

# STAF Installation Guide

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This document describes how to install STAF V3.3.0 and later.

To find more detailed information on using STAF, go to the main [STAF web page](#)

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## 1. Introduction

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### 1.1. Installing STAF

There are two types of installers that are provided for STAF:

- InstallAnywhere (available for Windows and most Unix platforms)
- STAFInst (available for all Unix platforms)

Note that the InstallAnywhere and STAFInst installers install the exact same files on a given platform. You can select which type of installer is most appropriate to use in your environment.

### 1.2. InstallAnywhere

InstallAnywhere is a Java-based multi-platform software installation program.

InstallAnywhere provides three installation modes:

- Graphical installation mode (requires a UI display)
- Console installation mode (via command-line, useful for systems without a UI display but requiring an interactive install)
- Silent installation mode (where the install options are specified when starting the silent installation, either via command-line options or a response file)

There are three types of InstallAnywhere files that are provided for STAF:

- Installer executable with a bundled JVM (named **STAF<version>-setup-<platform>.exe** on Windows and **STAF<version>-setup-<platform>.bin** on Unix)

The bundled JVM will be used for the installation, and will be copied to the "jre" directory in the root STAF install directory. This JVM will also be used to uninstall STAF.

- Installer executable without a bundled JVM (named **STAF<version>-setup-<platform>-NoJVM.exe** on Windows, **STAF<version>-setup-<platform>-NoJVM.bin** on Unix, and **STAF<version>-setup-<platform>.bin** on Mac OS X)
- Installer zip file without a bundled JVM for Mac OS X (named **STAF<version>-setup-<platform>.zip**)

To run an installer without a bundled JVM, you must already have a JVM on the system. Supported JVMs are:

- Sun: 1.4.x, 1.5.x, 1.6.x
- IBM: 1.4.x, 1.5.x
- Apple: 1.4.x, 1.5.x
- HP: 1.4.x, 1.5.x

To use an InstallAnywhere STAF installer, the target system must have:

- 64 MB of free RAM
- Minimum of 8-bit color depth (256 colors) for graphical installation
- Minimum 640 X 480 screen resolution for graphical installation

An InstallAnywhere install of STAF will typically require 1-5 minutes depending on the platform and system performance.

More information on InstallAnywhere can be found at <http://www.acresso.com/products/installation/installanywhere.htm>

### 1.3. STAFInst

STAFInst is a script-based installer for Unix platforms. It will install all files required to run STAF, however, it will not perform some installation steps that InstallAnywhere performs, such as updating user profiles for environment variable updates.

The STAFInst installer is packaged as a "GNU zipped tar" file (named **STAF<version>-<platform>.tar.gz**) except on z/OS where it is packaged as a Unix compressed file (named **STAF<version>-<platform>.tar.Z**).

A STAFInst install of STAF will typically require about 1 minute.

## 2. Installers available for each platform

### 2.1. [Overview](#)

### 2.2. [Install properties for STAF Installers](#)

#### 2.1. Overview

To download the latest versions of STAF, go to the [Download STAF](#) page.

The following table shows an overview of the STAF installers available for each platform.

Platform	InstallAnywhere (Bundled JVM)	InstallAnywhere (No JVM)	STAFInst
Windows 32-bit (win32)	✓	✓	-
Windows IA64 (win64)	✓	✓	-
Windows AMD64/Opteron (winamd64)	✓	✓	-
Linux Intel 32-bit (linux)	✓	✓	✓
Linux IA64 (linux-ia64)	✓	✓	✓
Linux AMD64/Opteron (linux-amd64)	✓	✓	✓
Linux PPC64-32 (linux-ppc64-32)	✓	✓	✓
Linux PPC64-64 (linux-ppc64-64)	✓	✓	✓
zLinux 31-bit (zlinux-32)	✓	✓	✓
zLinux 64-bit (zlinux-64)	✓	✓	✓
z/OS 32-bit (zos)	-	-	✓
z/OS 64-bit (zos64)	-	-	✓

Solaris Sparc 32-bit (solaris-sparc)	✓	✓	✓
Solaris Sparc 64-bit (solaris-sparc64)	✓	✓	✓
Solaris AMD64/Opteron x64 32-bit Java (solaris-x64)	✓	✓	✓
Solaris AMD64/Opteron x64 64-bit Java (solaris-x64-64)	✓	✓	✓
Solaris x86 32-bit (solaris-x86)	✓	✓	✓
AIX 32-bit (aix)	✓	✓	✓
AIX 64-bit (aix64)	✓	✓	✓
AIX 4.3.3 32-bit (aix433)	-	-	✓
HPUX PA-RISC (hpux)	✓	✓	✓
HPUX IA64-32 (hpux-ia64-32)	✓	✓	✓
HPUX IA64-64 (hpux-ia64-64)	✓	✓	✓
OS/400 32-bit (as400)	-	-	✓
FreeBSD 6.1+ i386 (freebsd)	-	✓	✓
FreeBSD 4.10 i386 (freebsd410)	-	-	✓
Mac OS X i386 (macosx-i386)	-	✓	✓
Mac OS X PPC (macosx-ppc)	-	✓	✓

## 2.2. Install properties for STAF Installers

After the STAF install is complete, an `install.properties` file will be created in the root STAF install directory. The file will contain key/value pairs that provide information about the version of STAF that has been installed.

The `install.properties` file will contain the following information:

- **version** - the version of STAF that has been installed
- **platform** - the STAF platform name
- **architecture** - the architecture of the STAF build (32-bit or 64-bit)
- **installer** - the type of installer (InstallAnywhere, STAFInst)
- **file** - the file used to install STAF
- **osname** - the operating system name for the STAF build (equivalent to the "os.name" Java property)
- **osversion** - the operating system version supported by the STAF build ("\*" indicates the build is supported on any version of the OS; a version number followed by a "+" indicates the build supports that version or later)
- **osarch** - the operating system architecture supported by the STAF build (equivalent to the "os.arch" Java property)

The following table shows the possible values for the `install.properties` file

version	platform	architecture	installer	file	osname	osversion	osarch
3.x.x	win32	32-bit	IA   IA_NoJVM	STAF3xx-setup-win32.exe   STAF3xx-setup-win32-NoJVM.exe	Windows	*	x86
3.x.x	win64	64-bit	IA   IA_NoJVM	STAF3xx-setup-win64.exe   STAF3xx-setup-win64-NoJVM.exe	Windows	*	ia64
3.x.x	winamd64	64-bit	IA   IA_NoJVM	STAF3xx-setup-winamd64.exe   STAF3xx-setup-winamd64-NoJVM.exe	Windows	*	amd64

3.x.x	linux	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-linux.bin   STAF3xx-setup-linux-NoJVM.bin   STAF3xx-linux.tar.gz	Linux	*	x86
3.x.x	linux-ia64	64-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-linux-ia64.bin   STAF3xx-setup-linux-ia64-NoJVM.bin   STAF3xx-linux-ia64.tar.gz	Linux	*	ia64
3.x.x	linux-amd64	64-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-linux-amd64.bin   STAF3xx-setup-linux-amd64-NoJVM.bin   STAF3xx-linux-amd64.tar.gz	Linux	*	amd64
3.x.x	linux-ppc64-32	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-linux-ppc64-32.bin   STAF3xx-setup-linux-ppc64-32-NoJVM.bin   STAF3xx-linux-ppc64-32.tar.gz	Linux	*	ppc64
3.x.x	linux-ppc64-64	64-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-linux-ppc64-64.bin   STAF3xx-setup-linux-ppc64-64-NoJVM.bin   STAF3xx-linux-ppc64-64.tar.gz	Linux	*	ppc64
3.x.x	zlinux-32	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-zlinux-32.bin   STAF3xx-setup-zlinux-32-NoJVM.bin   STAF3xx-zlinux-32.tar.gz	Linux	SLES8	s390
3.x.x	zlinux-64	64-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-zlinux-64.bin   STAF3xx-setup-zlinux-64-NoJVM.bin   STAF3xx-zlinux-64.tar.gz	Linux	SLES8	s390x
3.x.x	zos	32-bit	STAFInst	STAF3xx-zos.tar.Z	z/OS	1.4+	390
3.x.x	zos64	64-bit	STAFInst	STAF3xx-zos64.tar.Z	z/OS	1.4+	s390x
3.x.x	solaris-sparc	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-solaris-sparc.bin   STAF3xx-setup-solaris-sparc-NoJVM.bin   STAF3xx-solaris-sparc.tar.gz	SunOS	5.6+ 5.7+ (IA)	sparc
3.x.x	solaris-sparc64	64-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-solaris-sparc64.bin   STAF3xx-setup-solaris-sparc64-NoJVM.bin   STAF3xx-solaris-sparc64.tar.gz	SunOS	5.10+	sparcv9
3.x.x	solaris-x64	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-solaris-x64.bin   STAF3xx-setup-solaris-x64-NoJVM.bin   STAF3xx-solaris-x64.tar.gz	SunOS	5.10+	x86-64 (aka x64, amd64)

3.x.x	solaris-x64-64	64-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-solaris-x64-64.bin   STAF3xx-setup-solaris-x64-64-NoJVM.bin   STAF3xx-solaris-x64-64.tar.gz	SunOS	5.10+	amd64
3.x.x	solaris-x86	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-solaris-x86.bin   STAF3xx-setup-solaris-x86-NoJVM.bin   STAF3xx-solaris-x86.tar.gz	SunOS	5.10+	x86-32 (aka x86)
3.x.x	aix	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-aix.bin   STAF3xx-setup-aix-NoJVM.bin   STAF3xx-aix.tar.gz	AIX	5.1+	ppc
3.x.x	aix64	64-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-aix64.bin   STAF3xx-setup-aix64-NoJVM.bin   STAF3xx-aix64.tar.gz	AIX	5.1+	ppc64
3.x.x	aix433	32-bit	STAFInst	STAF3xx-aix433.tar.gz	AIX	4.3.3+	ppc
3.x.x	hpux	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-hpux.bin   STAF3xx-setup-hpux-NoJVM.bin   STAF3xx-hpux.tar.gz	HP-UX	B.11.11+	PA_RISC2.0
3.x.x	hpux-ia64-32	32-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-hpux-ia64-32.bin   STAF3xx-setup-hpux-ia64-32-NoJVM.bin   STAF3xx-hpux-ia64-32.tar.gz	HP-UX	B.11.23+	IA64N
3.x.x	hpux-ia64-64	64-bit	IA   IA_NoJVM   STAFInst	STAF3xx-setup-hpux-ia64-64.bin   STAF3xx-setup-hpux-ia64-64-NoJVM.bin   STAF3xx-hpux-ia64-64.tar.gz	HP-UX	B.11.23+	IA64W
3.x.x	as400	32-bit	STAFInst	STAF3xx-as400.tar.gz	OS/400	5.2+	PowerPC
3.x.x	freebsd	32-bit	IA_NoJVM   STAFInst	STAF3xx-setup-freebsd-NoJVM.bin   STAF3xx-freebsd.tar.gz	FreeBSD	6.1+	i386
3.x.x	freebsd410	32-bit	STAFInst	STAF3xx-freebsd410.tar.gz	FreeBSD	4.10+	i386
3.x.x	macosx-i386	32-bit	IA_NoJVM   STAFInst	STAF3xx-setup-macosx-i386.zip   STAF3xx-setup-macosx-i386.bin   STAF3xx-macosx-i386.tar.gz	Mac OS X	10.4+	i386
3.x.x	macosx-ppc	32-bit	IA_NoJVM   STAFInst	STAF3xx-setup-macosx-ppc.zip   STAF3xx-setup-macosx-ppc.bin   STAF3xx-macosx-ppc.tar.gz	Mac OS X	10.4+	ppc

Note that the `install.properties` file will be overwritten every time you install STAF to a target location. You should not delete or modify the `install.properties` file.

Here is a sample `install.properties` file from a Windows system (using the IA installer):

```
version=3.3.2
platform=win32
architecture=32-bit
installer=IA
file=STAF332-setup-win32.exe
osname=Windows
osversion=*
osarch=x86
```

Here is a sample install.properties file from a Mac OS X i386 system (using the STAFInst installer):

```
version=3.3.2
platform=macosx-i386
architecture=32-bit
installer=STAFInst
file=STAF332-macosx-i386.tar
osname=Mac OS X
osversion=10.4+
osarch=i386
```

Note that if STAF is running on a system, you can use the "MISC LIST PROPERTIES" service request to obtain the information in the install.properties file

When using Java classes that call into the STAF APIs, it is important to understand that STAF is implemented in C++, so any calls that your Java code makes into the STAF APIs will be using JNI to interface with the native C++ code.

This means that you must use the version of STAF that is compatible with the architecture (32-bit or 64-bit) of the JVM that you are using.

If the "STAF architecture" is "32-bit", then you must use a 32-bit JVM with that version of STAF.

If the "STAF architecture" is "64-bit", then you must use a 64-bit JVM with that version of STAF.

## 3. Install Topics

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- 3.6. [Advanced Options](#)
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### 3.1. STAF License Agreement

In order to install STAF, you must read and accept the terms of the license agreement.

### 3.2. Installation Target

When installing STAF, you must specify the target installation directory. The default install location varies depending on the operating system.

- On Windows, the default install directory is **C:\STAF**
- On Mac OS X, the default install directory is **/Library/staf**
- On other Unix platforms, the default install directory is **/usr/local/staf**

### 3.3. Upgrading STAF

When installing STAF via InstallAnywhere, if you have selected a target installation directory where a version of STAF is already installed, you will be asked if you want to upgrade the existing version. If you choose to do the upgrade installation, all of STAF files will be upgraded to the new version. Any files created after STAF was installed (e.g. additional services, log files, updated STAF.cfg, etc) will not be removed.

When installing STAF via STAFInst, if you have selected a target installation directory where a version of STAF is already installed, the install will display an error message indicating that you must first uninstall the existing version of STAF.

### 3.4. Install Sets

There are several install sets available when installing STAF, which define the set of STAF features that will be installed:

- Full - All features will be installed. This option is recommended for most users.
- Minimal - Only required application features will be installed. This option is recommended only for users with limited disk space.
- Custom - Choose this option to customize the features to be installed. This install set is only available with the InstallAnywhere installers.

Here is a list of the available features:

- STAF Application (STAF) - Core STAF application
- External Services (ExtSvcs) - External STAF services (Log, Monitor, ResPool, Zip)
- Language Support (Langs) - STAF Language Support (Java, Perl, Python, TCL, etc.)
- Samples and Demos (Samples) - Samples and Demos
- Additional Codepage Support (Codepage) - Install all STAF codepages
- Documentation (Docs) - STAF documentation
- Development Support (Develop) - Service developer header files and libraries

Note that the STAFInst installers allow install set types of "recommended", "full", and "minimal". Selecting "recommended" or "full" will perform a full install.

### 3.5. Registration

During the install you can optionally choose to provide registration information to the STAF development team. This information is used by the STAF team to determine the number of projects that are using STAF.

Note that this registration information is currently transmitted (the first time that STAFProc is started after the install) to a system within the IBM network. If you register information from a system that is outside the IBM network, the transmission will fail and the registration information will be discarded (note that this will not impact your ability to use STAF).

### 3.6. Advanced Options

Here is a list of the advanced options that are available during the install:

- Update Environment/Menu For:

This allows you to specify the scope of environment/menu updates. The possible selections are:

- System - the System environment variables and menus (if applicable) will be updated
- User - the currently logged-in user's environment variables and menus (if applicable) will be updated
- None - no environment variables or menus will be updated

Note that on Unix systems, after the install completes, you must logout and log back in to have the system/user environment variables refreshed.

- Start STAF on user login (Windows only)

This indicates whether you want STAF to automatically start when you login (by adding STAF to your Windows StartUp folder). This option is not available if you selected None for Update Environment/Menu. This option is only available with the InstallAnywhere installers.

- Create Start menu icons (Windows only)

This indicates whether you want icons placed on the Windows "Start Programs" menu. This option is not available if you selected None for Update Environment/Menu. This option is only available with the InstallAnywhere installers.

- Start STAFProc (Windows only)

This indicates whether you want STAFProc to be started in normal state (visible on the desktop) or minimized when the "Start STAF" icon in the Windows "Start Programs" menu is selected, or when STAFProc automatically starts when you login to Windows. This option is not available if you selected None for Update Environment/Menu. This option is only available with the InstallAnywhere installers.

- Default TCP/IP version

This indicates whether you want to use the IPv4 TCP libraries only, or if you want to use the TCP libraries that support both IPv4 and IPv6.

- Default Perl version (if applicable)

This indicates which version of Perl you want to be the default Perl support for STAF. This option is only available with the InstallAnywhere installers.

- Default STAF Instance Name

This allows you to specify the value for the STAF instance name for this version of STAF. Since multiple instances of STAFProc can be run at the same time on the same system, the STAF\_INSTANCE\_NAME environment variable can be used to specify a name for each STAFProc instance. You can leave the default instance name as "STAF", or you can change the instance name. Note, this value will only be used in the STAFEnv script file that will be created for you. This option is only available with the InstallAnywhere installers.

### 3.7. STAFEnv script

After the STAF install is complete, a STAFEnv.bat file (on Windows) or a STAFEnv.sh file (on Unix) will be created in the root STAF install directory. The STAFEnv script files are useful if you are going to be running two versions of STAF on the same machine and need a convenient way to switch settings for each version of STAF. An optional argument specifying the STAF instance name can be passed to a STAFEnv script file.

Here is a sample STAFEnv.bat file from a Windows system:

```
@echo off
REM STAF environment variables
set PATH=C:\STAF\bin;%PATH%
set CLASSPATH=C:\STAF\bin\JSTAF.jar;C:\STAF\samples\demo\STAFDemo.jar;%CLASSPATH%
set STAFCONVDIR=C:\STAF\codepage
if "%1" EQU "" set STAF_INSTANCE_NAME=STAF
if "%1" NEQ "" set STAF_INSTANCE_NAME=%1
```

Here is a sample STAFEnv.sh file from a Linux system:

```
#!/bin/sh
# STAF environment variables
PATH=/usr/local/staf/bin:${PATH:-}
LD_LIBRARY_PATH=/usr/local/staf/lib:${LD_LIBRARY_PATH:-}
CLASSPATH=/usr/local/staf/lib/JSTAF.jar:/usr/local/staf/samples/demo/STAFDemo.jar:
${CLASSPATH:-}
STAFCONVDIR=/usr/local/staf/codepage
if [ $# = 0 ]
then
    STAF_INSTANCE_NAME=STAF
else
    STAF_INSTANCE_NAME=$1
fi
export PATH LD_LIBRARY_PATH CLASSPATH STAFCONVDIR STAF_INSTANCE_NAME
```

Note that to correctly execute the STAFEnv.sh script on Unix, you must execute it in this format:

```
. ./STAFEnv.sh
```

Or, if the STAFEnv.sh script is not in the current directory:

```
. ./usr/local/staf/STAFEnv.sh
```

### 3.8. startSTAFProc script

After the STAF install is complete, a startSTAFProc.bat file (on Windows) or a startSTAFProc.sh file (on Unix) will be created in the root STAF install directory. The startSTAFProc script files can be used to set up the STAF environment variables and start STAFProc.

Here is a sample startSTAFProc.bat file from a Windows system:

```
REM Sets up the STAF environment variables and starts STAFProc
call "C:\STAF\STAFEnv.bat"
start "Start STAF 3.3.2" /min "C:\STAF\bin\STAFProc.exe"
```

Here is a sample startSTAFProc.sh file from a Linux system:

```
#!/bin/sh
# Sets up the STAF environment variables and starts STAFProc
# in the background, logging STAFProc output to nohup.out
```

```
. /usr/local/staf/STAFEnv.sh
nohup /usr/local/staf/bin/STAFProc &
```

Note that to correctly execute the startSTAFProc.sh script on Unix, you must execute it in this format:

```
./startSTAFProc.sh
```

Or, if the startSTAFProc.sh script is not in the current directory:

```
/usr/local/staf/startSTAFProc.sh
```

## 4. Using InstallAnywhere to install STAF

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### 4.1. IA Installer Arguments

Here are the command-line options for an IA installer (or uninstaller):

```
C:\>STAF332-setup-win32.exe -?
Usage: STAF332-setup-win32 [-f <path_to_installer_properties_file> | -options]
      (to execute the installer)
```

where options include:

```
-?
    show this help text
-i [swing | console | silent]
    specify the user interface mode for the installer
-D<name>=<value>
    specify installer properties
```

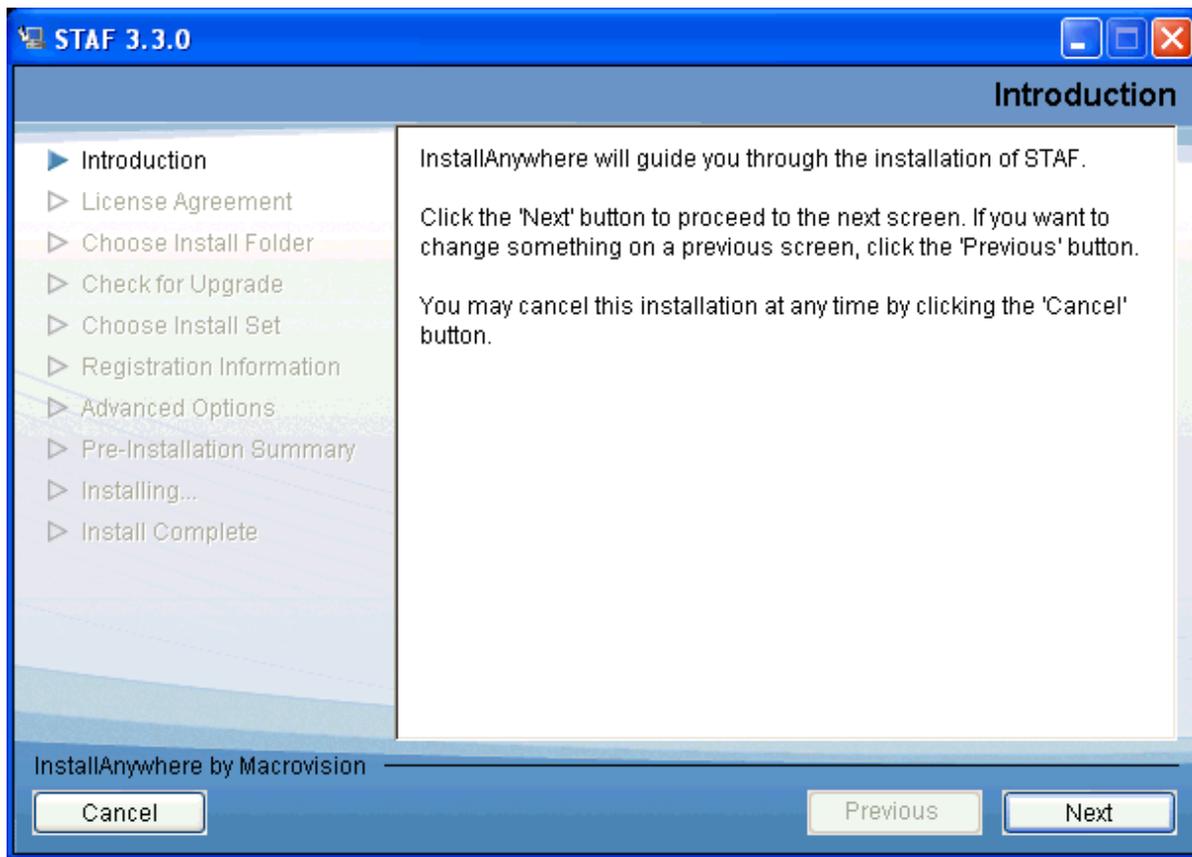
notes:

1. the path to the installer properties file may be either absolute, or relative to the directory in which the installer resides.
2. if an installer properties file is specified and exists, all other command line options will be ignored.
3. if a properties file named either 'installer.properties' or <NameOfInstaller>.properties resides in the same directory as the installer, it will automatically be used, overriding all other command line options, unless the '-f' option is used to point to another valid properties file.
4. if an installer properties file is specified but does not exist, the default properties file, if present, will be used. Otherwise, any supplied command line options will be used, or if no additional options were specified, the installer will be run using the default settings.

### 4.2. InstallAnywhere Graphical Install

Here are examples of the screens that will be displayed in the InstallAnywhere Graphical Install. Note that these screen captures are from a Windows install; Unix installs will have similar screens.

**Figure 1.**



**Figure 2.**

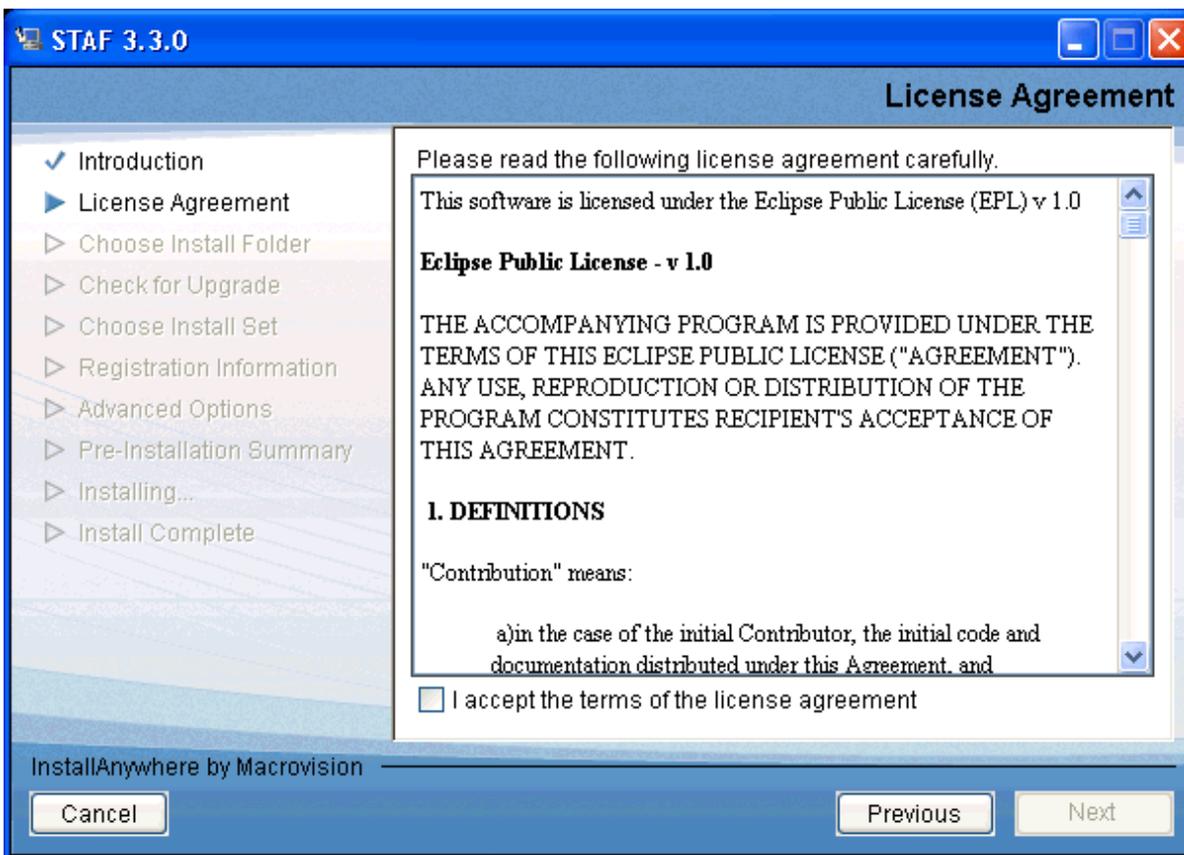


Figure 3.

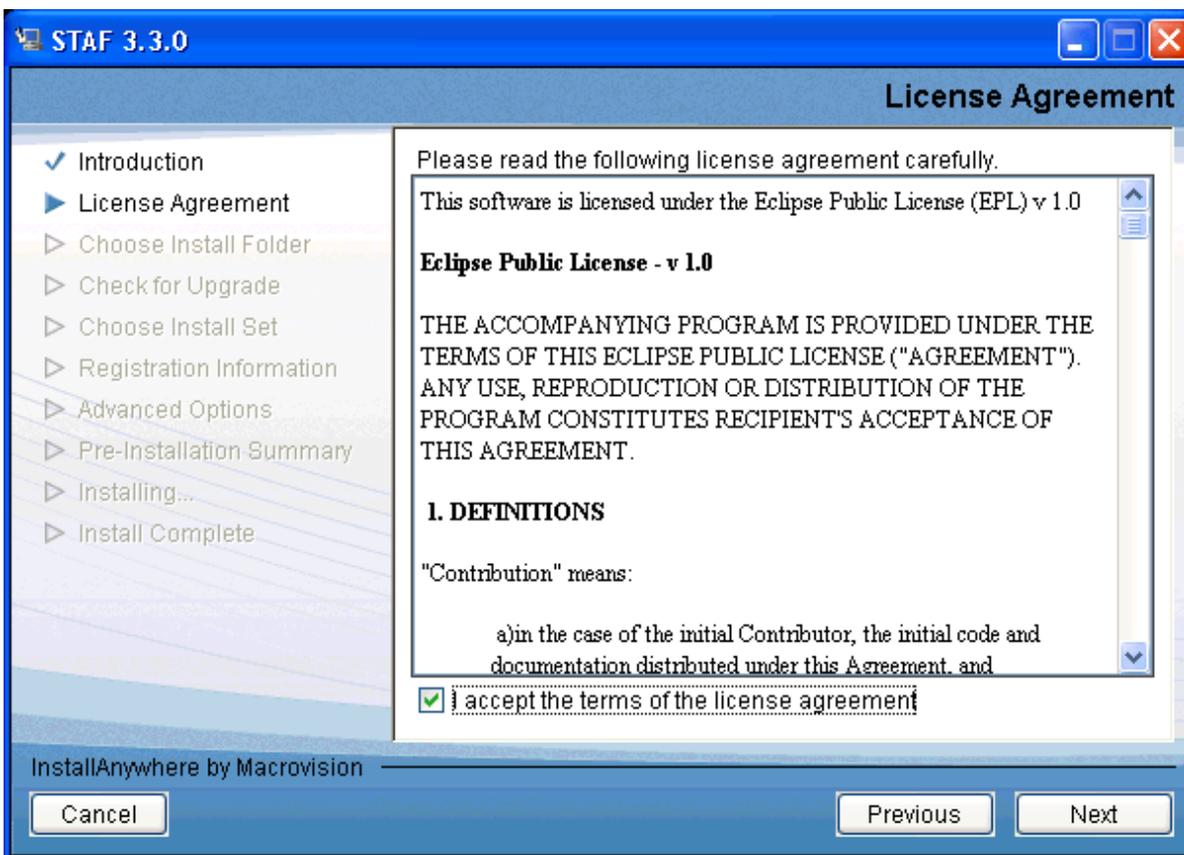


Figure 4.

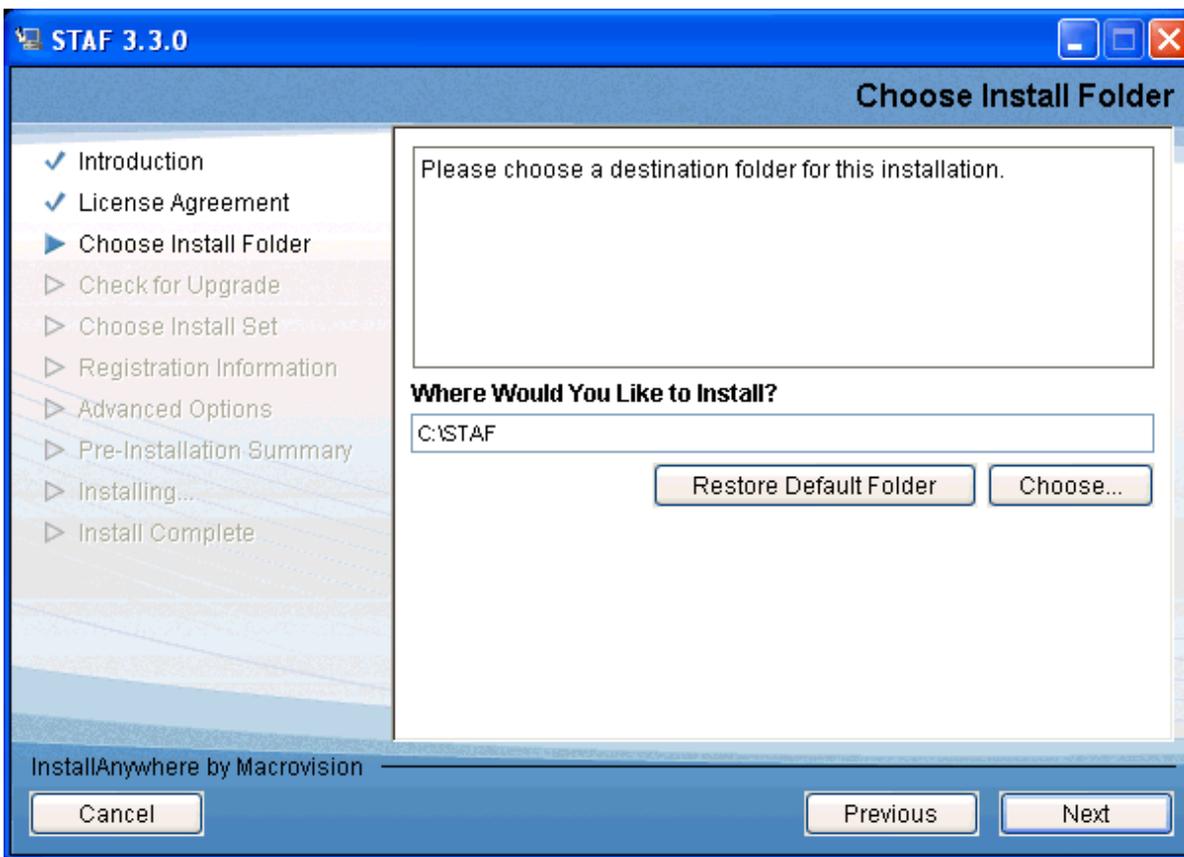


Figure 5.

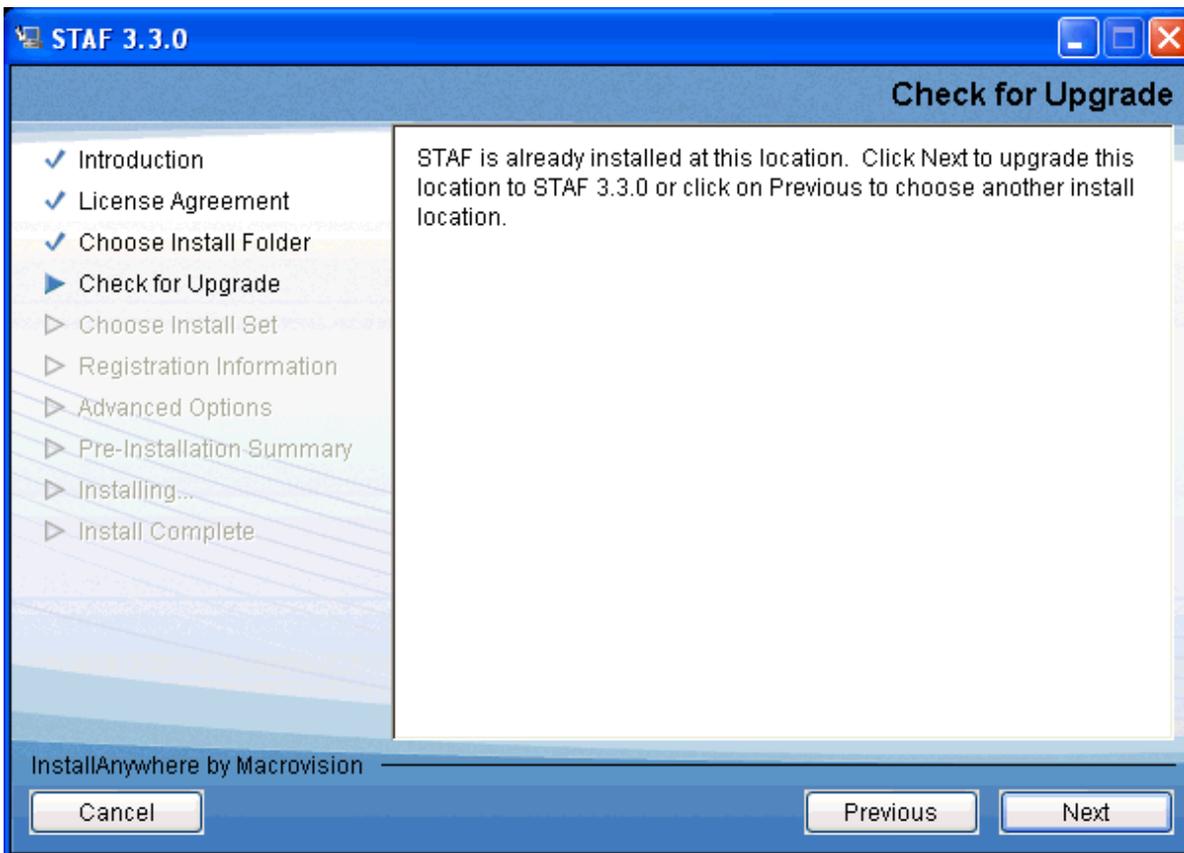


Figure 6.

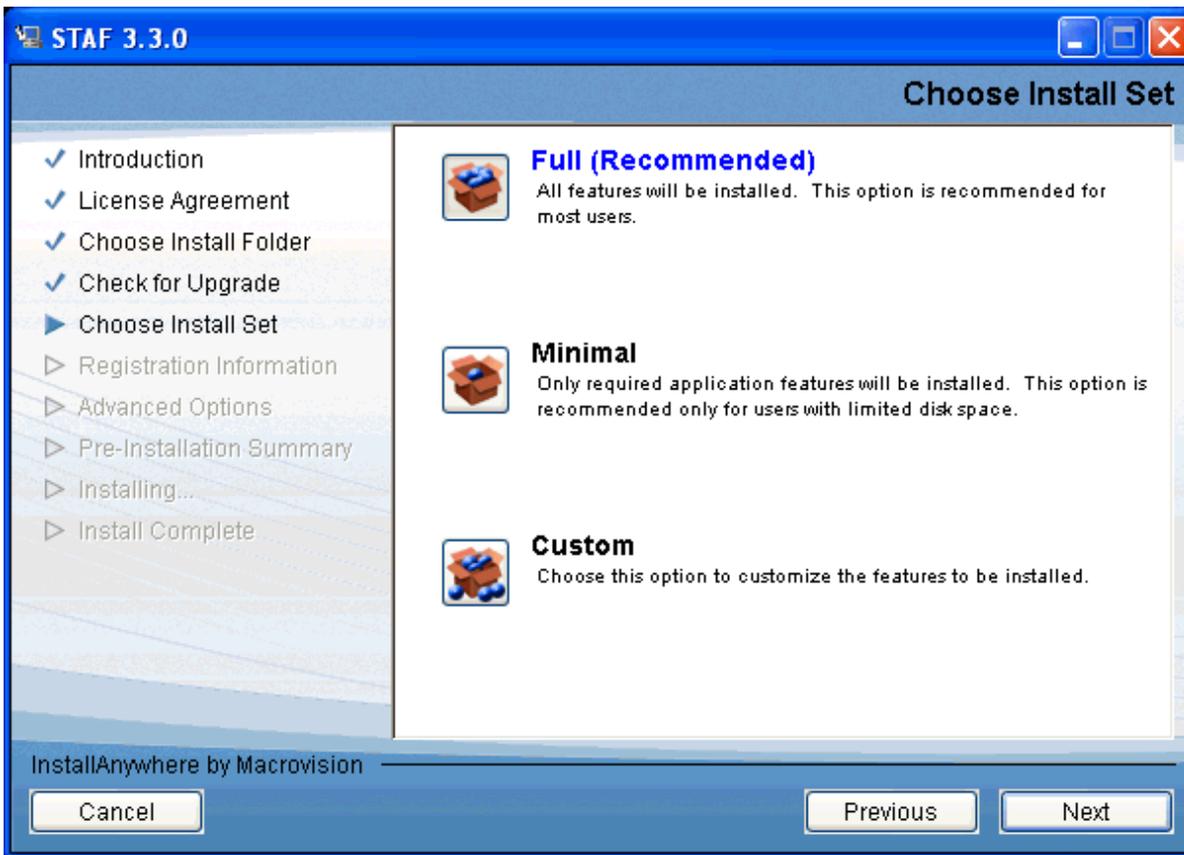


Figure 7.

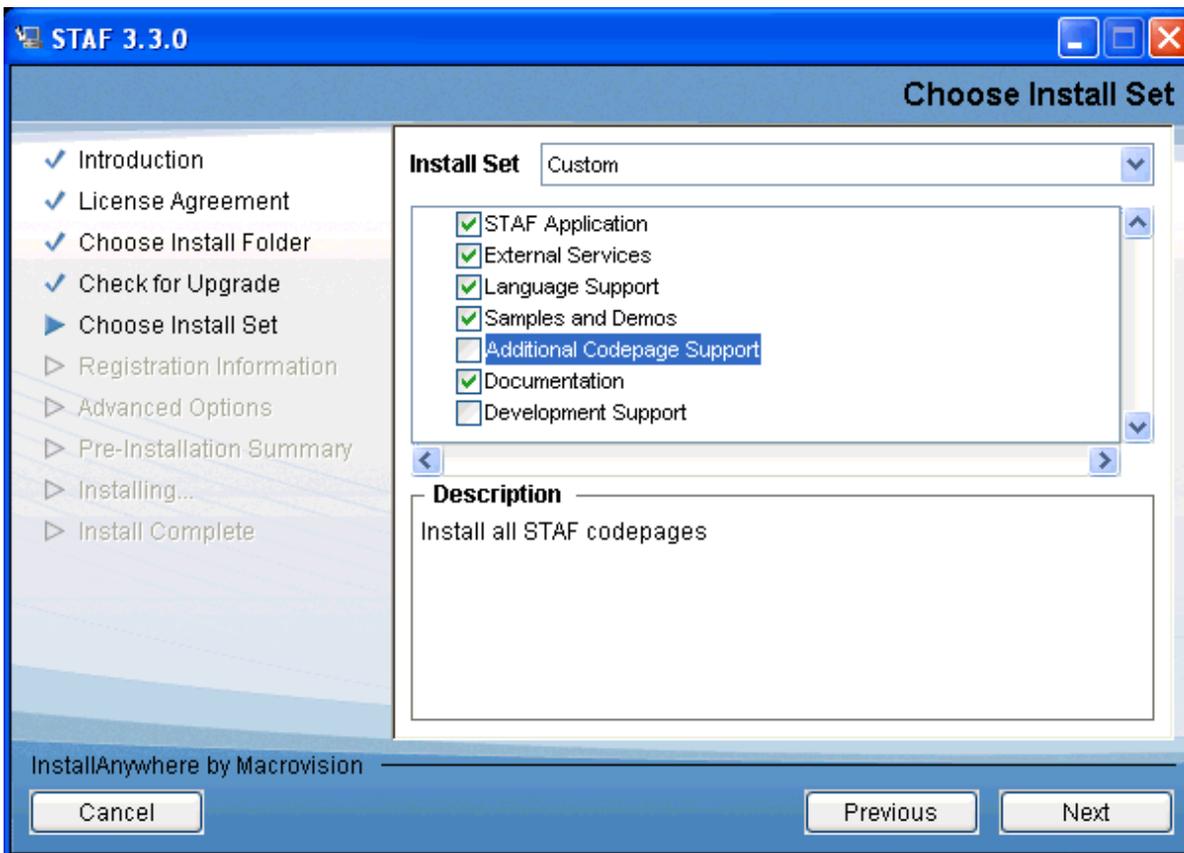


Figure 8.

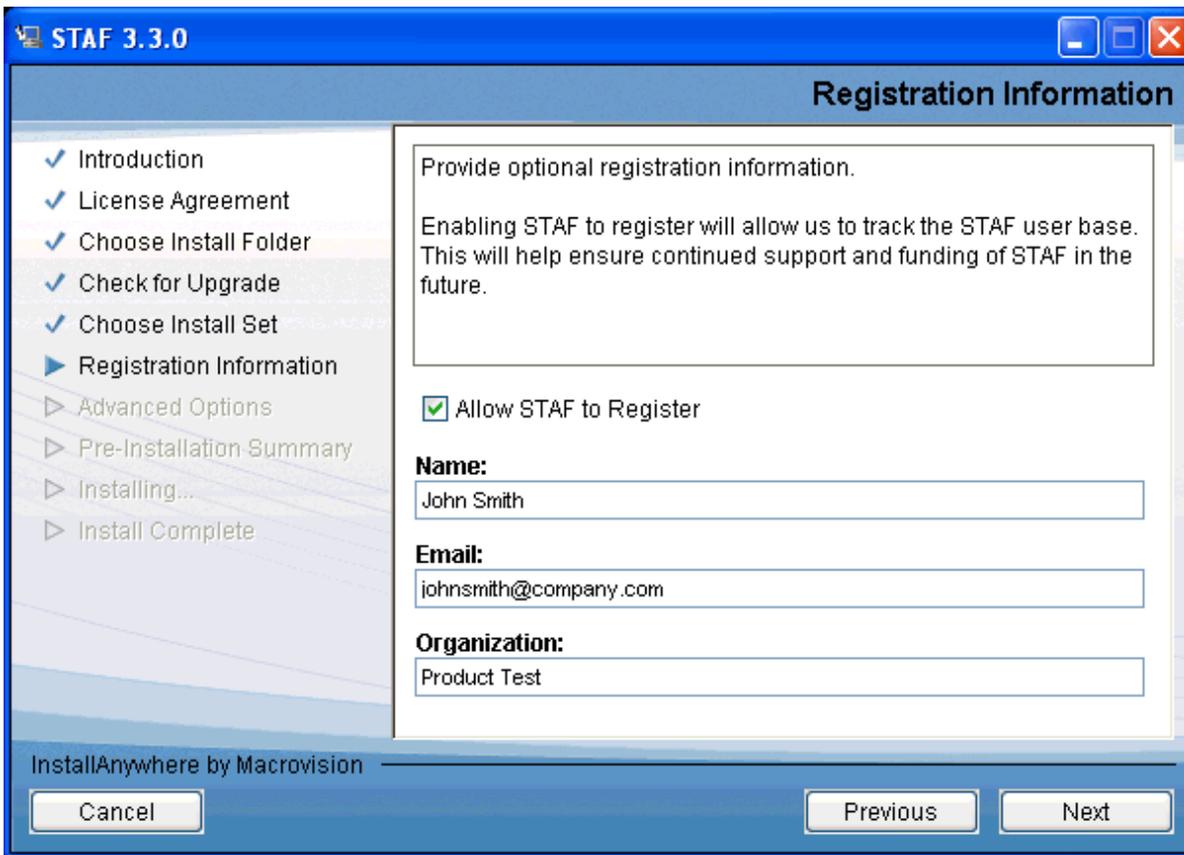


Figure 9.

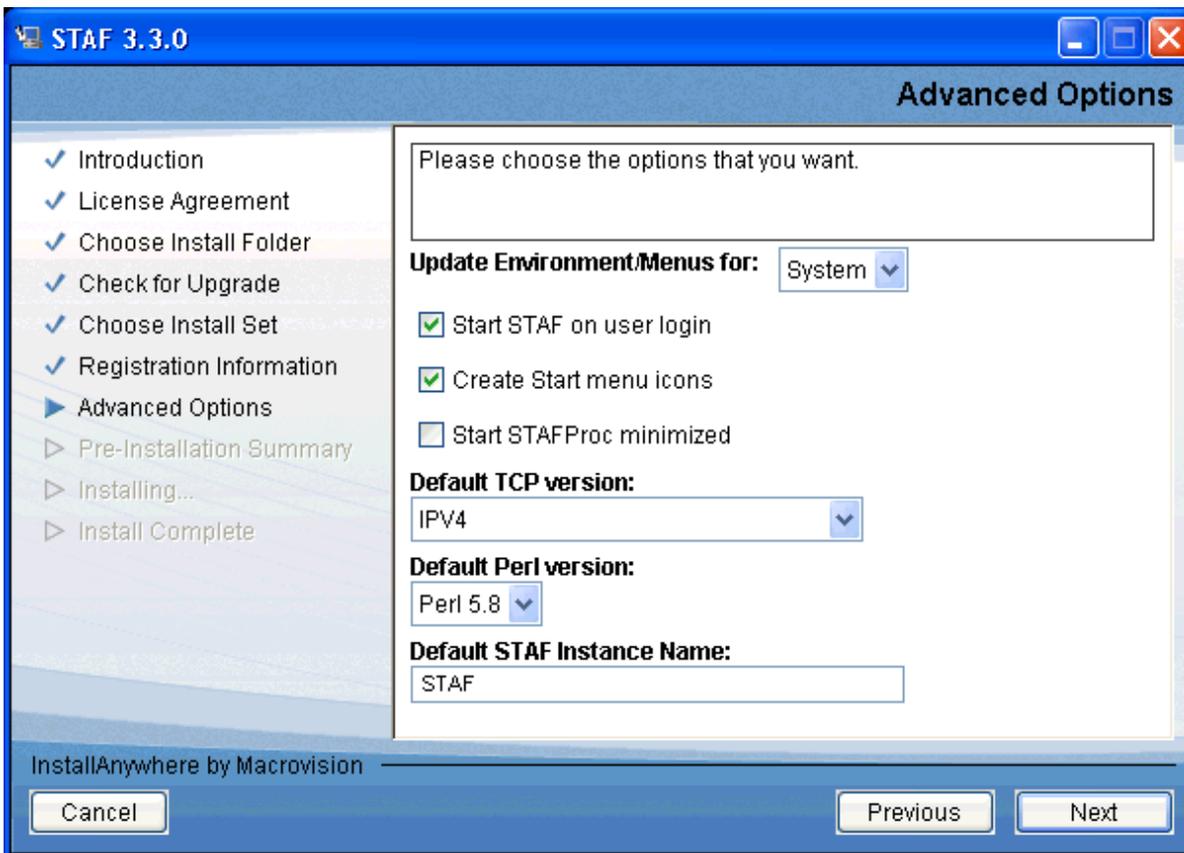


Figure 10.

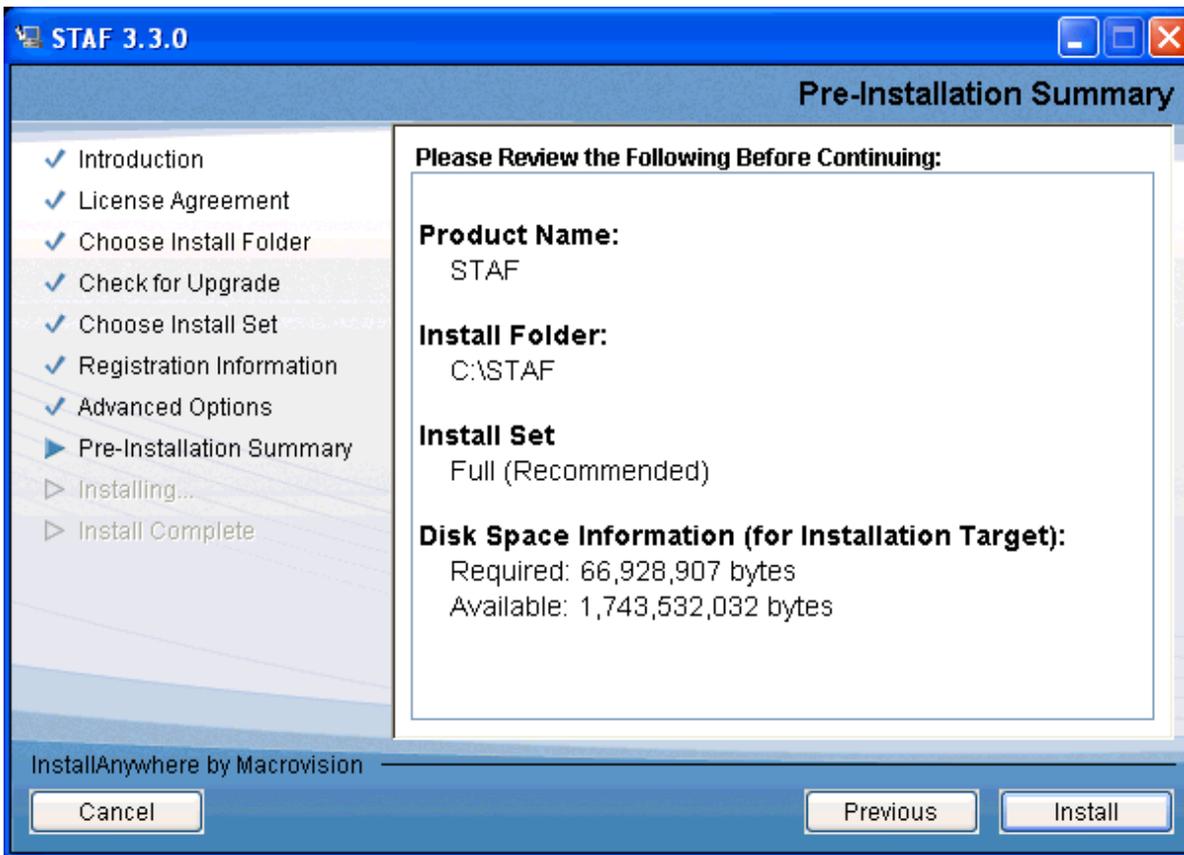


Figure 11.

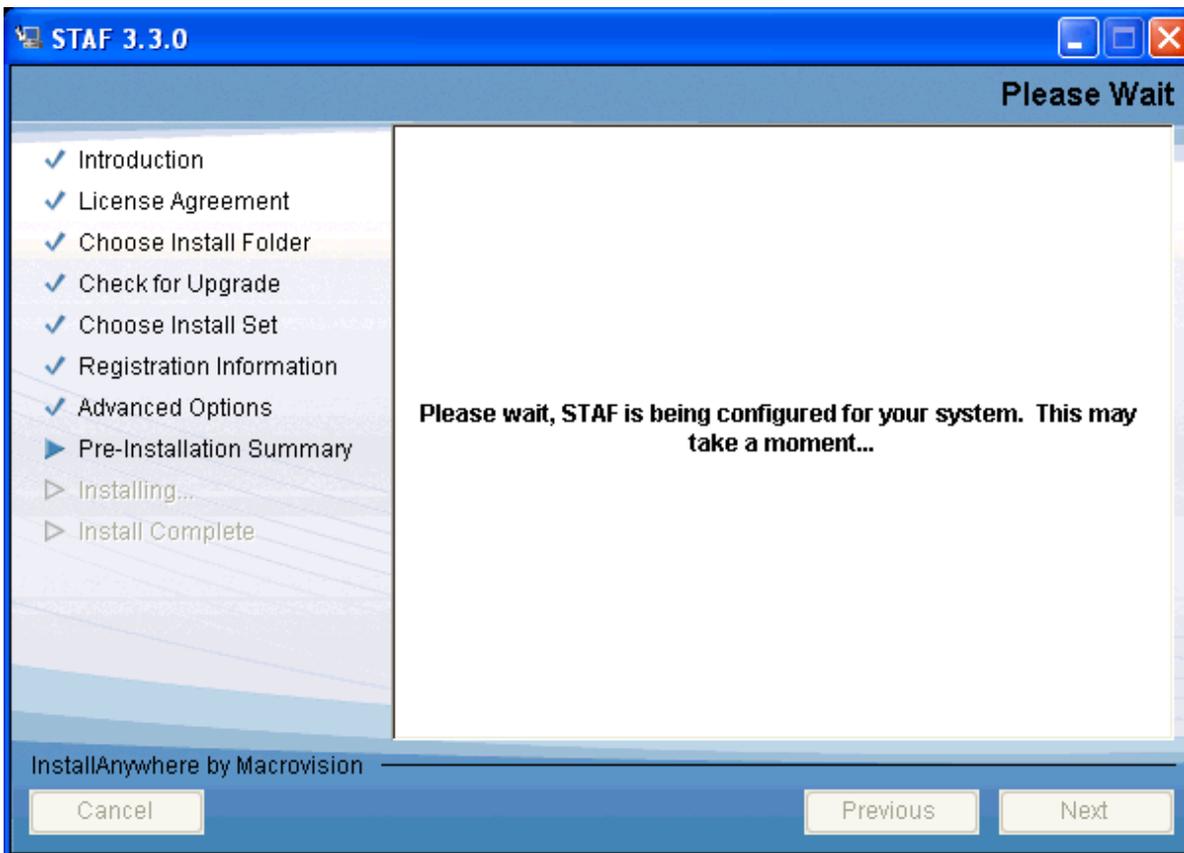


Figure 12.

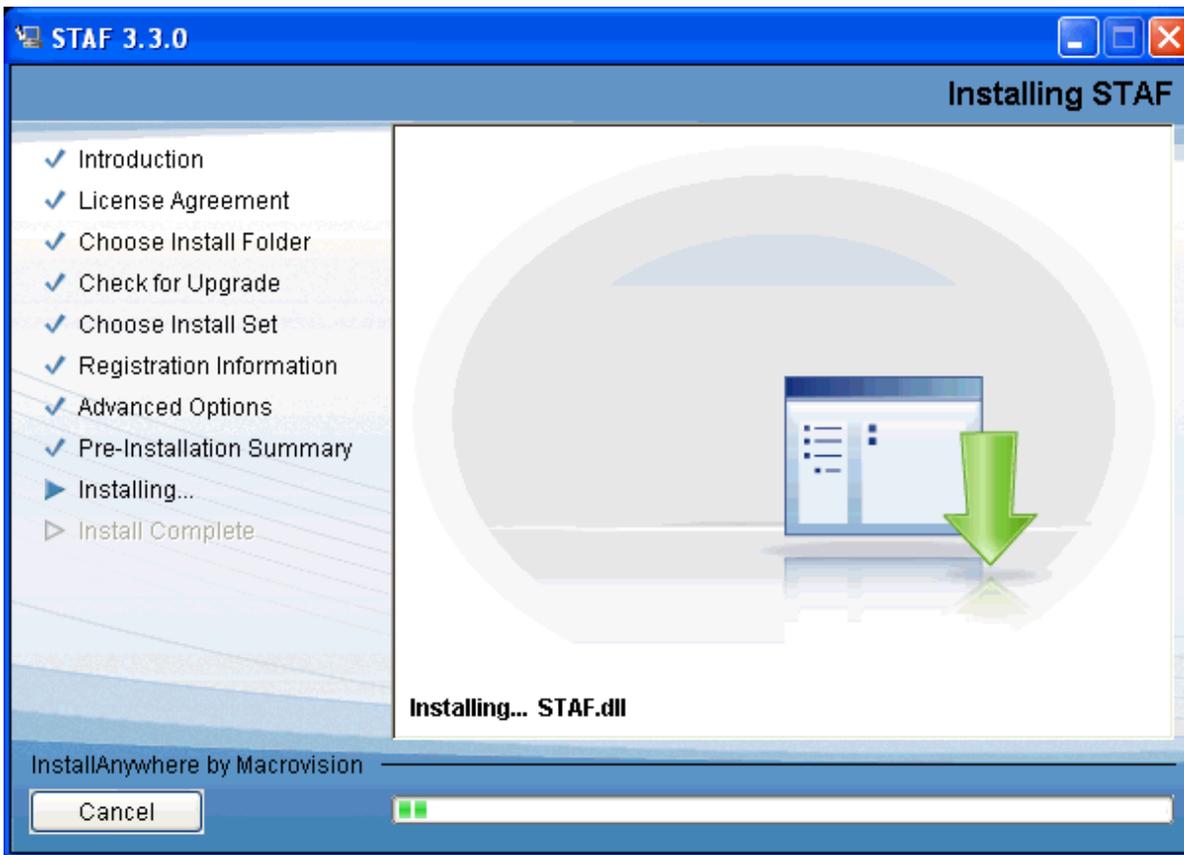
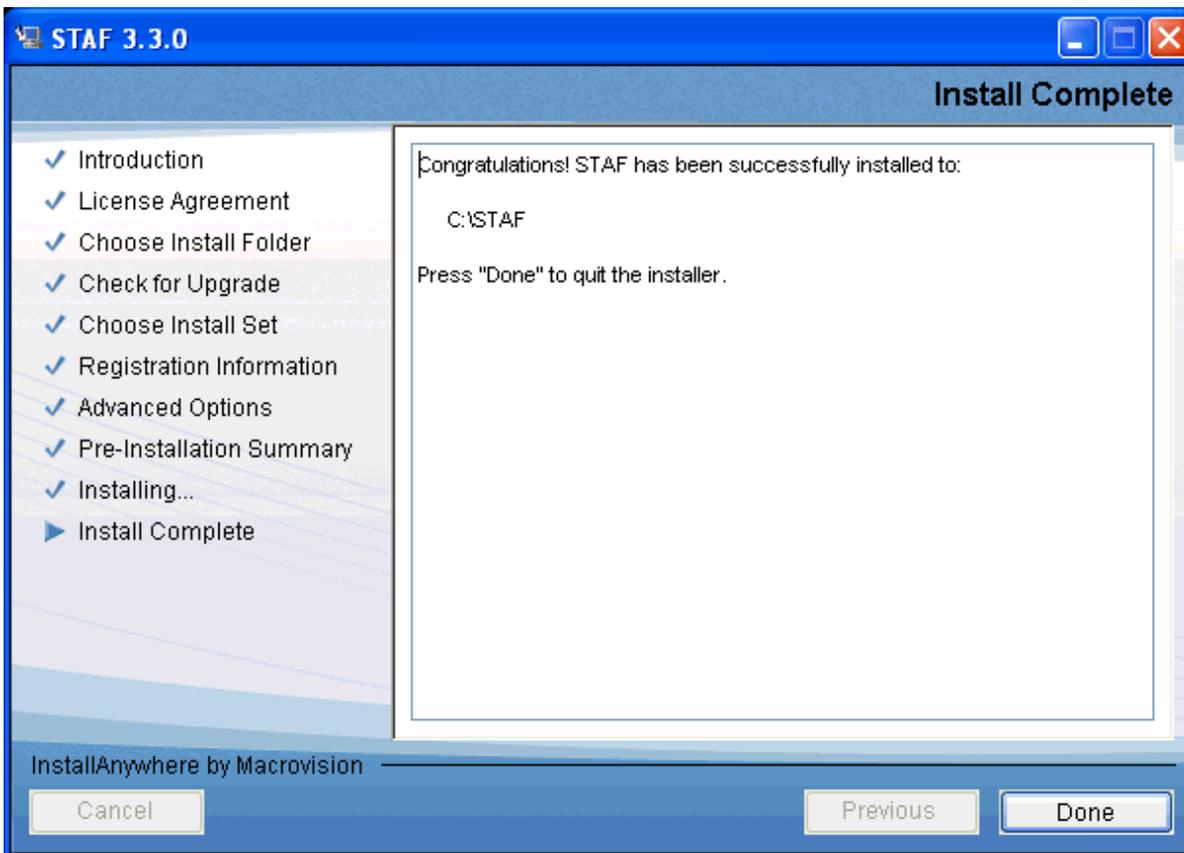


Figure 13.



#### 4.3. InstallAnywhere Silent Install

To start in IA install in silent mode, you can specify the "-i silent" property when starting the installer. You can also use specify this property in a response file.

The following table shows all of the install properties that are available for a silent installation. Note that these options can be specified at the command line or in a response file.

Property Name	Description	Value	Equivalent ISMP option
ACCEPT_LICENSE	Acceptance of the license agreement.	Values are "1" (accept) or "0" (or any value other than "1"). Default is "0"	license.selection
USER_INSTALL_DIR	The directory where STAF will be installed.	Default is "C:\STAF" on Windows, "/Library/staf" on Mac OS X, and "/usr/local/staf" on other Unix platforms.	stafinstalldirectory.defaultInstallLocation
INSTALLER_UI	The install UI type.	Values are "silent", "swing", or "console". This allows you to specify the install UI type without using the "-i" option. Default is "swing".	None
CHOSEN_INSTALL_SET	The install set.	Values are "Full", "Minimal", or "Custom". Default is "Full".	setupTypes.selectedSetupTypeId
CHOSEN_INSTALL_FEATURE_LIST	The Custom features to install.	Valid features names are: STAF,ExtSvcs, Langs,Samples, Codepage,Docs, Develop. The features should be specified as a comma-separated list of the feature names. Note that this option has no effect for "Full" or "Minimal" install.	None
REGISTER	Whether to perform STAF registration when STAF is first started.	Values are "1" or "0". Default is "1".	None
REGISTRATION_NAME	The name to register.	Default is "".	None
REGISTRATION_EMAIL	The email to register.	Default is "".	None
REGISTRATION_ORG	The organization to register.	Default is "".	None
UPDATE_ENVIRONMENT	Scope of environment/menu updates.	Values are "System", "User", "None". Default is "System".	stafOptions.updateEnvironmentVariables
START_ON_LOGIN	Whether to start STAF on Login. This is a Windows-only property.	Values are "1" or "0". Default is "1".	None

CREATE_START_MENU_ICONS	Whether to create Start menu icons/programs folder for STAF. This is a Windows-only property.	Values are "1" or "0". Default is "1".	None
START_STAFPROC	Whether to start the STAFProc window in normal state (visible on the desktop) or minimized. This is a Windows-only property.	Values are "Normal" or "Minimized". Default is "Normal".	None
USE_TCP_VERSION	The default TCP/IP version.	Values are "IPV4" or "IPV4_IPV6". "IPV4" is the default.	stafOptions.defaultIPvVersion
USE_PERL_VERSION	The default Perl version. Only valid on platforms with Perl support.	Values are "5.8", "5.10" and "5.6" (note that the supported Perl versions will vary depending on the operating system). Default is "5.8".	None
STAF_INSTANCE_NAME	The default STAF instance name.	Default is "STAF".	None
USER_REQUESTED_RESTART	Whether to automatically restart the Windows operating system if target files are in use during the STAF installation.	Values are "YES" and "NO". Default is "NO".	None

Note that the property names and values are case-sensitive.

Here are some examples of specifying silent install properties:

- Perform a silent install with all default options:

```
STAF332-setup-win32 -i silent -DACCEPT_LICENSE=1
```

- Install STAF in C:\Program Files\STAF:

```
STAF332-setup-win32 -i silent -DACCEPT_LICENSE=1 -DUSER_INSTALL_DIR="C:\Program Files \STAF"
```

- Perform a silent install of STAF, where the STAFProc window will start minimized:

```
STAF332-setup-win32 -i silent -DACCEPT_LICENSE=1 -DSTART_STAFPROC=Minimized
```

- Perform a Minimal install of STAF, without updating any menus or environment variables, and using the IPV4/IPV6-enabled TCP libraries:

```
STAF332-setup-win32 -i silent -DACCEPT_LICENSE=1 -DCHOSEN_INSTALL_SET=Minimal -DUPDATE_ENVIRONMENT=None -DUSE_TCP_VERSION=IPV4_IPV6
```

- Perform a Custom install of STAF in directory C:\tools\staf, with features STAF, External Services, Languages, and all

codepages:

```
STAF332-setup-win32 -i silent -DACCEPT_LICENSE=1 -DUSER_INSTALL_DIR=C:\tools\staf
-DCHOSEN_INSTALL_SET=Custom -DCHOSEN_INSTALL_FEATURE_LIST=STAF,ExtSvcs,Langs,
Codepage
```

You can specify a properties (response) file to use when starting the STAF IA Installer. The properties file should contain the same -D options that you would specify on a command-line installation. For example:

```
STAF332-setup-win32 -f installer.properties
```

Here is a sample installer.properties file:

```
INSTALLER_UI=silent
ACCEPT_LICENSE=1
USER_INSTALL_DIR=C:\\STAF
CHOSEN_INSTALL_SET=Full
REGISTER=1
REGISTRATION_NAME=Joe Smith
REGISTRATION_EMAIL=address@comany.com
REGISTRATION_ORG=ABC Test
UPDATE_ENVIRONMENT=System
START_ON_LOGIN=1
CREATE_START_MENU_ICONS=1
START_STAFPROC=Minimized
USE_TCP_VERSION=IPV4
USE_PERL_VERSION=5.8
STAF_INSTANCE_NAME=STAF
USER_REQUESTED_RESTART=NO
```

To perform a GUI install and have the selected options recorded in a properties file, you can specify the "-r <file>" option when starting the IA installer. For example:

```
STAF332-setup-win32-VM.exe -r
```

This will create a "installer.properties" file in the current directory. Note that there are several known bugs in IA where certain options will not be recorded in the response file. These options include:

```
CHOSEN_INSTALL_SET
CHOSEN_INSTALL_FEATURE_LIST
UPDATE_ENVIRONMENT
START_ON_LOGIN
CREATE_START_MENU_ICONS
START_STAFPROC
USE_TCP_VERSION
USE_PERL_VERSION
STAF_INSTANCE_NAME
USER_REQUESTED_RESTART=NO
```

You will need to manually add these options (if needed) to the response file.

#### 4.4. InstallAnywhere Console Install

In IA to perform a console installation, use the "-i console" option. For example:

```
./STAF332-setup-linux-VM.bin -i console
```

Here are examples (on Linux) of the console panels that are displayed:

**Figure 14.**

```
Preparing to install...
Extracting the JRE from the installer archive...
Unpacking the JRE...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...

Launching installer...

Preparing CONSOLE Mode Installation...

=====
STAF                               (created with InstallAnywhere by Macrovision)
-----

=====
Introduction
-----

InstallAnywhere will guide you through the installation of STAF.

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 something on a previous step, type 'back'.

You may cancel this installation at any time by typing 'quit'.

PRESS <ENTER> TO CONTINUE:
```

**Figure 15.**

```
=====
License Agreement
-----

Installation and Use of STAF Requires Acceptance of the Following License
Agreement:

This software is licensed under the Eclipse Public License (EPL) v 1.0

Eclipse Public License - v 1.0

THE ACCOMPANYING PROGRAM IS PROVIDED UNDER THE TERMS OF THIS ECLIPSE PUBLIC
LICENSE ("AGREEMENT"). ANY USE, REPRODUCTION OR DISTRIBUTION OF THE PROGRAM
CONSTITUTES RECIPIENT'S ACCEPTANCE OF THIS AGREEMENT.
```

## 1. DEFINITIONS

"Contribution" means:

a) in the case of the initial Contributor, the initial code and documentation distributed under this Agreement, and b) in the case of each subsequent Contributor:

i) changes to the Program, and

ii) additions to the Program;

where such changes and/or additions to the Program originate from and are distributed by that particular Contributor. A Contribution 'originates' from a Contributor if it was added to the Program by such Contributor itself or anyone

PRESS <ENTER> TO CONTINUE:

... ..

DO YOU ACCEPT THE TERMS OF THIS LICENSE AGREEMENT? (Y/N): Y

**Figure 16.**

```
=====
Choose Install Folder
-----

Where would you like to install?

    Default Install Folder: /usr/local/staf

ENTER AN ABSOLUTE PATH, OR PRESS <ENTER> TO ACCEPT THE DEFAULT
:
```

**Figure 17.**

```
=====
Choose Install Set
-----

Please choose the Install Set to be installed by this installer.

->1- Full (Recommended)
    2- Minimal

    3- Customize...

ENTER THE NUMBER FOR THE INSTALL SET, OR PRESS <ENTER> TO ACCEPT THE DEFAULT
:
```

**Figure 18.**

```
=====
Registration Information
-----

Allow STAF to Register? (DEFAULT: 1):
```

Registration Name: Jane Smith  
Registration Email: janesmith@company.com  
Registration Organization: Product Test

**Figure 19.**

```
=====
Advanced Options
-----

->1- System
   2- User
   3- None

Update Environment/Menus for:

->1- IPV4
   2- IPV4_IPV6

Default TCP version:

->1- 5.8
   2- 5.6

Default Perl version:

Default STAF Intance Name (DEFAULT: STAF):
```

**Figure 20.**

```
=====
Pre-Installation Summary
-----

Please Review the Following Before Continuing:

Product Name:
  STAF

Install Folder:
  /usr/local/staf

Install Set
  Full (Recommended)

Disk Space Information (for Installation Target):
  Required: 79,595,099 bytes
  Available: 2,880,045,056 bytes

PRESS <ENTER> TO CONTINUE:
```

**Figure 21.**

```

=====
Installing...
-----

[===== | ===== | ===== | ===== ]
[----- | ----- | ----- | ----- ]

```

**Figure 22.**

```

=====
Installation Complete
-----

Congratulations. STAF has been successfully installed to:

    /usr/local/staf

PRESS <ENTER> TO EXIT THE INSTALLER:

```

#### 4.5. Installer Return Codes

The STAF IA installers will return the following return codes:

- 0 - if the install was successful
- 1 - if there were any errors during the install
- 200 - if a silent install was performed and the `-DACCEPT_LICENSE=1` option was not specified

#### 4.6. Install Log

The STAF IA installers will create a log file called `STAFInstall.log` in the root install directory.

Note that the log file will always be created (it is not an option that can be specified when starting the installer) and will be overwritten on each install.

The install log will contain a "Summary" section with status information for the install.

For example, the Summary for a successful install would look like:

```

Summary
-----

Installation: Successful.

357 Successes
0 Warnings
0 NonFatalErrors
0 FatalErrors

```

If there were any errors during the install, the Summary would look like:

```

Summary
-----

Installation: Successfulwith errors.

287 Successes
0 Warnings
3 NonFatalErrors

```

0 FatalErrors

If there were any errors during the install, the "Install Log Detail" section will contain information about the errors. For example:

```
Install File:          /usr/local/staf/lib/libJSTAF.sl
Status: ERROR
Additional Notes: ERROR - ZeroGs1: /usr/local/staf/lib/libJSTAF.
sl (Text file busy (errno:26))
```

```
Install File:          /usr/local/staf/lib/libJSTAFSH.sl
Status: ERROR
Additional Notes: ERROR - ZeroGs1: /usr/local/staf/lib/
libJSTAFSH.sl (Text file busy (errno:26))
```

```
Install File:          /usr/local/staf/lib/libSTAFIPC.sl
Status: ERROR
Additional Notes: ERROR - ZeroGs1: /usr/local/staf/lib/
libSTAFIPC.sl (Text file busy (errno:26))
```

#### 4.7. Specifying a Temporary Directory

In ISMP, you could override the default temporary directory used during the install (for example, if the default temporary directory did not contain enough free space) by using the "is:tempdir <dir>" option.

In IA, on Windows, the installer uses the directory in the TEMP environment variable, and on Unix, the installer uses the directory in the IATEMPDIR environment variable. So, prior to running the installer, set the appropriate environment variable to a directory containing enough free space.

#### 4.8. Uninstaller

The IA uninstaller for STAF is created in directory <install-root>/Uninstall\_STAF. The uninstaller executable is <install-root>/Uninstall\_STAF/Uninstall\_STAF.exe on Windows and <install-root>/Uninstall\_STAF/Uninstall\_STAF on Unix.

Note that by default, the uninstaller will execute in the mode used for the installation. For example, if the install mode was silent, the uninstaller will run in silent mode by default.

#### 4.9. Comparison of IA install options and ISMP install options

Here are some comparisons of silent install options for STAF 3.2.5 (using ISMP) and STAF 3.3.0 and later (using IA):

- Perform a silent install using all of the default options

```
(ISMP) STAF325-setup-win32 -is:log c:\temp\ismpllog.txt -silent -W license.
selection="Accept"
```

```
(IA) STAF332-setup-win32 -i silent -DACCEPT_LICENSE=1
```

- Perform a silent install to C:\tools\staf

```
(ISMP) STAF325-setup-win32 -is:log c:\temp\ismpllog.txt -silent -W license.
selection="Accept" -W stafinstalldirectory.defaultInstallLocation="C:\tools\staf"
```

```
(IA) STAF332-setup-win32 -i silent -DACCEPT_LICENSE=1 -DUSER_INSTALL_DIR=C:\tools
\staf
```

- Perform a silent installation of install set "Minimal", without updating environment variables/menus, and with the support for IPv4 and IPv6

```
(ISMP) STAF325-setup-win32 -is:log c:\temp\ismpllog.txt -silent -W license.
selection="Accept" -W setupTypes.selectedSetupTypeId="Minimal" -W stafOptions.
updateEnvironmentVariables="None" -W stafOptions.defaultIPvVersion="IPv4 and IPv6"
```

```
(IA) STAF332-setup-win32 -i silent -DACCEPT_LICENSE=1 -DCHOSEN_INSTALL_SET=Minimal -
DUPDATE_ENVIRONMENT=None -DUSE_TCP_VERSION=IPV4_IPV6
```

- Perform a silent uninstall

```
(ISMP) ProductDir\_uninst\uninstaller -silent
```

```
(IA) ProductDir\Uninstall_STAF\Uninstall_STAF.exe -i silent
```

## 5. Using STAFInst to install STAF

### 5.1. [STAFInst Install](#)

### 5.2. [Examples using STAFInst](#)

### 5.3. [STAFInst Uninstall](#)

#### 5.1. STAFInst Install

A single gzipped or compressed tar file is provided for Unix systems. For some platforms that are not supported by InstallAnywhere, such as z/OS, AS/400, and FreeBSD 4.10, this is the only install file provided. Before installing STAF, you will need to gunzip the gzipped tar file or uncompress the compressed tar file and then untar it into a temporary directory from which you will later run the STAFInst command. Note that when you untar the file, it will expand into a single directory named "staf" that will contain the installation files and directories.

For example, assuming you downloaded the gzipped tar file for FreeBSD 4.10 into a temporary directory named /tmp/STAF,

```
cd /tmp/STAF
gunzip STAF325-freebsd410.tar.gz
tar -xvf STAF325-freebsd410.tar
cd staf
```

Or, for example, assuming you downloaded the compressed tar file for z/OS into a temporary directory named /tmp/STAF,

```
cd /tmp/STAF
compress -d STAF325-zos.tar.Z
tar -xvf STAF325-zos.tar
cd staf
```

Note that you can delete this temporary directory (e.g. /tmp/STAF) after you have run the STAFInst command to install STAF to the target directory.

Optionally, you may prefer to untar STAF on one system and mount the installable images from other systems.

Once the STAF installation image is ready, you should run the STAFInst command. The syntax is as follows.

```
Usage: STAFInst [-source <source path>] [-target <target path>]
  [-bin <directory>] [-lib <directory>] [-preview]
  [-type < m | r | f >] [-verbose] [-warn]
  [-ro <mode>] [-rx <mode>] [-rw <mode>] [-dp <mode>]
  [-noreg | [-name <name>] [-email <email>] [-org <org>]]
  [-acceptlicense] [-option name=value]...
```

**-source** specifies the directory in which the STAF files were untar'd. In our example above, this would be /tmp/STAF/staf. The default

is the current directory. If you are not running STAFInst from the directory in which STAFInst resides, you must specify `-source`.

**-target** specifies where STAF will be installed. The default is `/usr/local/staf` for all Unix systems except for Mac OS X where the default is `/Library/staf`.

**-bin** specifies the directory where softlinks to executables will be created. If this option is not specified, softlinks to executables will not be created.

**-lib** specifies the directory where softlinks to libraries will be created. If this option is not specified, softlinks to libraries will not be created.

**-type** specifies the type of installation (the default is `rs`). Possible values are:

- `m` - This installs the minimum files necessary to run STAF
- `r` - This installs all STAF files, including all supported codepages. This value is equivalent to `"f"`.
- `f` - This installs all STAF files, including all supported codepages. This value is equivalent to `"r"`.

**-verbose** specifies that all operations performed by STAFInst should be displayed to the user.

**-warn** specifies that STAFInst should stop execution if it encounters a warning condition. An example of a warning condition is trying to copy or link a non-existent file. Normally, these warning conditions are printed and execution continues.

**-preview** displays the intended actions of STAFInst without touching the file system.

**-ro** allows you to specify the mode bits for STAF files intended to be read-only. The default is 444.

**-rx** allows you to specify the mode bits for STAF files intended to be read-execute. The default is 555.

**-rw** allows you to specify the mode bits for STAF files intended to be read-write. The default is 664.

**-dp** allows you to specify the mode bits for the directories STAF creates. The default is 775.

**-noreg** prevents STAF from automatically registering with IBM Austin. This option is highly discouraged.

**-name** allows you to specify the name STAF uses when registering. The default is the empty string.

**-email** allows you to specify the e-mail address STAF uses when registering. The default is the empty string.

**-org** allows you to specify the organization STAF uses when registering. The default is the empty string.

**-acceptlicense** indicates that you accept the terms of the license agreement for this software. If not specified, the license agreement will be displayed at the beginning of the installation.

**-option** allows you to specify options for the installed components. The allowed name=value pairs are:

- **TCP=IPV4** Specifies to use the IPV4-only TCP libraries. This is the default.
- **TCP=IPV4\_IPV6** Specifies to use the TCP libraries that support both IPv4 and IPv6.

*IMPORTANT!* In order to start STAF or to use STAF, you must set some environment variables as described in section 7 "Environment Variable Settings". STAFInst does not update these environment variables for you.

## 5.2. Examples using STAFInst

For the following examples, assume the STAF installation image is in /tmp/STAF and your current directory is also /tmp/STAF.

To take all the defaults, which will perform a recommended install of STAF into /usr/local/staf (or /Library/staf if installing on Mac OS X), you would simply enter

```
./STAFInst -acceptlicense
```

To perform a recommended install of STAF into the default target directory, and have softlinks placed into /usr/bin and /usr/lib, you would enter

```
./STAFInst -acceptlicense -bin /usr/bin -lib /usr/lib
```

To perform a minimum installation of STAF into /opt/staf, you would enter

```
./STAFInst -acceptlicense -target /opt/staf -type m
```

To perform a preview of a full STAF installation into the default target directory, you would enter

```
./STAFInst -acceptlicense -type f -preview
```

To perform a default install of STAF and provide your name and e-mail address for registration, you would enter

```
./STAFInst -acceptlicense -name "Your name" -email "Your e-mail address"
```

To install STAF in the default locations but change read-only permissions to 440, read-execute permissions to 550, read-write privileges to 660, and directory permissions to 770, you would enter

```
./STAFInst -acceptlicense -ro 440 -rw 550 -rw 660 -dp 770
```

### 5.3. STAFInst Uninstall

When STAF is installed on Unix systems via STAFInst, a script called STAFUninst is created which can be used to uninstall STAF. This file is created in the directory where you installed STAF. All STAF features will be uninstalled; you cannot choose which features to uninstall. However, only the files and softlinks that the STAF install created will be removed. Any files created after STAF was installed will not be removed.

## 6. Platform Installation Notes

- 6.1. [Windows installation](#)
- 6.2. [Linux installation](#)
- 6.3. [HP-UX IA64 64-bit installation](#)
- 6.4. [OS/400 installation](#)
- 6.5. [z/OS installation](#)
- 6.6. [FreeBSD installation](#)
- 6.7. [Mac OS X installation](#)
- 6.8. [Solaris installation](#)

### 6.1. Windows installation

InstallAnywhere only supports installing on Windows NT or later (Windows 95, Windows 98, and Windows Millennium are not supported).

### 6.2. Linux installation

Note, when you are running STAF on Linux RedHat 9.0 or later, you may encounter a Segmentation Fault every time you execute the STAF executable. To work around this problem, set the following environment variable:

```
LD_ASSUME_KERNEL=<kernel-version>
```

The following versions can be specified for <kernel-version>

- **2.4.1** - Linuxthreads with floating stacks
- **2.2.5** - Linuxthreads without floating stacks

For information on Linux operating system library compatibility, see section 10 "Operating System Library Compatibility (Linux)".

When installing using IA on RHEL5, when attempting to launch the STAF installer, the following error may be seen: "The installer is unable to run in graphical mode.". On RHEL5, the libraries required to run a Swing based Java application (such as our STAF installers) may not be installed by default. See this [Macrovision \(InstallShield, InstallAnywhere\) article](#) for more information.

To resolve the problem, install the required X libraries on the RHEL5 system. For example, download libXp-1.0.0-8.1.el5.i386.rpm and install it via RPM.

### 6.3. HP-UX IA64 64-bit installation

Note, if you plan to use Java services, or STAF-enabled Java applications with the 64-bit version of STAF for HP-UX IA64, you must use Java 1.4.1 or later.

### 6.4. OS/400 installation

Note: STAF will only run on OS/400 V5R2 or newer.

Follow these instructions to install STAF:

- Create a directory /QIBM/stafinst on your OS/400 system (or use whatever directory name you prefer). This will be a temporary directory where you'll untar the STAF installer file.
- Download latest version of STAF for OS/400 (e.g. STAF33x-as400.tar.gz) from the Download STAF website to directory /QIBM/stafinst.
- You must install STAF from the OS/400 PASE environment which simulates the AIX operating system. To change to the OS/400 PASE environment, type the following from the AS/400 command line:

```
CALL QP2TERM
```

- Unzip the STAF33x-as400.tar.gz file and run the STAFInst executable to install STAF to location /QIBM/staf (or to whatever location you prefer). See section 5 "Using STAFInst to install STAF" for more information on STAFInst.

```
cd /QIBM/stafinst
gunzip STAF33x-as400.tar.gz
tar xf STAF33x-as400.tar
cd staf
. ./STAFInst -target /QIBM/staf -acceptlicense
```

Notes:

- If gunzip is not available on your OS/400 machine and you have access to a AIX machine, you can use the AIX gunzip executable on the OS/400 machine.
- If STAF is already installed in /QIBM/staf, and you want to upgrade to a new version of STAF, you should backup your STAF.cfg file and then run STAFUninst to uninstall STAF before running STAFInst, and then restore your backed up STAF.cfg file. For example, assuming you've already unzipped the STAF installer tar.gz file in /QIBM/stafinst, here are the steps to upgrade STAF:

```
cd /QIBM/staf
cp bin/STAF.cfg bin/STAF.cfg_save
```

```

. ./STAFUninst
cd /QIBM/stafinst/staf
. ./STAFInst -target /QIBM/staf -acceptlicense
cd /QIBM/staf
cp bin/STAF.cfg_save bin/STAF.cfg

```

- You can now delete the temporary directory where you unzipped the STAF installer file, if desired.

Follow these instructions to start STAFProc:

- Change to the OS/400 PASE environment by typing the following from the AS/400 command line. Skip this step if you're already in the OS/400 PASE environment from the above steps for installing STAF. You must run STAF in the OS/400 PASE environment.

```
CALL QP2TERM
```

- Change to the directory where you installed STAF and run STAFEnv.sh to set the necessary environment variables to use STAF:

```
cd /QIBM/staf
. ./STAFEnv.sh
```

Running STAFEnv.sh should set the following environment variables needed to use STAF:

```

export PATH=/QIBM/staf/bin:$PATH
export LIBPATH=/QIBM/staf/lib:$LIBPATH
export CLASSPATH=/QIBM/staf/lib/JSTAF.jar:{CLASSPATH}
export STAFCONVDIR=/QIBM/staf/codepage
export QIBM_MULTI_THREADED=Y
export QIBM_JAVA_PASE_STARTUP=/usr/lib/start32

```

- Type "STAFProc &" to launch STAF in the background. Note probably you'll want to start STAFProc using nohup so that when you exit your connection to the OS/400 machine, STAFProc will still be running. When using nohup, the output from STAFProc (including information on if an error occurred starting STAFProc) will be redirected to file nohup.out in the current directory (or you can specify to redirect the output to another file).

```
nohup STAFProc &
```

Note that the default shell for processes is /bin/sh. If you need to use the "qsh" shell for the OS/400 PASE environment, then you will either need to specify

```
SHELL "/QOpenSys/usr/bin/qsh -c %C"
```

for PROCESS START requests, or change the default shell by adding the following line to your STAF.cfg file:

```
SET DEFAULTSHELL "/QOpenSys/usr/bin/qsh -c %C"
```

You must shutdown and restart STAFProc for any changes to the STAF.cfg file to take effect.

## 6.5. z/OS installation

Note: STAF will only run on z/OS V1.4 or newer. STAF's Java support on z/OS requires JDK 1.4.1 or newer.

To install STAF on z/OS, you should follow the steps described in section 5 "Using STAFInst to install STAF".

It is critical that you remember to make set the `_CEE_RUNOPTS` environment variable. Failure to set this variable will prevent STAF from working properly. The proper setting should be

```
_CEE_RUNOPTS="posix(on) "
```

If you did not install STAF in the default target directory (`/usr/local/staf`), `STAFCONVDIR` must be set to the STAF codepage directory.

## 6.6. FreeBSD installation

Support for the following programming languages is provided in the STAF installer files for FreeBSD:

- FreeBSD 6.1+ i386 (STAF33x-freebsd.tar.gz)
  - Java 1.5+ support provided (compiled using Diablo Caffe JDK 1.5.0-7 for FreeBSD 6.1/i386)
  - Python support provided (compiled using Python 2.4.4)
  - No Perl or Tcl support
- FreeBSD 4.10+ i386 (STAF33x-freebsd410.tar.gz)
  - Python support provided (compiled using Python 2.3.3)
  - No Java, Perl or Tcl support provided

## 6.7. Mac OS X installation

To use the `.zip` InstallAnywhere installer for Mac OS X, download the `.zip` file to the Mac OS X system, and double click on the `.zip` file. This will unzip the zip file and create a `STAF332setup` file in the directory containing the `.zip` file. To start the installation, double click on the `STAF332setup` file.

Note that silent and console installs for Mac OS X using the `.zip` InstallAnywhere installer are not currently supported. To perform a silent or console install, use the `.bin` InstallAnywhere installer.

## 6.8. Solaris installation

On Solaris Sparc 64-bit platforms if you get the following error when starting STAFProc:

```
/usr/sfw/lib/libstdc++.so.6: wrong ELF class: ELFCLASS32
```

The solution is to include `"/usr/sfw/lib/sparcv9"` in `LD_LIBRARY_PATH`:

```
LD_LIBRARY_PATH=/usr/sfw/lib/sparcv9:$LD_LIBRARY_PATH
export LD_LIBRARY_PATH
STAFProc &
```

`/usr/sfw/lib/sparcv9` contains the 64-bit Solaris Sparc libraries.

# 7. Environment Variable Settings

## 7.1. [Environment Variable Settings](#)

### 7.2. [Windows](#)

### 7.3. [Unix](#)

### 7.4. [Mac OS X](#)

### 7.5. [OS/400 \(iSeries\)](#)

## 7.1. Environment Variable Settings

STAF requires setting some environment variables to run. If you performed an InstallAnywhere install and selected an option to have the install update the environment variables, these environment variables should already be updated for STAF. Otherwise, you must set these environment variables yourself. In most cases, you'll probably want to set these environments for the system so that they are always set even after logging out or rebooting. However, if you are going to be running two or more versions of STAF on the same machine, the install creates STAFEnv script files that you can use to easily switch environment settings for each version of STAF. See section 8, "Running Multiple Instances of STAFProc" for more information on using the STAFEnv script files when running multiple instances of STAF on the same machine.

## 7.2. Windows

- **PATH** must contain the STAF bin directory in order to start STAFProc or to communicate with STAF (e.g. C:\STAF\bin). Also, if you're going to be communicating with STAF from Java programs or registering STAF Java services, PATH should also contain the Java bin directory (e.g. C:\j2sdk1.4.2\_05\bin).
- **CLASSPATH** must contain the JSTAF.jar file (e.g. C:\STAF\bin\JSTAF.jar). JSTAF.jar contains the STAF Java APIs to communicate with STAF from Java programs and is also required to register STAF services written in Java.
- **STAFCONVDIR** must be set to the STAF codepage directory if you did not install STAF in the default C:\STAF directory.
- **STAFCODEPAGE** must be set on systems which don't return a valid value from `nl_langinfo(CODESET)` (specifically if that call returns NULL or the empty string). The value of this variable should contain the codepage being used by the system. See `codepage/alias.txt` for valid values. If you are unsure, use "LATIN\_1".

## 7.3. Unix

- **PATH** must contain the STAF bin directory in order to start STAFProc (e.g. /usr/local/staf/bin). Other windows need only have the STAF bin directory in the PATH if you did not allow softlinks to be created in the default system directories. Also, if you're going to be communicating with STAF from Java programs or registering STAF Java services, PATH should also contain the Java bin directory (e.g. /opt/IBMJava2-142/bin).
- **LD\_LIBRARY\_PATH** (**LIBPATH** on AIX, OS/400, and z/OS systems, **SHLIB\_PATH** on HP-UX systems, **DYLD\_LIBRARY\_PATH** on Mac OS X) must contain the STAF lib directory (e.g. /usr/local/staf/lib), unless you allowed softlinks to be installed in the default system directories
- **CLASSPATH** must contain the JSTAF.jar file (e.g. /usr/local/staf/lib/JSTAF.jar). JSTAF.jar contains the STAF Java APIs to communicate with STAF from Java programs and is also required to register STAF services written in Java.
- **STAFCONVDIR** must be set to the STAF codepage directory if you did not install STAF in the default target directory (e.g. /usr/local/staf).
- **STAFCODEPAGE** must be set on systems which don't return a valid value from `nl_langinfo(CODESET)` (specifically if that call returns NULL or the empty string). This is known to be true on Solaris 2.6. The value of this variable should contain the codepage being used by the system. See `codepage/alias.txt` for valid values. If you are unsure, use "LATIN\_1".
- (z/OS only) **\_CEE\_RUNOPTS** must be set to "posix(on)".

## 7.4. Mac OS X

- **PATH** must contain the STAF bin directory in order to start STAFProc (e.g. /Library/staf/bin).
- **DYLD\_LIBRARY\_PATH** must contain the STAF lib directory (e.g. /Library/staf/lib), unless you allowed softlinks to be installed in the default system directories
- **CLASSPATH** must contain the JSTAF.jar file (e.g. /Library/staf/lib/JSTAF.jar). JSTAF.jar contains the STAF Java APIs to communicate with STAF from Java programs and is also required to register STAF services written in Java.
- **STAFCONVDIR** must be set to the STAF codepage directory if you did not install STAF in the default target directory (e.g. /Library/staf).
- **STAFCODEPAGE** must be set on systems which don't return a valid value from `nl_langinfo(CODESET)` (specifically if that call returns NULL or the empty string). The value of this variable should contain the codepage being used by the system. See `codepage/alias.txt` for valid values. If you are unsure, use "LATIN\_1".

## 7.5. OS/400 (iSeries)

- **PATH** must contain the STAF bin directory in order to start STAFProc or to communicate with STAF (e.g. /QIBM/staf/bin). Also, if you're going to be communicating with STAF from Java programs or registering STAF Java services, PATH should also contain the Java bin directory.
- **LIBPATH** must contain the STAF lib directory (e.g. /QIBM/staf/lib).
- **CLASSPATH** must contain the JSTAF.jar file (e.g. /QIBM/staf/lib/JSTAF.jar). JSTAF.jar contains the STAF Java APIs to communicate with STAF from Java programs and is also required to register STAF services written in Java.
- **STAFCONVDIR** must be set to the STAF codepage directory (e.g. /QIBM/staf/codepage)
- **STAFCODEPAGE** must be set to LATIN\_1.
- **QIBM\_MULTI\_THREADED** must be set to Y so that STAF can be accessed from the QSH (Qshell) shell. This environment variable is required since STAF is multi-threaded. If this environment variable is not set, the QSH STAF request will hang.
- **QIBM\_JAVA\_PASE\_STARTUP** must be set to /usr/lib/start32. This environment variable indicates to start a 32-bit OS/400 PASE environment (needed when accessing the STAF Java support in QSH). If this environment variable is not set, an error such as the following will occur:

```
java.lang.ExceptionInInitializerError
    at java.lang.Throwable.<init>(Throwable.java:180)
    at java.lang.Error.<init>(Error.java:37)
    at java.lang.ExceptionInInitializerError.<init>(ExceptionInInitializerError.
java:61)
    at echo.main(echo.java:10)
Caused by: java.lang.NullPointerException
    at java.lang.ClassLoader.loadLibrary0(ClassLoader.java:1640)
    at java.lang.ClassLoader.loadLibrary(ClassLoader.java:1564)
    at java.lang.Runtime.loadLibrary0(Runtime.java:788)
    at java.lang.System.loadLibrary(System.java:834)
    at com.ibm.staf.STAFHandle.<clinit>(STAFHandle.java:100)
    ... 1 more
```

## 8. Installing Multiple Instances of STAF

### 8.1. [Installing Multiple Instances of STAF](#)

#### 8.1. Installing Multiple Instances of STAF

You can install different versions of STAF on the same machine in different locations. You can also run multiple instances of the same or different versions of STAF at the same time on a single machine.

See section "[Running Multiple Instances of STAFProc](#)" in the STAF User's Guide for more information on running multiple instances of STAF on a single machine.

## 9. Installation Problems

### 9.1. [Installation Problems](#)

#### 9.1. Installation Problems

If you have a problem while installing STAF, please check the STAF V3 FAQ, particularly section "[STAF Install Questions](#)".

If you have a problem starting STAFProc, please be sure that the necessary environment variables have been set for STAF (see section 7 "Environment Variable Settings"). Also, check the STAF V3 FAQ.

If you are getting an error such as "Error while loading shared libraries: libstdc++.so.6: cannot open shared object file: No such file or directory" when starting STAFProc on Linux, then see section 10 "Operating System Library Compatibility (Linux)".

## 10. Operating System Library Compatibility (Linux)

## 10.1. [Operating System Library Compatibility \(Linux\)](#)

### 10.1. Operating System Library Compatibility (Linux)

Some platforms (such as Linux) on which we build and provide STAF are linked to C++/GCC operating system libraries. In previous versions of STAF, these operating system library files were packaged/installed with STAF. However, these library files could cause some incompatibility issues with the operating system and other native applications. Starting in STAF V3.2.0, these library files will no longer be packaged/installed with STAF. However, in order to run STAF on these platforms, you will need these library files or compatible library files.

As a STAF user, what this means is that you may need to make some one-time setup/configuration changes on your test machine(s) in order to get STAF V3.2.0 or later working correctly. There are several possible user scenarios:

- STAFProc starts successfully on your platform. This means that the operating system currently has compatible C++/GCC library support.
- When attempting to start "STAFProc" or "staf", you receive a message such as: "Error while loading shared libraries: libstdc++.so.6: cannot open shared object file: No such file or directory" or "STAFProc: relocation error: /usr/local/staf/lib/libSTAF.so: undefined symbol: \_ZNSt4\_Rep20\_S\_empty\_rep\_storageE" This means that the operating system does not have compatible C++/GCC libraries. There are several ways to resolve this problem:
  - Install the compatibility libraries for your operating system. The steps to install these libraries will vary depending upon the operating system and level. For example, on RHEL4, using the install media, under "Package Group Selection", select "Development" and then select "Legacy Software Development".
  - Build STAF on your operating system. Follow the instructions in the "STAF V3 Developer's Guide" (<http://staf.sourceforge.net/current/stafdg.html>).
  - Use the library files from our STAF build machines in the table below. It is up to the user to decide how to install the files on their operating system(s). In previous versions of STAF, these files were installed in /STAF/Config/STAFRoot}/lib (and the files were accessible due to this directory being included in the LD\_LIBRARY\_PATH environment variable).
- When attempting to start "STAFProc" or "staf", you receive a message such as: "/lib64/libgcc\_s.so.1: version `GCC\_4.2.0' not found (required by /usr/local/staf/lib/libstdc++.so.6)". This means that the operating system has incompatible C++/GCC libraries in the library path. There are several ways to resolve this problem: e.g. Remove the /usr/local/staf/lib/... libraries if present.

Here are the affected operating systems and details about the specific platforms on which we build STAF:

OS Name	STAF Installers	OS Details	Library file (s)
Linux IA32	STAF33x-setup-linux.bin  STAF33x-setup-linux-NoJVM.bin  STAF33x-linux.tar.gz	Red Hat Linux release 8.0 (Psyche) gcc version 3.4.0, GNU Make version 3.79.1 Linux 2.4.20-28.8 i686 i686 i386 GNU/Linux GNU C Library stable release version 2.3.2 Compiled by GNU CC version 3.2 20020903 (Red Hat Linux 8.0 3.2-7). Compiled on a Linux 2.4.9-9 system on 2003-11-05.	<a href="#">libstdc++.so.6</a> .  <a href="#">libgcc_s.so.1</a> .
Linux AMD64	STAF33x-setup-linux-amd64.bin  STAF33x-setup-linux-amd64-NoJVM.bin  STAF33x-linux-amd64.tar.gz	Red Hat Enterprise Linux AS release 4 (Nahant Update 4) gcc version 3.4.6 20060404 (Red Hat 3.4.6-3), GNU Make 3.80 Linux 2.6.9-42.ELsmp x86_64 x86_64 x86_64 GNU/Linux GNU C Library stable release version 2.3.4 Compiled by GNU CC version 3.4.6 20060404 (Red Hat 3.4.6-2). Compiled on a Linux 2.4.20 system on 2006-07-04.	<a href="#">libstdc++.so.6</a> .

Linux IA64	STAF33x-setup-linux-ia64.bin  STAF33x-setup-linux-ia64-NoJVM.bin  STAF33x-linux-ia64.tar.gz	Red Hat Enterprise Linux AS release 3 (Taroon Update 6) gcc version 3.2.3 20030502 (Red Hat Linux 3.2.3-53) Linux 2.4.21-20.EL ia64 ia64 ia64 GNU/Linux GNU C Library stable release version 2.3.2 Compiled by GNU CC version 3.2.3 20030502 (Red Hat Linux 3.2.3-53). Compiled on a Linux 2.4.20 system on 2005-09-16.	<a href="#">libstdc++.so.5.</a>
Linux PPC64 (32-bit Java support)	STAF33x-setup-linux-ppc64-32.bin  STAF33x-setup-linux-ppc64-32-NoJVM.bin  STAF33x-linux-ppc64-32.tar.gz	SuSE SLES-8 (PPC) VERSION = 8.1 gcc version 3.2.2 Linux 2.4.21-309-pseries64 ppc64 unknown GNU C Library stable release version 2.2.5 Compiled by GNU CC version 3.2.2. Compiled on a Linux 2.4.19 system on 2006-01-26.	<a href="#">libstdc++.so.5.</a>  <a href="#">libgcc_s.so.1.</a>
Linux PPC64 (64-bit Java support)	STAF33x-setup-linux-ppc64-64.bin  STAF33x-setup-linux-ppc64-64-NoJVM.bin  STAF33x-linux-ppc64-64.tar.gz	SUSE LINUX Enterprise Server 9 (ppc) VERSION=9 PATCHLEVEL=2 gcc version 3.3.3 (SuSE Linux) Linux 2.6.5-7.191-pseries64 ppc64 ppc64 ppc64 GNU/Linux GNU C Library stable release version 2.3.3 (20040412) Configured for ppc-suse-linux. Compiled by GNU CC version 3.3.3 (SuSE Linux). Compiled on a Linux 2.6.5 system on 2005-06-05.	<a href="#">libstdc++.so.5.</a>  <a href="#">libgcc_s.so.1.</a>

## 11. Starting STAF during system reboot

### 11.1. [Unix](#)

### 11.2. [Windows](#)

#### 11.1. Unix

You can have STAF start automatically during reboot on Unix machines by using a script file similar to the following:

```
#!/bin/sh
PATH=/usr/local/staf/bin:$PATH
export PATH
LD_LIBRARY_PATH=/usr/local/staf/lib
export LD_LIBRARY_PATH
CLASSPATH=/usr/local/staf/lib/JSTAF.jar:/usr/local/staf/samples/demo/STAFDemo.jar
export CLASSPATH
STAFCONVDIR=/usr/local/staf/codepage
export STAFCONVDIR
STAFCODEPAGE=LATIN_1
export STAFCODEPAGE
```

```
nohup /usr/local/staf/bin/STAFProc > /usr/local/staf/stafproc.out &
```

See the STAFEnv.sh and startSTAFProc.sh files provided in the STAF root directory (e.g. /usr/local/staf). The STAFEnv.sh file contains the correct environment variables settings for STAF for your machine.

If you did not install STAF to the default directory (/usr/local/staf), then you would need to specify the non-default installation directory in the script file.

Note that on AIX, you need to replace LD\_LIBRARY\_PATH with LIBPATH, and on HP-UX, you need to replace LD\_LIBRARY\_PATH with SHLIB\_PATH.

Note that if your Unix operating system does not support the "nohup" command, then remove it from the last line in the script:

```
/usr/local/staf/bin/STAFProc > /usr/local/staf/stafproc.out &
```

The console output from STAFProc will be stored in the /usr/local/staf/stafproc.out file.

The usage of this script file varies depending on the specific Unix operating system:

- On Linux, in general, add the script lines to the /etc/rc.d/rc.local file. On Linux SuSe, add the script lines to the /etc/init.d/boot.local file.

Note that we recommend starting STAFProc under the root user id. To start STAFProc under the root user id, change the last line above to the following:

```
su -c '/usr/local/staf/bin/STAFProc' - root &
```

If starting STAFProc under the root user id, you may also need to modify /root/.bash\_profile by adding /usr/local/staf/bin to the PATH environment variable as follows:

```
PATH=$PATH:$HOME/bin:/usr/local/staf/bin
```

- On Solaris, follow these steps:

Run the following command, and keep track of the path returned:

```
which sh
```

For example, the path might be /usr/bin/sh.

Create a file in the /etc/init.d directory called something like "startSTAF". Note that the file should not end in .sh or anything else. Edit your file and add the script lines to it (using the "sh" path from the previous step as the first line in the script):

```
#!/usr/bin/sh

PATH=/usr/local/staf/bin:/jdk1.3.1/bin:${PATH:-}; export PATH
CLASSPATH=/usr/local/staf/lib/JSTAF.jar:${CLASSPATH:-}; export CLASSPATH
STAFCONVDIR=/usr/local/staf/codepage; export STAFCONVDIR
LD_LIBRARY_PATH=/usr/local/staf/lib:${LD_LIBRARY_PATH:-}; export LD_LIBRARY_PATH
/usr/local/staf/bin/STAFProc &
```

Make the file executeable (755 is most likely sufficient)

```
chmod 777 /etc/init.d/startSTAF
```

Symlink the file to the rc3.d directory and start STAF (being sure to use nohup):

```
ln -s /etc/init.d/startSTAF /etc/rc3.d/S98startSTAF
nohup /etc/rc3.d/S98startSTAF start
```

## Notes:

- o The prefix S means default state Started for Solaris
  - o 98 is just some number
  - o The suffix is the filename from init.d
- On AIX, create a /etc/rc.xxxx file (such as /etc/rc.staf), which contains the script lines. For example:

```
#!/bin/sh
PATH=/usr/local/staf/bin:$PATH
export PATH
LIBPATH=/usr/local/staf/lib
export LIBPATH
CLASSPATH=/usr/local/staf/lib/JSTAF.jar:/usr/local/staf/samples/demo/STAFDemo.jar
export CLASSPATH
STAFCONVDIR=/usr/local/staf/codepage
export STAFCONVDIR
STAFCODEPAGE=LATIN_1
export STAFCODEPAGE
/usr/local/staf/bin/STAFProc > /usr/local/staf/stafproc.out
```

Then add an entry to the /etc/inittab file so that the rc.staf file will execute during the boot. For example, add the following line to the end of /etc/inittab:

```
staf:2:boot:/etc/rc.staf
```

See the [AIX documentation](#) for more information on updating the /etc/inittab file.

Note that if you are using STAF Java services, then you must make sure the file system where the JVM is located is available during the AIX system boot. For example, if STAF is installed to /usr/local/staf, but the JVM being used for the STAF Java services is in the /opt file system, then the /opt file system may not be mounted when the rc.staf file is executed, and the stafproc.out file may contain an error such as:

```
27:Error constructing service, JSTAF, Result: Error starting a process for the JVM
using JVMName: STAFJVM1, JVM: /opt/aix64java/jre/bin/java, JVMOptions: -Xmx5
12m , RC: 10, Result: Invalid command: /opt/aix64java/jre/bin/java
The command is not a file or does not have execute permissions. OS RC 2 Make sure /
opt/aix64java/jre/bin/java exists.
```

To prevent this error, make sure that the JVM resides in a file system (such as /usr) that will be available during system boot.

- On HP-UX, create a file /sbin/init.d (give the file whatever name you want, maybe "staf"), and add the script lines to the file. Then you must put a file called "staf" (the same name used in /sbin/init.d, containing a variable declaration, like STAF=1) in /etc/rc.config.d. Finally, you have to create a symbolic link to your /sbin/init.d/staf, called S84staf, in /sbin/rc3.d.

You may get the following error message:

```
STAFProcess::processMonitorThread: error opening /dev/tty, errno: 6
```

However, STAFProc does start despite this message, and functions normally.

## 11.2. Windows

If you wish to have STAFProc start automatically on Windows when the operating system is rebooted (without requiring a user to log on to Windows), you can install STAF as a Windows service.

These instructions assume you have copied INSTSRV.EXE and SVRANY.EXE (available from the Windows Resource Kit) into C:\WINNT\SYSTEM32.

1. Create a base STAF service which by default is started automatically when the system boots.

```
instsrv STAF c:\winnt\system32\svrany.exe
```

2. Start the Windows Registry Editor by typing regedit and find:

```
My Computer\HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\Services\STAF
```

3. Create a new string value with the name Description. Set the value to Automatically start STAF service.
4. Create a new Key with name Parameters. Inside the new key, create a new string value with the name Application and set the value to c:\staf\bin\stafproc.exe.
5. Close the Registry Editor.

6. If on Windows 2000, open the following program:

```
Start > Programs > Administrative Tools > Services
```

7. If on Windows 2000 Terminal Server, open the following program:

```
Start > Programs > Administrative Tools > Management Console (Windows 2000 Terminal Server)
Services and Applications > Services
```

8. If on Windows XP Professional, open the following program:

```
Start > Settings > Control Panel > Administrative Tools > Services
```

9. Locate STAF, right click on the STAF entry, and select Properties.

10. From the 'Log On' tab, click 'Allow service to interact with desktop', then click on Apply and then click on OK.

11. Next, type:

```
net start staf
```

12. Check that STAF is now running from a command prompt:

```
staf local ping ping
```

13. Note that when running STAF as a Windows service, you should not have STAFProc automatically start when users log on to Windows. You should either deselect the "Start STAF on user login" option when installing STAF, or delete STAF from Start > Programs > Startup folder.
14. Note that STAF should not be started or shutdown with the commands on the start menu when STAF is configured as a service.

As an alternative to configuring STAFProc as a Windows service, you can start STAFProc as a scheduled task. This works for Windows 2000 or later. This is especially useful for Windows 2003 64-bit machines which do not support svrany.exe in the Windows Toolkit (used when starting STAF as a Windows service). Note that when starting STAFProc as a scheduled task, it does not display

any dialog. The following instructions are for starting STAFProc as a scheduled task on Windows 2003.

1. From the Start menu, select Control Panel > Scheduled Tasks > Add Scheduled Tasks.
2. In the "Scheduled Task Wizard", click on "Next" on the first panel.
3. In the list of applications, scroll to "Start STAF 3.3.2" (or whatever version you have installed) and select it. Note that "Start STAF x.x.x" should appear on the list of applications if you performed a recommended install of STAF using the defaults. If it is not in the list, click on "Browse" to select your STAFProc executable. Click on "Next".
4. On the next panel give the task a name, select "When my computer starts", and click on "Next".
5. For "Enter the user name:", enter "NT Authority\System" (without the double quotes, and remember that there is a space between "NT" and "Authority" and leave the password fields blank (otherwise you have to reset the password every time the controlling user resets their password). No password is required in this panel, but you need to be an administrator to set it up. Click on "Next".
6. Select "Open advanced properties for this task when I click Finish" and then click on "Finish".
7. In the "Settings" tab, de-select "Stop the task if it runs for...". Click on "Apply" and then "OK".
8. When you install STAF on a system where you plan to run it as a Scheduled Task, you should de-select the option that says "Start STAF when a user logs in". Otherwise, when a user logs in, it will try to start STAFProc again which causes problems. If you have already installed STAF, remove it from Start > Programs > Startup for all users to prevent STAFProc from starting again when a user logs in.
9. Reboot the machine and STAFProc should automatically start (without any command dialogs or anyone having to log in). You can view the tasks that you have scheduled by selecting Control Panel > Scheduled Tasks. In the submenu you should see the names of the scheduled tasks.