

Process Director Documentation

Installation Guide



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Documentation Formatting Note

Text and Code Formatting Conventions

To highlight terms and concepts that have special relevance, this documentation implements several formatting conventions to make key words and terms more noticeable.

- **Control Label:** This format will identify the text labels or properties for Process Director objects, or the names of dialog boxes.
Example: The **Name** text box.
- **UI Element:** This format will identify user interface elements such as buttons, tabs, or other UI objects used to perform interface operations.
Example: The **Submit** button.
- **Formal Control Name:** This format will identify named Process Director controls.
Example: A **Section End** control.
- **Process Director Object:** This format will identify named instances of Process Director Folders, Forms, Process Timelines, Knowledge Views, etc.
Example: The **Travel Expense Approval Process Timeline**.
- **Key Terms:** This format will identify key terms and concepts introduced into the text of the document, and which are important to learn.
Example: A **Case** is group of processes, transactions, or responses that define a complex activity.
- **Code:** This format will identify code samples, system variables, formulas, or other fixed programmatic syntax.
Example: Type the following formula: **AirFare + Lodging**.
- **Code Option:** A section of a code sample to denote placeholder values that must be replaced by the user manually at design time.
Example: {CURR_USER, format=**FormatType**}
- **Code Comment:** A section of a code sample that is used for text comments, rather than runnable code.
Example: **// This is a comment.**
- **Code Variable:** A programming object whose value is usually determined from a command written in code.
Example: var **formControls** = BaseCurrentForm.FormControls;

In addition to the above, extended samples of program code are presented in a special format to set them off from the rest of the text, as demonstrated below:

```
// Called after database initialized
public override void SetSystemVars(BPLogix.WorkflowDirector.SDK.bp bp)
{
    // Before we make SDK calls that access the database,
    // ensure DB has been opened
    if (bp.DBOpenComplete)
    {
        // Place custom code here
    }
}
```

Important text or warnings are presented in a special callout box for special attention:

 This is an Important item.

Notes of general interest are also presented in special callout boxes:

 This is a note.

Hopefully, the use of these formatting conventions will make it easier for you to determine the various types of objects to which the text refers.

Icons

Some universal icons are used in the documentation. They are listed below:

ICON	NAME	DESCRIPTION
#	Link	A hyperlink to the specific URL and named anchor of a topic, heading, or other item.
+	Dropdown Closed	An icon that, when clicked, will expand dropdown text in a topic.
-	Dropdown Open	An icon that, when clicked, will close the expanded dropdown text in a topic.

Finally, some topic headers within each online document may display a link symbol (#) when you mouse over the header. Clicking the link will navigate to that specific section of the document, which can then be bookmarked in your browser.

Other Conventions

URLs displayed in sample will, unless used for commands or URLs used on the local host machine, use the "HTTPS" prefix by default, as modern practice has evolved to use the encryption layer to access URLs, instead of the plain-text method (HTTP) of accessing URLs.

Installation Overview

This Installation Guide is intended for the administrator or IT user that will perform the initial installation and configuration of the server. It is assumed the reader is familiar with Windows OS, IIS, and the database that Process Director will use.

Server System Requirements

Hosting Process Director in the BP Logix Secure Cloud imposes no special system requirements for your desktop or mobile device. All recent-release modern browsers are supported. No downloads or plug-ins are required.

If you plan to host Process Director in your data center, please note these requirements for your application server:


- Microsoft Windows 2012, 2016 Server (all service packs are supported, 32- and 64-bit), or higher.
- Microsoft SQL Server 2012 or higher, Oracle 11g or higher
- .NET Framework 4.5
- Dual-core 2 Ghz (or higher) CPU, minimum 16 GB memory, minimum of 64GB storage (SSD recommended)
- Low-latency, wide bandwidth connection to your database server
- For Process Director v5.44.600 and higher, the most recent Microsoft **Rewrite** and **Advanced Request Routing** IIS modules must be installed. These modules can be downloaded and quickly installed by obtaining the [URL Rewrite package \(Link\)](#) and installing it first, then installing the [ARR v3.0 download package \(Link\)](#).

Installation Process


Installing Process Director requires completing a series of tasks, both to configure the server on which the product will be installed, and for installing the product itself. Even if you are an experienced server administrator, you should familiarize yourself with the unique requirements of Process Director before proceeding with the installation.

BP Logix Recommends that you perform the installation in the following order. Each of the links below will open the relevant section of the Installation documentation in a new browser window.

1. Familiarize yourself with the [Process Director installation environment](#).
2. [Install the product](#) on the target server.
3. [Create the database](#) that will be used to store Process Director data.
4. [Configure the Process Director IT Settings](#) to connect to the database.
5. [Configure the Installation Settings](#) for the general Process Director Properties.
6. Review [the Installation Completion section](#) for other actions you might need to complete, such as syncing Active Directory or setting up Windows Authentication.

 **Some users will be licensed to install multiple instances of Process Director on the same server. For these users, the process described in the [Multi-Instance Installations](#) sections is a required prerequisite.**

Installation Environment

 **Please review the [Installation Process](#) section of the documentation to see an overview of the steps required to properly install Process Director.**

Process Director can be installed on a standalone Windows host, or an existing host that is running other applications. The best practice for initial implementations is to install Process Director on a standalone host and use all of the installation program defaults. Many advanced configuration options exist (different port numbers, multiple IP addresses, address translation, etc.) but are only needed in special installation environments.

Please note that your server hardware should be compatible with your purchased license.

Hardware Recommendations

Many factors affect hardware requirements, such as the number of users, the number of objects in the repository (documents, Forms etc.), the number of running processes, frequency of searches, how often data is modified, etc. You can install the database server on the same host but separating the database server from Process Director will provide better performance.

Disk space usage increases as objects (documents, Forms, folders) are added to the repository. Databases are efficient with disk space, but we still recommend that you provide ample space for the database to grow over time. Documents generally take up most of the storage, so calculate the number of documents the system will hold and the average number of times they'll be updated. If you are storing a lot of documents, or very large documents, consider changing the [installation settings](#) to [store the documents on the file system](#) instead of in the database.

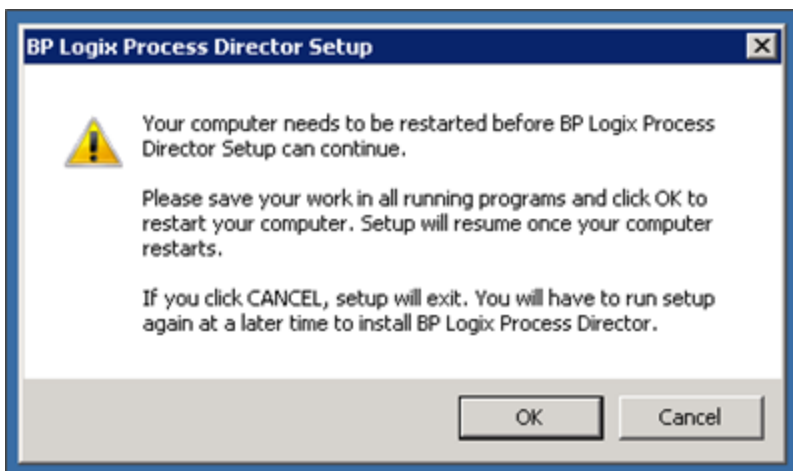
For the Process Director web server we recommend a minimum of 8GB of memory. Your database server should have much more memory and should be running with SSD drives.

Windows FIPS Mode

Starting with v5.44.700, Process Director will not function in environments where [FIPS mode is enabled in Windows](#). If Process Director is installed on a Windows server that has been configured to run in FIPS mode, typically for US Government environments, BP Logix recommends that you **do not** update beyond Process Director v5.44.602 at this time. We are currently working to provide a solution and will provide updated guidance when available.

Installation Warning

Occasionally, the installation process will display a dialog box with an error message, informing you that a restart will be required to continue the installation.



This warning is presented when the installation process detects a file in use that Process Director needs to access in order to install properly. If you click the

"Cancel" button and re-run the installation, there is a slight chance that Process Director files will be removed when the server eventually reboots (e.g. resource.resx). This behavior results from a command that stays active after the Cancel command is given, and which instructs the installation to clean up files. To recover from this error, simply re-run the install program and it will patch up the installation.

To avoid the possibility of this error, Click the OK button, rather than canceling the running installation process.

Process Director Installation Process

 Please review the Installation Process section of the documentation to see an overview of the steps required to properly install Process Director.

Ensure the latest Windows Updates are installed, and your server is up-to-date on all Important updates.

- Process Director v3.25 and below require v2.0 to v3.5 of the .NET Framework.
- Process Director versions v3.41 to 4.54 require that the Microsoft .NET Framework v4.5 be installed.
- Process Director v4.57 and higher require that the Microsoft.NET Framework v4.6 be installed.

For the purposes of this documentation, we will assume that you are installing the current version of Process Director, but the process for installing ASP.NET 3.5 is very similar.

For Windows 2008 R2 (SP1) and Windows 2008 (SP2) assuming you have updated your system regularly through the update service, you should have the .NET Framework v4.5 or higher already installed. If not, please accept all of the operating system updated from Microsoft and accept them, so that your Windows 2008 server has the appropriate service pack and .Net Framework installed.

Alternatively, v4.5.2 of the .NET Framework can be obtained directly from Microsoft's web site. An offline installer for .NET v4.5.2 can be obtained from:

<http://www.microsoft.com/en-us/download/details.aspx?id=42642>

A web installer for .NET v4.5.2 can be obtained from:

<http://www.microsoft.com/en-us/download/details.aspx?id=42643>

Both of these installers work for users of Windows Vista SP2, Windows 7 SP1, Windows 8, Windows 8.1, Windows Server 2008 SP2, Windows Server 2008 R2 SP1, Windows Server 2012 and Windows Server 2012 R2.

For users of Oracle databases, upgrading to v3.24 of Process Director also requires updating the Oracle drivers for .NET v4.5. Most likely Oracle users will need to install the .NET 4 Oracle ODP/ODAC drivers (e.g. ODAC121021_x64). The Microsoft Oracle drivers don't contain the correct functionality, so be sure to use the Oracle drivers, e.g., ODP.NET, and not the Microsoft drivers. Oracle users will see this error in Process Director if the Oracle drivers are for the wrong .NET version:

Oracle 10/11

```
Connect Failed: Database Error: Open, Data: DbProviderFactories.GetFactory: Exception: System.ArgumentException: Unable to find the requested .Net Framework Data Provider. It may not be installed., Data: Oracle.DataAccess.Client
```

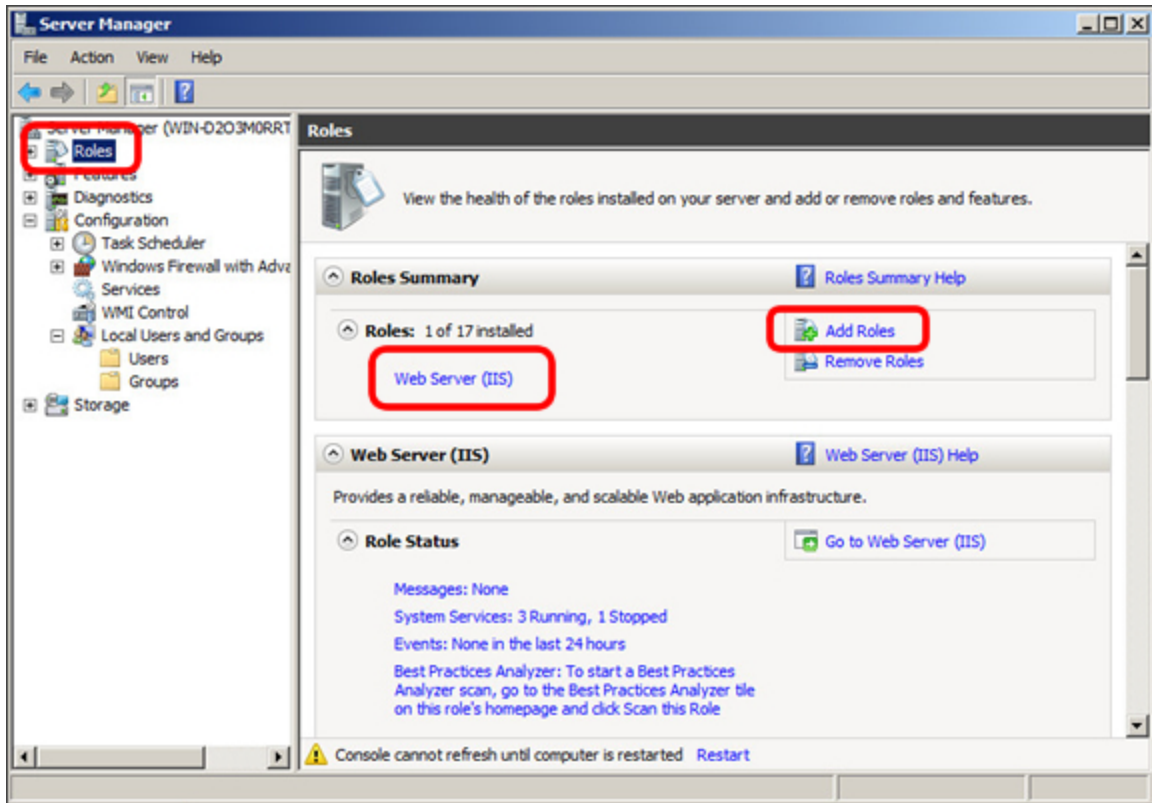
Oracle 12

```
Connect Failed: Database Error: Open, Data: DbProviderFactories.GetFactory: Exception: System.ArgumentException: Unable to find the requested .Net Framework Data Provider. It may not be installed., Data: System.Data.OracleClient
```

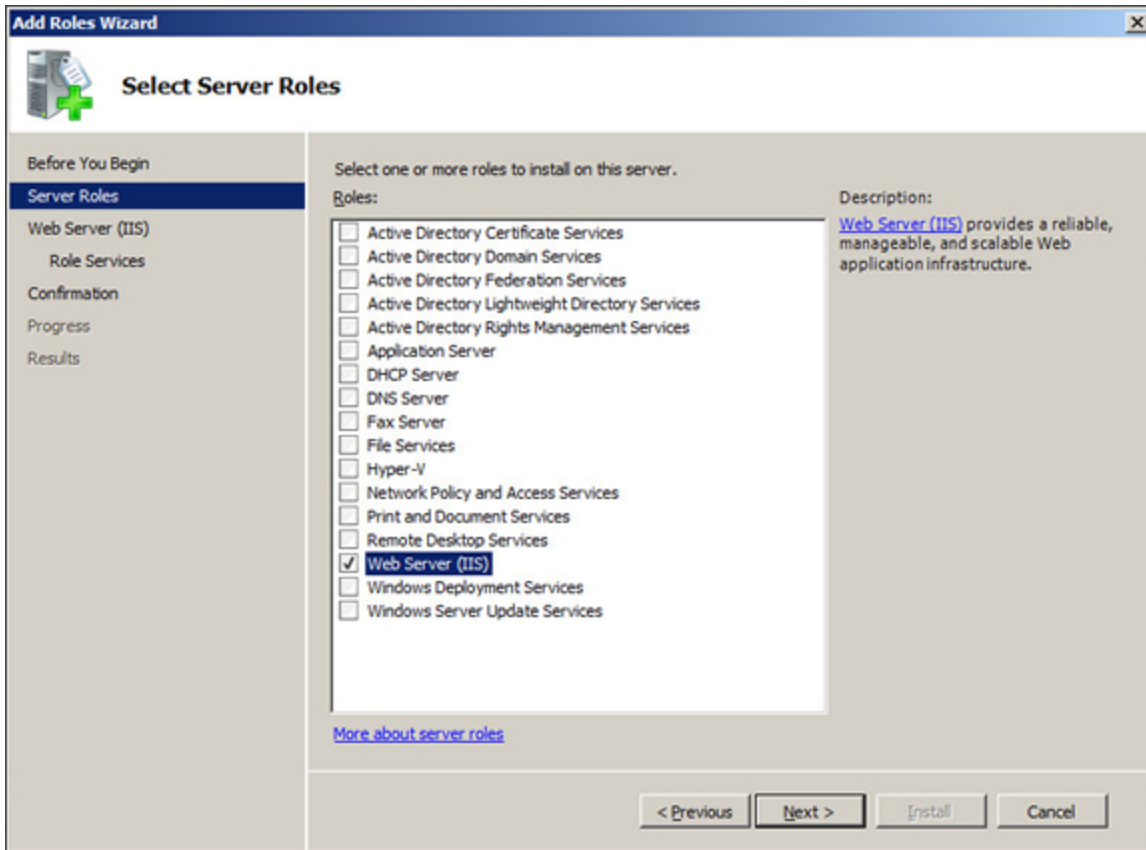
Installing Internet Information Server (IIS) #

Windows 2008 Server

The first step of the installation is to be sure that Internet Information Services (IIS) and ASP.NET v4.5 is installed for Process Director versions numbered higher than v3.2, and ASP.NET v3.5 is installed for versions numbered v3.2 or lower. To install these items, you'll need to open the Server Manager.



In the Server Manager, click on the "Roles" item located at the top of the treewiew on the left-hand side of the screen. The right side of the screen will display the server roles. If you don't see "Web Server (IIS)" as one of the roles, begin the installation by clicking the "Add Roles" link to open the Add Roles Wizard.

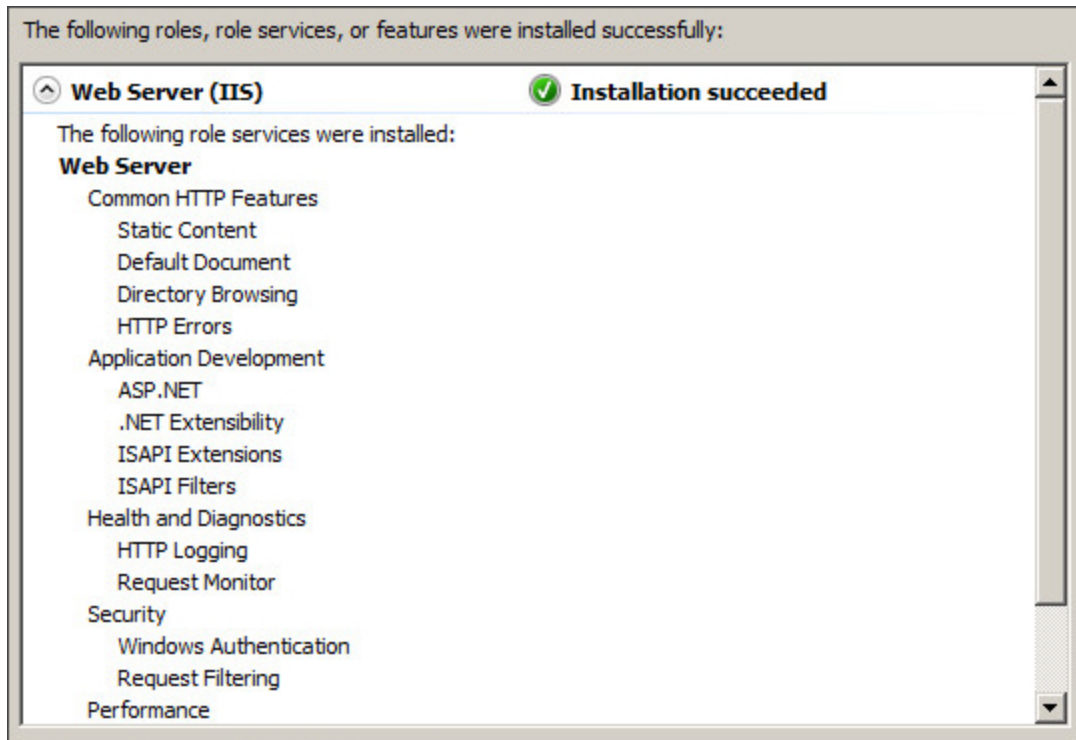


Click the Selection labeled "Web Server (IIS)" from the list box that appears in the first pane of the wizard, which will open a separate dialog box informing you of additional roles that will need to be installed along with IIS.



Click the Add Required Role Services button, to close the dialog box and return to the wizard. Once you are back at the Wizard, click the wizard's Next button.

In the next pane of the wizard, which is the "Select Role Services" pane, you'll be presented with a list of additional role services to install as part of IIS. From this list, you should select "ASP.NET" and "Windows Authentication". Once you have selected these two items, click the Next button. The Wizard should then display a confirmation pane, from which you can click the Install button to begin the installation. Once the installation is complete, you should see a confirmation of a successful IIS installation.



Windows 2012 Server and Higher

! Process Director supports all Windows Server operating systems higher than Windows 2008 Server, including Windows Server 2016/2018/2022 etc.

The first step of the installation is to be sure that Internet Information Services (IIS) and ASP.NET v4.5 is installed. To install these items, you'll need to open the Server Manager.

1 Configure this local server

- 2 [Add roles and features](#)
- 3 Add other servers to manage
- 4 Create a server group

Hide

In the Server Manager, click on the "Add Roles and Features" link located in the center of the screen to open the Add Roles and Features Wizard.

Add Roles and Features Wizard

DESTINATION SERVER
WIN-9P208ALA20J

Before you begin

This wizard helps you install roles, role services, or features. You determine which roles, role services, or features to install based on the computing needs of your organization, such as sharing documents, or hosting a website.

To remove roles, role services, or features:
Start the Remove Roles and Features Wizard

Before you continue, verify that the following tasks have been completed:

- The Administrator account has a strong password
- Network settings, such as static IP addresses, are configured
- The most current security updates from Windows Update are installed

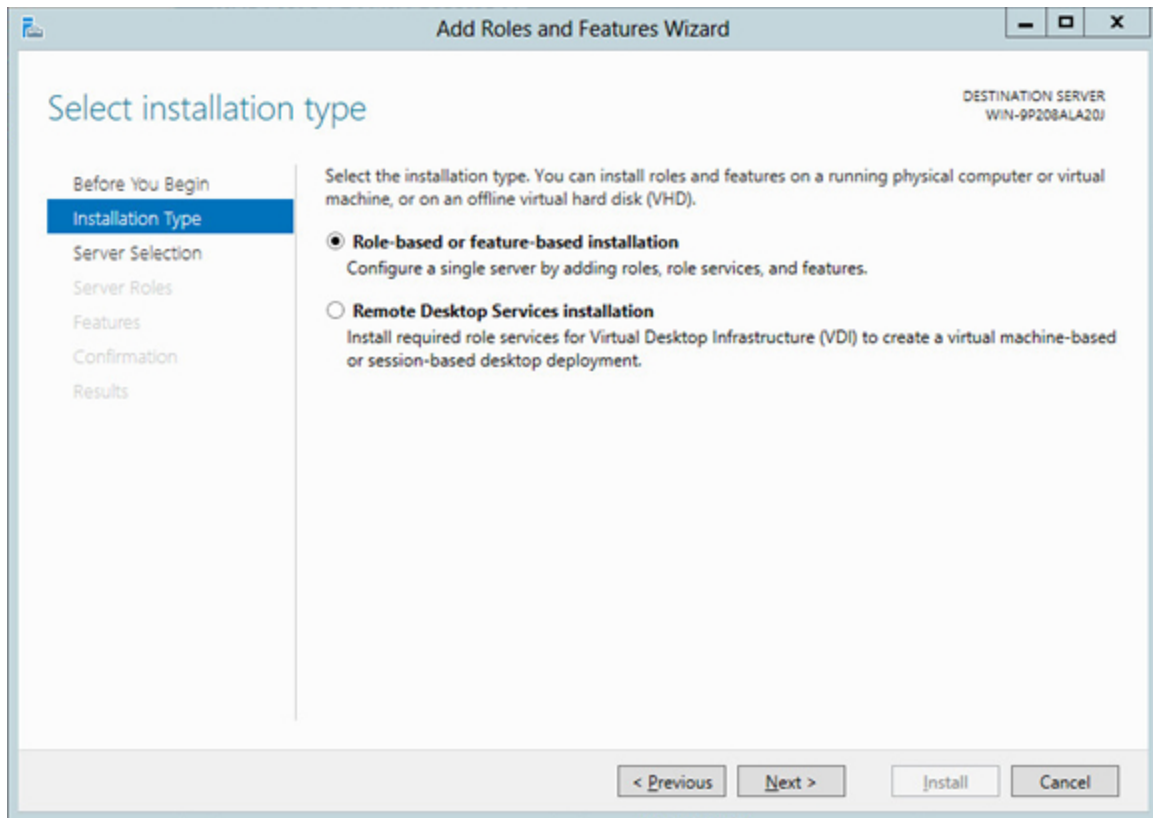
If you must verify that any of the preceding prerequisites have been completed, close the wizard, complete the steps, and then run the wizard again.

To continue, click Next.

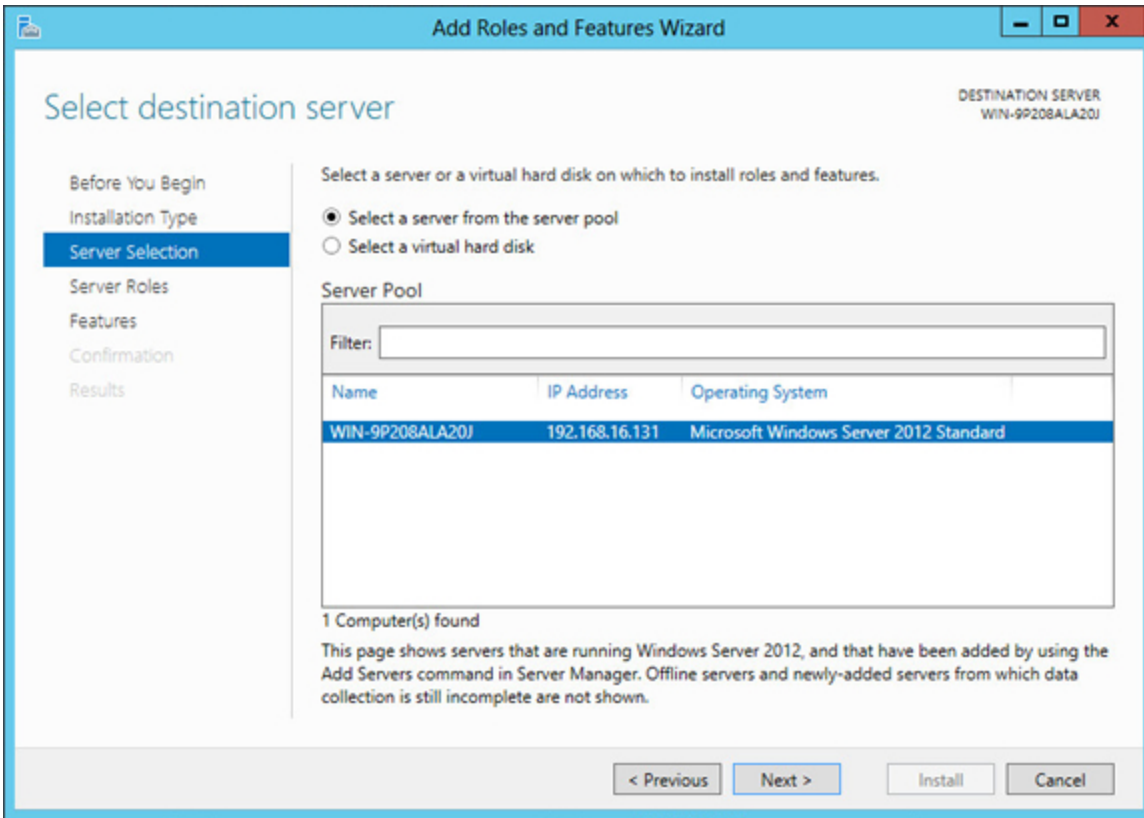
Skip this page by default

< Previous **Next >** Install Cancel

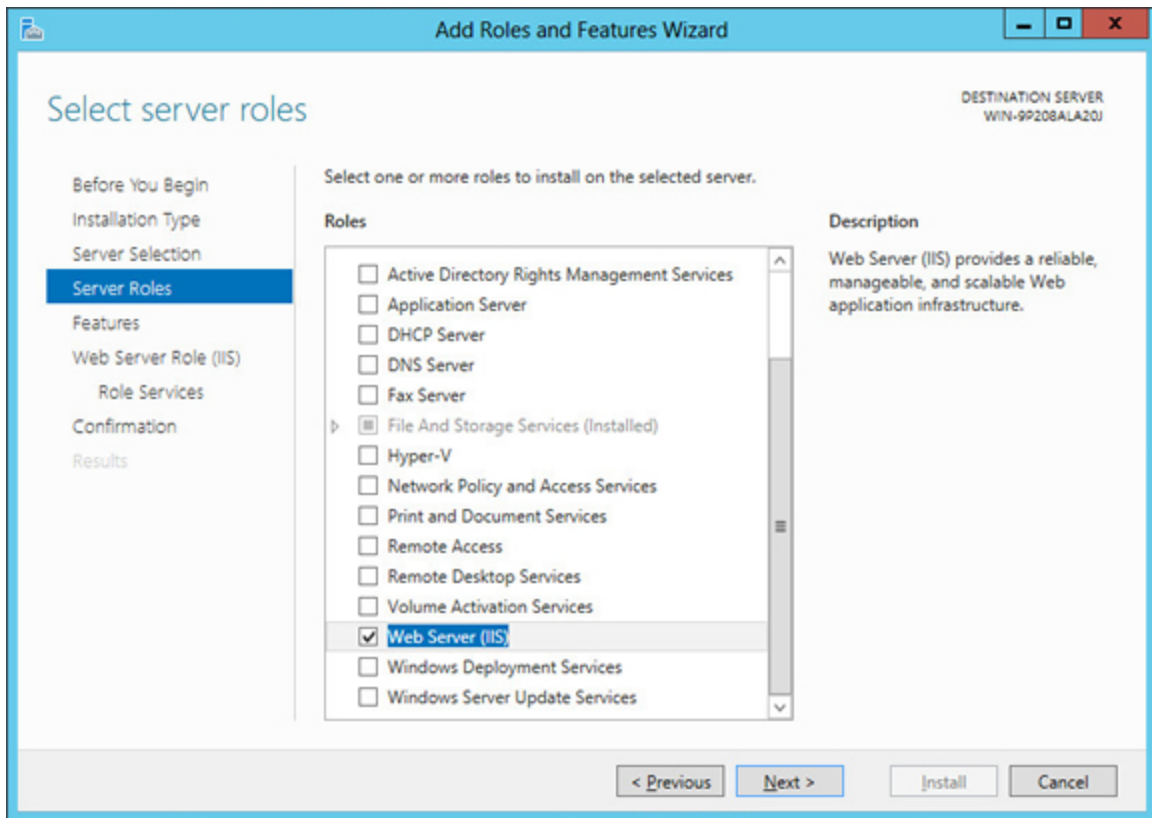
Click the Next button to start the wizard.



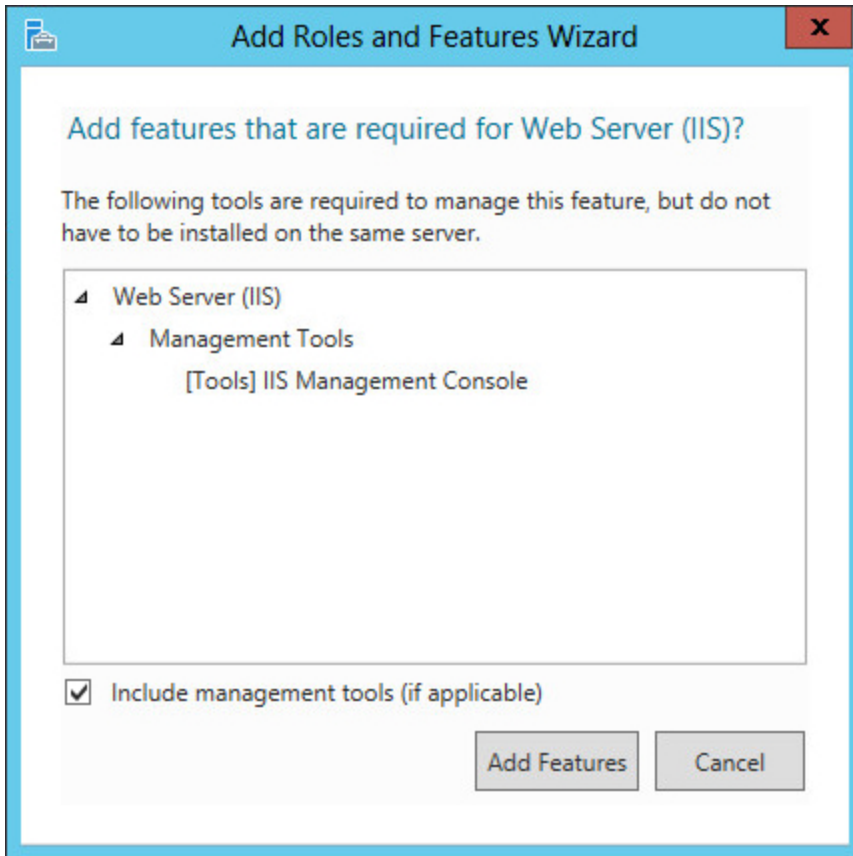
Select the "Role-based or feature-based installation" radio button, then click the Next button.



Select the appropriate server from the server pool, then click the Next button.

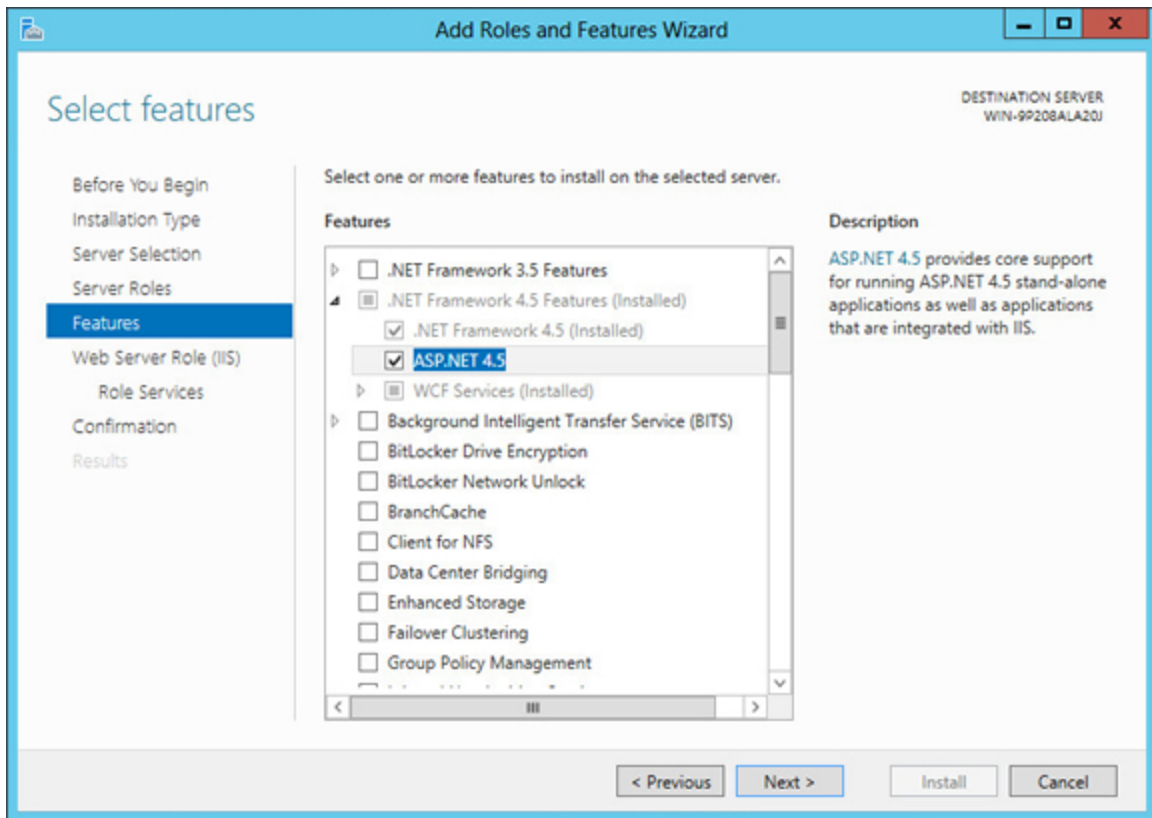


Click the Selection labeled "Web Server (IIS)" from the list box that appears in the first pane of the wizard, which will open a separate dialog box informing you of additional roles that will need to be installed along with IIS.

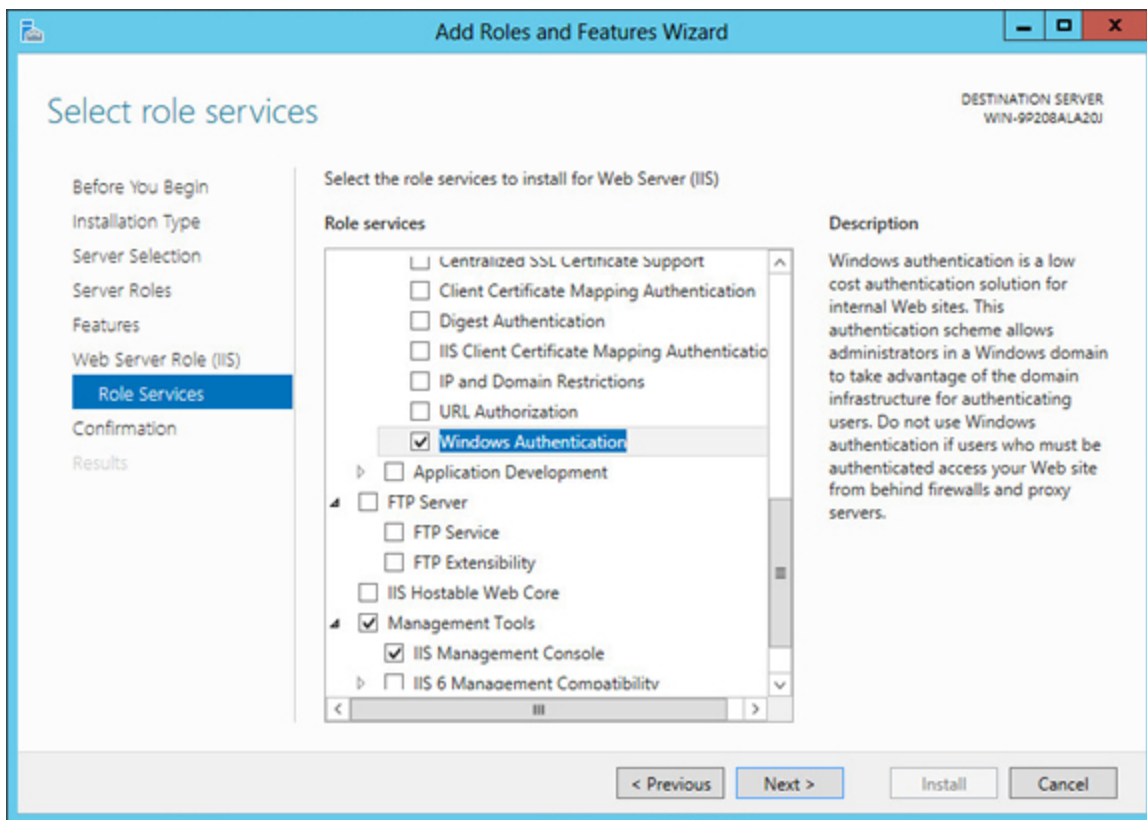


Click the Add Features button, to close the dialog box and return to the wizard. Once you are back at the Wizard, click the wizard's Next button.

In the next pane of the wizard, which is the "Select Role Services" pane, First select "Features" from the list of roles and features on the left side of the wizard, which will display a list of services in the center of the Wizard. From this list, you should first select "ASP.NET 4.5".



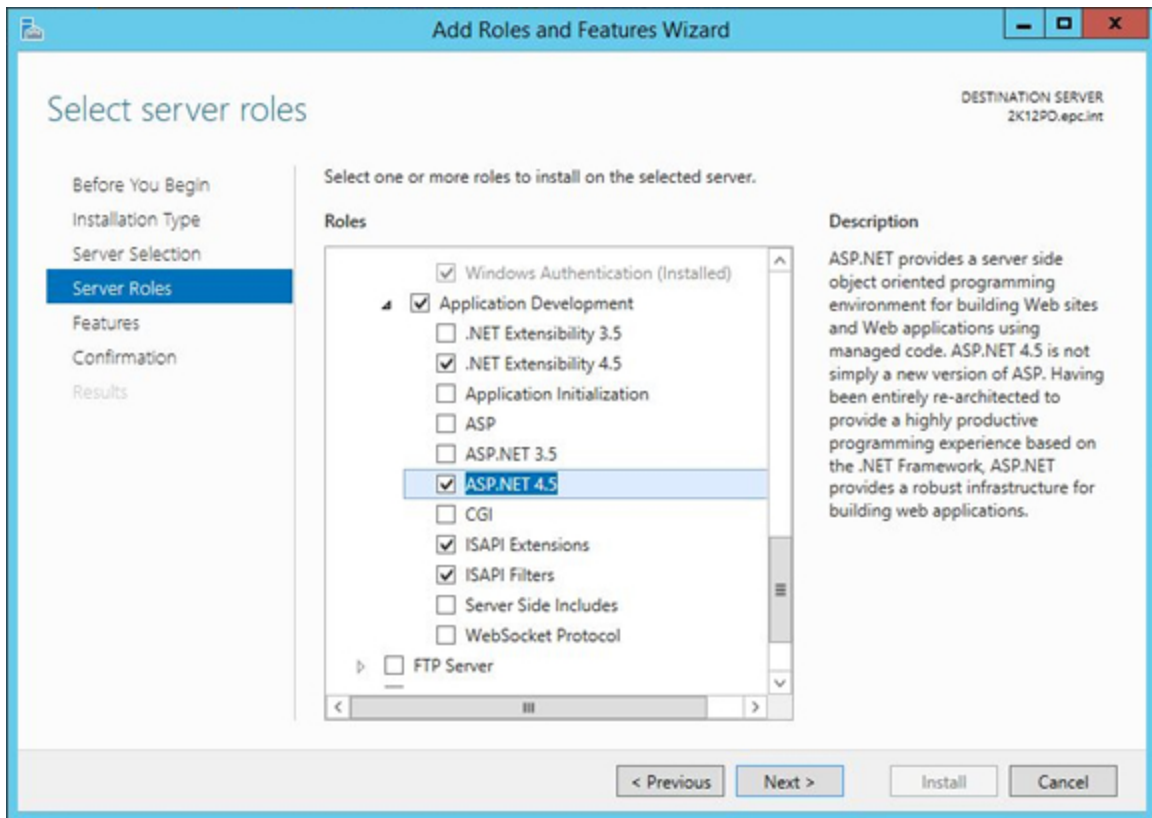
Next, select the "Role Services" item from the left side of the wizard, then select the "Windows Authentication" item from the list of role services.



Once you have selected these two items, click the Next button. The Wizard should then display a confirmation pane, from which you can click the Install button to begin the installation. Once the installation is complete, you can click the Close button to close the wizard.

It is quite possible that the proper ISAPI handlers were not installed when you complete the process above, and an HTTP 500 Error will display in the web site. Ensure that the proper ISAPI handlers are installed by re-opening the Add Roles and Features Wizard.

In the Server Roles pane of the Wizard, ensure that the Application Development section of the list box has ASP.NET 4.5 checked, or, for Process Director v4.57 and higher, ASP.NET 4.6 checked. If the item is unchecked, check it. This should add checks to the check boxes for the additional dependencies.



If not, ensure the following items are also checked:

- .Net Extensibility 4.5/4.7
- ISAPI Extensions
- ISAPI Filters

Complete the wizard and save the settings again. The full suite of ASP.NET 4.5/4.6 functionality should now be configured properly for IIS.

Installing Process Director

To install Process Director on Windows Server 2008/2012, exit all applications and follow these steps:

1. Download the Process Director installation program from the BP Logix web site and save it to your hard drive. The download can be obtained from the [BP Logix Support site](#).
2. Run the install program that you downloaded.
3. Follow the instructions on the screen and complete the installation program. This will install the product in the location you specify.

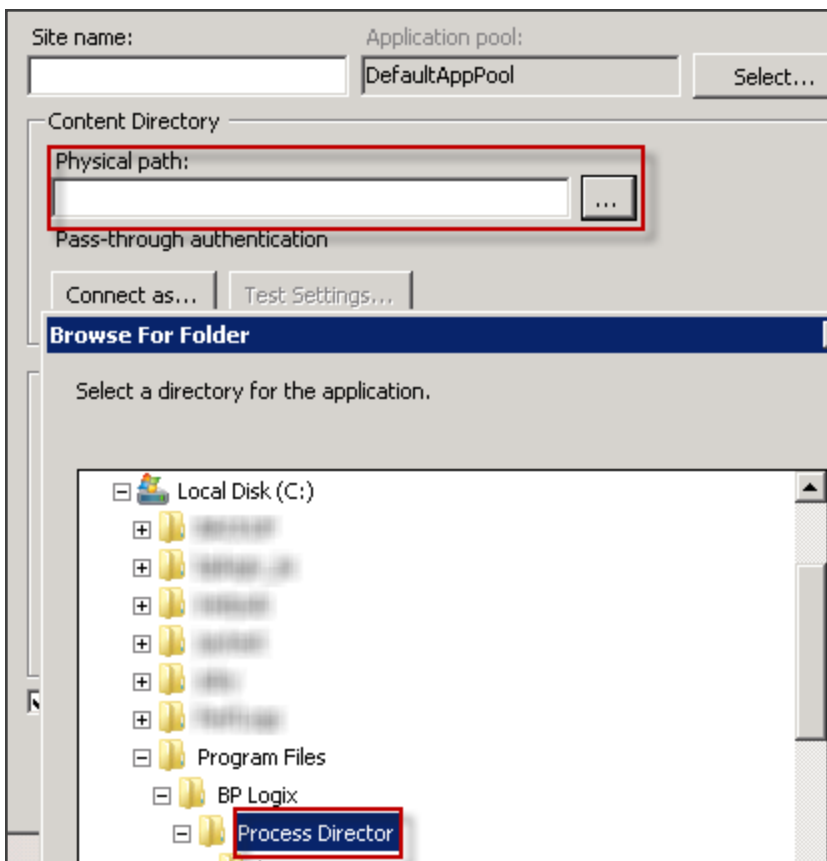
First Time Installations Only

4. Create a Web site in IIS.
5. Create the Process Director database in SQL Server or Oracle.
6. Navigate to the Process Director administration screens to configure the database connect string. This is located at: <http://localhost/admin/db.aspx> (where localhost can be replaced with the server where Process Director is installed).
7. Enter your license key in the product administration screens.

IIS Web Site Creation #

To create a new web site in IIS for Process Director, use all of the all defaults provided by IIS. Point your website to the “website” folder located in the following directory (where Process Director is installed):

`C:\Program Files\BP Logix\Process Director\website\`

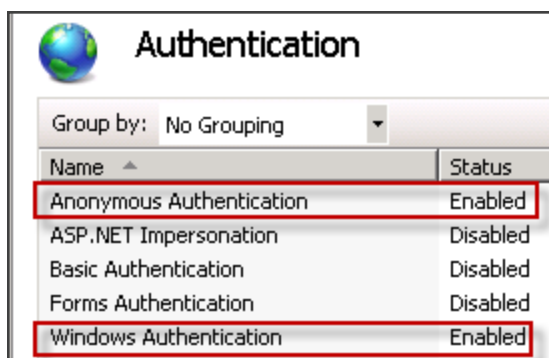
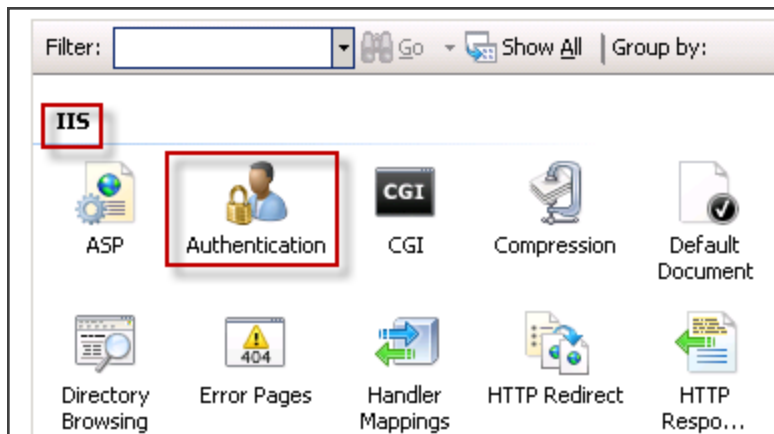


This is the default install location of Process Director. This may be different if you selected a folder other than the default.

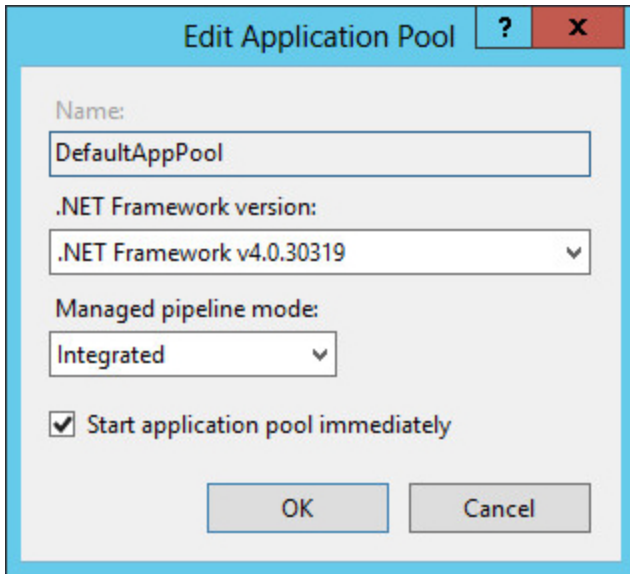
Please note that creating a Virtual Directory won't work using IIS 7. You must either convert the Virtual Directory to an Application or add an Application.

After the web site is created ensure these settings are configured in IIS:

1. Ensure "Anonymous" and "Integrated Windows Authentication" is turned on in the IIS Authentication properties.



2. Ensure that ".NET Framework v4.0.30319" is selected version in the Application Pool for the website.



You won't see a selection for a "4.5.xxxxx" framework, because of the way Microsoft treats some .NET Framework upgrades. The 4.5, 4.5.1, and 4.5.2 version of the .NET Framework are in-place upgrades to the v4.0 framework. So, in IIS, you'll see the v4.0 selection identified here. If you want to ensure that the ASP.NET Framework v4.5.X is installed, you can check the registry by opening the Registry Editor, then opening the following subkey:

HKEY_ LOCAL_ MACHINE\SOFTWARE\Microsoft\NET Framework Setup\NDP\v4\Full

Check for a DWORD value named Release. The existence of the Release DWORD indicates that the .NET Framework 4.5 or newer has been installed on that computer.

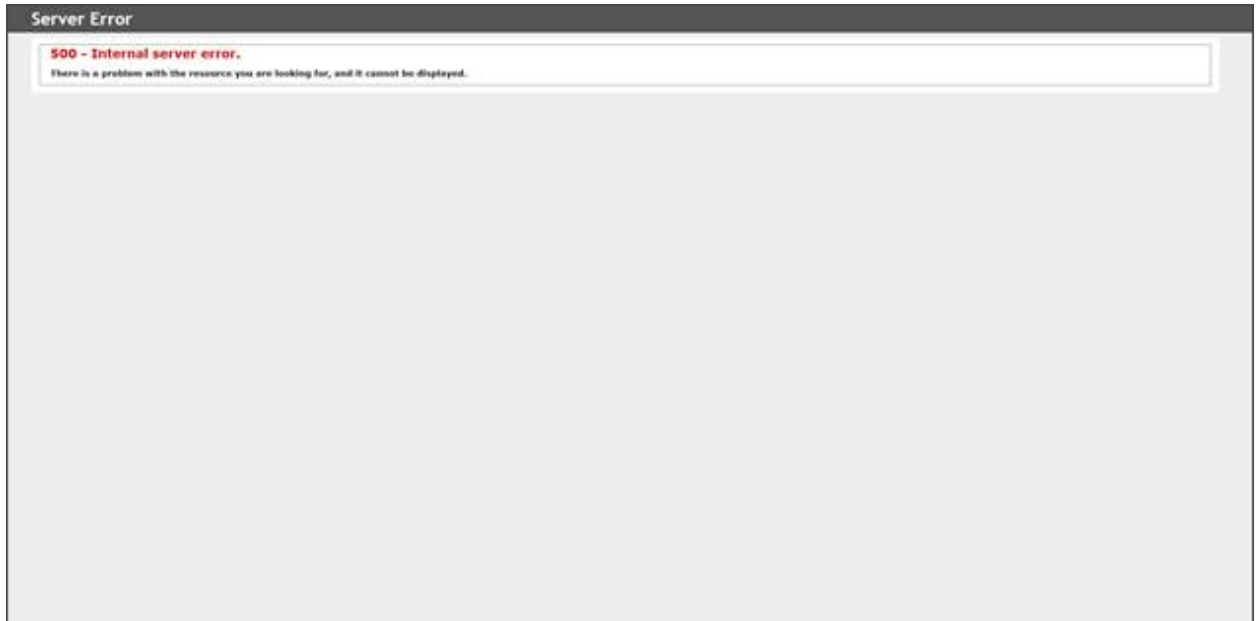
The value of the Release DWORD indicates which version of the .NET Framework is installed.

DWORD VALUE	VERSION
378389	.NET Framework 4.5
378675	.NET Framework 4.5.1
378758	.NET Framework 4.5.1
379893	.NET Framework 4.5.2

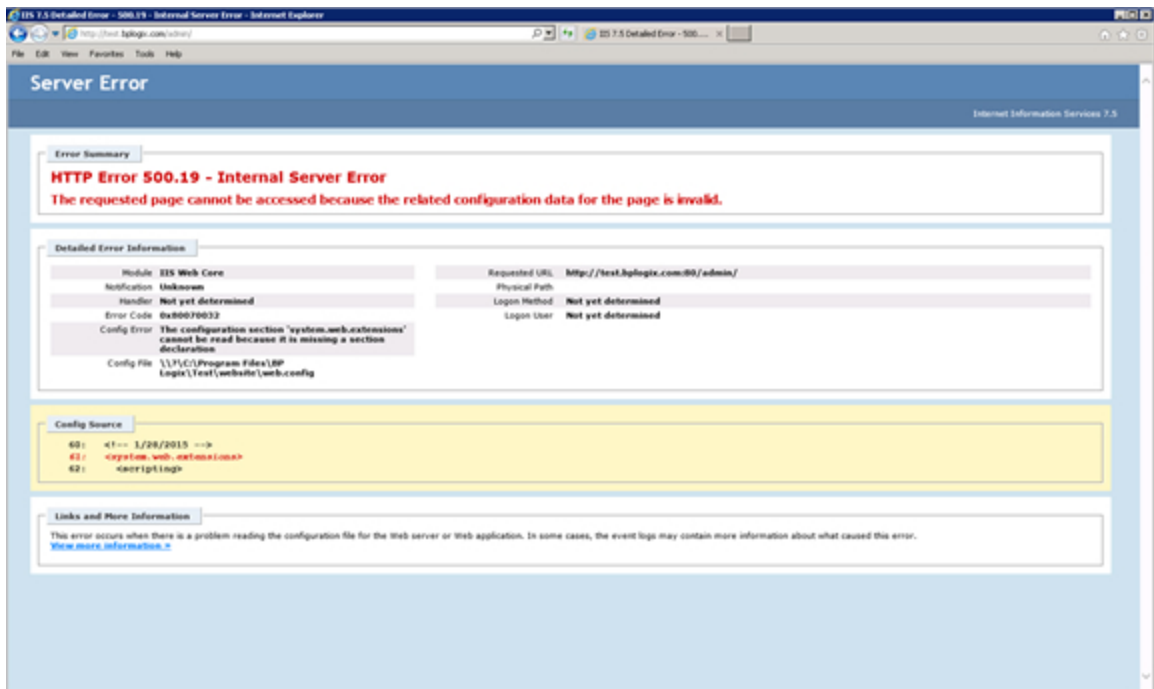
For more information, see the MSDN blog entry for [identifying what .NET version you are running](#).

If you don't select the proper framework version, you'll see the following errors:

1. End users will see the following generic 500 Internal server error screen when navigating to the Process Director URL:



2. If you open the page from localhost, you'll see a rather more helpful error page.



This error can be rectified by changing the App Pool framework version to v4.0.XXXXX.

Installation Completion

User Setup

On completion of the installation procedure, the Process Director will have added several items to the Windows program group. Unless you change the directory during the installation, the Process Director will be installed in the C:\Program Files\BP Logix\Process Director\ directory. The following components are also installed or configured as part of the installation program:

- Sample users, groups, partitions and permissions are added to the database for a new installation
- Available sample users: Administrator, user1, user2

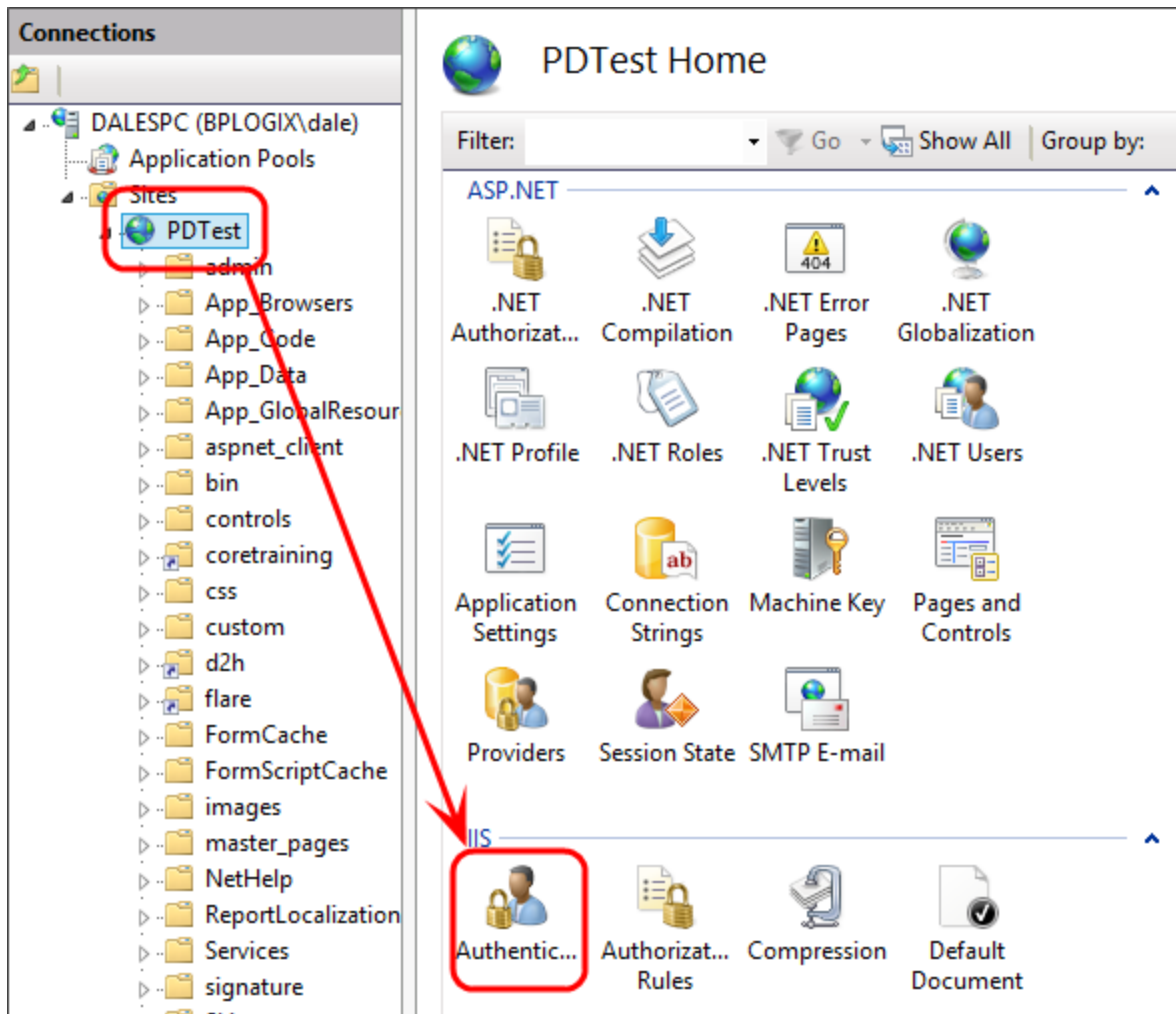
Active Directory Synchronization

Once installed, <http://doc-staging.bplogix.com/content/home.htm> can synchronize with Active Directory to import all of the Active Directory users into Process Director. To see more about Active Directory synchronization, see the topic on [User Directory Synchronization](#).

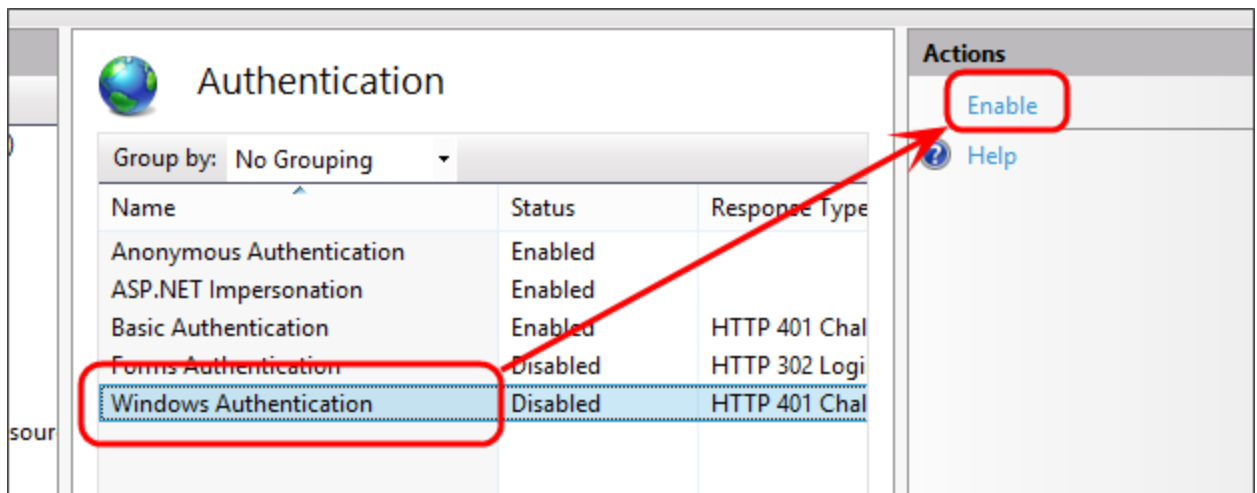
NTLM Configuration

Process Director accepts Windows Authentication using NTLM. The default configuration for Internet Information Services (IIS 7) is to enable anonymous authentication only, however, so you'll need to configure IIS to use NTLM by using the following procedure.

Open the IIS Manager and select the Process Director Web site from the tree view on the left side of the screen. Once you have done so, double click on the Authentication icon.



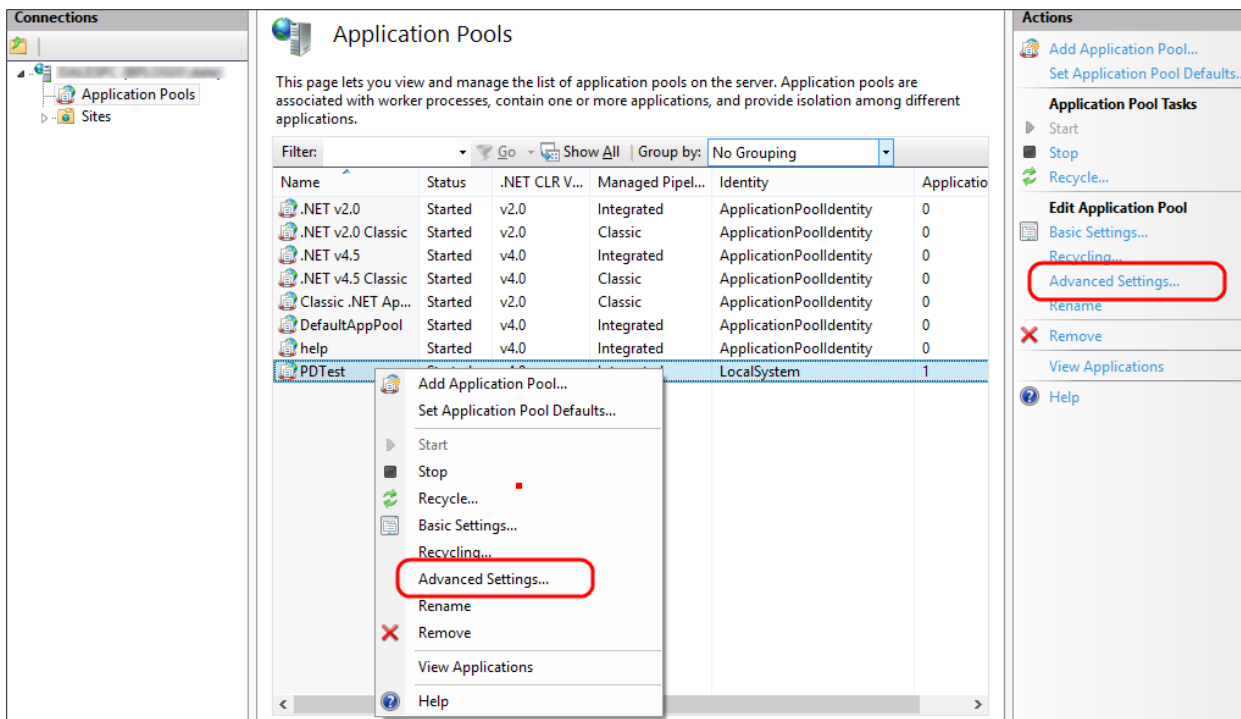
On the Authentication page, select Windows Authentication, then click Enable in the actions pane to use Windows authentication.



Web Garden Is Not Supported

Occasionally, server administrators will configure Internet Information Server to run as a web garden. By default, an IIS application pool will run in a single process on the server. Servers configured as a web garden allow an IIS application pool to run on multiple processes, usually as part of a load balancing scheme. When this is done, w3wp.exe, will serve requests made to that single application pool by distributing the requests to multiple processes. Setting up a web garden is accomplished by setting the Maximum Worker Processes property of the application pool to allow 2 or more process to run under the application pool.

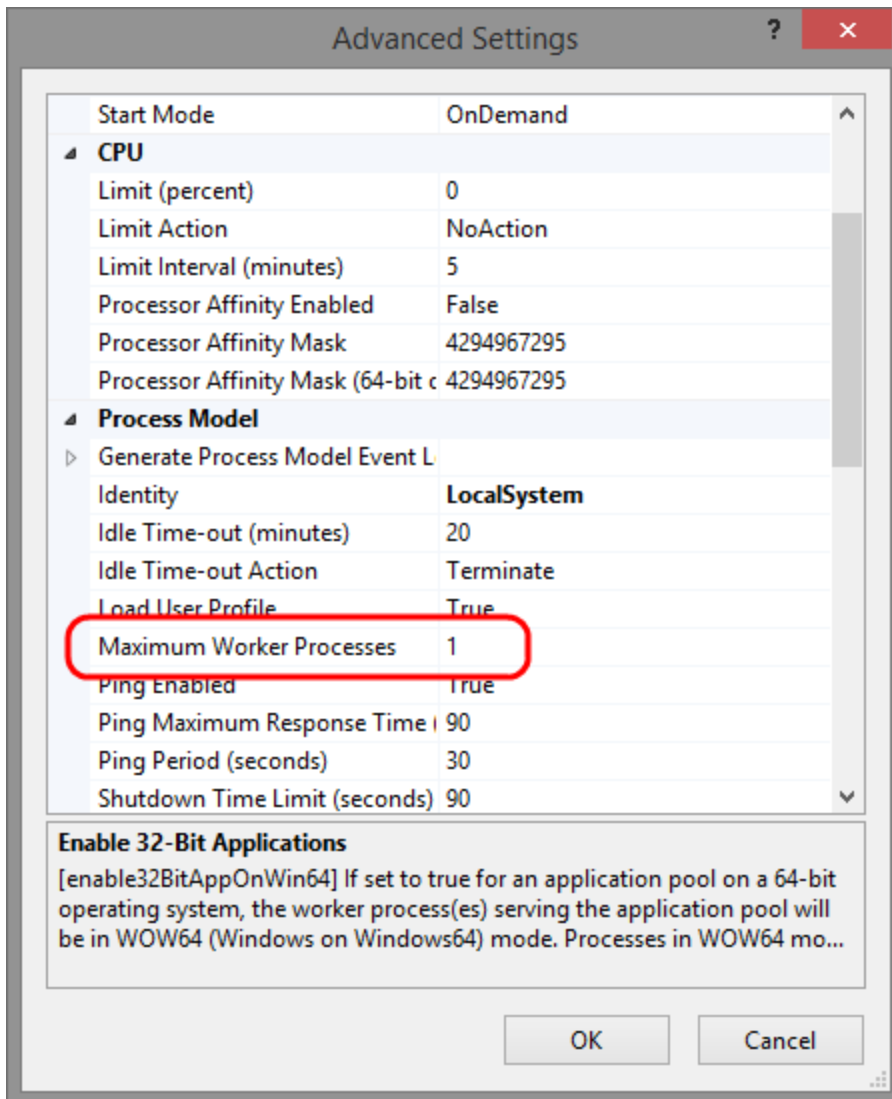
This configuration isn't supported by Process Director, as it isn't possible to synchronize the processes, causing the application to lose the current state of Process Director objects. You should ensure that the application pool for the Process Director Installation is configured to set the Maximum Worker Processes property to "1". To check this setting, Open the IIS Manager and click the Application Pools item in the treeview on the left side of the window. From the application pools list, open the Advanced Settings of the application pool of the process Director installation.



The screenshot displays the IIS Manager interface. The 'Application Pools' section is active, showing a list of application pools. The 'PCTest' pool is selected, and its context menu is open, with 'Advanced Settings...' highlighted. The 'Advanced Settings...' option is also highlighted in the 'Actions' pane on the right.

Name	Status	.NET CLR V...	Managed Pipel...	Identity	Applicatio
.NET v2.0	Started	v2.0	Integrated	ApplicationPoolIdentity	0
.NET v2.0 Classic	Started	v2.0	Classic	ApplicationPoolIdentity	0
.NET v4.5	Started	v4.0	Integrated	ApplicationPoolIdentity	0
.NET v4.5 Classic	Started	v4.0	Classic	ApplicationPoolIdentity	0
Classic .NET Ap...	Started	v2.0	Classic	ApplicationPoolIdentity	0
DefaultAppPool	Started	v4.0	Integrated	ApplicationPoolIdentity	0
help	Started	v4.0	Integrated	ApplicationPoolIdentity	0
PCTest				LocalSystem	1

In the Advanced Settings dialog box, ensure that the Maximum Worker Processes setting is set to "1".



Database Creation

! Please review the [Installation Process](#) section of the documentation to see an overview of the steps required to properly install Process Director.

Create a database and optionally a new user. You don't have to create the tables in the database; the product will create the tables as part of the installation/initialization processes. Ensure the user that will access the database has read, write and create table permissions.

SQL Server

For SQL Server, ensure the user has db_datareader and db_datawriter, or db_owner, permission to the database.

Oracle

Create a user (e.g. named 'bplogix') in the Oracle database with the following privileges:

Roles: 'CONNECT' and 'RESOURCES'

System Privileges: 'UNLIMITED TABLESPACE' and 'CREATE ANY VIEW'

Example syntax in SQL Plus, where "password" is the actual BP Logix user password:

```
create user bplogix identified by password;grant connect,resource to bplogix;commit;
```

Database Backups:

You should schedule database backups according to your recovery point objectives (RPO). Backups of the /website/App_Data/ and the /website/custom/ folder only need to occur after configuration changes are made to Process Director (e.g. custom vars changes, changes to the [IT Admin](#) area's [Installation Settings](#) section, etc.).

If you are storing document binaries on the file system instead of the database, ensure you are adding that file system folder to your backup plans.

If you don't require data recovery at the point of failure, it is recommended that you change the recovery mode to "Simple" in the Process Director database. This will allow the database to perform better, but only allows for the recovery of data from the point of the last [differential] backup.

Database Maintenance

BP Logix recommends that you create a database maintenance plan that rebuilds indexes and statistics. This maintenance plan should run weekly and be configured to process all tables in the Process Director databases.

There are some additional considerations to address for Microsoft SQL Server. First, we recommend that you change the database auto growth settings in SQL Server. When an SQL Server data file becomes full, auto grow is triggered based on

the auto grow settings of the database. This auto grow function causes the database to pause while the files are extended on disk. This pause in transactions can have a negative impact on performance. Auto grow is designed to be a contingency for **unexpected** growth. As a best practice, we recommend that when you create the database initially, that you size the database to account for any expected growth during the lifetime of the SQL instance. This means setting the initial size of the database as large as you think the database will eventually be, so that it never encounters auto grow.

We also recommend that the default SQL Server autogrowth setting be changed from a percentage (e.g. 10%) to a fixed amount, e.g. 200mb, to handle larger databases.

Also, if the transaction log file is growing too large, ensure that your backups are including the log files, or change the recovery mode to Simple.

Database Connection Strings

The database connection string is a very important part of the installation as it connects the server to the database. Construct your connection string as you see fit. We have provided some samples below:

SQL Server

Process Director supports a Microsoft SQL Server 2005 or higher database.

Provider

`System.Data.SqlClient`

Default connection string

```
SQL Server User:Data Source=HOSTNAME;Initial Catalog=DB_
NAME;User ID=USERID;Pwd=PASSWORD
```

Windows User

```
Data Source=HOSTNAME;Initial Catalog=DB_NAME;Trusted_Con-
nection=Yes
```

Please note: If you are using a Windows user, the user will need to be assigned as the Identity to the Application pool of the IIS website. The Default Application Pool User ID is called "IIS APPPOOL\{app pool name}". It is a virtual user so it won't appear in permissions dialogs when seeing a list of users, but it can be typed in.

This may be needed for customers that are using windows authentication to access their SQL Server, or are trying to access a file system (e.g. using the Export Items Custom Task) and don't have permissions. You can try adding permissions for the virtual user or you can change the application pool identity (user). Here are some helpful links:

[Microsoft: Securing Resources](#)

[ServerFault: How to assign permissions to ApplicationPoolIdentity account](#)

Oracle

Oracle requires that the DBA create the database (user schema in Oracle). To connect to Oracle the ODP.NET drivers must be installed on the web server where Process Director is located. These are available from Oracle. Process Director supports Oracle 10g or higher. The Oracle 11 ODP.NET drivers can be used with an Oracle 10 database.

Provider

Oracle 10/11: `Oracle.DataAccess.Client`

Oracle 12: `System.Data.OracleClient`

Connection string

```
Data Source=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)
(HOST=HOSTNAME)(PORT=1521))))(CONNECT_DATA=(SERVER=DEDICATED)
(SERVICE_NAME=DB_NAME));User Id=USER_SCHEMA;Password=PASSWORD;
```

IT Settings

 Please review the [Installation Process](#) section of the documentation to see an overview of the steps required to properly install Process Director.

In addition to the above installation procedures, the following is necessary to complete the Process Director installation. You must be on the local server to perform the following actions.

1. Navigate to the Admin DB Connection section of Process Director by typing the following in your browser: `http://localhost/admin/first.aspx`. This is the


- Database Settings tab located under the Installation Settings.
2. Configure the following properties as part of the installation:
 - a. The DB connect string – test and verify schema
 - b. The installation properties, Interface URL, mail host. See [Configuration Settings](#) for more information

You must make a positive connection to the database to have the Process Director automatically create/update the database tables. If you are using SQL Server on a remote host, or you are using Oracle, then you must run Test and Verify schema buttons.

Licensing

In addition, you must activate your Process Director license prior to using the software. Please see the System Administration Guide's [Licensing topic](#) for instruction on how to license the software.

Configuration Settings

 Please review the [Installation Process](#) section of the documentation to see an overview of the steps required to properly install Process Director.

BP Logix recommends that you configure the [Interface URL](#) property on the [Installation Settings](#) page of the [IT Admin](#) area. This property specifies the actual host name that can be used to connect to Process Director. This is configured in the Process Director Installation Settings tab. The Interface URL should be the exact name of the URL where Process Director is installed. This is case sensitive. Setting this value is especially important if:

- Your users access the server from using different IP address or names;
- You are using NAT (Network Address Translation);
- The web server is on a port other than 80;
- You have installed Process Director on something other than the default IIS "Default Web Site";
- You are using the authentication APIs.

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If this field is left empty, it will default to `http://hostname/` where `hostname` is the domain name of your Web server. If you are using a port other than port 80, you need to specify the fully qualified path (with the port number) here.

In order to send emails (such as task notifications) from the server, you must configure the SMTP host on this screen, as well. This specifies the mail server you'll use for Process Director.

Please ensure that your mail server is configured to allow relay from the IP address of the Process Director server, or the system will likely be unable to deliver emails. If the server on which Process Director is installed is the server you wish to use for sending email notifications via SMTP, you can set "localhost" as the SMTP host, however, when doing so, you must give the IIS User (or everyone) modify permissions on the `C:\inetpub\mailroot` folder.

Process Director Properties

Configuration | User Administration | Installation Settings | Troubleshooting

Properties | Global Variables | Database Settings | Licensing

Server Name: BP Logix Server Name

Interface URL: [OK](#) [Update](#) [Cancel](#)

Proxy URL:

Store Documents On File System:

Document Storage Path:

Document Size For File System Storage:

Local IP Addresses:

Load Balanced URLs:

Registered Email:

Logging Level:

CSS:

Logo URL:

Logo Link:

Home Page Top Height:

Home Page Logo Width:

SMTP Host:

SMTP Port:

SMTP UserID:

SMTP Password:

SSL Required?:

Web Service Enabled:

Require Web Service Authentication:

Web Service Restrictions:

Number of Custom Icons:

Other Administrative Considerations

Once you've completed the initial installation of Process Director, there are several other administrative considerations that you need to address. For example, implementing Process Director in a multi-instance installation, determining how users will authenticate, or upgrading Process Director version all require additional administrative action.

This section of the Installation Guide addresses these additional administrative actions. Navigation to a specific topic can be done via the Table of Contents displayed on the Upper right portion of the page, or by using the links below.

[Reinstall/Upgrades/Moving Hosts](#): Instructions for upgrading or reinstalling an existing installation, or moving an existing installation to a new host server.

[Multi-Instance Installations](#): Instructions for creating multiple instances of Process Director on a single server.

[User Authentication Options](#): Discussions about the different authentication types available for identifying process Director Users.

[SAML 2.0 \(Federated Identity\) Support](#): Discussions about how to implement authentication via a Federated Identity (SAML) ID Provider to authenticate and/or create user accounts in Process Director.

[Miscellaneous Installation Notes](#): Notes about common error, database, or other issues that might be encountered during the installation process.

Reinstall/Upgrades/Moving Hosts

The Process Director can be reinstalled or upgraded with no loss of data. Any database table updates are automatically performed after the install completes.

Rolling Back to a Previous Installation

After installing a new Process Director patch, you can roll back to the previous version by uninstalling Process Director and then reinstalling the previous version. However, some patches involve changes to Process Director's database. If a patch has changed the database, new database columns, indices, and tables will need to be removed, and the tblSettings columns "nDBVersion" and "nDBVersionPrev" will need to be reset. If you are reverting to a patch that involves database changes, [contact technical support](#) for instructions on reconfiguring the database.

Uninstalling

You may uninstall Process Director by using the Add or Remove Programs in the Control Panel:


1. Click on the **Start** button on the Windows taskbar.
2. Select **Settings**, then **Control Panel**.
3. Click on the **Add or Remove Programs** icon.
4. Select **Process Director** and click **Remove**.

The uninstall program will NOT remove the Process Director database, the website, or the virtual directory.

Upgrading to a New Version

The upgrade process for installing new versions of Process Director is very straightforward. Essentially, simply downloading and installing the new version will automatically upgrade your existing version of Process Director, and carry over all of your settings and licensing information. If you are upgrading to Process Director v3.41 or higher from an earlier version, however, you'll have to take the additional step of setting the Application Pool to use ASP.NET 4.5.

Process Director v5.44.700 and Higher

 **Process Director v5.44.700 and higher uses AES encryption for all encrypted fields/data. This encryption change provides higher security, but it does affect the migration process the *first time*--and **ONLY** the first time--you install v5.44.700 or higher from v5.44.600 or lower. Again, this is a one-time change to the process. Upgrading from v5.44.700 to any higher version requires no special action.**

Custom Tasks

You'll need to update the Custom Tasks for your installation, **prior to upgrading Process Director**. Some Custom Tasks include changes to field properties that require updated versions. If you update the Custom Tasks after upgrading Process Director, then you'll need to go to the **Server Control** page of the **IT Admin** area's **Troubleshooting** section, and click the action link labeled, **Encrypt Old Form Data**.

Single-Server Installations

Migration to AES encryption occurs automatically for customers, by default, when installing v5.44.700 on a single-server installation. **This migration may significantly increase the time needed to upgrade the system**, depending on how extensively your installation uses encrypted fields. It is possible to disable the encryption migration, and migrate manually at a later date.

To disable the migration during upgrade, use the following procedure:

1. Edit the Custom Variables file to set the [fEnableEncryptionMigration](#) custom variable to "false".
2. Upgrade the server instance.
3. Upgrade the Custom Tasks.

Migration to AES Encryption can later be done manually by navigating to the [Server Control](#) page of the [IT Admin](#) area's [Troubleshooting](#) section. In the list of action links on this page, click the link labeled, [Apply AES Encryption](#) for Process Director v6.0.100 and higher, or [Migrate to AES Encryption](#) for lower applicable versions. The migration will start and run in the background. Logs will indicate when the migration process started and stopped, what tables were modified, and the row count of modified fields. If, for any reason, the migration is stopped, you can simply restart it using the same action link.

Multi-Server Installations

For multi-instance or load-balanced installations that use more than one Process Director server, the following procedure is required:


1. Stop all Process Director/web server instances.
2. Upgrade Process Director on the primary system only.
3. Start Process Director on the primary system and access a page or log in.
4. Navigate to App_Data\bpProperties.xml and copy the following values in the Server Settings section of the file, which are highlighted in red, below:

```
<?xml version="1.0" encoding="utf-8"?>
  <BP_PROPERTIES xmlns:xsd-
d="http://www.w3.org/2001/XMLSchema" xmlns:x-
si="http://www.w3.org/2001/XMLSchema-instance">
  ...
    <SERVER_SETTINGS>
      <!--! COPY THE NODES/VALUES BELOW -->
```

```
<sEncryptionKeyDoNotModify>...</sEncryptionKeyDoNotModify>  
  <sCheckValue>...</sCheckValue>  
  <!--! COPY THE NODES/VALUES ABOVE-->  
...
```

5. Paste those two values, at the same line location, in the bpProperties.xml files for all other systems, and save them.
6. Upgrade and then start Process Director on the other systems, **one system at a time**.
7. Update the Custom Tasks on all servers.

Additional AES encryption configuration requirements for load-balanced servers are discussed in the [Load Balancing topic](#) of the System Administrator's guide.

 After upgrading to v5.44.700 and restarting the Process Director server, customers with on-premise installations must make a backup of their bpProperties.xml file. This file also contains the encryption key, so backing it up ensures that you have a backup of it. If you ever have to re-install from scratch (such as when moving hosts), you won't be able to recover your existing encrypted data without it.

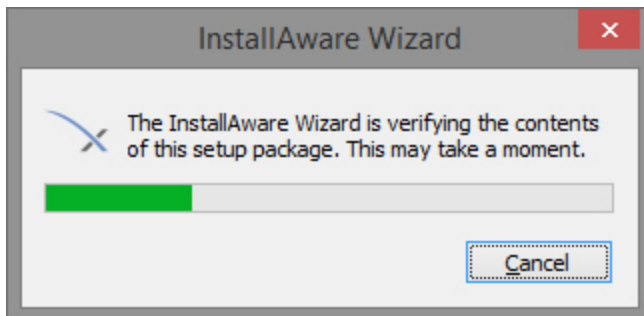
Upgrade Process

To begin the upgrade process, log into the BP Logix Support site and navigate to [the Downloads page](#).

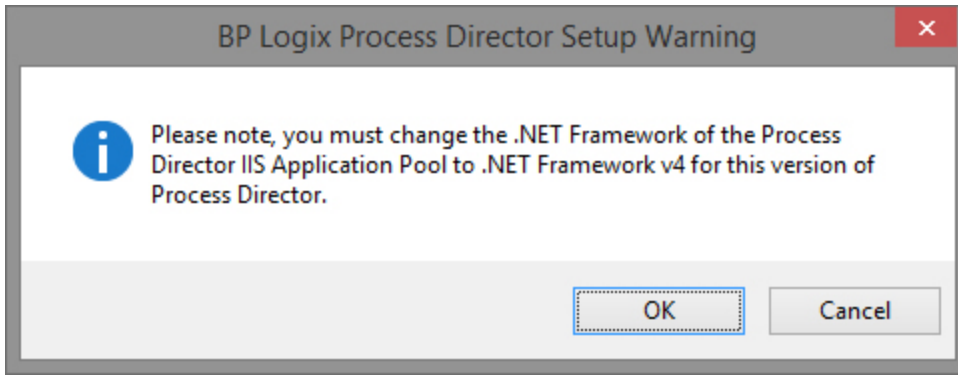
The screenshot shows the BP Logix Help Center interface. At the top, there is a navigation bar with the BP Logix logo, 'Community', 'Submit a request', and a user profile for Dale Franks. Below this is a large banner with the text 'Welcome to the BP Logix Help Center!' and a search bar. A blue navigation bar contains the breadcrumb 'BP Logix Technical Support > Process Director Software and Downloads'. The main content area is titled 'Process Director Software and Downloads' and includes a 'Follow' button. Below the title is a paragraph of text and a list of links: 'Process Director Software and Downloads', 'Release Notes Version 5', 'System Requirements', and 'BP Logix Plug-in v2.58'.

Download the installation file for the new version by clicking on the link labeled "Download Process Director Install program vX.XX". Depending on your web browser, the file will be downloaded automatically, or via a **Save** dialog box. You'll be able to monitor the Download in your Browser and open the installation file when the download completes, just like any other file.

The installation will begin unpacking the installation files.

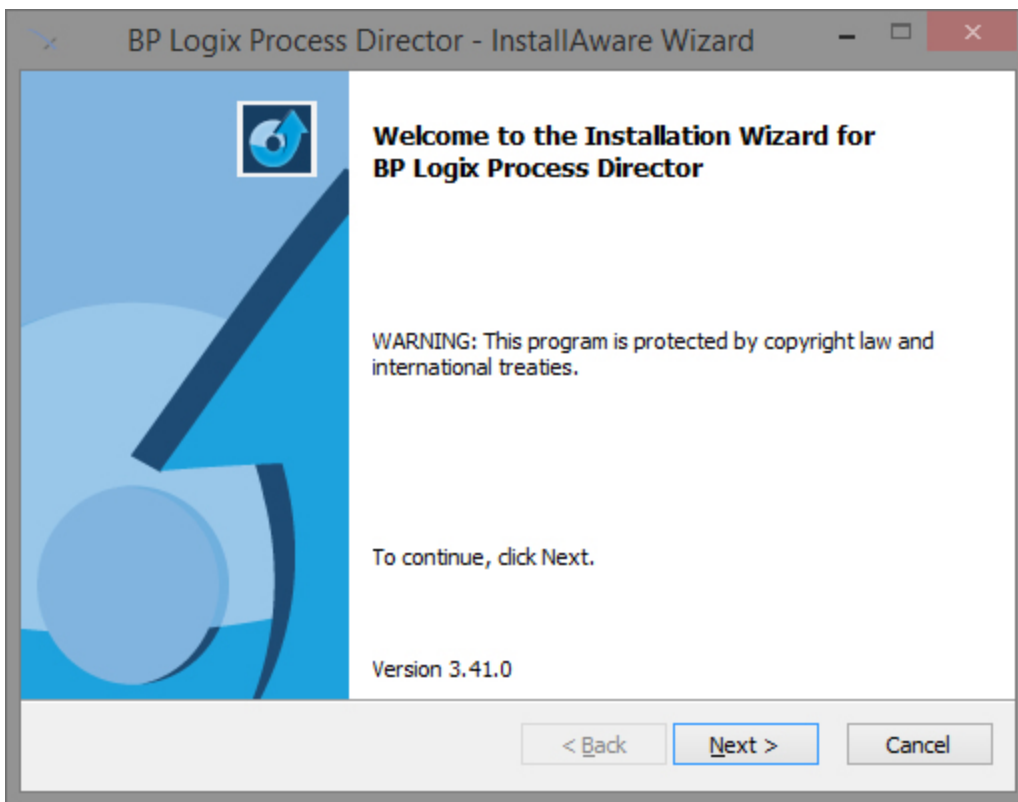


Once the installation files are unpacked and verified, if you are installing v3.4X or above, you'll receive a warning notifying you that you must change the application pool settings in IIS to use ASP.NET v4.5.

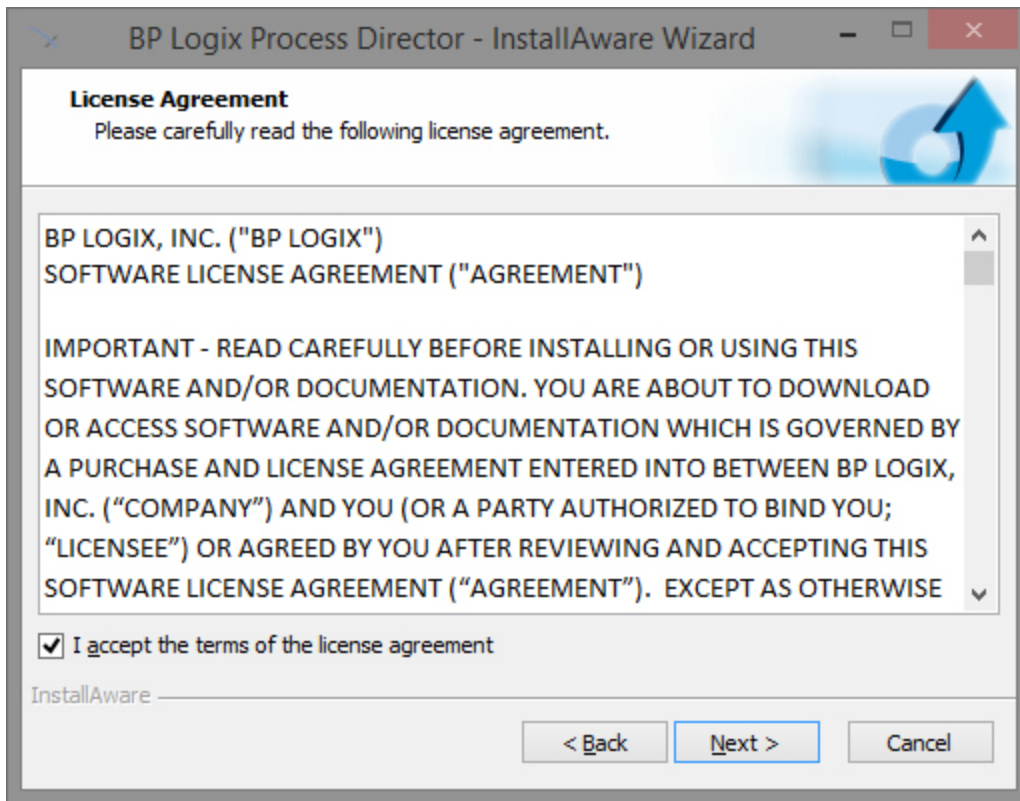


**Process Director v4.57 and higher requires the .NET Framework v4.6.
Process Director v5.X requires the .NET Framework v4.7.**

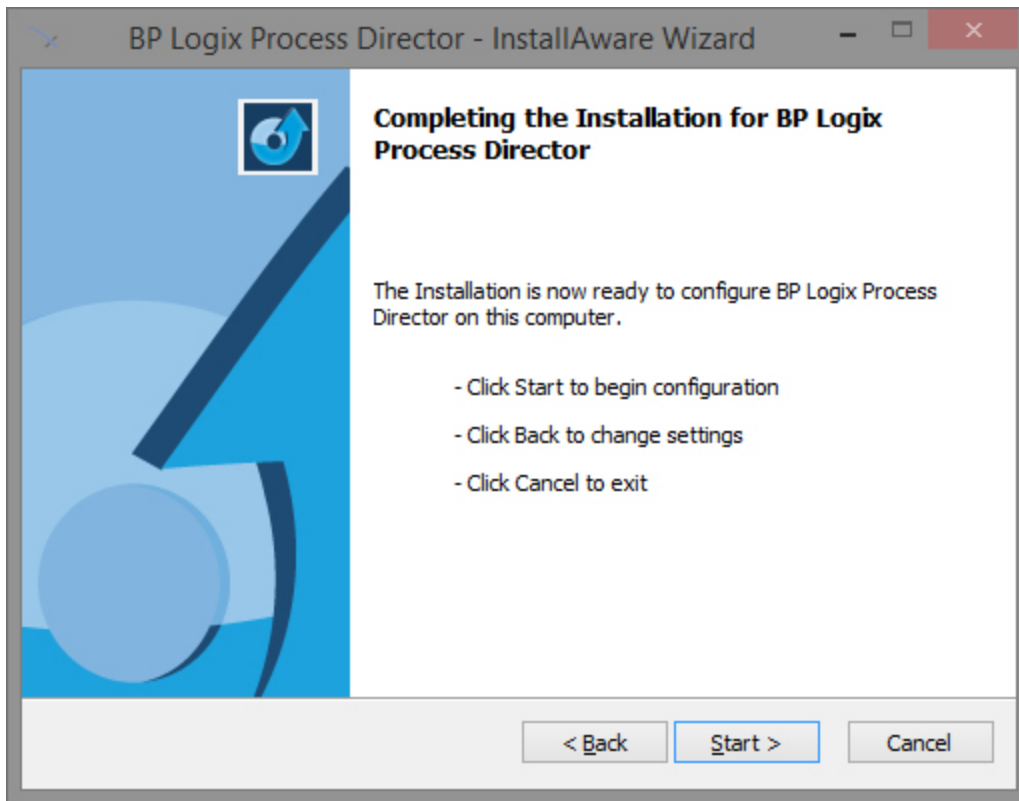
Once you accept the warning by clicking the OK button, the Installation Wizard will appear.



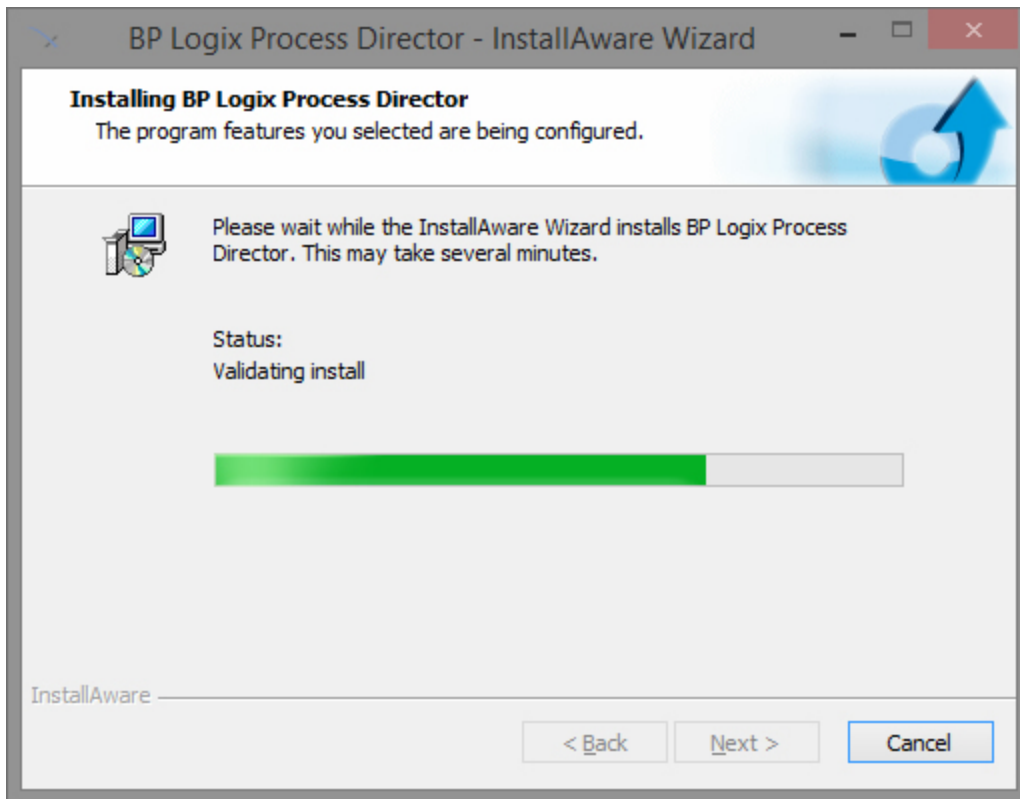
Click the Next button to show the next pane of the Wizard, which displays the License Agreement for Process Director. To continue the wizard, you must accept the terms of the license agreement by checking the acceptance check box.



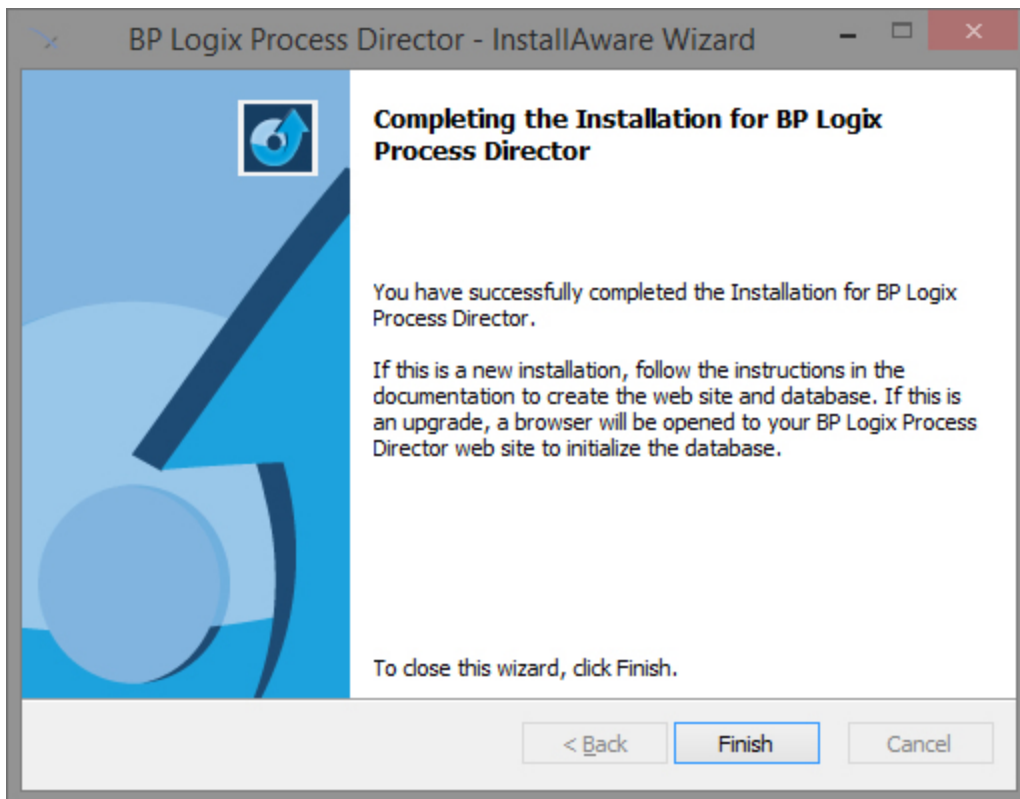
Click the Next button again to display the installation location for Process Director. The destination folder can't be changed for upgrades, so there is nothing for you to do in this pane of the wizard, except click the Next button.



The installation is now ready to begin. Click the Start button to begin the installation. The Wizard will display a progress pane while the installation proceeds.

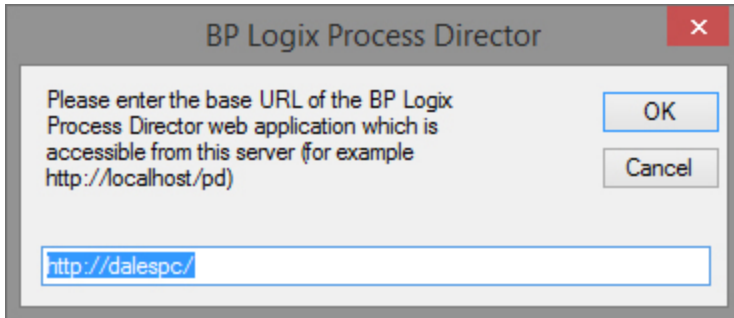


Once the installation is done, the Wizard will display a notification pane.



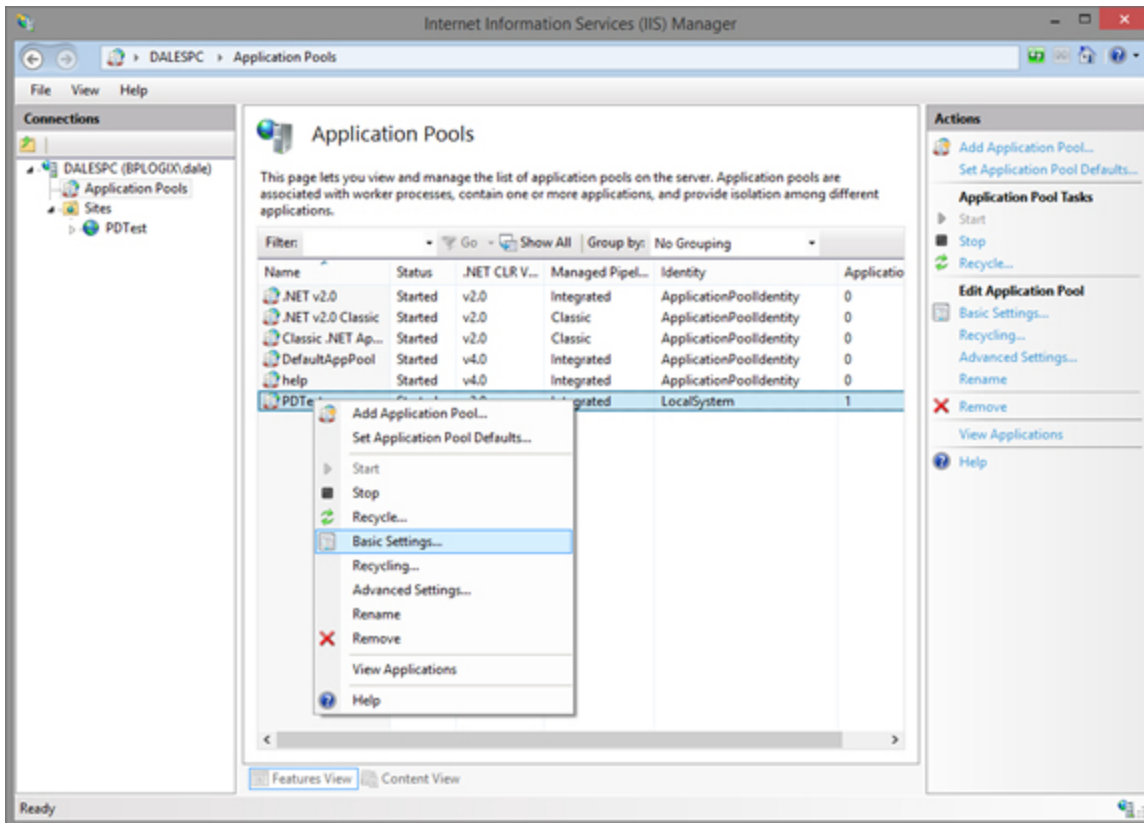
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Click the Finish button to close the wizard. After a few seconds, a dialog box will appear to set the base URL for the Process Director installation. By default, this will be the existing URL of the installation, so, you shouldn't have to change the URL. Click the OK button to close and save the URL.



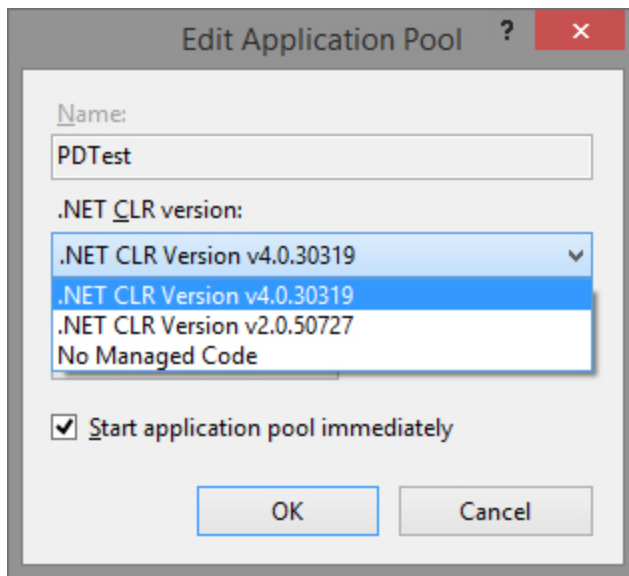
The Installation is now complete, but, if you are upgrading to v3.4X or above from an earlier version, Process Director won't work until you reconfigure the Application pool in IIS. If you try to open Process Director at this point, you'll receive an error message, most likely "HTTP Error 500.19 - Internal Server Error".

Open the Internet Information Service (IIS) Manager.



In the Connections pane of the IIS Manager, click on Application pools to display the application pools for IIS in the center pane. Find the application pool you have assigned to Process Director, right-click on it, and select Basic Settings from the popup menu. The basic settings dialog box will open.

Change the .NET CLR Version dropdown to .NET CLR Version v.4.0.XXXXXX (the precise version will be slightly different depending on the environment, but it should be at least v4.0.30319). Be sure that the Start application pool immediately check box is checked. Click the **OK** button to save your changes.



This should complete the upgrade process for Process Director.

Upgrading Multi-Instance Installations

Upgrading a multi-instance installation of Process Director to a new version is similar to the initial installation; however, you do **not** need to run the BP_Multi.exe application again. Once the system is configured for multi-instance use, this application is no longer needed. You'll only need to run BPLogixMultiInstance.exe to perform the upgrade on the desired systems.

! Once you install a newer version of Process Director on a Multi-Instance system, you can't install an older version again.

The main difference in running an upgrade is that, because you can run different installation versions on different instances, there are two different upgrade scenarios to account for.

Scenario 1: Upgrading when ALL instances are using the same version

You must edit the configuration text file to include **only** the instances you wish to update. For example, if you have three instances on a system, all running the same version, and you want to upgrade only instance number two and three, then you'd only include those two instances in the configuration text file. In this example, we'll name the file "upgrade.txt", and use the following configuration:

```
GROUP=My Server Group
NAME=Instance2
PATH=c:\wd2
NAME=Instance3
PATH=c:\wd3
```

Using this configuration, Instance 1 will remain on the older version of Process Director, while Instances 2/3 will be upgraded to the new version.

Once the text file has been configured, you can run BPLogixMultiInstance from the command line again, using the file path/names of the upgrade.txt configuration file and new Process Director installation file, e.g.:

```
BPLogixMultiInstance.exe "BP_GROUP=c:\upgrade.txt" "BP_INSTALL-
L=c:\ProcessDirectorv2Install.exe"
```

Scenario 2: Upgrading when SOME instances are ALREADY using a newer version

You must edit the configuration text file to include **ALL** the instances that will run the new version, **including any existing instances already running that version**. For example, let's say we have three instances on a system, running the following versions.

Instance	Process Director Version
Instance1	v1
Instance2	v2
Instance3	v2

To upgrade Instance 1 to v2, you must include all three instances in the configuration text file when upgrading. The installer will uninstall any existing versions of the upgrade, and won't reinstall them, if they aren't listed in the configuration

file. Thus, your configuration file, which we'll call "upgrade.txt" again, would need to look like the example below.


```
GROUP=My Server Group  
NAME=Instance1  
PATH=c:\wd1  
NAME=Instance2  
PATH=c:\wd2  
NAME=Instance3  
PATH=c:\wd3
```

Using this configuration, all three instances will run Process Director v2 once the installation completes.

Once the text file has been configured, you can run BPLogixMultiInstance.exe from the command line again, using the file path/names of the upgrade.txt configuration file and new Process Director installation file, e.g.:

```
BPLogixMultiInstance.exe "BP_GROUP=c:\upgrade.txt" "BP_INSTALL-  
L=c:\ProcessDirectorv2Install.exe"
```

During the upgrade process, all sites that are currently running the targeted version will be unavailable until the upgrade process concludes.

 After any upgrade, please be sure to delete your browser cache to clear out the cached elements used in the previous version.

Moving Process Director to a New Host

The Process Director installation can be moved to another Windows host. This may be required due to an upgrade to your hardware or copying the system to a test server. To perform the move, follow the instructions below.

1. Copy the Process Director database from the other system to the new server.
2. Install Process Director on the new server.
3. Copy these folders from the old server to the new server:

```
\Program Files\BP Logix\Process Director\website\custom\  
\Program Files\BP Logix\Process Director\website\AppData\
```


4. Set the Interface URL.

After Process Director is activated with the copy of the database from the other system, navigate to the [Properties](#) page in the [IT Admin](#) area's [Installation Settings](#) section and ensure the [Interface URL](#) property points to the URL of the new server (if any values were configured).

5. Rerun the registration process

Rerun the registration process on the new server by navigating to the Licensing tab under Installation of the Administration section and enter the serial number sent to you.

6. Recreate the appropriate database connection strings on the new server.

 **Do NOT attempt to perform a product upgrade and host change at the same time. You can either:**

- 1. Change the host for the existing version first, and ensure it works properly before attempting the upgrade, or**
- 2. Upgrade the existing version first, and ensure it works properly before changing hosts.**

Multi-Instance Installations

The product supports the ability to have multiple instances installed on the same server. Even different versions of the products can be installed. Each instance must be licensed appropriately, and each instance requires its own database. Each instance will run as a separate virtual directory or website under IIS.

As a pre-requisite, on the target machine for the multi-instance install, any previous single-instance installations of Process Director must be removed BEFORE attempting to perform a multi-instance install.

To facilitate the installation of multiple instances, you must contact BP Logix support by submitting a technical support ticket to request that we send you the multi-instance installation files. There are two required installation files, BP_Multi.exe, and BPLogixMultiInstance.exe.

Once you have received the files, the first step is to run the multi-instance preparation application, BP_Multi.exe. This application will prepare the target machine to run the multi-instance installer.

Once you have completed running the BP_Multi.exe application, you can then install the multi-instance version of Process Director by running the BPLogixMultiInstance.exe installation program.

The Multi-Instance Installer will actually run the Process Director setup program (downloaded separately) for each instance. You can create as many “installation groups” as you want on a server. Each installation group can contain any number of server instances. All instances in a server group must be at the same version and patch level of the software. Each server instance in the installation group will use the same version of Process Director.

To configure the Multi-Instance Installer, create a text file for each group of instances. The text file will have this syntax:

```
GROUP=My Server Group
NAME=Instance1
PATH=c:\wd1
NAME=Instance2
PATH=c:\wd2
...Etc.
```

NAME	DESCRIPTION
GROUP	Any unique name to identify all installations in this multi-instance group
NAME	The unique name of this server instance (e.g. for the Program Group, etc.)
PATH	The destination path for this instance installation

Any number of PATH/NAME pairs can be placed in the configuration file. To run the Multi-Instance Installer, use the following syntax in the system's command line interface:

```
BPLogixMultiInstance.exe "BP_GROUP=c:\instance.txt" "BP_INSTALL=c:\ProcessDirectorInstall.exe"
```

PARAMETER	DESCRIPTION
BP_GROUP	The path to the installation file with the settings for this Multi-Instance installation
BP_INSTALL	The path to the Process Director setup program

Notice that the parameters are surrounded by double quotes to handle spaces in the path names. Executing this command will silently execute the Process Director setup program for each instance. After the installation is complete, the installation instances are “normal” installations, which are managed and administered independently, and can even be uninstalled using the Windows Add-Remove Programs. The GROUP and NAME parameters are used to uniquely create the Program Group entries, and the Windows Add-Remove Programs names.

User Authentication Options

Users must access Process Director with a User ID and password. A User ID must exist in the Process Director database before a login can occur. Process Director currently support 4 types of authentication methods for users.

Please keep in mind that these four different types of authentication methods create different account types that are treated as separate accounts in Process Director. A user might, for example, have both a built-in account and a Windows or Active Directory account. Once a user account is created, such as a Windows account, that user name and password cannot log in as a built-in account. That account must always authenticate via Windows security.

Accounts created with one authentication method are always created as separate accounts from those created through other authentication methods. For instance, lets say you have **both** a Windows and a Built-In account that use the login credentials:

User Name: UserA

Password: Password1!



Reusing the same user names and passwords for different accounts would be a bad security practice, and should be avoided!

If UserA logged in via Windows Single Sign-On (SSO), they will be logged into a completely different user account than the one they would access if they used the Process Director page to login directly to the Built-In account for UserA. These two user accounts, despite having the same name and password, are two separate user accounts, each of which uses a specific method to authenticate. As the note

above indicates, reusing user names and passwords for different accounts is a bad security practice.

Built-in

This authentication method uses Process Director to authenticate users. This is the default authentication method. These users must be added to the Process Director database using the online Administration section of Process Director.

Windows Domain Security

This authentication mechanism uses Microsoft Windows to authenticate users. By default, [Windows Domain Security](#) is turned off. These Windows users will be automatically added to the Process Director database after being successfully authenticated by Windows. Additionally, you may also select Windows Integrated Logins to use as an SSO login.

Active Directory/LDAP

This authentication mechanism uses your LDAP server (e.g. Active Directory) to authenticate users. These users will be added automatically to the Process Director database after being successfully authenticated.

External

External users are those that are authenticated by a third party system, usually via [Federated Identity/SAML](#) authentication. SAML authentication can be provided through products such as IBM WebSphere, CA Siteminder, Cafesoft Cams, and many other other external authentication systems using the Process Director APIs. External users are automatically kept synchronized with the third party authentication system on every login.

This method of authentication and account creation is the best option for implementing complex authentication requirements, such as the use of Two-Factor (2FA) or Multi-Factor (MFA) authentication.

User Authentication Configuration

Navigate to the Authentication Settings under User Administration in the Administrators Section. Select the type of Authentication to use for Process Director. If you are using the Windows Authentication you must type the domain you'd like to authenticate within the "Windows AD Domain Name".

The screenshot shows the 'Process Director Authentication Settings' window. At the top, there are tabs for 'Configuration', 'User Administration' (selected), 'Installation Settings', and 'Troubleshooting'. Below these are sub-tabs: 'Users', 'Groups', 'Authentication Settings' (selected), 'Delegation', 'User Directory Synchronization', and 'User Perms'. The main area contains several settings:

- Enable Builtin Authentication: True (dropdown)
- Enable Windows Authentication: True (dropdown)
- Automatically Add Windows Users: False (dropdown)
- Windows AD Domain Name: [Empty text field]
- Enable HTTP Header Authentication: False (dropdown)
- User GUID Header: [Empty text field]
- UserID Header: [Empty text field]
- User Name: [Empty text field]
- User Email: [Empty text field]
- User's Groups: [Empty text field]
- Authenticate External User: False (dropdown)
- Enable External Authentication: False (dropdown)
- External Login Page URL: [Empty text field]

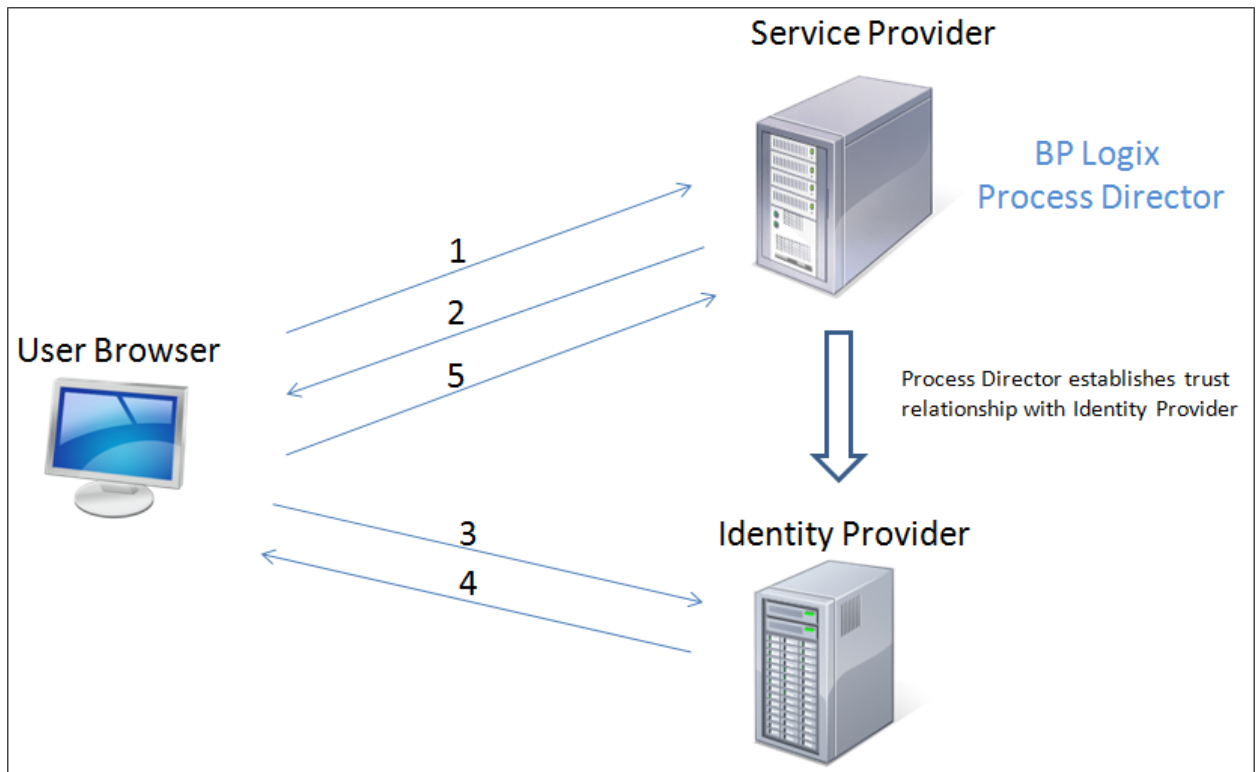
At the bottom right, there are buttons for 'OK', 'Update', and 'Cancel'. There are also links for 'OK', 'Update', and 'Cancel' in the top right area.

SAML 2.0 (Federated Identity) Support

Process Director supports SAML-based authentication for web single sign-on (SSO). SAML is an XML-based framework for communicating user authentication, entitlement, and attribute information.

Process Director accepts SAML 2.0 assertions regarding the identity, attributes, and entitlements of a user, from a federated Identity Provider (e.g. OpenAM or the open source version of OpenSSO).

The basic SSO model is shown in following diagram. A user authenticates at the identity provider and is subsequently appropriately recognized (and given corresponding access or service) at the service provider (Process Director).



Authentication Options

Process Director supports federated authentication. Federated authentication doesn't validate the user's actual password on Process Director. Instead, Process Director receives a SAML assertion in an HTTP POST request. The SAML assertion has a limited validity period, contains a unique identifier, and can be digitally signed. If the assertion is still within its validity period, has an identifier that hasn't been used before, and has a valid signature from a trusted identity provider, the user is granted access. If the assertion fails for any reason, the user is informed that their credentials are invalid.

Implementation Details

The transaction from an identity provider (IP) to Process Director is called a SAML assertion. Process Director assumes that all data contained in the assertion from the identity provider is valid. The structure of the SAML assertion is defined by an XML schema that is specified by the OASIS SAML standard and contains header information, the subject and statements about the subject in the form of attributes and conditions such as a start and logout URL. The SAML assertions will contain a

Federated ID from the identity provider; this must be mapped to a user in Process Director (see below for more information on this mapping).

There is an online SAML tool that will assist you in creating the XML metadata file that can be consumed by your IP. This tool is located at https://www.samltool.com/sp_metadata.php.

Web browser SSO is SAML's most widely used feature and is typically used in conjunction with the HTTP POST binding and authentication request protocol. There are two important use cases for SAML: Identity Provider Initiated Login, where a user starts directly at their identity provider, logs in, and is then redirected to a landing page at the service provider; and Service Provider Initiated Login, where a user starts by clicking a link to the service provider (e.g. bookmark, email link, etc) and is temporarily redirected to the identity provider for authentication, then returned to the link they initially requested.

Process Director supports Service Provider Initiated Logins, where a user starts by clicking a link to a Process Director object (e.g. home page, Form, etc) and is temporarily redirected to the identity provider for authentication, then returned to the link within Process Director they initially requested.

Process Director Configuration Settings

The user authentication configuration options support the SAML SSO configuration. The SAML configuration information includes:

- SAML Issuer
- SAML Provider Name
- SAML IP Certificate
- SAML URL
- SAML Logoff Page
- SAML Request Type
- SAML Response Type

For Process Director, these are the possible ACS URL configurations:

- `https://HOSTNAME/login_saml.aspx?SAMLRESPONSE=1&usertype=&reauth=&f=`
- `https://HOSTNAME/login_saml.aspx?SAMLRESPONSE=1&usertype=1&reauth=&f=`

- `https://HOSTNAME/login_saml.aspx?SAMLRESPONSE=1&usertype=4&reauth=&f=`

If using re-authentication as part of the electronic signatures these additional URLs are needed:

- `https://HOSTNAME/login_saml.aspx?SAMLRESPONSE=1&usertype=&reauth=1&f=`
- `https://HOSTNAME/login_saml.aspx?SAMLRESPONSE=1&usertype=1&reauth=1&f=`
- `https://HOSTNAME/login_saml.aspx?SAMLRESPONSE=1&usertype=4&reauth=1&f=`

i The `usertype` URL parameter can be blank, but also accepts a value that corresponds to the correct authentication type for the user, as specified by the [nAuditType enum](#) in the Process Director database, e.g., 1 for a Windows user, 4 for a SAML user, etc., depending on whether your system requires specific identification of user types.

Additional information is configured to establish the trust relationship with the identity provider. This configuration specifies what element in the SAML assertion identifies the user, and how that user ID will be mapped to the Process Director users.

User Mappings

When setting up SAML authentication, you'll establish an association between the identity provider and Process Director, forming a federation. When configuring the identity provider, you must determine the unique identifier that will be passed to Process Director as part of the assertion. This is what will uniquely identify the user to Process Director.

This value must be unique for all users in Process Director. Process Director also must be able to determine if this user is held by that part of company's identity infrastructure (e.g. AD, LDAP server) synchronized to the server. If so, then all needed information about the user will already be known.

If the user isn't found, it can be automatically be created in the Process Director database. If there is any information contained in the SAML assertion that

indicates the source of this user (e.g. from an AD server), Process Director can use that information to populate the users email address and user name. If that information doesn't exist, this user information will have to be entered from within the Process Director administrative interfaces.

When SAML integration is enabled, any request to a protected page or login to Process Director will automatically be redirected to the SAML Identity Provider. To use built-in or Windows authentication while SAML support is enabled, add the URL parameter `skipsaml=1` to the `login.aspx` page. When this parameter is present, SAML integration won't be used for that login.

Configuration

To configure SAML support, the following variables can be configured in the Process Director custom vars file at `/custom/vars.cs.ascx`, in the `PreSetSystemVars` section. Attribute names can be configured using the Form Name or the Friendly Name.

VARIABLE NAME	DESCRIPTION
SAML_Enable	Is SAML integration enabled?
SAML_URL	The URL of the SAML Identity Provider
SAML_Request_Type	SAMLReqType.HTTPRedirect (default) SAMLReqType.HTTPPost SAMLReqType.HTTPArtifact
SAML_Response_Type	SAMLRespType.HTTPPost (default) SAMLRespType.HTTPArtifact
SAML_Issuer	The URL of the SAML issuer.
SAML_Artifact_URL	Optional Identity Provider artifact URL
SAML_My_PFX	Optional path to local PFX file to sign SAML requests
SAML_My_PFXPassword	Optional password of local PFX file to sign SAML requests
SAML_My_Certificate	Optional path to Process Director public certificate file (.cer)
SAML_IP_Certificate	Optional path of Identity Provider public cer-

VARIABLE NAME	DESCRIPTION
	ificate file to validate entire SAML response (.cer)
SAML_IP_AssertionCertificate	Optional path of Identity Provider public certificate file to validate assertions in SAML response (.cer)
SAML_Attrib_GUID	Optional name of attribute containing User GUID
SAML_Attrib_UserID	Optional name of attribute containing User UserID. It will match with an existing user in the system using the EXTERNAL GUID attribute first (if configured), and the userID attribute next. If not set, it defaults to the SAML assertion's "subject".
SAML_Attrib_UserName	Optional name of attribute containing User UserName
SAML_Attrib_Email	Optional name of attribute containing User Email
SAML_Attrib_Groups	Optional name of attribute containing User Groups
SAML_Attrib_CustomString	Optional name of attribute containing the custom string to store in user record
SAML_Attrib_CustomNumber	Optional name of attribute containing the custom number to store in user record
SAML_Attrib_CustomDate	Optional name of attribute containing the custom date/time to store in user record
CustomLogoffPage	Optional URL to navigate to after logoff

A sample configuration in the custom vars file might look as follows:

```

// Called BEFORE database initialized
public override void PreSetSystemVars(BPLogix.WorkflowDirector.SDK.bp bp)
{
    bp.Vars.SAML_Enable = true;
}
```

```
bp.Vars.SAML_IP_Certificate = @"C:\Program Files\BP
Logix\cert.cer";
bp.Vars.SAML_URL =
    "https://ad-
fs.company.com/adfs/ls/idpinitiatedsignon.aspx?logintoRP=
    https%3a%2f%2fcloud.bplogix.net";
bp.Vars.CustomLogoffPage = "https://signin.company.com/";
bp.Vars.SAML_Request_Type = SAMLReqType.HTTPRedirect;
bp.Vars.SAML_Response_Type = SAMLRespType.HTTPPost;
bp.Vars.SAML_Issuer = "https://cloud.bplogix.net";
bp.Vars.SAML_ProviderName = "https://cloud.bplogix.net";
bp.Vars.SAML_Attrib_GUID = "SAML-Account-ID";
bp.Vars.SAML_Attrib_UserID = "SAML-Account-Name";
bp.Vars.SAML_Attrib_UserName = "DisplayName";
bp.Vars.SAML_Attrib_Email = "Email@email.address";
bp.Vars.SAML_Attrib_Groups = "Groups";
// For Azure Single Sign-Out (PD v6.0.100 and higher)
bp.Vars.SAML_Enable_SLO = true;
}
```

Azure Single Sign-Out

For Process Director v6.0.100 and higher, Azure Single Sign-Out has been implemented for installations that use Azure Based SAML logins. This feature will, when logging out of Process Director, also completely log the user off the SAML Identity Provider (Azure). A new Custom Variable, SAML_Enable_SLO, is used to implement the Single Sign-Out feature.

To fully implement this feature, the LogoutURL setting in Azure must be set to:

```
https://<processDirectorUrl>/login.aspx?skipsaml=1
```

...to specify where to be redirected after logging out of SAML.

Miscellaneous Installation Notes

Network Service Account

One Windows Server 2003 and higher, ASP.NET apps run by default using the Network Service account. When Process Director needs to access applications like mail (e.g. \InetPub\mailroot\Pickup), the Network Service account needs to be given permission to those resources. The account can be changed in the Application Pool configuration.

Port 80

Process Director uses the HTTP port 80 for all client-to-server communications. If Process Director is behind a firewall, ensure your firewall is configured to allow incoming TCP requests to port 80 to Process Director. You may also use Network Address Translation (NAT) on Process Director connections, if desired. To configure Process Director to use another port, first configure the new port number in the Microsoft Internet Service Manager. Process Director must also be configured to communicate using this new port number. This is configured in the Interface URL field in the online Administration section. For example to use port 8000 for Process Director, configure the online Administration Interface URL field in the installation tab to a value such as this (where your.external-host.com is your valid Internet domain name or IP address):

```
http://your.external-host.com:8000/
```

WebDAV


WebDAV isn't enabled by default in Process Director. For some functions, such as making Process Director compatible with Acrobat PDF annotations, WebDAV Authoring must be enabled in IIS. The WebDAV Redirector must be installed for Windows Server 2008, Windows Server 2008 R2, or Windows Server 2012. (The WebDAV Redirector is already installed on Windows Vista, Windows 7, and higher.) To install the WebDAV Redirector, refer to Microsoft's [WebDAV Installation documentation](#).

When using SQL Server Express 2008 and the SQL Server Management Studio you have to connect to the server name: servername\SQLEXPRESS.

For Process Director v6.1.0 and higher, BP Logix recommends that, if WebDAV is installed in IIS, to ensure it uses only the default installation settings, and to have it enabled. If WebDAV is installed in IIS but is not used, BP Logix recommends uninstalling the WebDAV module completely, to avoid conflicts with some UI features. If WebDAV is installed but disabled, it will cause a **405 Method Not Allowed on PUT HTTP Requests** error. Disabling it and removing it from the Handler Mappings section won't be enough either. Thus, if the WebDAV module is not being used, it should be removed entirely, not disabled.

IIS and .NET

During the product install, if a user installs .NET before installing IIS this will cause IIS not to use .NET. Commonly, this failure to register will result in a HTTP Error 500.19 – Internal Server Error page being displayed when trying to access a Process Director URL. Resolving the issue will require the use of the Microsoft [ASP.NET IIS Registration Tool](#).

 The HTTP Error 500.19 will also occur if "ASP.NET 4.5" isn't installed as a Server Role, in which case the registration command has no effect and won't resolve the issue. Ensure that the ASP.NET 4.5 Server Role is installed via the server manager prior to attempting the registration command. For Windows 2012 Server, this server role is disabled by default. See the [Windows 2012 Server section of this document](#) for instructions on how to configure the server roles properly.

The following Registration tool commands are the most commonly used to register .NET with IIS:

`aspnet_regiis -u`: Run in the v2.0.50727 folder if this is the current version of the Framework that you're running.

`aspnet_regiis -i`: Run in the v4.0.30319 folder if this is the current version of the Framework that you're running.

You can find more information on these commands from the registration tool link above.

You'll have to run the commands in the following dotnet folders:

ASP.NET v3.5: %windir%\Microsoft.NET\Framework\v2.0.50727

ASP.NET v4.5: %windir%\Microsoft.NET\Framework\v4.0.30319

Advanced Reporting and Windows 10

When running Windows 10 Professional, the Advanced Reporting Component doesn't run properly when the IIS Application Pool is running with the Identity is set as ApplicationPoolIdentity. For the Reporting Component to work, the IIS Application pool must be running under the Network Service identity. The Identity can be changed in the Advanced Settings for the Application Pool.

SQL Server Transparent Data Encryption (TDE)

Process Director is compatible with TDE on SQL Server Enterprise editions of Microsoft SQL Server 2008 R2 and higher. For more information on TDE, please see [Microsoft's TDE documentation in MSDN](#).

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