N A S T E L ™

TECHNOLOGIES, INC.

WLS/JMX 410.001

AutoPilot/IT Plug-in for WebLogic Server/JMX

Installation and User's Guide

Version 4.1

For use with AutoPilot/IT 4.0

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Chapter 1: Introduction

Welcome to the AutoPilot/IT Plug-in for WebLogic Server/JMX (AP/WLS/JMX) Installation and User's Guide. This guide explains how to update and perform new installations and the use of the this plug-in. This plug-in is designed to work with AutoPilot/IT, its components and other plug-ins, and run simultaneously without interference or performance degradation. AutoPilot/IT Plug-in for WebLogic Server/JMX will hereinafter be referred to as AP Plug-in for WLS/JMX or WLS/JMX Plug-in.

1.1 How This Guide is Organized

Chapter 1: Identifies the users and history of the document. System requirements for this plug-in are outlined. All other system and platform information is listed in the *AutoPilot/IT Installation and User's Guides.*
Chapter 2: Contains a brief description of WLS/JMX.
Chapter 3: Provides instructions for new installations of the WLS/JMX Plug-in.
Chapter 4: Provides instruction for using the WLS/JMX Plug-in.
Chapter 5: Describes metrics collected by the WLS/JMX expert.
Appendix A: Provides a detailed list of all reference information required for the installation of AutoPilot.
Appendix B: Contains conventions used in AutoPilot and documents typographical conventions.
Glossary: Contains a listing of unique and common acronyms and words and their definitions.

1.2 History of This Document

1-1. Document History			
Release Date:	**Document Number**	**For AutoPilot Version**	**Summary**
December 2006	AP/WLS/JMX 400.001	AP 4.0 or higher	Initial document release
August 2008	AP/WLS/JMX 410.001	AP 4.0 or higher	Updated WebLogic Server Setup information.

1.2.1 User Feedback

Nastel encourages all Users and Administrators of AutoPilot to submit comments, suggestions, corrections and recommendations for improvement for all AutoPilot documentation. Please send your comments via Post/Mail, or by *e*-mail. Send messages to: support@nastel.com. You will receive a written response, along with status of any proposed change, update, or correction.

1.3 Related Documents

The complete listing of related and referenced documents is listed in Appendix A of this guide.

1.4 Release Notes

See README.HTM files on installation media or AutoPilot installation directory. Release notes and updates are also available through the Nastel Resource Center at: http://www.nastel.com/resources/

1.5 Intended Audience

WLS/JMX Installation and User's Guide is intended for use by installers and administrators of Nastel's AutoPilot and WebLogic. There are three user groups defined for the purpose of installation and use.

- **Installer:** The installer should be familiar with Java Run Time Environment 1.5.1 (JRE 1.5.1) or higher (included in AutoPilot/IT for Windows, Solaris, AIX, HP-UX and Linux). Procedures for installing software on the target platform such as Windows and/or UNIX. Basic understanding of TCP/IP.
- **Administrator:** The administrator should have a working knowledge of middleware, TCP/IP, and system management. The Administrator should also have an understanding of Java Runtime Environment (JRE) and TCP/IP. Installation procedures for the platform where AutoPilot is installed (for example, Windows, NT, UNIX, etc.)
- **User:** Requires only local operating system operations knowledge and basic knowledge of AutoPilot.

1.6 System Requirements

This section defines system and platform prerequisite support requirements for WLS/JMX.

1.6.1 Platforms

WLS/JMX is compatible with the following platforms:

- Windows NT/2000/XP/2003
- Unix (Solaris, AIX, HP-UX, Linux)

1.6.2 WebLogic Application Servers

WLS/JMX is compatible with the following WebLogic Servers

- WebLogic Server 9.X

1.6.3 Other Requirements

WLS/JMX requires the following conditions:

- AutoPilot/IT 4.0 or higher.
- AutoPilot managed node running on the same machine as the WLS server and no other application servers or plug-ins are installed on this node.
- Java Run Time Environment 1.4.1 (JRE 1.4.1) or higher (included in AutoPilot/IT)
- Installer may need administrative privileges for the target platform.

1.7 Terms and Abbreviations

A list of Terms and Abbreviations used in this document is located in the Glossary.

1.8 Technical Support

If you need additional technical support, you can contact Nastel Technologies by telephone or by e-mail.
To contact Nastel technical support by telephone, call (800) 963-9822 ext. 1, if you are calling from outside the United States dial 001-631-761-9190. To contact Nastel technical support by e-mail, send a message to mailto:support@nastel.com. To access the Nastel automated support system (user id and password required), go to http://support.nastel.com/. Contact your local AutoPilot Administrator for further information.

1.9 Conventions

Refer to Appendix B for conventions used in this guide.

Chapter 2: About WebLogic/JMX

2.1 Introduction

WebLogic/JMX (WLS/JMX) plug-in was designed to enable AutoPilot to monitor and manage *e*Business applications for continuous operations in addition to its standard features.

2.2 WLS Support for Monitoring

- WebLogic Server performance
- JMS performance
- JDBC performance
- Security
- Application stats and performance
- All WLS subsystem performance

Combined with WebSphere Application Server, JBoss, jKool and WMQ, AutoPilot is capable of monitoring the entire SOA/J2EE based space.

2.2.1 WLS Features

WLS provides the following management features:

- Monitors and controls status of WebLogic services
- Monitors and manages Bean Data, Bean Object Pools, and Bean Method performance
- Monitors WLS runtime performance
- Create custom monitoring
- Collect system level performance information, such as CPU, I/O, and memory
- Collect historical data for subsequent analysis/capacity planning
- Instantly manage-enable any Java Bean application
- Organize management information into views, customized for specific users.

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Chapter 3: Installation

3.1 Installation Preparation

This section contains general information related to preparing for and installing WLS/JMX software.

3.1.1   Installation Materials

Installation can be performed by download through the Nastel Resource Center or by installation media. The installation media can be automatically initiated, then continued using the installation wizard, or manually installed. The installation media contains all required AutoPilot components for Java 2 platforms.

3.1.1.1 Technical Documents

Prior to installation, review all text files and installation procedures provided on the Nastel Resource Center. It is recommended that all installation related materials are printed to allow the installer to review prior to installation, and better follow the detailed instructions within.

3.1.2   Licensing Information

A copy of the standard Licensing Agreement is imbedded in the installation software. The formal licensing agreement has been furnished in the purchase agreement package.

3.2 Installation

This section provides instructions for installing WLS/JMX on the compatible platforms.
Review all installation related materials prior to commencing installation procedures. Reviewing materials will allow installers to pre-determine installation options and familiarize themselves with associated requirements.

3.2.1   Before Installing WLS/JMX

Ensure AutoPilot managed node is running on the same machine as WebLogic Server.

3.2.2   Installing the WLS/JMX Expert from Nastel Resource Center

1. Download the WLS/JMX Plug-in from the Nastel Resource Center.
2. Save your work and logoff AutoPilot and WebLogic Application Server.

	NOTE:	There are no specific logoff procedures required to exit AutoPilot Console.

3   Stop the Nodes and/or Domain Servers that will be updated as specified in the *AutoPilot/IT User's Guide*.

4. Copy `AP_JMX_WLS-<version_number>.pkg` into the `[AUTOPILOT_HOME]\updates` directory.

5. At the command prompt run:
    `[AUTOPILOT_HOME]\bin\pkgman ..\updates\AP_JMX_WLS-<version_number>.pkg`

6. Verify plug-in installation: `[AUTOPILOT_HOME]\bin\pkgman –libinfo`. The details of the library are listed.

	NOTE:	Make sure there are no errors posted at the bottom of the screen.

7. Restart the Nodes and/or Domain Servers that were stopped in step 3 above as specified in the *AutoPilot/IT User's Guide*.

3.2.3   WebLogic Server Setup

The following steps are required to enable a WebLogic application for monitoring using JMX. (See *Enable and Configure IIOP* in Administration Console Online Help for more detailed information.)

Enable Anonymous Admin Lookup

1. At Administration Console, navigate to **Domain >> Security >> General**.
2. If not already accomplished, in Change Center of Administration Console click **Lock & Edit**.
3. Check (enable) *Anonymous Admin Lookup Enabled* and click **Save**.

Enable IIOP Protocol for Admin Server and Application Server

1. At Administration Console, expand environment and select Servers >> *<Server_Name>*.
2. Under the server settings *Protocol* tab, click **IIOP** and check *Enable IIOP*.
3. Expand Advanced options and enter Default IIOP Username and Default IIOP Password.
4. Configure *default IIOP user* to be a WebLogic Server user with Administrator privileges.
5. In Change Center of Administration Console, click **Activate Changes**.
6. Restart WebLogic Server.

3.3 Known Issues

Messages similar to those below may be seen in the Managed Node system event log. These messages do not affect the functionality of the WebLogic Monitor and can be safely disregarded. These messages are output by the JDK CORBA implementation, beyond the control of Nastel Technologies. They are related to Bug #4914585, believed to have been fixed in JDK 1.4.1, but not JDK 1.4.2 (see http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=4914585 for more detailed information.)

Exception in thread "autopilot/JMX Monitor Sampling Thread" org.omg.CORBA.INTERNAL: vmcid: SUN minor code: 207 completed: No

```
        at com.sun.corba.se.internal.orbutil.CacheTable.put_table(CacheTable.java:78)
        at com.sun.corba.se.internal.orbutil.CacheTable.put(CacheTable.java:67)
        at com.sun.corba.se.internal.iiop.CDRInputStream_1_0.read_value(CDRInputStream_1_0.java:974)
        at com.sun.corba.se.internal.iiop.CDRInputStream_1_0.read_abstract_interface(CDRInputStream_1_0.java:859)
        at com.sun.corba.se.internal.iiop.CDRInputStream_1_0.read_abstract_interface(CDRInputStream_1_0.java:851)
        at com.sun.corba.se.internal.iiop.CDRInputStream.read_abstract_interface(CDRInputStream.java:309)
        at com.sun.corba.se.internal.io.IIOPInputStream.readObjectDelegate(IIOPInputStream.java:228)
        at com.sun.corba.se.internal.io.IIOPInputStream.readObjectOverride(IIOPInputStream.java:381)
        at java.io.ObjectInputStream.readObject(ObjectInputStream.java:318)
        at java.util.HashMap.readObject(HashMap.java:1006)
        at com.sun.corba.se.internal.io.IIOPInputStream.readObject(Native Method)
        at com.sun.corba.se.internal.io.IIOPInputStream.invokeObjectReader(IIOPInputStream.java:1298)
        at com.sun.corba.se.internal.io.IIOPInputStream.inputObject(IIOPInputStream.java:908)
        at com.sun.corba.se.internal.io.IIOPInputStream.simpleReadObject(IIOPInputStream.java:261)
        at com.sun.corba.se.internal.io.ValueHandlerImpl.readValueInternal(ValueHandlerImpl.java:247)
        at com.sun.corba.se.internal.io.ValueHandlerImpl.readValue(ValueHandlerImpl.java:209)
        at com.sun.corba.se.internal.iiop.CDRInputStream_1_0.read_value(CDRInputStream_1_0.java:948)
        at com.sun.corba.se.internal.iiop.CDRInputStream.read_value(CDRInputStream.java:289)
        at com.sun.corba.se.internal.corba.TCUtility.unmarshalIn(TCUtility.java:266)
        at com.sun.corba.se.internal.corba.AnyImpl.read_value(AnyImpl.java:561)
        at com.sun.corba.se.internal.iiop.CDRInputStream_1_0.read_any(CDRInputStream_1_0.java:635)
        at com.sun.corba.se.internal.iiop.CDRInputStream.read_any(CDRInputStream.java:260)
        at com.sun.jmx.remote.internal.PInputStream.read_any(Unknown Source)
        at com.sun.corba.se.internal.javax.rmi.CORBA.Util.readAny(Util.java:100)
        at javax.rmi.CORBA.Util.readAny(Util.java:90)
        at org.omg.stub.javax.management.remote.rmi._RMIConnection_Stub.getAttribute(Unknown Source)
        at     javax.management.remote.rmi.RMIConnector$RemoteMBeanServerConnection.getAttribute(RMIConnector.java:
854)
        at com.nastel.nmx.expert.weblogicjmx.WebLogicMBeanServer.getAttribute(WebLogicMBeanServer.java:66)
        at com.nastel.nmx.expert.jmx.JmxExpert.getAttribute(JmxExpert.java:402)
        at com.nastel.nmx.expert.jmx.JmxExpert.reportMBeanAttribute(JmxExpert.java:810)
        at com.nastel.nmx.expert.jmx.JmxExpert.sampleMBean(JmxExpert.java:766)
        at com.nastel.nmx.expert.jmx.JmxExpert.sampleMBeans(JmxExpert.java:725)
        at com.nastel.nmx.expert.jmx.JmxExpert.run(JmxExpert.java:843)
        at java.lang.Thread.run(Thread.java:534)
```

Chapter 4: Using WLS/JMX

4.1 Experts

All experts are agents knowledgeable about the subject they are assigned to monitor. Experts are mobile and act as connectors to other AutoPilot and optional plug-in experts. Experts are contained in target managed resources (nodes) and collect system's status information, which are analyzed by assigned policies, then filtered by AutoPilot managers to be viewed in a Business View Viewer. Experts publish facts. Facts in AutoPilot are basic true statements about current run-time values, indicating an object's state in a managed resource. WLS/JMX Experts maintain the same strengths and qualities as all AutoPilot/Experts. Refer to the AutoPilot/IT User's Guide (AP/USR 400.005) for additional information on expert deployment and configuration.

4.1.1 Deploying WLS/JMX Experts

1. Click **Deployment Tool** to display *Directory Viewer*.
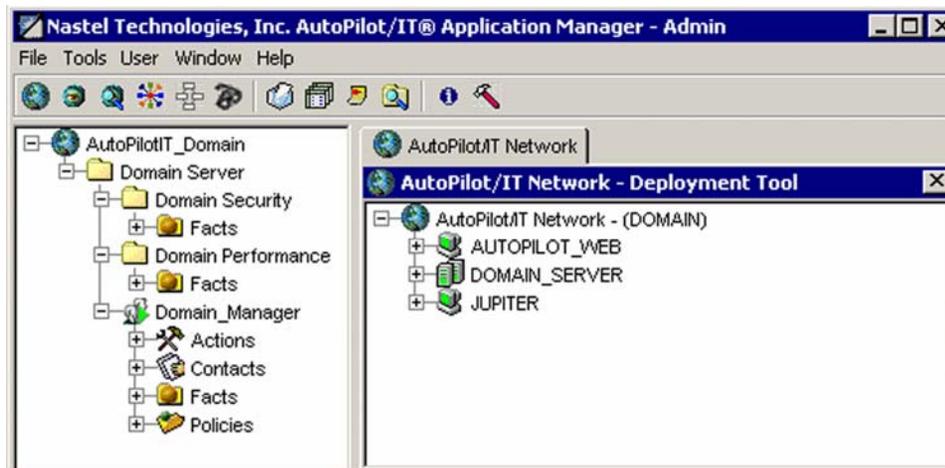
Figure 4-1. Deployment Tool and Networked Nodes

2. Click on the desired node.
3. Right click Node to display *Node Menu*. Click **Deploy Expert**. The Expert pop-up menu is displayed.
4. Click **WebLogic>>WebLogic JMX Monitor**.
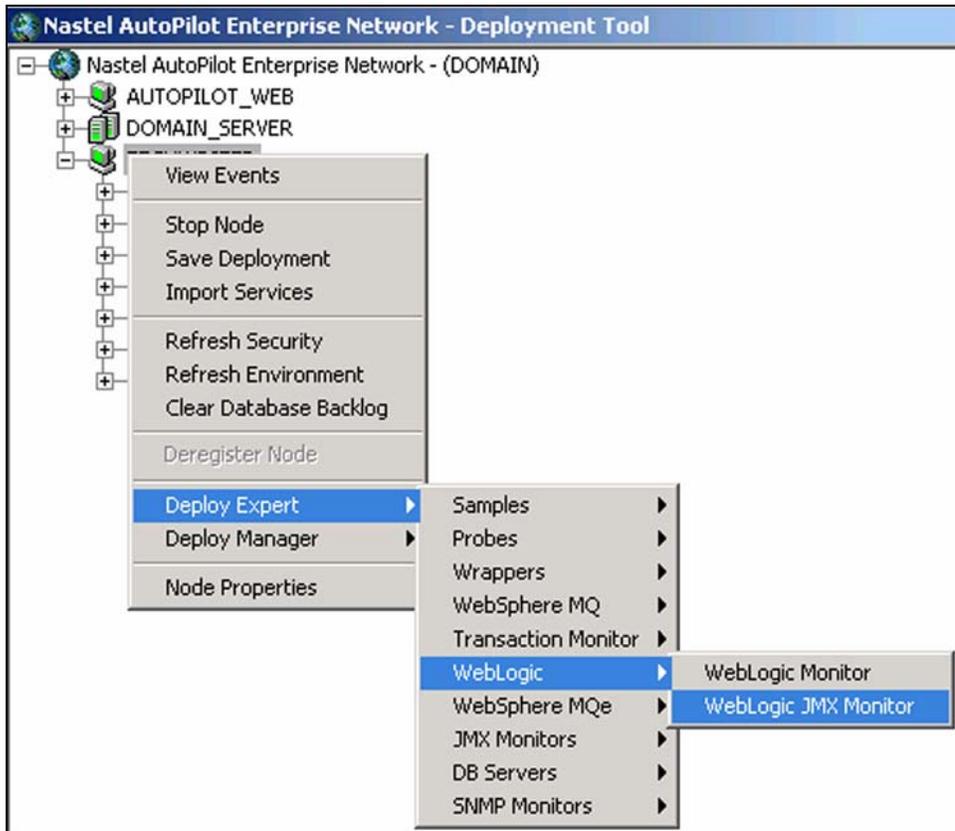
Figure 4-2. Deploying WLS/JMX Experts

5. Review the WebLogic_JMX Expert configuration on the screens displayed. Refer to Configuring WLS/JMX Experts instructions below for further detail.
6. Click **Apply**. The WLS/JMX Expert will be deployed only on node selected in step 2 above.

4.2 Configuring WLS/JMX Experts

This paragraph provides detailed instructions and information for configuring the WLS/JMX Expert. Other Software/Platform specific and standard experts are addressed in supporting documentation for that software/platform plug-in and the *AutoPilot/IT User's Guide*. Only the WLS/JMX Expert is discussed in this Guide.
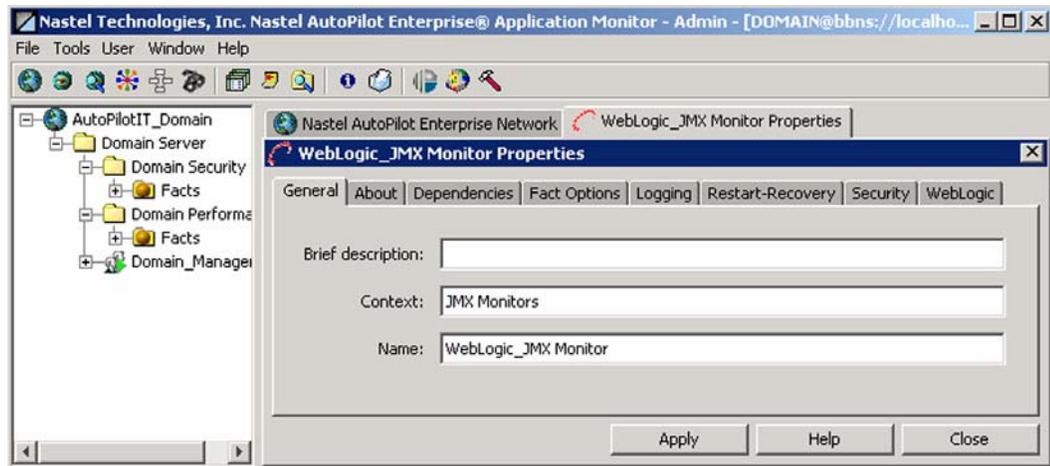
Figure 4-3. WLS/JMX Expert General Configuration

The WLS/JMX Expert consists of eight screens of user definable configuration data. The following procedure explains the entries for each category of the WLS/JMX Expert.

	NOTE:	Each Expert deployed in the AutoPilot network must have a unique name.

1. **General:** This screen is common to all Experts. Review (if updating existing Expert) or configure data elements as follows:

<table>
<tr><td colspan="2" align="center">4-1. WLS/JMX Expert Properties: General</td></tr>
<tr><td align="center">Element</td><td align="center">Description</td></tr>
<tr><td>Brief description</td><td>Short description of the service. This name will appear in brackets (example: [Process Monitor]) on screen with listed Node.</td></tr>
<tr><td>Context</td><td>User defined category that will be registered in the Domain Server. Context is displayed as folder icon under each Managed Node.</td></tr>
<tr><td>Name</td><td>Name that uniquely identifies the service in the Domain Server. Enter or modify the Service Name as required, or in accordance with local guidelines. Variations of names are used when deploying services on multiple Nodes. No spaces or blanks are allowed in Service Name formats. The default name is "Service_", plus a 12 digit random number (example: <code>Service_123456789012</code>).</td></tr>
</table>

2. **About:** This screen is common to all Experts and cannot be changed.

4-2. WLS/JMX Expert Properties: About	
Element	**Description**
Package Title	Implementation title of source package.
Package vendor	Name of implementation vendor.
Package version	Package version as assigned by the vendor.
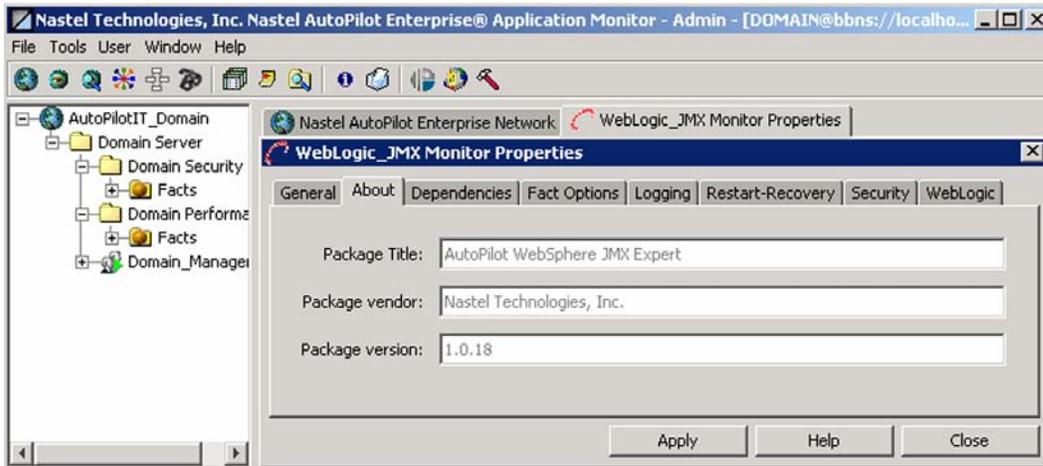
Figure 4-4. WLS/JMX Expert About Configuration

3. **Dependencies:** (Reserved) Leave blank unless required. Dependencies are comma delimited lists of services within a Managed Node. The lists must be available to the specified service prior to loading. The sequence of service loading is determined by the list.

4-3. WLS/JMX Expert Properties: Dependencies	
Element	**Description**
Platform dependencies	Comma separated list of operating system platforms this expert is dependent on.
Service dependencies	Comma separated list of services this expert is dependent on.
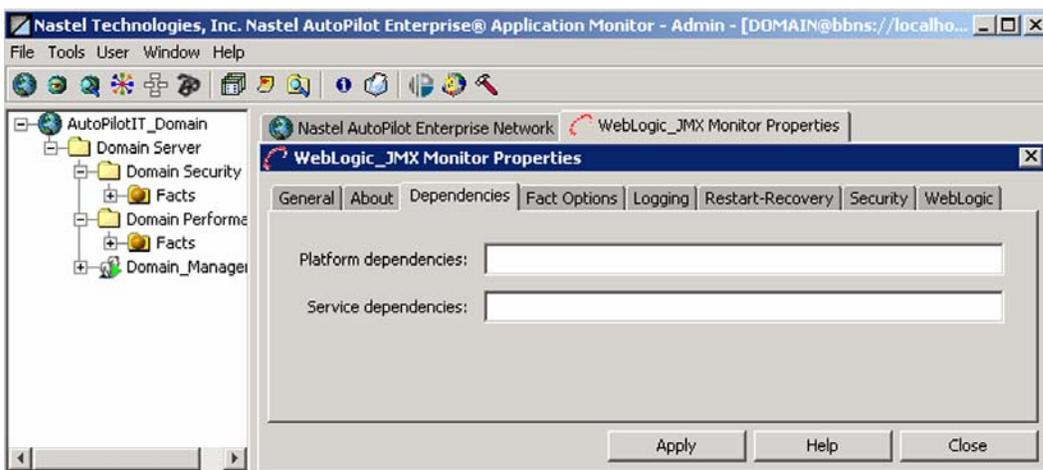
Figure 4-5. WLS/JMX Expert Dependencies Configuration

4. **Fact Options:** This screen is common to all Experts. Review (if updating existing Expert) or configure data elements as follows:

<table>
<tr><td colspan="2" align="center">**4-4. WLS/JMX Expert Properties: Fact Options**</td></tr>
<tr><td align="center">**Element**</td><td align="center">**Description**</td></tr>
<tr><td>**Exclude Fact Filters**</td><td>Comma separated list of fact paths to exclude during publishing</td></tr>
<tr><td>**Expire facts(ms)**</td><td>Automatically expire facts that have not been updated in the specified time (ms).</td></tr>
<tr><td>**Fact History Size**</td><td>Automatically maintains the specified number of samples for each published fact in memory.</td></tr>
<tr><td>**Include Fact Filters**</td><td>Comma separated list of fact paths to include during publishing.</td></tr>
</table>
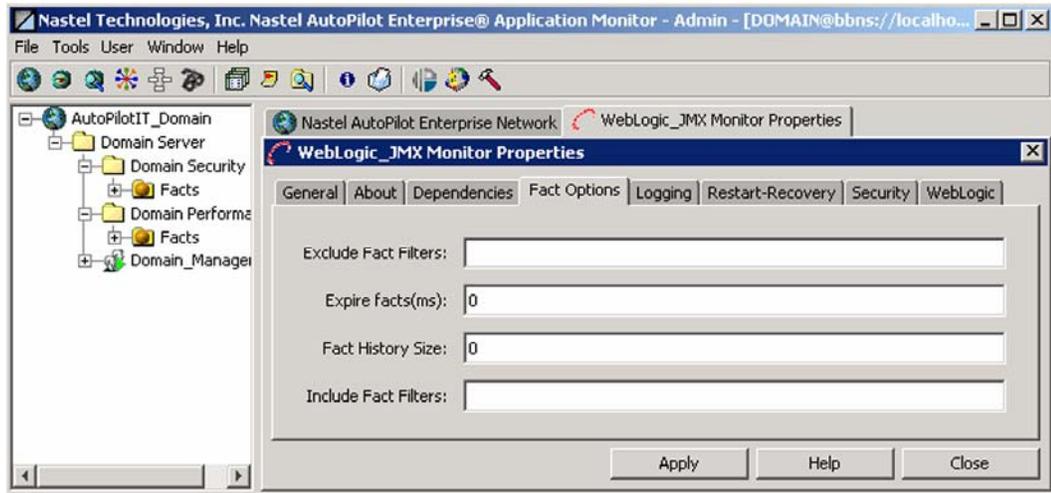
Figure 4-6. WLS/JMX Expert Fact Options Configuration

5. **Logging:** This screen is common to all Experts. Review (if updating existing Expert) or configure data elements as follows:

4-5. WLS/JMX Expert Properties: Logging	
Element	**Description**
Audit	Enable/Disable service audit trace. Default is disabled.
Log name	Log name associated with the service. The default name is Services, but may be changed as required. (Example: `Task_Progress_Process_Log`).
Log service activity	Enable/Disable service activity trace. Default is disabled.
Log size (bytes)	Log size in bytes. Real log size is the maximum value of the server.log.size and logsize.
Record Facts	Enable/Disable fact recording for this service. Default is enabled. Managed node records all facts produced by this service into an .fct file which can be replayed back using the apfact utility. Recording occurs only when managed node is started with -logfacts option or the environmental variable property server.service.fact.logging=true is defined in global.properties or node.properties.
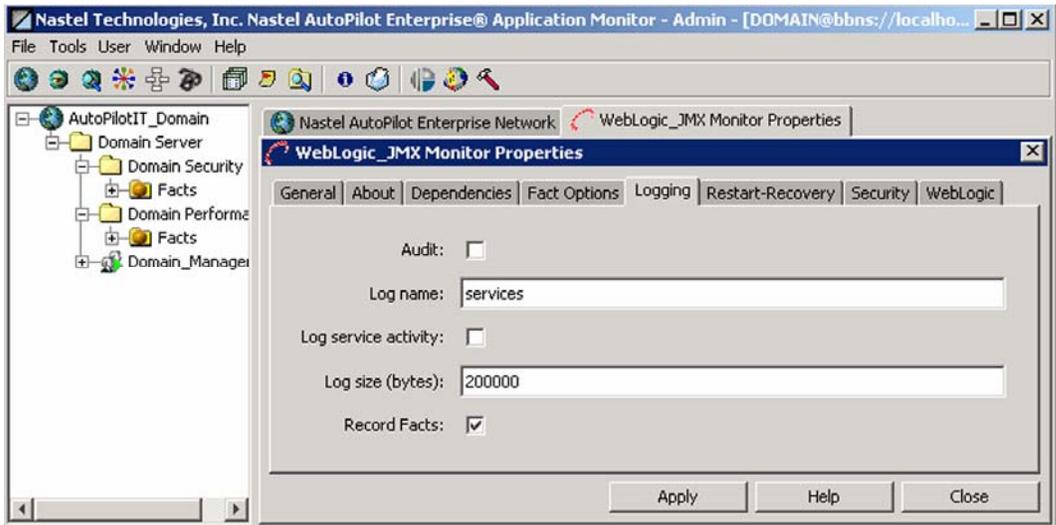
Figure 4-7. WLS/JMX Expert Logging Properties

6. **Restart-Recovery:** This screen is common to all Experts. Review (if updating existing Expert) or configure data elements as follows

4-6. WLS/JMX Expert Properties: Restart-Recovery	
Element	**Description**
Automatic start	Enable/disable automatic start. Default is enabled.
Save in registry	Persistent services are saved in Registry .xml file. Default is enabled.
Synchronous Control	Enable/Disable synchronous service initiation. Default is enabled.
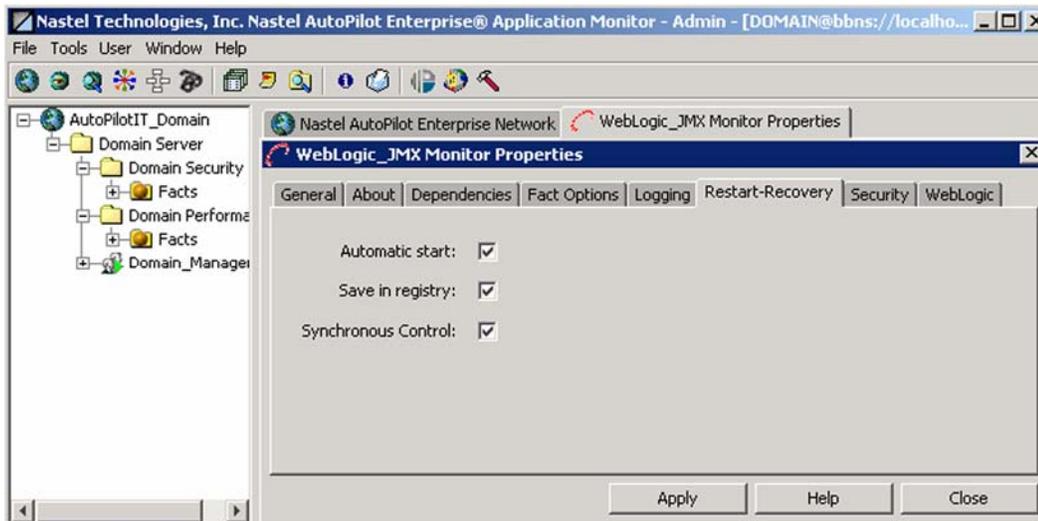
Figure 4-8. WLS/JMX Expert Restart-Recovery Properties

7. **Security:** This screen is common to all Experts. Review (if updating existing Expert) or configure data elements as follows:

4-7. WLS/JMX Expert Properties: Security		
Property	**Description**	
Inherit permissions from owner	Enable/disable inherit permission from owner's permission masks. Default is enabled.	
Owner	User that owns the object.	
Permissions	Permissions for users in the same group and users in other groups. Enable/disable as required.	
	Group:	**Other:**
Read	Group members may read/view attributes of an object.	Other users may read/view attributes of an object.
Change	Group members may change the attributes of an object.	Other users may change the attributes of an object.
Delete	Group members may delete the object.	Other users may delete the object.
Control	Group members may execute control actions such as start, stop, and disable.	Other users may execute control actions such as start, stop, and disable.
Execute	Group members may execute operational commands on the object.	Other users may execute operational commands on the object.
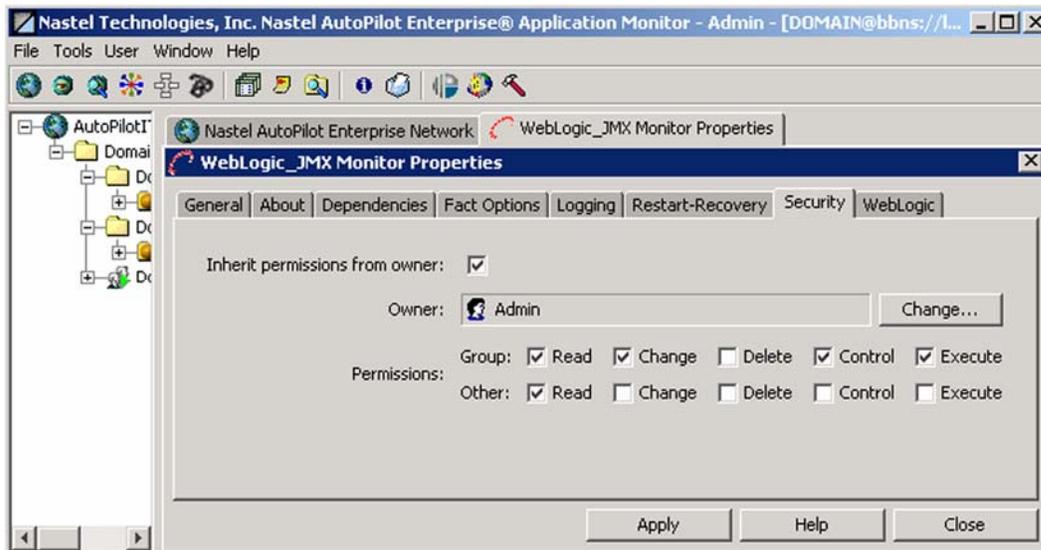
Figure 4-9. WLS/JMX Expert Security Properties

8. **WebLogic:** Review (if updating existing Expert) or configure data elements as follows:

4-8. WLS/JMX Expert Properties: WebLogic	
Element	**Description**
MBean filter	Only display MBeans whose names match this MBean filter.
MBean server	The MBean server to connect to. Each WebLogic admin server contains three MBean servers: Edit, Domain Runtime, and Runtime. The Edit MBean Server provides access to the editable configuration MBeans, the Domain Runtime MBean Server provides federated access to all Runtime MBeans and read-only configuration MBeans in the domain, the Runtime MBean Server provides access only to the Runtime and read-only configuration MBeans.
Sampling interval (sec.)	Sampling frequency in seconds.
Short name keys	Comma separated keys for shortening MBean names.
WebLogic host name	The host name or IP address of the WebLogic server.
WebLogic port	The port number of the WebLogic server.
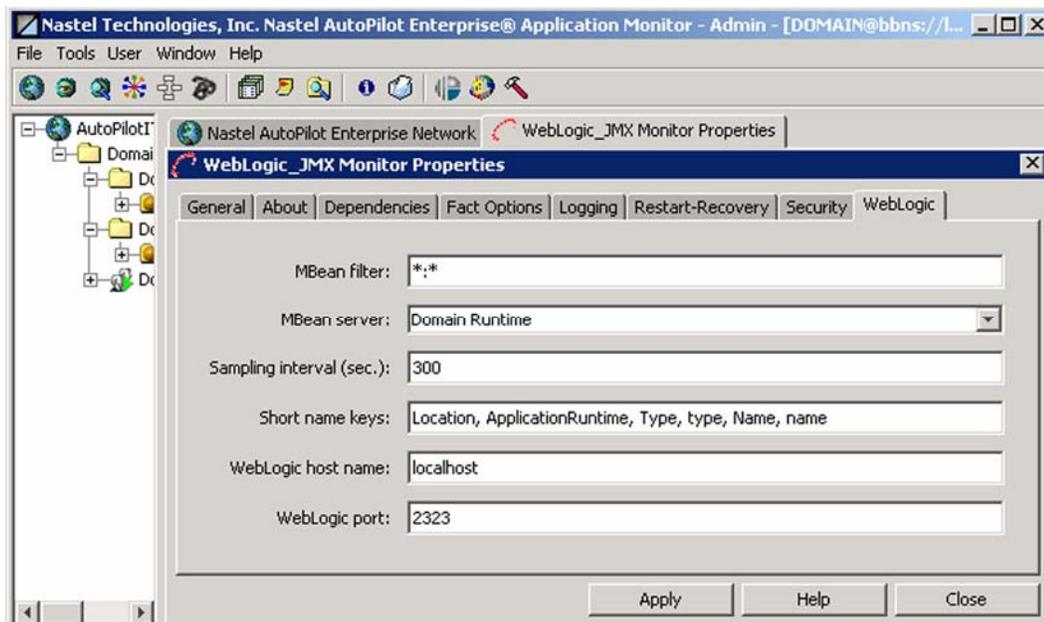
Figure 4-10. WLS/JMX Expert WebLogic Configuration

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Chapter 5: WebLogic Server/JMX Configuration Metrics

This section describes the WebLogic Server/Java Management Extensions (WLS/JMX) metrics collected by the WLS/JMX Plug-in expert. They are published as facts and are available under each expert as shown below:
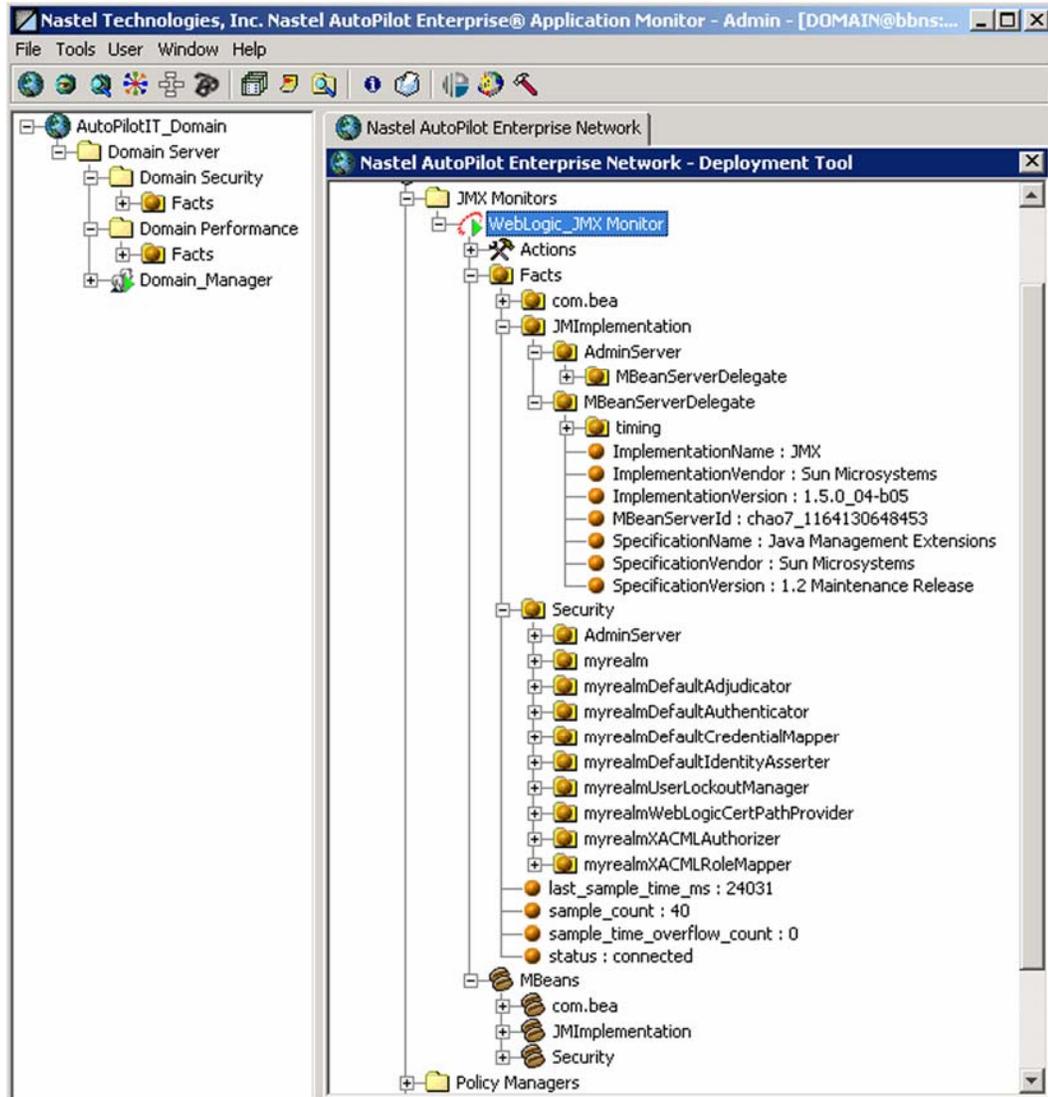
Figure 5-1. WLS/JMX Metrics

Once published, these facts can be included in one or more business views for validation, automation, notifications, logging and alerts.

WLS/JMX monitor publishes facts that follow structure below:

```
Facts\<jmx_domain>\<jmx_mbean_name>\<jmx_attribute>
```

WLS/JMX facts will change depending on the version of WLS.

5.1 Facts Published by WLS/JMX Expert

The WLS/JMX expert publishes the following fact categories:

- **JMImplementation** - the JMX domain for JMX server implementation
- **Security** - the JMX domain for the security related WebLogic server Mbeans
- **com.bea** - the JMX domain for all other WebLogic server MBeans.

Appendix A: References

A.1 Nastel Documentation

AP/USR 400.005 *Nastel AutoPilot User's Guide*
AP/INS 400.003 *Nastel AutoPilot Installation Guide*
AP/OSM 420.001 *AutoPilot/IT-OS Monitor Plug-in Guide*
AP/WMQ 420.001 *WebSphere MQ Plug-in for AutoPilot*
AP/TP 430.001 *AutoPilot/Transaction Monitor Probe for WebSphere MQ Installation, Configuration and User Guide*
AP/TM-USR 430.001 *AutoPilot/Transaction Monitor Installation and User Guide*
AP/TPz 430.001 *AutoPilot/Transaction Monitor WebSphere MQ Probe for z/OS Installation and User Guide*
AP/TEMS 110.001 *AutoPilot/TIBCO EMS Plug-in Guide*
AP/OR 100.001 *AutoPilot/Oracle Plug-in Guide*
AP/JMX 400.001 *AutoPilot/JMX Plug-in Guide*
AP/WMQ 410.004 *AutoPilot/WebSphere MQ Installation Guide*

A.2 IBM Documentation

SC33-1872 WebSphere MQ Intercommunications
SC33-1369 WebSphere MQ MQSC Command Reference
SC34-5456 WebSphere MQ Using Java
http://www-3.ibm.com/software/ts/mqseries/library/manuals/
http://www-3.ibm.com/software/ts/mqseries/support/summary/javasupp.html

A.3 Java™

http://java.sun.com/products/JavaManagement/reference/docs/index.html
http://www.hp.com/products1/unix/java/infolibrary/index.html
http://developer.java.sun.com/developer/technicalArticles/Servlets/corba/

A.4 MS Windows

http://www.microsoft.com/windows/default.mspx

A.5 UNIX

http://www.unix.org/

A.6 Solaris

http://www.sun.com/software/solaris/

A.7 HP-UX

http://welcome.hp.com/country/us/en/welcome.html

A.8 Linux

http://www.linux.org/

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Appendix B: Conventions

B.1 Typographical Conventions

B-1. Typographical Conventions	
Convention	**Description**
Blue/Underlined	Used to identify links to referenced material or websites. Example: support@nastel.com
Bold Print	Used to identify topical headings, glossary entries, and toggles or buttons used in procedural steps. Example: Click **EXIT**.
Italic Print	Used to place emphasis on a title, menu, screen name, or other categories.
Monospaced Bold	Used to identify keystrokes/data entries, file names, directory names, etc.
Monospaced Italic	Used to identify variables in an address location. Example: `[C:\AutoPilot_Home]\documents`. Where the portion of the address in the brackets [ ] is variable.
Monospaced Text	Used to identify addresses, commands, scripts etc.
Normal Text:	Typically used for general text throughout the document.
Table Text	Table text is generally a smaller size to conserve space. 10, 9, and 8 point type is used in tables throughout the AutoPilot product family of documents

B.2 Naming Conventions

Naming conventions have been adjusted to accommodate IBM's re-naming of MQSeries products to WebSphere MQ.

Nastel has adapted AutoPilot products to reflect IBM's product naming changes. In the redesign of AutoPilot, we have also better defined many elements within the AutoPilot product line.

B-2. AutoPilot Related Naming Conventions	
Old Name	**New Name**
AutoPilot/MQSI	AutoPilot for WebSphere MQI
MQSeries Plug-in for AutoPilot	WebSphere MQ Plug-in for AutoPilot
MQControl	AutoPilot for WebSphere MQ
MQSeries	WebSphere MQ (IBM)

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Glossary

AutoPilot: Nastel Technologies' Middleware Management System. AutoPilot monitors and automates the management of *e*Business integration components such as middleware application, application servers and user applications.

AutoPilot/WMQ: Nastel Technologies' WebSphere MQ management solution. Re-designated as AutoPilot for WebSphere MQ with release 4.0, prior releases (3.6 and before) retain the MQControl trademark. Abbreviated as AutoPilot/WMQ and AP/WMQ.

BSV: *see* Business View

Business View (BSV): A collection of rules that define a desired state of an *e*Business environment. Business Views can be tailored to presents information in the form most suited to a given user, as defined by the user.

Client: Any programming component that uses the AutoPilot infrastructure; for example, the AutoPilot/IT Console.

Common Object Request Broker Architecture (CORBA): CORBA defines APIs, communication protocol, and object/service information models to enable heterogeneous applications written in various languages running on various platforms to interoperate. A CORBA object can be invoked from a Web browser using CGI scripts or applets.

Console: The visual interface that depicts AutoPilot functionality graphically.

Contacts: A subordinate to a given Manager or Expert.

CORBA: *see* Common Object Request Broker Architecture.

Decision Support System (DSS): An AutoPilot/IT-based service designed to monitor, store, and display any event information generated by AutoPilot enabled middleware and applications.

Deploy: To put to use. To position for use or action.

Domain Server: A common server that records the names of objects and associates them with references, locations and properties and enforces security.

DSS: *see* Decision Support System

EVT: Event Log file extension (for example: *sample.evt*).

Event: An *Event* is something that happens to an object. Events are logged by AutoPilot and are available for use by AutoPilot Policies or the user.

Expert: A program that communicates with specific middleware technologies and translates their protocols to the common language of AutoPilot/IT objects.

Fact: A *Fact* is an object's state. Facts are single pieces of information published by an Expert or Manager within each Managed Node. Managers subscribe to the Facts Board and watch for Facts that trigger specific Policy actions

Graphical User Interface (GUI): A type of environment that represents programs, files, and options by means of icons, menus, and dialog boxes on the screen. The user can select and activate these options by pointing and clicking with a mouse or, often, with the keyboard. A particular item (such as a scroll bar) works the same way to the user in all applications, because the graphical user interface provides standard software routines to handle these elements and report the user's actions (such as a mouse click on a particular icon or at a particular location in text, or a key press); applications call these routines with specific parameters rather than attempting to reproduce them from scratch.

GUI: *see* Graphical User Interface.

IIS: *See* Internet Information Services

Internet Information Services (IIS): Microsoft's brand of Web server software, utilizing HTTP to deliver World Wide Web documents. It incorporates various functions for security, allows CGI programs, and also provides for Gopher and FTP services.

Java: A platform-independent, object-oriented programming language developed and made available by Sun Microsystems.

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Java Developer's Kit (JDK): A set of software tools developed by Sun Microsystems, Inc., for writing Java applets or applications. The kit, which is distributed free, includes a Java compiler, interpreter, debugger, viewer for applets, and documentation.

JDBC: *See* Java Database C

Java Database C (JDBC): The JDBC API provides universal data access from the Java programming language. Using the JDBC 2.0 API, you can access virtually any data source, from relational databases to spreadsheets and flat files. JDBC technology also provides a common base on which tools and alternate interfaces can be built. The JDBC *Test Tool* that was developed by Merant and Sun Microsystems may be used to test drivers, to demonstrate executing queries and getting results, and to teach programmers about the JDBC API.

Java Server Pages (JSP): JSP technology enables rapid development of web-based applications that are platform independent. Java Server Pages technology separates the user interface from content generation enabling designers to change the overall page layout without altering the underlying dynamic content. Java Server Pages technology is an extension of the Java™ Servlet technology.

Java Virtual Machine (JVM): The "virtual" operating system that JAVA-written programs run. The JVM is a hardware- and operating system-independent abstract computing machine and execution environment. Java programs execute in the JVM where they are protected from malicious programs and have a small compiled footprint.

JDK: *See* Java Developer's Kit.

JMX: JAVA Management Extension.

JRE: JAVA Run-time Environment. The minimum core JAVA required to run JAVA Programs

JSP: *See* Java Server Pages

JVM: *see* JAVA Virtual Machine.

MAC OS Runtime for Java (MRJ): MRJ is Apple's implementation of Sun Microsystems' Java Virtual Machine (JVM). MRJ 2.2 implements Sun's JDK 1.1.8 specification. MRJ provides the runtime software needed to run Java applets and applications, and the Apple Applet Runner, a simple utility for running applets without the overhead of a browser. For additional information see the MAC MRJ Web page at: http://asu.info.apple.com/swupdates.nsf/artnum/n11872

Manager: An AutoPilot object that assumes the responsibilities, authority and behavior of a human manager.

Messenger: An AutoPilot object used to deliver messages to Managers and Experts, or to carry out specific actions.

MOM: Message-Oriented Middleware.

MRJ: *see* MAC OS Runtime for Java

Naming Service: A common server records "names" of objects and associates them with references, locations and properties

Node: The *"container"* that holds a program at run-time. A Node is often a single machine; however, a single machine may contain more than one Node.

ORB: Object Request Broker.

Orbix: CORBA product distributed by IONA Technologies.

Package Manager: The command line utility that allows users to list, install, uninstall, verify and update AutoPilot installation on any Managed Node

PKGMAN: *see* Package Manager

Policy: A program that defines how Managers should act in specific situations.

Simple Mail Transfer Protocol (SMTP): A TCP/IP protocol for sending messages from one computer to another on a network. This protocol is used on the Internet to route e-mail. *See also* communications protocol, TCP/IP. *Compare* CCITT X series, Post Office Protocol.

SMTP: *see* Simple Mail Transfer Protocol

TCP/IP: *see* Transmission Control Protocol/Internet Protocol.

Transmission Control Protocol/Internet Protocol (TCP/IP): A protocol developed by the Department of Defense for communications between computers. It is built into the UNIX system and has become the de facto standard for data transmission over networks, including the Internet.

Virtual Machine: Software that mimics the performance of a hardware device, such as a program that allows applications written for an Intel processor to be run on a Motorola chip. *Also See* Java Virtual Machine

WAP: *see* Wireless Application Protocol

WebSphere Control Program (WSCP): WSCP is based on the tool command language (Tcl). Tcl is a portable command language that provides programming facilities, such as variables, procedures, conditionals, list-processing functions, and looping constructs. The WSCP interface extends Tcl by providing a set of commands to manipulate WebSphere objects. The console and the WSCP interface are compatible. The results of actions performed with WSCP are reflected in the console interface and vice versa.

WebSphere MQ: IBM's message queuing product. Formally known as MQSeries

Wireless Application Protocol (WAP): An open, global specification that is used by most mobile telephone manufacturers. WAP determines how wireless devices utilize Internet content and other services. WAP enables devices to link diverse systems contents and controls.

WSCP: *see* WebSphere Control Program

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Nastel Support

If you need technical support, you can contact Nastel Technologies by telephone, e-mail or through the online support system.
To contact Nastel technical support by phone, call (800) 963-9822 ext. 1. If you are calling from outside the United States dial 001-631-761-9190 or +44 20 7084 6025.
To contact Nastel technical support by e-mail, send a message to support@nastel.com
To access the Nastel automated support system (user id and Password required), go to:
http://support.nastel.com/. Contact your local AutoPilot Administrator for further information.

The Resource Center

The Resource Center is where AutoPilot solution users solve problems, exchange ideas, and learn best practices from peers and Nastel staffers. This online community is a service provided by Nastel Support. Our experts often participate in these discussion groups to share their advice, but, these groups are intended as a peer-to-peer resource. The Resource Center also provides access to downloads, updates, documentation, support articles, product news, and a lot more. Registration and access are free to all users. We encourage everyone using Nastel products to join. www.nastel.com/resources

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NASTEL™

Nastel Technologies is a market leader in providing solutions for application performance monitoring and management in SOA and EAI environment. Through our AutoPilot suite and a vast array of plug-ins, (ranging from Java applications, WebSphere MQ and WMB, TIBCO EMS, ESB and J2EE platforms, such as WebSphere Application Server, WebLogic, JBoss, Oracle 10g, etc.) we enable IT and Application Support teams to control and see performance bottlenecks in parts of the SOA and EAI infrastructure that they can't ordinarily see. Our solution measures transactional performance in these environments and pinpoints performance bottlenecks. We help our customers to reduce the complexity and decrease the mean time for problem resolution by timely identifying the root cause of a problem. Users can see end-to-end performance impact of Web Services and J2EE-based applications, spanning throughout the messaging infrastructure, into the databases and the legacy back end applications, on transactions and business processes.

Numerous Fortune 1000-sized companies around the world, including some of the world's largest banks, financial institutions, retail chains, and insurance underwriters operate more efficiently in real-time with AutoPilot. Nastel is a privately held company headquartered in New York and serves its customer with a network of integration partners throughout Europe, the Middle East, Asia, and Latin America.

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