Installation, Upgrade and Configuration Guide

Portal Development Kit for Microsoft .NET

Release 2.0

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Typographic Conventions

Type Style	Represents
Example Text	Words or characters that appear on the screen. These include field names, screen titles, pushbuttons as well as menu names, paths and options. Cross-references to other documentation
Example text	Emphasized words or phrases in body text, titles of graphics and tables, names of programs and files.
EXAMPLE TEXT	Names of elements in the system. These include report names, program names, transaction codes, table names, and individual key words of a programming language, when surrounded by body text, for example, SELECT and INCLUDE.
Example text	Screen output. This includes file and directory names and their paths, messages, names of variables and parameters, source code as well as names of installation, upgrade and database tools.
`Example text`	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
`<Example text>`	Variable user entry. Pointed brackets indicate that you replace these words and characters with appropriate entries.
EXAMPLE TEXT	Keys on the keyboard, for example, function keys (such as F2) or the ENTER key.

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Contents

1. Introduction

PDK for .NET is a set of tools that enable Microsoft Visual Studio .NET developers to build portal content for SAP Enterprise Portal. Organizations that have an existing investment in Microsoft .NET technology can leverage their developers' skills to take advantage of the SAP NetWeaver technology.

This guide provides detailed instructions for installing, upgrading and configuring Portal Development Kit 2.0 for Microsoft. NET (PDK for .NET).

2. Installation Checklist

Use the tables in this section as checklists to make sure you cover all the required installation steps.

Process Flow

1. Print out the checklists.

2. Follow the installation sequence as shown in the tables.

   – For each step, follow the link to the corresponding section, and perform the procedure described there.

   – After you have successfully completed the installation step, mark the corresponding entry in the printed table with ✔ to log the progress of your installation.

   – Proceed with the next step listed in the table.

Planning and Preparation

✔	Action
	Take into account the System Landscape Considerations
	Check the Hardware and Software Requirements
	Download the Installation Package
	Make sure you have access to the relevant SAP Notes

Installation

✔	Action
	Install Portal Add-in for Visual Studio 2003
	Install Portal Runtime for .NET
	Install Java - .NET Interoperability Components

Post-Installation

✔	Action
	Create a logon account for Portal Runtime for .NET
	Configure Portal Runtime for .NET
	Activate Portal Runtime for .NET
	Configure Portal-Side Settings of Portal Runtime for .NET

3. Planning

Plan your installation according to the requirementa of your system landscape and possible deployment configurations.

3.1. System Landscape Considerations

The PDK for .NET package is comprised of the following components:

- **Portal Add-in for Visual Studio 2003 (Portal Add-in)**

  An extension of Microsoft Visual Studio 2003 that allows .NET developers to build, deploy and debug portal components for SAP Enterprise Portal

- **Portal Runtime for Microsoft .NET (.NET Runtime)**

  A service used to process .NET portal components at runtime

- **Java - .NET Interoperability Framework**

  A mechanism that enables API calls between the Java stack and the.NET stack. It allows invoking Java-based portal services from .NET code, and permits SAP Enterprise Portal to pass requests to the Portal Runtime for .NET service. It includes components that are installed on the portal server.

  The following figure illustrates the technical system landscape for PDK for .NET.
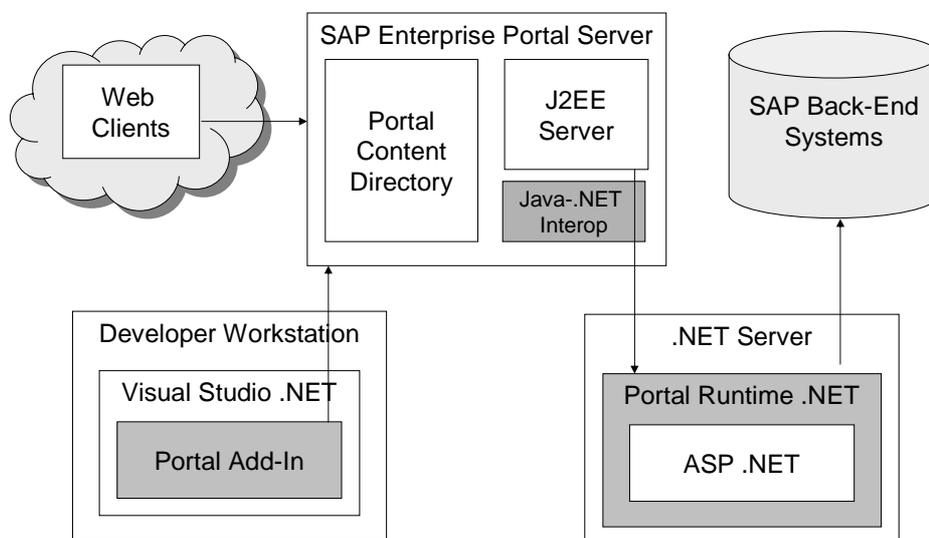
Technical System Landscape

3.2. Deployment Configurations

PDK for .NET supports a number of deployment configurations both for development and production:

Configuration	Description
Development	
Single Host	*Portal Add-in for Visual Studio 2003, SAP Enterprise Portal* and *Portal Runtime for .NET* are installed on the same developer's host.
Multiple development hosts + single portal host	Developer's host: *Portal Add-in for Visual Studio 2003* Portal host: *SAP Enterprise Portal* and *Portal Runtime for Microsoft .NET*. Recommended for team development.
Production	
	In a clustered environment, multiple nodes of *SAP Enterprise Portal* and *Portal Runtime for Microsoft .NET* are installed on multiple servers. If the portal servers run on a non-Windows operating system, you need to install *Portal Runtime for Microsoft .NET* on separate Windows hosts. It is recommended to have one or more *Portal Runtime for Microsoft .NET* failover hosts. For more information about configuring and managing multiple *Portal Runtime for .NET* servers and server nodes, see section Configuring Portal Runtime for .NET.

3.3. Hardware and Software Requirements

Requirement Type	Requirement
Software requirements for the development environment	Windows 2000 (Service Pack 4 or above), Windows 2003, or Windows XP Microsoft Visual Studio .NET 2003
Software requirements for the runtime environment	Windows 2000 (Service Pack 4 or above), Windows 2003 Microsoft .Net Framework 1.1
Hardware requirements for the development environment	Same as for Microsoft Visual Studio .NET 2003
Hardware requirements for the runtime environment	Minimal: same as for Microsoft .Net Framework 1.1. For more information about determining hardware requirements for your system, see Appendix A: Sizing and Performance
Other requirements	SAP Enterprise Portal 6.0 on Web AS 6.40, Service Pack 15 or higher, is installed and available (it does not have to be on the same host as PDK for .NET). For information on the SAP Enterprise Portal installation, see `service.sap.com/instguidesNW04` → *Installation* → *Installation Guide - SAP Enterprise Portal on Web AS 6.40*

Permissions	Your portal logon account should have system administrator permissions.
	Your logon account on each of the installation hosts should have administrator permissions.

3.3.1. Downloading the Installation Package

1. Download the installation package from SAP Service Marketplace at: **service.sap.com/swdc** → *SAP Installations and Upgrades* → *Entry by Application Group* → *SAP NetWeaver* → *PDK for MS.NET* → *PDK PORTAL SERVICES 2.0* → *Win32* → *PDK20NET_10003242.zip (PDK 2.0 for MS .NET).*

2. Save the downloaded .zip file on your host, and extract its contents to any available location.

3.4. SAP Notes

The SAP Notes listed below contain the most recent information about the installation, as well as corrections to the installation documentation.

Make sure that you have the up-to-date version of each SAP Note, which you can find at *SAP Service Marketplace*: **service.sap.com/notes**

SAP Note Number	Title
800842	Central Note for PDK for MS .NET

4. Installation and Upgrade

The installation of PDK for .NET includes installation procedures for each of its three components.

1. Log on to your host as a user with administrator permissions.

2. Go to the folder that contains the installation files, and follow the instructions below.

4.1. Portal Add-In Installation

To install SAP Portal Add-in:

3. Double-click *SAP Portal Add-in 2.0 for Visual Studio 2003.exe* to launch the InstallShield Wizard*.*

4. In the *Welcome* screen, click *Next* to continue.

5. In the *Destination Folder* screen, select the destination folder for the installation. Click *Change* if you want to install to a folder different from the default. Click *Next* to continue.

6. In the *Setup Type* screen, select *Complete* or *Custom*, and click *Next*.

   a. If you have chosen *Custom*, select the program features you want to install in the *Custom Setup* screen. You can select whether to install the *Documentation.*

7. In the *Ready to Install the Program* screen, click *Install* to begin the installation, or click *Back* to review or change your settings.

8. The Portal Add-in for Visual Studio 2003 installation program installs the software and updates your system.

9. SAP Portal Add-in for Visual Studio 2003 installation is completed. Click *Finish* to close the InstallShield wizard.

During the installation, the following actions are performed automatically:

- Runtime assemblies are registered in the Global Assembly Cache.

- The *Portal Add-in for Visual Studio 2003* folder is created on the local hard drive.

- The *Portal Add-in for Visual Studio 2003* registry key is created on the HKEY_LOCAL_MACHINE\SOFTWARE registry branch.

4.2. Portal Runtime for .NET Installation

To install SAP Portal Runtime for .NET:

1. Double-click *SAP Portal Runtime 2.0 for Microsoft .NET.exe* to launch the InstallShield Wizard*.*

2. In the *Welcome* screen, click *Next* to continue.

3. In the *Destination Folder* screen, select the destination folder for the installation. Click *Change* if you want to install to a folder different from the default one. Click *Next* to continue.

4. In the *Configuration* screen, configure the TCP port for communication with the portal. The default value is `8050`.

5. In the *Ready to Install the Program* screen, click *Install* to begin the installation, or click *Back* to review or change your settings.

6. The installation program installs the software and updates your system.

7. SAP Portal Runtime for .NET installation is completed. Click *Finish* to close the InstallShield wizard.

During installation, the following actions are performed automatically:

- The ability to run ASP.NET applications on the Portal Runtime for .NET host is verified.

- Runtime assemblies are registered in the Global Assembly Cache.

- The *Portal Runtime for Microsoft.NET* folder is created on the local hard drive.

- The *Portal Runtime for Microsoft.NET* registry key is created on the HKEY_LOCAL_MACHINE\SOFTWARE registry branch.

- The *SAP NetWeaver Portal Runtime 2.0 for Microsoft .NET Server 00* Windows service is created.

4.3. Installation of Java - .NET Interoperability Components

To enable communication with Portal Runtime for .NET, you need to deploy the Java - .NET Interoperability components (`com.sap.portal.dotnet.framework.sda` and `com.sap.portal.dotnet.services.systems.sda`) to the portal server.

> SAP Enterprise Portal 6.0 SPS15 and higher comes with these files installed. You need to deploy them manually using the *Software Deployment Manager* tool (SDM) only if you have an earlier version of the portal.

To deploy the SDA files:

1. Log on to the portal host.

2. Change to the `<sdm_home>` directory. The `<sdm_home>` directory matches the directory `sdm/program` in the installation of your SAP Web Application Server directory.

3. Start SDM GUI in remote mode with the start script *RemoteGui.bat* (Windows host) or *RemoteGui.sh* (UNIX host).

4. Log on to SDM GUI.

5. In the *Deployment* tab of Software Deployment Manager*:*

   a. Click either the icon *Add SCAs/SDAs to Deployment List (Local File Browser)* or *Add SCAs/SDAs to Deployment List (Server Side File Browser)*, depending on the location of the SDA files.

   b. Browse to the location of the following SDA files and add them to the deployment list:

      - `com.sap.portal.dotnet.framework.sda`

      - `com.sap.portal.dotnet.services.systems.sda`

   c. Follow the instructions to deploy these files to the portal.

      For detailed instructions, see:

      help.sap.com/nw04 → *SAP NetWeaver 04 (English)* → *Application Platform* → *Java Technology in SAP Web Application Server* → *Development Manual* → *Deployment: Putting It All Together* → *Software Deployment Manager*

6. After deployment of the SDA files, restart the portal.

4.4. Upgrading from Previous Versions

If you have a previous version of PDK for .NET installed on any of your hosts, the installation wizard will automatically detect and upgrade your installation. The content, created with the previous version, and all application settings are preserved.

Prior to upgrading, you need to stop all Portal Runtime for .NET server nodes on the host.

After upgrading, you need to:

- Reassign the logon account to all existing Portal Runtime for .NET server nodes. For more information, see Configuring Portal Runtime for .NET.

- Assign full control permissions for the `<Portal Runtime for .NET Installation folder>` to the logon account. For more information, see Creating a logon account for Portal Runtime for .NET.

- Configure the portal-side settings of Portal Runtime for .NET (see Configuring Portal-Side Settings).

4.5. Copying an Existing Installation

To copy an existing Portal Runtime for .NET installation to another host, you need to install it on the new host (see Portal Runtime for .NET Installation for instructions), and then perform the necessary configuration tasks, using the parameters of the existing installation. However, in the portal-side settings you should adapt the host name to the new host.

5. Post-Installation Activities

5.1. Creating a Logon Account for Portal Runtime for .NET

The portal authentication and authorization scheme requires the *Portal Runtime for .NET* service to provide logon credentials. For this purpose, a dedicated Windows user account should be configured and assigned to the *Portal Runtime for .NET* service.

Creating a Logon Account

1. In Windows, go to *Start → Programs → Administrative Tools → Computer Managegement*.

2. In the *Computer Management* tool, expand the *Local Users and Groups* node.

3. Right-click the *Users* node and select *New User*.

4. In the *New User* dialog box:

    a. Specify any name and password.

    b. Clear the option `User must change password at next logon`.

    c. Select the options `User cannot change password` and `Password never expires`.

Assigning Permissions to the Logon Account

1. Go to *Start → Programs → Administrative Tools → Local Security Policy.*

2. In the *Local Security Settings* tool, go to *Local Policies → User Rights Assignment → Log On as a Service.*

3. In the *Local Security Policy Setting* dialog box that opens, check whether your logon account appears in the list. If not, click *Add…*

4. In the *Select Users or Groups* dialog box that opens, select your logon account, and click *OK*.

Your account has been added to the list of accounts that have the `Log on as service` permission.

This account must have full control permissions for the following folders:

- Portal Runtime for .NET installation root folder that is by default *C:\Program Files\SAP\Portal Runtime for Microsoft .NET*

- Temporary ASP.NET Files folder, automatically generated by ASP.NET that is by default *%windir%\Microsoft.NET\Framework\v1.1.4322\Temporary ASP.NET Files*

- *%windir%\Temp* folder

To assign permissions for the folders:

1. In the *Explorer* window, select and right-click the *<folder>*.

2. Select *Properties* from the context menu, and click the *Security* tab.

3. Select your account and check the *Allow* box for the *Full Control.*

4. Click *OK.*

5.2. Configuring Portal Runtime for .NET

The *SAP Portal Runtime for .NET Snap-In* for Microsoft Management Console (MMC) provides tools to create, configure and manage the Portal Runtime for .NET server nodes on your local or remote servers.

A **server** is the local or remote host, on which Portal Runtime for .NET is installed.

A **server node** is a separate instance of the *Portal Runtime for .NET* service, installed on the same host. The corresponding service name is *SAP NetWeaver Portal Runtime 2.0 for Microsoft .NET Server XX,* where XX is the server node ID.

Starting the SAP Portal Runtime for .NET Snap-In

1. Go to *Start → Programs → SAP Portal Runtime for Microsoft.NET→ Management Console*. An MMC window with the *SAP Portal Runtime for .NET* node opens.

2. In the left pane, expand the *SAP Portal Runtime for .NET* node. In the right pane, the currently defined server nodes are displayed.

Initial Configuration

To start using the *Portal Runtime for .NET* service, perform the following configuration steps:

1. By default, the server *This computer* and the node *Server00* are defined. If you have installed Portal Runtime for .NET on a remote server, connect to this server.

2. If necessary, create new server node(s) on your server.

3. Set the properties of each server node.

4. Start each server node.

For detailed instructions on performing the required tasks, see Configuration and Management Tasks.

Configuration and Management Tasks

Task	Description
Connecting to a server	Right-click the *SAP Portal Runtime for .NET* node and select *Connect to Server…*
	In the *Connect to Server* dialog box select either *Connect to the local computer* or *Connect to a remote server;* for a remote server, enter the *Server name or IP address.*
	Important*:* Portal Runtime for .NET should be installed on this server.
Disconnecting a server	Right-click a server and select *Disconnect* from the context menu.
Displaying the list of existing server nodes	Double-click a server. The list of existing server nodes is displayed in the right pane.
Creating a new server node	Right-click a server and select *New node* from the context menu. Set the properties of the new node as required (see below).

Task	Description
Setting the properties of a server node	Double-click a server node. In the *Properties* dialog box that opens, set the properties as follows:
	TCP Port: Enter the port number to be used by this node to communicate with the portal.
	Assign Service Logon Account:
	Enter the credentials of the dedicated logon account that was previously created for the service and granted full control permissions for the following folders:
	%Program Files%\SAP\Portal Runtime for Microsoft .NET *%windir%\Microsoft.NET\Framework\v1.1.4322\Temporary ASP.NET Files* *%windir%\Temp*
	This account should have the "Log on as service" permission.
	For more information, see Creating a Logon Account for Portal Runtime for .NET.
	⚠
	- If you do not select a dedicated account, the default *LocalSystem* account will be used. This account has more permissions than necessary, so for security reasons it is not recommended for this purpose. - You can use the same account for all nodes on one server. - It is possible to assign the logon account to the service in the Windows *Services* tool. - Click *OK* to assign this account to the service.
Deleting a server node	Right-click a server node and select *Delete* from the context menu. Confirm or cancel the deletion in the message box that appears.
Starting, stopping, or restarting a server node	Right-click a server node and select the relevant option from the context menu. You can also use the toolbar buttons which are enabled when a node is selected. **Important**: To activate a service, you need to start the relevant server node.
Saving state	To save the list of servers to an `.msc` file, select *Save* or *Save As* from the Console menu. The list is also saved automatically when you exit MMC.

5.3. Configuring Portal-Side Settings

To enable effective communication between the portal and the.NET runtime environment, you have to configure a number of portal-side settings.

In a clustered environment, multiple portal server nodes communicate with multiple .NET runtime server nodes. The following procedure describes how to configure their communication parameters.

1. Log on to the portal as a system administrator.

2. In top-level navigation, go to System Administration → Support.

3. In the *Support Desk* iView, displayed in the work area, click Portal Runtime for Microsoft.NET.

4. In the displayed Portal Support Desk:Portal Runtime for Microsoft .NET page, click *.NET Runtime Service Configuration.*

5. In the *.NET Runtime Service Configuration* page that opens, configure the portal-side settings as described below.

Portal Servers

Configure each portal server node to enable communication with a .NET runtime server node:

Element	Description
Portal Node	The `ID` property of a portal server node. If this is a single node, leave empty; otherwise, specify a different `<Portal Server ID>` for each portal node.

Host: Port	The host and port on which the portal server node listens for a .NET runtime server connection: `<Portal Server1 Host>:<Portal Server1 Port for .NET>`. If there are multiple portal nodes, specify a different combination of host and port for each node.
	
	Default: `localhost:8051` (valid for a single portal node)
	
	Example:
	
	• Single node
	
	`Portal Node        Host: Port`
	
	`                   localhost:8051`
	
	• Multiple nodes
	
	`Portal Node        Host: Port`
	
	`4279850            localhost:8051`
	
	`4279851            localhost:8052`

Add	Add a new portal server node.
Remove	Remove the selected portal server node. **Important:** Make sure that at least one node remains.

.NET Runtime Servers

Configure each .NET runtime server node to enable communication with a portal server node:

Element	Description
Portal Node	The `ID` property of a portal server node. For example: `3200150` Default:`*` – means that all portal nodes listen to the specified .NET runtime server node
Host:Port	The host and port on which a .NET runtime server node listens for the connection from a portal server node; the port number should match the *TCP Port* property of the server node. `<.NET runtime host>:<.NET runtime port number>` Example: `p504:8050` Default: `localhost:8050`
Add	Add a new .NET runtime server node configuration.
Remove	Remove the selected .NET runtime server node configuration. **Important:** Make sure that at least one node remains.
Check Server	Check response of the selected .NET runtime server node.

.NET Runtime Failover Servers

To ensure reliability of the operation, specify the failover .NET runtime server nodes to use when none of the servers in the current configuration is responding. It is similar to the .NET runtime servers configuration.

Element	Description
Portal Node	`<Portal Server ID>` Example: `3200150` Default:`*` – means all portal nodes listen to the specified .NET runtime server node
Host:Port	The host and port on which a .NET runtime server listens for the connection from a portal server; the port number should match the *TCP Port* property of the server node. `<.NET runtime host>:<.NET runtime port number>` Example: `p504:8050` Default: `localhost:8050`
Add	Add a new failover .NET runtime server node configuration.
Remove	Remove the selected failover .NET runtime server node configuration.
Check Server	Check response of the selected failover .NET runtime server node.

Service Parameters

Configure the general service parameters.

Property	Description
Allow Server Affinity	If selected, all requests from a specific client session are directed to the same .NET runtime server until the end of the session; otherwise, the server is randomly selected by the load balancing mechanism. Default: selected **Warning**: If this checkbox is unselected, the state management, implemented with the *Session* and *Application* objects in the .NET portal components, does not work as expected.
Display ASP.NET Stack on ASP.NET Error	If selected, the ASP.NET call stack is displayed on an ASP.NET runtime error: otherwise, a regular portal error message is displayed. It is recommended to clear this checkbox in a production environment. Default: cleared
Enable Ja.NET Logging	If selected, writing Ja.NET (Java -.NET interoperability framework) log entries to the portal log is enabled. You also need to configure the portal logger to assign *Debug* or higher severity level for the `com.sap.portal.dotnet` component. For more information about tracing and logging, see *Trace and Log Files* in *Administration of PDK for .NET.* It is recommended to clear this checkbox in a production environment. Default: cleared

Production Mode	Defines the runtime operation mode.
	If unselected (Development mode), each request is processed by the specific .NET runtime server indicated in the request parameter. This mode enables a group of developers to use a single portal for simultaneous debugging sessions.
	If selected (Production mode), the requests are processed according to the configuration of .NET runtime servers.
	Default: selected
Lease Duration (seconds)	The initial lifetime of a Java object in seconds and the amount of time to renew the lease each time the object is accessed. If necessary, this value can be increased in the development mode.
	Default: `5`
Request Timeout (milliseconds)	.NET iView request timeout in milliseconds.
	Default: `5000`

6. Click *Save* to save your changes, Cancel to restore previous settings, or *Reset* to restore defaults.

7. To activate the changes, restart the portal service by clicking R*estart* in the *Application Details* pane.

> When you restart the portal service, the status indicators of all services in the *List of Services* panel indicate `Stopped`. However, you do not need to start the services manually, as they will be started automatically upon the first request.

6. Troubleshooting

This section lists possible errors/problems that might occur during or after the installation, and provides solutions. If a problem persists, contact your local support center or software supplier.

6.1. Installation Problems

Error messages

Following is the list of error messages that might appear during installation, their possible causes, and recommended solutions.

Error message

> Error code 1327, 2755 or 2336.

Solution

> To install the product, you must use Windows Installer 2.0 or higher.

Error message

> "Installation Incomplete"

Cause

> Windows Installer packages cannot be run from an encrypted directory on your file system.

Workaround

> Run the installer from an unencrypted directory and run it.

Message

> Your logon account does not have the administration permissions to install Portal Runtime for Microsoft.NET / Portal Add-in for Visual Studio 2003 on this host.

Solution

> Log on with an account that has administration permissions.

6.2. Installation Check

If other problems occur during or after the installation, you should perform the following checks:

6.2.1. Portal Add-In for Visual Studio

1. Start Microsoft Visual Studio .NET 2003.

2. Go to *Tools → Add-in Manager*.

   If the installation was successful, you see *Portal Add-in 2.0 for Visual Studio 2003* checked as an Available Add-in.

3. Create a new SAP Portal Application project, and check that the Portal Add-in elements are available in the IDE:

   - The *SAP Portal Application* project templates for C# and VB.NET

   - The *SAP Portal Component*, *SAP Portal System Template* and *SAP Portal Page* new item templates

- The *Portals* node in Server Explorer

- The *SAP NetWeaver* tab in the Toolbox

- SAP menu and toolbar icons

- Project context menu

- Portal Component context menu

- Tools → Options → SAP

- Help → Contents – SAP PDK for .NET documentation

6.2.2. Portal Runtime for .NET

1. Go to *Start → Settings → Control Panel.*

2. Double-click *Administrative Tools*, and double-click *Services.*

3. Check that the *SAP NetWeaver Portal Runtime 2.0 for Microsoft .NET Server 00* service appears in the *Services* window.

## 6.2.3. Installation Verification Tool

You can use the Installation Verification tool to check the problems with your installation.

For tool availability information, see SAP Note #800842.

The Installation Verification tool lets you verify that all the supporting files for your components have been properly installed.

To use the Installation Verification tool**:**

1. Go to the *<Installation Verification Tool>* folder.

2. In this folder, select and start the *Installation Verification Tool for PDK for .NET.*

3. In the selection screen, select the relevant checkboxes, or click *Select All to* verify all components.
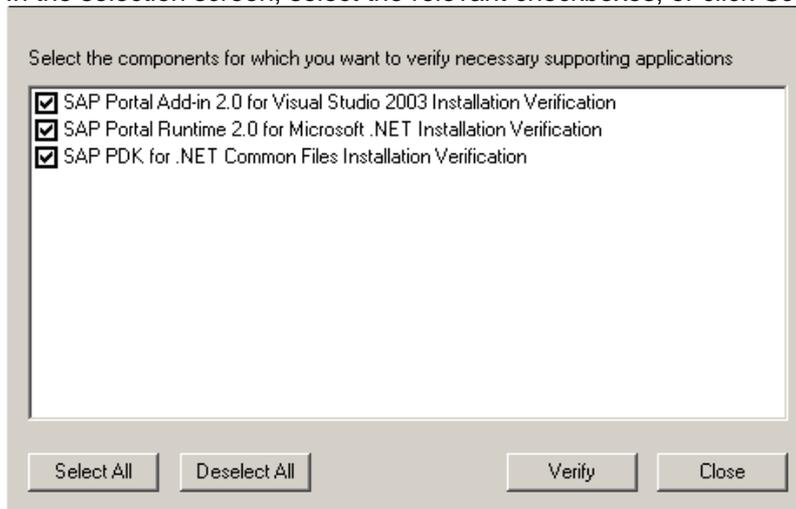
4. Click *Verify*.

   When verification is completed, the *Verification Summary* screen opens. The navigation area on the left displays the components selected for verification. The output area on the right displays in tabular form the results returned by each test. In the output section, see the instructions for installing the missing files.

5. Click *Close* to close the tool, or *Back* to return to the selection screen.

7. Modifying, Repairing, or Removing PDK for .NET

The InstallShield Wizard allows you to modify, repair or remove your current installation of the PDK for .NET components.

Modifying, Repairing, or Removing Portal Add-in for Visual Studio 2003

1. To launch the InstallShield Wizard, either double-click *SAP Portal Add-in 2.0 for Visual Studio 2003.exe*, or go to *Start → Settings → Control Panel → Add/Remove Programs*, choose *SAP Portal Add-in 2.0 for Visual Studio 2003*, and click *Change* or *Remove*.

2. In the *Program Maintenance* screen, select one of the *Modify*, *Repair* or *Remove* options, and click *Next*.

3. Follow the instructions of the wizard.

4. Click *Finish* to exit the wizard.

Modifying, Repairing or Removing Portal Runtime for .NET

1. To launch the InstallShield Wizard, either double-click *SAP Portal Runtime 2.0 for Microsoft .NET.exe,* or go to *Start → Settings → Control Panel → Add/Remove Programs*, choose *SAP Portal Runtime 2.0 for Microsoft .NET* and click *Change* or *Remove*.

2. In the *Program Maintenance* screen, select one of the *Modify*, *Repair* or *Remove* options, and click *Next*.

3. Follow the instructions of the wizard.

4. Click *Finish* to exit the wizard.

8. Additional Information

8.1. Appendix A: Sizing and Performance

To help you determine the hardware requirements for the best performance of your system, the following configuration has been tested and measured:

Configuration

- One portal host with two portal server nodes (processes)
- One Portal Runtime for .NET (.NET Runtime) host with four server nodes
- Each portal node is configured to communicate with two .NET Runtime server nodes.
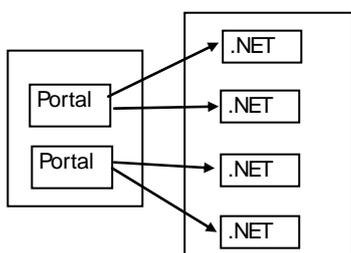
Hardware

Two hosts, each with the following capacity: Xeon, 2 CPU 2.80 Ghz, 3.82 GB RAM

Software

- Operating system: Microsoft Windows Server 2003
- Portal host: SAP Enterprise Portal 6.0 in NW '04 SP Stack 12
- PDK for .NET host: Portal Runtime 2.0 for Microsoft .NET

Test scenario

- Each user performs login and navigates 16 times to 2 pages: one page with 4 URL iViews and the other page with 4 embedded iViews.
- Each iView has a response size of 100K.
- The test runs without using a caching mechanism.

Users

In SAP sizing terminology, an **active user** is a user that goes through a given number of business processes in a given time period. A **named user** is a user with an account. The number of the active users is 10% of the named users. **Concurrent users** work in the system simultaneously.

The number of users is measured when the portal host reaches 60% CPU consumption. In the same time the .NET host reaches 20% CPU consumption.

Named users	3200 users
Active users	320 users with average one minute think time
Concurrent users	50 users, no think time

Notice

This measurement shows that the limitation of the users number is in the portal, therefore adding another .NET hosts to this configuration will not improve performance.

Disclaimer

The above measurements are based on the specific scenario and configuration that were defined for the performance tests of PDK for .NET. Other scenarios and configurations might yield different results.

For more information about SAP sizing solutions, see *Hardware Sizing* at `service.sap.com/sizing`.