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Preface


Audience

This manual is for application server administrators who are responsible for installing the Architect/Requirements Web component and database server component. The manual provides an overview of installation requirements and instructions for installing the Web and database server components. For information about installing the Architect/Requirements client component, see the Systems Architect/Requirements Management User's Manual.
Conventions

This manual uses the conventions described in the following sections:

Revision Marks

Technical changes are marked by a bar adjacent to the changed text.

Browser and Dialog Window Examples

The examples of browsers and dialog windows in this manual may appear different from those you see on your screen:

- The examples reflect Systems Architect/Requirements Management as initially installed at your site. Your enterprise may customize the browsers and dialog windows such that they appear different from those in the examples.

- The examples reflect individual Systems Architect/Requirements Management modules. If you install additional modules, your dialog windows and browsers reflect the additional modules.

- The examples reflect Systems Architect/Requirements Management installed on a Windows platform.

Names and Values

This manual represents system names, file names, and values in fonts that help you interpret the name or value. For example:

Change or add the parameter to the \texttt{init\textit{sid}.ora} file.

The conventions are:

- **Bold** \texttt{sid} identifies a varying portion of the name (a unique system ID). For example, the name of the file might be: \texttt{initBlue5.ora}

- **Italic** \textit{sid} identifies a varying portion of the name (a unique system ID). For example, the name of the file might be: \texttt{initBlue5.ora}

- **text-text** A hyphen separates two words that describe a single entry.
Command Line Entries, File Contents, and Code

This manual represents command line input and output, the contents of system files, and computer code in fonts that help you understand how to enter text or to interpret displayed text. For example, the following line represents a command entry:

```
msqlora -u system/system-password
```

The conventions are:

**Monospace**

Monospace font represents text or numbers you enter on a command line, the computer's response, the contents of system files, and computer code.

Capitalization and spacing are shown exactly as you must enter the characters or as the computer displays the characters.

**Italic**

Italic font represents text or numbers that vary. The words in italic text describe the entry.

The words are shown in lowercase letters, but the varying text may include uppercase letters. When entering text, use the case required by the system.

For the preceding example, you might substitute the following for `system-password`:

```
KLH3b
```

**text-text**

A hyphen separates two words that describe a single entry.
Submitting Comments

Portions of Teamcenter software are provided by third-party vendors. Special agreements with these vendors require Siemens PLM Software to handle all problem reports concerning the software they provide. Please submit all comments directly to Siemens PLM Software.

Please feel free to share with us your opinion on the usability of this manual, to suggest specific improvements, and to report errors. Mail your comments to:

    Siemens PLM Software Technical Communications
    5939 Rice Creek Parkway
    Shoreview, MN  55126
    U.S.A.

To submit an incident report, you can use the Siemens PLM Software GTAC online support tools at the following URL:


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Chapter 1: Preparing for the Installation

This chapter describes the Architect/Requirements components and the requirements for the installation of the Systems Architect/Requirements Management server.

Components

Architect/Requirements is designed for multi-tier Web deployment. It consists of the following main components:

- **Web component**

  The Architect/Requirements business logic resides in the Web component. This component runs within the Java environment of an application server, or Web server with a servlet engine. The Web component consists of one binary file, *tcr.war*.

- **Database server component**

  Architect/Requirements uses an object-oriented database system from Versant Corporation to store and manage data. The database server component consists of several binary files and must be installed separately before installing the Systems Architect/Requirements Management server.

  Architect/Requirements is certified and ships with Versant Database.

  For information about the version of Versant Database, see the Siemens PLM Software Certification Database:


- **Client component**

  This component presents the Architect/Requirements user interface on a local computer.

The Web component and database server component can be installed on the same computer or on two separate computers.

When the Web and database servers are on different computers, they must be within the same local area network (LAN) and never connected over a wide area network. Even within a LAN, performance can be adversely affected by latency introduced by routers and firewalls, or by network traffic from other sources. For best performance, place the database server and Web server on a dedicated, private LAN, that is isolated from other traffic and has near-zero latency.

This arrangement is not a minimum requirement. However, it is recommended when there are enough users that multiple Web server instances become necessary for scalability. That level of user activity generates a high volume of small communications to the database server.
Hardware Requirements

The Architect/Requirements can be deployed in multiple configurations. Following are the recommendations for the application server and the database server.

**Application Server hardware requirements (per Architect/Requirements instance)**

For an anticipated 25 concurrent users

- **RAM**
  - 4 GB

- **Processor**
  - 2 CPUs (or cores) per instance

For an anticipated 50 concurrent users

- **RAM**
  - 8 GB for 64-bit applications

- **Processor**
  - 4 CPUs (or cores) per instance

**Versant Database Server hardware requirements**

- **RAM**
  
  Memory requirements are driven by the size of the database and the desire to cache all or a significant portion of the database.

  The minimum requirement for UNIX is 8 GB of RAM.

- **Processor**

  2 CPUs (or cores) are required but 4 CPUs (or cores) are recommended for better performance

- **Disk space**

  The disk space requirement depends on the size of the database. If you are using a default database of 4 GB, you must have the following:

  - 10 GB for database area
  - 20 GB for backup area
  - 10 GB for working files
  - 50 GB for operating system swap and other applications

  Temporary installation space (not to exceed the requirements above) is also required in your `/tmp` directory during the installation.

RAM and disk space requirements must be adjusted upward depending on the resources required by other applications on the same servers.
These requirements do not include the disk space needed to create the database or to store back ups. For more information, see the *Systems Architect/Requirements Management System Administrator's Manual*. 
Software Requirements

Architect/Requirements 10.1 is a 64-bit application. Both the application server and the database server must be a 64-bit deployment.

For a 64-bit Architect/Requirements installation, 64-bit hardware, a 64-bit operating system, and a Web server such as WebLogic, WebSphere, or Tomcat are required.

The Architect/Requirements components can be installed on the following operating systems:

- Microsoft Windows
- Sun Solaris

For information about versions of operating systems, third-party software, and Teamcenter software that are certified for your platform, see the Siemens PLM Software Certification Database:


Requirement for Versant 64-bit Installation on Windows

The installation of Versant 64-bit on a Microsoft Windows system requires Microsoft Visual C++ 2008 Redistributable Package (x64). You can download the Microsoft Visual C++ 2008 Redistributable Package (x64) from the following link:


Oracle JDK 64-bit

The installation procedure requires deployment of the Architect/Requirements war file on a Windows computer. IBM WebSphere provides the required Java runtime support, with the IBM JVM version 1.7 or 1.8. But if you are not planning to deploy Architect/Requirements on WebSphere, you must install either the Java Development Kit (JDK) or the Server JRE (Java SE Runtime Environment) on your Windows computer. You can obtain the JDK or the Server JRE from your IT department or download it directly from the Oracle Web site:


You must use the 64-bit version only.

For information about version of Oracle JDK certified for your platform, see the Siemens PLM Software Certification Database:


Setting the Java environment variables

You must set the following Java variables:

- **JAVA_HOME**: Set it to the Java 8 JDK directory. For example,

  export JAVA_HOME= /usr/java/jdk1.8.0_91
• **PATH**: Add the Java bin directory to the PATH variable. For example,
  
  ```
  export PATH=$JAVA_HOME/bin:$PATH
  ```
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Chapter 2: Installing Architect/Requirements

This chapter contains an overview and instructions for installing Architect/Requirements and its components. It also describes how to set environment variables and configure the Versant database. If you are upgrading an existing installation of Architect/Requirements, skip to Upgrading the Installation.

Installation Overview

Architect/Requirements and its components can be installed in different configurations. Single-server and multiple-server installations are described in brief in the following sections. You may refer to this overview and follow the steps explained in detail in the subsequent sections.

You should verify the hardware and software requirements for Architect/Requirements prior to the installation.
Installing Architect/Requirements and Versant on a Single Server

In a single server installation, the Systems Architect/Requirements Management server and Versant object database are installed on the same computer. At a high level, the steps involved are:

1. Install a Web application server supported by Architect/Requirements.
2. Install the Versant object database.
3. Install the Architect/Requirements server software.
4. Set environment variables.
5. Copy the Versant license file and initialize the database.
6. Perform post-installation procedures, such as deploying the Web component (tcr.war file), and entering the licensing information.
Installing Architect/Requirements and Versant on Multiple Servers

Figure 2-2. Architect/Requirements and Versant Installed On Multiple Servers

In a multiple server installation, the Systems Architect/Requirements Management server and the Versant object database are installed on separate computers.

If you are installing and configuring an additional Architect/Requirements server or a Versant database server, you should install both Versant and Architect/Requirements server software on every server.

• On the computer to be configured as the Versant database server:
  1. Install the Versant object database.
  2. Install the Architect/Requirements server software.
     The Architect/Requirements server software should be installed because the Versant database requires the Architect/Requirements server libraries to initialize, configure, and maintain the database.
  3. Copy the Versant license file.
  4. Initialize the Versant database.
• On the computer to be configured as the Architect/Requirements Server:
  1. Install a Web application server supported by Architect/Requirements.

  2. Install the Versant object database.

      The Versant object database should be installed because the Architect/Requirements server requires the Versant client libraries to interact with the Versant database server (installed and configured on a separate computer).

  3. Install the Architect/Requirements server software.

      In the Database Input dialog window, ensure that you enter the host name of the Versant database server (installed and configured on a separate computer) and the name of the database.

  4. Set environment variables.

  5. Perform post-installation procedures, such as deploying the Web component (tcr.war file), and entering licensing information.

### Installing Architect/Requirements Client in Silent Mode

The Architect/Requirements client installation program provides an option to install the client in silent mode. The IT departments or enterprise administrators can use the silent mode option to roll out command line installations of Architect/Requirements Client with Office Integration on end-user machines.

- Elevated user privileges (power user or administrator) are required for the installation as registry entries are updated with the patch information.

- The client installer does not check for the user privilege level. If the installation is not performed as a privileged user, the registry entries are not created and the client fails to run when launched by a normal user.

**To install the Architect/Requirements client in silent mode:**

1. The client installation program is located in the Architect/Requirements Web component (the tcr.war file).

   The tcr.war file is located in the war_file directory.

   Extract the tcr.war file in a folder. You can run the command: `jar -xf tcr.war`

2. Locate the Architect/Requirements 10.1 client installer (setup.exe) in the /ugs.tc.req.installs folder and run the following commands:

   `setup.exe -i silent`

The client is installed in the default location, such as, C:\Program Files\SiemensPLM\Teamcenter\SystemsEngineering\Release_10.1 folder.
User Privileges for the Installations

Privileges for Installing the Server

Users installing and configuring the Architect/Requirements server and the Versant database server must be logged on to the systems with administrator privileges.

As a prerequisite, create a user ID and group ID for the ownership of Versant. Typically the user ID and group ID is tcradm. The Architect/Requirements server installer should be run by the database owner (for example, tcradm).

Privileges for Installing the Client

Elevated user privileges (power user or administrator) are required for installation and update of the Architect/Requirements client. This is required as Windows registry entries are updated during the patch update.

Installing the Versant Object Database Application

Architect/Requirements uses an object-oriented database system from Versant Corporation to store and manage data. Architect/Requirements is certified and ships with Versant Database.

For information about the version of Versant Database supported, see the Siemens PLM Software Certification Database:


The Versant installer is no longer a part of the Architect/Requirements server installer. The Versant database must be installed before installing the Architect/Requirements server. The instructions are the same for installing Versant on both the Architect/Requirements server and the database server. If you are running these servers on the same machine, perform the installation only once. If you are running these servers on separate machines, perform this installation on your database server machine as well as on each of the Architect/Requirements server machines.

Architect/Requirements 10.1 supports the Versant Object Database 8.0.2 patch 52. The Versant installer is located in the DVD_Root-Folder/Versant_8/Solaris folder.

The Versant database files must be on a file system that is local to the Versant server processor. Database corruption can occur if you use a remotely mounted drive, such as NFS.

Installing Versant 8

1. Run the Versant installer.
   Extract VOD8.0.2.52_3386_Solaris5.10-sparc_64bit.tar to a temporary directory and run the installer.
   It can take several minutes before the installation window appears.

2. On the Welcome to the Versant Object Database Setup Wizard screen, click Next.

3. On the License Agreement screen, select I accept the terms of the License Agreement and click Next.
4. On the **Select Destination Directory** screen, specify the location to install the Versant binaries and click **Next**.

5. On the **Select Components** screen, select or clear the check boxes as relevant:
   
   a. Clear the **SDK** check box.  
      
      You may need to click twice in the SDK check box to clear it. Clearing the **SDK** check box clears the **C SDK**, **C++ SDK**, **Java**, and **.NET SDK** check boxes.
   
   b. Expand the **Runtime Server** section and clear the **VSQL Server** check box.  
      
      Verify that only **VOD Server** and **Versant Agent** are selected.
   
   c. Expand the **Monitoring Client** section and clear the **VSQL Client** check box.  
      
      Verify that only **VOD Client** is selected.
   
   d. If you do not want the Versant documentation to be installed, clear the **Documentation** check box and click **Next**.

6. On the **Specify the owner of the installed files** screen, enter the owner and group for all Versant files and click **Next**.

   Typically, **tcradm** is used as the owner and group for the Versant files.

   ❗️ The user and group that you enter as the owner for Versant files must already be created.

7. On the **Configure License** screen, click **Next**.

   ❗️ The required Versant license is available after installing Architect/Requirements. You must configure the license after completing the Architect/Requirements installation.

8. On the **Versant Server Configuration** screen, specify the location where you want to set up the database directory. Ensure that you have sufficient disk space for the future growth of your database.

   Click **Next**.

9. On the **Ready to install** screen, review the options that you have selected to install and click **Next**.

   Wait for the installation process to complete.

10. On the **Completing the Versant Object Database Setup Wizard** screen, click **Finish**.

11. Restart your computer.

    ❗️ Although Versant does not prompt you to restart your computer, you must restart it for proper functioning of Versant.

The following services are created on installing Versant.

- **Versant Agent**
• Versant Database Connector

Continue installing Architect/Requirements according to the instructions in Installing the Architect/Requirements Server.

After installing Architect/Requirements, you must install the Versant 8 license file.

Post-Versant Installation Steps

After installation, perform the following steps:

Solaris 10:
1. Run inetconv (as root).
   This converts the entries placed in /etc/inetd.conf to the new Solaris 10 SMF format.
2. Restart inetd.

The last step in the Versant installation is to copy the Versant license file. This step should be completed after installing the Architect/Requirements server because the license file is included in the Architect/Requirements server installation.

Verifying the Versant Installation

Run these commands as the owner of the Versant files (for example, tcradm).

If Versant is installed properly, you should see several lines of output indicating the various Versant-related paths that you entered during the installation, such as Versant root path, Versant runtime path, and Versant database directory.

If you see an error message on UNIX platforms other than Solaris 10, restart the inetd daemon.

• Database Server:

Run the following commands to test the Versant installation:

  0 oscp -i @localhost

  Sample output for oscp -i @localhost:

  Versant Product Version: 8.0.2
  Versant Root Path: /versant
  Versant Runtime Path: /versant
  Versant DB Directory: /versant/db
  Versant osc-dbid node name: localhost
  Versant osc-dbid path: /versant/db

  0 itest -v <dbserverhostname>

  Sample output for itest -v <dbserverhostname>:

  host name: localhost IP addr: xxx.xxx.xxx.xxx
  Connection to localhost successful.
o  vinfo -l

Sample output for vinfo -l

PRODUCT: Versant Object Database
--------------------------------
VERSION 8.0.2.52.3386
OS Solaris5.10-sparc
BUILD INFO CC 5.9 JDK 1.5 64bit
PATCH DATE Jun 15, 2016

Included Components and Versions
--------------------------------
ODB 8.0.2.52.3386
JDO 8.0.2.52.3386
JVI 8.0.2.52.3386
VAR 8.0.2.52.3386
GUI 8.0.2.52.3386
VSQL 8.0.2.52.3386

• Architect/Requirements Server:

The following commands can be used to ensure that the Architect/Requirements Server can communicate with the database server across the network:

o  oscp -i @<dbserverhostname>

Sample output for oscp -i @localhost:

Versant Product Version: 8.0.2
Versant Root Path: /versant
Versant Runtime Path: /versant
Versant DB Directory: /versant/db
Versant osc-dbid node name: localhost
Versant osc-dbid path: /versant/db

o  itest -v <dbserverhostname>

Sample output for itest -v <dbserverhostname>:

host name: localhost IP addr: xxx.xxx.xxx.xxx
Connection to localhost successful.
Installing the Architect/Requirements Server

If you are upgrading your Systems Architect/Requirements Management installation from an earlier version, follow the instructions in *Upgrading the Installation*.

Before beginning the Systems Architect/Requirements Management server installation process, ensure that you install the Versant object database software. The Versant installation is no longer a part of the Architect/Requirements server installer.

The installers are on the Architect/Requirements DVD-ROM.

The installer is located in the `DVD_Root-Folder/Server/Solaris directory`.

For UNIX installations with the Websphere 6.01 application server, launching Architect/Requirements from the home page can give unexpected results. Instead of the Login page, the user's browser displays a blank page if the following conditions are true:

- Security Services is enabled.
- In Administrative Tools on the Web Application Configuration page, the Filter.doCompression parameter value is set to true.

To work around this problem, the user can do the following:

1. In Internet Explorer, click the View menu and choose Encoding→Unicode (UTF-8).
2. On the Architect/Requirements home page, click the Launch Teamcenter systems engineering link.
Installing the Server

To start the Systems Architect/Requirements Management Server installation process, perform the following steps:

1. The installer file is `TcSE_Server_64.bin`. Execute the installer file.
   It may take several minutes before the installation window appears.

2. In the **Introduction** screen, review the notes and click **Next** to begin the installation.

3. In the **Choose Install Folder** screen, click **Choose** to select the installation directory.
   The installation path must not contain spaces.
   To revert to the default location displayed by the installer, click **Restore Default Location**.
   To revisit the previous options presented by the installer, click **Previous**.
   Click **Next**.

4. In the **Database Input** screen, enter the name of the database server’s host name and the name of the database.
   
   The installer defaults to the local host name and `TCR_db`. This should be correct if you are installing the application server and database server on one machine. If the database is on a separate machine, enter the information applicable to that machine.
   
   It is not necessary for the database to already exist at this point in the installation process. The installer needs this information to update the `war` file with the information needed to connect to the database after Architect/Requirements is deployed.

   The **Database Server "hostname"** that you specify must be the same name that is used for the Versant installation.

   Click **Next**.

5. The **Pre-Installation Summary** screen displays information such as the product name, installation folder, database name, database server’s host name, and disk space availability.

   Click **Install** to begin the installation.

6. After the installation is successful, click **Done** to exit the installer.
Verifying Versant Environment Variables

The Versant installer creates a file named `envsettings.csh` in your `versant/bin` directory during installation. You can use this file as an example for updating your environment. The paths must be correct, as this file is updated during installation with the values for your system.

Architect/Requirements Web Servers

The following environment variables must be set for Systems Architect/Requirements Management to run on your application server:

- **VERSANT_ROOT**
- **LD_LIBRARY_PATH** (Solaris)

These environment variables must be set for the user ID that is used to start your application server. For example, if you start your application server as `root` using the `csh` shell, you must update your `.cshrc` file for `root`.

The `VERSANT_ROOT` variable must point to the root level of your Versant installation.

For example, if you install Versant in the `/versant` directory, then:

```
VERSANT_ROOT=/versant.
LD_LIBRARY_PATH=/TcrServerDir/jvi_root/lib:/versant/lib
```

The examples above are shell-specific on UNIX.

Example for `csh`:

```
setenv VERSANT_ROOT /versant
setenv LD_LIBRARY_PATH /TcrServerDir/jvi_root/lib:/versant/lib
```

Example for `sh`:

```
VERSANT_ROOT=/versant
export VERSANT_ROOT
LD_LIBRARYPATH=/TcrServerDir/jvi_root/lib:/versant/lib
export LD_LIBRARY_PATH
```

There are two options for setting these values on an application server:

- You can set these in the startup scripts for the user (for example, `chsrc fo csh`).
- You can set these in the startup scripts for the application server itself (for example, Tomcat `startup.sh` file).

Additionally, as stated earlier, the `envsettings.csh` file located in your `versant/bin` directory provides an example for updating your installation.
If you do not update your environment with these environment variables, errors are displayed when you start your application server.

Database Servers

The VERSANT_ROOT environment variable must be set for Systems Architect/Requirements Management to run on your database server. This environment variable must be set for the user ID that owns the Versant database. VERSANT_ROOT must point to the root level of your Versant installation.

For example, if you install Versant in the /versant folder, then VERSANT_ROOT=/versant.

The examples in this section are shell-specific on UNIX.

Example for csh:

```bash
setenv VERSANT_ROOT /versant
```

Example for sh:

```bash
VERSANT_ROOT=/versant
export VERSANT_ROOT
```

To run Versant commands without supplying the full path, add versant/bin to your UNIX PATH.

Additionally, as stated earlier, the envsettings.csh file located in your versant/bin directory provides an example for updating your installation.

Recommendation for Solaris

This section explains how to configure the multithreaded version of the malloc memory management library. By default, Solaris uses a single-threaded version, which can seriously impact the multiuser performance of the Web server and the Versant client.

For Solaris, it is recommended that you set the LD_PRELOAD environment variable for the user who runs the application server and the user who owns the Versant database.

- For the Bourne-again shell (bash):

  ```bash
  export LD_PRELOAD=libumem.so.1
  ```

- For the Bourne shell (sh):

  ```bash
  LD_PRELOAD=libumem.so.1
  export LD_PRELOAD
  ```

- For the C shell (csh):

  ```bash
  setenv export LD_PRELOAD libumem.so.1
  ```

This configuration lets Systems Architect/Requirements Management take advantage of using a multithreaded malloc. See Sun documentation for more details.
Copying the Versant License File

The default location of the license file (license.xml) is TcrServerDir/versant_license/license.xml. Copy the license.xml file located in the versant_license folder (in the Architect/Requirements installation folders) to the VERSANT_ROOT folder (for example, /versant). This file is needed to enable Versant.

You cannot create a database if you skip this step.

Initializing the Versant Database

You need to create a new database only in case of a new installation. To create and initialize the database, perform the following steps:

1. Log on with the ID tcradm (or using the user ID who owns the database).

2. From the command prompt, change the directory to the schema directory of your server installation. On the command prompt, enter the following command:

   `tcradmin -action initDB -logToStdOut`

To test whether the database (for example, TCR_db) is successfully created, enter the following command:

`dbinfo -p TCR_db`

If the database creation is successful, the following output is displayed:

VERSANT Utility DBINFO Version 8.0.2
Copyright (c) 1988-2012 VERSANT Corporation

Database is in multi-user mode ...

At this point, the database is created and initialized. A Systems Architect/Requirements Management user named tcradm is created with a blank password and the Enterprise Administrator privilege.

When you run the Systems Architect/Requirements Management client to verify the installation or enter licensing information, you must log on as tcradm.

Testing the Database

To determine whether the Systems Architect/Requirements Management database is properly created and initialized, perform the following steps. Replace VERSANT_ROOT with the name of the root directory in which Versant is installed on your system.

1. Run the following command at the command prompt to display all the databases in your Versant installation.

   `dblist`
Verify that the default database (for example, TCR_db) is included in the output. If the output does not include TCR_db, the database is not created properly.

2. Run the following command to display information about the database.

   db2ttty -D TCR_db

   This Versant command line utility can fail if it is not run from a command window launched without using the Run As Administrator option.

   This command prints several pages of data from the database on the screen if the database is created properly.

   In case of any problems with the database, contact support at http://www.plm.automation.siemens.com/en_us/support/gtac/.

Setting UNIX Kernel Parameters

Versant databases use shared memory. You must set UNIX kernel parameters for the machine on which the database resides.

The method you use depends on the operating system:

- For Solaris, edit the etc/system kernel configuration file.

While setting UNIX kernel parameters:

1. Determine the memory requirements for your particular database and system, considering shared memory, virtual memory (or swap space), and RAM requirements.

2. Reconfigure the UNIX kernel according to the memory parameter values that you require.

Determining Memory Requirements

The UNIX kernel parameters that affect shared memory are the following:

- **shmmni**
  
  Specifies the maximum number of shared memory segments system wide.

- **shmseg**
  
  Specifies the maximum number of shared memory segments per process.

Systems Architect/Requirements Management runs out of shared memory when it has allocatedshmseg number of segments and tries to allocate one more. The system runs out of shared memory when it tries to allocate one more shared memory segment and when either there is no more swap space or the shmmni limit is reached.

Versant uses shared memory for the back-end page cache, allocated in 1 MB blocks. Shared memory is allocated in virtual memory, and the limit on virtual memory is the available swap space. Some systems are configured to further limit the amount of virtual memory that a single process can
consume. The actual usage of shared memory depends on how much data is accessed by the Systems Architect/Requirements Management server application.

Calculate the memory-related values in the following order:

1. \textbf{shmseg} > size of the Versant database (in MB) plus growth space

2. \textbf{shmmni} \geq \textbf{shmseg}
   
   \textbf{shmmni} must be at least as large as \textbf{shmseg}.

An \textbf{shmseg} size that allows the entire Systems Architect/Requirements Management database to be loaded in memory provides the best performance. Less shared memory does not cause errors but may affect performance.

You may need higher settings if you have other applications that use shared memory segments. If you have questions about memory settings, contact Systems Architect/Requirements Management Customer Support.

Insufficient RAM causes slower performance but not process failures. Insufficient shared memory segments or virtual memory causes process failures. Such failures in a Versant utility or Systems Architect/Requirements Management are indicated by the following error messages:

\begin{itemize}
  \item 53, VSL_MEM_NOMEM: Out of process memory OS err ___
  \item 903, SL_MEM_NOMEM: Out of heap memory
\end{itemize}

For either message, the reason is one or more of the following:

\begin{itemize}
  \item The \textbf{shmseg} limit for the Systems Architect/Requirements Management database is exceeded.
    
    To examine the shared memory usage for the database, enter the following command:
    
    \texttt{dbtool -U database_name}
  \item All swap space is exhausted.
    
    To check the available swap space, enter the following command:
    
    \texttt{swap -s}
  \item A system limitation on process size is exceeded.
    
    To check for memory restrictions, use the UNIX \texttt{limit} command.
\end{itemize}

**Reconfiguring the UNIX Kernel**

After determining your memory requirements, you must reconfigure the UNIX kernel to set the memory parameter values.

\textbf{⚠️} Consult your system administrator before performing this operation.

For example, if you determine that you need a \textbf{shmseg} parameter value of 800, you set the kernel parameters to that value by doing one of the following:

\begin{itemize}
  \item For Solaris, enter the following lines in the \texttt{etc/system} kernel configuration file:
\end{itemize}
set shmsys:shminfo_shmmni = 800

For more information, see the Oracle documentation titled Security, Performance, and Accounting Administration, Appendix A: Tuning Kernel Parameters at http://docs.sun.com/app/docs/doc/801-6629/6i109n9s0.

Solaris 10 Database Server Installations

inetd Conversion to Service Management Facility

Solaris changed the way it handles the inetd file. Solaris no longer runs based on entries in the /etc/inetd.conf file. Entries made in this file must be converted to entries in Solaris 10 Service Management Facility.

To do this, run the following command as root on your system:

    inetconv

This command converts the entry Systems Architect/Requirements Management makes in your /etc/inetd.conf file to work with Solaris 10. You should then be able to run the following test:

    oscp -i @localhost

Shared Memory Segments

Managing shared memory segments for Solaris 10 is based on the project with which your user name is associated. You no longer update the settings by editing the /etc/system file.

To list the projects for the user name, enter the following command:

    id -p

The following is a sample output:

    uid=10000 gid=10000 projid=3

In the example above, 10000 is the tcradm user and 3 is the default project.

To change the shared memory settings, do the following:

• For example, to change maximum shared memory to 1.5 GB:

    projmod -s -K "project.max-shm-memory=(privileged,1.5GB,deny)" default

• To change the number of shared memory segments to 4000:

    projmod -s -K "project.max-shm-ids=(privileged,4000,deny)" default
Next Steps

Continue with the post-installation procedures such as:

- Updating the NIS master computer.
- Deploying the tcr.war file.
- Entering Architect/Requirements license information.
- Verifying the installation.

The procedures are described in Post-installation Tasks.
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Chapter 3: Upgrading the Installation

This chapter describes how to upgrade Architect/Requirements server software from the version 10.0 or later to Architect/Requirements 10.1.

Upgrade Overview

Architect/Requirements requires you to install or upgrade your Versant database separately from the Architect/Requirements installation. The Versant installation files are included on the Architect/Requirements media.

For the upgrade steps that require entering commands, you must type the commands and not copy and paste them into a command prompt from the documentation. If you copy and paste, the command may not work as intended.

The following assumptions are made in this section:

- The name of the Architect/Requirements server war file is **tcr.war**. While the Architect/Requirements installer allows you to use any name, **tcr.war** is the typically used name.

- The name of the Architect/Requirements Versant object database is **TCR_db**. While the Architect/Requirements installer allows you to use any name, **TCR_db** is the typically used name.

- The system 1 refers to the state of the system before the upgrade procedure, and the system 2 refers to the state of the system following the upgrade procedure.

User Privileges for Running the Installations

Users installing and configuring the Architect/Requirements server and the Versant database server must be logged on to the systems with administrator privileges.

As a prerequisite, create a user ID and group ID for the ownership of Versant. Typically the user ID and group ID is **tcradm**. The Architect/Requirements server installer should be run by the database owner (for example, **tcradm**).
Upgrade Planning

Upgrading your existing Architect/Requirements installation to the latest version will include the following activities:

- Upgrading the application server from Architect/Requirements 10.0 or later to Architect/Requirements 10.1.
- Upgrading the Versant Object Database application to version 8.0.2.
  
  For information about the latest supported version of the Versant, see the Siemens PLM Software Certification Database:


Upgrading From Architect/Requirements 10.0 or Later Versions

If you are installing and configuring additional computers as Architect/Requirements servers or Versant database servers, you should upgrade both Versant and Architect/Requirements server software on each of the computers.

You can follow the steps below that are applicable for your corresponding configuration.

On the computer configured as both the Versant database server and the Architect/Requirements server:

1. Undeploy the existing `tcr.war` file on the application server.
2. Uninstall the existing Architect/Requirements server.
3. Install Java.
   
   For information about the supported version of Java, see the Siemens PLM Software Certification Database:

4. Upgrade the Web application server (if required).
5. Install the latest version of the Architect/Requirements server software.
   
   In the Database Input dialog window, ensure that the host name of the Versant database server (installed and configured on a separate computer) and the name of the database are correct.
6. Run the Schema upgrade command.
7. Deploy the new `tcr.war` file on the application server.
8. Start the Web application server.
9. Launch Architect/Requirements and update the Web configuration parameters as needed.

On every computer configured as the Versant database server:
1. Install the latest version of the Architect/Requirements server software.
   The Architect/Requirements server software should be installed because the Versant database requires the Architect/Requirements server libraries to initialize, configure, and maintain the database.

2. Run the Schema upgrade command.
   **On every computer configured as the Architect/Requirements server:**
   1. Back up any important data.
   2. Undeploy the existing tcr.war file on the application server.
   3. Upgrade the Web application server (if required).
   4. Install the latest Architect/Requirements server software.
      In the Database Input dialog window, ensure that the host name of the Versant database server (installed and configured on a separate computer) and the name of the database are correct.
   5. Review and set the environment variables if needed.
   6. Deploy the new tcr.war file on the application server.
   7. Update the Web application configuration parameters, such as **JRE.Version**.
   8. Enter the Architect/Requirements licensing information.
   9. Restore any backed-up data.

**Upgrade Prerequisite Tasks**
You must perform the tasks mentioned in this section before starting the upgrade process.

**Backup Customized JSP and Schema Files**
Before the upgrade, you must back up any customized JSP files or custom schema. You can restore the JSP and schema after the upgrade process.

**Copy Customized JSP Files**
If you have created any custom JSP files, or modified any example JSP files, copy them to a temporary location before the upgrade process. The example files are overwritten during the upgrade process.

**Exporting the Customized Schema Objects**
If you have modified any schema objects supplied by Architect/Requirements, such as default templates and change approval activators, you must perform XML schema export of those objects.
from each project. The upgrade process replaces any standard schema objects that were changed from the previous release, and you must therefore perform the XML schema export. These objects can be restored by importing them as a post-upgrade step.

**Cleaning the Database and Taking a Backup**

Before beginning the upgrade, you should review the health of your existing database and back it up. Major version installations of Architect/Requirements often have schema changes that are not compatible with previous versions. To revert to a previous version, you must restore a Versant backup from that release.

Perform the following steps:

1. Run the Architect/Requirements **maintainDB** script to ensure that there are no critical errors in the database before proceeding to the next step.

   ```
tcradmin -action maintainDB
   ```

   Verify and review the log file (**TcrAdminLog.html**).

2. Ensure that all users are out of the system and stop your application server.

3. Run the following commands to ensure that all database transactions are complete and that all data is flushed from cache.

   ```
   stopdb TCR_db
   startdb TCR_db
   stopdb TCR_db
   ```

   💡 **It is important to ensure that the database is properly shut down. If not, the Versant schema conversion fails.**

4. Run the following Versant **check** database command to ensure that there are no database integrity issues before beginning the upgrade:

   ```
dbtool -check TCR_db
   ```

   💡 **This Versant command line utility can fail if it is not run from a command window launched without using the Run As Administrator option.**

   If there are no errors, proceed to the next step. If there are errors, you must resolve them before proceeding with the upgrade.

5. Backup your existing Architect/Requirements database.

   The backup is for safety purposes only. It is not used in the upgrade process. Your existing database is upgraded as part of the installation process.

   To back up the complete database to a file, run the following command:

   ```
vbackup -level 0 -device fileName -backup dbname
   ```

   Enter variable values as follows:
Replace `fileName` with the name of the backup file.

Replace `dbname` with the name of the database. The default name of Architect/Requirements database is `TCR_db`.

Database backup can be a time-consuming activity for large databases.

For example,

```
vbackup -device PATH/vbackup_VOD20071424.vbk -backup TCR_db
```

PATH is the directory where the backup file is kept.

6. After the backup, repeat the following commands to ensure that all database transactions are complete and that all data is flushed from cache.

```
stopdb TCR_db
startdb TCR_db
stopdb TCR_db
```

You must complete this step now. If you do not complete this step, the database conversion that occurs later in the upgrade procedure fails.

7. Back up all your custom `.jsp` files in the custom directory of the application server (such as BEA WebLogic), `application-server-installation-directory/tcr/custom`.

The contents of this directory are removed when you undeploy the previous `tcr.war` file and deploy the new one. You must use the backup files as replacements after the upgrade.

8. If the Sales and Services `DeltaMaintainDB` is used, remove it.

For more information on removing the Sales and Services `DeltaMaintainDB`, contact the Global Siemens Sales and Services team.

**Uninstalling Architect/Requirements Web Applications**

If your system 2 Versant Object Database 8 system is different from your system 1, do not uninstall your Architect/Requirements Web applications until you have verified your system 2 configuration.

**Uninstalling Architect/Requirements 10.0 or later patch**

1. Log on as a system administrator.
2. If the computer is also configured as Architect/Requirements server, stop the application server on which Architect/Requirements is installed.

3. If the computer is also configured as a Versant database server, run the following command to stop the Architect/Requirements database (for example, TCR_db) at a command prompt:
   
   ```
   stopdb TCR_db
   startdb TCR_db
   stopdb TCR_db
   ```

4. Remove the Architect/Requirements server software.
   
   Run the following command from the TcrServerDir/Uninstall folder under the server installation folder:
   
   ```
   Uninstall_Teamcenter_for_Systems_Engineering_Server_64bit_<Release_version_number>
   ```

   The Architect/Requirements 10.0 uninstaller fails if there is a problem in locating a JRE. In such a case, insert the LAX_VM argument to explicitly specify the JRE used to run the uninstaller. For example, the following command uninstalls the Architect/Requirements web application from its default location using the java binary under JAVA_HOME:
   
   ```
   "Uninstall Teamcenter for Systems Engineering Server 64bit Release_10" LAX_VM "${JAVA_HOME}/bin/java"
   ```

**Undeploying the Existing WAR File**

If system 1 is not the same machine as system 2, do not undeploy your existing war file until you have verified the system 2 configuration.

As part of the upgrade procedure, you should undeploy the existing tcr.war file before deploying the new tcr.war file. Follow the instructions from your application server vendor for removing a Web archive.

If you have any customizations in the custom folder inside the WAR file, create a backup for them so that you can add them to the new tcr.war file.
Installing the Versant Object Database Application

Architect/Requirements uses an object-oriented database system from Versant Corporation to store and manage data. Architect/Requirements is certified and ships with Versant Database.

The Versant installer is no longer a part of the Architect/Requirements server installer. The Versant database must be installed before installing the Architect/Requirements server. The instructions are same for installing Versant on both the Architect/Requirements server and the database server. If you are running these on the same machine, perform the installation only once. If you are running these on separate machines, perform this installation on your database server machine as well as each of the Architect/Requirements Server machines.

Architect/Requirements 10.0 supports the Versant Object Database 8.0.2 patch 52. The Versant installer is located in the DVD_Root-Folder/Versant_8/Solaris folder.

The Versant database files must be on a file system that is local to the Versant server processor. Database corruption can occur if you use a remotely mounted drive, such as NFS.

Versant Object Database server is required on a machine configured as an Architect/Requirements server only machine as well.

If system 1 and system 2 are not the same machine, you must install the Versant Object Database on system 2 only. In such cases, system 1 remains at the previous version of Versant throughout the upgrade procedure.

Installing Versant 8

1. Execute the Versant 8 installer.

   Log on as tcradm

   mkdir $HOME/temp_versant8_dir

   cd $HOME/temp_versant8_dir

   tar -xvf VOD8.0.2.52_3386_Solaris5.10-sparc_64bit.tar

   su root

   ./VOD8.0.2.52_3386_Solaris5.10-sparc_64bit.sh

   a. On the Welcome to the Versant Object Database Setup Wizard screen, click Next.
b. On the **Existing installation detected** screen, select **Yes, update the existing installation**, and click **Next**.

![Existing installation detected screen](image)

On the **Existing installation detected** screen, select **Yes, update the existing installation** and click **Next**.

- On the **License Agreement** screen, select **I accept the terms of the License Agreement** and click **Next**.

- On the **Select Components** screen, select or clear the check boxes as given below:
  
  A. Clear the **SDK** check box.
     
     You may need to click twice in the SDK check box to clear it. Clearing the SDK check box clears the **C SDK**, **C++ SDK**, **Java**, and **.NET SDK** check boxes.

  B. Expand the **Runtime Server** section and clear the **VSQL Server** check box.
     
     Verify that only **VOD Server** and **Versant Agent** are selected.

  C. Expand the **Monitoring Client** section and clear the **VSQL Client** check box.
     
     Verify that only **VOD Client** is selected.

  D. If you do not want the Versant documentation to be installed, clear the **Documentation** check box.
e. If the Versant installer cannot find the license for the previous installation of Versant, the **Configure License** screen is displayed.

On the **Configure License** screen, click **Next**.

You can skip this step and configure the license later.

*The required Versant license is available after installing Architect/Requirements. You must configure the license after completing the Architect/Requirements installation.*

f. On the **Specify the owner of the installed files** screen, enter the owner and group for all Versant files and click **Next**.

Typically **tcradm** is used as the owner and group for the Versant files.

*The user and group that you enter as the owner for Versant files must already be created.*

g. On the **Ready to install** screen, ensure that VOD Server, Versant Agent, and VOD Client are displayed and click **Next**.

![Setup - Versant Object Database 8](image)
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h. On the **Completing the Versant Object Database Setup Wizard** screen, click **Finish**.

2. If you chose a new location for installing Versant, you must update the **.profile**, **.kshrc**, OR **.login**, OR **.cshrc**.

   For example, following is the **.profile** after the required changes:

   ```
   PATH=/usr/bin:/usr/ucb:/etc:.:/usr/openwin/bin:/opt/sfw/lib/firefox:
   /apps/versant/8.0.2/bin:/usr/local/bin
   export PATH
   LD_LIBRARY_PATH=/usr/lib:/usr/openwin/lib:/apps/versant/8.0.2/lib
   export LD_LIBRARY_PATH
   VERSANT_ROOT=/apps/versant/8.0.2
   export VERSANT_ROOT
   ```

   You can verify the Versant installation before continuing with the upgrade process.

**Verifying the Versant Installation**

Run these commands as the owner of the Versant files (for example, **tcradm**).

If Versant is installed properly, you should see several lines of output indicating the various Versant-related paths that you entered during the installation, such as Versant root path, Versant runtime path, and Versant database directory.

If you see an error message on UNIX platforms other than Solaris 10, restart the **inetd** daemon.

> Execute the following commands from a new command window.
• **Database Server:**

   Run the following commands to test the Versant installation:

   o `oscp -i @localhost`

   **Sample output for** `oscp -i @localhost`:

   Versant Product Version: 8.0.2
   Versant Root Path: /versant
   Versant Runtime Path: /versant
   Versant DB Directory: /versant/db
   Versant osc-dbid node name: localhost
   Versant osc-dbid path: /versant/db

   o `itest -v localhost`

   **Sample output for** `itest -v localhost`:

   host name: localhost
   IP addr: xxx.xxx.xxx.xxx

   Connection to localhost successful.

   o `vinfo -l`

   **Sample output for** `vinfo -l`

   **PRODUCT:** Versant Object Database
   --------------------------------
   **VERSION** 8.0.2.52.3386
   **OS** Solaris5.10-sparc
   **BUILD INFO** CC 5.9 JDK 1.5 64bit
   **PATCH DATE** Jun 15, 2016

   Included Components and Versions
   ---------------------------------
   ODB 8.0.2.52.3386
   JDO 8.0.2.52.3386
   JVI 8.0.2.52.3386
   VAR 8.0.2.52.3386
   GUI 8.0.2.52.3386
   VSQL 8.0.2.52.3386

**Post-Versant Installation Steps**

After installing the Versant database application, you must set the environment variables.

The last step in the Versant installation is to copy the Versant license file. This step must be completed after installing the Architect/Requirements server because the license file is included in the Architect/Requirements server installation.

**Verifying Versant Environment Variables**

The Versant installer creates a file named `envsettings.csh` in your `versant/bin` directory during installation. You can use this file as an example for updating your environment. The paths must be correct, as this file is updated during installation with the values for your system.
Architect/Requirements Web Servers

The following environment variables must be set for Systems Architect/Requirements Management to run on your application server:

- **VERSANT_ROOT**

- **LD_LIBRARY_PATH** (Solaris)

These environment variables must be set for the user ID that is used to start your application server. For example, if you start your application server as `root` using the `csh` shell, you must update your `.cshrc` file for `root`.

The **VERSANT_ROOT** variable must point to the root level of your Versant installation.

For example, if you install Versant in the `/versant` directory, then:

```
VERSANT_ROOT=/versant
```

**LD_LIBRARY_PATH** or **SHLIB_PATH** must point to the Versant client `lib` directory `TcrServerDir /lib`, followed by the Versant server `lib` directory `versant/lib`.

For example:

```
LD_LIBRARY_PATH=/TcrServerDir/jvi_root/lib:/versant/lib
```

The examples above are shell-specific on UNIX.

Example for `csh`:

```
setenv VERSANT_ROOT /versant
setenv LD_LIBRARY_PATH /TcrServerDir/jvi_root/lib:/versant/lib
```

Example for `sh`:

```
VERSANT_ROOT=/versant
export VERSANT_ROOT
LD_LIBRARYPATH=/TcrServerDir/jvi_root/lib:/versant/lib
export LD_LIBRARY_PATH
```

There are two options for setting these values on an application server:

- You can set these in the startup scripts for the user (for example, `chsrc fo csh`).

- You can set these in the startup scripts for the application server itself (for example, Tomcat `startup.sh` file).

Additionally, as stated earlier, the **envsettings.csh** file located in your `versant/bin` directory provides an example for updating your installation.

🎀 If you do not update your environment with these environment variables, errors are displayed when you start your application server.
Database Servers

The VERSANT_ROOT environment variable must be set for Systems Architect/Requirements Management to run on your database server. This environment variable must be set for the user ID that owns the Versant database. VERSANT_ROOT must point to the root level of your Versant installation.

For example, if you install Versant in the /versant folder, then VERSANT_ROOT=/versant.

The examples in this section are shell-specific on UNIX.

Example for csh:

```bash
setenv VERSANT_ROOT /versant
```

Example for sh:

```bash
VERSANT_ROOT=/versant
export VERSANT_ROOT
```

To run Versant commands without supplying the full path, add versant/bin to your UNIX PATH.

Additionally, as stated earlier, the envsettings.csh file located in your versant/bin directory provides an example for updating your installation.

Recommendation for Solaris

This section explains how to configure the multithreaded version of the malloc memory management library. By default, Solaris uses a single-threaded version, which can seriously impact the multiuser performance of the Web server and the Versant client.

For Solaris, it is recommended that you set the LD_PRELOAD environment variable for the user who runs the application server and the user who owns the Versant database.

- For the Bourne-again shell (bash):
  ```bash
echo export LD_PRELOAD=libumem.so.1
```

- For the Bourne shell (sh):
  ```bash
  LD_PRELOAD=libumem.so.1
  export LD_PRELOAD
  ```

- For the C shell (csh):
  ```bash
  setenv export LD_PRELOAD libumem.so.1
  ```

This configuration lets Systems Architect/Requirements Management take advantage of using a multithreaded malloc. See Sun documentation for more details.

Installing Architect/Requirements Server

You have now completed uninstalling your existing version. Continue by following the installation steps below.
The installers are on the Architect/Requirements DVD-ROM.
The installer is located in the DVD_Root-Folder/Server/Solaris directory.

Installing the Server

To start the Systems Architect/Requirements Management Server installation process, perform the following steps:

1. The installer file is TcSE_Server_64.bin. Execute the installer file.
   It may take several minutes before the installation window appears.

2. In the Introduction screen, review the notes and click Next to begin the installation.

3. In the Choose Install Folder screen, click Choose to select the installation directory.
   The installation path must not contain spaces.
   To revert to the default location displayed by the installer, click Restore Default Location.
   To revisit the previous options presented by the installer, click Previous.
   Click Next.

4. In the Database Input screen, enter the name of the database server’s host name and the name of the database.
   The installer defaults to the local host name and TCR_db. This should be correct if you are installing the application server and database server on one machine. If the database is on a separate machine, enter the information applicable to that machine.
   It is not necessary for the database to already exist at this point in the installation process. The installer needs this information to update the war file with the information needed to connect to the database after Architect/Requirements is deployed.

   ![The Database Server "hostname" that you specify must be the same name that is used for the Versant installation.]

   Click Next.

5. The Pre-Installation Summary screen displays information such as the product name, installation folder, database name, database server’s host name, and disk space availability.
   Click Install to begin the installation.

6. After the installation is successful, click Done to exit the installer.

Copying the Versant License File

The default location of the license file (license.xml) is Copy the license.xml file located in the versant_license folder (in the Architect/Requirements installation folders) to the VERSANT_ROOT folder (for example, /versant). This file is needed to enable Versant.
You cannot create a database if you skip this step.
Upgrading the Database for use with Architect/Requirements 10.1

The steps are also applicable for Versant Object Database only machines.

After the installation, you must upgrade the database for use with Architect/Requirements 10.1. Perform the following steps to upgrade the database.

**Solaris 10:**

1. Run `inetconv` (as root).
   
   This converts the entries placed in `/etc/inetd.conf` into the new Solaris 10 SMF format.

2. Restart `inetd`.

**Upgrading the Architect/Requirements Schema**

If you intend to move your database to a new server while completing this upgrade, see Appendix B, *Upgrading the Architect/Requirements Schema while moving the database server*. After you complete the steps in Appendix B, proceed to *Completing the Upgrade*.

1. Stop the database. Execute the following command at the command prompt:
   
   ```
   stopdb TCR_db
   ```

2. Upgrade the Architect/Requirements schema.
   
   From the command prompt, change the directory to the schema directory of your server installation. Execute the following command:
   
   ```
   tcradmin -action upgradeDB -logToStdOut
   ```

**Completing the Upgrade**

1. Deploy the Architect/Requirements 10.1 web application `tcr.war` file.
   
   For information on how to deploy the `tcr.war` file, see *Deploying the tcr.war File*.

2. If you have also moved your database to a new server with this upgrade, you must restore the customer number and Architect/Requirements license information recorded in the prerequisite steps.

   
   To upgrade the Architect/Requirements client, you must uninstall the previously installed client.

   For information on uninstalling the Architect/Requirements client, see *Uninstalling the Architect/Requirements Client* in the Systems Architect/Requirements Management User’s Manual.
Architect/Requirements 10.1 requires JRE 1.8. Uninstall all previously installed JREs and install the 32-bit Java.

For information about the supported version of Java, see the Siemens PLM Software Certification Database:


Install the new Architect/Requirements client.

For information on installing the Architect/Requirements client, see Installing the Architect/Requirements Client with Office Integration in the Systems Architect/Requirements Management User's Manual.

4. Start an Architect/Requirements client and verify the upgrade.

Elevated user privileges (power user or administrator) are required for the installation as registry entries are updated with the patch information.

For information on how to start the client and perform the verification, see Verifying the Installation.

Running the maintainDB Utility

Siemens PLM Software recommends that you run the maintainDB utility after upgrading your database from any earlier version.

To examine and correct the entire database, run the tcradmin command. From the command prompt on system 2, change the directory to the schema directory of your server installation. Execute the following command from the command prompt:

```
tcradmin -action maintainDB -logToStdOut
```

For more information about running maintainDB, see the Systems Architect/Requirements Management System Administrator's Manual.
Next Steps

Continue with the post-upgrade procedures such as:

- Updating the NIS master computer.
- Restoring custom JSP files.
- Updating the Web application configuration parameters.
- Entering Architect/Requirements license information.
- Upgrading the Architect/Requirements clients.
- Verifying the installation.
- Restoring the customized schema.

The procedures are described in *Post-installation Tasks*. 
Chapter 4: Post-installation Tasks

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Chapter 4: Post-installation Tasks

This chapter describes the procedures to be followed after installing or upgrading the Systems Architect/Requirements Management server.

Overview

Some of the post installation or upgrade procedures are:

- Updating the NIS master computer.
- Restoring custom JSP files.
- Deploying the `tcr.war` file.
- Updating the Web Application Configuration parameters.
- Entering Architect/Requirements license information.
- Upgrading the Architect/Requirements clients.
- Verifying the installation.
- Restoring customized schema.
Updating the NIS Master Computer

If you installed the Versant application server on a UNIX machine, and your UNIX network runs Network Information Service (NIS), you must follow the instructions in this section.

Performing the Installation

Complete this procedure only if both of the following apply to your installation:

- Versant Database System is installed on a UNIX computer.
- Your UNIX network runs NIS.

It does not matter where the Web component is installed.

If you have questions about NIS, consult your UNIX system administrator.

To update the NIS master computer:

1. To determine which computer is the NIS master, at the command line of the computer on which Versant Database System is installed, enter the following command:

   `ypwhich`

   The output of this command is the name of the NIS master computer.

2. Perform one of the following:

   - If the NIS master is the same as the database server, change to the `var/yp` directory on this computer, and enter the following command:

     `make`

     This command broadcasts the changes to all other computers. You may need the `root` privilege for this command.

   - If the NIS master is different from the database server, do the following on the NIS master computer:

     a. Log on as `root`.

     b. Update the `etc/services` file with the following line:

        `oscssd 5019/tcp # Versant service`

     c. Change to the `var/yp` directory, and then enter the following command:

        `make`

        This command broadcasts the changes to all other computers. You may need the `root` privilege for this command.
Restoring Custom JSP Files

Before upgrading to a newer version of Architect/Requirements, you may have backed up all your custom JSP files before undeploying an existing tcr.war file. You can restore these custom JSP files to ensure that your customized information is available after upgrading the server software.

The JSP files were located in the custom directory of the application server (such as BEA WebLogic), application-server-installation-directory/tcr/custom.

To restore your custom JSP files:

1. Create a temporary folder and extract the tcr.war file.
   
   You can run the command: `jar -xf tcr.war`

2. Add the backed up JSP files to the custom folder.

3. To prevent adding the existing tcr.war file to the new WAR file, delete or move it (the existing tcr.war file) from the temporary folder.

4. Zip the contents of the temporary folder to create the new WAR file.
   
   You can run the following command:
   
   `jar -cf tcr.war *`

Deploying the tcr.war File

The Architect/Requirements Web component (tcr.war) contains libraries required for the functioning of the Architect/Requirements server. You should deploy the tcr.war file on the application server (such as BEA WebLogic) after installing or upgrading the Architect/Requirements server software.

The Architect/Requirements WAR file (tcr.war) is located in the war_file directory.

Use an appropriate example provided in the following sections to deploy the WAR files. For more instructions specific to your application server, see the documentation provided by the vendor.

You must ensure that the Java command used to launch the Architect/Requirements server is configured to run in 64 bits. On Solaris, you must use the Java option `-d64`.

For example, add the following line to the `bin/setenv.sh` file:

```
JAVA_OPTS=-d64
```

Deploying tcr.war File on Oracle WebLogic

Use the examples provided in this section to deploy a WAR file on Oracle WebLogic. For more information on deploying a WAR file on Solaris or a different version of WebLogic, see Oracle WebLogic documentation.

If you are not an experienced Web server administrator, Siemens PLM Software recommends that you perform only the actions in these examples and retain all other default WebLogic settings.
Deployment Process

To deploy the WAR file on Oracle WebLogic, perform the following steps:

1. Edit the `CLASSPATH` variable.
2. Create a WebLogic domain for Systems Architect/Requirements Management.
3. Deploy the WAR file.
4. Restart WebLogic.

Edit the Classpath Variable

Before you start WebLogic, you must ensure that the `jvi80.jar` file path is not included in the computers `CLASSPATH` environment variable. The Architect/Requirements application server sets its own `CLASSPATH`, so you must remove the computers `CLASSPATH`.

To remove the `CLASSPATH`:

Execute the following command:

For Solaris servers with the Korn shell

```
unset CLASSPATH
```

For Solaris servers with the C shell

```
unsetenv CLASSPATH
```

If the `CLASSPATH` includes the `jvi80.jar` file before WebLogic is launched, deployment of `tcr.war` fails.

Create a WebLogic Domain

Before deploying the WAR file, you must create a WebLogic domain.

To create a domain:

1. From the WebLogic Configuration Wizard, choose Create a new WebLogic domain and click Next to continue.
2. Choose Generate a domain configured automatically to support the following Oracle products: and check the WebLogic Server (Required) check box. Click Next to continue.
3. Enter and note the default administrator user name and password for the domain. This information is required to start and stop the WebLogic application server. Click Next to continue.
4. In the Configure Server Start Mode and JDK screen, choose Production Mode on the left side and click Next to continue.
5. Choose Yes to the Do you want to customize any of the following options? question and click Next to continue.
6. In the Configure the Administration Server window, enter and note the port number, such as 7010. Click Next multiple times to continue to the Create WebLogic Domain window. Enter
and note the name for the Systems Architect/Requirements Management domain, such as tcr_7010. Click Create and Done.

For the domain in the example above, the WebLogic configuration files and folders are typically created at /usr/oracle/user_projects/domains/tcr_7010.

**Deploying the War File**

Start the WebLogic application server by running the Start the Admin Server for WebLogic Server Domain command. Enter the default administration user name and password when prompted.

Launch the Oracle WebLogic administrative console and log on using the default administration user name and password. For a domain created with the port 7010, the administrative console can be typically launched using http://hostname:7010/console.

To deploy the war file:

1. In the Change Center section in the left pane, click the Lock & Edit button to modify, add, or delete items in this domain.

2. In the Domain Structure section in the left pane, click Deployments. The Summary of Deployments page is displayed. Click Install under Deployments.

3. On the Install Application Assistant pane, browse to the location of the WAR file.
   
The Architect/Requirements WAR file (tcr.war) is located in the war_file directory.

4. Choose the WAR file and click Next to continue. The processing usually takes a few seconds. You must wait until the hour glass cursor disappears and the Install Application Assistant pane is displayed.

5. Choose the Install this deployment as an application targeting style and click Next.

6. On the Install Application Assistant pane, click Finish.

7. In the Change Center section in the left pane, click Activate Changes to activate the pending changes.

8. Restart WebLogic.

9. When the restart is complete, launch the WebLogic administration console, select the check box next to the WAR file (for example, tcr) under Deployments. Click the arrow next to the Start button and select the Servicing all requests option.

10. In the Start Application Assistant pane, click Yes.
   
   After the processing is successful, the state column next to the WAR file (for example, tcr) is Active.
   
   Log out of the WebLogic administrative console.
Deploying tcr.war File on IBM WebSphere

The examples in this section are for a typical WebSphere installation. If you are not an experienced Web server administrator, Siemens PLM Software recommends that you do only the actions in these examples and retain other default WebSphere settings.

To deploy the WAR file on IBM WebSphere, perform the following steps:

1. Deploy the WAR file.
2. Restart WebSphere.
3. Install the security JAR files that are required for Systems Architect/Requirements Management licensing.

Deploying the War File

To deploy the war file:

1. Log on to the WebSphere application server administration console.
   By default, the IBM WebSphere administrative console is run on Port 9060: http://localhost:9060/ibm/console.
2. In the left pane, expand Applications→Application Types, and then click the Websphere enterprise applications link.
3. In the Enterprise Applications pane, click the Install button.
4. In the Preparing for the application installation pane, select Local file system, click Browse and select the Architect/Requirements WAR file.
   The Architect/Requirements WAR file (tcr.war) is located in the war_file directory.
5. In the Preparing for the application installation pane, select Fast Path, and click Next.
6. In the Install New Application pane, for Step1: Select installation options, click Next.
7. In the Install New Application pane, for Step 2: Map modules to server, select the Teamcenter 10 for systems engineering check box and click Next.
8. In the Install New Application pane, for Step 3: Map virtual hosts for Web modules, select the Teamcenter 10 for systems engineering check box and click Next.
9. In the Install New Application pane, for Step 4: Map context roots for Web modules, enter /tcr as the Context Root and click Next.
10. In the Install New Application pane, for Step 5: Summary, click Finish.
    This action initiates the deployment process, which may take several minutes. After the WAR file is deployed, the installation summary is displayed, and it includes a message such as:
    Application tcr_war installed successfully.
11. Click the Save Directly to Master Configuration link to save the settings for Systems Architect/Requirements Management.
12. Restart WebSphere.

13. In the left pane, expand **Applications**→**Application Types**, and then click the **Websphere enterprise applications** link.

14. Check that the application (for example, `tcr_war`) is started.

   The **Application Status** must display a green arrow. Systems Architect/Requirements Management is deployed and running.

   If it is not started, a red cross is displayed as the **Application Status**. Select the check box in front of the application and click **Start**.

**Installing the Security JAR Files**

To install the security JAR files, perform the following steps:

1. Open the main Architect/Requirements login page.

2. Click the **Administrative Tools** link. On the Administrative Tools page, click the **Web Application Configuration** link.

3. Log on as an enterprise administrator user (typically `tcradm`).

4. Scroll to the bottom of the page and click the **Install Security Files** button.

5. On the page displaying the **From** and **To** locations, the **To** text box must include the only the complete path to the server JRE's `lib/ext` directory. For example, `usr/IBM/WebSphere/AppServer/java/jre/lib/ext` . Delete any additional path information or semicolons.

   Click **OK**.

6. After the process completes, click the **Close** button.
Deploying the tcr.war File on Apache Tomcat

This section provides procedure examples for deploying the WAR file on Apache Tomcat.

The examples in this section are for a typical Tomcat installation. If you are not an experienced Web server administrator, Siemens PLM Software recommends that you do only the actions in these examples and leave all other Tomcat settings at the defaults.

To deploy the WAR file on Apache Tomcat:

1. Install the Java Development Kit (JDK).
2. Install Apache Tomcat.
3. Deploy the WAR file.

Installing JDK

Install JDK, using the installation program provided by Oracle.

For information about versions of the JDK supported for Apache Tomcat, see the Siemens PLM Software Certification Database:


Installing Apache Tomcat

Install Tomcat, using the installation program provided by Apache.

The JDK must be installed first, because the Tomcat installation program detects the JDK version on your system. If the wrong location is detected, cancel the installation and set the JAVA_HOME environment variable to the location of JDK on your system. Tomcat then uses this location.

Deploying the WAR File

When both JDK and Tomcat are installed, you can deploy the WAR file.

1. Copy the WAR file from the Architect/Requirements installation directory to the TOMCAT_HOME/Webapps folder.
   The Architect/Requirements WAR file (tcr.war) is located in the war_file directory.
   The WAR file should be copied to the Webapps folder within your Tomcat directory structure.
2. Deploy the WAR file on Tomcat.
   Ensure that Tomcat is running. Tomcat expands the WAR file automatically. Under the Webapps directory, Tomcat creates a directory named tcr with the contents of the WAR file.
3. Restart Tomcat.
The Apache Tomcat application server caches .jsp files that it compiles at runtime under the `tomcat_root/work` folder. In some cases, simply deleting and re-deploying the WAR file does not force Tomcat to reload these cached files. This causes Architect/Requirements to run with the older versions of .jsp files from previous releases.

As a workaround:

1. Delete the old WAR file and the deployment folder.
2. Delete the tcr folder, typically found at `tomcat_root/work/$User/localhost/tcr` where `User` is the user name.
4. Restart Tomcat.

### Updating the Web Application Configuration Parameters

If you are upgrading your installation, update the Web application configuration parameters by performing the following steps:

1. Open the main Architect/Requirements login page.
2. Click the **Administrative Tools** link. On the Administrative Tools page, click the **Web Application Configuration** link.
3. Log on as an enterprise administrator user (typically `tcradm`).
4. Scroll down to the **JRE.Version** parameter, and select the **Reset to Default** check box to update the list of JRE software supported for this release.
   
   The **Reset to Default** check box is not available in case of new installation.
5. Scroll to the bottom of the page and click the **Update** button. The updated values of the **JRE.Version** parameter are displayed.
6. Click **OK**.

### Entering Architect/Requirements License Information

You receive license information in an e-mail message from Siemens PLM Software Customer Support when your Architect/Requirements application is registered.

The license information includes:

- Your customer number, located on the **Installation No** line in the message body.

- Your license key, contained in the license file named `tcr.lic` that is attached to the message.

The license key is an encrypted text string that controls a certain number of licenses and license types. The key contains information such as your customer number, an expiration date, and the number of seats for each license type.
Enter this license information after the tcr.war file is deployed and the database is initialized or upgraded.

For more information about managing licenses, see the Systems Architect/Requirements Management System Administrator's Manual.

**Entering Your Customer Number**

Your customer number is located on the **Installation No** line in the e-mail message that you receive from Siemens PLM Software Customer Support.

1. In Microsoft Internet Explorer, open the Architect/Requirements home page, and then click the **Administrative Tools** link.
2. On the Administrative Tools page, click the **Web Application Configuration** link.
   
   The Architect/Requirements login page is displayed.
3. Enter **tcradm** in the **User Name** field, and then click **Log In**.

   ![Tip] If your server is newly upgraded, the password for the **tcradm** user is unchanged. For a newly installed server, leave the **Password** field blank. A password is not required as the database is newly initialized.

   The Configuration Parameters page is displayed.

   ![Tip] You can also display the Configuration Parameters page by entering the following URL in the Internet Explorer **Address** field.

   ```
   http://server:port/tcr/ugs/tc/req/configtcr.jsp
   ```

4. Locate the **LIC.CustomerNumber** parameter, and then enter your customer number in the corresponding **Current Database Value** field.
5. At the bottom of the page, click **Update**.
   
   A confirmation page displays the proposed and current values for the parameter.
6. To commit the proposed value to the database, click **Ok**.
   
   The Configuration Parameters page is displayed, with your customer number as the **LIC.CustomerNumber** parameter value.

For more information about managing licenses, see the Systems Architect/Requirements Management System Administrator's Manual.

**Entering Your License Key**

Your license key is in the license file named **tcr.lic**. This file is attached to the e-mail message that you receive from Siemens PLM Software Customer Support.
Your customer number must be entered before you start this procedure. For more information, see *Entering Your Customer Number*.

1. On the Architect/Requirements home page, click the **Administrative Tools** link.
   The Administrative Tools page is displayed.

2. Click the **TcSE Licensing** link.
   The License Information page is displayed, with a summary of the license count from all license keys.

3. Click the **Manage Licenses** link.
   The Architect/Requirements login page is displayed.

4. Enter your enterprise administrator user name and password, select a language, and click **Log In**.
   The License Management page is displayed.

   If your database is new and if your customer number is not entered, an alternate page is displayed. This page contains a link to the Web Application Configuration page.

   Click that link, enter your customer number in the **LIC.CustomerNumber** parameter, and click the **Update** button. Then repeat this procedure.

5. Open the **tcr.lic** file in a text editor (for example, Microsoft Notepad), and copy the encrypted string to the clipboard.

6. In the text field at the bottom of the License Management page, delete the words **Enter Key Here** and paste the encrypted string into the field.

   You can reverse this action by clicking **Clear**.

7. Click **Add Key**.
   The license management utility checks the license key. When the license key is validated, a confirmation page displays the license key information in unencrypted format.

   Click **Back** to return to the License Management page, where you can enter the key again or enter another key.

   If the license key is invalid, expired, or a duplicate, an error message is displayed.

8. Click **Add**.
   The license key is committed to the database. The License Management page displays the new license key in the table of encrypted strings.
If you have two or more Web application servers that point to the same database, and if you manage each server separately through the Installation Key parameter in the web.xml file, you must add this license key on each server.

Upgrading the Architect/Requirements Client

After you have completed the server upgrade, you must upgrade all the Architect/Requirements client.

Elevated user privileges (power user or administrator) are required for uninstalling the Architect/Requirements client.

To upgrade an Architect/Requirements client

1. Uninstall the existing client.
   For information on uninstalling the Architect/Requirements client, see Uninstalling the Architect/Requirements Client in the Systems Architect/Requirements Management User’s Manual.

2. Install the latest Architect/Requirements client.
   For information on installing the Architect/Requirements client, see Installing the Architect/Requirements Client with Office Integration in the Systems Architect/Requirements Management User’s Manual.

Verifying the Installation

Verifying the Installation on the Server

After the patch is deployed, you can verify the Architect/Requirements Server patch version.

To verify the Architect/Requirements Server patch version:

1. Open the Architect/Requirements client home page.

2. Click Administrative Tools.

3. Click Diagnostic Tools.

4. Click Server Version.
   Ensure that the server patch version for the Architect/Requirements war file and tcrServer.jar file is displayed as 10.1.0.

To verify that the correct version of the tcrServer.jar was copied to your schema directory, navigate to the schema directory and execute the following command:

```
tcradmin -action showVersion logToStdOut
```

Verify that the following details are displayed on the screen:

```
  Product-Version: Release_10.1
  Product-Client-Patch: 10.1.0
```
Product-Server-Patch: 10.1.0

In addition to the **Server Version** diagnostics, there are additional diagnostic utilities that provide information about the environment in which the Systems Architect/Requirements Management server is installed. This information helps you troubleshoot problems with the installation.

For detailed information about using these utilities, see *Running System Utilities* in the *Systems Architect/Requirements Management System Administrator's Manual*.

**Verifying the Installation on the Client**

You verify the Systems Architect/Requirements Management server installation by running the Systems Architect/Requirements Management client. If the client connects to the database, the installation is successful.

For detailed information about installing the client, see the *Systems Architect/Requirements Management User's Manual*.

**To run the Systems Architect/Requirements Management client and verify the version:**

1. Verify that the Systems Architect/Requirements Management client application server is running.
   
   Record the name and port number of the application server.

2. In the Microsoft Internet Explorer **Address** field, enter the URL of the Systems Architect/Requirements Management home page.

   For example, if your host is named **MyHost** and is running on port **8080**, you would enter the following:

   `http://MyHost:8080/tcr`

3. Click the **Launch Teamcenter systems engineering** link.

4. In the **User Name** and **Password** fields, enter your Systems Architect/Requirements Management user name and password.

   If you have just created the Systems Architect/Requirements Management database, enter **tcradm** as the user name. This is the default user name created at the time of initializing the Architect/Requirements database and it has no password.

5. Click **Login**, or press the enter key.

6. Follow the subsequent instructions in the installation wizard.

   ![Warning]
   
   One of the JRE versions as defined in the **JRE.Version** Web configuration parameter must be present on the client machine. If that version is not present on the client machine, the Architect/Requirements server prompts you to install it the first time you run Architect/Requirements.

7. After the Architect/Requirements client is launched, verify the version by either of the following methods:
• Click **Help→About** to view the **About** box. The splash screen displays the patch version as 10.1.

![Teamcenter 10 for systems engineering](image1)

• View the **System Properties** by clicking **Tools→System Information→System Properties→Show Version**. Architect/Requirements displays the version information for files installed on the client computers.
Restoring Customized Schema

Before upgrading to a newer version of Architect/Requirements, you may have exported the locally modified schema objects supplied by Architect/Requirements.

You may perform an XML schema import of those objects.

Importing Schema for Folder Move Confirmation

After you have verified the installation, you can optionally add schema to provide an optional confirmation when users attempt to move a top-level folder. See PR 6847222 for details.

To Import Schema to provide Folder Move Confirmation

1. Log on to Architect/Requirements as a user with the Enterprise Administrator privilege.

2. Navigate to the Administration module.

3. Right-click the TcR Administration project.

4. From the menu, select Import→Import Schema.

5. Select the AdminProjectSchema.xml file, extracted from the TcSE_10.1.zip file to the temporary folder and click OK.
Chapter 5: Uninstalling Architect/Requirements

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Chapter 5: Uninstalling Architect/Requirements

This chapter describes the situations when you may need to uninstall the Systems Architect/Requirements Management server software. A reference to the detailed instructions is also provided.

Uninstalling the Server Software

In some situations, you may want to uninstall the Systems Architect/Requirements Management server software from your application server. For example:

- To move Architect/Requirements to a different server.
- To reinstall Architect/Requirements in a different location on the same server.
- To upgrade to a new version of Systems Architect/Requirements Management.
- When your evaluation is concluded.

The instruction to uninstall the Systems Architect/Requirements Management server is explained in Uninstalling Architect/Requirements Web Applications.
Appendix A: Directories and Files Created During Server Installation
Appendix A: Directories and Files Created During Server Installation

The Systems Architect/Requirements Management installation program creates the following directories under the Systems Architect/Requirements Management server directory:

- **Uninstall**
  This directory contains files needed to uninstall the Systems Architect/Requirements Management server.

- **schema**
  This directory contains the files necessary for administrative functions such as creating a new database and maintenance utilities such as **MaintainDB**.
  The main script is `tcradmin`. The rest are supporting Java files. The `version.txt` file contains the Architect/Requirements version that these files are built from.

- **security_jars**
  This directory contains Java files necessary for the licensing of Systems Architect/Requirements Management to function properly on WebSphere.

- **versant_license**
  This directory contains the `license.xml` file. This file must be copied to your `VERSANT_ROOT` directory.

- **war_file**
  Contains the Systems Architect/Requirements Management Web archive. This file must be copied to or deployed on your application server.

- **jvi_root**
  Contains the Versant client runtime files used by the Systems Architect/Requirements Management server.

The following files are at the root level:

- **TcSE_Server.properties**: This file contains installation-related properties for UNIX only and is used only by the installer.

- **Teamcenter_for_Systems_Engineering_Server_64bit_VERSION_InstallLog.log**: This is the installation log file.
Appendix B:  Upgrading the Architect/Requirements Schema while moving the database server
Appendix B: Upgrading the Architect/Requirements Schema while moving the database server

This appendix describes how to upgrade the Architect/Requirements schema while moving a database server. It is a useful if you need to move your database server to meet certification requirements on the upgraded system.

The following assumptions are made in this section:

- The name of the Architect/Requirements server war file is `tcr.war`. While the Architect/Requirements installer allows you to use any name, `tcr.war` is the typically used name.

- The name of the Architect/Requirements Versant object database is `TCR_db`. While the Architect/Requirements installer allows you to use any name, `TCR_db` is the typically used name.

- The `system 1` refers to the state of the system before the upgrade procedure, and the `system 2` refers to the state of the system following the upgrade procedure.

1. Ensure that the user performing the upgrade process has the Versant DBA role assigned on the system 1 database. To check the user’s existing status, execute the following command on system 1:

   `dbuser -list TCR_db`

   If the user is not assigned the DBA role, execute the following command on system 1:

   `dbuser -add -n <UpgradeUserName> -role DBA TCR_db`

2. Note down your Customer Number and License Key information using the Web Application Configuration and TcSE Licensing links on the Administrative Tools page of system 1.

   As the system 2 database is on a different machine, you need to enter the information while deploying the `tcr.war` file.

3. To create the database directory, execute the following command from the command prompt of system 2:

   `makedb -nofeprofile TCR_db`

4. Copy the `profile.be` file from system 1 `TCR_db` directory to the system 2 database directory.
Appendix B: Upgrading the Architect/Requirements Schema while moving the database server

The upgrade process causes a small increase in the database size.

Ensure that the Versant system volume, as specified by the `sysvol` parameter in `profile.be`, is large enough to accommodate the database that you are copying. For example, if the size of the database is 10 GB, the `sysvol` must be a minimum of 12000M including 20% room for growth.

The `profile.be` syntax is M for megabytes.

5. Copy the database from system 1 to system 2 by executing the following command on the system 2:
   
   ```bash
   vcopydb -nolock -i -optimize TCR_db@<System1> TCR_db
   ```

6. Copy the `profile.be` file from system 1 `TCR_db` directory to system 2 database directory.

   The previous step overwrites the `profile.be` file so you must copy it again.

   Ensure that the Versant system volume, as specified by the `sysvol` parameter in `profile.be`, is large enough to accommodate the database that you are copying. For example, if the size of the database is 10 GB, the `sysvol` must be a minimum of 12000M including 20% room for growth.

   The `profile.be` syntax is M for megabytes.

7. Stop the database. Execute the following command at the command prompt of system 2:
   
   ```bash
   stopdb TCR_db
   ```

8. Create the session user. From the command prompt on system 2, change the directory to the schema directory of your server installation. Execute the following command from the command prompt of system 2:
   
   ```bash
   tcradmin -action createSessionUser -logToStdOut
   ```

9. Upgrade the Architect/Requirements schema. Execute the following command on system 2:
   
   ```bash
   tcradmin -action upgradeDB -logToStdOut
   ```
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