Universal Messaging Installation Guide

Version 9.6

April 2014

This document applies to Universal Messaging Version 9.6 and to all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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1 Overview

Universal Messaging is made up of a server component and a client API used by applications to communicate with the server. The server, known as the Realm Server, maintains all the information regarding resources and P2P services, and the security around these. The Realm Server supports direct connections using normal TCP/IP sockets and Secure Socket Layer (SSL) while also supporting HTTP directly with no additional processes or web server infrastructure required. By directly supporting HTTP the process of configuring a Realm Server for the Internet is greatly simplified.

Universal Messaging is highly portable - written in 100% pure Java. It therefore requires a copy of the Java Development Kit (JDK) or Java Runtime Environment (JRE) to be installed. The minimum version of the required JDK and JRE is 1.2 and the recommended release is 1.6.

In order to make the installation of Universal Messaging a pain free experience we provide our users with a set of options. Installers can run in either GUI or console mode in order to enable it to be run on nearly all systems without the requirement of having some sort of graphical display to perform the task. In addition to that, installers can include a Java Runtime Environment (JRE) or not which significantly affects the size of your download but ensures compatibility and normal operation of the product.

The installers can be downloaded directly from the web site.

This installation guide contains information on the following sections:

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Trial and Production Licences

- "Upgrading from Trial to Production Licence" on page 43

Note for webMethods UM Users

Please use the "ninstancemanager" on page 45 tool to manage your UM installations.

2 Pre-Installation

Pre-Installation

As mentioned in the installation overview section, when choosing the download package you have to option to download one with a JRE or one without a JRE. If you have chosen a Win32, Linux or Solaris installer that does not include a JRE or the Generic Unix installer you need to ensure that a compatible Java JDK or JRE installation exists prior to running the installer. Any JRE or JDK 1.2 or later can be used although the recommended version is 1.6.

The installer assumes that JRE or JDK is configured correctly and can be executed by opening a console/shell and typing the following command:

```
[root@host~]# Java -version
Java version "1.6.0_03"
Java(TM) SE Runtime Environment (build 1.6.0_03-b05)
Java HotSpot(TM) Client VM (build 1.6.0_03-b05, mixed mode, sharing)
[root@host ~]#
```

3 Performing the Installation

The installation steps heavily depend on your chosen installer.

Win32

After downloading, double-click on install.exe. The installer will attempt to locate a suitable JRE/JDK installation on your machine but if you do not have one, be sure to download the package that includes one.

Linux/Solaris

After downloading open a shell and, cd to the directory where you downloaded the installer. At the prompt type:

```
sh ./install.bin
```

The installer will attempt to locate a suitable JRE/JDK installation on your machine but if you do not have one, be sure to download the package that includes one. Otherwise you may need to download one from your Java VM supplier's web site or contact your OS manufacturer. The installer can operate in GUI or console modes depending on your system configuration. The default mode of operation is console but you can perform a GUI installation by typing

```
sh ./install.bin -i gui .
```

Mac OSX

After downloading, double-click on nirvana_osx_novm.zip to uncompress it. This produces a single installer executable called install.app. Double-click again to start the installation using the OSX java configured in your Mac.

Generic Unix

After downloading open a shell and, cd to the directory where you downloaded the installer. At the prompt type:

```
sh ./install.bin
```

The installer will attempt to locate a suitable JRE/JDK installation on your machine. You can download one from your Java VM supplier's web site or contact your OS manufacturer. The installer can operate in GUI or console modes depending on your system configuration. The default mode of operation is console but you can perform a GUI installation by typing

```
sh ./install.bin -i gui
```

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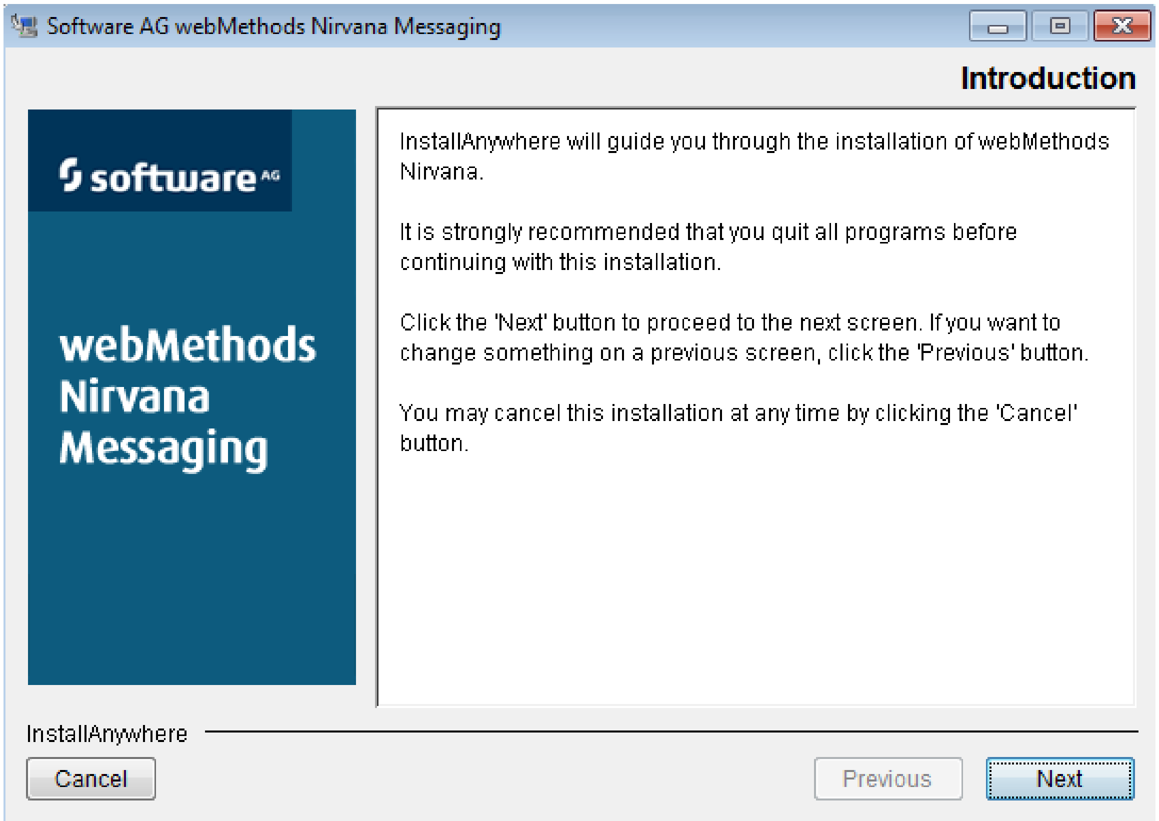
Introduction

The first screen that is displayed when the installer is run is the introduction screen which describes the process that is about to start and advises to quit all other running programs before continuing. An example of how the screens look like is illustrated below for Win32 (GUI mode) and Unix (Console mode).


Software AG webMethods Nirvana Messaging
Introduction
software AG
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InstallAnywhere
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Next

InstallAnywhere will guide you through the installation of webMethods Nirvana.

It is strongly recommended that you quit all programs before continuing with this installation.

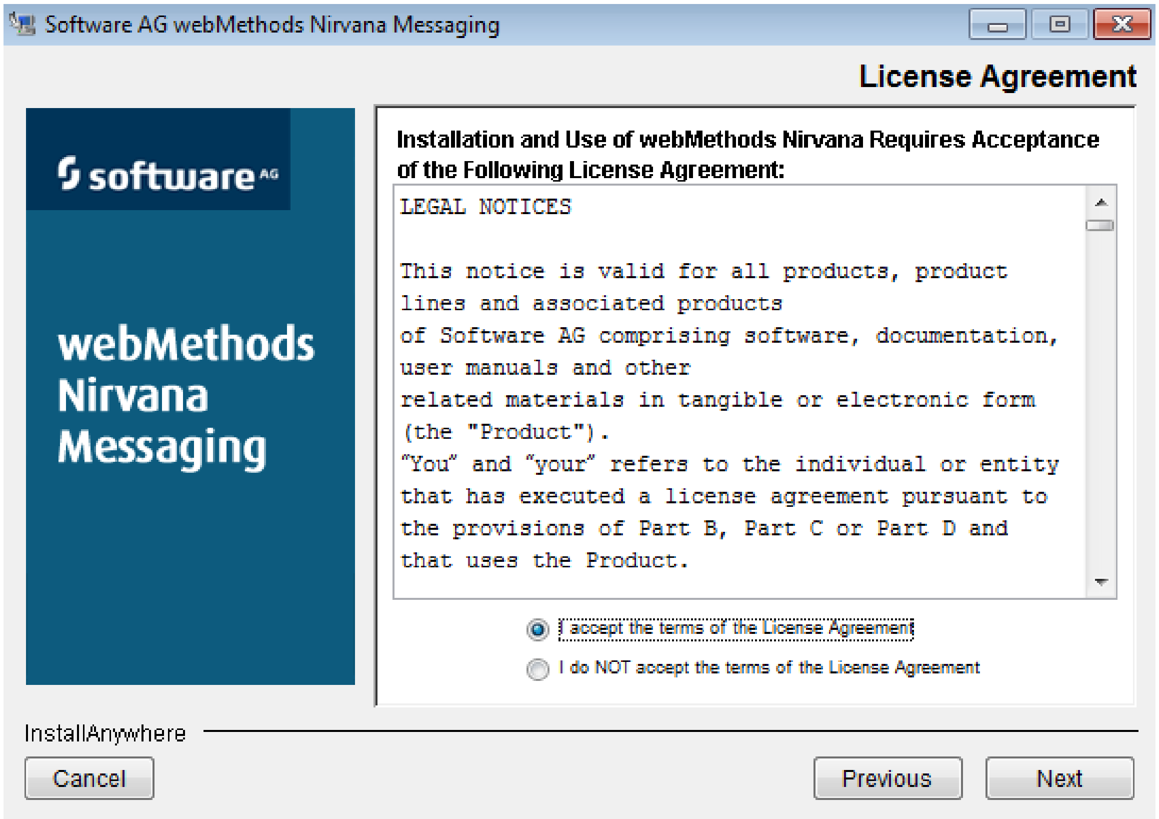
Click the 'Next' button to proceed to the next screen. If you want to change something on a previous screen, click the 'Previous' button.

You may cancel this installation at any time by clicking the 'Cancel' button.

```
Preparing to install...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...
Launching installer...
===============================================================================
webMethods Universal Messaging (created with InstallAnywhere)
-------------------------------------------------------------------------------
Preparing CONSOLE Mode Installation...
===============================================================================
Introduction
------------
InstallAnywhere will guide you through the installation of webMethods Universal Messaging.
It is strongly recommended that you quit all programs before continuing with this installation.
Respond to each prompt to proceed to the next step in the installation. If you want to change som
You may cancel this installation at any time by typing 'quit'.
PRESS <ENTER> TO CONTINUE:
```

License Acceptance

The second screen displayed by the installer asks you to accept the PCB Systems Ltd License agreement before continuing with the installation. Accepting the license agreement implies you agree with all terms of use and the installation can continue normally. Rejecting the license agreement will end the installation process. An example of the license agreement as it appears in GUI and console modes is illustrated below.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License Agreement

Installation and Use of webMethods Nirvana Requires Acceptance of the Following License Agreement:

```
LEGAL NOTICES

This notice is valid for all products, product
lines and associated products
of Software AG comprising software, documentation,
user manuals and other
related materials in tangible or electronic form
(the "Product").
“You” and “your” refers to the individual or entity
that has executed a license agreement pursuant to
the provisions of Part B, Part C or Part D and
that uses the Product.
```

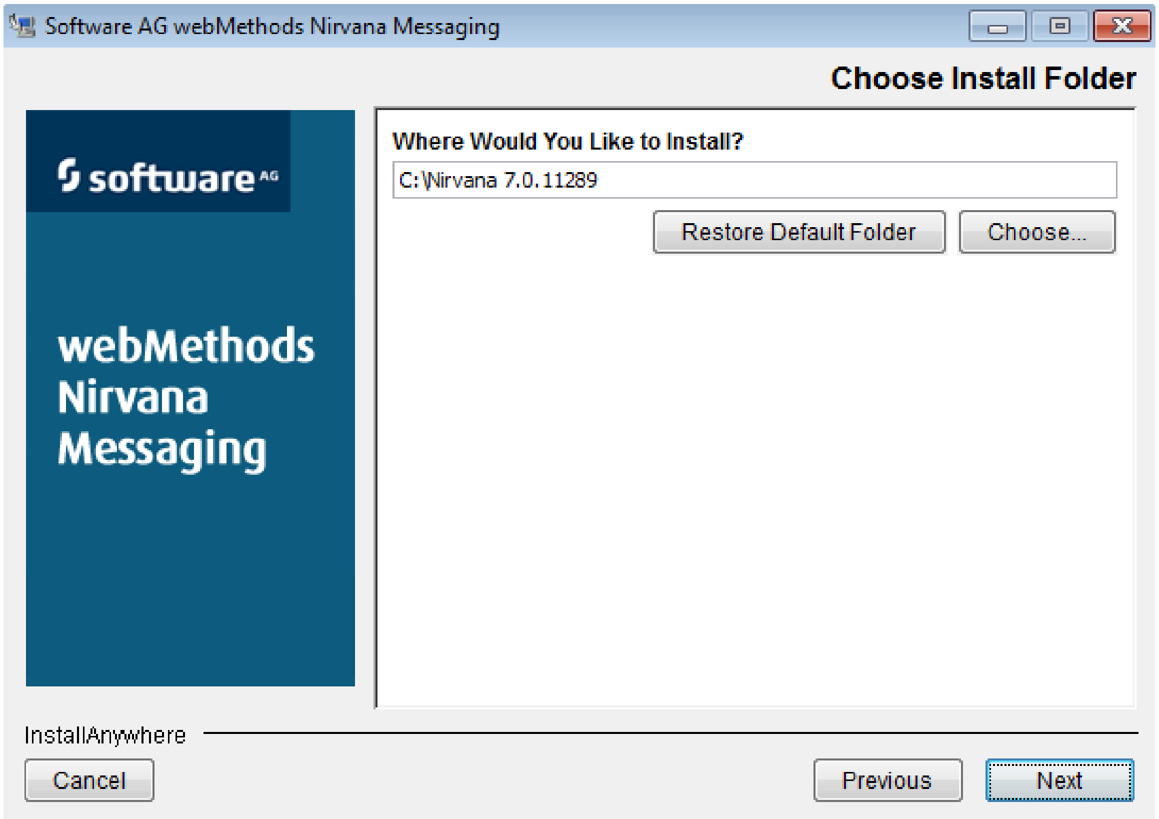
● I accept the terms of the License Agreement

○ I do NOT accept the terms of the License Agreement

```
===============================================================================
License Agreement
-----------------
Installation and use of webMethods Universal Messaging requires acceptance of the following Licen
LEGAL NOTICES
This notice is valid for all products, product lines and associated products of Software AG compr
IMPORTANT: PLEASE READ BEFORE INSTALLING THE PRODUCT
PART A: GENERAL TERMS
You are not allowed to install or use the Product without a corresponding license agreement.
(Full License Text Omitted)
to a third party the outcomes or results of any such exercise, or any information derived from th
END OF LEGAL NOTICES
DO YOU ACCEPT THE TERMS OF THIS LICENSE AGREEMENT? (Y/N):
```

Installation Folder

The third screen displayed by the installer asks you to choose the directory where you want the product installed. You can type the name of the directory or click on Choose to browse for a folder. If you type a directory name but wish to restore the default installation folder, you can do so by clicking on the Restore Default Folder button. The following figures illustrate an example of this screen for GUI and console modes.



Software AG webMethods Nirvana Messaging

Choose Install Folder

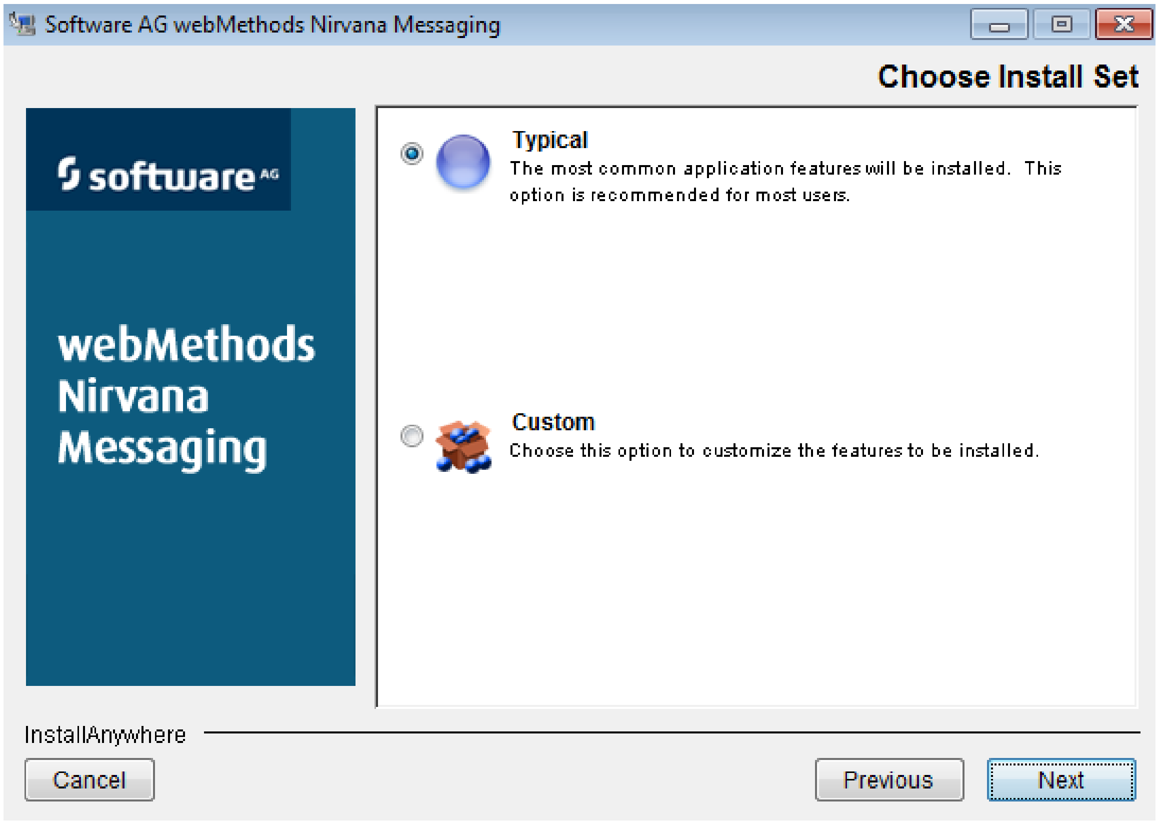
Where Would You Like to Install?

C:\Nirvana 7.0.11289

```
===============================================================================
Choose Install Folder
---------------------
Where would you like to install?
Default Install Folder: /home/krital/Universal Messaging_7.0.11289
ENTER AN ABSOLUTE PATH, OR PRESS <ENTER> TO ACCEPT THE DEFAULT
```

Installation Set

The fourth screen displayed by the installer asks you to specify if you wish to perform a typical installation or a customized one. A customized installation allows you to choose which product features should be installed as well as allows the customization of the Java virtual machine to use irrespective of the one chosen by the installer. The following figures illustrate an example of this screen for GUI and console modes.



Software AG webMethods Nirvana Messaging

Choose Install Set

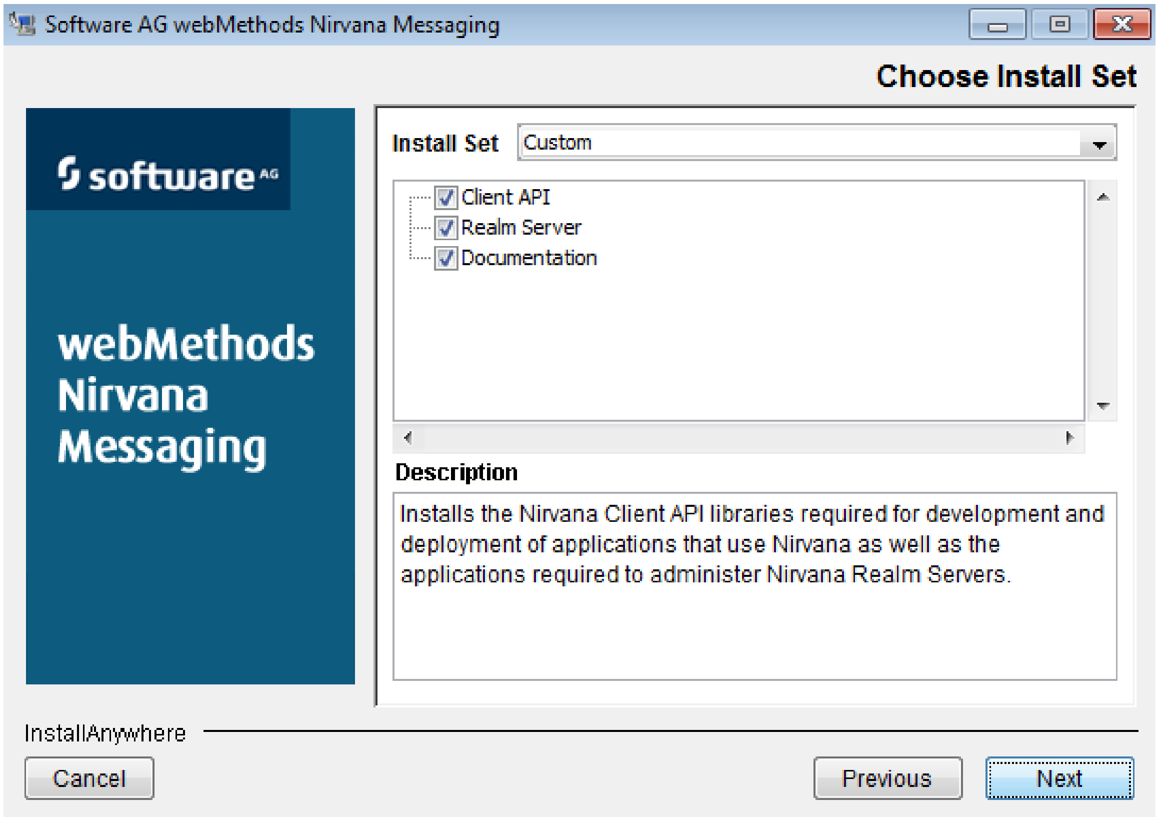
● Typical
The most common application features will be installed. This option is recommended for most users.

○ Custom
Choose this option to customize the features to be installed.

```
===============================================================================
Choose Install Set
------------------
Please choose the Install Set to be installed by this installer.
->1- Typical
2- Customize...
ENTER THE NUMBER FOR THE INSTALL SET, OR PRESS <ENTER> TO ACCEPT THE DEFAULT
```

Installation Set Customization

This screen will only be displayed if you previously chose a custom installation set in order to choose the product features that will be installed. Selecting an individual product feature displays additional information to facilitate your choice. The following figures illustrate an example of this screen for GUI and console modes.



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Choose Install Set

Install Set: Custom

☑ Client API
☑ Realm Server
☑ Documentation

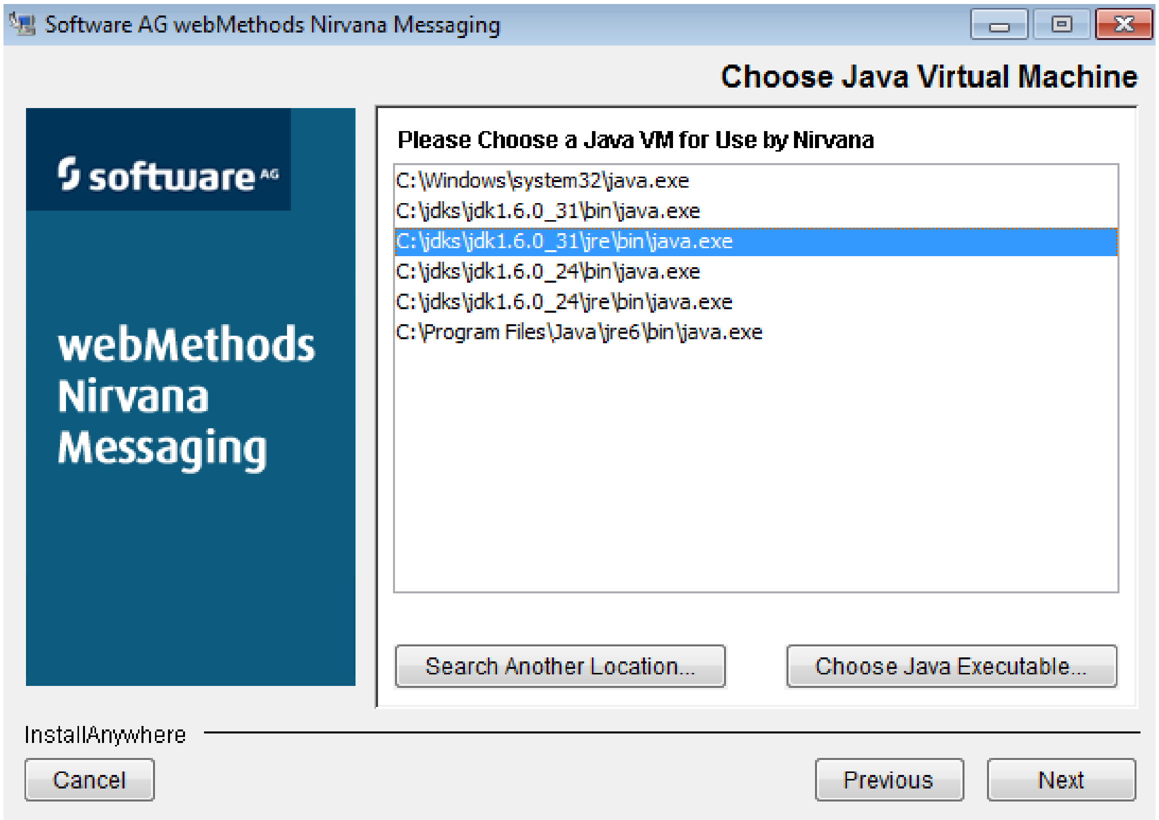
Description

Installs the Nirvana Client API libraries required for development and deployment of applications that use Nirvana as well as the applications required to administer Nirvana Realm Servers.

```
==============================================================================
Choose Product Features
-----------------------
ENTER A COMMA_SEPARATED LIST OF NUMBERS REPRESENTING THE FEATURES YOU WOULD
LIKE TO SELECT, OR DESELECT. TO VIEW A FEATURE'S DESCRIPTION, ENTER
'?<NUMBER>'. PRESS <RETURN> WHEN YOU ARE DONE:
1- [X] Client API
2- [X] Realm Server
3- [X] Documentation
Please choose the Features to be installed by this installer.
:
```

Java Virtual Machine Customization

This screen will only be displayed if you previously chose a custom installation set. It allows you to specify which Java Virtual machine will be used by the product once the installation is complete, irrespective of the virtual machine chosen by the installer to perform the installation. The following figures illustrate an example of this screen for GUI and console modes.


Software AG webMethods Nirvana Messaging
Choose Java Virtual Machine
software AG
webMethods Nirvana Messaging
Please Choose a Java VM for Use by Nirvana
C:\Windows\system32\java.exe
C:\jdks\jdk1.6.0_31\bin\java.exe
C:\jdks\jdk1.6.0_31\jre\bin\java.exe
C:\jdks\jdk1.6.0_24\bin\java.exe
C:\jdks\jdk1.6.0_24\jre\bin\java.exe
C:\Program Files\Java\jre6\bin\java.exe
Search Another Location...
Choose Java Executable...
InstallAnywhere
Cancel
Previous
Next

```
===============================================================================
Choose Java Virtual Machine
---------------------------
Please choose a Java VM for use by Universal Messaging
->1- /usr/bin/java
2- /usr/local/jdk1.6.0/bin/java
3- Choose a Java VM already installed on this system
ENTER THE NUMBER FOR THE Java VM, OR PRESS <ENTER> TO ACCEPT THE
CURRENT SELECTION:
```

Realm BootStrap Configuration

The Universal Messaging Realm server comes with a very powerful remote administration API. All the administration tools provided make use of that API only which means that all functionality is available for use in your applications or enterprise management tools of your choice.

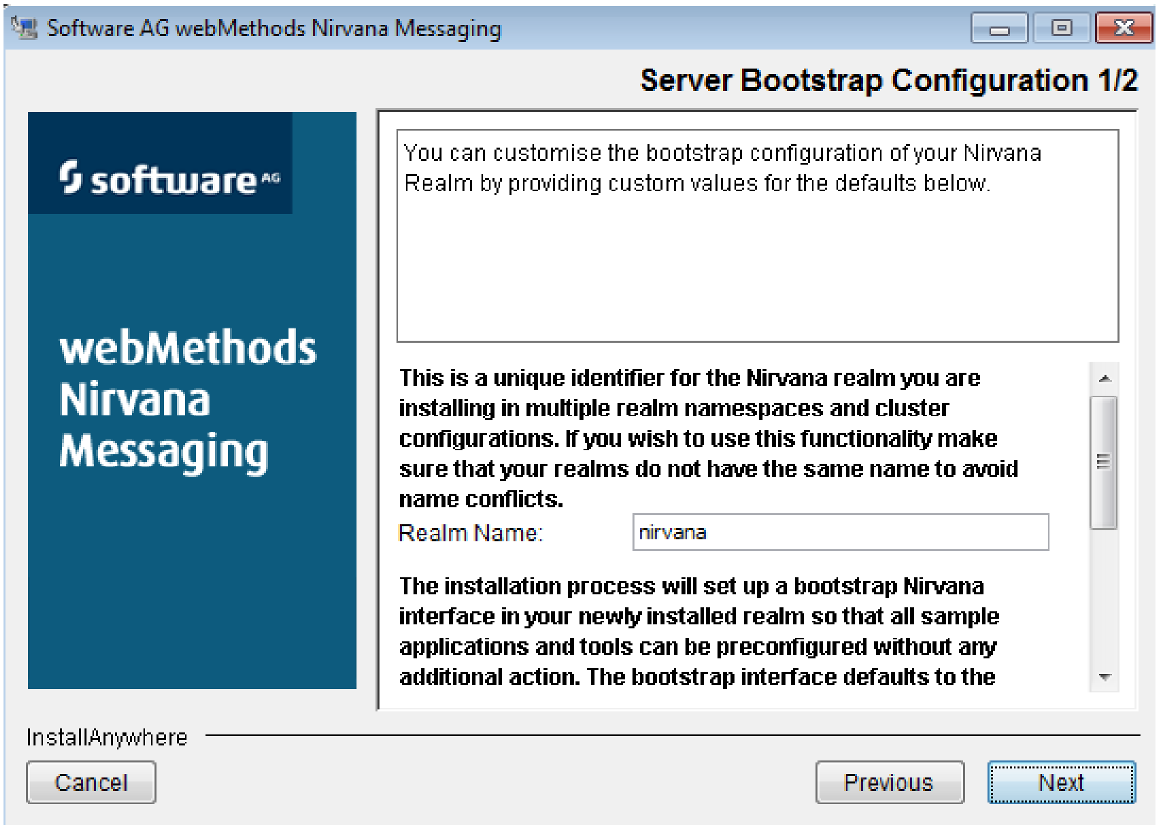
As the administration API operates using any of the 4 available Universal Messaging transport protocols the installer needs to perform bootstrap configuration on the Realm server being installed so that further administration using the tools or API can be easily performed as soon as the installation completes. The following table illustrates a list of possible bootstrap configuration parameters, the default values provided by the installer and a short description.

BootStrap Parameter	Default Value	Description

BootStrap Parameter	Default Value	Description
Realm Name	Universal Messaging	This is a unique identifier for your Universal Messaging realm. It is very important that this name is unique when using your realm in federated namespaces or cluster configurations.
NHP Interface binding	0.0.0.0	The Universal Messaging realm you are installing will have a bootstrap network interface installed to allow samle applications and administration tools to connect to it. This interface will use the NHP protocol (see protocol overview below). This parameter specifies if the interface should bind to all known IP addresses or a specific one only.
NHP Interface port	9000	The port that the bootstrap interface will listen on.
Data directory	<install folder>/server/<realm name>/data	This is the folder that all Universal Messaging realm data files, logs and configuration files will be stored when the server starts. This parameter is NOT customizable during the installation.
Log level	4	This is the log level specifying the verbosity of the Universal Messaging realm log file ranging from 0 (very verbose) to 7 (quiet). This parameter is NOT customizable during the installation.

BootStrap Parameter	Default Value	Description
Initial Memory	256MB	This is the initial amount of memory the Universal Messaging realm will use. This parameter is NOT customizable during the installation.
Max Memory	512MB	This is the maximum amount of memory the Universal Messaging realm can use if needed. This parameter is NOT customizable during the installation

During the installation process, the fist 4bootstrap parameters can be customized. The remaining can be customized by modifying the nserver.lax configuration file. The following figures illustrate an example of the bootstrap customization screens for GUI and console modes.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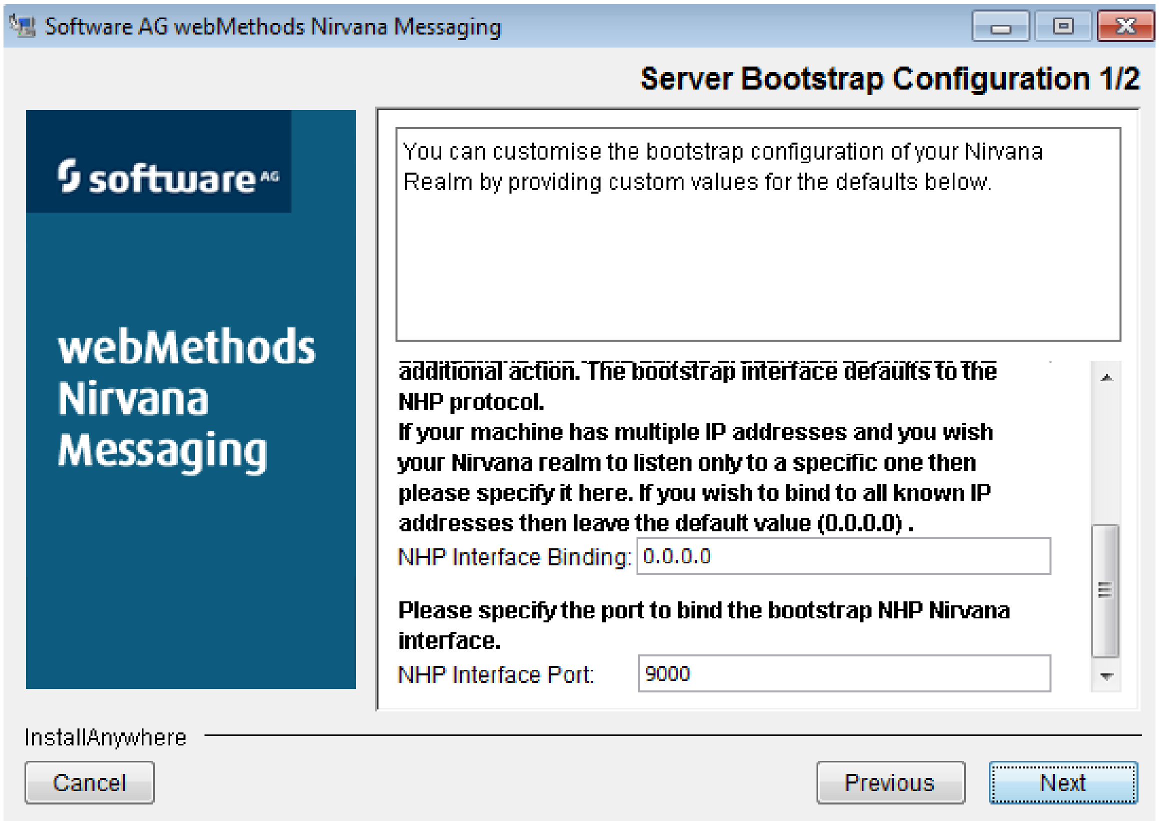
Server Bootstrap Configuration 1/2

You can customise the bootstrap configuration of your Nirvana Realm by providing custom values for the defaults below.

This is a unique identifier for the Nirvana realm you are installing in multiple realm namespaces and cluster configurations. If you wish to use this functionality make sure that your realms do not have the same name to avoid name conflicts.

Realm Name: nirvana

The installation process will set up a bootstrap Nirvana interface in your newly installed realm so that all sample applications and tools can be preconfigured without any additional action. The bootstrap interface defaults to the



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Server Bootstrap Configuration 1/2

You can customise the bootstrap configuration of your Nirvana Realm by providing custom values for the defaults below.

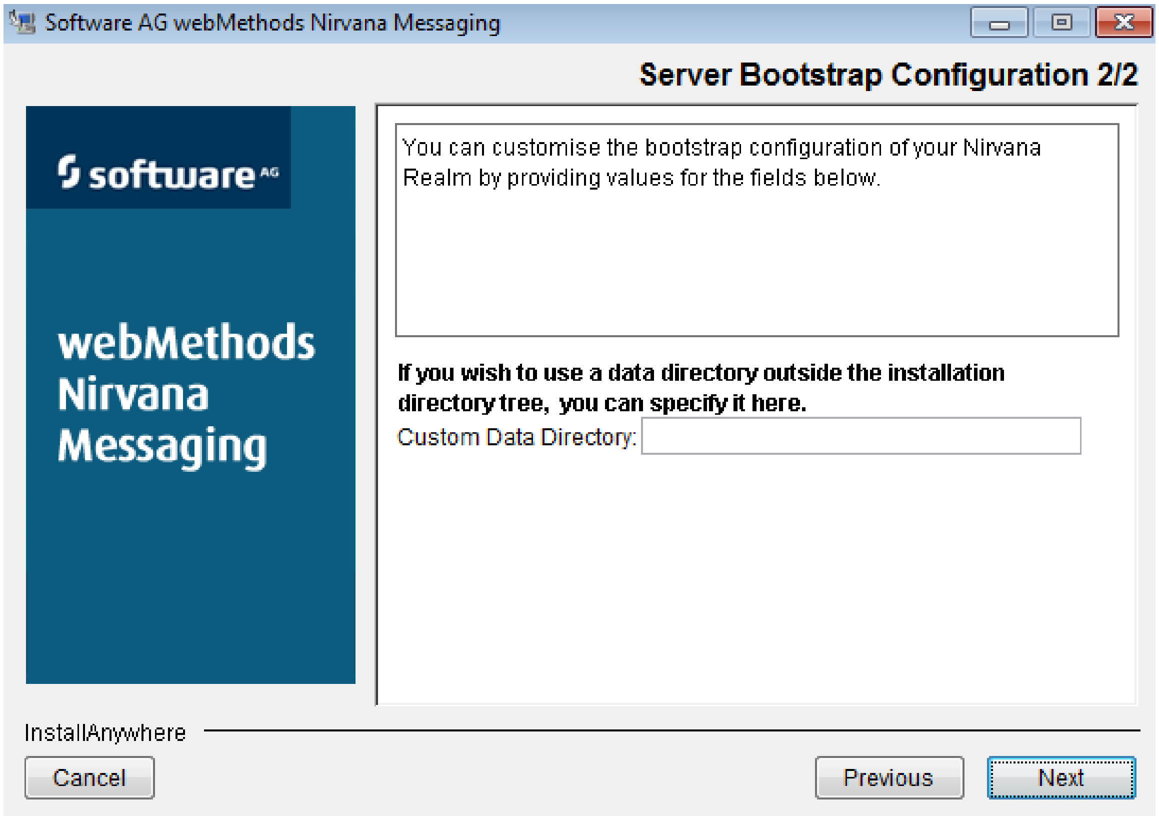
additional action. The bootstrap interface defaults to the NHP protocol.

If your machine has multiple IP addresses and you wish your Nirvana realm to listen only to a specific one then please specify it here. If you wish to bind to all known IP addresses then leave the default value (0.0.0.0) .

NHP Interface Binding: 0.0.0.0

Please specify the port to bind the bootstrap NHP Nirvana interface.

NHP Interface Port: 9000



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webMethods Nirvana Messaging
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Server Bootstrap Configuration 2/2

You can customise the bootstrap configuration of your Nirvana Realm by providing values for the fields below.

If you wish to use a data directory outside the installation directory tree, you can specify it here.

Custom Data Directory:

```
================================================================================
Server Bootstrap Configuration - Realm Name
-------------------------------------------
This is a unique identifier for the Universal Messaging realm you are installing in multiple real
Realm Name: (DEFAULT: Universal Messaging):
================================================================================
Server Bootstrap Configuration - NHP Interface Binding
------------------------------------------------------
The installation process will set up a bootstrap Universal Messaging interface in your newly inst
If your machine has multiple IP addresses and you wish your Universal Messaging realm to listen o
NHP Interface Binding: (DEFAULT: 0.0.0.0):
================================================================================
Server Bootstrap Configuration - NHP Interface Port
---------------------------------------------------
Please specify the port to bind the bootstrap NHP Universal Messaging interface.
NHP Interface Port: (DEFAULT: 9000):
```

Protocol Overview

Universal Messaging is capable of using multiple transport protocols depending on the deployment and security requirements in place. Although the bootstrap interface defaults to the Universal Messaging HTTP Protocol (NHP) more interfaces can be added using the Universal Messaging Enterprise manager or an application using the Universal Messaging Admin API.

Universal Messaging Socket Protocol

Out of the box the installer configures the Realm to have a Universal Messaging Socket Protocol (nsp) adapter. As the name suggests NSP uses TCP/IP sockets directly and is useful for servers and clients on a secure wan/lan configuration where encryption of data and firewall traversal are not required.

Universal Messaging HTTP Protocol

In order to facilitate communications in environments where security policies enforce network restrictions, the Realm can use the Universal Messaging HTTP (Protocol) (nhp). This driver supports HTTP and provides a mechanism for clients and other servers to communicate with the server through proxy servers, firewalls and essentially the Internet. It would not be prudent to run this protocol directly on the Internet without SSL to provide a level of security. It can be useful however, in traversing internal firewalls to get to a DMZ hosted Universal Messaging Realm server thus allowing trusted clients and servers access to the external facing Realm.

Universal Messaging Secure Socket Protocol

The Universal Messaging Secure Socket Protocol (nsps) is identical to the Universal Messaging Socket Protocol but using SSL sockets rather than plain TCP/IP ones. It can be configured to require client side authentication or not and it requires a Java VM with Secure Socket Layer installed. For more information on that please see the Secure Socket Layer Installation section below.

Universal Messaging Secure HTTP Protocol

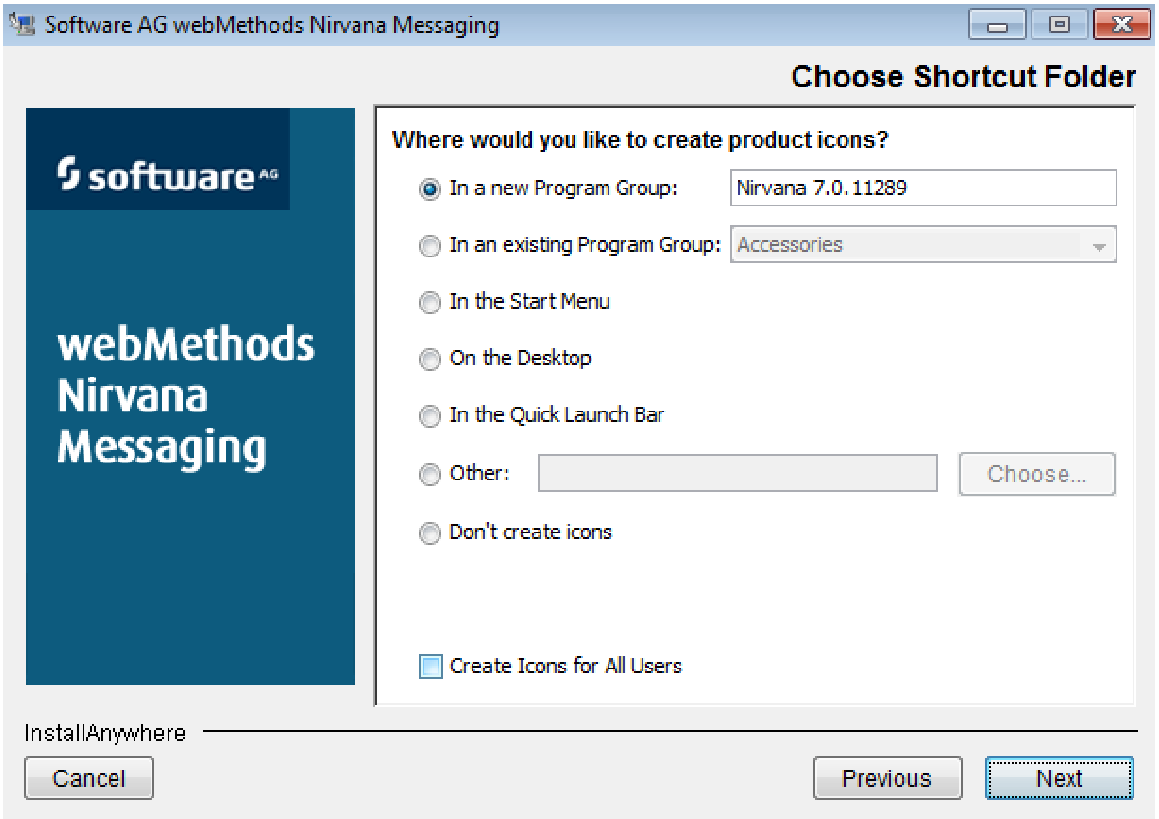
The Universal Messaging Secure HTTP Protocol (nhps) is identical to the Universal Messaging HTTP Protocol but it uses SSL sockets rather than plain TCP/IP ones. It can be configured to require client side authentication or not and it requires a Java VM with Secure Socket Layer installed. For more information on that please see the Secure Socket Layer Installation section below.

Secure Socket Layer Installation

In order for the server to support the NSPS and NHPS protocols the Java Secure Socket Extension (JSSE) package is required. Please note that JSSE must be installed in the JVM before the server can utilise it (note that JSSE it is already built into recent JVM's, and as such does not require any further action). Should you need to install JSSE however, the installation can be found at http://Java.sun.com/products/jsse/INSTALL.html. With recent JVMs, Universal Messaging Realm server can also be configured to use any JSSE compliant SSL provider.

Shortcut/Link Customization

This screen will only be displayed if you previously chose a custom installation set. It allows you to specify the location that will be used to install shortcuts/links. The following figures illustrate an example of this screen for GUI and console modes.



Software AG webMethods Nirvana Messaging

Choose Shortcut Folder

Where would you like to create product icons?

● In a new Program Group: Nirvana 7.0.11289

○ In an existing Program Group: Accessories

○ In the Start Menu

○ On the Desktop

○ In the Quick Launch Bar

○ Other:

○ Don't create icons

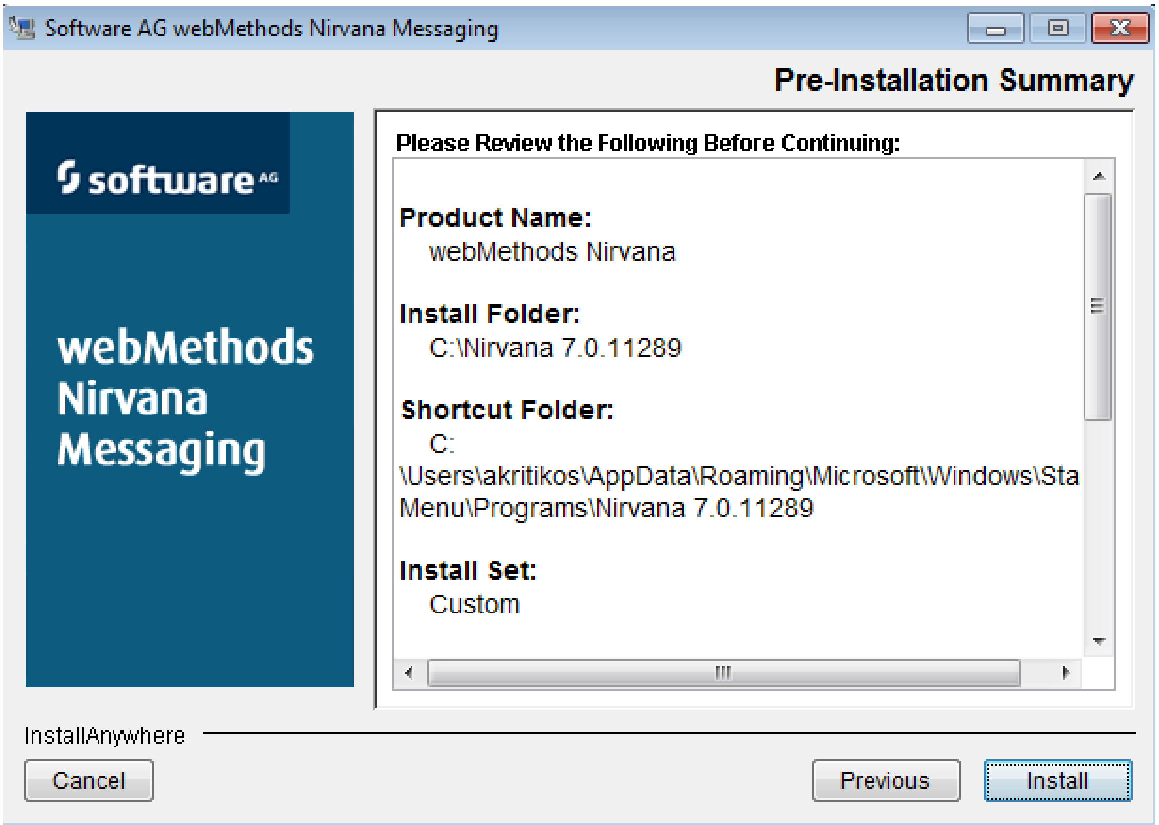
□ Create Icons for All Users

```
===============================================================================
Choose Link Location
--------------------
Where would you like to create links?
->1- Default: /home/krital/Universal Messaging_7.0.11289/links
2- In your home folder
3- Choose another location...
4- Don't create links
```

```
ENTER THE NUMBER OF AN OPTION ABOVE, OR PRESS <ENTER> TO ACCEPT THE DEFAULT
:
```

Pre-Installation Summary

The is the last screen displayed by the installer showing a pre-installation summary of the actions that will be performed if you choose to continue. The following figures illustrate an example of this screen for GUI and console modes.


Software AG webMethods Nirvana Messaging
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Cancel
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Install

Pre-Installation Summary

Please Review the Following Before Continuing:

Product Name:
webMethods Nirvana

Install Folder:
C:\Nirvana 7.0.11289

Shortcut Folder:
C:
\Users\akritikos\AppData\Roaming\Microsoft\Windows\Sta
Menu\Programs\Nirvana 7.0.11289

Install Set:
Custom

```
===============================================================================
Pre-Installation Summary
------------------------
Please Review the Following Before Continuing:
Product Name:
webMethods Universal Messaging
Install Folder:
/home/krital/Universal Messaging_7.0.11289
Link Folder:
/home/krital/Universal Messaging_7.0.11289/links
Install Set:
Custom
Product Features:
Client API,
Realm Server,
Documentation
Java VM to be Used by Installed Product:
/usr/lib/jvm/java-6-openjdk
Disk Space Information (for Installation Target):
Required: 258,365,385 Bytes
Available: 10,502,373,376 Bytes
PRESS <ENTER> TO CONTINUE:
```

4 Running a Silent Installation

There may be occasions where you want to install Universal Messaging in silent mode, ie where you can script the install, and not require any user input. This section describes how to run the installer in silent mode. There are currently some outstanding issues with the InstallAnywhere installer bundle that causes the silent install to not correctly work without making some slight alterations to the installer output. These steps are described in the following sections.

To begin, you need to have already installed Universal Messaging somewhere (you will need to run the installer with '-r installer.props' in order to first generate the response file required for a silent install). Once you have the response file (installer.props but it can be called anything you wish), there are some modifications that need to be made to this file in order to successfully run the silent install. So, assuming you have the installer.props file in the same location as the unix Universal Messaging install binary, you will need to edit the installer.props and make the following changes:

Custom Variables

The installer.props contains all the custom information provided during the install, such as installation directory, realm name etc. Due to an outstanding issue with the installer software, some of these variables should in fact be appended with '_1'. For example, CUSTOM_REALM_NAME, should in fact be CUSTOM_REALM_NAME_1. All CUSTOM variables require the additional _1 to be appended.

Escaping Characters

Another issue with the installer, is that the actual variables stored as CUSTOM install parameters, contain unnecessary escape characters. For example,

CUSTOM_REALM_NAME=\"nirvana\"

The escape characters need to be removed, so after completing the Custom Variable step and the escaped characters changes you should end up with something that resembles:

- CUSTOM_REALM_NAME_1=nirvana
- CUSTOM_NSP_BINDING_1=0.0.0.0
- CUSTOM_NSP_PORT_1=9000

Remove Chosen List

The final configuration change that is required is to ensure that all components are installed during the silent install. To do this, simply comment out the following:

- CHOSEN_FEATURE_LIST=Client ,Realm_SRV,Doc
- CHOSEN_INSTALL_FEATURE_LIST=Client ,Realm_SRV,Doc

- CHOSEN_INSTALL_SET=Typical

So it looks like:

- #CHOSEN_FEATURE_LIST=Client ,Realm_SRV,Doc
- #CHOSEN_INSTALL_FEATURE_LIST=Client ,Realm_SRV,Doc
- #CHOSEN_INSTALL_SET=Typical

Performing A Silent Install

Once you have a custom installer properties file, this can be used as a template to create customisable installs for any server instance you wish to script. For example, the installer.props file that contains all of the changes described above can now be copied and modified to contain the boot strap information required for any nirvana realm.

Once you are happy that you have modified the properties file to contain all of the information required, you can now run the install in silent mode, by using the following command:

```
sh ./nirvana_linux_novm.bin -i silent -f installer.props
```

replacing the installer.props file with the name of your custom configuration file.

5 Command Prompts

Command Prompts

In order to make it easy for new users to test the rich functionality provided by Universal Messaging, the Universal Messaging installation includes compiled versions of all the sample applications as well as native launchers that wrap them and use environment variables to minimise the input required by the user. A command prompt is therefore a console/shell with some environment variables already set.

Client Command Prompt

The client command prompt is a console/shell with environment variables set by a client environment script. Examples of such environment variables include RNAME, PATH, CLASSPATH, Certificate stores etc. On Win32 platforms a client command prompt is opened using the shortcut in the start menu while on Unix platforms it is opened by executing the appropriate softlink in the links folder under the install directory:

```
[marvin@Terracotta.com]$ cd /home//Universal Messaging/links/Client/Universal Messaging
[marvin@Terracotta.com]$ . ./Command_Prompt
```

You are now ready to run sample client applications and sample administration (AdminAPI) applications with the minimum possible input.

Server Command Prompt

The server command prompt is a console/shell with environment variables set by a server environment script. Examples of such environment variables include PATH, CLASSPATH, server certificate stores etc. On Win32 platforms a server command prompt is opened using the shortcut in the start menu while on Unix platforms it is opened by executing the appropriate softlink in the links folder under the install directory:

```
[marvin@Terracotta.com]$ cd /home//Universal Messaging/links/Server/Universal Messaging
[marvin@Terracotta.com]$ . ./Command_Prompt
```

You are now ready to run server side administration commands such as start a realm server, stop a realm server etc.

6 Server Memory Modes

Server Memory Modes

The performance and behaviour of the Realm Server is inseparably linked to the amount of maximum heap memory allocated to the Java VM hosting it. The Realm Server is capable of scaling depending on the hardware platform it is hosted on, and that is determined by the memory available to the Java VM. The Realm detects this and switches its mode of operation to *Small Memory Mode*, *Medium Memory Mode* or *Large Memory Mode*.

Small Memory Mode

Allocating 16MB or less of heap memory to the Java VM hosting the Universal Messaging Realm will make it operate in small memory mode. This is confirmed at start-up by a log entry like the following:

```
Audit,Setting Server mode to Small Memory Mode
```

The Universal Messaging Realm small memory mode should be used when running a Realm on mobile or embedded devices, or other machines with very limited memory resources available. Apart from limited memory available to store events in reliable channels, all thread pooled sub systems are changed to have only one thread. It is therefore recommended that persistent channels should always be used on such Realms. The performance will also be reduced by the fact that all caching is disabled in this mode.

All of the functionality provided by the innovative Universal Messaging server side Realms are available in the small memory mode and hence on handheld devices etc.

Medium Memory Mode

Allocating 16MB or more of heap memory to the Java VM hosting the Universal Messaging Realm will make it operate in medium memory mode. This is confirmed at start-up by a log entry like the following:

```
Audit,Setting Server mode to Medium Memory Mode
```

The Universal Messaging Realm medium memory mode should be used when running Realms on development or where memory is at a premium. All thread pooled sub systems will start up with our recommended default values for this mode. Tuning the Realm to higher values for those sub systems will increase the Realm's memory requirements and increase caching age values.

Large Memory Mode

Allocating 70MB or more of heap memory to the Java VM hosting the Universal Messaging Realm will make it operate in large memory mode. This is confirmed at start-up by a log entry like the following:

```
Audit,Setting Server mode to Large Memory Mode
```

The Universal Messaging Realm large memory mode should be used when running Realms on development, staging or production environments, or when using reliable channels. All thread pooled sub systems will start up with our recommended default values for this mode.. Tuning the Realm to higher values for those sub systems will increase the Realm's memory requirements and increase caching age values.

7 Client Deployment

Client Deployment

Depending on the functionality used by your Universal Messaging application, different jar files are required. This following table illustrates the deployment dependencies between the jar libraries installed by the Universal Messaging installer.

JAR File	Description	Dependency
nClient.jar	Provides Universal Messaging Client functionality (Pub/Sub and Queues)	None
nP2P.jar	Provides Universal Messaging Peer 2 Peer functionality	nClient.jar
nJMS.jar	Provides Universal Messaging Provider for JMS functionality	nClient.jar
nAdminAPI.jar	Provides Universal Messaging Administration & Monitoring functionality	nClient.jar, nP2P.jar
nAdminXMLAPI.jar	Provides Universal Messaging Configuration XML Import / Export functionality	nClient.jar, nP2P.jar, nAdminAPI.jar
nEnterpriseManager.jar	Contains the Enterprise Manager tool	nClient.jar, nP2P.jar, nAdminAPI.jar, nAdminXMLAPI.jar (Optional)
nServer.jar	Contains the Universal Messaging Realm Server	None
Universal Messaging.tlb	Provides Universal Messaging Client Functionality for ActiveX applications	nClient.jar & Universal Messaging ActiveX Bridge

8 Starting the Realm Server

Starting the Universal Messaging Realm server depends on the installation operating system.

For win32 operating systems, the installer installs a shortcut called *Start Universal Messaging Realm Server* . Furthermore, the server command prompt can be used to open a console window and the server can be started by typing `nserver`.

Alternatively you can register the Realm as an NT service and control operation through the service control panel.

For Linux/Solaris/Generic Unix operating systems, starting the Realm can be done using the softlink inside the `Server` directory:

```
[marvin@Terracotta.com]$ cd /home//Universal Messaging/links/Server/Universal Messaging
[marvin@Terracotta.com]$ nohup Start_Universal Messaging_Realm_Server &
```

For the personal Java installation simply click the server link in the pjbin or the evbin, depending on the Personal Java JRE of your choice.

At this point the server should have started and is now ready for operation. To confirm this it is easy to check the Realm Server log file and ensure there are no errors being reported.

```
[Mon Apr 07 10:59:11 BST 2014], Copyright © PCB Systems Limited. All rights reserved
[Mon Apr 07 10:59:11 BST 2014],Startup: Processing local environment and setting Realm Server par
[Mon Apr 07 10:59:11 BST 2014],Startup: Support for Version older clients enabled
[Mon Apr 07 10:59:12 BST 2014],Startup: Setting log level to 2
[Mon Apr 07 10:59:13 BST 2014],Startup: Finalising Realm startup
[Mon Apr 07 10:59:13 BST 2014],Startup: Server enabling NIO communications
[Mon Apr 07 10:59:14 BST 2014],Startup: Setting Server mode to Large Memory Mode
[Mon Apr 07 10:59:15 BST 2014],Startup: Realm restarted for realm1
[Mon Apr 07 10:59:15 BST 2014],Startup: Scanning local network adaptors and configuring network s
[Mon Apr 07 10:59:15 BST 2014],Startup: Starting Realm Server Security Controller
[Mon Apr 07 10:59:15 BST 2014],Startup: Scheduling cluster cryptograhic initialisation
[Mon Apr 07 10:59:15 BST 2014],Startup: Starting validating Realm Configuration
[Mon Apr 07 10:59:15 BST 2014],Realm Validation: Resolved hostname nirvanahost to /nirvanahost fo
[Mon Apr 07 10:59:15 BST 2014],Realm Validation: Resolved hostname nirvanahost to /nirvanahost fo
[Mon Apr 07 10:59:15 BST 2014],Startup: Using SHA1withRSA, name SHA1withRSA Provider = SunRsaSign
[Mon Apr 07 10:59:15 BST 2014],Realm Validation: Resolved hostname nirvanahost to /nirvanahost fo
[Mon Apr 07 10:59:15 BST 2014],Startup: Finished validating Realm Configuration
[Mon Apr 07 10:59:15 BST 2014],Startup: Reloading all Channels/Queues and starting management tas
[Mon Apr 07 10:59:15 BST 2014],Startup: Using DH for shared secret generation, Provider = SunJCE
[Mon Apr 07 10:59:16 BST 2014],Startup: Reloading Realm Public and Private RSA Key
[Mon Apr 07 10:59:16 BST 2014],Startup: Using JMS Style fanout engine for persistentTopic
[Mon Apr 07 10:59:16 BST 2014],Startup: Completed Realm Public and Private RSA Key
[Mon Apr 07 10:59:16 BST 2014],Startup: Cluster cryptograhic initialisation, complete
[Mon Apr 07 10:59:16 BST 2014],Startup: Starting Transaction Manager
[Mon Apr 07 10:59:16 BST 2014],Startup: Loading Realm Server configuration settings
[Mon Apr 07 10:59:16 BST 2014],Starting inter-realm read thread:realm5
[Mon Apr 07 10:59:17 BST 2014],Starting inter-realm read thread:realm3
[Mon Apr 07 10:59:17 BST 2014],Starting inter-realm read thread:realm2
[Mon Apr 07 10:59:17 BST 2014],Reloading Delayed publishing channel
[Mon Apr 07 10:59:17 BST 2014],Reloaded Delayed publishing channel, reloaded 0 items
[Mon Apr 07 10:59:17 BST 2014],fConfigManager: Config group TransactionManager registered itself
```

```
[Mon Apr 07 10:59:17 BST 2014],nPlugins: Registered and loaded JMX Management sub-system
[Mon Apr 07 10:59:18 BST 2014],nPlugins: Registered com.pcbsys.nirvana.server.plugins.nUniversal
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Name : Universal Messaging XML Plugin Desc : Allows the
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Ignoring com.pcbsys.nirvana.server.plugins.nWebExpress U
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Ignoring com.pcbsys.nirvana.server.plugins.nServletPlugi
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Registered com.pcbsys.nirvana.server.plugins.nChangePass
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Name : Change Password Plugin Desc : Allows changing pas
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Registered com.pcbsys.nirvana.server.plugins.nRealmStatu
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Name : Realm Status Plugin Desc : Displays Realm Server
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Ignoring com.pcbsys.nirvana.server.plugins.nUniversal Me
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Registered com.pcbsys.nirvana.server.plugins.nFilePlugin
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Name : File Plugin Desc : Handles web requests for files
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Registered com.pcbsys.nirvana.server.plugins.nProxy
[Mon Apr 07 10:59:19 BST 2014],nPlugins: Name : Proxy Pass through Plugin Desc : Handles web requ
[Mon Apr 07 10:59:19 BST 2014],fConfigManager: Config group ProxyForward registered itself with c
[Mon Apr 07 10:59:19 BST 2014],fConfigManager: Config group RecoveryDaemon registered itself with
[Mon Apr 07 10:59:19 BST 2014],Startup: Initialising all inter-realm connections
[Mon Apr 07 10:59:19 BST 2014],Startup: Registering Namespace Agent to monitor realm additions/de
[Mon Apr 07 10:59:19 BST 2014],Startup: Starting Cluster management
[Mon Apr 07 10:59:19 BST 2014],Cluster> Cluster Agent revectoring client request table
[Mon Apr 07 10:59:19 BST 2014],Cluster> Cluster Agent finished revectoring client request table
[Mon Apr 07 10:59:20 BST 2014],Cluster> Cluster State Engine being initialised
[Mon Apr 07 10:59:20 BST 2014],Cluster> Setting initial state to InitState
[Mon Apr 07 10:59:20 BST 2014],Cluster> Waiting for Cluster quorum
[Mon Apr 07 10:59:20 BST 2014],Cluster> Changing state from InitState to OfflineState
[Mon Apr 07 10:59:20 BST 2014],Cluster> Cluster State Engine initialisation complete
[Mon Apr 07 10:59:20 BST 2014],Cluster> Using Cluster event id based master selection algorithm
[Mon Apr 07 10:59:20 BST 2014],Startup: Recovering any dead event links
[Mon Apr 07 10:59:20 BST 2014],Startup: Recovering any uncommitted events from Queues
[Mon Apr 07 10:59:20 BST 2014],Startup: Recovering any uncommitted events from clustered Queues
[Mon Apr 07 10:59:20 BST 2014],Reloading Delayed publishing channel
[Mon Apr 07 10:59:21 BST 2014],Reloaded Delayed publishing channel, reloaded 0 items
[Mon Apr 07 10:59:21 BST 2014],Startup: Starting Interface Manager
[Mon Apr 07 10:59:22 BST 2014],Startup: Loading Driver for nsp://nirvanahost:9500
[Mon Apr 07 10:59:22 BST 2014],Starting Socket driver with NIO support
[Mon Apr 07 10:59:22 BST 2014],Cluster> Detected potential master realm1 is off line, waiting for
[Mon Apr 07 10:59:22 BST 2014],Startup: Registering join conneciton monitor
[Mon Apr 07 10:59:22 BST 2014],Startup: Processing remote joins
[Mon Apr 07 10:59:22 BST 2014],Startup: Processing joins
[Mon Apr 07 10:59:22 BST 2014],Startup: Starting realm server scheduler entries
[Mon Apr 07 10:59:22 BST 2014],================================================
[Mon Apr 07 10:59:22 BST 2014], Copyright © PCB Systems Limited. All rights reserved
[Mon Apr 07 10:59:22 BST 2014],Start date = Mon Apr 07 10:59:22 BST 2014
[Mon Apr 07 10:59:22 BST 2014],
[Mon Apr 07 10:59:22 BST 2014],Realm Server Details :
[Mon Apr 07 10:59:22 BST 2014], Realm Server name = realm1
[Mon Apr 07 10:59:22 BST 2014], Realm Server version = $Name: $ - $Revision: 1.3 $
[Mon Apr 07 10:59:22 BST 2014], Build Number = BUILD_4_0_5000
[Mon Apr 07 10:59:22 BST 2014], Build Date = 12-Feb-1964
[Mon Apr 07 10:59:22 BST 2014], Data Directory = C:\\nirvana4\\realm1\\server\\realm1\data
[Mon Apr 07 10:59:22 BST 2014], Realm(s) Reloaded = 4
[Mon Apr 07 10:59:22 BST 2014], Channels Reloaded = 11
[Mon Apr 07 10:59:22 BST 2014], Queues Reloaded = 1
[Mon Apr 07 10:59:22 BST 2014], Interfaces Reloaded = 1
[Mon Apr 07 10:59:22 BST 2014],
[Mon Apr 07 10:59:22 BST 2014],Operating System Environment :
[Mon Apr 07 10:59:22 BST 2014], OS Name = Windows XP
[Mon Apr 07 10:59:22 BST 2014], OS Version = 5.1
[Mon Apr 07 10:59:22 BST 2014], OS Architecture = x86
[Mon Apr 07 10:59:22 BST 2014],
[Mon Apr 07 10:59:22 BST 2014],Java Environment :
[Mon Apr 07 10:59:22 BST 2014], Java Vendor = Sun Microsystems Inc.
[Mon Apr 07 10:59:22 BST 2014], Java Vendor URL = http://Java.sun.com/
```

```
[Mon Apr 07 10:59:22 BST 2014], Java Version = 1.5.0_14
[Mon Apr 07 10:59:22 BST 2014], Memory Allocation = 512 MB
[Mon Apr 07 10:59:22 BST 2014], Memory Warning = 435 MB
[Mon Apr 07 10:59:22 BST 2014], Memory Emergency = 481 MB
[Mon Apr 07 10:59:22 BST 2014], Clock Adjustment = 0ms
[Mon Apr 07 10:59:22 BST 2014], Nanosecond delay = Supported
[Mon Apr 07 10:59:22 BST 2014], Time Zone = Greenwich Mean Time
[Mon Apr 07 10:59:22 BST 2014], Security Provider 0 = SUN version 1.5
[Mon Apr 07 10:59:22 BST 2014], Security Provider 1 = SunRsaSign version 1.5
[Mon Apr 07 10:59:22 BST 2014], Security Provider 2 = SunJSSE version 1.5
[Mon Apr 07 10:59:22 BST 2014], Security Provider 3 = SunJCE version 1.5
[Mon Apr 07 10:59:22 BST 2014], Security Provider 4 = SunJGSS version 1.0
[Mon Apr 07 10:59:22 BST 2014], Security Provider 5 = SunSASL version 1.5
[Mon Apr 07 10:59:22 BST 2014], Security Provider 6 = Terracotta version 1.0
[Mon Apr 07 10:59:22 BST 2014],================================================
[Mon Apr 07 10:59:22 BST 2014],Startup: Realm Server Startup sequence completed
```

As the Realm Server starts up it reports the current log level settings, currently set to 1000000 characters and a log level of 4. The log level was set during the installation, a level of 0 reports every action the server does and can roll log files every minute on a busy realm.

The Realm Server then reports the JRE environment and the currently installed security providers. These are important if running SSL and cause the majority of configuration problems. After this the server then reloads all the configuration parameters, channels and topics and then is ready to accept connections.

If there are any problems binding to a port or creating an SSL instance these exceptions are reported into the Realm Server log file with as much detail as the server can produce.

To test that the Realm Server is up and ready to accept connections a simple test is to request information about the realm itself. To do this you need to open a client command prompt, and then issue the command ngetrealms.

To open a client command prompt on a Win32 installation, click on the Command Prompt shortcut in your Start Menu.

To open a client command prompt on a Linux/Solaris/Generic Unix installation, open a console and source the Command Prompt script as follows:

```
[marvin@Terracotta.com]$ cd /home//Universal Messaging/links/Client/Universal Messaging
[marvin@Terracotta.com]$ . ./Command_Prompt
```

This will set up your environment so that you can communicate with your Realm server.

9 Stopping the Realm Server

Stopping the Universal Messaging Realm server depends on the installation operating system.

For win32 operating systems, the installer installs a shortcut called *Stop Universal Messaging Realm Server* . Furthermore, the server command prompt can be used to open a console window and the server can be stopped by typing `nstopserver`.

If however you have started the Realm from service control panel then stopping it should also be done from there.

For Linux/Solaris/Generic Unix operating systems, stopping the Realm can be done using the softlink inside the `Server` directory:

```
[marvin@.com]$ cd /home//Universal Messaging/links/Server/Universal Messaging
[marvin@.com]$ ./Stop_Universal Messaging_Realm_Server
```

At this point the server will try and close down all client links and resources and P2P services. This may take some time to perform a graceful shutdown due to the Operating System resources that the Realm Server uses. The RealmServer will automatically perform a complete shutdown within 10 seconds if the graceful shutdown has not yet completed at which the Realm Server will perform an immediate shutdown. The Realm Server will generate a thread dump which will be written to the log file prior to shutdown.

The Realm Server will then log the shutdown within the server log and can be confirmed as complete by the following entries

```
[Tue Apr 08 09:26:58 BST 2014],Shutdown: Realm Server shutdown sequence started
[Tue Apr 08 09:26:58 BST 2014],Shutdown: Removed all logger listeners
[Tue Apr 08 09:26:58 BST 2014],Shutdown: Disabling client requests
[Tue Apr 08 09:26:58 BST 2014],Shutdown: Stopping Realm status updates
[Tue Apr 08 09:26:58 BST 2014],Shutdown: Stopping Interface Manager
[Tue Apr 08 09:26:58 BST 2014],Shutdown: Closing all accept handlers
[Tue Apr 08 09:26:58 BST 2014],Shutdown: Closing all sessions with connected clients
[Tue Apr 08 09:26:58 BST 2014],Shutdown: Stopping Cluster management
[Tue Apr 08 09:26:58 BST 2014],Cluster> Cluster Agent restoring client request table
[Tue Apr 08 09:26:58 BST 2014],Cluster> Cluster Agent finished restoring client request table
[Tue Apr 08 09:26:58 BST 2014],--------- Log File Closed ---------
```

10 JMS Configuration

The Universal Messaging Realm server is designed to automatically support applications that use the provided Universal Messaging Provider for JMS. Such applications however need a valid JNDI context configuration in order to remain vendor neutral.

Universal Messaging 4.0 features a JNDI service provider that can operate using any of the Universal Messaging transport protocols (nsp, nhp, nsps and nhps) as well as tools that allow configuration of the latter or any JNDI context is required from LDAP to NIS. The Universal Messaging JNDI provider uses a channel called /naming/defaultContext to store JMS references and the implementation class is com.pcbsys.nirvana.nSpace.Universal MessagingContextFactory.

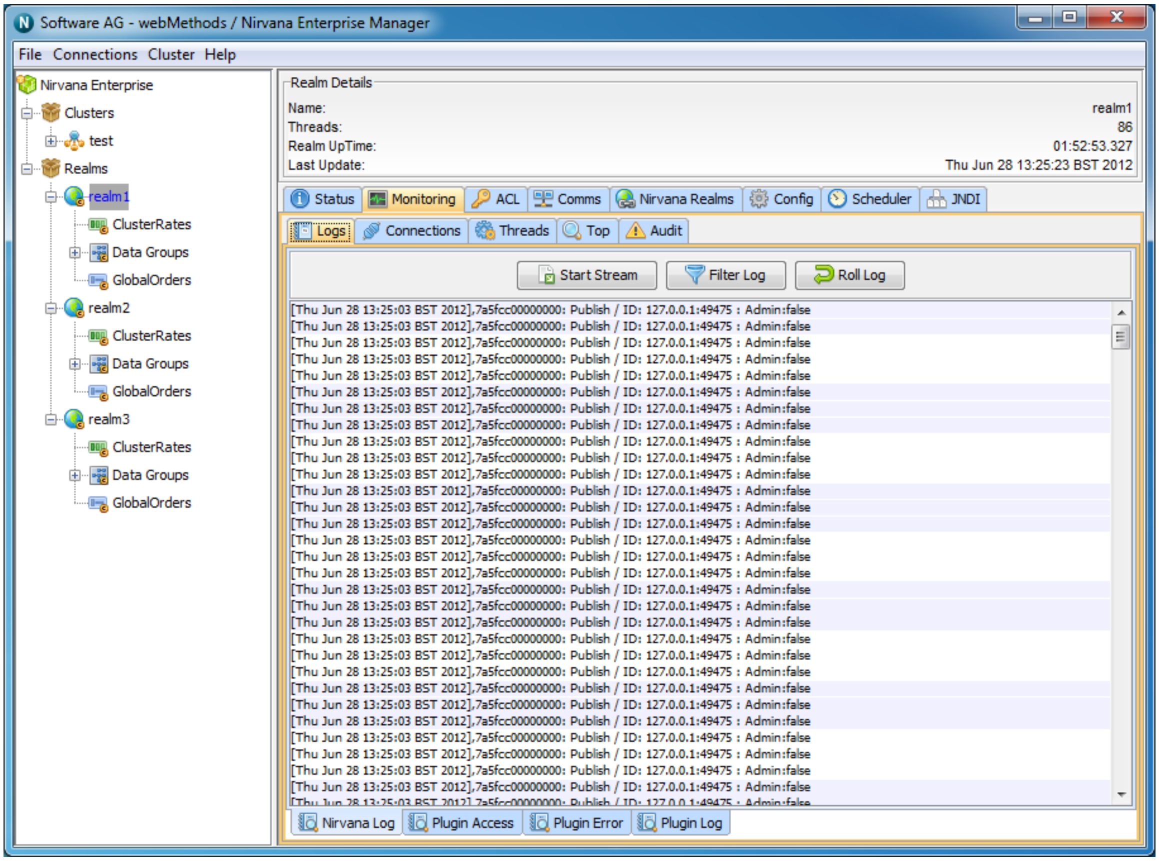
JNDI configuration can be performed in 2 ways. The first is by using a command line application (with full source code provided) called JMSAdmin. For more information about how to use this application please check the appropriate developer guide section. The second is by using the realm JNDI configuration panel in the Universal Messaging Enterprise Manager.

11 How to access the Universal Messaging log file ?

The Universal Messaging log file can be accessed using the Universal Messaging Enterprise Manager GUI by clicking on the LogFile Tab. This provides access to the Universal Messaging logfile itself as well as the log files associated with the Universal Messaging Realm Plugins. To switch between the available log files select the appropriate tab from the bottom of the logs panel.

Universal Messaging log files can also be accessed programmatically using the Universal Messaging Admin API.

If multiple Realms have been added to the namespace then the log file for each can be accessed by clicking on that realm in the namespace and then selecting the Monitoring tab which will by default display the log panel.



Realm Details

Name: realm1
Threads: 86
Realm UpTime: 01:52:53.327
Last Update: Thu Jun 28 13:25:23 BST 2012

```
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
[Thu Jun 28 13:25:03 BST 2012],7a5fcc00000000: Publish / ID: 127.0.0.1:49475 : Admin:false
```

12 How to administer a remote Universal Messaging Realm

A typical development setup involves installing a Universal Messaging Realm in a remote development server as well as the developer's workstation. This guide will help you connect to the remote development Universal Messaging realm for administration purposes.

A Universal Messaging realm by default enforces a security model that allows only the username running the server process to connect to it with full privileges, and that can only be done when connecting from localhost (127.0.0.1). Therefore, in order to be able to connect remotely you need to add an ACL entry for the user and the IP address you will connecting from. To do this you need to use the naddrealmacl command line tool on the development server as follows:

Windows OS Server Steps

1. Open a client "command prompt" on page 25 from the Start Menu shortcut
2. Type "naddrealmacl <user> <ip> full", where <user> is the OS username that the development workstation will use to connect and <ip> is the ip address of the development workstation. In this instance we specify that full access should be given to this user.

Linux / Solaris Server Steps

1. Open a console window (shell)
2. Type "cd <install dir>/client/<realm_name>/bin", where <install_dir> is your installation path and <realm_name> is the name you assigned to the realm during installation.
3. Type "export RNAME=nsp://localhost:9000", this sets an environment variable called `RNAME` that all samples and command line tools use in order to know how to connect to the server. In this instance we are using the Universal Messaging Socket Protocol on localhost and port 9000. If you have chosen a different port please adjust accordingly.
4. Type " ./naddrealmacl <user> <ip> full", where <user> is the OS username that the development workstation will use to connect and <ip> is the ip address of the workstation. In this instance we specify that full access should be given to this user.

Development Workstation Steps

1. Run your enterprise manager on the development workstation and click on the Connections menu, selecting Connect To Realm.

2. A dialog will pop up asking you to specify the RNAME to use. Similarly to what we did for the command line tool, we specify "nsp://<server ip>:9000", where <server ip> is the IP address where the server is running and 9000 is the port the server is listening on. Again if you have chosen a different port please adjust accordingly
3. Click ok and you should see your realm appear in the tree under the Realms folder.

13 Upgrading from a Trial to a Production Licence

Note: Universal Messaging ships with a trial licence, which allows the server to run for a maximum of 90 days from first run.

Trial Users

To purchase a production licence, please contact us.

Production Users

If you already have a production licence, and download a new build of the version for which you are licenced, then you should overwrite the shipped trial licence with your production licence to avoid being restricted to only 90 days' usage.

To do this, simply copy your production `licence.xml` over the trial `licence.xml` located in your `<install directory>/server/licence/` directory, and restart your server. If you encounter any problem with this process, please contact your local office for further support.

14 Nirvana Instance Manager

During the installation of webMethods Nirvana Messaging, a default instance called nirvana (unless renamed during installation) is created for all the components installed. If the user needs to create additional instances this can be done using the ninstancemanager command line tool.

Requirements

In order to run the ninstancemanager command line tool, you need to open a Java Examples Command prompt or Realm Server Command prompt. These prepare a set of environment variables that allow the execution of the ninstancemanager tool.

Components

The ninstancemanager tool can create instances of realm servers (RS), Enterprise Manager (EM) and template applications (TA). In order to create an instance of a component this needs to have been installed first.

Usage Message

Executing the ninstancemanager tool without any arguments provides a usage message as follows:

```
ninstancemanager <Action> <Instance Name> <Component> <Host> <Port>
```

- <Action> can be either create, delete or query
- <Instance Name> can be any instance name
- <Component> is the component the action applies on, namely RS, EM, TA or ALL for Realm Server, Enterprise Manager, Template Applications or everything installed
- <Host> is the hostname or IP that the template apps & Enterprise manager will point to, and the adapter the realm will bind to
- <Port> is the TCP port that the template apps & Enterprise manager will point to, and the adapter the realm will bind to

Example 1: To create a new instance called nirvana2 and listening to all IPs on port 9001, you would run:

```
ninstancemanager create nirvana2 all 0.0.0.0 9001
```

Example 2: To create a new EM instance called nirvana2 and pointing to a realm on 192.168.1.100 port 9001 you would run:

```
ninstancemanager create nirvana2 all 192.168.1.100 9001
```

Example 3: To delete all instances called nirvana2 you would run:

```
ninstancemanager delete nirvana2 all
```

Example 4: To delete an EM instance called nirvana2 you would run:

```
ninstancemanager delete nirvana2 em
```

Example 5: To query installed instances you would run:

```
ninstancemanager query
```

Querying Installed Instances

Running the ninstancemanager tool with the query action displays a list of currently installed instances. For example:

```
ninstancemanager query
```

will display the following in a default installation:

```
webMethods Nirvana Messaging installation query
----------------------------------------------
Realm Server Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMRealmServer
Instances: nirvana
Enterprise Manager Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMEnterpriseMa
Instances: nirvana
Template Applications Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMTemplateA
Instances: nirvana
```

Creating Instances

Running the ninstancemanager tool with the create action allows you to create instances of all the installed components or a subset. In order to create an instance, you need to run the ninstancemanager as follows:

```
ninstancemanager create <Instance Name> <Component> <Host> <Port>
```

Where:

- <Instance Name> is a logical name for the instance which needs to be unique for each installation.
- <Component> is the component you wish to create an instance of. The possible values are ALL (for all components installed), RS (for a realm server instance), TA (for template applications instance) or EM (for enterprise manager instance).

Example: If we wanted to create an instance of all components installed called testinstance, bound to all IPs of the machine and listening on port 9002 you would enter:

```
ninstancemanager create testinstance all 0.0.0.0 9002
```

Output:

```
Created RS instance testinstance
Created TA instance testinstance
Created EM instance testinstance
```

You can then verify the instance.s presence by issuing a query action:

```
ninstancemanager query
```

Output:

```
webMethods Nirvana Messaging installation query
-----------------------------------------------
Realm Server Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMRealmServer
Instances: nirvana , testinstance
Enterprise Manager Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMEnterpriseMa
Instances: nirvana , testinstance
Template Applications Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMTemplateA
Instances: nirvana , testinstance
```

Deleting Instances

The ninstancemanager tool can be used to delete any instances created apart from the default instance created using the installer. The components specified allow you to remove an instance for one component while keeping it for the others.

In order to delete an instance, you need to run the ninstancemanager as follows:

```
ninstancemanager delete <Instance Name> <Component>
```

Where:

- `<Instance Name>` is a logical name for the instance which needs to be unique for each installation.
- `<Component>` is the component you wish to create an instance of. The possible values are ALL (for all components installed), RS (for a realm server instance), TA (for template applications instance) or EM (for enterprise manager instance).

Example: If we wanted to delete a previously created instance of all components called testinstance, you would enter:

```
ninstancemanager delete testinstance all
```

Output:

```
RS instance testinstance has been deleted
TA instance testinstance has been deleted
EM instance testinstance has been deleted
```

You can then verify the instance's presence by issuing a query action:

```
ninstancemanager query
```

Output:

```
webMethods Nirvana Messaging installation query
-----------------------------------------------
Realm Server Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMRealmServer
Instances: nirvana
Enterprise Manager Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMEnterpriseMa
Instances: nirvana
Template Applications Installed Version: e2ei/11/NUM_9.0.1.0.11929/Nirvana/NUMTemplateA
Instances: nirvana
```