the downloaded certificate, selecting **Local Machine** in the Certificate Import Wizard, then clicking **Next** several times to complete the wizard.
   a. Click **Dashboard** at the top of the page to return to the Server Dashboard.
3. Repeat Steps 1 through 2 of this procedure for Application Server 2.

   The two application servers are added to the Server Status section. The Services column in the table is empty, indicating that there are no PatientSecure services installed yet.

The Server Dashboard should look similar to the following example:



Configure the Load Balancer Server

The steps for configuring the load balancer server depend on the technology, as each have different interfaces.

Select the load balancer server technology you are configuring:

- Microsoft IIS with ARR
- Citrix ADC (formerly Netscaler)
- F5 BIG-IP GTM/LTM

Microsoft IIS with ARR

> **NOTE:** Screenshots of Microsoft IIS Manager are included as a courtesy to guide you through the configuration. The workflows may differ slightly depending on your operating system version.

Step 1: Configure IIS

To configure the Load Balancer server with IIS:

1. In IIS Manager, navigate to the **Default Web Site**.

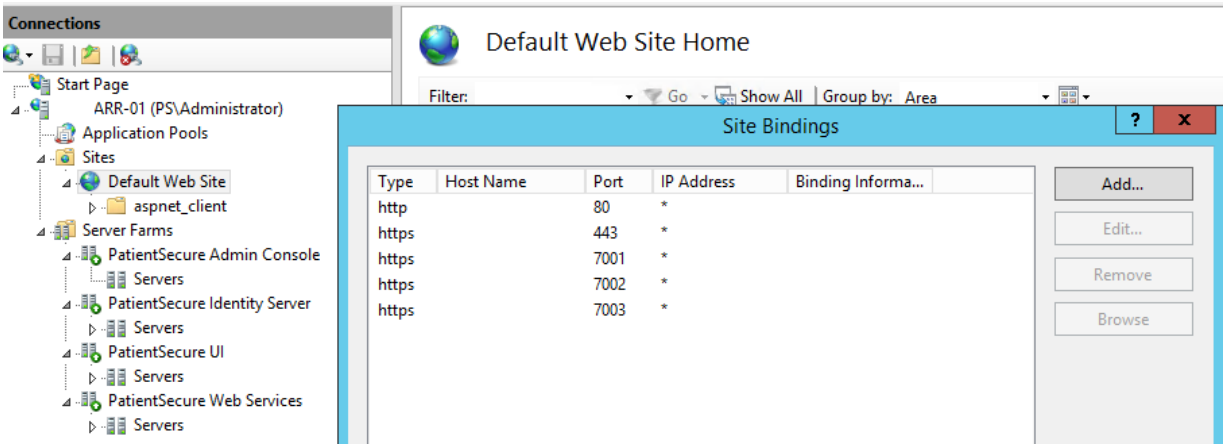
   In the Actions page, edit **Site Bindings** to add port bindings for the services.

   The default values are as follows:

PatientSecure Component	Default Port	Type
Identity Server	7001	HTTPS
Web Services	7002	HTTPS
User Interface	7003	HTTPS
Reporting Service	7004	HTTPS

PatientSecure Component	Default Port	Type
Admin Console	80, 443 **NOTE**: These ports cannot change.	Port 443 must be HTTPS.
Emergency Search & Palm Vein Authentication Service	7005 and 7006	HTTPS
System Health Service	7007	HTTPS
FHIR Service (optional)	7008	HTTPS
EMPI Service (optional)	7009	HTTPS

The following example illustrates the Default Web Site port bindings configured with default port values:



Step 2: Configure the PatientSecure Identity Server

Install the PatientSecure Identity Server component on the two application servers and create a server farm for the Identity Server on the Load Balance server.

Step 2a: Install the PatientSecure Identity Server on the Application Servers

To install the Identity Server component on the application servers:

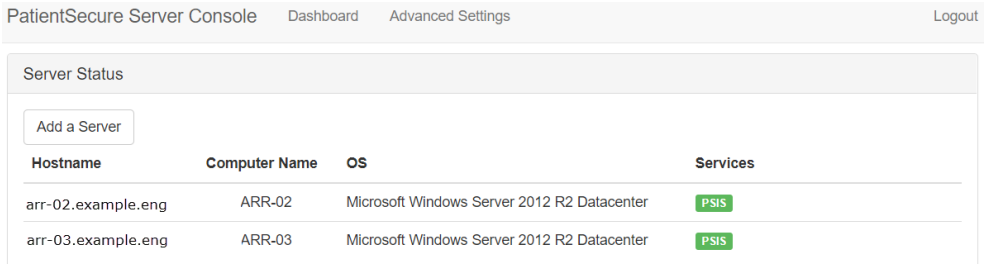
1. Click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Identity Server section, select the drive and port, and then click **Install PSIS**.

> **NOTE:** The port setting must match the value configured for the Load Balancer port above. The default value is 7001.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.

4. Repeat Steps 1 through 3 of this procedure for Application Server 2.

   When you are done, the Server Dashboard should look similar to the following example:



Step 2b: Configure Advanced Settings

Use the Advanced Settings page to configure the value for PatientSecure Identity Server.

1. Click **Advanced Settings** at the top of the page.

   The Advanced Settings page lists the installed Imprivata PatientSecure components.

   a. Configure the value for **PatientSecure Identity Server** to match the following format:

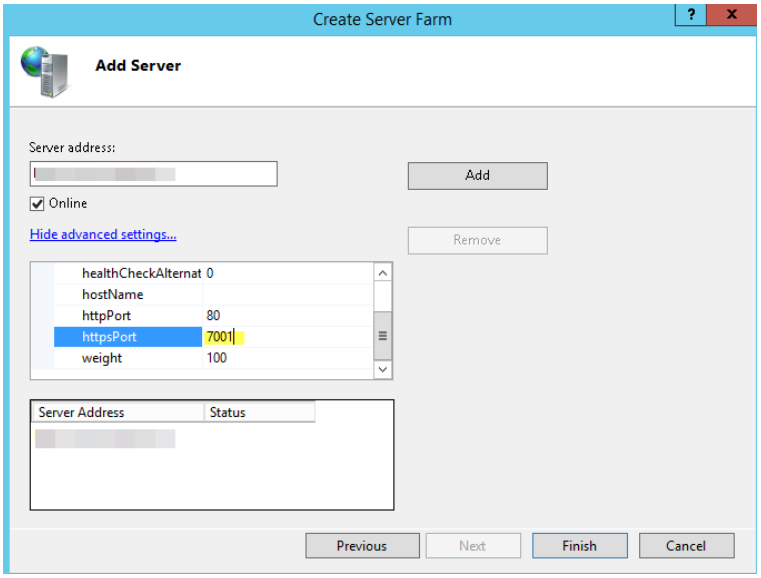
   https://<*LoadBalancingServer*>:<*ConfiguredPort*>/identityserver

   For example: https://myLoadBalancer.mydomain.com:7001/identityserver

Step 2c: Create a Server Farm for the Identity Server

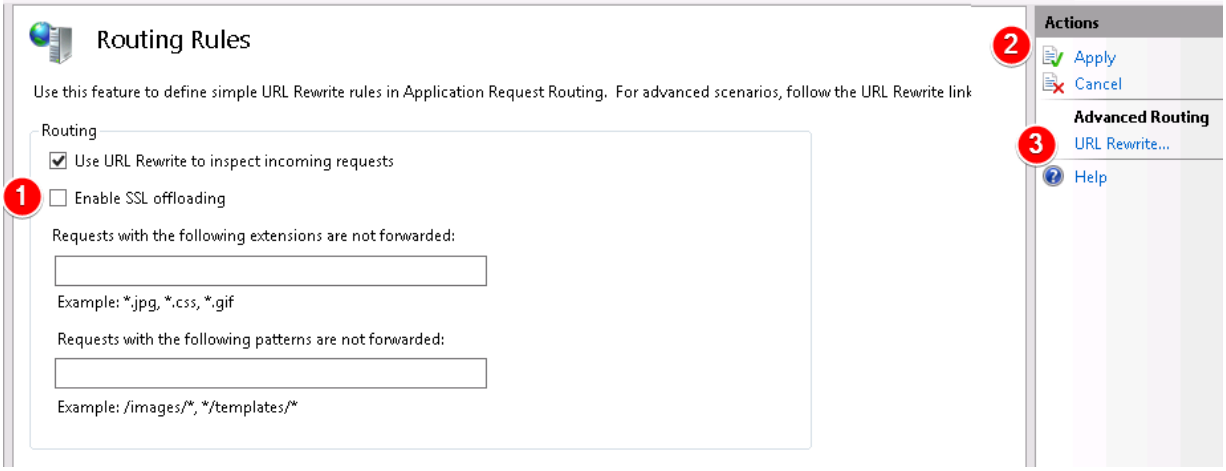
To create a server farm for the Identity Server:

1. On the Load Balance server, open IIS Manager and select **Server Farm > Create Server Farm**.
2. In the **Server farm name** box, type **PatientSecure Identity Server**.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.

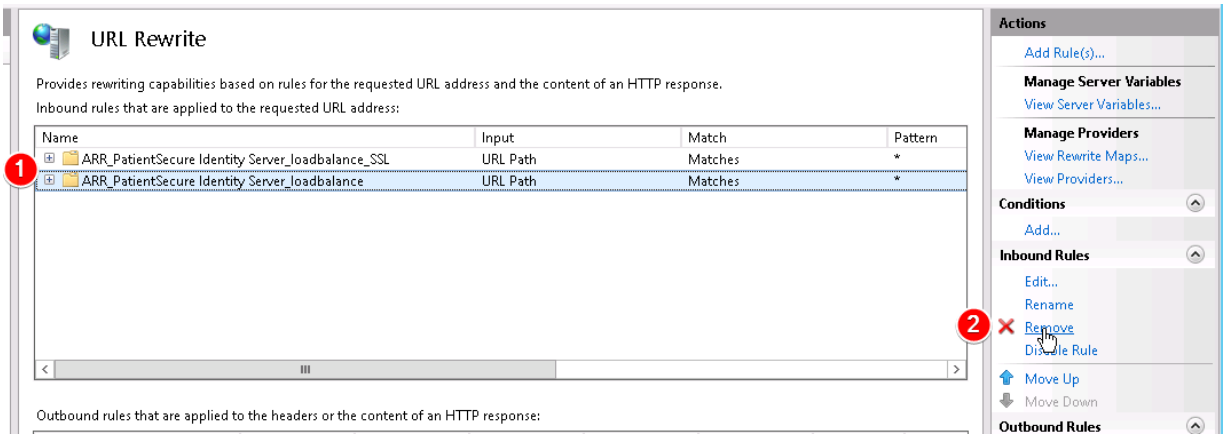


5. Enter the information for the first server.

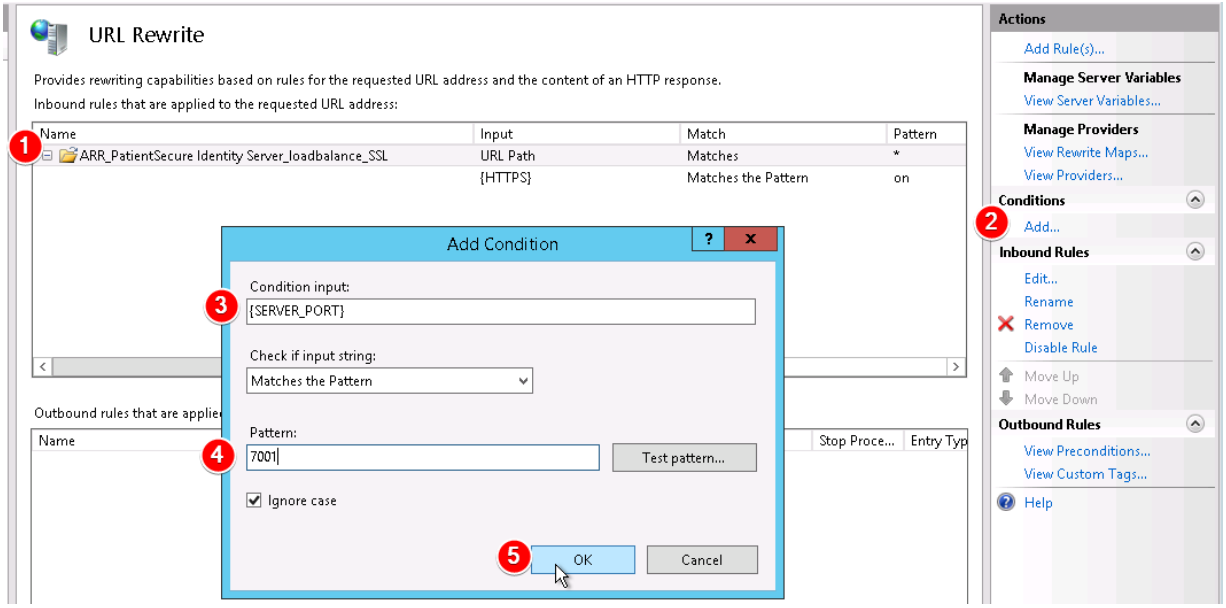
6. In the Advanced Settings section, configure the HTTPS port value to match the port specified for the Load Balancer and the application servers.
7. Click **Add** and repeat the procedure for additional servers.
8. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically. Click **Yes**.
9. From the Connections list, click the server farm name (PatientSecure Identity Server), and then click **Routing Rules**.



10. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
11. In the Advanced Routing pane, click **URL Rewrite**.



12. Select the rewrite rules that do not include SSL, and then click **Remove** in the Inbound Rules pane.



13. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane.

    The Add Condition dialog box opens.
14. In the **Condition Input** field, type {SERVER_PORT}.
15. In the **Pattern** field, type the port configured for the **Identity Server**.

Step 2d: Configure Failover for Identity Service

To configure failover support within ARR for the Identity Server:

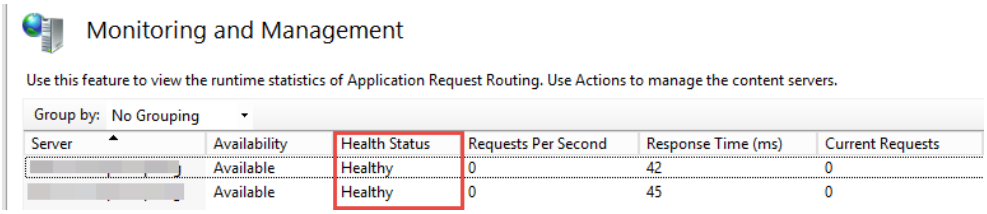
1. On the Load Balance server, open IIS Manager, select **Server Farms > PatientSecure Identity Server**, and then click **Health Test**.

   The URL Test form opens.
2. In the URL field, enter the PSIS address entered on the PatientSecure Server Console Advanced Settings.
3. In the **Acceptable status codes** field, enter 200-399.
4. In the **Response match** field, enter **IdentityServer4**.

> **NOTE**: You can also add custom values for the Interval, which governs how often the test is performed, and the Time-out, which determines how long the health test will wait for a response. On slower configurations, the default settings may return false errors.

5. Click **Verify URL Test**.
6. In the **Minimum servers** field, enter 1.
7. Click **Apply**.
8. From the Connections list, select **Server Farms > PatientSecure Identity Server**, and then click **Monitoring and Management**.

9. On the Monitoring and Management page, the entries in the Health Status column should be **Healthy**. There may be a brief delay (set by the Interval time) to update the server statuses.



Step 3: Configure PatientSecure Web Services

Step 3a: Install PatientSecure Web Services on the Application Servers

To install PatientSecure Web Services (PSWS) on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Web Services section, select the drive and port, and then click **Install PSWS**.

> **NOTE:** The port setting should match the value configured for the Load Balancer port above. The default value is 7002.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat Steps 1 through 3 of this procedure for Application Server 2.

Step 3b: Configure Advanced Settings

Use the Advanced Settings page to configure the value for PatientSecure Web Services.

1. Click **Advanced Settings** at the top of the page.

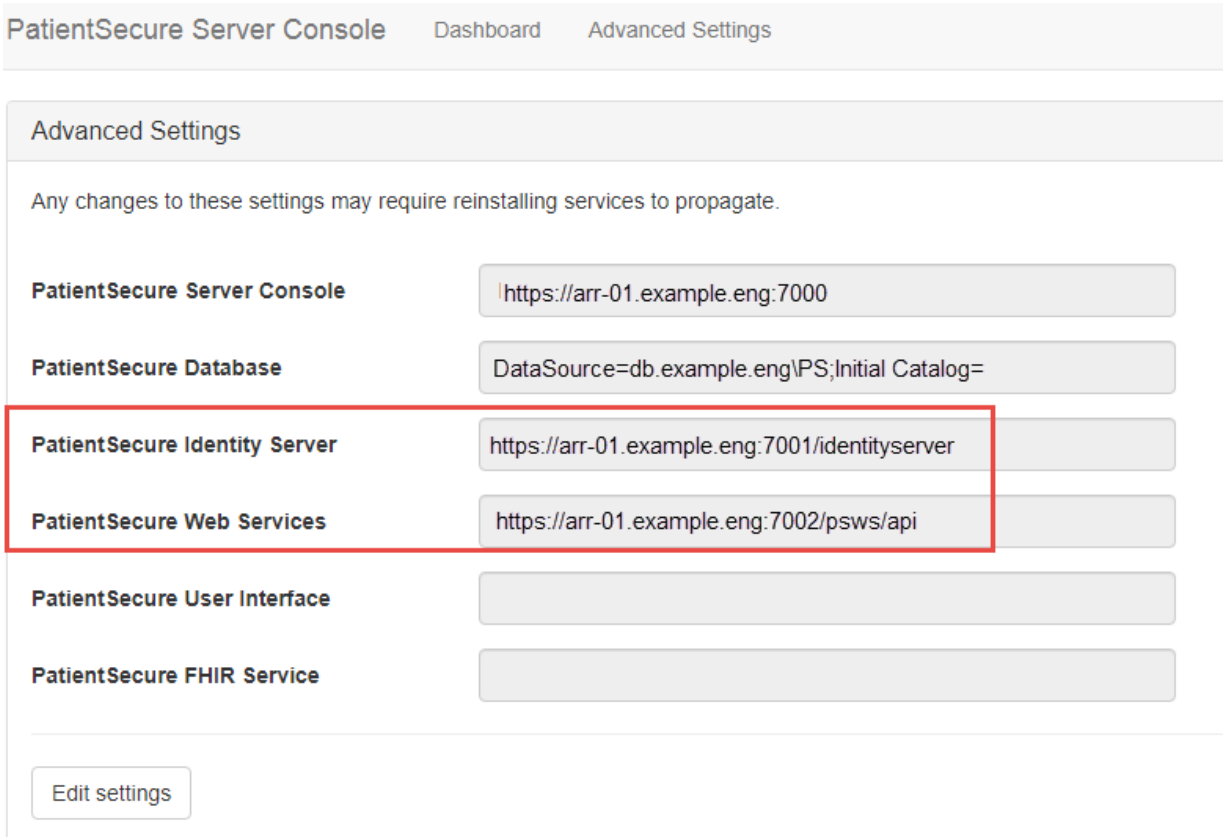
   The Advanced Settings page lists the installed Imprivata PatientSecure components.

   a. Configure the value for **PatientSecure Web Services** to match the following format:

   https://<*LoadBalancingServer*>:<*ConfiguredPort*>/psws/api

   For example: https://myLoadBalancer.mydomain.com:7002/psws/api

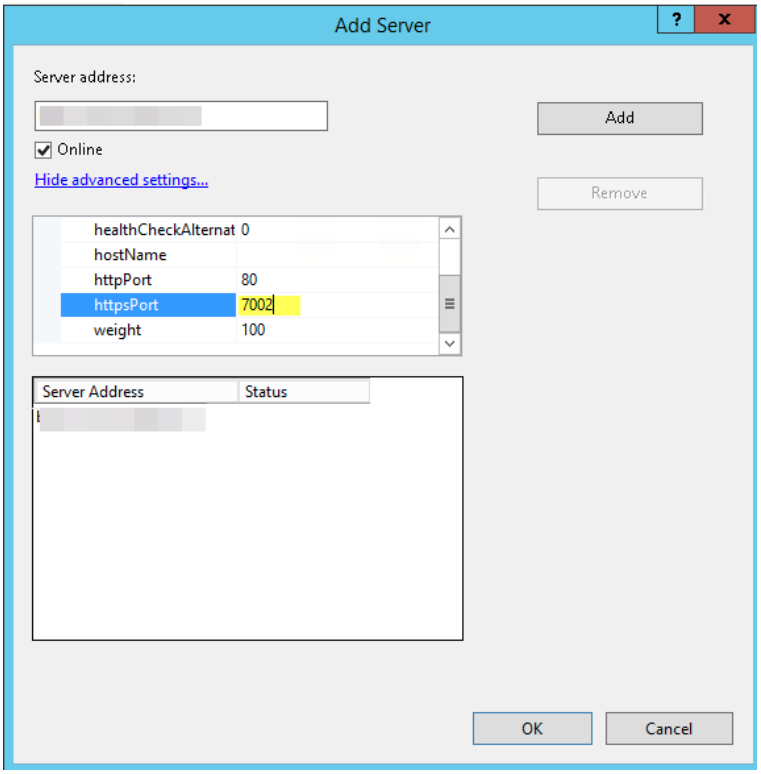
When you are done, the Advanced Settings page should look similar to the example below:



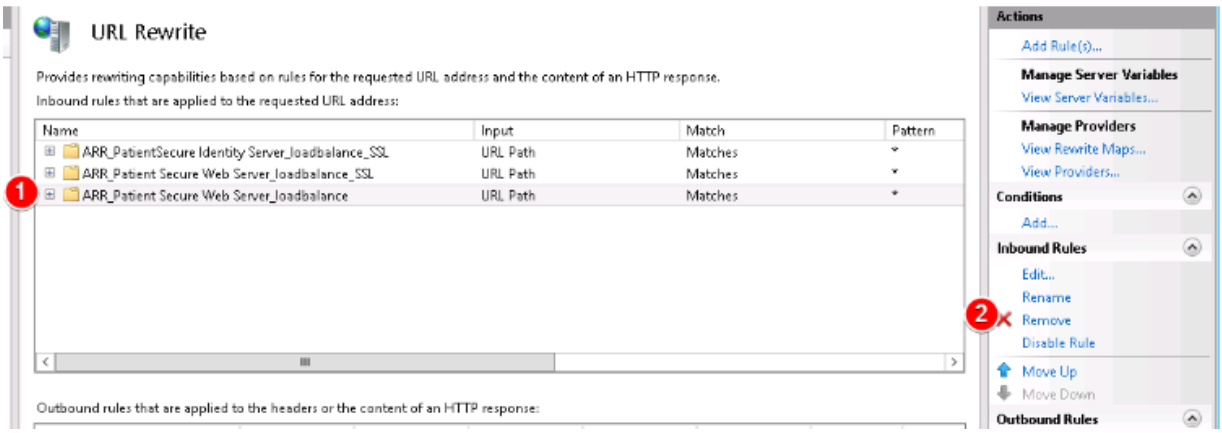
Step 3c: Create a Server Farm for the PatientSecure Web Service

To create a server farm for the Web Service:

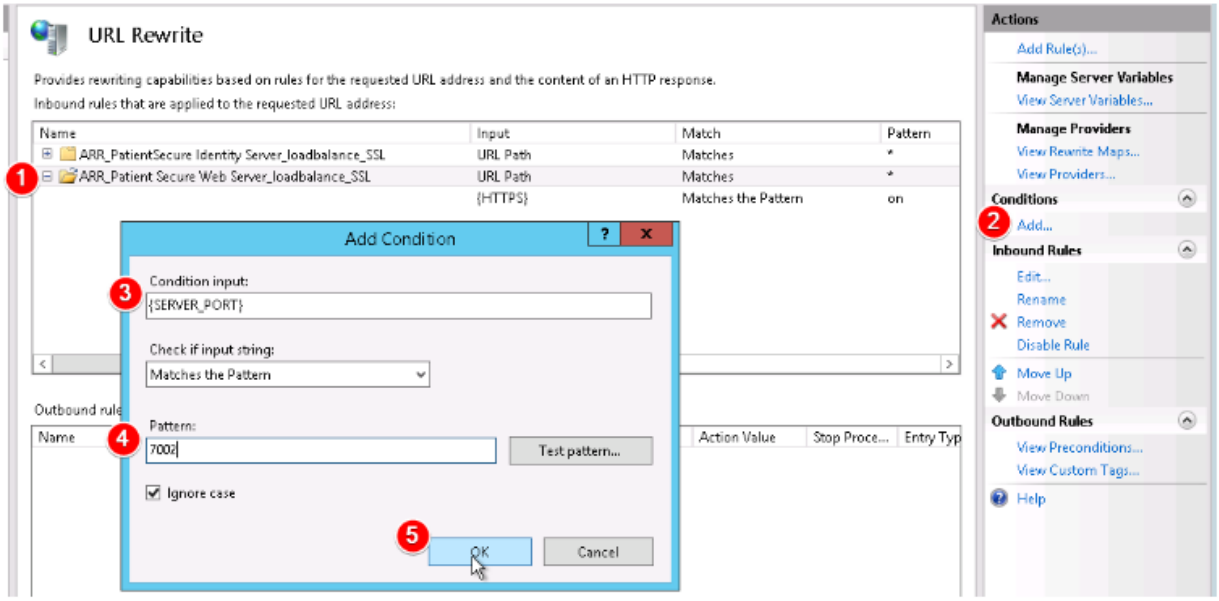
1. On the Load Balance server, open IIS Manager and select **Server Farms > Create Server Farm**.
2. In the **Server farm name** field, type PatientSecure Web Services.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.



5. Enter the information for Application Server 1.
6. In the Advanced Settings section, configure the HTTPS port value to match the port specified for the Load Balancer and the application servers.
7. Click **Add** and repeat the procedure for additional servers.
8. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically. Click **Yes**.
9. From the Connections list, click the server farm name (PatientSecure Web Services), and then click **Routing Rules**.
10. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
11. In the Advanced Routing pane, click **URL Rewrite**.



12. Select the rewrite rules that do not include SSL, and then click **Remove** in the Inbound Rules pane.



13. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane.

    The Add Condition dialog box opens.
14. In the **Condition Input** field, type {SERVER_PORT}.
15. In the **Pattern** field, enter the port configured for Web Services.
16. Return to the Connections list, click the server farm name (PatientSecure Web Services), and then click **Server Affinity**.
17. Select the **Client Affinity** checkbox, and then click **Apply**.

Step 3d: Configure Failover for Web Services

To configure failover support within ARR for Web Services:

1. On the Load Balance server, open IIS Manager, select **Server Farms > PatientSecure Web Services**, and then click **Health Test**.

   The URL Test form opens.
2. In the URL field, enter the following URL:

   https://<*LoadBalanceServer*>:<*PSWS port*>/psws/api/public/status
3. In the **Acceptable status codes** field, enter 200-302.
4. Click **Verify URL Test**.
5. In the **Minimum servers** field, enter 1 and click **Apply.**
6. From the Connections list, select **Server Farms > PatientSecure Web Services**, and then click **Monitoring and Management**.
7. On the Monitoring and Management page, the entries in the Health Status column should be **Healthy**. There may be a brief delay (set by the Interval time) to update the server statuses.

Step 4: Configure the User Interface Server

Install the User Interface Server component on the two application servers and create a server farm for the User Interface Server on the Load Balance server.

Step 4a: Install the PatientSecure User Interface Server on the Application Servers

To install the User Interface Server component on the application servers:

1. Click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure User Interface section, select the drive and port, and then click **Install CLIENT**.

   > **NOTE:** The port setting should match the value configured for the Load Balancer port above. The default value is 7003.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat Steps 1 through 3 of this procedure for Application Server 2.

Step 4b: Configure Advanced Settings

Use the Advanced Settings page to configure the value for PatientSecure User Interface.

1. Click **Advanced Settings** at the top of the page.

   The Advanced Settings page lists the installed Imprivata PatientSecure components.
2. Configure the value for PatientSecure User Interface Server to match the following format:

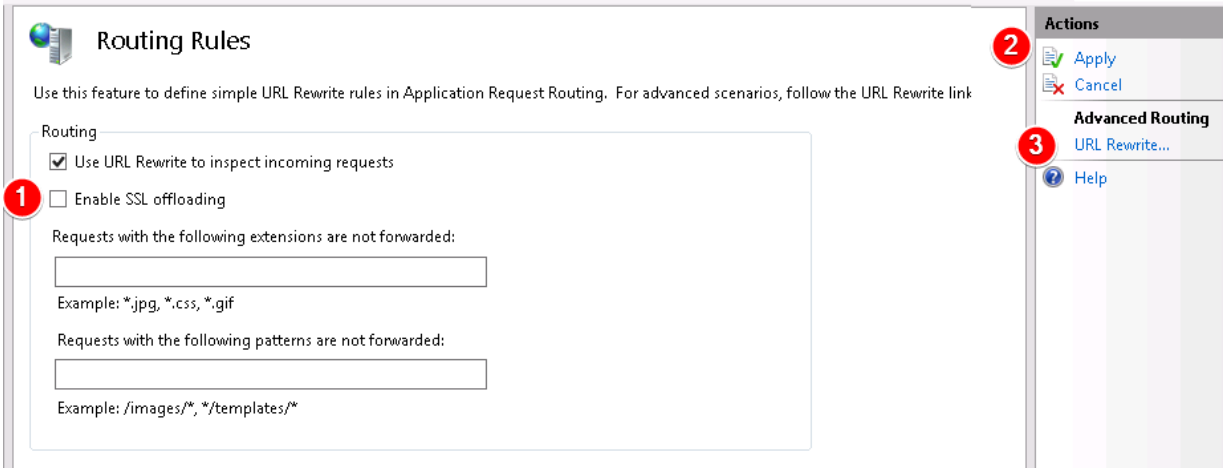
   https://<*LoadBalancingServer*>:<*ConfiguredPort*>

   For example: https://myLoadBalancer.mydomain.com:7003

Step 4c: Create a Server Farm for the User Interface Server

To create a server farm for the User Interface Server:

1. On the Load Balance server, open IIS Manager and select **Server Farm > Create Server Farm**.
2. In the **Server farm name** field, type PatientSecure User Interface Server.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.
5. Enter the information for the first server.
6. In the Advanced Settings section, configure the HTTPS port value to match the port specified for the Load Balancer and the application servers.
7. Click **Add** and repeat the procedure for additional servers.
8. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically. Click **Yes**.
9. From the Connections list, click the server farm name (PatientSecure User Interface Server), and then click **Routing Rules**.



10. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
11. In the Advanced Routing pane, click **URL Rewrite**.
12. Select the rewrite rules that do not include SSL, and then click **Remove** in the Inbound Rules pane.
13. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane.

    The Add Condition dialog box opens.
14. In the **Condition Input** field, type {SERVER_PORT}.
15. In the **Pattern** field, enter the port configured for the User Interface Server.
16. Return to the Connections list, click the server farm name (PatientSecure Admin Console), and then click **Server Affinity**.
17. Select the **Client Affinity** checkbox, and then click **Apply**.

Step 4d: Configure Failover of the User Interface Server

To configure failover support within ARR for the User Interface Server:

1. On the Load Balance server, open IIS Manager, select **Server Farms > PatientSecure User Interface Server**, and then click **Health Test**.

   The URL Test form opens.
2. In the URL field, enter the address entered on the PatientSecure Server Console Advanced Settings.
3. In the **Acceptable status codes** field, enter 200-399.
4. In the **Response match** field, enter **UserInterface3**.

> **NOTE**: You can also add custom values for the Interval, which governs how often the test is performed, and the Time-out, which determines how long the health test will wait for a response. On slower configurations, the default settings may return false errors.

5. Click **Verify URL Test**.
6. In the **Minimum servers** field, enter 1.

7. Click **Apply**.
8. From the Connections list, select **Server Farms > PatientSecure User Interface Server**, and then click **Monitoring and Management**.
9. On the Monitoring and Management page, the entries in the Health Status column should be **Healthy**. There may be a brief delay (set by the Interval time) to update the server statuses.

Step 5: Configure the Admin Console

Step 5a: Install the Admin Console on the Application Servers

To install the Admin Console on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for the first application server to open its Server Details page.
2. In the Services - PatientSecure Admin Console section, select the drive, and then click **Install ADMIN**. The Admin Console installs on port 80 and port 443 (if SSL is used).
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for all application servers.

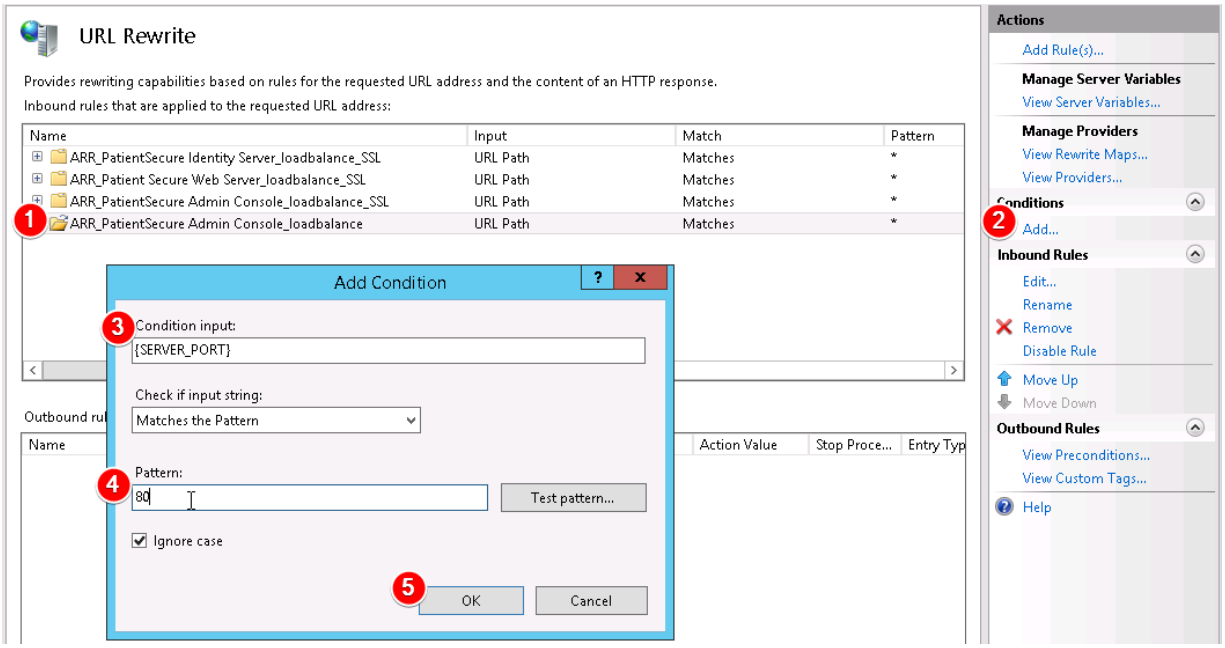
Step 5b: Create a Server Farm for the Admin Console

To create a server farm for Admin Console:

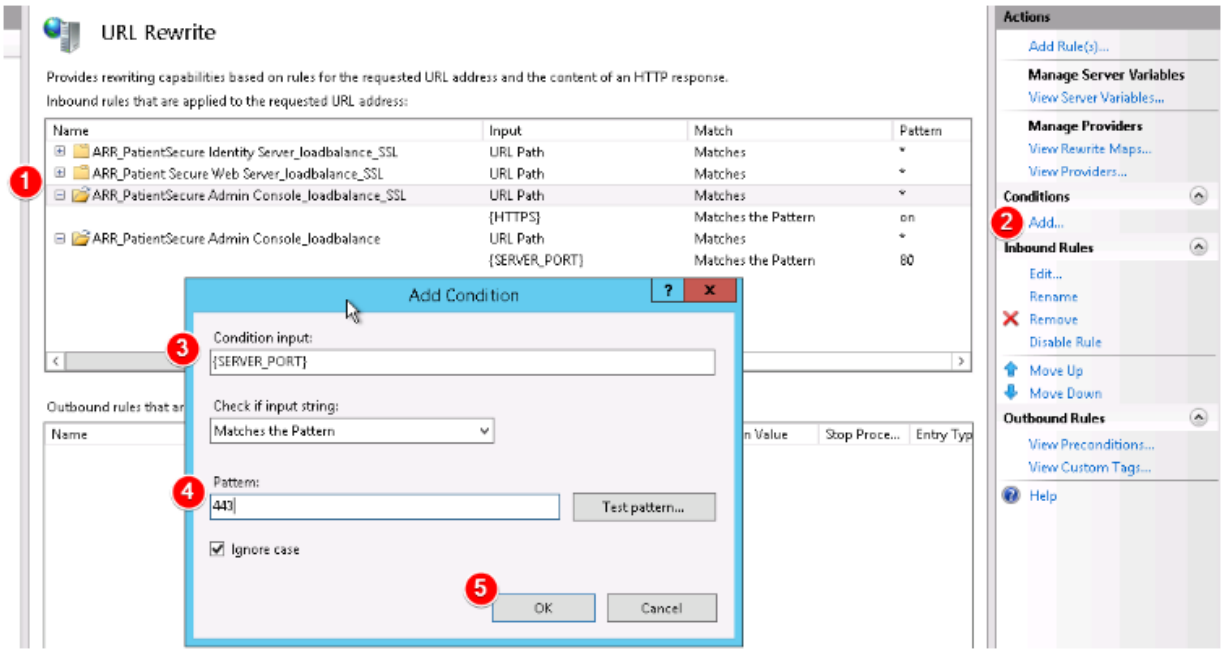
1. On the Load Balance server, open IIS Manager and select **Server Farms > Create Server Farm**.
2. In the **Server farm name** field, type PatientSecure Admin Console.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.
5. Enter the information for the first server.

> **NOTE**: Do not configure advanced settings for the port on either application server.

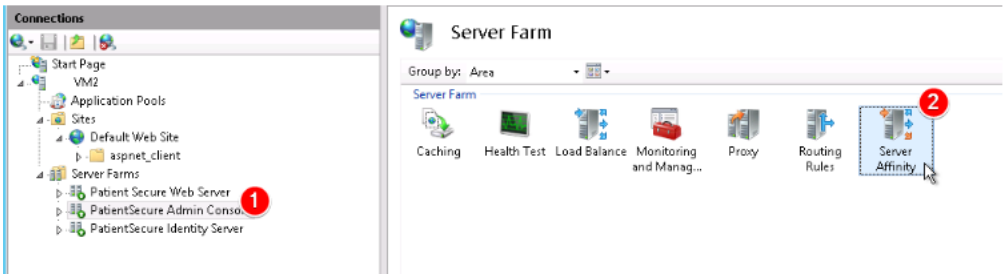
6. Click **Add** and repeat the procedure for additional servers.
7. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically.
8. Click **Yes**.
9. From the Connections list, click the server farm name (PatientSecure Admin Console) and then click **Routing Rules**.
10. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
11. In the Advanced Routing pane on the left, click **URL Rewrite**.



12. Select the rewrite rule that does not include SSL, and then click **Add** in the Conditions pane. The Add Condition dialog box opens.
13. In the **Condition Input** field, type {SERVER_PORT}.
14. In the **Pattern** field, enter 80.



15. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane. The Add Condition dialog box opens.
16. In the **Condition Input** field, type {SERVER_PORT}.
17. In the **Pattern** field, enter 443 and click **OK**.



18. Return to the Connections list, click the server farm name (PatientSecure Admin Console), and then click **Server Affinity**.

19. Select the **Client Affinity** checkbox, and then click **Apply**.

Step 5c: Configure Failover for the Admin Console.

To configure failover support within ARR for Admin Console:

1. On the Load Balance server, open IIS Manager, select **Server Farms > PatientSecure Admin Console**, and then click **Health Test**.

   The URL Test form opens.
2. In the URL field, enter the following URL:

   https://<*LoadBalanceServer*>/AdminConsole
3. In the **Acceptable status codes** field, enter 200-399.
4. Click **Verify URL Test**.
5. In the **Minimum servers** field, enter 1 and click **Apply**.
6. From the Connections list, select **Server Farms > PatientSecure Admin Console**, and then click **Monitoring and Management**.
7. On the Monitoring and Management page, the entries in the Health Status column should be **Healthy**. There may be a brief delay (set by the Interval time) to update the server statuses.

Step 6: Configure the Reporting Service

The Reporting Service component is required for the Admin Console to display the dashboard and to run reports.

Step 6a: Install the Reporting Service on the Application Servers

To install the Reporting Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Reporting Service section, select the drive, and then click **Install Reporting**. The Reporting Service port defaults to 7004.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

Step 6b: Configure Advanced Settings

Use the Advanced Settings page to configure the value for PatientSecure Reporting Service.

1. Click **Advanced Settings** at the top of the page.

   The Advanced Settings page lists the installed Imprivata PatientSecure components.
2. Configure the value for PatientSecure Reporting Service to match the following format:

   https://<*LoadBalancingServer*>:<*ConfiguredPort*>/api

   For example: https://myLoadBalancer.mydomain.com:7004/api

Step 6c: Create a Server Farm for the Reporting Service

To create a server farm for the Reporting Service:

1. On the Load Balance server, open IIS Manager and select **Server Farm > Create Server Farm**.
2. In the **Server farm name** field, type PatientSecure Reporting Service.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.
   a. Enter the information for the first server.
   b. In the Advanced Settings section, configure the HTTPS port value to match the port specified for the Load Balancer and the application servers.
   c. Click **Add** and repeat the procedure for additional servers.
5. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically. Click **Yes**.
6. From the Connections list, click the server farm name (PatientSecure Reporting Service), and then click **Routing Rules**.
7. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
8. In the Advanced Routing pane, click **URL Rewrite**.
9. Select the rewrite rules that do not include SSL, and then click **Remove** in the Inbound Rules pane.
10. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane.

    The Add Condition dialog box opens.
11. In the **Condition Input** field, type {SERVER_PORT}.
12. In the **Pattern** field, enter the port configured for the **Reporting Service**.

Step 7: Configure the PatientSecure Emergency Search & Authentication Service Server

Step 7a: Install the Emergency Search & Authentication Service on the Application Servers

To install the Emergency Search & Authentication Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Emergency Search Service section, select the drive, and then click **Install Emergency Search**. The Emergency Search Service ports defaults to 7005 and 7006.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

Step 7b: Configure Advanced Settings

Use the Advanced Settings page to configure the value for PatientSecure Emergency Search Service.

1. Click **Advanced Settings** at the top of the page.

   The Advanced Settings page lists the installed Imprivata PatientSecure components.
2. Configure the value for PatientSecure Emergency Search Service to match the following format:

   https://<*LoadBalancingServer*>:<*ConfiguredPort*>/api

   For example: https://myLoadBalancer.mydomain.com:7005/api

Step 7c: Create a Server Farm for the Emergency Search & Palm Vein Authentication Service

To create a server farm for the Emergency Search & Palm Vein Authentication Service:

1. On the Load Balance server, open IIS Manager and select **Server Farm > Create Server Farm**.
2. In the **Server farm name** field, type PatientSecure Emergency Search Service.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.
   a. Enter the information for the first server.
   b. In the Advanced Settings section, configure the HTTPS port value to match the port specified for the Load Balancer and the application servers.
   c. Click **Add** and repeat the procedure for additional servers.
5. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically. Click **Yes**.
6. From the Connections list, click the server farm name (PatientSecure Emergency Search Service), and then click **Routing Rules**.

7. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
8. In the Advanced Routing pane, click **URL Rewrite**.
9. Select the rewrite rules that do not include SSL, and then click **Remove** in the Inbound Rules pane.
10. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane.

    The Add Condition dialog box opens.
11. In the **Condition Input** field, type {SERVER_PORT}.
12. In the **Pattern** field, enter the port configured for the **Emergency Search Service**.
13. Return to the Connections list, click the server farm name (PatientSecure Emergency Search Service), and then click **Server Affinity**.
14. Select the **Client Affinity** checkbox, and then click **Apply**.

Step 8: Configure the PatientSecure System Health Service

The PatientSecure System Health Service monitors the status of the PatientSecure database and application servers, and powers the system health dashboard in the PatientSecure Admin Console.

Step 8a: Install the System Health Service on the Application Servers

To install the System Health Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure System Health Service section, select the drive, and then click **Install System Health Service**. The service port defaults to 7007.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

Step 8b: Configure Advanced Settings

Use the Advanced Settings page to configure the value for PatientSecure System Health Service.

1. Click **Advanced Settings** at the top of the page.

    The Advanced Settings page lists the installed Imprivata PatientSecure components.
2. Configure the value for PatientSecure System Health Service to match the following format:

    https://<*LoadBalancingServer*>:<*ConfiguredPort*>/api

    For example: https://myLoadBalancer.mydomain.com:7007/api

Step 8c: Create a Server Farm for the System Health Service

To create a server farm for the System Health Service:

1. On the Load Balance server, open IIS Manager and select **Server Farm > Create Server Farm**.
2. In the **Server farm name** field, type PatientSecure System Health Service.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.
    a. Enter the information for the first server.
    b. In the Advanced Settings section, configure the HTTPS port value to match the port specified for the Load Balancer and the application servers.
    c. Click **Add** and repeat the procedure for additional servers.
5. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically. Click **Yes**.
6. From the Connections list, click the server farm name (PatientSecure System Health Service), and then click **Routing Rules**.
7. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
8. In the Advanced Routing pane, click **URL Rewrite**.
9. Select the rewrite rules that do not include SSL, and then click **Remove** in the Inbound Rules pane.
10. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane.

    The Add Condition dialog box opens.
11. In the **Condition Input** field, type {SERVER_PORT}.
12. In the **Pattern** field, enter the port configured for the **System Health Service**.

Step 9: Install the HL7 Service on the Application Servers

To install the HL7 Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure HL7 Service section, select the drive, and then click **Install HL7**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

HL7 Sender and Processor services automatically pick an application server to be their active server, and switch to another healthy server when they detect that the current active server has stopped sending messages.

The Listener service should only be actively managing traffic on one application server at a time. When the HL7 Listener service fails on Application server 1, you must re-route traffic to Application server 2. You may need to manually point the HL7 engine to Application server 2, or set up a VIP.

Step 10: Configure the FHIR Service

NOTE:
Configuring this service is optional, and depends on whether your PatientSecure environment will integrate with the FHIR service.

Step 10a: Install the FHIR Service on the Application Servers

To install the FHIR Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure FHIR Service section, select the drive and specify the port, and then click **Install FHIR**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

Step 10b: Add Third-Party Certificate to Application Servers

Obtain the third-party SSL certificate and import it to both of the Application Servers hosting the PatientSecure FHIR service.

For more information, see your Windows documentation.

Step 10c: Configure Advanced Settings

Use the Advanced Settings page to configure the value for PatientSecure FHIR Service.

1. Click **Advanced Settings** at the top of the page.

   The Advanced Settings page lists the installed Imprivata PatientSecure components.
2. Configure the value for PatientSecure FHIR Server to match the following format:

   https://<*LoadBalancingServer*>:<*ConfiguredPort*>/api

   For example: https://myLoadBalancer.mydomain.com:7005/api

Step 10d: Create a Server Farm for the FHIR Service

1. On the Load Balance server, open IIS Manager and select **Server Farm > Create Server Farm**.
2. In the **Server farm name** field, type PatientSecure FHIR Service.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.
   a. Enter the information for the first server.
   b. In the Advanced Settings section, configure the HTTPS port value to match the port specified for the Load Balancer and the application servers.
   c. Click **Add** and repeat the procedure for additional servers.
5. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically. Click **Yes**.

6. From the Connections list, click the server farm name (PatientSecure FHIR Service), and then click **Routing Rules**.
7. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
8. In the Advanced Routing pane, click **URL Rewrite**.
9. Select the rewrite rules that do not include SSL, and then click **Remove** in the Inbound Rules pane.
10. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane.

    The Add Condition dialog box opens.
11. In the **Condition Input** field, type {SERVER_PORT}.
12. In the **Pattern** field, enter the port configured for the **FHIR Service**.

Step 11: Configure the EMPI Service

> **NOTE:**
> Configuring this service is optional, and depends on whether your PatientSecure environment will integrate with an EMPI such as Verato MPI or Initiate.

Step 11a: Install the EMPI Service on the Application Servers

To install the EMPI Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure EMPI Service section, select the drive and specify the port, and then click **Install EMPI**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

Step 11b: Add Third-Party Certificate to Application Servers

Obtain the third-party SSL certificate and import it to both of the Application Servers hosting the PatientSecure EMPI service.

For more information, see your Windows documentation.

Step 11c: Configure Advanced Settings

Use the Advanced Settings page to configure the value for PatientSecure EMPI Service.

1. Click **Advanced Settings** at the top of the page.

   The Advanced Settings page lists the installed Imprivata PatientSecure components.
2. Configure the value for PatientSecure EMPI Server to match the following format:

https://<*LoadBalancingServer*>:<*ConfiguredPort*>/api

For example: https://myLoadBalancer.mydomain.com:7006/api

Step 11d: Create a Server Farm for the EMPI Service

1. On the Load Balance server, open IIS Manager and select **Server Farm > Create Server Farm**.
2. In the **Server farm name** field, type PatientSecure EMPI Service.
3. Make sure that the **Online** checkbox is selected.
4. Click **Next** and add both of the application servers to the server farm.
   a. Enter the information for the first server.
   b. In the Advanced Settings section, configure the HTTPS port value to match the port specified for the Load Balancer and the application servers.
   c. Click **Add** and repeat the procedure for additional servers.
5. Click **Finish**. A dialog displays with a request to create URL rewrite rules automatically. Click **Yes**.
6. From the Connections list, click the server farm name (PatientSecure EMPI Service), and then click **Routing Rules**.
7. On the Routing Rules page, clear the **Enable SSL offloading** checkbox, and then click **Apply** in the Actions pane.
8. In the Advanced Routing pane, click **URL Rewrite**.
9. Select the rewrite rules that do not include SSL, and then click **Remove** in the Inbound Rules pane.
10. Select the rewrite rule that includes SSL, and then click **Add** in the Conditions pane.

    The Add Condition dialog box opens.
11. In the **Condition Input** field, type {SERVER_PORT}.
12. In the **Pattern** field, enter the port configured for the **EMPI Service**.

Citrix ADC (formerly Netscaler)

> **NOTE:**
> Screenshots of the ADC (NetScaler) management interface are included as a courtesy to guide you through the configuration.
>
> For more details, see your Citrix ADC documentation.

Step 1: Add Application Servers to the Load Balancer

In the Citrix ADC management interface, add all of the PatientSecure Application Servers to the load balancer.

To add the Application servers:

1. In **Traffic Management > Load Balancing > Servers**, click **Add**. The Create Server page opens.
2. Enter the server name.
3. Select **Domain Name**.
4. Enter the full qualified domain name (FQDN) of the Application Server 1 and click **Create**.
5. Repeat steps 1 through 4 of this procedure for Application Server 2.

   The Servers page displays the Application servers.

Step 2: Add Service Groups

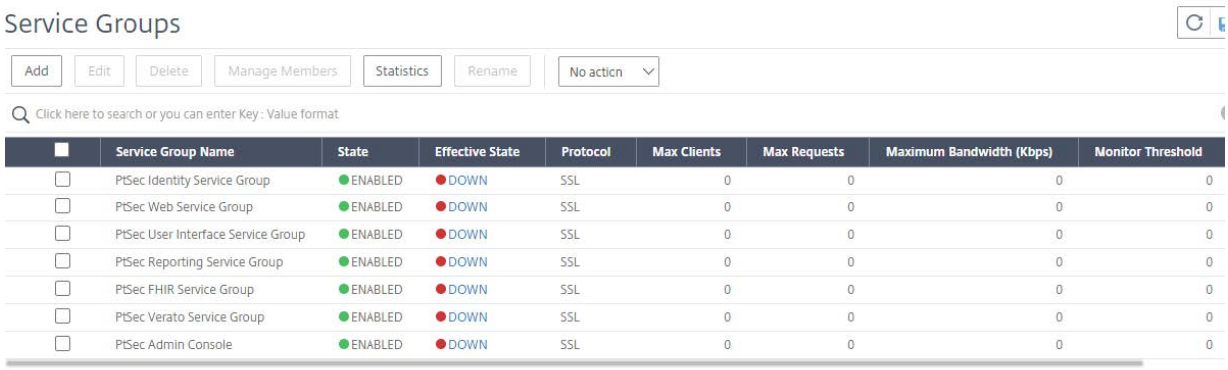
In the Citrix ADC management interface, create a service group for each PatientSecure component and bind it to the appropriate communication port.

To create a service group:

1. In **Traffic Management > Load Balancing > Service Groups**, click **Add**.
2. In Basic Settings, enter a name appropriate for the service group.

   For example: **PatientSecure Identity Service Group**.
3. Select **SSL** from the **Protocol** list and click **OK**.
4. In the Service Group Members section, add servers:
   a. Select **Server Based**.
   b. In the Select Server box, click the arrow to select the two application servers (Application Server 1 and Application Server 2).
   c. Enter **7001** in the **Port** box.
   d. Click **Create**.
5. Repeat steps 2 through 4 in this procedure to add a Service Group for **PatientSecure Web Service** using port **7002** with the same two application servers.
6. Add a Service Group for **PatientSecure Admin Console** using port **443** with the same two application servers.
7. Add a Service Group for **PatientSecure User Interface** using port **7003** with the same two application servers.
8. Add a Service Group for **PatientSecure Reporting Service** using port **7004** with the same two application servers.
9. Add a Service Group for **PatientSecure Emergency Search** service using port **7005** with the same two application servers.
10. *Optional.* Add a Service Group for **PatientSecure FHIR Service** using port **7007** with the same two application servers.
11. *Optional.* Add a Service Group for **PatientSecure EMPI Service** using port **7008** with the same two

application servers.



Step 3: Add Virtual Servers

In the Citrix ADC management interface, create the load balancing virtual servers for each PatientSecure component and configure the server certificate bindings.

To add virtual servers:

1. In **Traffic Management > Load Balancing > Virtual Servers**, click **Add**.
2. In the Basic Settings section, enter a name for the virtual server.

   For example, **PatientSecure Identity Server**.
   a. Select **SSL** from the **Protocol** list.
   b. Select **IP Address** from the **IP Address Type** list.
   c. Enter the **IP** address for the VIP in the **IP Address** box.
   d. Enter **7001** in the **Port** box.
3. In the Services and Service Groups section, click **Load Balancing Virtual Service Group Binding**.
   a. Select the **PatientSecure Identity Service group** from the **Select Service Group Name** list.
   b. Click **Bind**.
   c. Click **Server Certificate**.
   d. Select the server certificate from the list and click **Bind**.
4. To set the persistence, in Advanced Settings, click **Persistence**.
   a. a. Select **SOURCEIP**.
   b. b. Enter **10** in the **Time-out** box, and click **OK**.
5. Repeat steps 2 through 4 in this procedure to add a virtual server for the **PatientSecure Web Service**, using port **7002**, and to bind the certificate.
6. Add a virtual server for the PatientSecure Admin Console, using port 443, and to bind the certificate.
7. Add a virtual server for the PatientSecure User Interface using port 7003, and to bind the certificate.

8. Add a virtual server for the PatientSecure Reporting Service using port 7004, and to bind the certificate.
9. 9. Add a virtual server for the PatientSecure Emergency Search service using port 7005. and to bind the certificate.
10. Add a virtual server for the PatientSecure Palm Vein Auth service using port 7006, and to bind the certificate.
11. *Optional.* Add a virtual server for the PatientSecure FHIR service using port 7007, and to bind the certificate.
12. *Optional.* Add a virtual server for the PatientSecure EMPI service using port 7008, and to bind the certificate.

Step 4: Configure the PatientSecure Identity Server

Using the PatientSecure Server Console interface, install the PatientSecure Identity Server component on the two application servers and configure the URL for the VIP.

To install the Identity Server component on the application servers:

1. Click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Identity Server section, select the drive and port, and then click **Install PSIS**.

   NOTE: The default port value is 7001.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat Steps 1 through 3 of this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for **PatientSecure Identity Server** to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/identityserver

   For example: https://myLoadBalancer.mydomain.com:7001/identityserver

Step 5: Configure the PatientSecure Admin Console

1. From the PatientSecure Server Dashboard, click the server row for the first application server to open its Server Details page.
2. In the Services - PatientSecure Admin Console section, select the drive, and then click **Install ADMIN**. The Admin Console installs on port 80 and port 443 (if SSL is used).
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for all application servers.

Step 6: Configure the PatientSecure Web Services

To install PatientSecure Web Services (PSWS) on the application servers:

1. From the PatientSecure Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Web Services section, select the drive and port, and then click **Install PSWS**.

   NOTE: The port setting should match the value configured for the Load Balancer port above. The default value is 7002.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat Steps 1 through 3 of this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for **PatientSecure Web Services** to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/psws/api

   For example: https://myLoadBalancer.mydomain.com:7002/psws/api

Step 7: Configure the User Interface Server

To install the User Interface Server component on the application servers:

1. Click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure User Interface section, select the drive and port, and then click **Install CLIENT**.

   NOTE: The default port value is 7003.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat Steps 1 through 3 of this procedure for Application Server 2.
5. Use the Advanced Settings page to configure the value for PatientSecure User Interface.
6. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
7. Configure the value for **PatientSecure User Interface Server** to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>

   For example: https://myLoadBalancer.mydomain.com:7003

   BEST PRACTICE:
   Imprivata recommends that you configure a health monitor in Citrix ADC for the PatientSecure User Interface. This will assist in determining the health of the application servers and fail over appropriately.

Step 8: Configure the Reporting Service

The Reporting Service component is required for the Admin Console to display the dashboard and to run reports.

To install the Reporting Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Reporting Service section, select the drive, and then click **Install Reporting**.

   The Reporting Service port defaults to 7004.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for PatientSecure Reporting Service to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/api

   For example: https://myLoadBalancer.mydomain.com:7004/api

Step 9: Configure the Emergency Search Service & Palm Vein Auth Service

To install the Emergency Search & Authentication Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Emergency Search Service section, select the drive, and then click **Install Emergency Search**.

   The Emergency Search Service ports default to 7005 and 7006.
3. Enter the Windows administrator credentials for the server, and then click Confirm.
4. Repeat this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for PatientSecure Emergency Search Service to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/api

   For example: https://myLoadBalancer.mydomain.com:7005/api

Step 10: Configure the PatientSecure System Health Service

The PatientSecure System Health Service monitors the status of the PatientSecure database and application servers, and powers the system health dashboard in the PatientSecureAdmin Console.

To install the System Health Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.

2. In the Services - PatientSecure System Health Service section, select the drive, and then click **Install System Health Service**. The service port defaults to 7007.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.
5. Click **Advanced Settings** at the top of the page.

   The Advanced Settings page lists the installed Imprivata PatientSecure components.
6. Configure the value for PatientSecure System Health Service to match the following format:

   https://<*LoadBalancingServer*>:<*ConfiguredPort*>/api

   For example: https://myLoadBalancer.mydomain.com:7007/api

Step 11: Install the HL7 Service on the Application Servers

To install the HL7 Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure HL7 Service section, select the drive, and then click **Install HL7**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

HL7 Sender and Processor services automatically pick an application server to be their active server, and switch to another healthy server when they detect that the current active server has stopped sending messages.

The Listener service should only be actively managing traffic on one application server at a time. When the HL7 Listener service fails on Application server 1, you must re-route traffic to Application server 2. You may need to manually point the HL7 engine to Application server 2, or set up a VIP.

Step 12: Configure the FHIR Service

NOTE:
Configuring this service is optional, and depends on whether your PatientSecure environment will integrate with the FHIR service.

To install the FHIR Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure FHIR Service section, select the drive and specify the port, and then click **Install FHIR**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for PatientSecure FHIR Server to match the following format:
   https://<LoadBalancingServer>:<ConfiguredPort>/api
   For example: https://myLoadBalancer.mydomain.com:7008/api

Step 13: Configure the EMPI Service

> **NOTE:**
> Configuring this service is optional and depends on whether your PatientSecure environment will integrate with an EMPI such as Verato MPI or Initiate.

To install the EMPI Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure EMPI Service section, select the drive and specify the port, and then click **Install EMPI**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.
5. Click **Advanced Settings** at the top of the page. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for PatientSecure EMPI Server to match the following format:
7. https://<LoadBalancingServer>:<ConfiguredPort>/api
8. For example: https://myLoadBalancer.mydomain.com:7009/api

F5 BIG-IP GTM/LTM

> **NOTE:**
> For more details on workflows in the F5 BIG-IP management interface, see your F5 BIG-IP documentation.

To configure connection balancing in F5 BIG-IP GTM/LTM, perform the following tasks.

Step 1: Add Application Servers to the Load Balancer

In the F5 BIG-IP management interface, add the PatientSecure Application Servers to the load balancer.

1. Use the fully qualified domain names (FQDNs) of Application Server 1 and Application Server 2 when adding them to the load balancer.

Step 2: Configure Traffic Groups and Rules

Imprivata recommends creating traffic groups and traffic rules in F5 to manage the different communication protocols for the PatientSecure services.

- **HTTP-based services** - Identity Server, Web Services, Reporting Service, User Interface, Admin Console, Emergency Search & Palm Vein Authentication Service, System Health Service, and optionally, the EMPI and FHIR services.
- **TCP/IP-based services -** HL7 services.

Example

- Create the FQDN as **patientsecure.hospital.org**, and then create a rule to balance calls to it between both active servers.
- Create the FQDN as **patientsecurehl7.hospital.org**, and then create a rule that routes all traffic to it to the one server currently processing all HL7 requests for PatientSecure.
- Set the "Idle Timeout" in the TCP profile to a value sufficient to handle the longest client idle timeout. Imprivata recommends a minimum of 1860 seconds (31 minutes) to accommodate the default PatientSecure Admin Console (PSAC) session idle length (30 minutes).

Step 3: Configure the VIP

In the F5 BIG-IP management interface, create the load balancing virtual servers for each PatientSecure component and configure the server certificate bindings.

1. For PatientSecure Identity Service, use port 7001.
2. For PatientSecure Web Service, use port 7002.
3. For PatientSecure Admin Console, use port 443.
4. For PatientSecure User Interface, use port 7003.
5. For PatientSecure Reporting Service, use port 7004.
6. For PatientSecure Emergency Search service, use port 7005.
7. For PatientSecure Palm Vein Auth service, use port 7006.
8. For PatientSecure System Health service, use port 7007.
9. *Optional.* For the PatientSecure FHIR service, use port 7008.
10. *Optional.* For the PatientSecure EMPI service, use port 7009.

Step 4: Configure the PatientSecure Identity Server

Using the PatientSecure Server Console interface, install the PatientSecure Identity Server component on the two application servers and configure the URL for the VIP.

To install the Identity Server component on the application servers:

1. Click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Identity Server section, select the drive and port, and then click **Install PSIS**.

   NOTE: The default port value is 7001.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat Steps 1 through 3 of this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for **PatientSecure Identity Server** to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/identityserver

   For example: https://myLoadBalancer.mydomain.com:7001/identityserver

Step 5: Configure the PatientSecure Web Services

To install PatientSecure Web Services (PSWS) on the application servers:

1. From the PatientSecure Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Web Services section, select the drive and port, and then click **Install PSWS**.

   NOTE: The port setting should match the value configured for the Load Balancer port above. The default value is 7002.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat Steps 1 through 3 of this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for **PatientSecure Web Services** to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/psws/api

   For example: https://myLoadBalancer.mydomain.com:7002/psws/api

Step 6: Configure the User Interface Server

To install the User Interface Server component on the application servers:

1. Click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure User Interface section, select the drive and port, and then click **Install CLIENT**.

NOTE: The default port value is 7003.

3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat Steps 1 through 3 of this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for **PatientSecure User Interface Server** to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>

   For example: https://myLoadBalancer.mydomain.com:7003

Step 7: Configure the Admin Console

1. From the PatientSecure Server Dashboard, click the server row for the first application server to open its Server Details page.
2. In the Services - PatientSecure Admin Console section, select the drive, and then click **Install ADMIN**. The Admin Console installs on port 80 and port 443 (if SSL is used).
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for all application servers.

Step 8: Configure the Reporting Service

The Reporting Service component is required for the Admin Console to display the dashboard and to run reports.

To install the Reporting Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Reporting Service section, select the drive, and then click **Install Reporting**.

   The Reporting Service port defaults to 7004.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for PatientSecure Reporting Service to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/api

   For example: https://myLoadBalancer.mydomain.com:7004/api

Step 9: Configure the Emergency Search Service & Palm Vein Auth Service

To install the Emergency Search & Authentication Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure Emergency Search Service section, select the drive, and then click **Install Emergency Search**.

   The Emergency Search Service ports default to 7005 and 7006.
3. Enter the Windows administrator credentials for the server, and then click Confirm.
4. Repeat this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for PatientSecure Emergency Search Service to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/api

   For example: https://myLoadBalancer.mydomain.com:7005/api

Step 10: Configure the PatientSecure System Health Service

The PatientSecure System Health Service monitors the status of the PatientSecure database and application servers, and powers the system health dashboard in the PatientSecureAdmin Console.

To install the System Health Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure System Health Service section, select the drive, and then click **Install System Health Service**. The service port defaults to 7007.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.
5. Click **Advanced Settings** at the top of the page.

   The Advanced Settings page lists the installed Imprivata PatientSecure components.
6. Configure the value for PatientSecure System Health Service to match the following format:

   https://<*LoadBalancingServer*>:<*ConfiguredPort*>/api

   For example: https://myLoadBalancer.mydomain.com:7007/api

Step 11: Install the HL7 Service on the Application Servers

To install the HL7 Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure HL7 Service section, select the drive and specify the port, and then click **Install HL7**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

HL7 Sender and Processor services automatically pick an application server to be their active server, and switch to another healthy server when they detect that the current active server has stopped sending messages.

The Listener service should only be actively managing traffic on one application server at a time. When the HL7 Listener service fails on Application server 1, you must re-route traffic to Application server 2. You may need to manually point the HL7 engine to Application server 2, or set up a VIP.

Step 12: Configure the FHIR Service

> **NOTE:**
> Configuring this service is optional, and depends on whether your PatientSecure environment will integrate with the FHIR service.

To install the FHIR Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure FHIR Service section, select the drive and specify the port, and then click **Install FHIR**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.
5. Click **Advanced Settings**. The Advanced Settings page lists the installed PatientSecure components.
6. Configure the value for PatientSecure FHIR Server to match the following format:

   https://<LoadBalancingServer>:<ConfiguredPort>/api

   For example: https://myLoadBalancer.mydomain.com:7008/api

Step 13: Configure the EMPI Service

> **NOTE:**
> Configuring this service is optional and depends on whether your PatientSecure environment will integrate with an EMPI such as Verato MPI or Initiate.

To install the EMPI Service on the application servers:

1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Services - PatientSecure EMPI Service section, select the drive and specify the port, and then click **Install EMPI**.
3. Enter the Windows administrator credentials for the server, and then click **Confirm**.
4. Repeat this procedure for Application Server 2.

5. Click Advanced Settings at the top of the page. The Advanced Settings page lists the installed PatientSecure components.
6. 2. Configure the value for PatientSecure EMPI Server to match the following format:
7. https://<LoadBalancingServer>:<ConfiguredPort>/api
8. For example: https://myLoadBalancer.mydomain.com:7009/api

Connect Clients to a High Availability Environment

Install the PatientSecure client software on the endpoints that will connect to the High Availability environment.

For clients in high availability environments secured with third-party certificates:

1. On the client endpoints, deploy or install the third-party certificate to the local machine's truststore. For more information on installing certificates, see the Windows documentation for your version of Windows.
2. Install the PatientSecure client software by using either the installation program or by installing by command line.

   For more information, see the topic "Installing the PatientSecure Client" in the PatientSecure online help.

NOTE:
When connecting your PatientSecure Clients to the High Availability environment, use the same FQDN and Port from the PatientSecure Web Services URL defined in the procedure Step 3b: Configure Advanced Settings.

For example: myLoadBalancer.mydomain.com and 7002.

Update Connection Strings

You can update all connection strings for components installed on an application server.

This is especially helpful when migrating a PatientSecure environment from a single application server to a multiple-server High Availability environment.

To update the connections strings to pick up a URL change:

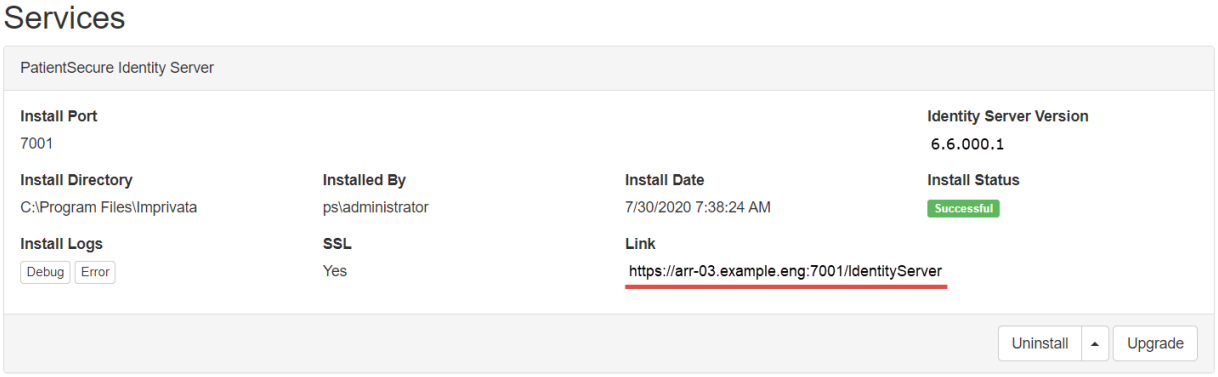
1. From the PatientSecure Server Dashboard, click the server row for Application Server 1 to open its Server Details page.
2. In the Server Info section, click **Update Service Connection Strings**. Enter your Windows credentials for the server.
3. Repeat the steps for Application Server 2.

Troubleshooting

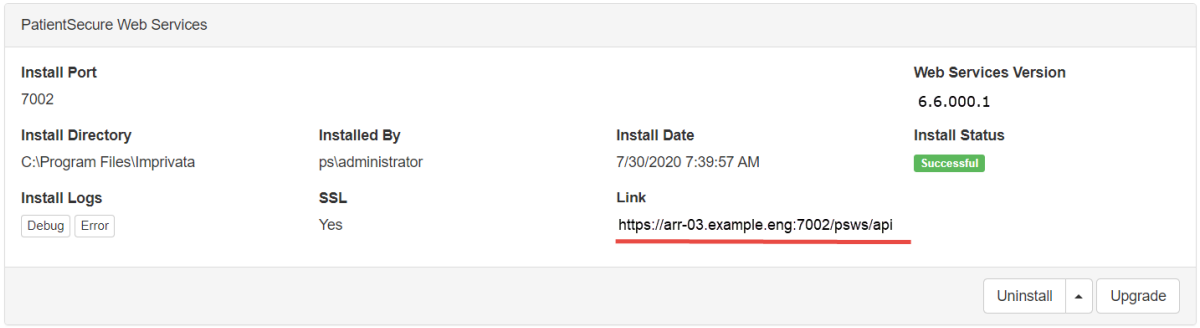
If you are unable to access or use Imprivata PatientSecure in a load-balanced configuration, try the following steps to resolve the problem:

Microsoft IIS

1. For each server, verify that you are able to access the default IIS page. This page can be found by following the PatientSecure Identity Server link from the PatientSecure Server Console:



2. Once the PSIS components have been verified, perform the same action for the PatientSecure Web Services. If PSWS is working correctly, you should receive a blank page with the word: **Success**.



3. If both these services are running, the issue is likely with the Load Balancer configuration. Review your setup and verify that everything is configured correctly.