



**XPP RESTful Web Services:**

# *Installation and Release Notes*

for use with  
XPP RESTful Web Services 1.1  
on XPP 9.4 and later

November 2021

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**XPP RESTful Web Services 1.1**

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# **Installing XPP RESTful Web Services**

This chapter describes the following topics:

- Installing or upgrading XPP RESTful Web Services on Windows
- Installing or upgrading XPP RESTful Web Services on Linux
- Uninstalling XPP RESTful Web Services
- Validating the installation
- Logging and error messages

---

## Installing or Upgrading XPP RESTful Web Services on Windows

This section describes prerequisites to installing or upgrading XPP RESTful Web Services on Windows, and the installation procedure itself.

### Prerequisites for Installing

Before you install XPP RESTful Web Services, verify that the following prerequisites are met:

- XPP 9.4 or later is installed.
- The default XPP graphics library `%XYV_EXECS%\distr\graphics` is available.
- The `%XYV_EXECS%` environment variable is set.

*Tip:* To determine if the environment variable is defined, at the command prompt, type `set XYV_EXECS` and press **Enter**. The system should return the variable with its path. If not, the variable has not been set.

### Results

As a result of the installation, the following XPP files and directories are created on your system:

- XPP RESTful Web Services programs are installed to:  
`%XYV_EXECS%\xpprest`
- XPP RESTful Web Services test scripts are installed to:  
`%XYV_EXECS%\xpprest\t`

### Installing or Upgrading XPP RESTful Web Services

To install XPP RESTful Web Services:

1. Log in to the server as a user with administrative privileges.
2. To mount the installation ISO file, right-click the file and select **Mount**. Windows mounts the ISO file to the next available drive letter. Alternatively, you can use a third-party tool to mount the ISO as a disk.

3. Navigate to the location of the installation program:  
`drive:\Windows\VM`  
(where *drive* is the drive where the installation ISO file was mounted).
4. Click the `install.exe` executable or type **install.exe**.
5. In the *Introduction* panel, click **Next**.
6. In the *License Agreement* panel, click **I accept the terms of the License Agreement**, and then click **Next**.
7. For a new install, a dialog will appear prompting you for the port number. The default port is 2995; optionally, enter a new number to change the port. Click **OK**.
8. In the *Pre-Installation Summary* panel, review your settings. If the settings are correct, click **Install**. The installation program displays a *Post-Installation Status* panel.
9. After the installation is complete, if this XPP server will service Windows clients, the document paths have been configured to use UNC path names. Because XPP RESTful is a service, it needs network read/write access, which the default `Local System` is not sufficient to allow.  
Do the following if the XPP server has been configured with Windows clients:
  - a. In Windows, open **Control Panel > Administrative Tools > Services**.
  - b. Right-click **XPP Rest** and select **Properties**.
  - c. On the Properties dialog Log On tab, select **This account** and enter an account name with sufficient network file access privileges and its password.
  - d. Restart the XPP RESTful service.
10. Validate the installation.  
Refer to page 1-8.

### ***Console or Silent Installation***

XPP RESTful can be installed without a GUI in either console or silent mode.

To install XPP RESTful Web Services in console mode, (which displays installation results), execute the installation program with the `-i console` option.

To install XPP RESTful Web Services in silent mode, execute the installation program using the `-i silent` option.

In console or silent mode, the port number defaults to 2995. If a different port is required, set it at the command line using the `-DWS_PORT=xxxx` option (where `xxxx` is the port number).

*Examples*

.....  
The following command installs XPP RESTful Web Services in console mode using port 2996:

```
install.exe -i console -DWS_PORT=2996
```

The following command installs XPP RESTful Web Services in silent mode using port 2997:

```
install.exe -i silent -DWS_PORT=2997
```



---

## Installing or Upgrading XPP RESTful Web Services on Linux

This section describes prerequisites to installing XPP RESTful Web Services on Red Hat Enterprise Linux, and the installation procedure itself. It also includes procedures for upgrading or uninstalling Web Services.

### Prerequisites for Installing

Before installing XPP RESTful Web Services, verify that the following prerequisites are met:

- XPP 9.4 or later is installed.
- The default XPP graphics library `$XYV_EXECS/distr/graphics` is available.
- The `$XYV_EXECS` environment variable is set.

To do this, at a prompt, type `source /etc/xyvision/xyv.cshrc`

### Results

As a result of this installation, the following XPP files and directories are created on your system:

- XPP RESTful Web Services programs installed to `$XYV_EXECS/xpprest`
- The XPP RESTful Web Services test scripts are installed to `$XYV_EXECS/xpprest/t`

### Installing or Upgrading XPP RESTful Web Services

To install XPP RESTful Web Services:

1. Log on as root.
2. Mount the installation ISO file.
  - a. Type `mkdir /mount-point`  
(where *mount-point* is the name of the directory to where you will mount the ISO).
  - b. Type `mount -t iso9660 -o loop cdrom.iso /mount-point`  
(where *cdrom.iso* is the name of the ISO file and *mount-point* is the directory you created).

3. Enter the full path to the installation program:  
*/mount-point/Linux/VM/install.bin*.  
(where *mount-point* is the directory where the ISO file was mounted).
4. In the *Introduction* panel, click **Next**.
5. In the *License Agreement* panel, click **I accept the terms of the License Agreement**, and then click **Next**.
6. For a new install, a dialog will appear prompting you for the port number. The default port is 2995; optionally, enter a new number to change the port. Click **OK**.
7. In *Pre-Installation Summary* panel, review your settings. If the settings are correct, click **Install**. The installation program displays a post-installation status panel.
8. Click **Done**.
9. Validate the installation.  
Refer to page 1-8.

### *Console or Silent Installation*

XPP RESTful Web Services can be installed without a GUI in either console or silent mode.

To install XPP RESTful Web Services in console mode, (which displays installation results), execute the installation program with the `-i console` option.

To install XPP RESTful Web Services in silent mode, execute the installation program using the `-i silent` option.

In console or silent mode, the port number defaults to 2995. If a different port is required, set it at the command line using the `-DWS_PORT=xxxx` option (where `xxxx` is the port number).

#### *Examples*

.....  
The following command installs XPP RESTful Web Services in console mode using port 2996:

```
install.bin -i console -DWS_PORT=2996
```

The following command installs XPP RESTful Web Services in silent mode using port 2997:

```
install.bin -i silent -DWS_PORT=2997
```

---

## Uninstalling XPP RESTful Web Services

To uninstall XPP RESTful Web Services:

1. Log in as root on Linux or as Administrator on Windows.
2. From a command prompt, execute the uninstall command by entering the full path to the command:

**On Windows:** %XYV\_EXECS%\xpprest\uninstall [-s] [n]  
[-h]

**On Linux:** \$XYV\_EXECS/xpprest/uninstall [-s] [-n] [-h]

where:

- -s suppresses the confirmation prompt and begins uninstalling the XPP RESTful Web Services software
- -n displays what the uninstall program would do, but does not uninstall the software
- -h displays the usage of the uninstall command

*Note: The switches for the uninstall command are optional.*

3. If you executed the uninstall command without the -s switch, XPP prompts to confirm you want to continue uninstalling the software. Type Y to continue. The uninstall program stops the XPP RESTful Web Service and removes its folder and all of its files.

*Note: On Windows, you may see a message stating that the folder is not empty. If this occurs, run the unistall program again.*

---

## Validating the Installation

The following steps let you validate the XPP RESTful Web Services installation or upgrade on Windows or Linux.

To test the XPP RESTful Web Services installation:

In a Web browser, type:

```
http://xppwebserver:####/index.html
```

where *xppwebserver* is the name of the web server and *####* is the port number as configured. You should see an XPP RESTful Web Services Welcome page.

### XPP RESTful Web Services Test Suite

To test the XPP RESTful Web Services installation, a Perl test environment and a JavaScript test environment are provided. You can invoke the Perl and JavaScript test scripts at a command prompt from the `xpprest` directory.

#### *Perl Testing*

To test that the Perl scripts are able to communicate with the XPP RESTful Web Services software:

1. From the command prompt (Windows) or an Xterm window (Linux), change to the `%XYV_EXECS%\xpprest` folder on Windows or the `$XYV_EXECS/xpprest` directory on Linux.
2. Run the Perl test command:

**Windows:** `perl t\00-xpp.pl`

**Linux:** `/etc/xyvision/common/bin/bin/perl t/00-xpp.pl`

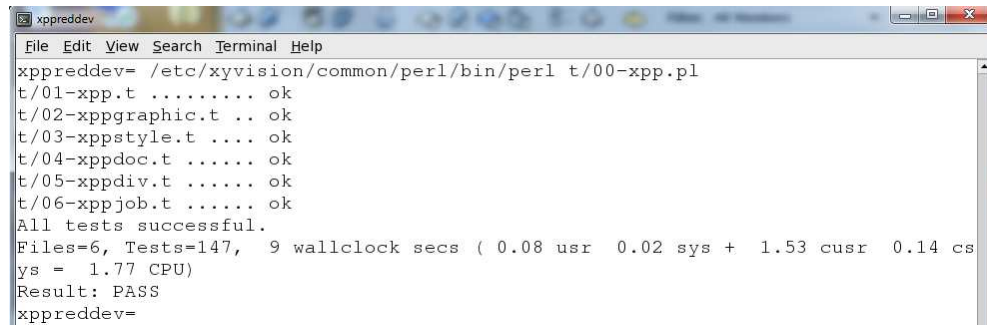
*Note:* If the default protocol (`http`) and/or port (2995) are not used, add the `protocol://host:port` as the second argument to the perl command, such as:

```
perl t/00-xpp.pl https://localhost:8443
```

or

```
perl t/00-xpp.pl http://localhost:3007
```

The following are sample Perl test results:



```
xppreddev= /etc/xyvision/common/perl/bin/perl t/00-xpp.pl
t/01-xpp.t ..... ok
t/02-xppgraphic.t .. ok
t/03-xppstyle.t .... ok
t/04-xppdoc.t ..... ok
t/05-xppdiv.t ..... ok
t/06-xppjob.t ..... ok
All tests successful.
Files=6, Tests=147,  9 wallclock secs ( 0.08 usr  0.02 sys +  1.53 cusr  0.14 cs
ys =  1.77 CPU)
Result: PASS
xppreddev=
```

## JavaScript Testing

To test that the JavaScript scripts are able to communicate with the XPP RESTful Web Services software:

1. From the command prompt (Windows) or an Xterm window (Linux), change to the %XYV\_EXECS%\xpprest folder on Windows or the \$XYV\_EXECS/xpprest directory on Linux.
2. Enter the JavaScript test command: test-rest

*Note:* If the default protocol (http) and/or port (2995) are not used, add the `--host protocol://host:port` as an argument to the test-rest command, such as:

```
test-rest --host https://localhost:8443
```

or

```
test-rest --host http://localhost:3007.
```

The following are sample JavaScript test results:



```
XPP Restful Web Service
'xpp' test
  ✓ Get version
  ✓ Get XPP version
  ✓ Environment
  ✓ User Name
  ✓ License <67ms>
  ✓ Modules
  ✓ Unknown method
'xppgraphic' test
  ✓ Libraries
  ✓ List <45ms>
  ✓ Put Image
  ✓ File Size
  ✓ Last modified
  ✓ Info
  ✓ Get Image
  ✓ Copy Image
  ✓ Get JPEG
  ✓ Delete Image
'xppstyle' test
  ✓ Libraries
'xppdoc' test
  ✓ List
  ✓ DocPath
  ✓ Exists

21 passing <280ms>
```

### *Validating the Online Documentation*

To verify that the online documentation has been successfully loaded:

1. In a web browser, type `http://xppwebserver:####/index.html` where *xppwebserver* is the name of the web server and `####` is the port number.
2. Press **Enter**. The XPP RESTful Web Services home page appears.
3. Click the **Documentation** link. The online documentation should appear.

*Note: The XPP RESTful Web Services online documentation refers to the "XPP Command Line Utilities Manual," which is not delivered with XPP RESTful Web Services. To link the references to the online documentation to that manual, copy the `cmdutils.pdf` file from the XPP Documentation to the following directory:*

- **Windows:** `%XYV_EXECS%\xpprest\xpp\documentation`
- **Linux:** `$XYV_EXECS/xpprest/xpp/documentation`

---

## Logging and Error Messages

The XPP RESTful server is installed as a service on Windows and Linux. As a background “server” process, it supports implied functionality, including:

- Automatically starting when the system is booted
- Integrated OS logging by which the service outputs the start-up status messages to a known location
- Ability to manually stop and start the service
- Error logging

### XPP RESTful Server as a Service

Running the XPP RESTful server as a service is controlled differently on Windows and Linux.

#### *Windows*

On Windows, the XPP RESTful service is accessible through **Control Panel/Administrator Tools/Services** so that it can be managed like any other Windows service. Its display name is **XPP Rest** and its actual service name is **xpprest.exe**.

Start and stop messages from the XPP RESTful service are available through the Windows **Event Viewer** under the **Application** section.

Status and error messages are written to log files named `xpprest.out.log` and `xpprest.err.log`, respectively, which are located in the `XYV_EXECS/xpprest/daemon` folder.

#### *Linux*

On Linux, the XPP RESTful service is accessible through the Linux `init.d` facility. The service is managed by a start/stop script, the syntax of which is:

```
/etc/init.d/xpprest [start | stop | restart]
```

Start and stop messages are written to a log file named `xpprest.log`, which is located in the Linux `/var/log` directory.

Status and error messages are written to log files named `xpprest.log` and `xpprest-error.log`, respectively, which are also located in the `/var/log` directory.

## XPP RESTful Socket Timeout

The XPP RESTful server has a timeout option to set the server socket timeout. If a process takes longer than the timeout, the connection will close and the user will receive a timeout error code. The default timeout for any URL function is six hours.

A single XPP web service API call should not take more than six hours. However, if the timeout value needs to be changed, a `--timeout value` option (where *value* is the number of seconds) can be added to the configuration file in a manner similar to changing the port number. See Chapter 2: "Post-installation Configuration" for information on how to add or change option arguments when starting the XPP RESTful service.

*Note: When calling the XPP RESTful API through a client, the client-side connection may have its own timeout. This must be changed at the client connection level.*



# Post-installation Configuration

This chapter describes the following optional post-installation configuration:

- Changing the port number
- Using the Secure Socket Layer (SSL) protocol
- Configuring user access
- Cross-origin Resource Sharing (CORS)

---

## Changing the Port Number (Optional)

If you need to change the port number of the XPP RESTful server, a service configuration file can be modified post-installation.

An environment variable, `XYV_REST_IARGS`, is used to pass configuration options to the run-time server. The `-port xxxx` option is used to specify the port. The process for changing the port and restarting the service is dependent on the operating system.

### Changing the Port on Windows

To change the port number on a Windows system:

1. Stop the XPP RESTful service using the **Services Control Panel**.
2. Edit the `xpprest/daemon/xpprest.xml` file:
  - a. Find the line:

```
<env name="XYV_REST_IARGS" value="--port 2995"/>
```
  - b. Change the port to the appropriate number, as in:

```
env name="XYV_REST_IARGS" value="--port 3007"/>
```
3. Start the service using the **Services Control Panel**.

### Changing the Port on Linux

To change the port number on a Linux system:

1. Stop the XPP RESTful service using `/etc/init.d/xpprest stop`
2. Edit the `/etc/init.d/xpprest` file:
  - a. Look for the line containing:

```
--env XYV_REST_IARGS="--port 2995"
```
  - b. Change the port to the desired number; as in:

```
--env XYV_REST_IARGS="--port 3007" ...
```
3. Start the service using `"/etc/init.d/xpprest start"`

## Using the Secure Socket Layer (SSL) Protocol (Optional)

The XPP RESTful Web Services server does not require SSL. Since it is a low-level API, it is designed to sit on top of an XPP server and it is assumed that any application that requires XPP RESTful Web Services will provide its own functionality within its web server. However, due to security concerns, you may want all server socket traffic to be encrypted with SSL. To meet this requirement, the XPP RESTful Web Services server can be configured to run with SSL.

SSL setup consists of providing a certificate and private key files in the "pem" format. When installing the service, a `--cert filename` option must be configured on the XPP RESTful Web Services server. This option looks for the two 'pem' files in the `xpprest/ssl/` directory as `name.pem` (certificate) and `name-key.pem` (private key).

Because this process is outside the standard installation and delivery, the installation program does not handle SSL natively; instead, SSL setup is an optional post-installation process. The following sections describe this process for Windows and Linux systems.

### Setting Up SSL on Windows

To configure XPP RESTful Web Services to use SSL on a Windows system:

1. Ensure the two 'pem' files are placed in the `%XYV_EXECS%\xpprest\ssl` folder as `name.pem` and `name-key.pem` (where `name` is the base name of the file(s) that contain the security keys).
2. Stop the XPPrest service using the **Services Control Panel**.
3. Edit the `xpprest\daemon\xpprest.xml` file:
  - a. Find the line:
 

```
<env name="XYV_REST_IARGS" value="--port 2995"/>
```
  - b. Add to the value attribute `--cert name` (where `name` is the base name of the certificate 'pem' files), as in:
 

```
<env name="XYV_REST_IARGS" value="--port 2995 --cert name"/>
```
4. Start the service using the **Services Control Panel**.

## Setting Up SSL on Linux

To configure XPP RESTful Web Services to use SSL on a Linux system:

1. Ensure the two 'pem' files are placed in the `$XYV_EXECS/xpprest/ssl` folder as `name.pem` and `name-key.pem` (where `name` is the base name of the file(s) that contain the security keys).
2. Stop the XPP RESTful service using `/etc/init.d/xpprest stop`
3. Edit the `/etc/init.d/xpprest` file:
  - a. Look for the line containing:

```
... --env XYV_REST_IARGS="--port 2995\"
```
  - b. Add to the environment variable definition `--cert name` (where `name` is the base name of the certificate 'pem' files), as in:

```
... --env XYV_REST_IARGS="--port 2995 --cert name\" ...
```
4. Start the service using `/etc/init.d/xpprest start`

## Testing the XPP RESTful Service with SSL

For detailed instructions on testing the XPP RESTful service on the https protocol, refer to *Validating the Install* on page 1-8.

Because this protocol is not the default, you must add the argument, `protocol://host:port` to the Perl and JavaScript test commands, as in the following examples:

### Perl:

```
perl t/00-xpp.pl https://host:port
```

or

```
/etc/xyvision/common/perl/bin/perl t\00-xpp.pl https://host:port
```

### JavaScript:

```
test-rest --host https://host:port
```

## Configuring User Access (Optional)

The XPP RESTful Web Services server is installed on the same system as the XPP server. Since the API is an application programming interface, it is assumed that any client application using the API will provide its own security on the front end of its application if required. For example, a web application would require its own login procedure prior to connecting to the XPP RESTful server.

By default, the XPP RESTful server requires registering a user prior to using the API. In this way, a log file captures the active users, and individual API functions are not available unless the user has registered with the XPP RESTful service. While not secure (since it doesn't require name/password validation), it at least allows you to track who is using the service and control random access to the individual API calls.

Access to the API is available through a registration endpoint, `http://host:port/xpp/register` and the caller must provide a JSON object in the HTTP body of the form `{ name: "User Name", email: "name@xxxx.com" }`.

Failure to provide the name and email properties will return a "BadRequest" error. The HTTP response will be a JSON object in the HTTP body containing a token as a long unique string of the form `{ token: "JFLajfakFA:LLAK:LD....." }`. After retrieving the token, the user must set the HTTP "Authorization" header on every subsequent API call as:  
`Authorization: Bearer JFLajfakFA:LLAK:LD.....`

Failure to set the header to a proper value will result in a "401 Unauthorized" HTTP status return code with a JSON object returned as:  
`{"code":"InvalidCredentials","message":"No authorization token was found"}`.

The `/index.html`, `/xpp/documentation/*`, `/xpp/ping`, and `/xpp/register` endpoints do not need a registration token for access.

It is possible to completely disable the registration process. Doing so will allow access to all API calls without requiring an Authorization header. To do so, refer to *Changing the Port Number (Optional)* on page 2-2 for sample instructions for adding an option and add `a--noregister` option. Restarting the service will disable registration and the `/xpp/register` setup will not have to be invoked.

---

## Cross-origin Resource Sharing (CORS)

Cross-origin Resource Sharing (CORS) is an HTTP-header-based mechanism that allows a server to indicate any origins (such as a domain, scheme, or port) other than its own from which a browser should permit loading of resources.

CORS relies on a mechanism by which a browser makes a “preflight” request to the server hosting the cross-origin resource to check that the server will permit the actual request. In the preflight request, the browser sends headers specifying the HTTP method and headers that will be used in the actual request.

XPP RESTful Web Services is automatically configured to allow CORS cross-site references. You can prevent any web page from accessing the XPP RESTful API or specify a list of known servers to be permitted access to the API. To do so, add an `-access value` option to the XPP RESTful service configuration file and set *value* as follows:

- To disable all CORS access, set *value* to `NONE`
- To specify a list of servers to be granted access, set *value* to the name of a file in the `xpprest` folder containing the server names, one per line.

Refer to “Changing the Port Number (Optional)” on page 2-2 for sample instructions for adding an option.

# XPP RESTful Web Services 1.1 Release Notes

The online documentation for XPP RESTful Web Services is organized by type (Document, Style, and Graphics), and contains a description of the functionality and URL address.

You can locate the XPP RESTful Web Services online documentation using the following URL:

```
http://host:port/xpp/documentation/index.html
```

where *host* is the name of the host machine for the XPP RESTful API server, and *port* is the port number you established when you installed XPP RESTful Web Services.

This chapter contains the following information:

- What's New in XPP RESTful Web Services Version 1.1

---

## What's New in XPP RESTful Web Services

Version 1.1 of XPP RESTful Web Services includes the following enhancements:

- Updated `node.js` to version 14.7.5 for enhanced security
- Added Cross-origin Resource Sharing (CORS) support for all servers with an option to disable sharing from all external servers or limit access to a specified list of servers.

### Additional Changes

The following additional changes are included in this release:

#### *CRQ-24729: Correct XPP RESTful API User command documentation*

The online XPP RESTful API documentation for the User command now reflects the correct command location: `xz/xpprest/user` and an example (`command=testws.pl`) was added to the parameter description.

#### *XPP-5981: Fix documentation links in XPP RESTful API doc*

Broken links to some XPP manuals were repaired in the online XPP RESTful API documentation.





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