TEAMCENTER

Visualization — Deployment and Administration

Teamcenter 2412

SIEMENS

About Siemens Digital Industries Software

Siemens Digital Industries Software is a global leader in the growing field of product lifecycle management (PLM), manufacturing operations management (MOM), and electronic design automation (EDA) software, hardware, and services. Siemens works with more than 100,000 customers, leading the digitalization of their planning and manufacturing processes. At Siemens Digital Industries Software, we blur the boundaries between industry domains by integrating the virtual and physical, hardware and software, design and manufacturing worlds. With the rapid pace of innovation, digitalization is no longer tomorrow’s idea. We take what the future promises tomorrow and make it real for our customers today. Where today meets tomorrow. Our culture encourages creativity, welcomes fresh thinking and focuses on growth, so our people, our business, and our customers can achieve their full potential.

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Configuring Visualization to work with Active Workspace

1. Plan your Teamcenter Visualization installation

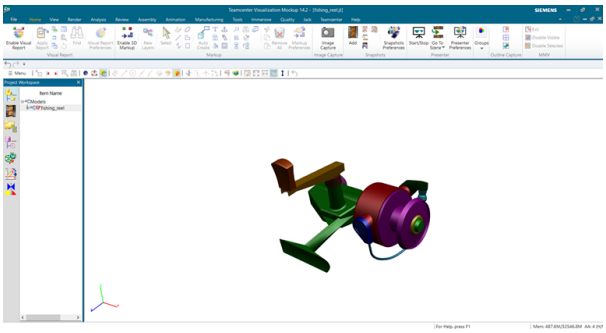
Deploying Teamcenter Lifecycle Visualization in a Teamcenter environment provides your entire organization with the ability to view design data while also letting you explore and validate product innovations and issues in a collaborative environment. Additionally, PLM XML support provides a lightweight, extensible mechanism for sharing product data with other Siemens Digital Industries Software products and supported third-party applications.

You can use Visualization in the following ways in the Base, Standard, Professional, and Mockup product configurations:

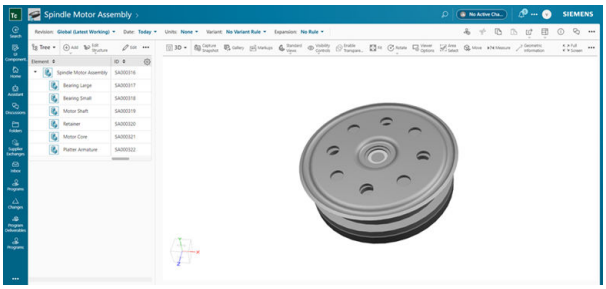
- In the external standalone application viewer, which is a standalone visualization viewer outside of a Teamcenter client
- In the web-based client interface provided by Active Workspace, which includes built-in dynamic visualization capabilities for using dynamic 3D and 2D visualization functionality
- In the Lifecycle Viewer perspective of the rich client

Before you begin — Plan and install the client of your choice for visualizing components, performing analysis, and saving your work to the Teamcenter database. You can choose from the following client options.

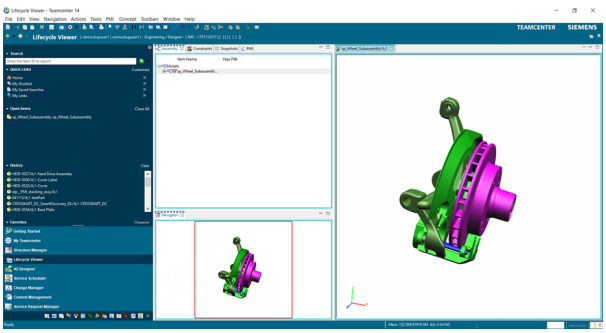
Standalone Visualization —
Java-based desktop client outside of a Teamcenter client



Active Workspace —
Web-based client

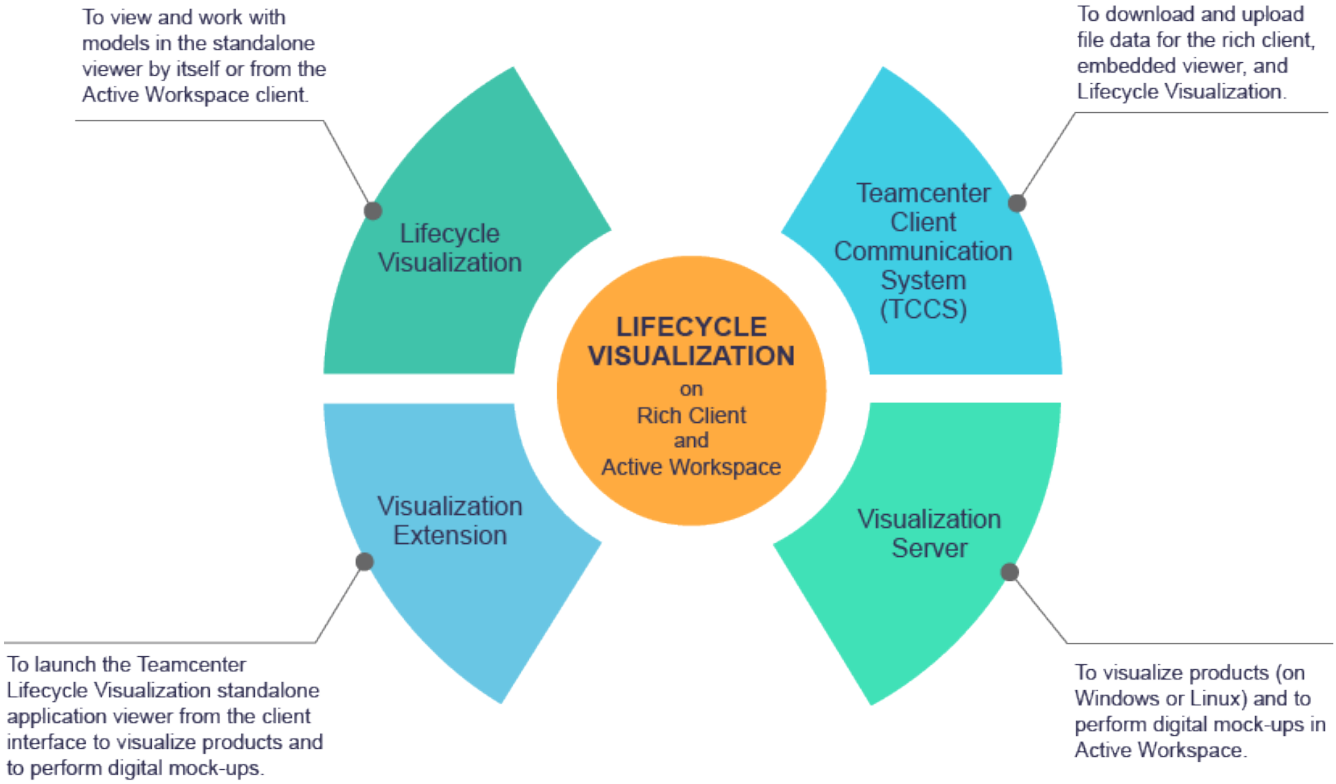


Rich Client —
Java-based desktop client within Teamcenter



Choose the components to install —

Your choice of the Teamcenter client you determines the other components you need to install.



Where do I go from here?

Business User	• Create and work with sessions to save the state of the viewer in Active Workspace. • Capture the state of the 3D viewing window as a snapshot in Active Workspace and Rich Client.

	• Create and manage sections in Active Workspace and Rich Client.
Administrator	
How do I set up Teamcenter for visualizing models either in Active Workspace or in the rich client?	Choose the client and install the different components required for visualizing models. Then, perform any post-installation tasks.
How do I configure Teamcenter to visualize models in the web client	Depending on your requirements, you can change aspects of visualization to improve security, display, logging, and performance.
How do I optimize Visualization Server system performance in Active Workspace?	You can modify Visualization Pool Assigner and Visualization Server Manager configuration parameters that impact server scalability.
How do I configure Active Workspace to connect with Lifecycle Visualization?	You can connect Active Workspace and Lifecycle Visualization in one of two ways. You can use the default option, the info browser hosted in the Lifecycle Visualization desktop, or you can use your external default browser through Active Workspace Application Connect.
How do I monitor visualization components?	You can monitor visualization components in the **Viewer Administration** page on Active Workspace or monitor the Active Workspace Visualization Server system using a Java Management Extensions (JMX) client.
How do I ensure that Lifecycle Visualization works seamlessly in Teamcenter?	For Lifecycle Visualization to work seamlessly in Teamcenter, you must have the appropriate license. The licensing is required for the Lifecycle Viewer and the Teamcenter embedded viewer.
How do I configure Teamcenter to visualize models in the rich client	Depending on your requirements, you can change aspects of Teamcenter to ensure server compatibility, embedded viewer compatibility, and so on.
How do I configure the behavior of Lifecycle Visualization datasets for the rich client?	To do this, set the Teamcenter Integration preferences to specify the default behavior of datasets in Lifecycle Visualization.

2. Install Teamcenter Visualization

Installing Visualization with Teamcenter involves adding visualization capabilities to a Teamcenter client, such as rich client or Active Workspace.

Prerequisites

Before you install Visualization, make sure you have **finalized the Teamcenter client** that you want to use.

Lifecycle Viewer support for Teamcenter versions is consistent with Lifecycle Visualization support. Download the **Teamcenter Interoperability Matrix** spreadsheet found on the Support White Papers Certifications page on **Support Center**.

Procedure

1. Install Lifecycle Visualization using the standalone installer.

   For more information about installing standalone Lifecycle Visualization, see *Installation* under Teamcenter Lifecycle Visualization.

2. Install the Visualization Server components.

   a. **Visualization Server Manager**

   b. **Visualization Server Pool Assigner**

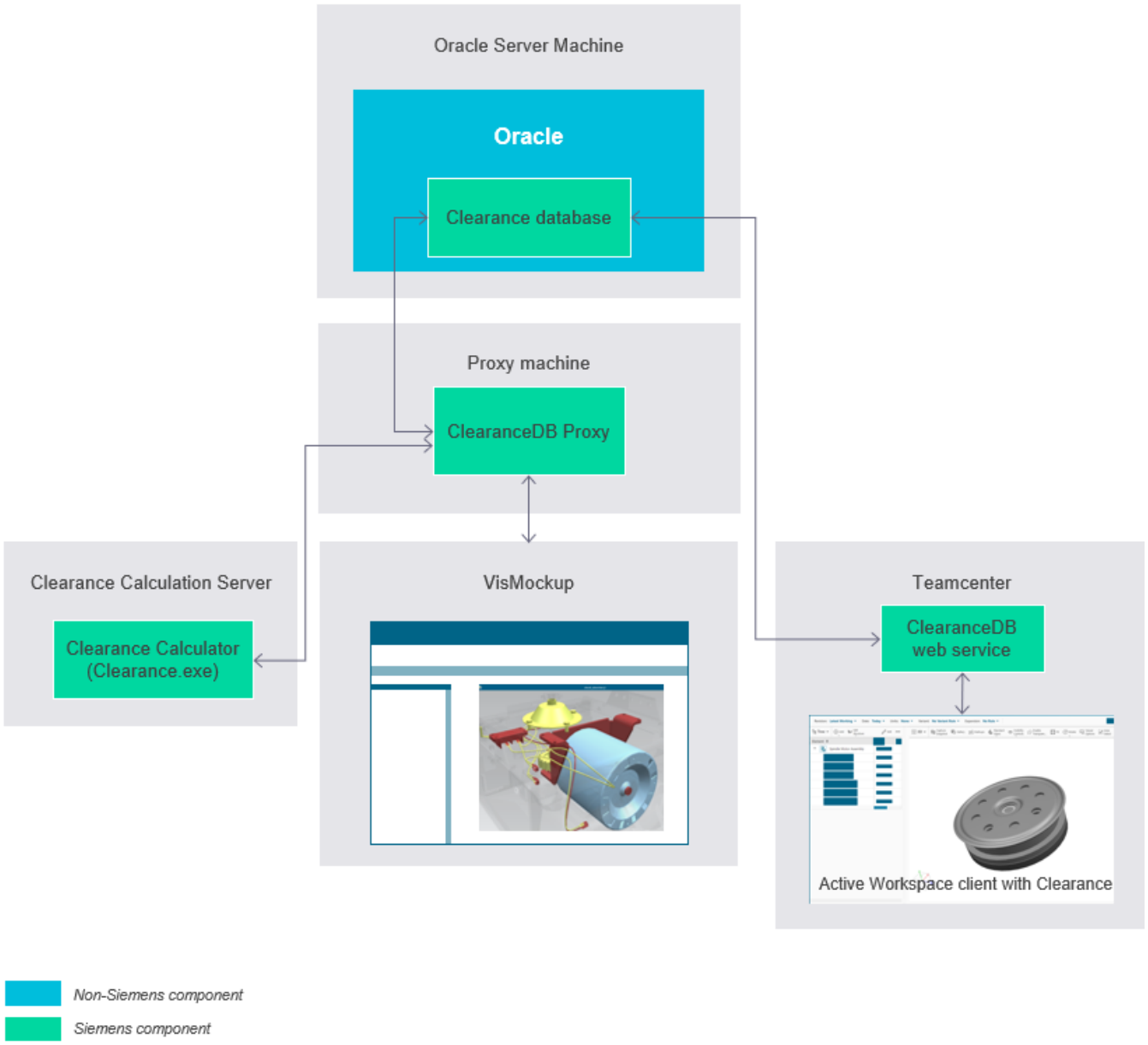
   c. (Optional) **Visualization Data Server**

3. Perform the **post-installation tasks** for the Visualization Server.

3. Connect to an existing 3D Clearance database using Deployment Center

Add the 3D Clearance application to your existing Teamcenter environment and connect ClearanceDB for Active Workspace using Deployment Center. You will connect the ClearanceDB to an existing clearance database using the web service. This gives end users the ability to view Clearance results in Active Workspace.

> Note:
>
> You do not need a proxy when using Active Workspace Clearance. The web service takes place as the proxy.



Procedure

1. Log on to Deployment Center and select the environment to which you want to add 3D Clearance.
2. Go to the **Applications** task. Click **Add or Remove Selected Applications** .
3. In the **Available Applications** panel, use the web browser search to find the **3D Clearance** application. Select the application, and then click **Update Selected Applications**.

   Deployment Center automatically selects any additional dependent applications.
4. Go to the **Components** task.

5. In the **Selected Components** list, select the **ClearanceDB Server Configuration** component.

6. In the **ClearanceDB Server Configuration** panel, enter values for the following configuration parameters:

Parameter	Description
Database Host	Host machine name on which the Clearance database is installed.
Port	The port number used to connect to the Clearance database.
Service	The Clearance database service name. The default service name is **ORCL**.
User	The Clearance database user name. The default user name is **CLOWNER**.
Password	The password for the Clearance database user.
Confirm Password	Confirmation of the Clearance database user password.
Enable per-user access to the Clearance Database	Enables either specific users or all users to view and disposition Clearance results in Active Workspace: • To enable specific users, select the check box. Additionally, **assign users to a ClearanceDB role**. • To enable all users, clear the check box.

7. When you finish entering values for the **ClearanceDB Server Configuration** component, click **Save Component Settings**.

8. In the **Selected Components** list, note any remaining components whose configuration status is not **100%**. Select each incomplete component, enter required parameters, and save component settings until all components in the environment show a configuration status of **100%**.

   When all components are fully configured, the **Deploy** task is enabled.

9. Go to the **Deploy** task. Click **Generate Install Scripts** to generate deployment scripts you will use to update affected machines.

   When script generation is complete, note any special instructions in the **Deploy Instructions** panel.

10. Locate deployment scripts, copy each script to its target machine, and then run each script on its target machine.

    For more information about running deployment scripts, see *Deployment Center — Usage*.

Postrequisites

Configure the ClearanceDB for Active Workspace.

4. Install 3D Clearance using Teamcenter Environment Manager (TEM)

Add the 3D Clearance application to your existing Teamcenter environment to install ClearanceDB for Active Workspace. You must install ClearanceDB for end users to be able to view Clearance results in Active Workspace.

Prerequisites

This procedure assumes you have an existing Teamcenter environment with Active Workspace.

Procedure

1. Launch Teamcenter Environment Manager.

   - **Windows systems**

     In the Windows program list, click **Teamcenter**, and then right-click **Environment Manager** and choose **Run as administrator**.

   - **Linux systems**

     Change to the *TC_ROOT/install* directory, and then run the **tem.sh** script.

2. In the **Maintenance** panel, choose **Configuration Manager**.

3. In the **Configuration Maintenance** panel, choose **Perform maintenance on an existing configuration**.

4. In the **Old Configuration** panel, select the configuration to which you want to add Active Workspace.

5. In the **Feature Maintenance** panel, select **Add/Remove Features**.

6. Proceed to the **Features** panel, and under **Base Install→Active Workspace→Client**, select the following features:

   - **3D Visualization**

   - **3D Clearance**

7. Proceed through the remaining panels in TEM, entering any required parameters.

   For more information about each panel, click the **Help** button.

8. In the **Confirmation** panel, click **Start** to begin installation.

9. When the installation is complete, close TEM.

5. Install XR Visualization

Install the **XR Visualization** application, which adds extended reality (XR) visualization to your Teamcenter environment.

Prerequisites

Install a Teamcenter environment using Deployment Center.

Procedure

1. Log on to Deployment Center and select the environment to which you want to add XR Visualization.

2. Go to the **Applications** tab. Click **Add or Remove Selected Applications**.

3. In the **Available Applications** panel, use the web browser search to find the **XR Visualization** application. Select the application, and then click **Update Selected Applications**.

   Deployment Center automatically selects additional dependent applications.

4. Go to the **Components** tab.

5. Configure the **Visualization Server Manager** component:

   a. Go to the **Components** tab, and in the **Selected Components** list, select **Visualization Server Manager**.

   b. In the **Visualization Server Manager** panel, enter values for the following configuration parameters:

Parameter	Description
XR Service Endpoint	Type the URL to the XR service endpoint.
XR ACC Endpoint	Type the URL to the XR ACC endpoint.
DSS Service Endpoint	Type the URL to the DSS service endpoint.

   c. Under **Gateway Settings > File transfer protocol**, select whether to use secure protocol for VSM communication with the Active Workspace Gateway. If you select **https**, the VSM uses the HTTPS configuration specified in the **HTTPS Config** component.

      The **HTTPS Config** component is configured during creation of the Teamcenter environment.

   d. When you finish entering values for the **Visualization Server Manager** component, click **Save Component Settings**.

e. In the **Selected Components** list, note any remaining components whose configuration status is not **100%**. Select each incomplete component, enter required parameters, and save component settings until all components in the environment show a configuration status of **100%**.

   When all components are fully configured, the **Deploy** tab is enabled.

6. Go to the **Deploy** tab. Click **Generate Install Scripts** to generate deployment scripts you will use to update affected machines.

   When script generation is complete, note any special instructions in the **Deploy Instructions** panel.

7. Locate deployment scripts, copy each script to its target machine, and then run each script on its target machine.

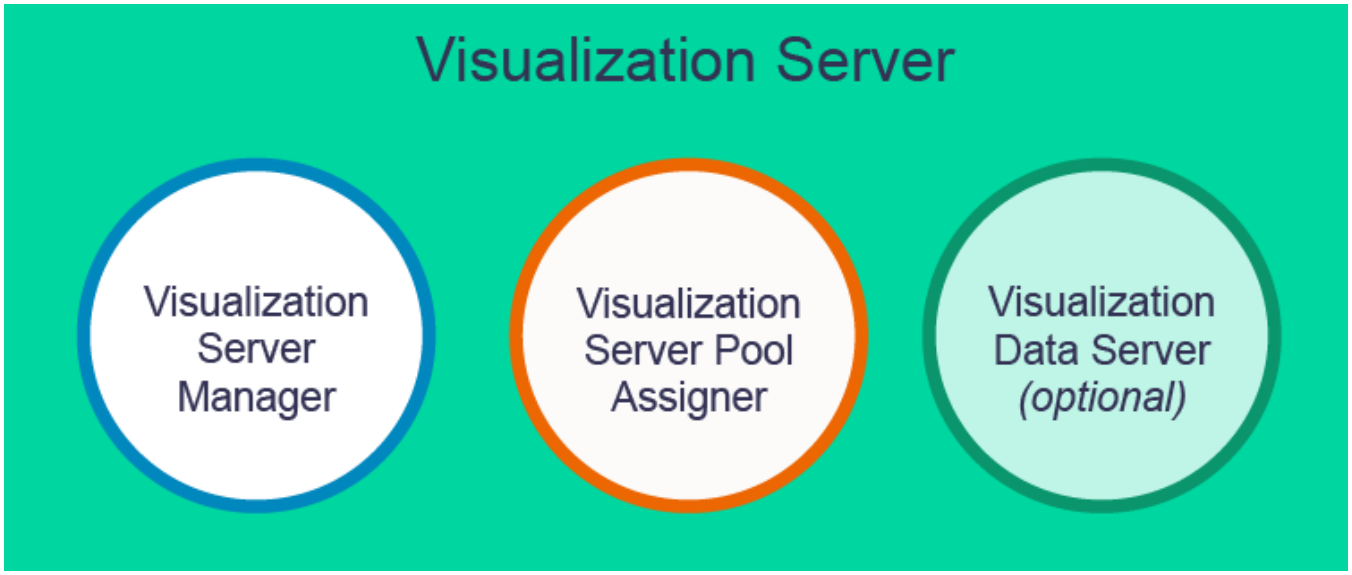
   For more information about running deployment scripts, see *Deployment Center — Usage*.

6. Installing the Visualization Server for Active Workspace

Overview of the Visualization Server

The Visualization Server provides dynamic 3D and 2D visualization functionality for the Active Workspace. If you do not use the 3D viewer or the 2D part feature of the universal viewer in the Active Workspace, you need not install the Visualization Server.

The Visualization Server contains the following components.



Choosing client-side or server-side rendering

At a glance: client-side rendering versus server-side rendering

Client-side rendering (CSR) uses WebGL to leverage client-side graphics capabilities using the Active Workspace browser. Server-side rendering (SSR) does not require WebGL and is suited to larger structures. The following comparison may help you decide which option to use.

Conditions	CSR	SSR
Data size limit	The data size limit is affected by browser memory, transfer time tolerance, and WebGL performance as the data size increases.	This option provides the highest data size limit, because the server has substantial CPU, RAM, and GPU resources.

Conditions	CSR	SSR
	Using render acceleration can increase this limit significantly.	
Load speed	All data is streamed to the client. Browser caching for client-side rendering is supported.	Best option for loading speed. Data is localized to the render server.
User experience interaction	Best experience within the limits of WebGL performance. All drawing and interactions are local. Rendering is unaffected by network traffic, so is more responsive and less latency sensitive.	Good experience, especially with low latencies. Better-to-best experience when working with significantly increased data sizes.
Server cost per user	Lower cost. No server-side graphics card is required. Offloading rendering to clients means the system can support more users per server. However, the triangles of the model must be loaded onto the client machine before it can render.	This option has a higher cost, but it can be more cost effective than putting a high-end graphics device on every user's desk.
Device support	Devices that support WebGL and an HTML5 web browser.	Devices that support an HTML5 web browser. This option is necessary for devices that do *not* support WebGL.

Reserve slots on SSR servers for SSR users unless all CSR capacity is consumed

To optimize resource utilization, the Visualization Server Pool Assigner directs SSR users to SSR-capable servers, while diverting CSR users to servers that can support CSR users only. However, since SSR servers can also support CSR users, when all CSR servers are busy and the SSR servers still have capacity, you can use SSR servers to support CSR users. This provides flexibility within the enterprise while reserving SSR servers for users who need that resource.

To adjust or disable this behavior, you can contact Siemens Digital Industries Software support.

Rendering 3D data

In Active Workspace, the **3D** viewer is displayed within the universal viewer area of the **Overview** tab for objects that have viewable attachments. The 3D viewer is also displayed in the **3D** tab, where you can explore 3D data (JT) associated with parts and assemblies. The render location setting applies to both viewer locations.

Visualization Server is required for visualizing 3D data in Active Workspace with CSR. However, the Visualization Server Manager can be installed on a server without a graphics card.

For better user experience and certain functionality to work, ensure the following:

- The client machine for CSR must have a valid graphics card.
- You must enable WebGL on the browser.
- For SSR, even the server must have a valid graphics card.

Set default rendering method

To set the default rendering method for the 3D viewer and the universal viewer, set the value of the **AWV0ViewerRenderOption** Teamcenter preference to either of the following:

- For client-side rendering (default option): Set the value to **CSR**.
- For server-side rendering: Set the value to **SSR**.

End users can change the rendering method on the **Viewer Options** panel in Active Workspace.

Additional settings for CSR

Ensure that you are not using integrated graphics, and perform the following steps to switch to your graphics card:

1. Open the NVIDIA Control Panel.
2. Click **3D Settings→Manage 3D Settings**.
3. Click the **Program Settings** tab.
4. From the list shown, select the program for which you want to choose a graphics card.
5. Select the preferred graphics processor from the list.

Alternatively, ensure that the GPU is used when running Google Chrome:

1. Open Windows settings (Windows key+I).
2. Search for graphics settings or GPU.

Should I use MMV?

Massive Model Visualization (MMV) is a visualization technology that uses Visibility Guided Rendering (VGR) to increase performance and scalability when viewing extremely large 3D models, such as cars, airplanes, and ships. Models of this size typically consist of a massive amount of geometry arranged in a relatively compact space with a huge amount of internal geometry hidden behind the outer shell of the product. It can take hours to display such models in their entirety, because every piece of geometry

in the model needs to be retrieved and processed, far exceeding the typical capability most hardware. MMV technology resolves this problem by leveraging VGR techniques to load only those parts that are required to render a given scene; parts that are not visible because they are occluded by other parts in the foreground are not loaded. As a result, large 3D models become visible in a fraction of the time previously required.

> Note:
>
> If a structure has more than 30,000 BOM lines, MMV is recommended. If a structure has more than 120,000 BOM lines, MMV rendering is required for scalability and performance.

Visualization of MMV data in the Active Workspace requires an MMV license. If the necessary license is not present, the full model loads as standard JT data.

A Visualization Data Server is required for implementing MMV but is otherwise optional.

To use the Visualization Data Server to compute Massive Model Visualization (MMV) spatial hierarchies of structures, you must do the following actions:

1. Apply the MMV index structure flag to the product configurations that you want to view using MMV.

2. Use the **bomindex_admin** utility to include the configurations in the list of structures to index.

The Visualization Data Server has a structure and JT pre-caching feature that can help improve visualization performance for structures not indexed for MMV. To use this feature:

1. Apply the VDS indexing flag for product configurations that will be viewed frequently but are not indexed for MMV.

2. Use the **bomindex_admin** utility to include the configurations in the list of structures to index.

Visualization Server Manager prerequisites

Operating systems

The Visualization Server Manager (VSM) supports both large model visualization (LMV) and massive model visualization (MMV) on supported Microsoft Windows and Linux server platforms.

On a Linux machine without a GPU or without a supported level of OpenGL, client-side rendering is supported, but server-side rendering is not supported and fails to load.

For supported OS versions, see the Hardware and Software Certifications knowledge base article on Support Center.

Server hardware and graphics cards

The following hardware is supported for VSM:

- **For server-side rendering:**

  Server class hardware certified by NVIDIA to support NVIDIA RTX 6000, RTX 8000, T4, A10, A40, GRID K1, K2, Tesla M60, or P40 graphics cards. Note that any server capable of supporting server-side rendering also supports client-side rendering.

- **For client-side rendering:**

  GPU hardware requirements for desktop Visualization applications (Lifecycle Visualization) are sufficient for client-side rendering.

  If no server-side rendering is needed, any web server class hardware is sufficient to support client-side rendering (CSR).

  The Visualization Server is required for visualizing 3D data in Active Workspace with client-side rendering. However, to use client-side rendering, you must install the Visualization Server Pool Assigner and VSM on a server without a graphics card.

Sizing of hardware should be appropriate to support intended data sizes and usage patterns. See *VSM hardware sizing* for more info about hardware sizing.

Windows Server versions supported with the VSM support a maximum of 8 GPUs, with certain exceptions. For example, on a Windows Server 2012 R2 machine with two NVIDIA GRID K1 cards, the legacy VGA device makes the fourth GPU on one card unavailable for use.

Active Workspace supports virtualized server-side rendering for **certain hardware and software combinations**.

NVIDIA usage requires NVIDIA virtual application licenses — one per concurrent user.

For information about server hardware compatible with supported NVIDIA GRID graphics cards, see **www.nvidia.com**.

Virtualization

If you use only client-side rendering, the VSM can be virtualized.

If you use server-side rendering, the VSM must be installed on physical hardware, unless you follow a supported virtualization combination.

Active Workspace visualization supports virtualization for certain combinations of:

- Host OS and version
- Virtualization layer
- Guest OS and version
- NVIDIA GPU

For information about supported combinations, see the Graphics Card Certification Matrix in the Hardware and Software Certifications knowledge base article on Support Center: **https://support.sw.siemens.com**

For information about NVIDIA virtual GPU compatibility, see NVIDIA virtual GPU (vGPU) software documentation at **docs.nvidia.com**.

VSM hardware sizing

Sizing of VSM hardware should allow for typical and maximum expected usage by considering the following factors:

- Expected numbers of concurrent Active Workspace visualization users
- Expected product data sizes
- CPU, RAM, VRAM and GPU resources consumed by expected product data

In general, a high end server with:

- A maximum number of CPU cores with processing speeds of 3.0 GHz or faster
- A minimum of 64 GB of RAM
- A minimum of 256 GB of disc space

In addition, a VSM that will support server-side rendering requires an NVIDIA GRID graphics card. For information about server hardware compatible with supported NVIDIA GRID graphics cards, see **www.nvidia.com**.

For additional guidance in sizing of VSM hardware, contact your field services professionals.

Environment information

Make sure you know the following values. These are needed during installation of the VSM.

Visualization Server Pool Assigner host and port

These are defined in **Install the Visualization Server Pool Assigner**.

Visualization Data Server host and port (if VDS is to be installed)

These are defined in **Install the Visualization Data Server**.

Host and port of FCC parents

These are defined during Teamcenter installation.

Linux machine configuration

Before you run the VSM on a Linux machine, perform the following steps:

1. Make sure the machine has the required RPM package managers.

2. Install the required fonts:

```
sudo yum install '*font*' --skip-broken
```

3. Make sure that Xserver is installed and running on **DISPLAY :0**. One way to verify this is to type the following command to determine whether the **X** or **Xorg** process is running:

```
ps -ef | grep "/usr/.*/X.*:0" | grep -v grep
```

The command returns output similar to the following:

```
>ps -ef | grep "/usr/.*/X.*:0" | grep -v grep
root      9533     1  0  2023 ?        00:00:00 sudo /usr/bin/Xorg :0
     -background none -verbose -auth /run/user/471/gdm/Xauthority
     -seat seat0 -listen tcp vt7
root      9534  9533  0  2023 tty7     00:25:42 /usr/bin/Xorg :0
     -background none -verbose -auth /run/user/471/gdm/Xauthority
     -seat seat0 -listen tcp vt7
```

The exact output from the **grep** command may vary depending on the configuration of your Linux environment, but the output *must* contain **/user/bin/Xorg :0** *or* **/user/bin/X :0** where shown above. This indicates that the Xserver is running on **DISPLAY :0** and that your environment is supported.

If you reboot the system, you must restart Xserver.

> Note:
>
> The Xserver allows graphical user interfaces on a Linux system. When you install Linux, if you installed a minimal text-only environment, you must install Xserver according to your Linux Xserver installation and setup guide.

If you installed a graphical environment, Xserver and Xorg should already be installed. The Xserver manages the display hardware to provide a graphical interface. To use X applications, install the Xorg X11 apps package.

For information about configuring Xserver, see your Linux system configuration documentation.

4. After you verify that Xserver is running on **DISPLAY :0**, configure Xserver for offscreen and headless operation for use by the visualization server processes.

   - **Linux machine with no GPU:**

     After you verify that Xserver is running on **DISPLAY :0**, run the following commands:

     ```
     setenv DISPLAY :0
     xhost +
     ```

     You must run these commands after a reboot.

     The commands return output similar to the following:

     ```
     >setenv DISPLAY :0
     >xhost +
     access control disabled, clients can connect from any host
     ```

   - **Linux machine with GPU:**

     Set up the NVIDIA GPU on the Linux machine by running the **setup_xserver.sh** script provided in the Visualization Server Manager installation.

     a. Change to the *TC_ROOT***/vispoolmanager/jetty** directory.

     b. Type the following command:

     ```
     setup_xserver.sh default
     ```

     The `default` parameter specifies to use the graphics card and bus id discovered by the script. If you do not specify this parameter, the script prompts you to confirm the card and bus id, and provides the opportunity to change these values if you want.

Install the Visualization Server Manager

Install the Visualization Server Manager using Deployment Center

1. Log on to Deployment Center.

2. In the **Environments** list, select the environment to which you want to add the Visualization Server Manager (VSM), or click **Add Environment** to create a new environment.

3. In the **Software** tab, make sure the Teamcenter 2412 software kit is included in your environment.

4. Proceed to the **Applications** tab and then click **Add or Remove Selected Applications** .

5. In the **Available Applications** list, select **Visualization Extension**.

   This selection adds the **Visualization Server Manager** and **Visualization Pool Assigner** components to the environment.

6. Select **3D Visualization** or **Active workspace Visualization 2D Viewer** if you wish to add the **Viewer Administration** application, which provides an interface for monitoring Visualization Server components in Active Workspace.

7. Click **Update Selected Applications**.

8. Proceed to the **Components** tab.

9. In the **Selected Components** list, select **Visualization Server Manager**.

10. Enter configuration parameters for the VSM:

    a. If your environment type, which is specified in the **Options** tab, is **Distributed**, type the values for the **Machine Name** and **OS** for the machine deploying the VSM.

       Also, in the **Teamcenter Installation Path** box, type the path for the location where you will install Teamcenter software on the VSM machine.

       > Note:
       >
       > If your environment type is **Single Box**, then the **Machine Name**, **OS**, and **Teamcenter Installation Path** boxes are read-only and cannot be changed.

    b. Under **Gateway Settings > File transfer protocol**, select whether to use secure protocol for VSM communication with the Active Workspace Gateway. If you select **https**, the VSM uses the HTTPS configuration specified in the **HTTPS Config** component.

       The **HTTPS Config** component is configured during creation of the Teamcenter environment.

    c. If you want to change other default configuration parameters for the VSM, click **Show all parameters** and change values as necessary.

    d. Click **Save Component Settings**.

11. In the **Components** tab, note any components which do not have a configuration status of **100%**. Enter or update configuration parameters until all components show a configuration status of **100%**.

12. Proceed to the **Deploy** tab. Click **Generate Install Scripts** to generate deployment scripts to update affected machines.

    When the script generation is complete, note any special instructions in the **Deploy Instructions** panel.

13. Locate the deployment scripts, copy each script to its target machine, and run each script on its target machine.

    For more information about running deployment scripts, see *Deployment Center — Usage*.

Install the Visualization Server Manager using TEM

You can install the Visualization Server Manager in a new Teamcenter configuration or in an existing Teamcenter configuration.

If you are adding the Visualization Server Manager to an *existing* configuration, launch the installed TEM in maintenance mode and skip to step 8 below.

Otherwise, if you are installing the Visualization Server Manager on a host with *no* existing Teamcenter environment, proceed with the following steps:

1. Ensure you have access to the Teamcenter 2412 software kit.

2. Launch TEM from the Teamcenter 2412 software kit.

   On Windows systems, launch TEM with administrator privileges by using right-click→**Run as administrator**.

3. In the **Welcome to Teamcenter** panel, select **Teamcenter**.

4. In the **Install / Upgrade Options** panel, click **Install**.

5. In the **Media Locations** panel, you can optionally specify the locations of any Teamcenter update software kits you want to apply to your configuration. Otherwise, proceed to the next step.

6. In the **Configuration** panel, enter values for **ID** and **Description**.

7. In the **Solutions** panel, make no selections.

8. Proceed to the **Features** panel, and under **Base Install→Active Workspace→Visualization Server**, select the **Visualization Server Manager** feature.

In the **Installation Directory** box, enter the location in which to install the Visualization Server Manager.

9. In the **File Client Cache (FCC)** panel, set the **FMS_HOME** environment variable.

10. In the **FCC Parents** panel, define the list of FSC parents to which the Visualization Server Manager connects.

    You must provide the protocol, host, and port of the FSC parent. To add rows to the table, click **Add**.

    > Note:
    >
    > If you are using a Visualization Data Server, the Visualization Data Server and the Visualization Server Manager should use the same FSC.

11. In the **Configuration** section of the **Visualization Server Manager** panel, provide values for the Visualization Server Manager.

Local Host Alias	Specifies the alias for the local Visualization Server Manager.
Server Host	Specifies the host where the Visualization Server Manager is running. This must be the local machine name and must be resolvable by the Visualization Pool Assigner machine (the machine running the Active Workspace Gateway). Do not use **localhost** or **127.0.0.1**.
Server Port	Specifies the port on which the Visualization Server is listening.
Max Servers in Sub-Pool	Specifies the maximum number of Visualization Server processes allowed to run in this pool for a single-host configuration or in this subpool for a multihost configuration. For example, on Windows machines, the default value is **30**. On Linux machines, the default value is **200**.
Min Warm Servers	Specifies the minimum number of Visualization Server processes in this pool that are started but not assigned.

> Note:
>
> If necessary to maintain the minimum number of warm servers while not exceeding the maximum number of server processes, the server manager times out the servers in use.

12. If you use a Visualization Data Server, provide the values for this server in the **Visualization Data Server Configuration** section of the **Visualization Server Manager** panel.

Add Visualization Data Server	Select this if you are using a Visualization Data Server.
Host	Type the name of the host on which the Visualization Data Server is installed.
Port	Type the port value used by the Visualization Data Server.

A Visualization Data Server improves performance by caching product structure and JT parts files.

13. In the **Visualization Server Manager Settings** panel, define the settings for how the Visualization Server Manager communicates with the pool assigners.

14. In the **Operating System User** panel, type the user's password.

Override local node settings	Select this option to override the host name and the port value. Enter the **Host** and **Vis Assigner Port** values of the local machine. In the **Gateway Connection Port** box, enter the port used by the Active Workspace Gateway.
Visualization Server Pool Assigners	Lists the pool assigners that this Visualization Server Manager uses. • **Assigner Host** Host name of the machine where the Visualization Server Pool Assigner runs. • **Assigner Port** Port value of the pool assigner.

15. In the **Confirmation** panel, click **Start**.

16. When the installation is complete, close TEM.

Visualization Server Pool Assigner prerequisites

Software

The Visualization Server Pool Assigner requires the following software:

- A supported Microsoft Windows Server operating system or Linux operating system on the Visualization Server Manager host.

  For supported versions, see the Hardware and Software Certifications knowledge base article on Support Center.

- The **Visualization Extension** Server Extensions feature on the corporate server and on any server that has Teamcenter Foundation installed.

Environment information

Make sure you know the following values. These are needed during installation of the Visualization Server Manager.

Visualization Server Pool Assigner host and port

Visualization Data Server host and port (if VDS is to be installed)	These are defined in **Install the Visualization Data Server**.
Host and port of FCC parents	These are defined during Teamcenter installation.

Install the Visualization Server Pool Assigner

Install the Visualization Server Pool Assigner using Deployment Center

1. Log on to Deployment Center.
2. In the **Environments** list, select the environment to which you want to add the Visualization Server Pool Assigner (VPA), or click **Add Environment** to create a new environment.
3. In the **Software** tab, make sure the Teamcenter 2412 software kit is included in your environment.
4. Proceed to the **Applications** tab and then click **Add or Remove Selected Applications**.
5. In the **Available Applications** list, select **Visualization Extension**, and then click **Update Selected Applications**.

   This adds the **Visualization Server Manager** and **Visualization Pool Assigner** components to the environment.
6. Proceed to the **Components** tab.
7. In the **Selected Components** list, select **Visualization Pool Assigner**.
8. Enter the configuration parameters for the Visualization Pool Assigner (VPA):

a. If your environment type, which is specified in the **Options** tab, is **Distributed**, type values for the **Machine Name** and **OS** for the machine on which you deploy the VPA.

Also, in the **Teamcenter Installation Path** box, type the path in which to install Teamcenter software on the VPA machine.

> Note:
>
> If your environment type is **Single Box**, the **Machine Name**, **OS**, and **Teamcenter Installation Path** boxes are read-only and cannot be changed.

b. Enter the following configuration parameters for the VPA:

Value	Description
File transfer protocol	Specifies whether to use secure protocol for VPA communication with the Active Workspace Gateway. If you select **https**, the VPA uses the HTTPS configuration specified in the **HTTPS Config** component. The **HTTPS Config** component is configured during creation of the Teamcenter environment.
Vis Assigner Port	Specifies the port used by the local Visualization Server Pool Assigner.
Gateway Connection Port	Specifies the port through which the Active Workspace Gateway connects to the Visualization Server Pool Assigner. The default value is **8089**.
Gateway Vis Assigner URL	Specifies the URL through which the Active Workspace Gateway accesses the VPA. This value is automatically based on the **Machine Name** and **Gateway Connection Port** values. It is read-only and cannot be directly changed.

c. If you want to change the default configuration parameters for the VSM, click **Show all parameters** and change values as necessary.

d. Click **Save Component Settings**.

9. In the **Components** tab, note components whose configuration status is not **100%**. Enter or update configuration parameters until all components show a configuration status of **100%**.

10. Proceed to the **Deploy** tab. Click **Generate Install Scripts** to generate deployment scripts to update affected machines.

When the script generation is complete, note any special instructions in the **Deploy Instructions** panel.

11. Locate the deployment scripts, copy each script to its target machine, and run each script on its target machine.

    For more information about running deployment scripts, see *Deployment Center — Usage*.

Install the Visualization Server Pool Assigner using TEM

You can install the Visualization Server Pool Assigner in a new Teamcenter configuration or in an existing Teamcenter configuration.

If you are adding the Visualization Server Pool Assigner to an *existing* configuration, launch the installed TEM in maintenance mode and skip to step 8 below.

Otherwise, if you are installing the Visualization Server Pool Assigner on a host with *no* existing Teamcenter environment, proceed to step 1.

1. Ensure you have access to the Teamcenter 2412 software kit.

2. Launch TEM from the Teamcenter 2412 software kit.

   On Windows systems, launch TEM with administrator privileges by using right-click→**Run as administrator**.

3. In the **Welcome to Teamcenter** panel, select **Teamcenter**.

4. In the **Install / Upgrade Options** panel, click **Install**.

5. In the **Media Locations** panel, you can optionally specify the locations of any Teamcenter update software kits you want to apply to your configuration. Otherwise, proceed to the next step.

6. In the **Configuration** panel, enter values for **ID** and **Description**.

7. In the **Solutions** panel, make no selections.

8. Proceed to the **Features** panel, and under **Base Install**→**Active Workspace**→**Visualization Server**, select the **Visualization Server Pool Assigner** feature.

   In the **Installation Directory** box, enter the location in which to install the Visualization Server Manager.

9. In the **Visualization Server Pool Assigner Settings** panel, enter settings to configure the Visualization Server Pool Assigner:

Value		Description
Host		Specifies the host on which this Visualization Server Pool Assigner runs. This is the host on which this Visualization Server Pool Assigner is deployed. You may type the host name or the IP address of the host.
Vis Assigner Port		Specifies the port used by the local Visualization Server Pool Assigner.
Gateway Connection Port		Specifies the port through which the Active Workspace Gateway connects to the Visualization Server Pool Assigner. The default value is **3000**.
Add pool assigner		Specifies whether additional Visualization Server Pool Assigners are used. Select the **Add pool assigner** check box to add pool assigners.
Peer Assigners		The **Peer Assigners** table lists other Visualization Server Pool Assigners known to the local Visualization Server Pool Assigners.
	Assigner Host	Specifies the host on which a peer Visualization Server Pool Assigner is deployed. This value can be the host name or IP address.
	Assigner Port	Specifies the port number used by the peer Visualization Server Pool Assigner.
Server Side 4-tier URL		Specifies an alternate four-tier URL for the viewer to connect to Teamcenter. The Visualization Server uses this in case the primary four-tier URL is blocked by a firewall, or if a more direct route is needed for performance.

10. In the **Confirmation** panel, click **Start**.

11. When the installation is complete, close TEM.

Visualization Data Server prerequisites

Software

The Visualization Data Server requires the following software:

- A supported Microsoft Windows Server operating system or Linux operating system on the Visualization Server Manager host.

  For supported versions, see the Hardware and Software Certifications knowledge base article on Support Center.

- The **Visualization Extension** Server Extensions feature on the corporate server and on any server that has Teamcenter Foundation installed.

- A Visualization Server Manager installed on the Visualization Data Server host.

- An FMS client cache (FCC) component on the Visualization Data server host.

- Structure indexing configured on the Visualization Data server host.

  The Visualization Data Server uses the structure indexing infrastructure of Active Workspace to keep cached product structure up-to-date.

Hardware

- Graphics card: No requirements.
- Network: You must deploy the Visualization Data Server on a high speed LAN near the Visualization Server Manager.
- Memory: The Visualization Data Server host should have a minimum of 16 GB of RAM, but may require more.

> Note:
>
> **How to determine memory needed:**
>
> The amount of RAM needed depends on the number of structures to be indexed and their size.
>
> A rough rule of thumb is to count the number of lines in the unconfigured structure to be indexed and allow at least 2000 bytes per line. For example, if there are 1 million lines in the unconfigured product index, then 1 million * 2000 = 2 GB of RAM.
>
> If you are not sure of the size of the structures, Siemens Digital Industries Software recommends that you allow approximately 4 GB of RAM for each structure you are planning to cache in the Visualization Data Server. For example, if 4 structures are to be indexed, 16 GB of RAM is recommended.

Environment information

You need to know the following values to install the Visualization Data Server:

- FCC parents
- Teamcenter web tier URL
- Host name and port for the Visualization Data Server

Recommendations

Siemens Digital Industries Software recommends that you install the Visualization Data Server on a machine with the following:

- **Multiple processors**

The Visualization Data Server is a multithreaded server program and is thus resource intensive; multiple processors are utilized if they are available. Standard server class machine hardware is sufficient.

- **FSC cache or FSC volume**

  If you deploy the Visualization Data Server remote (on a WAN) from the FSC volume, you should deploy an FSC cache on a LAN near or on the Visualization Data Server host machine.

- **Visualization Server Manager**

  For maximum performance, the Visualization Data server should be installed on the same machine as the Visualization Server Manager and should use the same cache.

  A single Visualization Data Server can support one or more Visualization Server Managers.

Install the Visualization Data Server

Install the Visualization Data Server using Deployment Center

1. Log on to Deployment Center.
2. In the **Environments** list, select the environment to which you want to add the Visualization Data Server (VDS), or click **Add Environment** to create a new environment.
3. In the **Software** tab, make sure the Teamcenter 2412 software kit is included in your environment.
4. Proceed to the **Applications** tab, and then click **Add or Remove Selected Applications**.
5. In the **Available Applications** list, select **Visualization Extension**, and then click **Update Selected Applications**.
6. Proceed to the **Components** tab.
7. In the **Selected Components** list, select **Visualization Data Server**.
8. Enter configuration parameters for the VDS:

   a. If your environment type, which is specified in the **Options** tab, is **Distributed**, then type the values for the **Machine Name** and **OS** for the machine on which you deploy the VDS.

      Also, in the **Teamcenter Installation Path** box, type the path in which to install Teamcenter software on the VDS machine.

> Note:
>
> If your environment type is **Single Box**, then the **Machine Name**, **OS**, and **Teamcenter Installation Path** boxes are read-only and cannot be changed.

b. If you want to change the default configuration parameters for the VDS, click **Show all parameters** and change the values as necessary.

c. Click **Save Component Settings**.

9. In the **Components** tab, note components whose configuration status is not **100%**. Enter or update configuration parameters until all components show a configuration status of **100%**.

10. Proceed to the **Deploy** tab. Click **Generate Install Scripts** to generate deployment scripts to update affected machines.

    When script generation is complete, note any special instructions in the **Deploy Instructions** panel.

11. Locate deployment scripts, copy each script to its target machine, and run each script on its target machine.

    For more information about running deployment scripts, see *Deployment Center — Usage*.

Install the Visualization Data Server using TEM

You can install the Visualization Data Server (VDS) in a new or an existing Teamcenter configuration. Siemens Digital Industries Software recommends that you install the Visualization Data Server on a machine that does *not* have a Teamcenter corporate server.

If you are adding the Visualization Data Server to an *existing* configuration, launch the installed TEM in maintenance mode and skip to step 8 below.

Otherwise, if you are installing the Visualization Data Server on a host with *no* existing Teamcenter environment, proceed to step 1 below.

1. Ensure you have access to the Teamcenter 2412 software kit.

2. Launch TEM from the Teamcenter 2412 software kit.

3. In the **Welcome to Teamcenter** panel, select **Teamcenter**.

4. In the **Install / Upgrade Options** panel, click **Install**.

5. In the **Media Locations** panel, you can optionally specify the locations of any Teamcenter update software kits you want to apply to your configuration. Otherwise, proceed to the next step.

6. In the **Configuration** panel, enter values for **ID** and **Description**.

7. In the **Solutions** panel, make no selections.

8. In the **Features** panel, select the **Visualization Data Server** feature:

   Base Install→Active Workspace→Visualization Server→Visualization Data Server

   In the **Installation Directory** box, enter the location in which to install the Visualization Data Server.

9. In the **File Client Cache (FCC)** panel, set the **FMS_HOME** environment variable. The FCC must be installed on the same machine as the Validation Data Server.

10. In the **FCC Parents** panel, define the list of FSC parents to which the Visualization Data Server connects.

    You must provide the protocol, host, and port of the FSC parent. To add rows to the table, click **Add**.

    > Note:
    >
    > To improve performance, the Visualization Data Server and the Visualization Server Manager should use the same FSC.

11. In the **Teamcenter Administrative User** panel, enter the user's password.

12. In the **Visualization Data Server Configuration** panel, enter the required values:

    - **Server Port**

      This is the port number on which the Visualization Data Server listens.

    - **Teamcenter 4-tier URL**

      This is the URL of the Teamcenter web tier application. The format is:

      http://*host***:***port***/***tc-web-app*

      host is the machine running the web application server on which the Teamcenter web application is deployed.

      port is the port value used by the web application server.

      tc-web-app is the name of the Teamcenter web application. The default is **tc**.

13. In the **Confirmation** panel, click **Start**.

14. When the installation is complete, click **Close**.

Troubleshoot a new installation of Visualization

Intent

The following Teamcenter lifecycle visualization troubleshooting diagnostic sequence is:

- For new installations where visualization is non-functional.
- Tailored for clean systems that have never had a previous installation of Teamcenter lifecycle visualization.
- Intended for use when the Visualization Pool Assigner is deployed on a Java server on Windows.

Usage notes

- Document all changes made during this process so that all unnecessary changes can be reverted once the system works again.
- If a problem is identified and fixed during the diagnostic sequence listed here, but visualization still does not work, return to the beginning of the diagnostic sequence.

Sequence

Use the following steps when troubleshooting a new installation of Teamcenter lifecycle visualization.

1. Verify that the servers are installed on computers that are running supported operating systems. For example, Windows 7 Professional is unsupported.

2. Verify that the Visualization Server Manager is launched using the **run_visservermgr.cmd** script.

   > Caution:
   >
   > Do not run the Visualization Server Manager as a Windows service, because doing so significantly reduces stability and performance.

3. Verify that the Visualization Pool Assigner is launched using the **run_visassigner.cmd** script.

> Caution:
>
> Do not run the Visualization Server Manager as a Windows service, because doing so significantly reduces stability and performance.

4. If the Visualization Data Server is installed and running, terminate the Visualization Data Server. It is not required for loading small to medium sized models.

5. Turn off all firewalls. If this is not possible, verify that all ports and port ranges specified in Deployment Center or TEM have been opened through firewalls.

6. Restart the visualization system. The following sequence yields the cleanest startup:

   a. Terminate the Visualization Server Manager.

   b. Terminate the Visualization Pool Assigner.

   c. Start the Visualization Pool Assigner.

   d. Start the Visualization Server Manager.

7. Attempt to view 3D content in Active Workspace. A failure is expected.

8. Does the 3D window waiting cursor (rotating circle) show for a long time and does the 3D model fail to appear?

If your answer is	**Action to take**

Yes	Log off and log on as the **admin** user. Navigate to Viewer Administration and verify that at least one Visualization Pool Assigner and one Visualization Server Manager is listed.
	
	If no Visualization Pool Assigner and Visualization Server Manager are listed, do the following:
	
	a. Navigate to the Gateway installation.
	
	b. Verify that Gateway forwarding is correctly pointing to the deployed Visualization Pool Assigner by verifying that the following entry is correct in the **config.json** file.
	
	`"vis": {`
	
	`"path": "/VisProxyServlet",`

If your answer is	Action to take
	"target": "http://<VisAssignerHostname>:<VisAssignerHostPort>>/VisProxyServlet" } Here, **VisAssignerHostname** and **VisAssignerHostPort** are the host and port where the Visualization Pool Assigner was configured.
No	Continue.

9. Does the following message appear in the Visualization Server Manager console within two minutes of startup? *Vis Server Manager is ready*

If your answer is	Action to take
Yes	Continue.

No	• Does a *JVM_Bind* error appear in the Visualization Pool Assigner or Visualization Server Manager console or log?
	  • Yes: The server's Socket Cache port is already in use by another process. Either use TEM to alter the port, or terminate the process that is presently using the port. Then, restart the visualization system.
	  • No: Continue.
	• Does the following error appear in the Visualization Server Manager console? *Trouble connecting to cold visualization server on port <PORT> with PID <PID> due to 'The VisView's reported system CPU usage (-1.0) is less than 0'. Retrying.*
	  • Yes:
	  a. Verify that the Visualization Server Manager is installed on a computer that is running a supported operating system.
	  b. On the machine hosting the Visualization Server Manager, run the following Windows commands:
	  `cd C:\Windows\SysWOW64`
	  `lodctr /r`
	  `winmgmt /resyncperf`

If your answer is	Action to take
	c. Restart the Visualization Server Manager. d. If the problem persists, contact the vendor. • No: Continue. • Does the following error appear in the Visualization Server Manager console? *Error reading 'begin' notification* • Yes: You are likely pointing your Visualization Server Manager at an incorrect server or port. For example, you may be pointing it at the Visualization Pool Assigner's HTTP server instead of the Visualization Pool Assigner's Socket Cache server. If not, contact the vendor. • No: Continue. • Verify that the appropriate Microsoft Visual Studio Redistributables are installed. They are typically installed automatically. a. Launch *VisServerFV\Products\FoundationViewer\visview.exe*. b. Does VisView appear? • Yes: Continue. • No: Does an error message appear that complains of a missing MFC DLL? ■ Yes: Download and install the appropriate redistributables. ■ No: A different warning or error message is observed. Continue. • Is the Visualization Server Manager repeatedly reporting an error beginning with *Could not connect to VisPoolAssigner*? • Yes: ■ The Visualization Pool Assigner is running a server called the *Socket Cache*, but the Visualization Server Manager is reporting that it cannot connect to that server. Verify that the **VisPoolProxy.peerNodes** property in the Visualization Server Manager's *jetty/jettyservice.properties* file will allow the Visualization Server Manager to contact the Visualization Pool Assigner's Socket Cache server. ■ If the problem persists, contact the vendor.

If your answer is	Action to take

	• No: Continue.
	
	• Purge the registry areas for VisView:
	
	a. Terminate the Visualization Server Manager.
	
	b. Run Windows' Registry Editor, *regedit.exe*.
	
	c. Using the Registry Editor, delete the following folders in the registry:
	
	`HKEY_CURRENT_USER/Software/Siemens/AW/<<AW_RELEASE_VERSION>`
	`HKEY_CURRENT_USER/Software/Siemens/AW_Retained/<<AW_RELEASE_VERSION`
	
	d. Restart Visualization Server Manager and retest.
	
	e. Continue.
	
	• Contact the vendor.

10. Does the following error message appear in Active Workspace when trying to view 3D content? *The visualization servers are busy.*

If your answer is	Action to take
Yes	• Does the following error message appear in the Visualization Pool Assigner console? *All Pool Managers are full* • Yes: a. Open the Visualization Server Manager's *jetty/jettyservice.properties* file and note the value of **VisPoolProxy.hostName**. b. From the Visualization Pool Assigner computer, open a command prompt and run the command `ping <VisPoolProxy.hostName>` where **<VisPoolProxy.hostName>** is the value found in the *jetty/jettyservice.properties* file. c. Was a reply observed? ■ Yes: Continue.

If your answer is	Action to take
	■ No: The Visualization Pool Assigner initiates communications with the Visualization Server Manager using the **VisPoolProxy.hostName** and **VisPoolProxy.poolUrl** values found in the *jetty/jettyservice.properties* file. If the Visualization Pool Assigner cannot reach the Visualization Server Manager using these values, then the system will not work. d. If the problem persists, contact the vendor. • No: Contact the vendor.
No	Continue.

11. Is a new VisView process started when you attempt to load a model into Active Workspace?

If your answer is	Action to take
Yes	Did the new process terminate a few seconds after starting? • Yes: Contact the vendor. • No: Continue.
No	• Ensure that the **VisPoolProxy.peerNodes** in the *jetty/jettyservice.properties* file is pointing at the correct Visualization Pool Assigner. • If the problem persists, contact the vendor.

12. Configure the Visualization Server Manager to be in debug mode.

    a. Create a backup of the *jetty/jettyservice.properties* file.

    b. Open the *jetty/jettyservice.properties* file and change the following parameters:

    - Set **VisPoolProxy.warmServers**=*1*
    - Set **VisPoolProxy.maxServers**=*1*.

      Setting this parameter to one prevents more than one VisView process from starting.
    - Enable **VisPoolProxy.envset.TCVIS_DA_DEBUG_LOG**=*True*
    - Enable **VisPoolProxy.envset.TCVIS_LOGGING_LEVEL**=*DEBUG*

    c. Shut down Visualization Server Manager.

d. Delete the contents of the *jetty/TEMP* directory.

e. Start Visualization Server Manager.

f. You are now in debug mode. Continue.

13. Configure Visualization Server Manager to operate with a virtual network card.

    Open the **jetty/jettyservice.properties** file and change the following parameter:

    Set **VisPoolProxy.envset.TCVIS_CUSTOM_SYSTEM_NETWORK_BANDWIDTH**=*1000*

    This parameter sets the custom bandwidth in MBps for an instance or for the system. If you have a Active Workspace installation and the Visualization Server that uses a virtual network card does not start, enable this setting to start the Visualization Server.

14. Check for FCC problems.

    a. Configure the Visualization Server Manager to be in debug mode. See **this** step.

    b. Stop the Visualization Server Manager.

    c. Verify that your **FMS_HOME** environment variable specifies the FCC installation area.

    d. Purge FCC temporary files:

        A. Run the following commands:

        ```
        %FMS_HOME%/startfcc.bat

        %FMS_HOME%/bin/fccstat –purge

        %FMS_HOME%/bin/fccstat –kill
        ```

        B. Delete the following:

        - *C:\Users\%USERNAME%\FCCcache**
        - *C:\Users\%USERNAME%\Teamcenter\SOA*
        - *C:\Users\%USERNAME%\vendor\logs*
        - *C:\Users\%USERNAME%\fcc.**
        - *VisDataServer/Program/scratch/**.

C. Start FCC manually using the **%FMS_HOME%/startfcc.bat** command and verify that there are no errors.

e. Clear the contents of the **jetty/TEMP** area of the Visualization Server Manager.

f. Restart the visualization system.

g. Attempt to view 3D content in Active Workspace.

h. Examine the **jetty/TEMP/VisProd*/tcvis_da_dbglog*.txt** and address any error messages.

i. Open the *jetty/TEMP/Visview<PID>.log* file.

j. Does the log file contain any of these messages?

```
“ERROR: MkGetFileByFMSTicket”

“ERROR: MkCreateMoniker”

"ERROR: OpenDocumentByMoniker”
```

If your answer is	Action to take
Yes	A. Open your FCC’s *fcc.xml* file and verify that it is pointing at correct locations and that it is it free of typos. B. If your FCC’s *fcc.xml* parentfsc is using HTTPS, verify the involved certificates. C. Review the FCC console for errors. D. Review the *jetty/TEMP/VisProd<PID>/*/tcvis_da_debug*.txt* file for errors. E. If the problem persists, contact the vendor.
No	Continue.

15. Verify that the Visualization Server Manager has access to graphics hardware.

a. See the **Configure the Visualization Server Manager to be in debug mode** section earlier in this procedure.

b. Open the *jetty/TEMP/Visview<PID>.log* file.

c. Does the log file contain the following message? *System Supports OpenGL Version*

If your answer is	Action to take

Yes	Is the value of *System Supports OpenGL Version* 1.2 or greater?
	• Yes: Continue.
	• No: Are you using supported graphics hardware?
	  • Yes:
	  A. Verify that your NVIDIA graphics driver is version 340.66 or later.
	  B. Verify that the computer is recognizing the graphics card.
	  C. If the problem persists, contact the vendor.
	  • No: No solution.

No	Contact the vendor.

16. Contact the vendor.

7. Post-installation tasks for setting up the Visualization Server

Start the Visualization Server components

Once you install all the required and optional Visualization Server components, you must start them individually in the following order.

Start Visualization Server Manager

Start Visualization Server Manager on Linux

To start the Visualization Server Manager (VSM) on a Linux machine, type the following command:

TC_ROOT/vispoolmanager/run_servermgr.sh

Optional: Start VSM as a Linux daemon

Alternatively, you can start Visualization Server Manager as a daemon by running the **installservice.sh** command for each jetty server with admin permissions:

installservice.sh*unique-service-name port user*

If you do not specify parameters, the script will run in interactive mode and prompt you for the information.

For example, from the *TC_ROOT/vispoolmanager/jetty* directory, type:

sudo ./installservice.sh MyUniquePoolManager1 8090 MyUser

Uninstalling the Linux daemon:

To *uninstall* the VSM daemon, run the **uninstallservice.sh** command for each jetty server with admin permissions:

uninstallservice.sh *service-name*

For example, from the *TC_ROOT/vispoolmanager/jetty* directory, type:

sudo ./uninstallservice.sh MyUniquePoolManager1

If you do not know the name of the service, search the *TC_ROOT/vispoolmanager/jetty/* directory or the */etc/systemd/system* directory for a file named *service-name.service*. The *service-name* is the unique service name you provided to the **installservice.sh** command.

Start the Visualization Server Manager on Windows

1. Make sure the **FMS_HOME** environment variable is set as a system environment variable and not a user variable. Visualization Server Manager runs as a service only if **FMS_HOME** is a system environment variable.

2. Run the following file:

   *TC_ROOT***vispoolmanager\run_visservermgr.cmd**

   > Note:
   >
   > If Visualization Server Pool Assigner (VPA) is not running, Visualization Server Manager displays console messages until it finds the VPA. To avoid this, **start Visualization Server Pool Assigner** before you start Visualization Server Manager.

When running **run_visservermgr.cmd**, you can use Windows remote desktop connection to sign on to the machine on which Visualization Server Manager is installed if you have an NVIDIA card with a driver version of 340.66 or later. Other remote access products, such as VNC, can also be used.

After running **run_visservermgr.cmd**, you can lock the machine, but you must remain logged on. If you sign out, Visualization Server Manager is shut down.

Visualization Server Manager requires access to the graphics card. Therefore, it cannot run as a Windows service in server-side rendering mode. However, you can start Visualization Server Manager as a Windows service when you use client-side rendering exclusively.

Optional: Configure automatic logon and restart on Windows

You can configure Windows to automatically log on and restart Visualization Server Manager in the event of a system reboot.

Caution:

Enabling automatic logon bypasses security. When Windows is configured to automatically log on, anyone with physical access to the machine can restart it and gain entry to the system. Use automatic logon *only* if the system is in a secure environment.

1. Open the Windows User Accounts dialog box:

   a. Press the Windows key+R to display the **Run** dialog box.

   b. In **Open**, type **netplwiz**, and then click **OK**.

2. In the **User Accounts** dialog box, select a user account from the list.

3. Clear the **Users must enter a user name and password to use this computer** check box.

4. Click **Apply**.

   The **Automatically sign in** dialog box appears.

5. In the **Password** and **Confirm Password** boxes, type the user's password.

6. Click **OK**.

   The specified user is automatically logged on when Windows starts.

7. Create a script or batch file to launch the Visualization Server Manager. Include the following command to lock the workstation:

   ```
   rundll32.exe user32.dll LockWorkStation
   ```

8. Create a new task with Windows Task Scheduler to run the script or batch file at log on.

Optional: Start Visualization Server Manager as a Windows service

You can start Visualization Server Manager as a Windows service only when you are exclusively using client-side rendering. Windows services cannot access the graphics card, so this is not a suitable deployment for server-side rendering.

1. To install Visualization Server Manager as a Windows service, run the **installservice.bat** command:

   ```
   installservice.bat "%JAVA_HOME%" "VSM-dir" pool-IDport
   ```

Replace *VSM-dir* with the path to the Visualization Server Manager's **jetty** directory. Replace *pool-ID* and *port* with the ID and port for the **VisPoolManager** service. The port must match the **VisPoolProxy.poolUrl** port in the **jettyservice.properties** file.

For example:

```
installservice.bat "%JAVA_HOME%" "%TC_ROOT%\vispoolmanager\jetty" vispool-A 8090
```

2. Locate the newly installed service named **Teamcenter VisServlet***pool-ID* in the list of Windows services.

3. Right-click the service name and choose **Properties**.

4. On the **Log On** tab, enter logon credentials for the domain user account under which the service runs.

   Visualization Server Manager requires an FMS client cache (FCC) to cache files. Use a dedicated account to run this service, not the **Local System** account.

   Windows attempts to run the service automatically by default. If the service is not already running, a problem may have occurred.

   If you set the service to start manually in its **Properties**, then you can click **Run** from the toolbar to start the service, or right-click the service in the **Services** window and choose **Start**.

   To stop the service, either click **Stop Service** on the toolbar, or right-click the service and choose **Stop**.

To uninstall the service, type **uninstallservice.bat "Teamcenter VisServlet** *pool-ID*.

Start Visualization Server Pool Assigner

Linux systems

To start Visualization Server Pool Assigner (VPA) on a Linux machine, type the following command:

*TC_ROOT***/visassigner/run_assigner.sh**

Alternatively, you can start the VPA as a daemon by running the **installservice.sh** command for each jetty server with admin permissions:

installservice.sh *unique-service-name port user*

If you do not specify parameters, the script runs in interactive mode and prompts you for the information.

For example, from the *TC_ROOT***/visassigner/jetty** directory, type:

sudo ./installservice.sh MyUniqueAssigner1 7780 MyUser

Windows systems

To start VPA on a Windows machine, run the following file:

*TC_ROOT***\visassigner\run_visassigner.cmd**

After running **run_visassigner.cmd**, you can lock the machine, but you must remain logged on. If you sign out, the VPA is shut down.

Alternatively, you can start VPA as a Windows service only when you are exclusively using client-side rendering. Windows services cannot access the graphics card, so this is not a suitable deployment for server-side rendering.

1. To install VPA as a Windows service, run the **installservice.bat** command:

   `installservice.bat "%JAVA_HOME%" "`*VPA-dir*`" `*assigner-IDport*

   Replace *VPA-dir* with the path to the VPA's *jetty* directory. Replace *assigner-ID* and *port* with the ID and port used by Active Workspace Gateway to connect to the Assigner.

   For example:

   ```
   installservice.bat "%JAVA_HOME%" "%TC_ROOT%\visassigner\jetty" VisAssigner-A
   8089
   ```

2. Locate the newly installed service named **Teamcenter VisServlet***assigner-ID* in the list of Windows services.

3. Right-click the service name and choose **Properties**.

4. On the **Log On** tab, enter the logon credentials for the domain user account under which the service runs.

   Windows attempts to run the service automatically by default. If the service is not already running, a problem may have occurred.

   If you set the service to start manually in its **Properties**, then you can click **Run** from the toolbar to start the service, or right-click the service in the **Services** window and choose **Start**.

   To stop the service, either click **Stop Service** on the toolbar, or right-click the service and choose **Stop**.

To uninstall the service, type `uninstallservice.bat "Teamcenter VisServlet` *assigner-ID*`"`.

Start Visualization Data Server

To start Visualization Data Server Manager, enter the following command:

Windows systems: *TC_ROOT***VisDataServer\Program\VisDataServer.exe**

Linux systems: *TC_ROOT*/**VisDataServer/bin/VisDataServer**

After the Visualization Data Server is started, it automatically detects and caches product configurations that have been indexed with the MMV flag. These cached product configurations are ready for fast visualization with the MMV technology.

For a product configuration is ready for MMV visualization, the following criteria must be met:

- The product configuration has been indexed.
- Visualization Data Server has detected, downloaded, and cached the structure.
- Visualization Data Server has prepopulated the FMS system.

If you attempt to visualize a product configuration that is not yet completely indexed and cached in the Visualization Data Server, the viewer uses the regular non-MMV mode by default. Changes in the product configuration need to be re-indexed and reread by the Visualization Data Server before they can be displayed by the viewer.

Additional configuration for the Visualization Data Server is available in the **etc/VisDataServer.properties** file. This includes detailed logging and fine tuning for other settings. If you make changes to the properties file, you need to restart Visualization Data Server.

Optional: Start the Visualization Data Server as a Linux daemon

To install these services, run the **installservice.sh** located in the **VisDataServer/bin** folder. Run this command with administrator permissions:

installservice.sh*unique-service-nameuserFMS_HOME*

For example, from the **VisDataServer/bin/** directory, type:

sudo ./installservice.sh VDS MyUser /VIS/VisServer/FCC

If you do not specify arguments, the script runs in interactive mode and prompts you for the required values.

To uninstall services, run the **uninstallservice.sh** script for each Jetty server. Run this command with administrator permissions:

uninstallservice.sh*service-name*

For example, from the **VisDataServer/bin/** directory, type:

sudo ./uninstallservice.sh VDS

If you do not specify arguments, the script runs in interactive mode and prompts you for the required values.

If you do not remember the name of the service, find it using the following steps:

1. Change to the *VisDataServer/bin/* directory or */etc/systemd/system* directory.

2. Search for a file named *name.service*. The *name* in this file name is the *unique-service-name* you specified when you installed the service using **installservice.sh**.

Optional: Start the Visualization Data Server as a Windows service

1. Make sure the **FMS_HOME** environment variable is set as a system environment variable, not a user variable. The VDS runs as a service only if **FMS_HOME** is a system environment variable.

2. Inspect the *VisDataServer.properties* file and make sure all file paths specified in it are full paths, not relative paths.

3. Open a Teamcenter command prompt and change to the root directory of the Visualization Data Server.

4. Install the Visualization Data Server as a Windows service by running the **VisDataServer.exe** command with the **/registerService** argument:

   VisDataServer.exe /registerService /displayName=*name***/startup=***option*

   Replace *name* with a display name for the service. Replace *option* with **automatic** or **manual**.

   For example:

   ```
   VisDataServer.exe /registerService /displayName=VisDataServer /startup=automatic
   ```

   Optional additional arguments:

Argument	Description	Example
description	Specifies a description for the service.	`/description="VDS for Active Workspace"`
config	Specifies a configuration file to load for the application.	`/config="VDSConfig.txt"`

After the service is successfully installed, Windows displays the following message:

```
The application has been successfully registered as a service.
```

5. Configure the VDS service:

   a. In the Windows **Services** dialog box, locate the VDS service by the name you specified in the **displayName** attribute.

   b. Right-click the service name and choose **Properties**.

   c. In the **Log on** tab, enable the service logon with the following options:

   - **Log on as**: Select **This account**, and then enter the domain and user name, for example, **myDomain\myName**.
   - **Password**: Enter and confirm the password for the user account.

   > Note:
   >
   > The VDS requires an FMS client cache (FCC) to cache files. Use a dedicated account to run this service, not the **Local System** account.

Windows attempts to run the service automatically by default. If the service is not already running when you open the Windows **Services** dialog box, the installation may have failed.

If you set the service to start manually, right-click the service name and choose **Start**. To stop the service, right-click the service name and choose **Stop**.

To uninstall the service, run the **VisDataServer.exe** utility with the **/unregisterService** argument.

Rebuild VDS repository from scratch

As the VDS repository is updated via deltas containing incremental changes from Teamcenter that occur as design data evolves, the repository used to support MMV viewing may introduce errors. To reduce errors, a good practice is to periodically regenerate the VDS repository from scratch. The default threshold for this scratch rebuild is every 500 delta updates, but this value is configurable by an administrator. A full regeneration of the VDS repository can be set to occur more or less often, depending on the observed need.

To change the number of deltas that are processed before a scratch rebuild of the VDS repository, set the **MMV_delta_collection_accumulation_limit** Teamcenter preference to a value higher or lower than the default value of 500. This will change how often the VDS rebuilds its repository from scratch.

> Note:
>
> To manage the number of delta files that are to be deleted, use the **MMP_PERCENTAGE_OF_DELTA_TO_PURGE** preference. Its default value is 100, but based on your need, you can set it to any value from 10 to 100. Refer to the following table to understand preference value limits:

If preference value is set to	then preference value processed is
<=10	10
10 < value < 100	value
>=100	100

All delta files are deleted when the **MMP_PERCENTAGE_OF_DELTA_TO_PURGE** preference value is set to 100.

> Example:
>
> Set the **MMV_delta_collection_accumulation_limit** preference value to 500.
>
> In this case, since the value is set to 500, it becomes the maximum delta limit. After 500 deltas are processed, a completely new mmp file is created.
>
> To delete 100% of the old delta files in the MMV dataset, set the **MMP_PERCENTAGE_OF_DELTA_TO_PURGE** preference value to 100. If you want to delete only 10% of the old delta files in the MMV dataset, set the **MMP_PERCENTAGE_OF_DELTA_TO_PURGE** preference value to 10.

Visualization Data Server status log settings

Configuration for the Visualization Data Server is available in the **etc/VisDataServer.properties** file. This includes detailed logging and fine tuning for other settings. If you make changes to the properties file, you must restart the Visualization Data Server.

Log information includes the status of all products hosted by the Visualization Data Server.

```
#
# Status logger settings. The status logger can be of help showing
the current indexing status
# and also the current and waiting task to be processed.
#
# The interval to generate the status log (see the "Interval"
```

```
documentation
 for more info).
StatusLogger.StatusInterval=120
# This will output the name of the top level (root) node.
StatusLogger.ShowRootName = true
# Shows the timestamp of the indexed product.
StatusLogger.ShowTimestamp = true
# Shows the available revision rules of indexed product.
StatusLogger.ShowRevRule = true
# Shows the status of the Spatial JTs.
StatusLogger.ShowSpatialJt = true
# If ShowSpatialJt is true, also shows the file path of the Spatial JTs.
StatusLogger.ShowSpatialJtPath = true
# If ShowSpatialJt is true and a Spatial JT is missing, the string will
be added
in from of the path.
# This can be used if a specific string is needed to search for a
missing
file (like using the grep utility).
StatusLogger.MissingSpatialJtMessage = (missing)
# Shows all the versions of a product instead of just the latest one.
StatusLogger.ShowAllVersions= false
# Shows the active tasks being processed.
StatusLogger.ShowActiveTasks=true
# Shows any waiting tasks to be processed.
StatusLogger.ShowWaitingTasks=true
```

8. Configuring Teamcenter for visualizing models in the rich client

Configure Teamcenter for visualizing models in the rich client

Perform the following configurations to visualize models in the rich client:

Procedure

1. Configure **FMS client cache**.
2. Configure **updating session files** in Multi-Site environments.
3. **Enable confirmation** for loading authentication data for session files.
4. **Configure Lifecycle Viewer**.
5. **Add search schemas** for the Lifecycle Viewer.
6. Configure Teamcenter to **visualize structures with large number of BOM lines**.
7. Set up using **separate TcServer session for the standalone viewer**.
8. **Remove argument** to use the Lifecycle Visualization embedded viewer.
9. **Customize the rich client Viewer view**.
10. Configure preferences to **specify new types of visualization datasets**.
11. Configure **automatic markups**.
12. Configure **image preview**.
13. Set Visualization preferences to configure the **behavior of Lifecycle Visualization datasets**.

Configure FMS client cache

What are TCCS and FCC and why are they required?

The Teamcenter client communication system (TCCS) manages communication and file transfers between Teamcenter clients and servers. TCCS contains the Teamcenter Server Proxy (TSP) application which manages HTTP/S communication with a Teamcenter server and provides support for forward proxy, reverse proxy, and Kerberos authentication.

TCCS also contains the FMS client cache (FCC), which uploads files from your workstation to a Teamcenter volume and also downloads requested files from the volume to your workstation. The Teamcenter lifecycle visualization integration with Teamcenter requires an FCC to transfer volume data between Teamcenter and the Lifecycle Viewer.

TCCS is normally installed with the Teamcenter rich client. If the Teamcenter rich client is installed on your machine, most likely no additional installation steps are necessary.

For information on installing TCCS with the Teamcenter rich client, refer to Teamcenter Rich Client Installation on Windows or Teamcenter Rich Client Installation on Linux within the Teamcenter documentation.

Configure FCC to view data from multiple Teamcenter servers

If you plan to view data from multiple Teamcenter servers such as Teamcenter, Teamcenter engineering process management, and Teamcenter Enterprise, the various databases may not be coordinated with the viewer. You can connect to only one server at a time with a single File Management System (FMS).

You must install either separate rich clients for these servers or the FMS client caches (FCCs).

To enable viewing visualization data, update the fcc.xml file for each Teamcenter server —

1. Contact your Teamcenter administrator for the following information about each server for each Teamcenter product that you want to view visualization data from:

   - The site ID number
   - The parentfsc address

2. Open a command window on your machine and navigate to *teamcenter-product-installation-directory***\tccs\bin**.

   Example:

   d:\tc\2412\tccs\bin

3. At the command prompt, type: **fccstat –stop –kill**.

4. Navigate to *teamcenter-product-installation-directory***\tccs**.

5. Open the *fcc.xml* file in a text editor and search for the following string: **external site access definition**.

6. Update the site information by adding the following attributes and their values:

   <site id=”site number” overridable=”true”>

<parentfsc address="URL" priority="1"/>

</site>

> Example:
>
> **<site id="101010101" overridable="true">**
>
> **<parentfsc address="http://tcentserver:4444/" priority="1"/>**
>
> **</site>**

7. If you have multiple Teamcenter product servers and you want to view visualization data from all of them, add the site information for each server.

> Note:
>
> - For each additional **<site>** entry that you add to the **fcc.xml** file, in the **<parentfsc>** tag, increment the value of the priority attribute, so that each entry has a different priority.
> - You can only connect to a single server at a time.

8. Save the **fcc.xml** file.

9. At the command prompt, type: **fccstat –start**.

If your machine has multiple FCCs and you want to view visualization data from a particular product, your machine's **FMS_HOME** environment variable must point to the location of the product's FMS.

To check or change the value of the FMS_HOME environment variable —

> Note:
>
> A TCCS/FCC stop is required before updating the **FMS_HOME** variable.

Windows	Linux
1. Right-click **My Computer** and select **Properties**. 2. In the **System Properties** dialog box, click the **Advanced** tab. 3. On the **Advanced** page, click **Environment Variables**. 4. On the **Environment Variables** page, in the **User variables** section, find **FMS_HOME** and verify that	1. In the shell window from which the software product was launched, type echo **$FMS_HOME**. A path to the installation of that product is displayed. 2. Check the path to verify that the **FMS_HOME** environment variable is pointing to the right product.

Windows	Linux
its path refers to the installation path of the product from which you want to load visualization data. 5. If necessary, change the path as needed. Example: **d:\tc\2412\tccs**	3. If necessary, change the path as needed. Example: **.../tc/2412/tccs**

Configuring FCC for background file loading

Using background file loading for large JT models may improve the performance of subsequent analysis operations, for example, creating a cross section of a vehicle engine. Background file loading uses secondary processing when the system is idle. Initial file rendering caches JT file fragments that support displaying the model in the viewer. Once the initial rendering is complete, background file loading uses secondary processes to begin streaming complete files that you selected. During this process your users can view, rotate, and interact with the model; however, they might interrupt background loading or defer it to a later time because the primary viewer rendering takes higher priority. For example, cutting a cross-sectioning may defer the background loading to a later time.

To enable background file loading, you must first configure File Management System (FMS) client caches (FCCs). Consider the following when you configure FCC:

- Load your JT data from Teamcenter. This feature only supports working with managed data and FMS.
- Use or install FCC 9.1 or later.
- Configure the FCC to be large enough to load all the JT files required for visualizing models using a rich client session. If the FCC cache is too small, not all the JT files will be available during a viewing session with unpredictable results. For example, the geometry for a part may not be visible, or a *LoadPartException* error will be displayed.

Update configuration settings in the fcc.xml configuration file —

- Set the segment cache to twice the size of the largest model.

  Example:

  If the largest model is 2 GB, set the segment cache to 4 GB.

- Set the whole file cache to twice the size of the largest model.

- Review and set `MinimumReadCacheAgeMinutes` to a longer duration than approximately the time the end users will be away from an active viewing session. For example, if your users can normally be interrupted for two hours during an active viewer session, set `MinimumReadCacheAgeMinutes` to three hours.

> Note:
>
> The initial file rendering performance is not significantly influenced by selecting background file loading.

For detailed information about installing and configuring FMS and FCC, see the following:

- For more information about installing FCC in Teamcenter lifecycle visualization, see Teamcenter lifecycle visualization Installation in the Lifecycle Visualization help.
- For more information about Teamcenter FMS, see Introduction to File Management System in Teamcenter *Teamcenter Administration* in the Teamcenter help.
- For more information about configuring FCC using **fccdefaults**, see Teamcenter Teamcenter Administration in the Teamcenter help.

For steps to select background loading for JT files, see Load JT files using background processing.

Purge cache to make disk space for newer cache files — Cache purging is a process that removes the oldest files in the FCC whole file cache to make disk space for newer cache files. Minimum values for cache purging include the size of the segment and whole file caches, and minimum cache file age. To prevent the application from deleting (purging) model files from your FCC cache, the **fccdefaults** options must be set to optimize how you work in your environment.

> Example:
>
> - In this example, a model is 8 GBs, but available local disk space is 7 GBs.
>
> Your users can expect poor performance because the entire model cannot be loaded in the whole file cache. As a result, data is downloaded using segment cache until it writes more than the allocated data. It is important to note that data is loaded in Teamcenter lifecycle visualization, but additional time is needed to render all parts.
>
> - In this example, a large model is 2 GBs, and both the whole file and segment cache are set to 1 GB.
>
> The data is downloaded using segment cache. The segment cache automatically purges the oldest files whenever you access an object, which reduces performance. To resolve the performance problem, the system administrator should set the both the whole file and segment cache size to 4 GBs.

Note:

If the option, `MinimumReadCacheAgeMinutes`, has not been exceeded, the cache increases to support loading the 2 GB model. That is, the cache expands so the 2GB model is loaded or until the age exceeds its configured value (the default value is four hours).

- In this example, the cache size grows larger than the segment cache and `MinimumReadCacheAgeMinutes` is exceeded.

  The default for the `MinimumReadCacheAgeMinutes` option is four hours. Files in your model have been downloaded and they are stored in your cache. If a file has not been accessed after four hours, and you need to access and work with new data, the cache policy is configured to purge the older files to make room for newer ones.

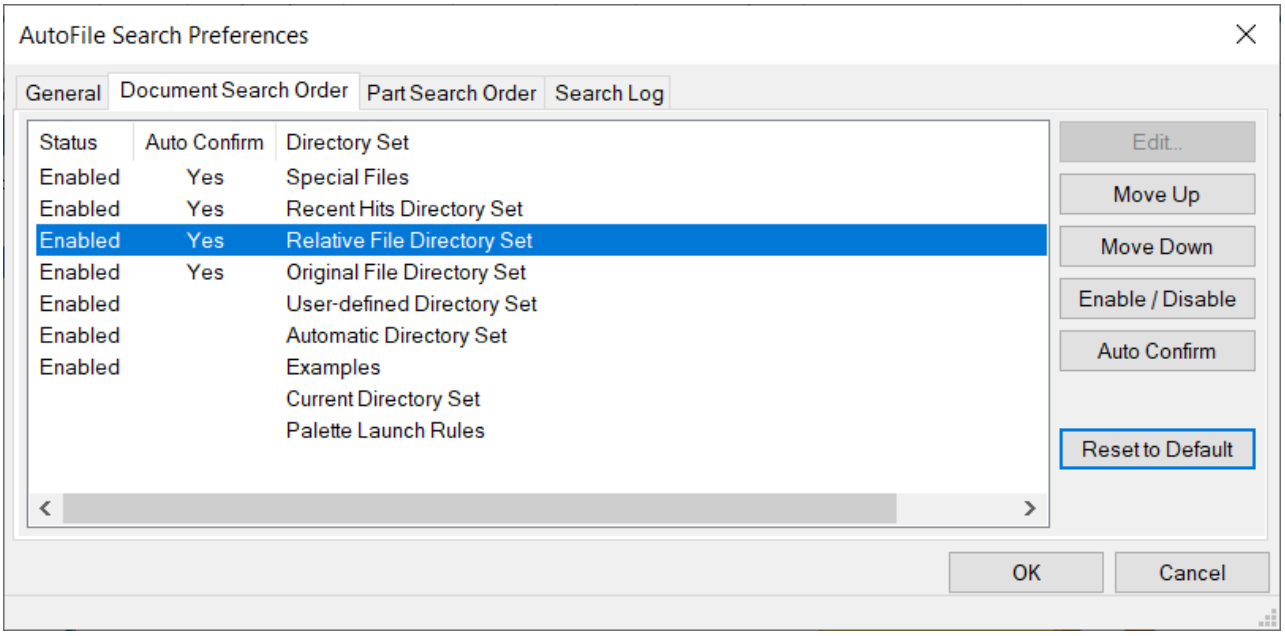
Configure updating session files in Multi-Site environments

When working in a Multi-Site Collaboration environment, Teamcenter lifecycle visualization session files referencing dynamic 3D documents may not update correctly. This issue can appear under the following conditions:

- The session file is created on the master site.
- The session file references dynamic 3D documents.
- The session file and all referenced data are replicated on another site in the network.
- The session file is loaded into Teamcenter lifecycle visualization from a replica site.

To prevent session update failures in Teamcenter lifecycle visualization, perform the following steps to update the **File Locate** preferences:

1. Choose **File→Preferences→File Locate**.
2. In the **AutoFile Search Preferences** dialog box, click the **Document Search Order** tab.
3. In the search order list, select **Relative File Directory Set**.
4. Click **Move Up** to position **Relative File Directory Set** above **Original File Directory Set** in the list.
5. Click **Auto Confirm**.



6. Click **OK**.

Enable confirmation for loading authentication data for session files

If you save a session file locally in a two-tier Teamcenter environment and then load the session file into a four-tier environment when two-tier is not running, the authentication data is automatically loaded.

If you prefer that data is not loaded automatically and you want to confirm the loading of data, add the **WEB_default_url_autoconfirm** preference, and set it to **false**.

Configure Lifecycle Viewer

Configure Teamcenter to match viewer version

The Teamcenter rich client and the Lifecycle Visualization embedded viewer must share the same release. For patches, the viewer must be the same version as the rich client, or newer.

When using a version of the viewer that is newer than your rich client, new viewer features may not be available if they require rich client or server support. In addition, if a newer version of the viewer is installed, you must copy the **SingleEmbeddedViewer.jar** file from the *<viewer_install_location>\Program* folder to the *<rac_install_location>\rac\plugins* folder, overwriting the older version of the file.

Manage Teamcenter settings to match viewer file updates

The files used to configure Teamcenter are cached. As a result, if you update the **client_specific.properties** or **tcviewer.properties** files, your changes may not be visible because rich client could be referencing the cached files. If you are unable to see your changes in the viewer, do the following:

- Clear the cache by adding the **–clean** argument to the command line in the shortcut that you use to start the rich client. Once your changes appear, you can remove the argument from the command line.

- If you update a JAR file in the **../rac/plugins** directory, ensure to replace the original JAR file with the updated version. Do not retain the original version of the JAR file in the directory.

Specify Lifecycle Visualization licensing options to work with Teamcenter

For Lifecycle Visualization to work in Teamcenter, you must have the appropriate license. The licensing is required for the Lifecycle Viewer and the Teamcenter embedded viewers. To set the license level, perform the following steps.

> Caution:
>
> These settings must match the licensing configuration available from your Teamcenter license server. They are set automatically during the client installation and in most cases should not be modified.

1. Set the visualization service level license

   When you create or modify a user in Organization, for the **Visualization Licensing Level**, choose the appropriate license for the user: **Base**, **Standard**, **Professional**, or **Mockup**.

2. Specify the licensing for additional optional applications

   a. Open the *client_specific.properties* file in a text editor. The file is located in the *<RAC_install_location>\plugins\configuration_<version>* directory on client machines.

   b. If the *client_specific.properties* file does not contain the following line: `PortalViewer_Optional_licenses`, add it to the file, and set it to include the names of applicable functionality options.

      The following names of functionality options are not included in the default product configurations. You must type the values individually, separated by commas to match any additional licenses you have purchased:

      - `Simplified_Rendering`

- `ECAD`
- `Analysis`
- `Path_Planning`
- `Concept_Desktop`
- `Collaboration`
- `Visual_Report`
- `STEP`
- `JT_Inspect_Workflow`

Example:

`PortalViewer_Optional_Licenses=ECAD,Analysis,Path_Planning`

3. Build the registry to implement the changes

   To implement the changes, run the *genregxml.bat* file located in the *<RAC_install_location>\portal\registry* directory on client machines.

Set up rich client commands to open models in the standalone viewer

The options or commands to send Teamcenter-managed visualization data to the standalone application viewer are not shown by default on the rich client user interface. To enable viewing these commands in the rich client, you must set the **TC_show_open_in_vmu_button** preference.

1. In the rich client, choose **Edit→Options**.
2. In the **Options** dialog box, select **Lifecycle Visualization**.
3. Select the **Show "Open in Lifecycle Visualization" command** check box.
4. Click **OK**.

   In the rich client, the **Start/Open in Lifecycle Visualization**  toolbar button and the **File→Open in Lifecycle Visualization** menu command are displayed.

Configure viewer features for multifield keys

Multifield keys are identifiers assigned to objects to ensure their uniqueness in the database. For example, if the *item* business object type is configured to use multifield keys, it is possible to have two *item* objects with the same item ID.

Most visualization features support multifield key data without requiring any additional configuration, with the following exceptions:

- ClearanceDB

  The managed product name must include the **__PLM_ITEMREV_UID** value for the item revision, and the *Clearance.cfgproduct* file must include the multifield key properties for the item containing the product.

- MDS stamping

  The **MetaDataStamp_template** preference must specify the values of the multifield key properties associated with the item containing the MDS_default_styles_template dataset.

Configure Teamcenter to view Lifecycle Visualization sessions

To enable users to view and work with sessions created and saved in Teamcenter lifecycle visualization, you must configure the following:

1. Relate the **Vis Session** dataset to the specific item revision type which you plan to use for sessions.

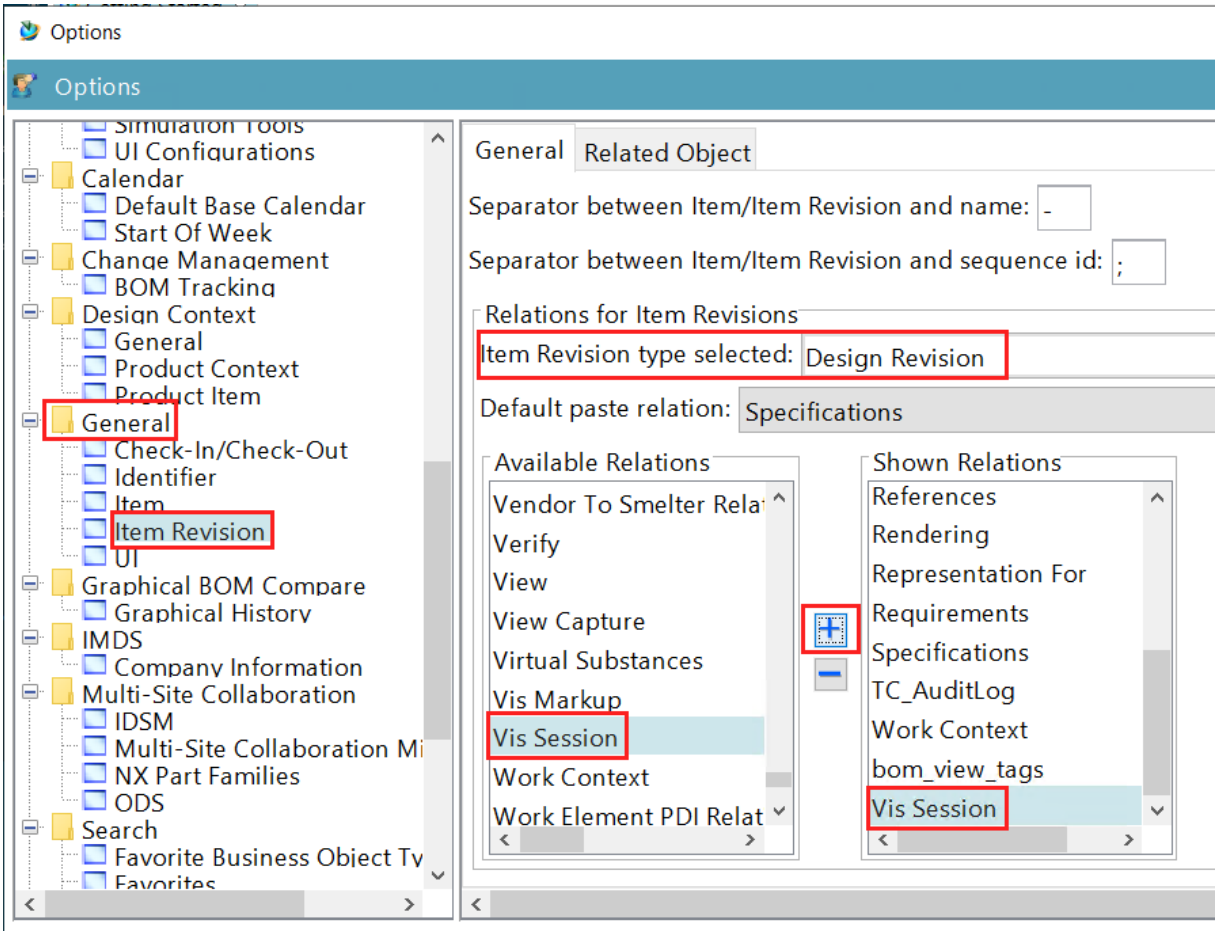
   a. In My Teamcenter, choose **Edit→Options**.

   b. In the **Options** dialog box, choose **General→Item Revision**.

   c. On the **General** tab, select the desired **Item Revision type selected**, for example, **Design Revision**.

      This specifies the item revision type for which the sessions saved in standalone Lifecycle Visualization will be available in the Teamcenter rich client.

   d. If not already present in **Shown Relations**, under **Available Relations**, select **Vis Session**, and add it to **Shown Relations**.

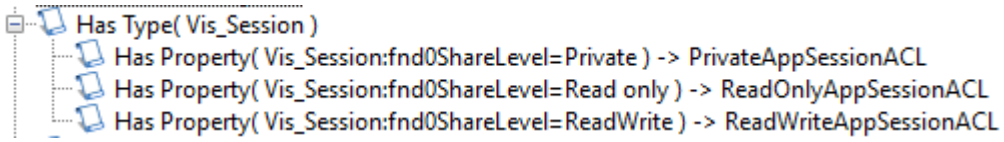


e. Click **Apply**, and then click **OK**.

2. Relate the **Vis_Session** dataset to the **Fnd0AppSession** object. Once the **Vis_Session** dataset is related to **Fnd0AppSession**, it should not be modified outside the context of **Fnd0AppSession**. To protect this integrity, use the suggested access control lists (ACLs):

   a. In Access Manager, add a **Has Type** condition for **Vis_Session** on the existing **Has Class(Fnd0AppSession)** rule.

   b. Add the following properties for the **Has Type(Vis_Session)** rule.



   c. On the **General** tab, select the desired item revision type to relate, for example, **Design Revision**.

d. If not already present in **Shown Relations**, under **Available Relations**, select **Vis Session**, and add it to **Shown Relations**.

Fnd0AppSession supports the following values:

- Private: Only the owning user may view or modify the session objects. Other users cannot view the session objects.
- ReadOnly: Only the owning user may modify the session objects. Other users can view the session objects.
- ReadWrite: All users can view or modify the session objects.

Add search schemas for the Lifecycle Viewer

By default, the following system-defined search schemas are used when performing a search operation in the standalone viewer and in the Lifecycle Viewer:

- Dataset
- Item
- Item revision
- Part

To add any additional system-defined search schemas, add them as values in the Teamcenter **TC_DIS_Search** preference.

Configure Teamcenter to visualize structures with large number of BOM lines

To avoid server time-out issues when trying to visualize large BOM lines in the Lifecycle Viewer, you may need to adjust the **executionTimeout** and **maxRequestLength** values in the *Web.config* file of the Teamcenter web server.

1. Browse to the middle tier installation directory.
2. In the *Web.config* file, increase **executionTimeout** to **7200** and **maxRequestLength** to **131072**, as follows:

```
<httpRuntime executionTimeout=”7200”maxRequestLength=”131072”/>
```

3. Clear the cache.

4. Restart the IIS server, the Teamcenter server, and the Teamcenter rich client.

Set up using separate TcServer session for the standalone viewer

By default, in a four-tier environment, when you launch standalone Lifecycle Visualization from the Teamcenter rich client, the viewer and the rich client share the same **TcServer** session. When users perform a time consuming standalone viewer operation, the rich client may appear to lock up until the viewer operation is finished. To avoid this, you can configure Teamcenter to create a separate **TcServer** session for the standalone viewer.

1. Locate your *<rac_install_location>\rac\plugins\configuration_XXX* directory.

2. Open the *site_specific.properties* file in a text editor.

3. If not already present, add the following section:

```
##########################################################################
########

# Share tcserver with standalone Viewer (that also supports sharing).

# on this machine when logging in with the same user credentials.

# Default is true. If desired, change to false before starting the rich
client.

##########################################################################
########

#viewerShareSession=true
```

4. Change the last line from:

```
#viewerShareSession=true
```

   To:

```
viewerShareSession=false
```

5. Save the file and start the rich client.

When you launch the standalone viewer from the rich client, the viewer will have its own **TcServer** session.

Note:

Embedded viewers in the rich client are not affected by this property. They will continue to share the **TcServer** session with the rich client.

How locale affects embedded viewer behavior

The Lifecycle Visualization embedded viewer launches in the locale of the operating system. For the embedded viewer to work properly, the operating system locale and the rich client runtime locale must match.

The **-nl** argument overrides the Java locale and can cause incorrect behavior in the embedded viewer. Therefore, if you use the Lifecycle Visualization embedded viewer, do not use the **-nl** argument when you launch the rich client.

Customize the rich client Viewer view

The framework for the **Viewer** view in the rich client uses preferences to configure the **Viewer** view to traverse the data model and present a viewer for the selected business object type. When an object is selected in the rich client, the preference configuration is read, and the correct target viewer is presented.

You can use the following preferences to configure the **Viewer** view.

Preference	Purpose
defaultViewerConfig.VIEWERCONFIG	Use this preference to specify the default **Viewer** view configuration by defining which Generic Relationship Management (GRM) rules to expand and which viewer to use for each type of object specified in the preference. For default values, see the **defaultViewerConfig.VIEWERCONFIG** preference description.
*<viewer-config-ID>***.VIEWERCONFIG**	Use this preference to specify an alternate **Viewer** view configuration instead of the **defaultViewerConfig.VIEWERCONFIG** preference. This preference defines which GRM rules to expand, and the viewer to use for each type of object specified in the preference. • You can create your own preference using the *<viewer-config-id>***.VIEWERCONFIG** format for the name. The name must end with **.VIEWERCONFIG**. • To use this preference instead of the default viewer configuration preference, you must specify the preference name in the **Viewer.VIEWERCONFIGTOLOAD** preference.

Preference	Purpose
	Note: There is no default value for the *<viewer-config-ID>*.**VIEWERCONFIG** preference. Enter values for your own configuration. For an example of values, see the **defaultViewerConfig_VIEWERCONFIG** preference.
Viewer.VIEWERCONFIGTOLOAD	Use this preference to specify the **Viewer** view configuration to load. This preference must point to a **.VIEWERCONFIG** preference name. By default, this preference points to the **defaultViewerConfig.VIEWERCONFIG** preference. To point to an alternate preference, enter a *<viewer_config_id>*.**VIEWERCONFIG** preference name.

Configure preferences to specify new types of visualization datasets

For visualization file types defined as dataset business objects by the Business Modeler IDE, but not associated by default with the Lifecycle Viewer and the My Teamcenter viewer, you must configure each dataset type for display.

Note:

You must provide unique names for each new dataset type and named reference.

1. Add the names of the custom dataset types to the **VMU_Datasets** preference.

2. Add the names of the custom references to the **VMU_FileSearchOrder** preference.

3. If 2D markup layers are valid for these file types, add the names of the custom references to the **TC_DIS_2D_named_ref** preference.

4. If 3D markup layers are valid for these file types, add the names of the custom references to the **TC_DIS_3D_named_ref** preference.

5. (For the Lifecycle Viewer) Create entries for each dataset type in the *TcViewer_properties.txt* file.

   The *TcViewer_properties.txt* file is installed in the *installation_directory**Visualization**etc**PLMIntegration* directory on client machines containing standalone viewer installations. This file contains examples of properly constructed dataset type definitions and comments that describe each of the necessary parameters.

6. (For My Teamcenter) Create entries for each dataset type in the **defaultViewerConfig.VIEWERCONFIG** preference.

   Example:

   To enable the viewing of NX *.prt* files in the My Teamcenter viewer, add the following values to the **defaultViewerConfig.VIEWERCONFIG** preference:

   UGMASTER.DirectModelViewer=UGPART

   UGPART.DirectModelViewer=UGPART

   UGALTREP.DirectModelViewer=UGPART

7. (For My Teamcenter) Add the names of the visualization dataset types that contain more than one named reference to the **VIS_multi_file_datasettypes** preference.

   Note:

   Users can view the selected named reference in the My Teamcenter embedded viewer.

Configure automatic markups

Automatic markup functionality enables users to markup 2D and 3D datasets directly along with nonstandard dataset types. Perform the following steps to enable this functionality within the Lifecycle Viewer and the embedded viewers that are located within Teamcenter applications such as My Teamcenter and the Structure Manager.

1. In the Business Modeler IDE application, create a new dataset type, for example **DJ_Dwg**. The following is an example of defining the dataset type:

   a. In the **Tools** section, add the **PV** tool to the **List of Selected Tools** field.

   b. Click **References**.

   c. In the **References** dialog box, enter the name of the dataset type in the **Reference** box, for example, **dj_drawing**.

   d. Enter **File** in the **File/Object** box.

   e. Enter **.jpg** in the **File** box.

   f. Enter **BINARY** in the format box.

   g. Click **Create** to create the new dataset type.

2. Modify the *\com\teamcenter\rac\common\tcviewer\tcviewer.properties* file located in the *%IPR%\plugins\com.teamcenter.rac.common_teamcenter-version-number.jar* file.

   a. Add the name of the newly created dataset type to the **DatasetViewer.TYPES** property, for example, add **DJ_Dwg**.

   b. Add the named reference to the **DatasetViewer.VIEWSEARCHORDER** property, for example, add **dj_drawing**.

   c. Add the **VIEWPANEL** for the new dataset type, for example, add **Dj_Dwgcom.VIEWPANEL= com.teamcenter.rac.common.tcviewer.TCTwoDViewer**.

3. In the *\com\teamcenter\rac\explorer\explorer.properties* file, located in the *%IPR%\plugins\com.teamcenter.rac.tcapps_teamcenter-version-number.jar* file, add the name of the new dataset type to the **explorer.CONTAINERDATASETTYPES** list.

4. In My Teamcenter, choose **Edit→Options**, and add the dataset type based on the type of markup required.

For 2D markups	For 3D markups
Add the name of the dataset type to the following preferences: • **TC_DIS_2D_named_ref** • **VMU_Datasets**	Add the name of the dataset type to the following preferences: • **TC_DIS_3D_named_ref** • **3DMarkup_relation_primary** • **VMU_Datasets**
Add the name of the new named reference, for example, **dj_drawing**, to the **VMU_FileSearchOrder** preference.	Add the name of the new named reference, for example, **dj_drawing**, to the **VMU_FileSearchOrder** preference.

5. In My Teamcenter, choose **Edit→Options**, and create a new *dataset_type*_**DefaultChildProperties** preference, where the*dataset_type* is the name of the new dataset type, for example, **DJ_Dwg_DefaultChildProperties**.

Configure image preview

Configure the Image Preview view

The **Image Preview** view provides quick previews of 2D raster images. To enable viewing 2D raster images, you can configure 2D dataset types, reference types, and the relation search order by performing the following steps:

1. Open the *tcgrb.properties* file, which is located in the **com.teamcenter.rac.tcgrb_8000.0.0** plug-in.

2. Based on your requirement, perform any of the following actions.

To	Do this
Specify the 2D datasets to display	Add 2D dataset types, separated by commas, to the **Thumbnail2DViewer.TYPES** property.
Specify the named reference types to be searched within a dataset for an image to display. Only named references listed here are valid candidates for thumbnail display.	Add named reference types, separated by commas, to the **Thumbnail2DViewer.VIEWSEARCHORDER** property.
Specify the order in which datasets are chosen when there are datasets attached in different relations to an item revision.	Add relation types, separated by commas, to the **Thumbnail2DViewer.RELATIONSEARCHORDER** property. Note: Images are displayed according to the order specified here, even if there are valid 2D datasets attached in other relations to an item revision.

Example:

```
Thumbnail2DViewer.TYPES=Image
Thumbnail2DViewer.VIEWSEARCHORDER=Image
Thumbnail2DViewer.RELATIONSEARCHORDER=IMAN_reference,IMAN_manifestation,IMAN_Rendering,IMAN_specification
```

3. Save the file, and then update the plug-in.

Configure the JT Preview

The **JT Preview** view provides quick previews of .jt parts. To enable viewing .jt parts, you can configure 3D dataset types, reference types, and the relation search order by performing the following steps:

Teamcenter embedded visualization must be installed for the **JT Preview** tab in the Teamcenter client to function properly.

1. Open the *tctdv.properties* file, which is located in the **com.teamcenter.rac.tctdv_8000.0.0** plug-in.

2. Based on your requirement, perform any of the following actions.

To	Do this
Specify the 3D datasets to display	Add 3D dataset types, separated by commas, to the **Thumbnail3DViewer.TYPES** property.
Specify the named reference types to be searched within a dataset for a part to display. Only named references listed here are valid candidates for thumbnail display.	Add named reference types, separated by commas, to the **Thumbnail3DViewer.VIEWSEARCHORDER** property.
Specify the order in which datasets are chosen when there are datasets attached in different relations to an item revision.	Add relation types, separated by commas, to the **Thumbnail3DViewer.RELATIONSEARCHORDER** property. Note: Images are displayed according to the order specified here, even if there are valid 3D datasets attached in other relations to an item revision.

Example:

```
Thumbnail3DViewer.TYPES=DirectModel,DirectModelMotion
Thumbnail3DViewer.VIEWSEARCHORDER=JTPART
Thumbnail3DViewer.RELATIONSEARCHORDER=IMAN_manifestation,IMAN_Render
ing,IMAN_specification,IMAN_Motion,IMAN_3D_snap_shot,
TC_Attaches
```

3. Save the file, and then update the plug-in.

Configure image preview in Relation Browser

You can configure the image preview in Relation Browser perspective of the rich client by specifying the relation search order and the view search order in the **tcgrb.properties** file.

1. Open the *tcgrb.properties* file, which is located in the *com.teamcenter.rac.tcgrb_xxxx.x.x* plug-in.

2. Based on your requirement, perform any of the following actions.

To	Do this
Specify the order in which datasets are chosen when there are datasets attached in	Add relation types, separated by commas, to the **DatasetViewer.RELATIONSEARCHORDER** property.

To	Do this
different relations to an item revision.	Note: Images are displayed according to the order specified here, even if there are valid datasets attached in other relations to an item revision.
Specify the named reference types to be searched within a dataset for an image to display. Only named references listed here are valid candidates for image preview display.	Add named reference types, separated by commas, to the **ImagePreview.VIEWSEARCHORDER** property.

Example:

```
DatasetViewer.RELATIONSEARCHORDER=IMAN_manifestation,
IMAN_Rendering,IMAN_specification,IMAN_Motion,IMAN_3D_snap_shot
ImagePreview.VIEWSEARCHORDER=UG-QuickAccess-Binary,Graphics-
Interface,Markup,Image,JPEG,BMP,Shaded-image
```

Note:

If the first dataset found does not contain an image file, Relation Browser searches until an image file is found.

3. Save the file, and then update the plug-in.

Configure image preview in the Summary view

You can configure the image preview in the **Summary** view by specifying the relation search order and the view search order in the *tcviewer.properties* file.

1. Open the *tcviewer.properties* file, which is located in the *com.teamcenter.rac.common.tcviewer* plug-in.

2. Based on your requirement, perform any of the following actions.

To	Do this
Specify the order in which datasets are chosen when there are datasets attached in different relations to an item revision.	Add relation types, separated by commas, to the **DatasetViewer.RELATIONSEARCHORDER** property.

To	Do this
	Note: Images are displayed according to the order specified here, even if there are valid datasets attached in other relations to an item revision.
Specify the named reference types to be searched within a dataset for an image to display. Only named references listed here are valid candidates for image preview display.	Add named reference types, separated by commas, to the **ImagePreview.VIEWSEARCHORDER** property.

Example:

```
DatasetViewer.RELATIONSEARCHORDER=IMAN_manifestation,
IMAN_Rendering,IMAN_specification,IMAN_Motion,IMAN_3D_snap_shot
ImagePreview.VIEWSEARCHORDER=UG-QuickAccess-Binary,Graphics-
Interface,Markup,Image,JPEG,BMP,Shaded-image
```

Note:

If the first dataset found does not contain an image file, the system does not continue searching the datasets until an image file is found.

3. Save the file, and then update the plug-in.

Teamcenter preferences

You can use Teamcenter preferences to control various aspects of an application's behavior and appearance. At their core, preferences are simply a way to store information. They are similar to environment variables, except that they operate with several layers of permissions.

Where can I get a list of preferences?

There are several sources from which to retrieve a list of preferences and their definitions, such as Administration data report, rich client, and raw XML export.

Create new group or role preference instances

Depending on your dba or group administrator status, you will either see the entire organization or just a portion of it. Either way, use the organization chart to navigate to an available group, role, or user location to view or modify that location's existing preference instances or to create new ones.

Export, edit, and importing preferences

You can manually edit preference XML files to create or modify a preference, and then use the **preferences_manager** utility to load the XML files, or use the rich client to import the files.

Setting Visualization preferences to configure the behavior of Lifecycle Visualization datasets

Overview of Teamcenter Integration preferences

Use the Teamcenter Integration Preferences to specify the default behavior of visualization datasets in Lifecycle Visualization. In the standalone viewer or the Lifecycle Viewer, choose **File→Preferences→Teamcenter Integration** to adjust any of the following preferences:

These preferences	Do this
Teamcenter Integration 3D Loader preferences	Specify the unit of measurement for PLM XML and Parasolid files loaded from Teamcenter. Also specify how to load 3D documents containing both static and configured product structure.
Teamcenter Integration Session preferences	Control the default save location for session files.
Teamcenter Integration Markup preferences	Control how new markups are named and whether or not to display messages during batch modifications.
Teamcenter Integration Check Out preferences	Specify the default behavior when attempting to load checked out objects.
Teamcenter Integration Attributes preferences	Control the display of Teamcenter and NX attributes present in visualization datasets.
Teamcenter Integration Snapshot preferences	Control how 2D snapshots and 3D product views are saved to Teamcenter.
Teamcenter Integration Visual Issue preferences	Specify the default behavior for visual issue creation.
Teamcenter Integration 3D Save preferences	Specify how to save 3D documents with both configured and static product structure.

Teamcenter Integration 3D Loader preferences

Use the Teamcenter integration 3D loader preferences to specify the unit of length for product structure data sent as a new document to the Lifecycle Viewer or standalone application viewer. You can also specify how to load 3D documents containing both static and configured structure.

1. Choose **File→Preferences→Teamcenter Integration**.

2. Click the **3D Loader** tab.

3. In the **Document Units** section, from the **Document Units** list, select a unit of measurement.

> Note:
>
> - The default unit of length for product structure data sent to the Lifecycle Viewer or the standalone application viewer is meters.
> - Changes to the **Document Units** preference do not apply to documents that are open in the session. After modifying the preference, close and reopen your documents for the change to take effect.
> - The **Document Units** preference is not applicable for structure that is inserted or merged into an existing document.
> - The **Document Units** preference has no effect on static structure that is opened in the Lifecycle Viewer or the standalone application viewer. The document unit of length for static data is specified using the **PLM XML units** setting in **PLM XML Preferences**.

4. In the **Product Structure** section, choose one of the following:

To	Do this
Open configured structure according to its current state in Teamcenter. The most recent structure configuration is loaded.	Click **Configure an updated structure**.
For 4GD subsets, replay the subset recipe before opening the data.	a. Click **Configure an updated structure**. b. From the **Update subset on load** list, select one of the following: • **No Update** • **Replay Recipe**
When both configured and static product structure are available, open the structure according to its state at the time the session was saved.	Click **Load static structure (structure at time of session save)**.
When both configured and static product structure are available, choose how to load the structure when you attempt to open it.	Click **Ask at load time**.

5. In the **Partitions** section, select the **Show empty partitions** check box if, when viewing partition hierarchies in the assembly tree, you want to show partitions that have no design element members. When this option is not selected, empty partitions do not appear.

Teamcenter Integration Session preferences

Use the Teamcenter Integration Session preferences to control how a session file is saved.

1. Choose **File→Preferences→Teamcenter Integration**.
2. Click the **Session** tab.
3. In the **Default Storage Location** section, do any of the following:

To	Do this
Save session files with the base document.	Click **Attach to base document**.
Save session files in a new location.	Click **Alternate location**.

Teamcenter Integration Markup preferences

Use the Teamcenter Integration Markup preferences to control how new markups are named and to display messages during batch modifications.

> Note:
>
> The Teamcenter site preference **TC_Generate_Markup_Name** determines whether dataset names are hard-coded or generated. This controls the markup name only in Teamcenter. In standalone Lifecycle Visualization, the generated markup name is always used.

1. Choose **File→Preferences→Teamcenter Integration**.
2. Click the **Markup** tab.
3. In the **General** section, do any of the following:

To	Do this
Name new markup datasets as you create them	Select the **Show New Dataset selection dialog** check box.
Display warning messages during batch operations	Select the **Show warnings during batch modifications** check box.
Display errors that occur during batch operations	Select the **Show partial errors during batch modifications** check box.

Teamcenter Integration Check Out preferences

Use the Teamcenter Integration Check Out Preferences to specify the default behavior when attempting to load checked out objects.

1. Choose **File→Preferences→Teamcenter Integration**.

2. Click the **Check Out** tab.

3. In the **Document Checked Out By** section, do any of the following:

To specify how to load documents	Do this
When the documents are checked out by someone else	In the **Different user** section, choose from the following options • **Load in read only mode** • **Cancel load** • **Show warnings**
When you have opened the documents in another application	In the **Same User / Different Application** section, choose from the following options • **Load in read only mode** • **Break lock and check out** • **Cancel load** • **Show warnings**
When you have already opened the documents in the viewer	In the **Same User / Same Application** section, choose from the following options • **Load in read only mode** • **Cancel load** • **Show warnings**

Teamcenter Integration Attributes preferences

Use the Teamcenter Integration Attributes Preferences to control the display of Teamcenter and NX attributes present in visualization datasets.

Note:

This preference is applicable for assemblies only. It has no effect on individual JT datasets.

1. Choose **File→Preferences→Teamcenter Integration**.
2. Click the **Attributes** tab.
3. In the **Teamcenter Attributes** tab, select the attributes that you want to display.

   Tip:

   To select multiple adjacent attributes, click the first attribute, press Shift, and then click the last attribute. To select multiple nonadjacent attributes, hold Ctrl as you click each item.

4. Click **Add**.

   The selected attributes move to the **Displayed Attributes** section.

5. (Optional) Select the **Use Display Names** check box.

   The attributes are shown using display names if your database administrator defined them.

6. Close and restart the application.

Note:

- You can also set the attributes to display within Teamcenter. Choose **Edit→Options→Index**, and then search for **Interop_Vis_Attributes**.
- To display attributes that are longer than a single line, your system administrator must have grouped them into a single, multiline attribute.

Teamcenter Integration Snapshot preferences

Use the Teamcenter Integration Snapshot Preferences to control how 2D and 3D snapshots are saved to Teamcenter.

1. Choose **File→Preferences→Teamcenter Integration**.
2. Click the **Snapshot** tab.
3. In the **2D Snapshot** section, do any of the following:

To	Do this
Enter form data on 2D snapshots	Select the **Show attributes form on save** check box. Note: You can enter data for any custom form fields. **Revision** and **Page** information is entered automatically.
Save a 2D geometry asset	a. Select the **Capture 2D geometry asset** check box. b. (Optional) Adjust the **Geometry asset image quality** slider.
Adjust the 2D geometry asset image quality	Use the slider bar to make adjustments in a range from **Good**, **Better**, or **Best**.

4. In the **Teamcenter Product View** section, do any of the following:

To	Do this
Add or update 3D geometry asset for product views	a. Select the **Add or Update 3D Geometry Asset** check box. b. (Optional) Select the **Draw Outline** check box to generate an outline of the 3D geometry asset. Note: If you do not see the **Add or Update 3D Geometry Asset** check box, contact your administrator.
Create an image capture of the product view	a. Select the **Image Capture** check box. b. (Optional) Select the **Use image export dialog** check box to display the **Export Image** dialog box when you save the product view. If this option is cleared, the application uses Teamcenter preferences to control such image capture options as size, file type, and resolution. Note: If you do not see the **Image Capture** check box, contact your administrator.
Rename the product view before saving it	a. Select the **Show Snapshot Name Dialog** check box to display the **New Teamcenter Product View Dataset** dialog box.

To	Do this
	b. In the **New Teamcenter Product View Dataset** dialog box, type a new name for the product view.

Note:

- Use **3D Product View** preferences to modify how Teamcenter product views are processed.
- The **3D Product View** preferences are unavailable in the following conditions:
  - When you do not send Teamcenter data to Lifecycle Viewer. That is, you must have an active connection to a Teamcenter server.
  - When the Teamcenter protection scope of the preferences is higher than your permission scope. For example, if your administrator set the preference protection scope to SITE, and your protection scope is set to USER, the **3D Product View** options are unavailable.
- If you have permissions, when you change a product view preference in Lifecycle Viewer you also change the corresponding Teamcenter preference on the server.

Teamcenter Integration Visual Issue preferences

Use the Teamcenter Integration Visual Issue Preferences to control the default behavior of visual issue creation.

1. Choose **File→Preferences→Teamcenter Integration**.
2. Click the **Visual Issue** tab,
3. Do any of the following:

To	Do this
Specify a visual report template	From the **Issue Type** list, select a template. Note: **Issue Report** is the default issue type. Your organization may also allow you to choose from additional issue types.
Specify the issue relation to use for snapshots	In the **Issue Relation for Snapshots** section, choose one of the following:

To	Do this
	• **Snapshot Before Fix** • **Snapshot After Fix**
Specify the data type attached to the visual issue	From the **Data Type** list, select one of the following: • **Product View or 2D Snapshot** • **Session File**
Enter options for visual issue creation each time an issue is created	Select the **Ask at the time the Issue is created** check box.

Teamcenter Integration 3D Save preferences

Use the Teamcenter Integration 3D Save Preferences to specify how to save 3D documents that contain both configured and static product structure.

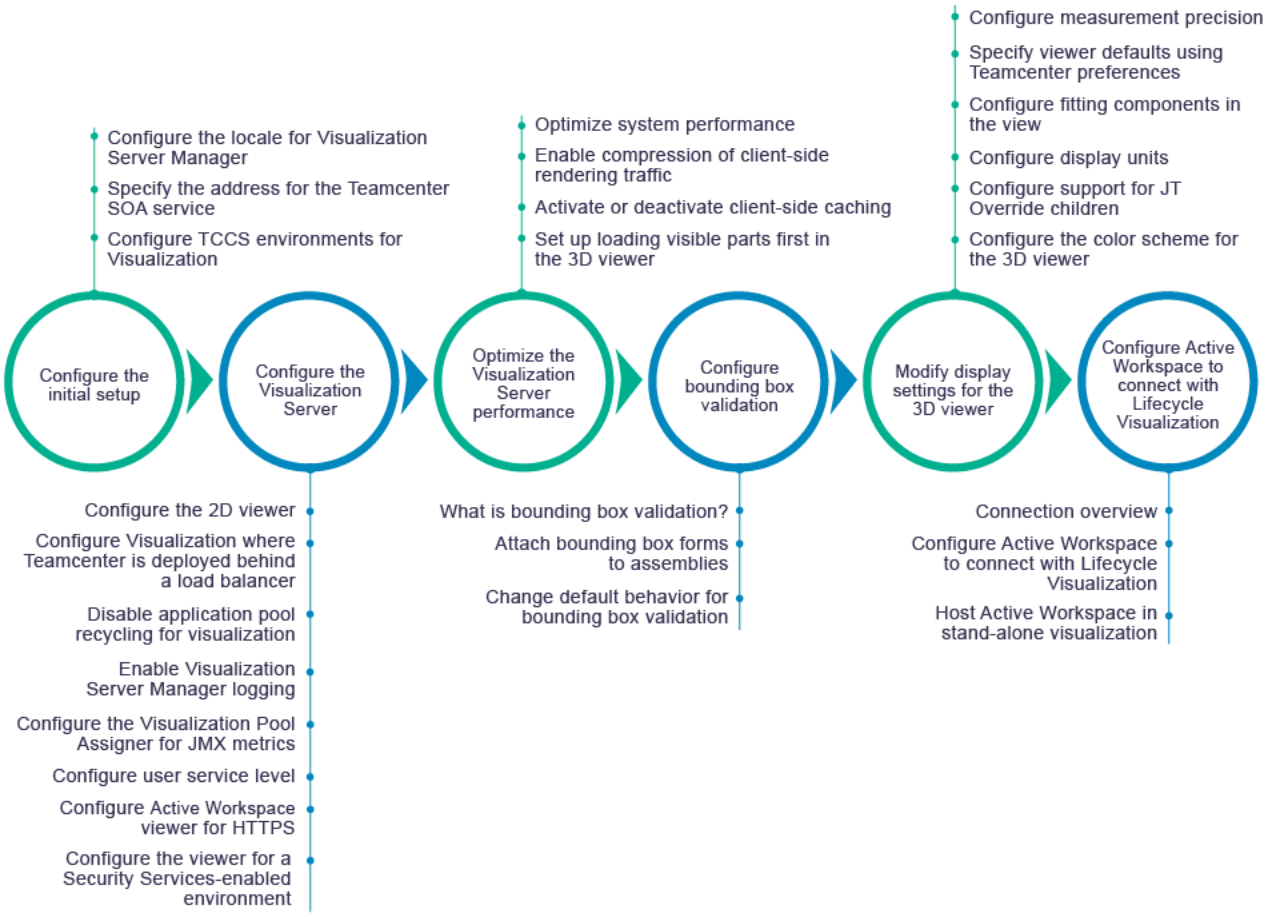
1. Choose **File→Preferences→Teamcenter Integration**.
2. Click the **3D Save** tab.
3. In the **Product Structure** section, do any of the following:

To	Do this
Specify to save configured structure only	Select **Save only configured structure**.
Specify to save both configured and static representations of the current structure	Select **Save configured and static representations of the current structure**.

9. Configuring Visualization to work with Active Workspace

Tasks to configure Visualization to work with Teamcenter Active Workspace

Perform the following tasks to set up Visualization to work with the Teamcenter Active Workspace.



Configure the locale for Visualization Server Manager

You can configure the Active Workspace client to display the user interface in any of the supported Teamcenter locales. However, some visualization data, such as Product and Manufacturing Information (PMI), requires Visualization Server Manager (VSM) configured for the same locale as the information. For visualization data to display correctly in Active Workspace, you must have at least one VSM configured to run in each locale that you support. With a VSM in place to support each localization being used, visualization processes are then routed to the appropriate server based on locale.

VSMs can be configured to support the following languages:

Brazilian Portuguese	English	Korean
Chinese (Simplified)	French	Polish
Chinese (Traditional)	German	Spanish
Czech	Italian	Russian
French	Japanese	

You can configure a VSM with any one of these languages. If you want to configure a cluster of VSMs to support more than one language, you need at least one VSM per language.

To change the language of a VSM, set the operating system (Windows or Linux) to the required language, location, and locale:

For Windows systems

1. Adjust the required language, location, and locale using the **Region** and **Language** options found in the Windows **Control Panel**.

2. Adjust the **Date and time formats**, the **Current location**, and the **Current language for non-Unicode programs** values.

3. Reboot the system after changing your Windows settings.

   When the VSM is started again, it inherits the new language configuration of the operating system.

For Linux systems

1. Run the following command to list all languages currently available on the machine: **locale -a**.

2. To configure the VSM to support a particular language, set the environment variables **LANG** or **LC_ALL** in the *jettyservice.properties* file.

   Example:

   To set the VSM to run using the German UTF8 locale, set these values in the *jettyservice.properties* file:

   - VisPoolProxy.envset.LANG = de_DE.utf8
   - VisPoolProxy.envset.LC_ALL = de_DE.utf8

> Note:
>
> Some Asian locales may require a restart of the Visualization Server to force the necessary fonts for the desired language to load correctly.

If all VSMs are configured to use the same language, all clients use the available language regardless of browser preferences.

Note that if you have a VSM system configured for two or more different languages, then Siemens Digital Industries Software highly recommends that at least one VSM be configured for English, even though this may require a minimum of three VSMs. When the server system is configured with multiple languages, if at least one VSM is configured for English, then the English locale is a default.

The following table shows the VSM system response to a visualization data request from a client when the client is not in one of the preconfigured languages.

VSM system configured for two or more languages	Client is not in a preconfigured VSM language
VSM for English exists.	The data request is routed to an English VSM.
No VSM for English.	The data request is rejected.

Specify the address for the Teamcenter SOA service

You can specify the Teamcenter SOA service address, which is the context root for the Teamcenter instance. In some reverse proxy deployments, the Visualization Pool Manager cannot access the outside reverse proxy address due to a firewall. This address is used to provide a direct path from the Visualization Pool Manager to the main Teamcenter SOA stack.

Enter the Teamcenter SOA service address using your preferred installation tool (Deployment Center or TEM).

Deployment Center

1. Log on to Deployment Center and select your environment.

2. Proceed to the **Components** tab and select the **Visualization Pool Assigner** component to display its parameters.

3. In the **Teamcenter 4-tier URL** parameter, type the server side four-tier URL, and then click **Save Component Settings**.

4. If any components do not show a **COMPLETE** status of **100%**, update each component in turn until all components are fully configured and the **Deploy** tab is enabled.

5. Go to the **Deploy** tab. Click **Generate Install Scripts** to generate deployment scripts to update affected machines. When script generation is complete, note any special instructions in the **Deploy Instructions** panel.

6. Locate deployment scripts, copy each script to its target machine, and run each script on its target machine.

   For more information about running deployment scripts, see *Deployment Center — Usage*.

Teamcenter Environment Manager (TEM)

1. Launch TEM in maintenance mode and proceed to the **Feature Maintenance** panel.

2. Select **Visualization Server Pool Assigner (Java EE)** *or* **(.NET)→Update Visualization Server Pool Assigner configuration**, and click **Next**.

3. In the **Visualization Server Pool Assigner Settings** dialog box, type the server side four-tier URL in the **Server Side 4-Tier URL** box.

4. Proceed through the remaining panels in TEM, entering the required parameters for the components you selected.

   For information about each panel, click the help button .

5. When TEM displays the **Confirmation** panel, click **Start** to begin installation.

Configure TCCS environments for Visualization

If you are using a TCCS environment for Teamcenter, you must set up a separate TCCS environment for the Active Workspace URL in order to open models in standalone Visualization from Active Workspace. The Active Workspace URL must be added in addition to the Teamcenter URL.

Follow the instructions in the Teamcenter help, Install TCCS using the stand-alone installation wizard, to add another URL like this: http://*servername*/awc/tc.

Configuring the Visualization server

Configure the 2D viewer

The 2D viewer allows you to view additional 2D file types in Active Workspace.

Why would I use the 2D viewer?

The 2D viewer (**Awp02dViewer**) is one of the individual viewers that are part of the universal viewer and can render certain files that the Image Viewer (**Awp0ImageViewer**) cannot. When first installed, it

renders the **HPGL**, **DXF** and **TIF** file types, but it can be configured to view many more. Some of the more common file types are:

- NX drawing files (**PRT**)
- Solid Edge drafts (**DFT**)

See the Teamcenter Visualization documentation on Support Center for a full list of supported 2D file types.

How do I make the 2D viewer available?

For the 2D viewer to be available to the universal viewer, the following Visualization Server components must be installed:

- Visualization Server Manager (server)
- Visualization Server Pool Assigner (server)
- Active Workspace Visualization 2D viewer (client)

How do I configure new file types?

1. Tell the universal viewer to use the 2D viewer for your file type.

   For each file type you want the 2D viewer to use, add a new line to the **AWC_defaultViewerConfig.VIEWERCONFIG** preference or modify an existing line to change the viewer type to **Awp02dViewer**. Verify that there are no duplicate dataset types in the list.

   datasetType`.Awp02dViewer=`**namedReference**

2. Tell Teamcenter Visualization to open the file type. Add a new value to each of these two Teamcenter preferences containing the dataset type and the named reference.

   `VMU_Datasets –` **datasetType**

   `VMU_FileSearchOrder –` **namedReference**

Example:

You want to use the 2D viewer to render your NX drawings.

NX drawings are stored in **UGPART** and **UGMASTER** datasets. Normally, these datasets are viewed in the image viewer (**Awp0ImageViewer**), which uses the **UG-QuickAccess-Binary** reference.

You need to set the universal viewer preference to use the 2D viewer for those dataset types instead of the image viewer.

Find and edit the existing lines for the two dataset types.

```
UGMASTER.Awp0ImageViewer=UG-QuickAccess-Binary
UGPART.Awp0ImageViewer=UG-QuickAccess-Binary
```

Change them to the new viewer and named reference.

```
UGMASTER.Awp02dViewer=UGPART
UGPART.Awp02dViewer=UGPART
```

Next, add the dataset values to the **VMU_Dataset** preference.

```
UGMASTER
UGPART
```

Finally, add the named reference value to the **VMU_FileSearchOrder** preference.

```
UGPART
```

Configure Visualization where Teamcenter is deployed behind a load balancer

You have two options when configuring Visualization in an environment where Teamcenter is behind a load balancer.

Option 1

Set up Teamcenter in a cluster, and then configure it behind a load balancer. For more information on setting up Teamcenter in a cluster, see Overview of clustered deployment in the Teamcenter Help.

Note:

The Teamcenter load balancer URL cannot be used as the SOA URL unless Teamcenter is deployed in a cluster.

Option 2

Deploy Teamcenter and Active Workspace behind a load balancer—preferably on the same application server. Use localhost for configuring the Active Workspace SOA URL. You will still achieve load balancing since the client requests are coming in through the load balancer.

You must generate separate Active Workspace gateway deployments, each configured with its own VisAssigner, in the following situations:

- If you must deploy Teamcenter on a separate application server.

- If the Teamcenter SOA URL needs to be configured with a valid domain name in your environment.

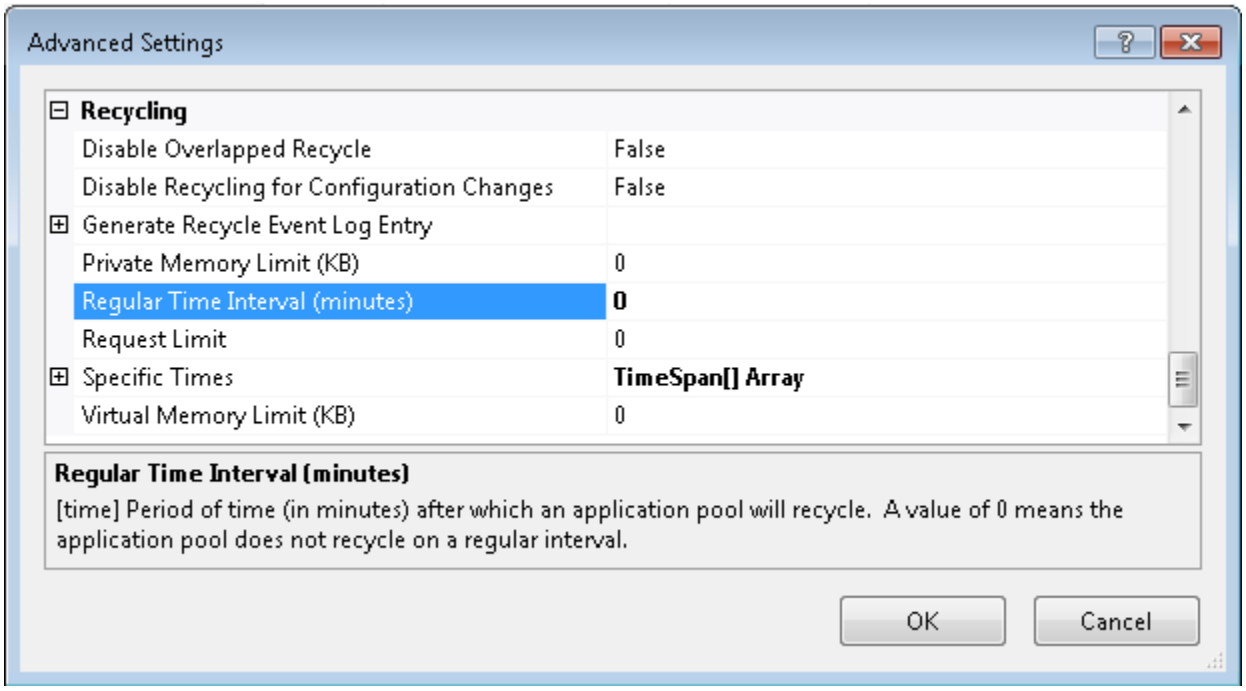
Disable application pool recycling for visualization

You can use IIS Manager to recycle application pools; however the Visualization Pool Assigner does not support recycling.

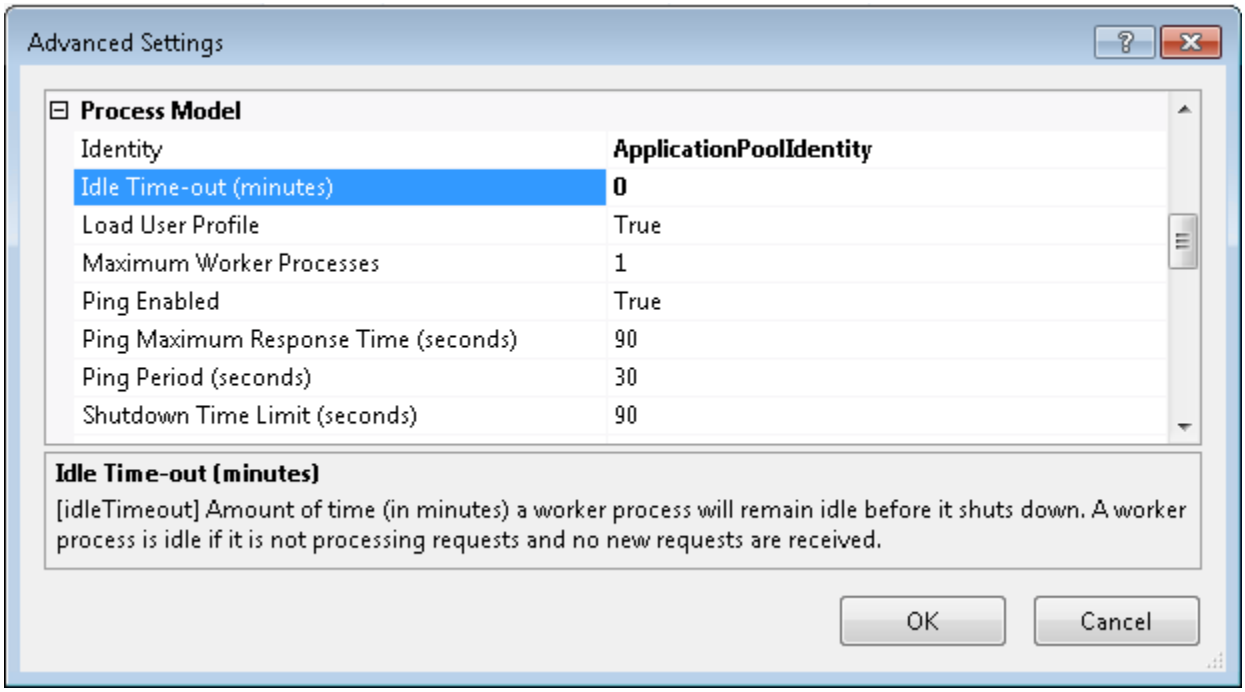
When an application pool is recycled, stored information about client connections, health, and model sizes is cleared. This causes errors, typically socket exceptions, in the connected Visualization Server Manager. These exceptions are difficult to resolve and stop the Visualization Server Manager. Because of this condition, settings for the application pool containing the Visualization Pool Assigner must be updated to disable recycling.

You must set these two settings in the IIS Manager **Advanced Settings** for the application pool that contains the Visualization Pool Assigner:

- Under **Recycling**, set **Regular Time Interval** to **0**.



- Under **Process Model**, set **Idle Time-out** to **0**.



Enable Visualization Server Manager logging

The Visualization Server Manager logs contain system information that you can use to identify and resolve problems.

- Create the following environment variables:

Name	Value
TCVIS_DA_DEBUG_LOG	**True** Note: For this environment variable, the value of **True** is case sensitive.
TCVIS_LOGGING_LEVEL	Any of the following: **ERROR** **INFO** **DEBUG**
TCVIS_LOGGING_PATH	A valid path to the location where you want the system to write the log files. If this environment variable is not set, the generated *VisView#####.log* file, which is one log file per

Name	Value
	VisView process, is placed into the jetty's *TEMP* directory. If this environment variable is set, all log files are placed into one file, which may make it more difficult to determine which process each log event came from. If **TCVIS_DA_DEBUG_LOG** and **TCVIS_LOGGING_LEVEL** are set properly, this is an optional parameter.

Example:

With **TCVIS_LOGGING_LEVEL** set to **DEBUG**, the log files include information about how the system is using OpenGL. When setting up the Visualization Server hardware, you can use this information to ensure the graphics hardware is operating as expected.

For example, the information in the sample output below indicates the system is not configured properly, because it is utilizing software rendering.

```
Running on GL_VERSION: 1.1.0 (1.1.0 supported by driver)
Running on GL_VENDOR: Microsoft Corporation
Running on GL_RENDERER: GDI Generic
```

Note:

When a Visualization Server process crashes, a log file with crash information is always written. If Visualization Server logging is not enabled, the log file is written to the system *TEMP* directory.

Configure the Visualization Pool Assigner for JMX metrics

On Windows systems, the Visualization Pool Assigner exposes a variety of useful information through JMX, but not all of this information is available automatically. Due to stability risks, the following JMX metrics are unavailable for the Visualization Pool Assigner without special configuration:

- **computerCpuUsageRatio**
- **computerMaxBandwidthBytesPerSec**
- **computerMemUsageRatio**
- **computerNetworkUsageRatio**
- **computerTotalMemMB**
- **loadRatioAbsolute**
- **loadRatioRelative**
- **visSysCpuUsageRatio**
- **visSysMemUsageRatio**
- **visSysNetworkUsageRatio**

Although these metrics appear in a JMX client, their values are not populated with useful information. To enable these JMX metrics for your Visualization Pool Assigner, you must copy a provided DLL into the path of the Java servlet container hosting your Visualization Pool Assigner.

The following steps are supported on a Windows host only.

1. Locate the Visualization Pool Assigner web application, **vispoolmanager.war**, in the **visassigner\jetty\webapps** directory on your system.

   This file is created by the Teamcenter installation tool (Deployment Center or TEM).

2. Unzip the web application **.war** file to a local directory.

3. Navigate to the *WEB-INF\lib* directory and locate the *vis-proxy.jar* file.

4. Open this *.jar* file in a supported ZIP file utility and extract the *Metrix.dll* file.

5. Add the location of *Metrix.dll* to the path of the server that hosts your Visualization Pool Assigner. The easiest way to do this is to find the script that starts the server, or to create a new script to start the server if one does not already exist. In the script, prepend the location of the *Metrix.dll* to your path.

   > Example:
   >
   > If you place *Metrix.dll* in *C:\foo*, add the following command to the script:
   >
   > **set path=C:\foo;%path%**

6. Restart the Visualization Pool Assigner.

   If the Visualization Pool Assigner fails to find *Metrix.dll*, the console window displays the following warning during startup:

   ```
   The Metrix library could not be loaded. Some system performance metrics
   are unavailable to JMX clients.
   ```

   If the Visualization Pool Assigner succeeds in finding *Metrix.dll*, no warning is displayed and the JMX metrics are populated with meaningful data.

Configure user service level

The pages, panels, and features used for visualizing 3D data are available to users based on their Visualization service level license: Base, Standard, Professional, or Mockup.

There are three ways to configure user service levels:

- Enter the value for the correct service level for the **Visualization Licensing Level** option when creating or managing a user in Active Workspace.
- Select the correct service level for the **Visualization Licensing Level** option in the Teamcenter Organization application.
- Use the command line **make_user** utility:

```
make_user -u=Tc-admin-user -p=password -g=group
    -user=aw_test_4 -vislicenselevel=mockup -update
```

Configure the Active Workspace viewer for HTTPS

Configure Visualization Server components to run the Active Workspace viewer using HTTPS protocol.

Procedure

1. Install the Visualization Server Pool Assigner (VPA) and Visualization Server Manager (VSM) as described in the Teamcenter installation guide for Windows or Linux.
2. In Deployment Center, in the **Components** task, select **Active Workspace Gateway**. Select the **Override Connection** check box, and make sure the URL shown begins with **https**.
3. In the **Deploy** task, click **Generate Install Scripts** to generate deployment scripts, and then run scripts to deploy the VPA and the VSM.
4. Configure the Visualization Server Pool Assigner:
   a. Navigate to the **jetty** directory for the VPA and obfuscate the keystore password:

```
java -cp lib/jetty-util-11.0.18.jar
org.eclipse.jetty.util.security.Password user keystore-password

OBF:##########################
MD5:##########################
```

   b. Open the **start.ini** file and make the following changes:
      A. Activate the HTTPS and SSL modules:

```
java -jar start.jar --add-to-start=https,ssl
```

      B. Ensure that the "`#--module=http`" line is commented out.
      C. Verify the HTTPS and SSL modules are active:

```
--module=https
--module=ssl
```

D. Locate the line that contains the `jetty.ssl.port` setting. Set the port for the VPA as follows:

```
jetty.ssl.port=VPA-port
```

The VPA port was set when you installed the VPA. The default port is **8089**.

E. Enable SSL settings:

```
jetty.sslContext.keyStorePath=relative-path-to-keystore-file
jetty.sslContext.trustStorePath=relative-path-to-truststore-file
jetty.sslContext.keyStorePassword=OBF:##################
(from step 3.a.)
jetty.sslContext.keyStoreType=<JKS|PKCS12>
jetty.sslContext.keyManagerPassword=OBF:##################
(from step 3.a.)
jetty.sslContext.trustStorePassword=OBF:##################
(from step 3.a.)
jetty.sslContext.trustStoreType=<JKS|PKCS12>
```

For the `OBF:##################` values, use the value you entered in step **a**.

F. Save the changes to the **start.ini** file.

5. Configure the Visualization Server Manager:

a. Navigate to the **jetty** directory for the VSM.

b. Open the **jettyservice.properties** file, make the following changes, and then save the file:

`VisPoolPropxy.poolUrl=`**https://***server-name*`:`*VSM-port*`/VisProxyServlet`

c. Copy the **start.ini** file from the **jetty** directory of the VPA to the **jetty** directory of the VSM.

d. In the copied **start.ini** file, modify the following entry:

```
jetty.ssl.port=VSM-port
```

The VSM port was set when you installed the VSM. The default port is **8090**.

6. Copy the certificates file to the **vispoolmanager/VisServerFV/etc/certs** directory.

7. Configure Teamcenter client communication system (TCCS):

a. Navigate to the **tccs** directory.

b. Edit the **fcc.xml** file. Make sure the **parentfsc** address specifies **https**.

```
<parentfsc
          address="https://fcc-server-name:fcc-port/" priority="0"
      transport="lan"/>
```

8. If you configured the Active Workspace Gateway for HTTPS in step 2, skip this step.

   Otherwise, configure the Active Workspace Gateway by modifying the **config.json** file:

   a. Navigate to the **microservices/gateway-1.6.0** directory.

   b. Edit the **config.json** file. Make sure the **target** address specifies **https**.

```
"vis": {
"path": "/VisProxyServlet",
"target":"https://VPA-server-name:VPA-port/VisProxyServlet"
},
```

   c. Restart the Teamcenter Process Manager service.

Configure the viewer for a Security Services-enabled environment (Teamcenter 11.x)

If you are using Teamcenter version 11.x, the following must be configured to use Active Workspace viewer if Security Services (SSO) is enabled:

1. Deploy a single login service in *applet* mode to be used by Visualization as well as the Active Workspace client.

2. Enable the Teamcenter thin client for Security Services and configured with a Login Service that is deployed in *applet* mode. See *Security Services Configuration* in the Teamcenter help.

   - You must configure the Identity Service with two **appID** values, one for Active Workspace and another for Teamcenter thin client.

   - The Teamcenter server must be configured for single sign-on with both **appID** values separated by a comma or a space.

	appID value
Active Workspace	**appIDAW**
Teamcenter thin client	**appIDTC**

	appID value
Teamcenter server	**appIDAW, appIDTC**
Teamcenter rich client (not required for viewer)	**appIDTC**

3. Once configured, perform the following actions:

   a. Verify you can log onto the Teamcenter thin client from the Visualization Server machine. You may need to enable Java applets for the browser.

   b. **Specify the address for the Teamcenter SOA service.**

   > Note:
   >
   > Ensure you add a trailing slash (**/**) to the end of the URL.

Note the following points:

- After working in an Active Workspace session for more than 10 hours, the viewer may fail to launch.

  In this case, sign out of Active Workspace and sign in again to open the viewer.

- If you remain signed in overnight, Security Services may time out.

  If it does, sign in again.

Optimizing the Visualization Server performance

Optimize Visualization Server system performance

Visualization Pool Assigner and Visualization Server Manager have several configuration parameters that impact server scalability, that is, how many Active Workspace users can open 3D viewers before the Visualization Servers are considered too busy to accept any further users.

- Timeouts

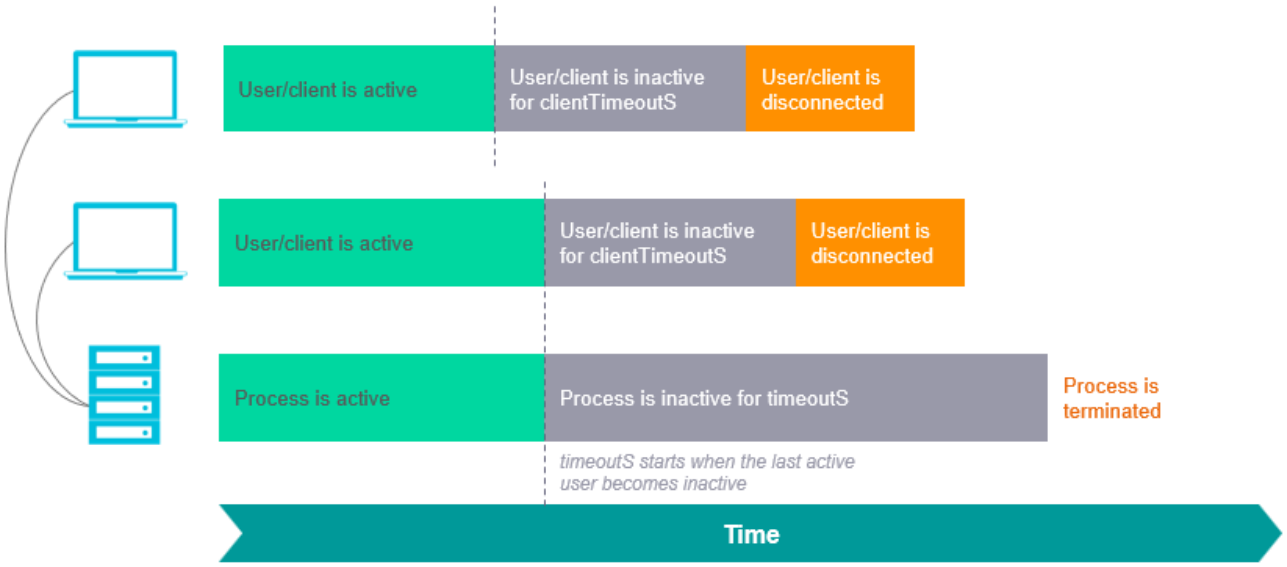
  When an Active Workspace client opens a model in a 3D viewer, a corresponding server data container is opened in a VisView process on the Visualization Server. A single server VisView process may contain several data containers from different clients' viewers.

  Each VisView process and each user it supports also consume server resources. When a client viewer is terminated, for example, by the user logging out of Active Workspace or closing the browser tab, an opportunity to release server resources arises. The **serverPollingTimeIntervalS** parameter controls the length of time that the viewer process waits to release the Teamcenter server processes following the termination of a user's viewer session.

However, if a client viewer is not terminated but merely becomes inactive, a timeout period may be set that releases server resources. The following settings provide a way to control this timeout behavior.

Variable	Default Value	Definition	Location	File
clientTimeoutS (user idle timeout)	900 (15 min)	A client viewer is considered inactive if it does not cause any http traffic to the Visualization Server. When a client viewer is inactive for **clientTimeoutS** seconds, then the corresponding server document is closed.	Pool Assigner	**%TC_ROOT%\visassigner\jetty\jettyservice.properties** Note: By default, the jetty.service.properties files are not included.
timeoutS (process idle timeout)	1800 (30 min)	A VisView process is considered inactive if all of its connected clients' viewers are inactive. When a process is inactive for **timeoutS** seconds, then it is terminated.	Server Manager	**%TC_ROOT%\vispoolmanager\jetty\jettyservice.properties**

These timeout settings play a role in the tradeoff between server scalability and client user convenience. Decreasing the timeout values may allow more users access to the Visualization Server, by more quickly releasing unused server resources from inactive users. However, it may also cause more inconvenience to individual users by triggering more reconnection events. Reversely, increasing the timeout values causes users less viewer reconnect interruptions but increases overall server resource usage, which allows fewer users access to the server.



Example:

Suppose a Visualization Server is configured with the default timeout values, and it has a single VisView process with 2 documents, each connected to a client viewer. The first client viewer becomes inactive, that is, there is no more HTTP traffic to its document. After 15 minutes of inactivity, the first document is closed, leaving only the second document in the VisView process. The second client viewer becomes inactive some time later. After 15 minutes of inactivity, the second document is also closed, leaving the VisView process with no document. The process is not terminated immediately, as it contains cached data that might be useful for a suitable client viewer that might connect. However, the process is terminated after another 15 minutes, namely the difference between the Visualization Server Manager **timeoutS** and the Visualization Pool Assigner **clientTimeoutS**. This is why the value of the Visualization Pool Assigner **clientTimeoutS** should always be smaller than the value of the Visualization Server Manager **timeoutS**.

Note:

- If the user accesses the client viewer after it has timed out, that is, Visualization Pool Assigner **clientTimeoutS**, a message appears warning that the connection is being reestablished, and the viewer reconnects to the Visualization Server.
- Actions in other, non-viewer interfaces of Active Workspace do not affect the viewer inactivity state. It is defined solely through the HTTP traffic to the Visualization Server, not to the Teamcenter server.
- When reconnecting, the viewer selection state and visibility state are restored. However, the navigation state and any state of the viewer panels, such as **Measurement** and **Section**, are not restored.

- VisView process terminations, that is, Visualization Server Manager **timeoutS** expirations, are indistinguishable from process crashes. In the unlikely event of a process crash, the client viewer reconnects as if it had timed out, according to the Visualization Pool Assigner **clientTimeoutS**.

The Visualization Server Manager constantly monitors all VisView processes. If a process becomes unresponsive to these monitoring requests, then it is terminated. This avoids hung processes consuming valuable server resources.

Variable	Default Value	Definition	Location	File
unresponsive-TimeoutS	180 (3 min)	If a VisView process does not respond to monitoring requests for **unresponsiveTimeoutS** seconds, it is terminated.	Server Manager	**%TC_ROOT%\vispoolmanager\jetty\jettyservice.properties**

Note:

- VisView process terminations due to Visualization Server Manager **unresponsiveTimeoutS** expirations, are indistinguishable from process crashes. In the unlikely event of a process crash, the client viewer reconnects as if it had timed out, according to the Visualization Pool Assigner **clientTimeoutS**.

- **maxBytesPerSec**

  The Visualization Pool Assigner and Visualization Server Manager both possess a **maxBytesPerSec** configuration parameter. This parameter represents the maximum number of bytes per second that this node may transmit or receive before it rejects requests from users to load new models. The default value is 125000000 bytes per second. If your server system is consuming too much network bandwidth, you may want to consider adjusting this parameter.

  To modify this configuration parameter for the Visualization Server Manager or the Visualization Pool Assigner, do the following:

  1. In a text editor, open the *jettyservice.properties* file from the Visualization Server Manager's installation or the Visualization Pool Assigner's installation.

  2. Adjust the value of the **VisPoolproxy.maxBytesPerSec** parameter for your server environment.

- **maxUsageThreshold**

  The Visualization Pool Assigner and Server Manager possess a **maxUsageThreshold** configuration parameter. This parameter represents the maximum usage and load ratio that any Visualization Server Manager or VisView process may possess before the Visualization Pool Assigner refuses to allocate new open model requests to that Visualization Server Manager or VisView process. The Visualization

Pool Assigner and Server Manager do not assign any more users to a particular VisServer if its system load, which is an amalgam of network usage, CPU usage, memory usage, and GPU memory usage, exceeds the given threshold specified with this parameter. The range of values accepted is 0.0 (no load) to 1.0 (full load).

To modify this configuration parameter for the Visualization Server Manager or Visualization Pool Assigner, do the following:

1. In a text editor, open the *jettyservice.properties* file in the Visualization Server Manager's installation or the Visualization Pool Assigner's installation.

2. Adjust the value of the **VisPoolproxy.maxUsageThreshold** parameter for your server environment.

Enable compression of client-side rendering traffic

When using client-side rendering in Active Workspace Visualization, you can enable gzip compression for all *VisProxyServlet/emm* HTTP responses from the Visualization Pool Assigner to the client. To do this, you use a parameter in the Visualization Pool Assigner **configuration** file.

1. In a text editor, open the **visassigner/jetty/jettyservice.properties** file under the Teamcenter installation directory.

2. Add the following parameter to the file:

```
VisPoolProxy.allowHTTPResponseCompression=True
```

> Note:
>
> To disable compression, set the value to **False**. This is the default value.

Activate or deactivate client-side caching in Active Workspace

Client-side caching helps to improve the loading time of a model in Active Workspace.

Procedure

1. On the home page, click the **PREFERENCES** tile.

> Note:
>
> You may need administrative privileges to set preferences.

2. Set the **AWV0VisBrowserCaching** Teamcenter preference based on your requirement.

Value	Purpose
True (default)	Activates client-side caching.
False	Deactivates client-side caching.

Set up loading visible parts first in the 3D viewer

In the client-side rendering (CSR) mode, you can specify the CSR loading strategy to load a model faster in the 3D viewer to improve the user's viewer experience.

To load a model faster, set the **AWV0CSRLoadingStrategy** Teamcenter preference to **useSmartLoading**. In Active Workspace, this allows the 3D viewer to first load the product structure that can be seen from the current camera view. Then, when loading the geometry, it causes the visible parts to be loaded before the parts that are hidden.

By default, **AWV0CSRLoadingStrategy** is set to **useSmartLoading**. If you do not wish to use any loading strategy, set **AWV0CSRLoadingStrategy** to **None**.

Configure bounding box validation

What is bounding box validation?

Bounding box validation checks for stray parts outside of an assembly. You must define the assembly's bounding box by using minimum and maximum X, Y, and Z values.

Parts that are found outside the defined area are not only a potential problem with locator numbers, drawings, sections, analysis, and so on, but also can cause issues when displaying the assembly in the 3D viewer. For example, if a stray part is located far outside the defined area, when the assembly is *fit* to the viewer it may zoom out so far that the parts are merely dots on the screen.

Bounding box validation is only available if the **Visualization Data Server** is installed.

How does bounding box validation work?

By default, you choose which assemblies need bounding box validation and **attach a form** to each, assigning the minimum and maximum values for the bounding box.

Once the form is attached to the assembly and filled out, if a part in that assembly falls outside the defined area, an entry is logged in the *BBoxUpdate.log* file located in your system temp directory. You may assign bounding box validation to as many assemblies as you want by adding a form to each one.

Check this file occasionally to reveal any parts that violate any assigned bounding boxes.

How can I further configure how bounding box validation works?

- **Change what happens** when a part is outside the area.
- **Change which form** the validator looks for.
- **Set a site-wide default** bounding box for *all* assemblies.
- Modify the logging settings.

Attach bounding box forms to assemblies

Use a Teamcenter form to define bounding box validation parameters and assign them to your assemblies. This ensures that each assembly uses the correct bounding box parameters.

1. Create a form of the type **UGPartBoundingBoxForm**, and attach it to the top level of the assembly using the **IMAN_requirement** relation.

2. Fill out the fields on the form to define the minimum and maximum X, Y, and Z values for the bounding box.

The system will automatically use this form on this assembly to validate that all parts fall within the defined bounding box.

Repeat this process for each assembly where you want a bounding box validated.

Changing default behavior for bounding box validation

You can make changes to the default behavior of bounding box validation by modifying the **BBox Validator** section of the **VisDataServer.properties** file, which is located in the **TC_ROOT***VisDataServer**etc* directory.

> Note:
>
> After making changes to this file, you must restart the **Visualization Data Server** for those changes to take effect.

```
# BBox Validator
# Default BBox limit on the products. A per product limit can be set using a bbox form
on the Item Revision.
# The BBox units are in meters...
# ProductManager.BBoxValidator.BBoxLimit= -10, -10, -10, 10, 10, 10

# Specifies the suppression to be done on a Node that extends outside of the BBoxLimit.
# The supported modes are the following (FileRef is the default mode):
# Full: The complete Node information is suppressed. Same behavior as no read access on
a Node.
# FileRef: Any file references are removed. Same behavior as no read access on the
```

```
attached files.
# None: No suppression will be done.
ProductManager.BBoxValidator.NodeSuppression= FileRef

# The Relation name used to reference the min/max Form values.
ProductManager.BBoxValidator.FormRelationName= IMAN_requirement
# This is the form type to look for min/max values under the ItemRevision.
ProductManager.BBoxValidator.FormObjectType= UGPartBoundingBoxForm
# The property names on the form to get the values (xmin, ymin, zmin, xmax, ymax, zmax).
ProductManager.BBoxValidator.FormPropertyNames= xmin, ymin, zmin, xmax, ymax, zmax
```

Change what happens

By default, bounding box validation suppresses the display of any parts that violate the validation bounding box limits in the 3D viewer, but it still shows the entry in the structure.

To modify this behavior, change the `ProductManager.BBoxValidator.NodeSuppression=` field to specify the type of suppression to use. Regardless of this setting, the violation will still be logged.

Type of suppression	Result
Full	The complete node information is suppressed, both in the 3D viewer and in the structure, as if the part is not present in the assembly.
FileRef	The 3D viewer suppresses the display of the file, but the BOM line entry still shows in the structure.
None	No suppression.

Change the form information

By default, bounding box validation looks for the following properties on specific form types attached to the assembly with a specific relation:

Form type: `UGPartBoundingBoxForm`
Relation name: `IMAN_requirement`
Property names: `xmin, ymin, zmin, xmax, ymax, zmax`

You can change any or all of these values if you want to use custom forms, properties, or relations.

Provide site-wide default bounding box

By default, bounding box validation only examines assemblies with the specific form attached. You can uncomment the following line to provide a default bounding box for *all* assemblies in the database. Any assemblies that have the form attached will override these defaults.

```
# ProductManager.BBoxValidator.BBoxLimit= -10, -10, -10, 10, 10, 10
```

Modifying the display settings for the 3D viewer

View product views in Active Workspace

An issue report revision is generated with a product view in Teamcenter Lifecycle Visualization and can be previewed in the 3D mode in Active Workspace.

> Note:
>
> The value of the **AWC_visProductViewOpenConfiguration** preference decides the configuration setting used while loading product views in the 3D viewer.
>
> Depending on the value set by the administrator, the appropriate product view is displayed. The default value for this preference is **Dynamic**.

If the value is set to	The product view displayed is
Dynamic	Dynamic, where in the product structure is reconfigured while loading the product view. The 3D viewer displays the current state of the product.
Static	Static, where in the product structure is not reconfigured while loading the product view. Any modifications made to the structure after saving the product view are not visible.

Configure measurement precision

The default measurement precision is hundreds on Windows systems and ten thousands on Linux systems. To change the measurement precision, perform these steps on the machine that hosts the Visualization Server.

1. Open the registry editor.

   Windows systems

   Launch the Windows registry editor, **regedit**.

   Linux systems

   Type the following command:

   ```
   Run TC_ROOT/vispoolmanager/VisServerFV/bin/regedit
   ```

2. Locate the following registry key:

   ```
   HKEY_CURRENT_USER\Software\Siemens\AW_Retained\2412\Common\C\Measurement\
   ```

3. Under this key, right-click the **Measurement_Precision** value and choose **Modify**.

4. Enter properties for these values:

   - **Base**: Choose **Decimal**.
   - **Value data**: Type the appropriate value for your desired degree of precision.

Value	Precision
0	3
1	3.1
2	3.14
3	3.142
4	3.1416
5	3.14159

5. Close the registry editor and restart the Visualization Server Manager to enable the registry change.

Specify viewer defaults using Teamcenter preferences

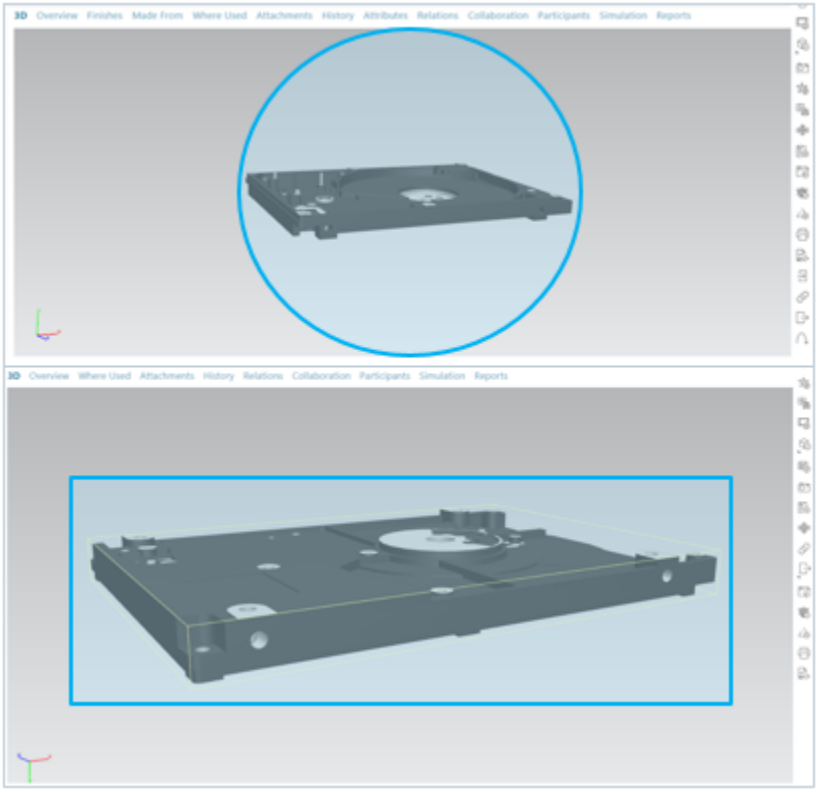
You can specify the default settings for Active Workspace visualization features by changing their preference values in Active Workspace.

Visualization feature	Default	Teamcenter preference
3D navigation mode	Rotate	**AWC_visNavigationMode**
Front view orientation	+Y	**AWC_visStdViewOrientationFront**
Left view orientation	+X	**AWC_visStdViewOrientationLeft**
Top view orientation	–Z	**AWC_visStdViewOrientationTop**
Aligns standard views with the X, Y, and Z axes of the global coordinate system	Automotive	**AWC_visStandardViewAlignmentMode**
Display mode (shaded with edges on or off)	Shaded with edges off	**AWC_visShading**
Material	Flat	**AWC_visMaterial**
Floor visibility	Off	**AWC_visFloorOn**
Floor offset	0.0	**AWC_visFloorOffset**
Floor orientation	XZ	**AWC_visFloorPlaneOrientation**

Visualization feature	Default	Teamcenter preference
Floor grid visibility	When the floor is on, the grid is displayed.	**AWC_visGridOn**
Reflection visibility	When the floor is on, the reflection is not displayed.	**AWC_visReflectionOn**
Shadow visibility	When the floor is on, the shadow is not displayed.	**AWC_visShadowOn**
Trihedron visibility	On	**AWC_visTrihedronOn**
Uses transparency selection mode	On	**AWC_visSelectionDisplay**
Shows caps and cut lines on sections	On	**AWV0SectionCapsEdgesInitialState**
Specifies the default 3D navigation mode for the Viewer in the Active Workspace client	EXAMINE	**AWC_vis3DNavigationMode**
Specifies the default *Apply true shading material* mode for the viewer in the Active Workspace client	true	**AWC_applyTrueShadingMaterial**
Determines which rendering technology should be used in the Active Workspace 3D viewer by default	CSR	**AWV0ViewerRenderOption**
Determines the zoom behavior of the Examine mouse navigation	Push	**AWC_visExamineZoomIn**
Sets the display unit for the 3D viewer	Meters	**AWC_3DViewerDisplayUnit**
Sets the background and part selection color in the 3D viewer	White	**AWC_visColorScheme**
Sets client-side caching to improve the loading time of a model in Active Workspace	true	**AWV0VisBrowserCaching**

Configure fitting components in the view

When you use the **Fit** command to fit components in the view, by default a spherical boundary selects and fits the components. You can configure the **Fit** command to fit a 2D box around the model and annotations and fit that within the 2D viewing area. With this feature enabled, the result can be a closer view of the parts within the viewing area.



1. Shut down the Visualization Server Manager.
2. Back up the *jetty/jettyservice.properties* file.
3. Edit the *jetty/jettyservice.properties* file to add the following line:

   ```
   VisPoolProxy.envset.TCVIS_FITALL_2DBBOX=True
   ```

4. Start the Visualization Server Manager.

Adjust the display resolution for 3D models

When you display and manipulate a 3D model in Active Workspace, the Visualization Server renders images of the model and sends them to the client viewer for display. The images are typically the same size as the client viewer. However, if the client viewer is larger than the desktop resolution of the

Visualization Server, the images are the same size as the server resolution and scaled to fit the client viewer.

If you expand the client viewer to the point where it exceeds the server resolution, the scaled images may appear soft, especially the edges of the 3D models. To compensate for this, increase the desktop resolution on the Visualization Server.

It is recommended that the system administrator consider the maximum client resolution that is needed to show crisp images, and then set the server desktop resolution accordingly. Note that there is no fixed overhead to setting a high server desktop resolution, as clients typically use a lower resolution and the corresponding server rendering and network image transfer happen at that lower client resolution.

Configure display units

Use the **AWC_3DViewerDisplayUnit** preference to configure the default display unit. The default unit is **Meters**. Users can override the default unit using the Displayed dropdown.

Value	Units
1	Millimeters
2	Centimeters
3	Meters
4	Inches
5	Feet
6	Yards
7	Micrometers
8	Decimeters
9	Kilometers
10	Mils

Configure support for JT Override children

Add support for the JT Override Children column on the structure table

Complete the following steps to allow the end user to add the JT Override Children column to the structure table.

1. Create an XML file containing the following:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<Import>
<Client abbreviation="AWClient" name="AWClient">
<ClientScope hostingClientName="" name="Awb0OccurrenceManagement"
uri="Awb0OccurrenceManagement">
<ColumnConfig columnConfigId="mySampleContentColConfig" sortBy="0"
sortDirection="Descending">
<ColumnDef objectType="Awb0PositionedElement"
propertyName="awv0JtOverrideChildren" width="50"/>
</ColumnConfig>
</ClientScope>
</Client>
</Import>
```

2. At the Teamcenter command prompt, merge the XML file with any existing column definitions using the **import_uiconfig** utility, and specify the desired group and role values for this functionality.

Set up viewing individual node geometry of overridden subassemblies

When viewing a structure that has an element overridden by a monolithic JT file, only the monolithic JT file geometry is displayed in the 3D Viewer. No geometry associated with any of the individual child lines under that element will be loaded or displayed in the 3D Viewer.

To allow the end user to view the geometry overridden by a monolithic JT file by opening the overridden subassembly in a new tab, uncomment the following line in the Visualization Server Manager's **jetty/jettyservice.properties** file:

```
#VisPoolProxy.envset.TCVIS_IGNORE_ROOT_MONO_OVERRIDE=True
```

> Note:
>
> To enable this functionality for **MMV data**, your administrator must set the `ProductManager.IgnoreRootMonoOverride=true` in the Visualization Data Server's **etc/VisDataServer.properties** file.

Configure the color scheme for the 3D viewer

Active Workspace lets you choose between two schemes, *White* and *Gray Ramp*, to change the background color and the part selection color in the 3D viewing window.

To allow a user to switch between the two schemes, as a site administrator, you can override the default scheme by changing the value of the **AWC_visColorScheme** preference.

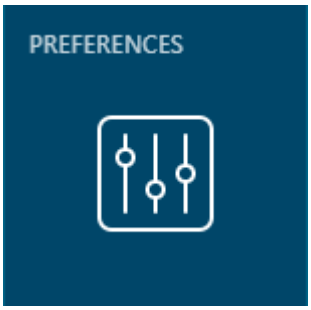
The default value of this preference is set to **White**.

Note:

The scheme of the background color and the part selection color in the 3D viewing window is also retained for cross sections.

To override the default scheme:

1. On the Home page, click **Preferences**.



2. Search for the preference **AWC_visColorScheme**.

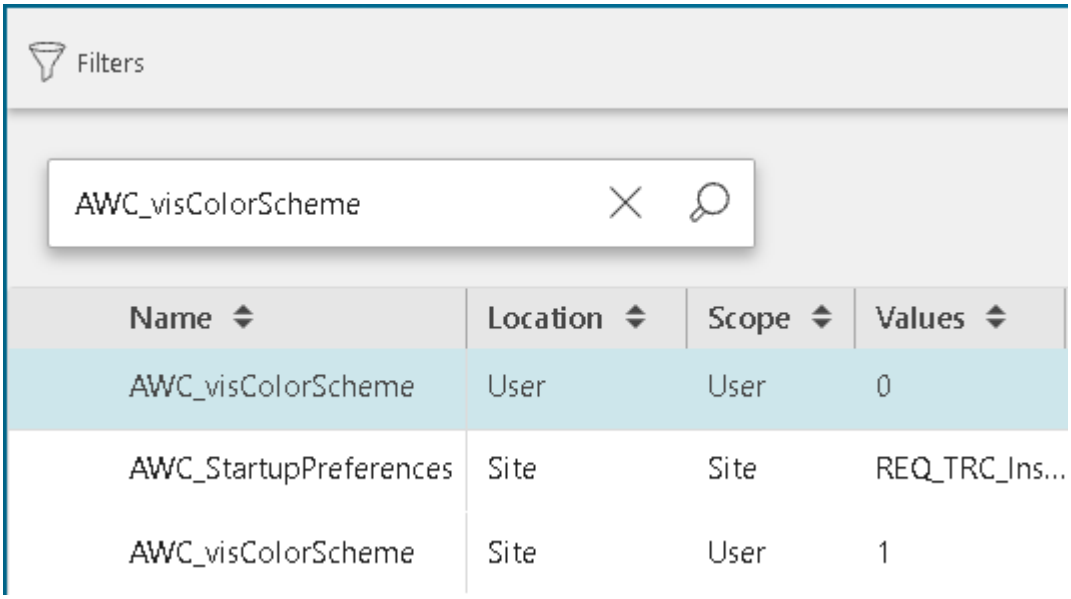
3. From the search results, select the instance of the preference that has a **Location** defined as **Site** and **Scope** defined as **User**.

4. On the primary toolbar, click **New** ✳.

5. Click **Override** ⊕. The **Add Override** panel opens.

6. In the **Values** section, change the value of the preference to **0** and click **Add**.

7. A new instance of the preference which has a **Location** and **Scope** set to **User** is created. It appears in the **Preferences** search results.



Note:

To switch between schemes again, change the value of the new preference instance that is created.

8. Sign out of Active Workspace and sign in again for the changes to take effect. Search for the product you want to work with and load the 3D viewer.

Note:

The background color and part selection color gets saved within a working session.

To add new color schemes:

1. Add new colors under **<Section_Colortheme>** in the *Initialization.xml* file located in the *\vispoolmanager\VisServerFV\etc* folder.

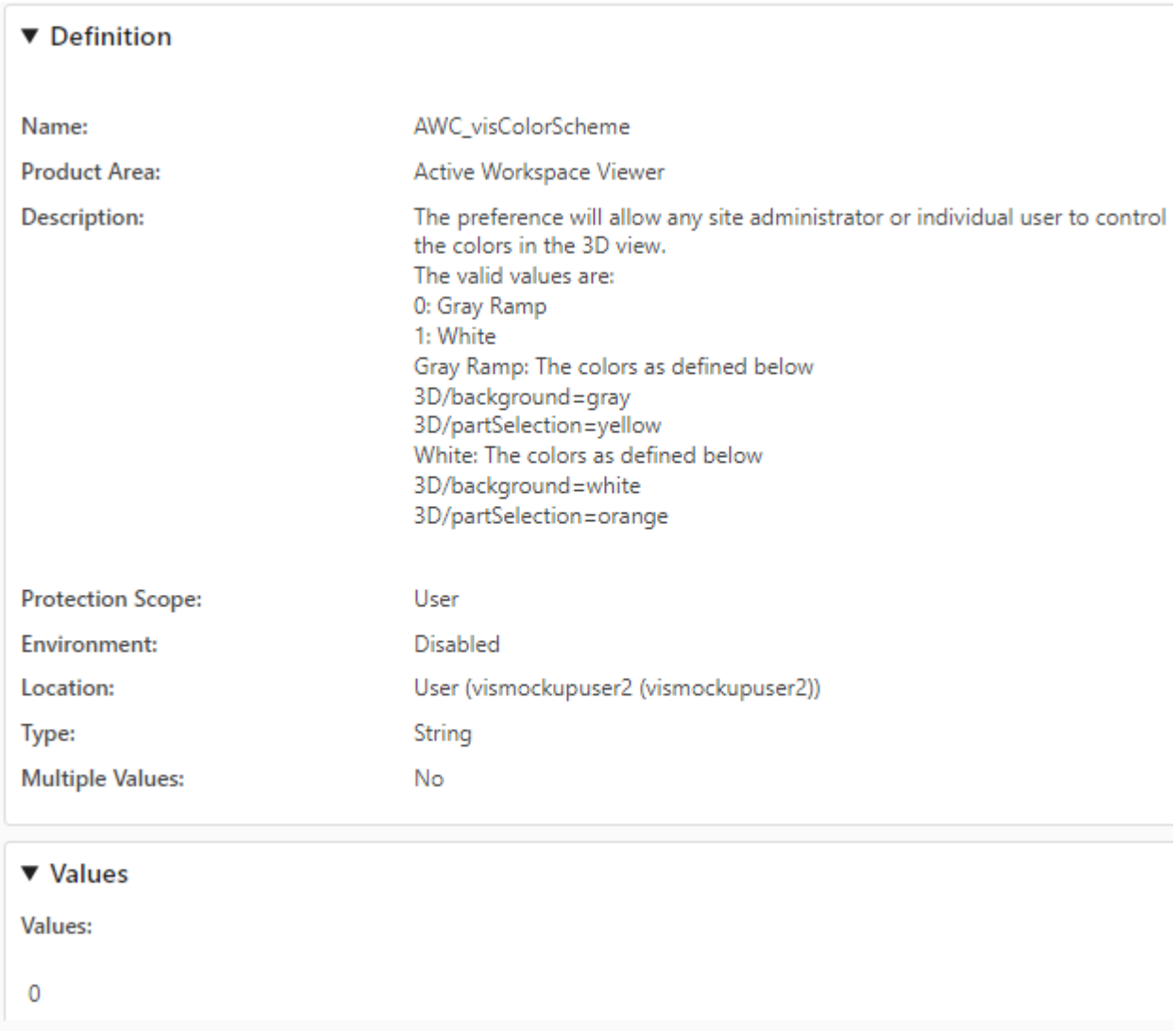
Warning:

You must not delete or modify the default schemes that are available with the out-of-the-box installation. Siemens Digital Industries Software recommends that you add your color schemes *after* the default schemes in the file.

```
<Section_Colortheme>
<Theme Name="Gray Ramp">
<Background3D>
<TopColor red="180" green="182" blue="184"></TopColor>
<BottomColor red="230" green="232" blue="234"></BottomColor>
</Background3D>
```

```
<PartSelection3D red="255" green="255" blue="128"></PartSelection3D>
</Theme>
<Theme Name="White">
<Background3D>
<TopColor red="255" green="255" blue="255"></TopColor>
<BottomColor red="255" green="255" blue="255"></BottomColor>
</Background3D>
<PartSelection3D red="246" green="160" blue="73"></PartSelection3D>
</Theme>
</Section_Colortheme>
```

2. Update the new values in the **AWC_visColorScheme** preference.



Configure selection limit

The number of parts that you can select with a volume select action is dependent on the value of the **AWC_visSelectionLimit** site-level preference. Area Select will not permit a user to select more than this number of items in a single selection action.

Configuring Active Workspace to connect with Lifecycle Visualization

What is Active Workspace Application Connect?

You can connect Active Workspace and Lifecycle Visualization in your default browser using Active Workspace Application Connect.

> Note:
>
> The ability to connect Active Workspace with Lifecycle Visualization is available only when using Active Workspace 4.3 or later *and* Lifecycle Visualization 12.3 or later.

With Active Workspace Application Connect, you can move between Active Workspace and Lifecycle Visualization to complete work on your data. You can also take advantage of cross-selection where selections made in either Active Workspace or Lifecycle Visualization are reflected in both applications.

In addition, this also provides the flexibility to open multiple documents in separate browser tabs while retaining interoperability with Lifecycle Visualization.

Configuration instructions for both connection methods can be found in **Configure Active Workspace for connection with Lifecycle Visualization**.

Configure Active Workspace for connecting with Lifecycle Visualization

Active Workspace Application Connect allows users to use the Active Workspace **Open in Visualization** command to open their data in the Lifecycle Visualization application connected to a synchronized Active Workspace session. The connected Active Workspace session can be hosted in the Info Browser within Lifecycle Visualization, or it can run in any external browser that Active Workspace supports.

When configured to host your connected Active Workspace in the Info Browser inside Lifecycle Visualization (default configuration), the original Active Workspace session will be replicated in the internal Info Browser. In this mode, the Active Workspace session hosted in the Info Browser will be updated to match the originating Active Workspace session each time you select the **Open in Visualization** command.

When configured to connect with Active Workspace running in an external browser, Lifecycle Visualization will launch and connect with a copy of the original Active Workspace session in a new tab in your default browser. In this mode, a new browser tab containing a copy of the original Active

Workspace session will be created each time you select the **Open in Visualization** command from the original, that is, the unconnected Active Workspace session. Selecting **Open in Visualization** from an already connected Active Workspace session refreshes the current session and does not open a new tab.

Actions such as selection or visibility changes are synchronized between Lifecycle Visualization and the connected Active Workspace session in both modes.

Note:

Because Active Workspace dropped support for Internet Explorer in Active Workspace 6.0, Teamcenter lifecycle visualization 14.1 and earlier can only host Active Workspace 5.2 and earlier. Teamcenter lifecycle visualization 14.2 and later can host any supported version of Active Workspace.

Note:

Set the **AWV0LaunchAsSession** user preference to **False** if you are using:

- Teamcenter lifecycle visualization 12.4 or earlier along with a Teamcenter version later than 12.4.
- Teamcenter lifecycle visualization 12.4 or earlier along with Active Workspace 5.0 or later.

Teamcenter lifecycle visualization versions 12.4 and earlier do not understand session information saved by Active Workspace, but can still load the configured assembly referenced by the session.

Teamcenter preference or Lifecycle Visualization environment variable	Usage or purpose	Setting type
AWV0AWAppConnectMode	Determines where the connected Active Workspace session is launched. • **Off** — No connection is created. • **InfoBrowser** — (Default) launches the Active Workspace Application Connect Active Workspace session in Info Browser within Lifecycle Visualization. • **ExternalBrowser** — launches the Active Workspace Application Connect Active Workspace session in a new tab of the user's default browser, external to Lifecycle Visualization.	Teamcenter preference
TCVIS_DISABLE_WEBVIEW	Determines which browser components are used to view web content in Lifecycle Visualization.	Lifecycle Visualization environment variable

Teamcenter preference or Lifecycle Visualization environment variable	Usage or purpose	Setting type
	• **False**: Uses Microsoft Edge browser components to view web content in the Info Browser. This is the default value. To host Active Workspace 6.0 or later in the Info Browser, this setting must be **False**. • **True**: Uses Internet Explorer browser components, which is useful for supporting web pages containing Lifecycle Visualization Automation controls. Active Workspace 6.0 or later cannot be hosted in the Lifecycle Visualization Info Browser if **TCVIS_DISABLE_WEBVIEW=True**.	

Host Active Workspace in standalone visualization

You can host Active Workspace in the browser embedded in standalone Lifecycle Visualization. Hosting is especially useful because if you use the Active Workspace **Open in Visualization** command to send data to the Lifecycle Visualization application, then selecting a part in either the hosted Active Workspace structure or in the viewing window applies the same selection status in both locations. This behavior is referred to as "cross-selection."

> Note:
>
> Because Active Workspace discontinued support for Internet Explorer in Active Workspace 6.0, Teamcenter lifecycle visualization 14.1 and earlier can only host Active Workspace 5.2 and earlier. Teamcenter lifecycle visualization 14.2 and later can host any supported version of Active Workspace.

One-time configuration of the local machine is required.

Configure the local computer to host Active Workspace in standalone application viewer

Host Active Workspace in standalone Lifecycle Visualization

Configure the local computer to host Active Workspace in standalone application viewer

> Note:
>
> Prerequisites for this procedure:

- The Teamcenter administrator has installed the Active Workspace server extension for visualization.
- The standalone application viewer software is installed on the local computer.
- A File Management System client cache (FCC) for the Active Workspace Teamcenter database is configured on the local computer.

1. In the standalone viewer, from the Application toolbar, choose **Menu→Web→Edit Links**.
2. In the **Edit Links** dialog box, click **Add**.

   A new link appears in the **Link Names** list.
3. Type a name for the link, and press Enter.
4. Select the link and then, in the **Link URL** box, type the Active Workspace address.
5. Add the following text to the end of the address:

   ?ah=true

   Your full address should now resemble the following:

   http://<your_aw_deployment>?ah=true

   Adding the **?ah=true** suffix selects and disables the **Display in Info Browser** check box.
6. Click **OK**.

   Your new link is now displayed on the **Web** menu.
7. In the Windows registry, create the following browser emulation DWORD entries.

```
HKEY_CURRENT_USER
   SOFTWARE
      Microsoft
         Internet Explorer
            Main
               FeatureControl
                  FEATURE_BROWSER_EMULATION
                     visview.exe = (DWORD) 00011000
                     visview_ng.exe = (DWORD) 00011000
```

   Make sure the 11000 DWORD values are in decimal. The equivalent value in hexadecimal is 2AF8.
8. Review the compatibility view settings.

a. Open Internet Explorer.

b. Press Alt to display the Menu bar (or right-click the Address bar and then select **Menu bar**).

c. Click **Tools**, and then click **Compatibility View settings.**

d. Ensure that the following options are turned off.

Display intranet sites in Compatibility View

Use Microsoft compatibility lists

Host Active Workspace in standalone Lifecycle Visualization

1. As needed, **configure the local computer to host Active Workspace in standalone application viewer**.

2. In standalone Lifecycle Visualization, from the Application toolbar, choose **Menu→Web→<your_aw_link>**.

3. Type your user name and password, and click **Sign in**.

4. (Optional, but likely desired) In the hosted Active Workspace browser, send visualization data to the standalone viewer.

Configuring Clearance to display results in Active Workspace

Configure Clearance to display results

Perform the following steps to configure ClearanceDB to work with Active Workspace and display clearance results.

Prerequisites

Before completing these steps, you must install the **3D Clearance** feature in Active Workspace using Deployment Center or TEM.

Procedure

1. Clone stable IDs.

2. (Optional) Set the default owner for each Clearance result.

3. (Optional) **Assign ClearanceDB roles** to Teamcenter users.

4. (Optional) Create and export 2D images.

Define ClearanceDB roles in Active Workspace

To protect Teamcenter ClearanceDB data viewed in Active Workspace, assign users to one of the ClearanceDB roles within the ClearanceDB group, according to your business rules. There are three OOTB ClearanceDB roles:

> Note:
>
> Before assigning users to a ClearanceDB role, you must select the **Enable per-user access to the Clearance Database** check box on the ClearanceDB Server Configuration page in Deployment Center. When this check box is cleared, all users can read and disposition Clearance results in Active Workspace.

Role	Description
Administrator	Users can author Clearance data in the database.
Disposition	Users can disposition (read/write) ClearanceDB analysis results.
Read only	Users can read the Clearance data but cannot modify or disposition the data.

Within the ClearanceDB group, add users to ClearanceDB roles using:

- Active Workspace Administration
- Teamcenter Organization
- make_user utility in Teamcenter command shell

> Example:
>
> ```
> |user1|user1_password|ClearanceDB|Administrator|description|
> Administrative access for Clearance Data Base
> ```
>
> ```
> |user2|user2_password|ClearanceDB|Disposition|description|Disposition
> access for Clearance Data Base
> ```

10. Allow users to replace DirectModel datasets attached to released item revisions

Consider the scenario where there are JT translators running as a service in end user environments, translating CAD data to JT. These services might generate data even after an item revision is released. Based on the practices of your organization, you can allow or disallow this behavior.

To allow updates to a released item revision, you can set up attaching or detaching a **DirectModel** dataset from a released item revision.

Procedure

1. On the home page, click the **PREFERENCES** tile.

   > Note:
   >
   > You may need administrative privileges to set preferences.

2. Add the users, who can attach or detach **DirectModel** datasets as values to the **TC_JTTRANSLATOR_USERS** preference.

   - All users defined as values of the preference, for example, *jackjtuser*, can attach or detach **DirectModel** datasets to and from an **ItemRevision** object when it is in a *released* state.

   - Users that are not defined in the preference cannot attach or detach **DirectModel** datasets to and from an **ItemRevision** object when it is in a *released* state.

11. Monitoring and Troubleshooting Visualization

Monitor visualization components in Active Workspace

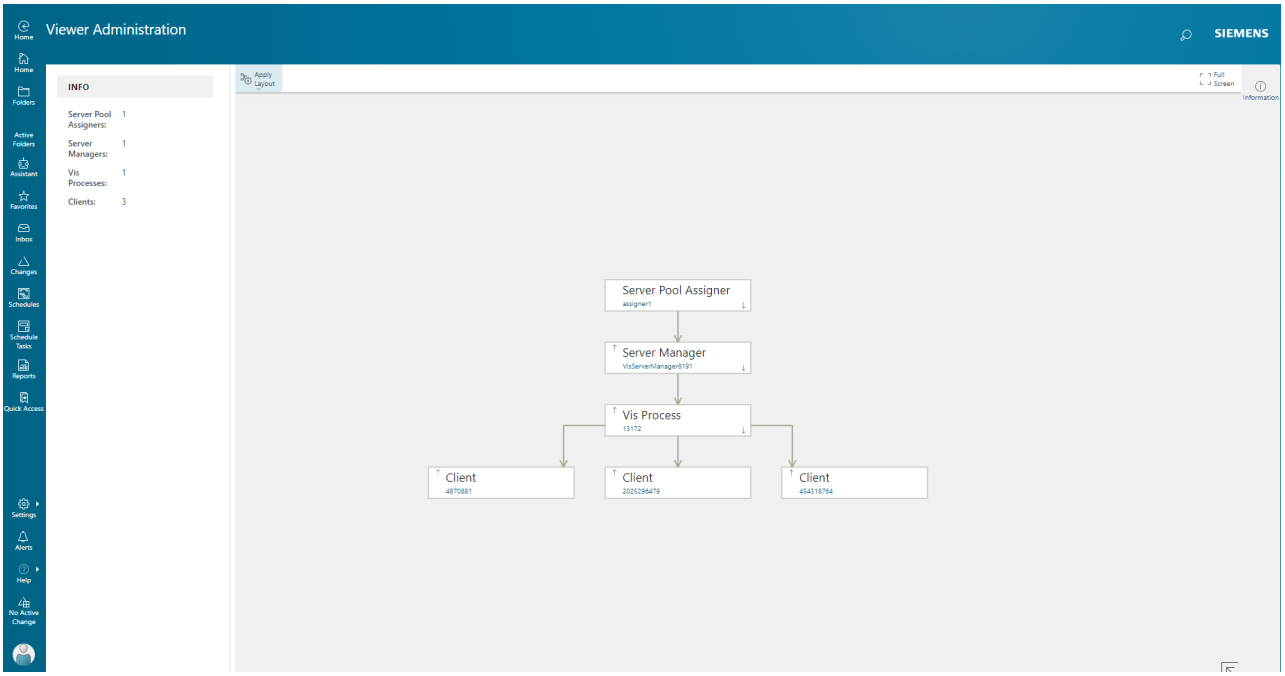
The Active Workspace **Viewer Administration** page provides information about active visualization components, including the server pool assigner, server manager, processes, and connected clients.

1. Log on as a user with administrator privileges.

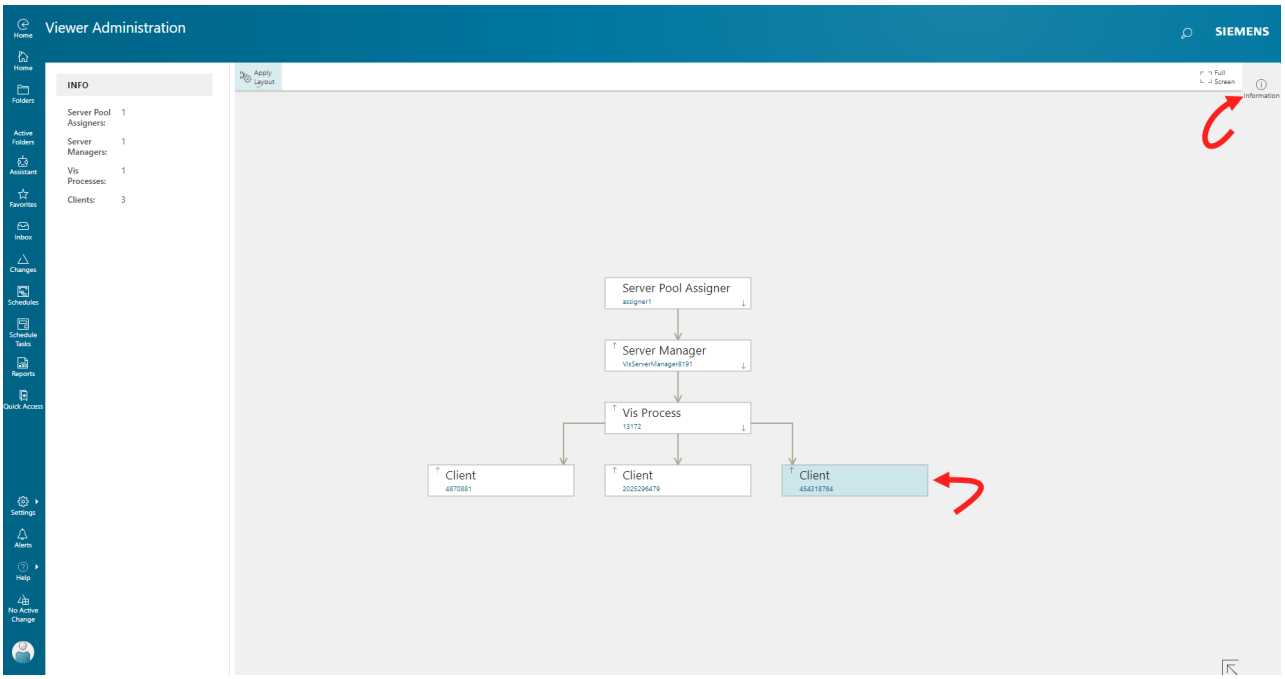
2. On the home page, click **VIEWER ADMINISTRATION**.

> Tip:
>
> To see the **VIEWER ADMINISTRATION** tile on the home page, make sure your organization group and role is mapped to the right workspace.

The **Viewer Administration** page appears. The initial view of the page includes a diagram of the server pool assigner, server manager, and the active processes and connected clients.



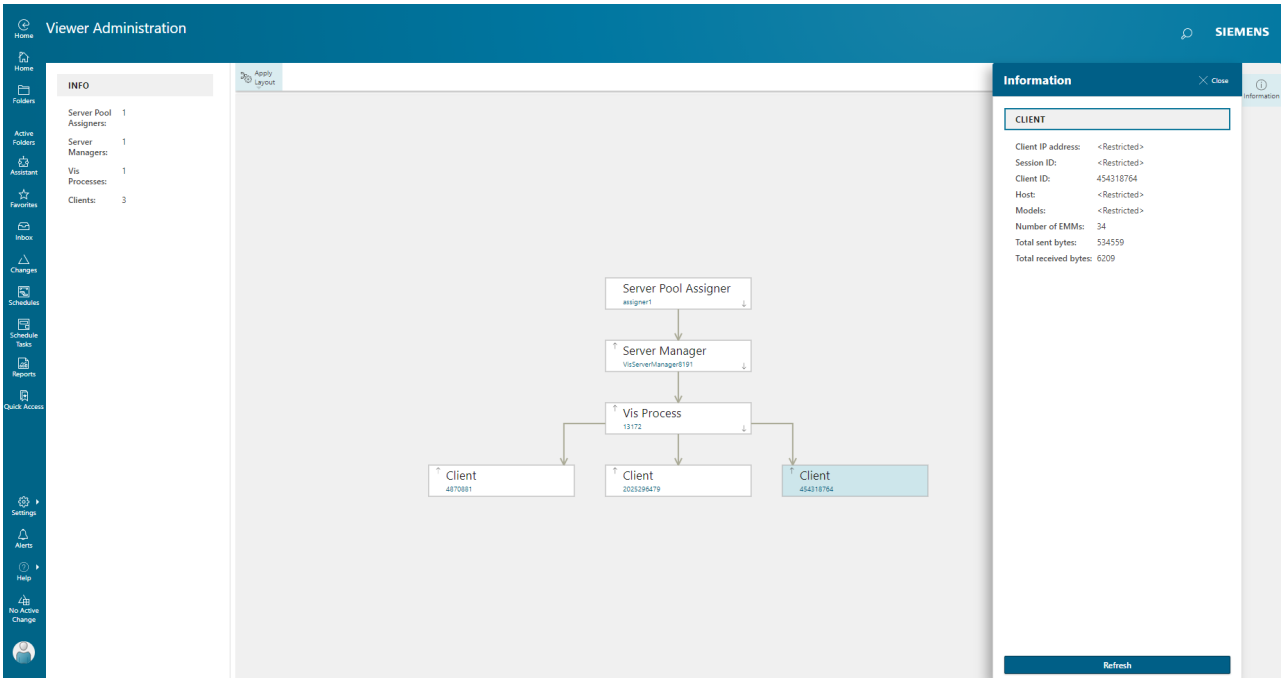
3. For details about an object included in the diagram, select the object, and click **Information** ⓘ.



The **Information** panel appears, providing detailed information about the selected visualization component.

Note:

To maintain a secure environment, sensitive information such as IP addresses and the session ID is not displayed.



4. To update the information displayed, click **Refresh**.

Monitoring Visualization server components using JMX

Overview of monitoring Visualization Server components using JMX

You can monitor the Active Workspace Visualization Server system, including the Visualization Server Manager, Visualization Servers, and the Visualization Pool Assigner, using a freeware Java Management Extensions (JMX) client, such as Oracle Java Mission Control or JConsole. Monitoring these server components with JMX is useful for identifying performance bottlenecks or other problems.

A JMX client installed on the same computer as the Visualization Server components automatically detects all servers running on the machine. The information exposed by the visualization components is presented using MXBeans.

To set up remote access for JMX clients, you must configure authentication of users and passwords on the server and encryption for the server process. Once remote access is enabled and configured, JMX clients from remote machines can connect to the server.

For information about configuring remote JMX monitoring of server processes, see *Monitoring and Management Using JMX Technology* in the Oracle Java SE Documentation.

Note:

JMX metrics can include the following composite data types with multiple values:

CurrentMaxTotal: This object includes these values:

- The current value
- The highest the value has been since startup
- The total value since startup

#clientCount	CompositeData, size 3
#current	26.0
#max	30.0
#total	66.0

CurrentMaxMin : This object includes these values:

- The current value
- The highest the value has been since startup
- The smallest the value has been since startup

#computerCpuUsageRatio	CompositeData, size 3
#current	0.0014545454
#max	0.122
#min	0.0

Visualization Server Manager

Each Visualization Server Manager hosts two MXBeans that contain information about its current state: **<poolName>** and **<poolName> monitoring**. They are located in the **Administer-<poolName>-manager** folder.

The **<poolName>** MXBean for the Visualization Server Manager provides the following information:

- **CacheConfiguration**

  The configuration parameters used to connect the Visualization Server Manager to the Visualization Pool Assigner.

- **Language**

The language within which the Visualization Server Manager is running.

- **Load**

  A single ratio that represents how much of the computer's capacity is currently in use. When this ratio is greater than or equal to 1.0, the system is completely full and new clients are rejected.

- **NumberOfAssignedServers**

  The number of Visualization Server processes in use or recently in use by client users.

- **NumberOfColdServers**

  The number of Visualization Server processes in the process of starting up but not yet ready for use.

- **NumberOfServers**

  The total number of Visualization Server processes, including, cold, warm, and assigned.

- **NumberOfWarmServers**

  The number of Visualization Server processes ready for use by new client users.

- **PoolID**

  The name of this Visualization Server Manager.

- **PoolSpecificConfiguration**

  The configuration parameters passed in at startup to this Visualization Server Manager.

- **StartupDate**

  The data and time that this Visualization Server Manager was last started.

The **<poolName> monitoring** MXBean for the Visualization Server Manager provides the following information:

- **accepting**

  Whether this server is currently accepting new incoming users.

- **assignedServerCount**

  The number of VisView processes that are currently serving users with visualization functionality.

- **assignedVisViews**

  Specific information about each of the VisView processes that are currently assigned to users.

- **assignedVisViewsCount**

  The number of VisView processes that are currently assigned to users.

- **computerCpuUsageRatio**

  A ratio indicating how much CPU usage is consumed or unavailable on this computer.

  > Note:
  >
  > A *ratio* for Active Workspace MXBeans refers to a current usage value divided by the maximum usage value. For example, a CPU usage of 30% is divided by the maximum of 100% to compute a ratio of 0.3. All ratios in Active Workspace are between 0 and 1, unless the capacity of the visualization system is exceeded, in which case the ratio is greater than 1.

- **computerMemUsageRatio**

  A ratio indicating how much system memory is consumed or unavailable on this computer.

- **computerNetworkUsageRatio**

  A ratio indicating how much network usage is consumed or unavailable on this computer.

- **config**

  The configuration parameters passed in at startup to this server.

- **dateCreated**

  The date and time that this Visualization Pool Assigner was last started.

- **gpus**

  Specific information about each of the GPUs currently used by VisView processes.

- **hostName**

  The name or IP address of the computer that this server is hosted on.

- **languageID**

  The language that the server is currently running in. The default is English.

- **loadRatioAbsolute**

  A ratio indicating how much of the computer's resources is consumed or unavailable on this computer.

- **loadRatioRelative**

  A ratio indicating how much of the computer's resources are consumed or unavailable on this computer when compared to the maximum allowed resource consumption level of this server. The default maximum allowed resource consumption level is 0.7.

- **maxBandwidthBytesPerSec**

  The maximum allowed bandwidth in bytes per second that this server is allowed to consume.

- **numAssignmentsSinceStartup**

  The number of models that have used visualization system resources on this server.

- **numGpus**

  The number of GPUs that the computer has.

- **poolName**

  The alias defined by the administrator to identify this particular Visualization Server Manager.

- **Prefers**

  The models preferred by this server.

- **serverTooFullExceptions**

  When clients are refused visualization services, this contains the reason.

- **serverTooFullExceptionsCount**

  How many clients were refused visualization services.

- **serves**

  The models that this server has currently in memory due to requests from users.

- **totalGpuMemMB**

  The total amount of system GPU memory on this computer.

- **upTimeSec**

  How many seconds have elapsed since this server was last started.

- **visSysCpuUsageRatio**

  A ratio indicating the CPU usage of this server on the computer.

- **visSysGpuUsageRatio**

  A ratio indicating the GPU usage of this server on the computer.

- **visSysMemUsageRatio**

  A ratio indicating the amount of system memory consumption of this server on the computer.

- **visSysNetworkUsageRatio**

  A ratio indicating the amount of network usage of this server on the computer.

- **warmServerCount**

  The number of VisView processes that do not yet have users but are ready to host visualization services for new users.

- **warmVisViews**

  Specific information about the VisView processes that do not yet have users but are ready to host visualization services for new users.

- **warmVisViewsCount**

  The number of VisView processes that do not yet have users but are ready to host visualization services for new users.

Visualization Server

Each Visualization Server owned by the Visualization Server Manager hosts one MXBean that contains information about its current state. The MXBeans for the Visualization Servers are called **VisView@PID_<processID>@Port_<port>**. They are located in a folder called **VisServers**.

An MXBean for a Visualization Server provides the following information:

- **ClientConnections**

  Information about each client user connected to this Visualization Server.

- **DateCreated**

  The date and time that this Visualization Server entered a state where it was first made available to client users (warm).

- **Models**

  The IDs for the models that this Visualization Server is currently hosting.

- **MsSinceLastEMM**

  The number of milliseconds since this Visualization Server last received a message from a client.

- **Port**

  The port that this Visualization Server is currently hosting its socket server on for connections from the Visualization Pool Assigner.

- **ProcessCpuUsageRatio**

  The average amount of CPU usage that this Visualization Server has consumed on the Visualization Server Manager computer over the last 20 seconds.

- **ProcessGpu**

  General information about the GPU that the Visualization Server is using.

- **ProcessID**

  Also known as the PID, this is the identifier that the operating system uses to denote this particular Visualization Server.

- **ProcessMemUsageRatio**

  The average amount of memory usage that this Visualization Server has consumed on the Visualization Server Manager computer over the last 20 seconds.

- **ProcessMyGpuMemUsageRatio**

  The average amount of GPU memory usage that this Visualization Server has consumed, of the particular GPU that this Visualization Server is assigned to, over the last 20 seconds.

- **ProcessNetworkUsageRatio**

  The average amount of network usage that this Visualization Server has consumed on the Visualization Server Manager computer over the last 20 seconds.

- **ProcessTotalBytesTransfered**

  The number of bytes that have been received and sent by this Visualization Server process. This discounts the data downloaded from Teamcenter servers.

- **ServletConnections**

  Information about each connection from the Visualization Pool Assigner.

- **TotalNumEMMs**

  The number of client requests handled by the Visualization Server.

- **UpTimeSec**

  The number of seconds that have elapsed since the Visualization Server was created.

Visualization Pool Assigner

Each Visualization Pool Assigner hosts two MXBeans that contain information about its current state: **Assigner** and **Assigner monitoring**. The MXBeans are located in the **Administer Assigner manager** folder.

> Note:
>
> You must configure the Visualization Pool Assigner to populate some of the JMX metrics with meaningful information. For more information, see Configure the Visualization Pool Assigner for JMX metrics.

The **Assigner** MXBean for the Visualization Pool Assigner provides the following information:

- **AssignerSpecificConfiguration**

  The configuration parameters passed to this Visualization Pool Assigner at startup.

- **CacheConfiguration**

  The configuration parameters used to connect this Visualization Pool Assigner to any other Visualization Pool Assigners in the Visualization Server system, and the configuration parameters used to identify this Visualization Pool Assigner such that other nodes in the Visualization Server system can connect to it.

- **Load**

  A single ratio that represents how much of the computer's capacity is currently in use. When this ratio is greater than or equal to 1.0, the system is completely full and new clients are rejected.

- **NumberOfPools**

  The number of Visualization Server Managers that this Visualization Pool Assigner is currently connected to.

- **NumberOfUsers**

  The number of client users who are currently connected to Visualization Server processes through this Visualization Pool Assigner.

- **StartupDate**

  The data and time that this Visualization Pool Assigner was last started.

The **Assigner monitoring** MXBean for the Visualization Pool Assigner provides the following information:

- **clientCount**

  The number of users that are connected to this server.

- **clients**

  Specific information about the clients that have active sessions with this server.

- **computerCpuUsageRatio**

  A ratio indicating how much CPU usage is consumed or unavailable on this computer.

- **computerMaxBandwidthBytesPerSec**

  The maximum allowed bandwidth in bytes per second that this server is allowed to consume.

- **computerMemUsageRatio**

  A ratio indicating how much system memory is consumed or unavailable on this computer.

- **computerNetworkUsageRatio**

  A ratio indicating how much network usage is consumed or unavailable on this computer.

- **computerTotalMemMB**

  The total amount of system memory on this computer.

- **config**

The configuration parameters passed in at startup to this server.

- **dateCreated**

  The date and time that this Visualization Pool Assigner was last started.

- **loadRatioAbsolute**

  A ratio indicating how much of the computer's resources is consumed or unavailable on this computer.

- **loadRatioRelative**

  A ratio indicating how much of the computer's resources is consumed or unavailable on this computer when compared to the maximum allowed resource consumption level of this server. The default maximum allowed resource consumption level is 0.7.

- **poolCount**

  The number of Visualization Server Managers known to this server.

- **poolManagers**

  Specific information about the Visualization Server Managers known to this server.

- **serverTooFullExceptions**

  When clients are refused visualization services, this contains the reason.

- **serverTooFullExceptionsCount**

  How many clients were refused visualization services.

- **upTimeSec**

  How many seconds have elapsed since this server was last started.

- **visSysCpuUsageRatio**

  A ratio indicating the CPU usage for this server on the computer.

- **visSysMemUsageRatio**

  A ratio indicating the amount of system memory consumption for this server on the computer.

- **visSysNetworkUsageRatio**

A ratio indicating the amount of network usage of this server on the computer.

Troubleshooting Visualization

The following list of issues and possible resolutions address situations that are outside the scope of the troubleshooting diagnostic sequence for new installations. Additionally, if you are having issues with an Active Workspace client connected to a Visualization Server, use the *Logging* feature to record the issues in a log file to share with Siemens Digital Industries Software support who can help you find a solution.

- **Graphics in the viewer tab display extraneous geometry**.
- **Measurement label dragging does not work with a touch screen**.
- **The assembly appears to be very small on the screen**.
- **Indexing fails while using the MMV option**.
- **Lifecycle Visualization may display a structure differently than it is shown in Active Workspace**.
- **The Visualization Pool Assigner repeatedly adds the error message: Could not connect to <HOST>:<PORT>. Retrying..." to the console/log**.
- **The Visualization Server Manager displays message: Trouble connecting to cold visualization server on port XXXX with PID YYYYY due to "The VisView's reported system CPU usage (-1.0) is less than 0". Retrying**.
- **After a user inactivity exceeds the time out value, the Active Workspace viewer tries to reconnect but fails with the following error: Visualization was not loaded because communication was lost**.
- **When initializing the viewer, you see a spinning circle, but the Viewer never loads.**
- **The measurement or PMI labels appear very small on the screen**.
- **Sessions saved in standalone Lifecycle Visualization are not visible in the Teamcenter rich client**.

In case there is an issue in the Active Workspace 3D viewer, you can obtain a diagnostic report.

Issue	Possible resolution
Graphics in the viewer tab display extraneous geometry.	This is an indication that the graphics driver on the Visualization Server Manager machine is not up-to-date. **Verification** 1. On your video card manufacturer's web site, make note of the latest driver version for your card.

Issue	Possible resolution
	2. Open the Windows Control Panel. 3. Click **Device Manager**. 4. Expand **Display adapters**. 5. Right-click the entry for your display adapter, and choose **Properties**. 6. Click the **Driver** tab. The driver version on your machine is listed. If the installed driver is not the latest available, update it. **Solution** If the driver for the graphics adapter is not the latest version, update the driver and reboot.
Measurement label dragging does not work with a touch screen.	**Solution** In browsers on the Microsoft Surface, you may need to disable the press and hold setting if you see a translucent square appear when performing the press and hold gesture. 1. Open Windows search and type **Pen and Touch** to find the settings dialog box. 2. In the **Touch** tab, select the **Press and Hold** action and click **Settings**. 3. Uncheck **Enable press and hold for right-clicking** and click **OK**. 4. In the **Pen and Touch settings** dialog box, click **OK**.
The assembly appears to be very small on the screen.	**Verification** The existence of bad data from a single part in a large assembly may cause noticeable visualization artifacts when the whole assembly is viewed in MMV mode. For example, if one part has a very large bounding box caused by bad data, the assembly may appear to be very small on the screen. Review the **vds_console.log** for this line: `Suspected bad bounding box encountered` VDS provides this warning if it encounters parts with suspicious bounding boxes. Keep in mind the following items: • VDS flags nodes with an unusually large bounding box.

Issue	Possible resolution

	• VDS flags nodes that are isolated from other parts.
	• You need at least 1000 nodes in a structure for these calculations to be made. Otherwise, it would not be statistically meaningful.
	
	To log additional information on boundary box error reporting, create a log for bounding box validation by adding the following to the **VisDataServer.properties** file:
	
	`# This channel is meant to capture the output from BBoxValidator logger.`
	`# This will log any invalid Bounding Boxes found in the structure.`
	`logging.channels.BBoxValidatorChannel.class=FileChannel`
	`logging.channels.BBoxValidatorChannel.flush=false`
	`logging.channels.BBoxValidatorChannel.path=${system.tempDir}/BBoxValidator.log`
	`logging.channels.BBoxValidatorChannel.rotateOnOpen=true`
	`logging.channels.BBoxValidatorChannel.purgeAge=0 seconds`
	`logging.channels.BBoxValidatorChannel.formatter=FileFormatter`
	
	`# BBoxValidator logger`
	`logging.loggers.BBoxValidator.name=BBoxValidator`
	`logging.loggers.BBoxValidator.level=Debug`
	`logging.loggers.BBoxValidator.channel=BBoxValidatorChannel`
	
	Use the bounding box validator to define the appropriate bounding box for your assemblies.

Indexing fails while using the MMV option.	**Verification** When running the FTS Indexer with the Massive Model Visualization (MMV) option, a folder is automatically generated in case there is a failure: *FTS_INDEXER_HOME***working\TcFtsIndexer_structure\ MMV_Failure** **Solution** If you notice the **MMV_Failure** folder is created and contains content, contact Support Center to investigate the issues.
Lifecycle Visualization may display a structure differently than it is shown in Active Workspace. This may occur when Active Workspace configures its structures using a saved variant rule (SVR) and then	**Solution** The **PSEShowUnconfigdVarPref** preference must be set to **false** for Lifecycle Visualization to show the same structure as Active Workspace when variants are applied. This can be done using the **Edit→Options** menu command in the rich client. The issue can occur depending on the value of the **PSEShowUnconfigdVarPref** preference. The Structure Manager application within the rich client allows for setting a **Show Unconfigured Variants** flag. When this flag is **true**, BOM lines that would normally be removed given the current variant configuration are shown. The value of the **PSEShowUnconfigdVarPref** preference is modified

Issue	Possible resolution
interoperates the configured structure to Lifecycle Visualization.	each time the state of this flag is modified. Active Workspace does not currently present this **Show Unconfigured Variants** flag as a configurable option. However, the **PSEShowUnconfigdVarPref** preference is still used by the BOM window to set its own state regarding whether it shows unconfigured BOM lines. Setting the **PSEShowUnconfigdVarPref** preference to **false** causes BOM lines for configurations other than the current one to be removed, displaying the same configuration data in Lifecycle Visualization that is displayed in Active Workspace.
The Visualization Pool Assigner repeatedly adds the error message `Could not connect to <HOST>:<PORT>. Retrying...` to the console or log.	The Visualization Pool Assigner was likely mistakenly configured to have a peer Visualization Pool Assigner. Peer Visualization Pool Assigners are intended for load balanced configurations where there is more than one Visualization Pool Assigner in the system for improved load handling or failover. In Deployment Center, open the **Visualization Pool Assigner** component parameters and remove the server peer assigner entry. In TEM, in the **Visualization Server Pool Assigner Settings** panel, remove the server peer assigner entry.
The Visualization Server Manager displays the message `Trouble connecting to cold visualization server on port XXXX with PID YYYYY due to "The VisView's reported system CPU usage (-1.0) is less than 0". Retrying...`	The Visualization Server Manager process uses Windows performance counters to read the current CPU usage of the computer. Windows performance counters can become broken, resulting in invalid values for the CPU usage, for example: -1. **Solution** 1. Open a command prompt or run PowerShell as an administrator. 2. Change the directory to *C:\Windows\SysWOW64*. 3. Run the command **lodctr /R**. 4. Restart the Visualization Server Manager.
After a user exceeds the time out value, the Active Workspace viewer tries to reconnect but fails with the following error: `Visualization was not loaded because communication was lost`	The Visualization deployment was likely mistakenly configured with the Teamcenter Load Balancer URL. Refer to Configure Visualization where Teamcenter is deployed behind a load balancer. In the developer tools console, the following error will appear if the deployment was configured with the Load Balancer URL: `Error: Failed to connect to server: The TCLoginverifier likely refused this visualization-specific request due a missing connection to Teamcenter.`

<table>
<tr><th>Issue</th><th>Possible resolution</th></tr>
<tr><td>The Viewer doesn't load during initialization and you see a spinning circle.</td><td>There is a startup preference for Active Workspace that contains the list of all preferences that are loaded at startup. It must contain the full list of preferences required by the viewer. If some of the preferences are missing from this preference or from the database, the viewer may not load properly. You will see a spinning circle over the graphics area, but the viewer will not load.

It is especially important to check this if Active Workspace preferences were installed or upgraded without using the install scripts provided by Active Workspace, or if they were modified after the install.

• All the viewer preferences must be in the database with valid values.

• Check the value of the AWC_startupPreferences preference. It should contain the list of required viewer preferences.

The full preference list and their default values can be found at:

{ROOT}
\src\solutions\awv0activeworkspacevis\businessdata\awv0activeworkspacevis\install\awv0_preference_skip.xml

The full list is below.

<table>
<tr><td>AWC_visNavigationMode</td><td>AWC_visStdViewOrientationFront</td></tr>
<tr><td>AWC_vis3DNavigationMode</td><td>AWC_applyTrueShadingMaterial</td></tr>
<tr><td>AWC_visShading</td><td>AWC_visOverlayDisplayEffectivity</td></tr>
<tr><td>AWC_visMaterial</td><td>AWC_visSelectionDisplay</td></tr>
<tr><td>AWC_visTrihedronOn</td><td>AWV0SectionCapsEdgesInitialState</td></tr>
<tr><td>AWC_visFloorOn</td><td>AWV0HostAWInVisUponLaunch</td></tr>
<tr><td>AWC_visFloorPlaneOrientation</td><td>AWV02DViewerRenderOption</td></tr>
<tr><td>AWC_visFloorOffset</td><td>AWV0ViewerRenderOption</td></tr>
<tr><td>AWC_visGridOn</td><td>AWC_visExamineZoomIn</td></tr>
<tr><td>AWC_visShadowOn</td><td>AWC_visExposedBetaFeatures</td></tr>
<tr><td>AWC_visReflectionOn</td><td>AWC_visAllOn</td></tr>
<tr><td>AWC_visStdViewOrientationTop</td><td>AWC_3DViewerDisplayUnit</td></tr>
<tr><td>AWC_visStdViewOrientationLeft</td><td></td></tr>
</table>
</td></tr>
<tr><td>The measurement or PMI labels appear very small on the screen.</td><td>You probably have a Visualization Server Manager deployed on Linux that either does not have fonts installed, or the default DPI needs to be updated, or both.

Solution</td></tr>
</table>

<table>
<tr><th>Issue</th><th>Possible resolution</th></tr>
<tr><td></td><td>
1. Ensure that your Linux system has fonts installed. For details, see Visualization Server Manager prerequisites for Linux.

2. Update the DPI. To do this, on your Linux system:

a. Modify the following values in the /etc/X11/xorg.conf file.

<table>
<tr><th>Earlier</th><th>Modify to</th></tr>
<tr><td><code>DisplaySize</code>: 508 317</td><td><code>DisplaySize</code>: 224 128</td></tr>
<tr><td>SubSection "Display"
Virtual 1920 1200
Depth 24
EndSubSection</td><td>SubSection "Display"
Virtual 960 600
Depth 24
EndSubSection</td></tr>
</table>
b. Restart your Xserver.

c. Restart Visualization Server Manager.
</td></tr>
<tr><td>Sessions saved in standalone Lifecycle Visualization are not visible in the Teamcenter rich client.</td><td>
Ensure that your administrator has related the Vis Session dataset to the specific item revision type which you plan to use for sessions.

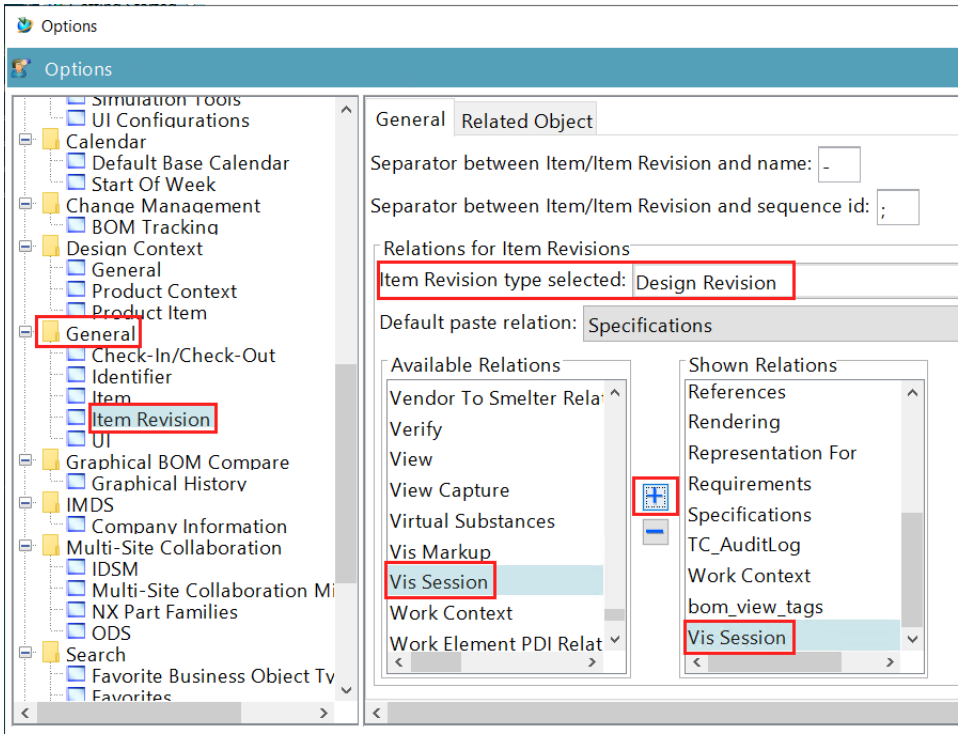
1. In My Teamcenter, choose Edit→Options.

2. In the Options dialog box, choose General→Item Revision.

3. On the General tab, select the desired Item Revision type selected, for example, Design Revision.

This specifies the item revision type for which the sessions saved in standalone Lifecycle Visualization will be available in the Teamcenter rich client.

4. If not already present in Shown Relations, under Available Relations, select Vis Session, and add it to Shown Relations.
</td></tr>
</table>

Issue	Possible resolution
	 5. Click **Apply**, and then click **OK**.

Record client issues in a log file

If an Active Workspace client connected to a Visualization Server has an issue, you can use the *Logging* feature to record the issue in a log file to share with Siemens Digital Industries Software support who can help you find a solution.

As an administrator, you can activate logging to collect debug information from the Active Workspace Visualization Server. Once logging is activated, users can perform actions to replicate an issue and the debug statements are captured in a log file.

> Caution:
>
> To avoid impacting performance to the Visualization Server, be sure to deactivate logging once you have retrieved the necessary logs from the Visualization Server.

This method of capturing debug logs on the Visualization Server has the following benefits:

- Administrators can activate and deactivate logging on the Visualization Server from the web client without the need to edit any configuration variables.

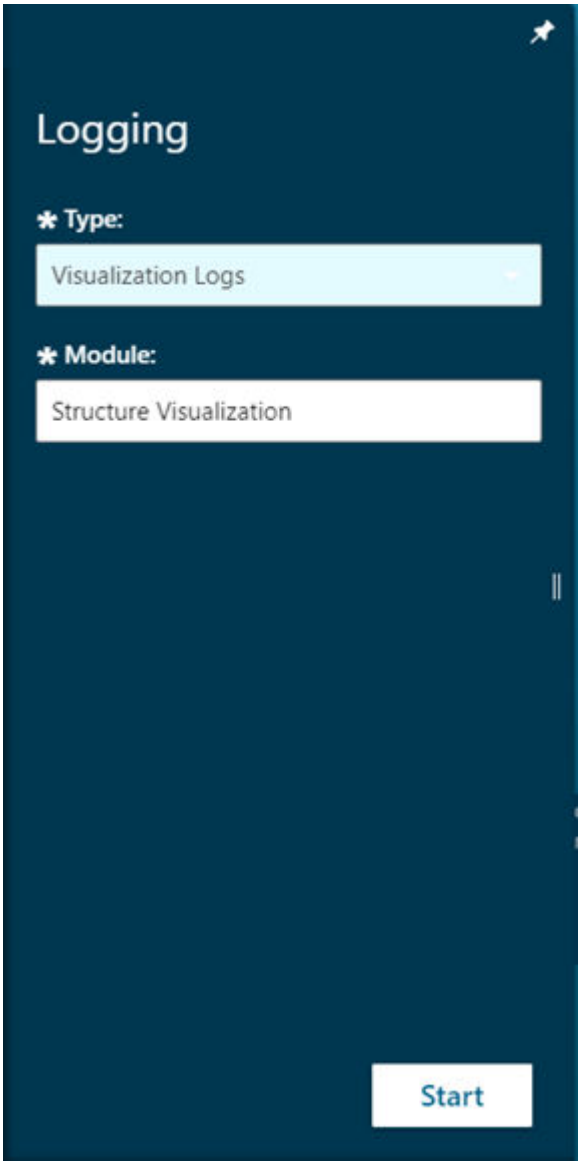
- Logging can be activated and deactivated without shutting down or restarting the Visualization Server, minimizing the impact to other users.

Procedure

1. In Active Workspace, on the global navigation toolbar on the home page, click **Settings** and choose **Logging**.

   The **Logging** panel is displayed.

2. Select **Visualization Logs** as the **Type** of log you want to generate.



3. Click **Start**.

The system begins recording the problem in a log file.

> Note:
>
> When logging is activated, logs are collected for all active Visualization users. Because logging can create a lot of data, be careful not to leave logging activated when it is not needed.

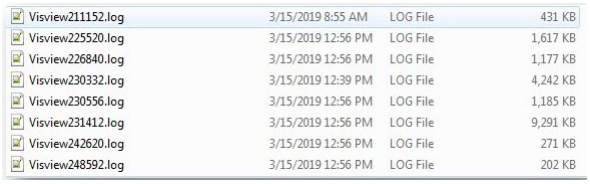
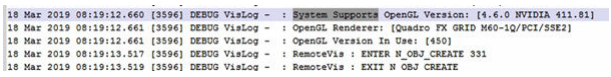
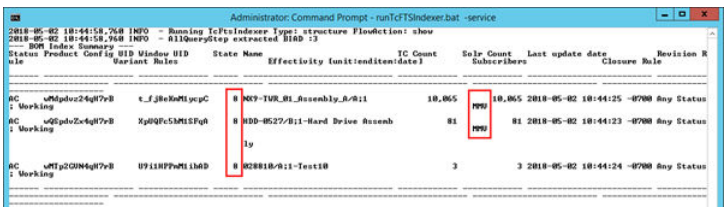
4. Click **Stop** to stop logs from being generated after the necessary log files have been collected from the Visualization Server.

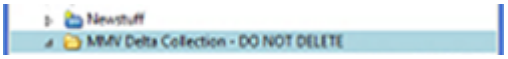
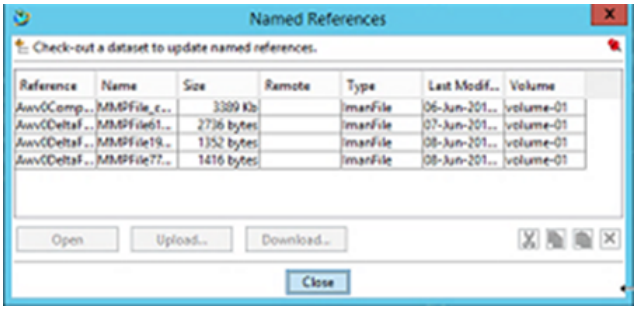
Troubleshooting an MMV deployment

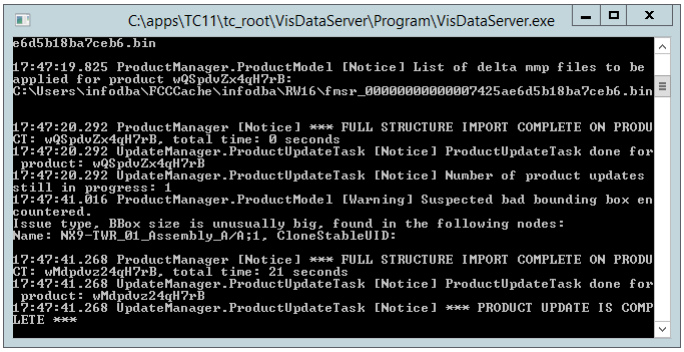
This troubleshooting topic assumes that you have already deployed the Active Workspace 3D viewer, Visualization Data Server (VDS), and indexed the structure with the MMV flag. If you do not have a working Active Workspace 3D viewer, review the other topics within **Monitoring and troubleshooting Visualization**. If you have a working viewer but your structure is not loading with MMV, then use this checklist to troubleshoot your MMV deployment issues.

Use the following procedures to troubleshoot an Active Workspace MMV deployment.

Troubleshooting step	Comments
Ensure the **Active Workspace Visualization Server Extension** feature is installed.	This feature adds the **awv0activeworkspacevis_template.xml** template to the database.
Ensure that these licenses are installed.	• Vis_simp_rendering • Visualization Professional or Mockup service level
Ensure that **FCC** (File Client Cache) is installed and configured correctly.	The FCC should be large enough to load all the JT data that is needed for the indexed products.
Use the **VisView** process log files to determine if the viewer is using the **GPU**.	1. Enable logging through the **jettyservice.properties file**. 2. Uncomment this line: `#VisPoolProxy.envset.TCVIS_LOGGING_LEVEL=DEBUG` 3. Restart the **Visualization Server Manager**. 4. Log into any log file for any **VisView** process.

Troubleshooting step	Comments
	The log output directory, which defaults to TEMP, should look like the example below. The numbers will be different but the pattern Visview*.log will remain the same.  5. Search for **OpenGL** to find a block of text that looks like the example below.  If the version of **OpenGL** is greater than 1.1.0 (110), then you are using the **GPU**. 
Verify that the configuration that is indexed is the same as what you are trying to view, for example, same revision, rule, effectivity, and so on.	For more information on using the FTSIndexer, review runTcFTSIndexer. Use the following command to get the FTSIndexer status. 1. In the Teamcenter **command prompt**, enter the following command: `runTcFTSIndexer -task=structure:show` 2. Confirm that the **State** field value = **8** (success) and the **Subscribers** field value = **MMV**.  Another way to verify that the indexing is successful is to: 1. Log in as the Teamcenter administrative user. 2. Locate the **MMV Delta Collection - DO NOT DELETE** folder.

Troubleshooting step	Comments
	 3. Inside the folder, locate the dataset with the **Awv0CompleteFile** named reference, indicating successful indexing.  If the structure is not MMV-indexed, review the bomindex_admin to make sure it is configured correctly.
If the indexing did not succeed, generate indexing logs for MMV.	1. Set the **TcFtsIndexer** logging to **TRACE**: `log4j.logger.com.siemens.teamcenter.ftsi=TRACE` 2. Modify the existing **%TcFtsIndexer.home%\conf\TcFtsIndexer.properties** parameter. This keeps the generated MMP and TCXML files. 3. Cleanup the working directory and previously generated logs. 4. Restart the **TcFtsIndexer** service.
Review the **VDS** console to verify that there are no obvious error messages.	1. Start up the **VisDataServer.exe** process. 2. Look for *****FULL STRUCTURE IMPORT COMPLETE** output for the **BIAD**s (BOMIndexAdminData tables) that are MMV-indexed. You will not be able to view MMV until the import is complete. 3. Review the console for any obvious error messages.

Troubleshooting step	Comments
	

Correct an **InvalidCredentialsException** error on **VDS** startup.	**VDS** independently logs into Teamcenter using a password file created by TEM or Deployment Center (DC). If this password is wrong or lost, you will see an InvalidCredentialsException error in the console on VDS startup. You can do the following to recreate the file.
	
	1. From the command line, enter the following commands:
	
	Windows systems:
	
	`set TEM_SEENA=<password>`
	`VisDataServer.exe /encryptpwf /pwenv=TEM_SEENA /pwfile=d:\test.pwf`
	`set TEM_SEENA=`
	
	Linux systems:
	
	`set TEM_SEENA=<password>`
	`VisDataServer --encryptpwf --pwenv=TEM_SEENA --pwfile=/tmp/test.pwf`
	`set TEM_SEENA=`
	2. In the **VisDataServer.properties** file, ensure that these values are correctly set:
	
	• User name under which **VDS** accesses Teamcenter data for the population of indexed models in its memory and cache.
	
	`TeamcenterAccessManager.User1=`*Tc-admin-user*
	• Path to encrypted password file.
	
	`TeamcenterAccessManager.LoginFilePath1=C:/myfolder/test.pwf`

Troubleshooting step	Comments
Verify that the URL is configured correctly and that the viewer can access the **VDS**.	1. In the **jetty.properties** file for the viewer (not the **VDS**), locate the line similar to the following example: `VisPoolProxy.envset.TCVIS_VISDATASERVERURL=http://<hostname>:9990/ProductStructure` 2. Copy and paste the URL into a browser window on the machine where the viewer is running. The **VDS** console should respond with an error message if the URL is configured correctly and the viewer is accessing the VDS. If the VDS console does not respond, it means either that this line in the jetty.properties file is misconfigured or that something in the network is preventing the viewer from contacting the VDS.

View the **VDS** logs if the viewer isn't behaving as expected.	If the viewer isn't behaving as expected, do the following to view the client communication logs to **VDS**. You should see a FindRoot call to confirm that the viewer is attempting to load a structure with the **VDS**.
	
	1. Shut down **VDS**.
	2. In the **VDS.properties** file, uncomment the following lines to see the HTTP request from the client.
	
	`#logging.loggers.ProductStructure.name=ProductStructure`
	
	`#logging.loggers.ProductStructure.level=Debug`
	
	`#logging.loggers.ProductStructure.channel=ConsoleChannel1`
	
	This will show client communication from the viewer to **VDS**.
	
	Note:
	
	This will generate a lot of logs, so avoid doing this until you have reached this step in the troubleshooting process.

Troubleshooting step	Comments
	3. Locate the FindRoot call to confirm that the viewer is attempting to load a structure with the **VDS**. 4. If there is no communication between the viewer and **VDS** when a structure is loaded, turn on the SOADebug library from the viewer: • In the **jetty.properties** file, add the following line: `VisPoolProxy.envset.TC_SOACLIENT_LOGGING=DEBUG` The soa_client log will be created in the TEMP directory. • In the soa_client log, look for a GetStructureIDFromRecipe call being made to Teamcenter from the viewer.

A. Required RPM package managers

If you use the visualization server manager (VSM) on a Linux machine, make sure the following required RPM package managers are available on the machine.

SUSE Linux:

fontconfig-2.11.1-7.1.x86_64
glibc-2.31-150300.46.1.x86_64
glibc-32bit-2.22-15.3.x86_64
libbz2-1-1.0.6-29.2.x86_64
libexpat1-2.1.0-21.3.1.x86_64
libexpat-devel-2.1.0-21.3.1.x86_64
libfreetype6-2.6.3-7.15.1.x86_64
libgcc_s1-8.2.1+r264010-1.3.3.x86_64
libGLU1-9.0.0-18.1.x86_64
libICE6-1.0.8-12.1.x86_64
libjpeg8-8.1.2-31.7.4.x86_64
libpng16-16-1.6.8-14.1.x86_64
libSM6-1.2.2-3.59.x86_64
libstdc++6-8.2.1+r264010-1.3.3.x86_64
libstdc++6-12.2.1+git416-150000.1.7.1.x86_64
libuuid1-2.29.2-7.14.x86_64
libX11-6-1.6.2-12.5.1.x86_64
libXau6-1.0.8-4.58.x86_64
libxcb1-1.10-4.3.1.x86_64
libXext6-1.3.2-4.3.1.x86_64
libXft2-2.3.1-9.32.x86_64
libXm4-2.3.4-4.15.x86_64
libXmu6-1.1.2-3.60.x86_64
libXp6-1.0.2-3.58.x86_64
libXrender1-0.9.8-7.1.x86_64
libXt6-1.1.4-3.59.x86_64
libz1-1.2.11-1.27.x86_64
Mesa-libGL1-18.0.2-6.28.x86_64

> Note:
>
> On SUSE Linux, the **/usr/lib64/libGLdispatch.so.0** file is not owned by any package.
>
> Also, the **/usr/lib64/libGLX.so.0** file is not owned by any package.

RedHat Linux:

bzip2-libs-1.0.6-13.el7.x86_64
expat-2.1.0-10.el7_3.x86_64
expat-devel-2.1.0-10.el7_3.x86_64

fontconfig-2.13.0-4.3.el7.x86_64
freetype-2.8-12.el7.x86_64
glibc-2.28-225.el8.x86_64
libgcc-4.8.5-36.el7.x86_64
libglvnd-1.0.1-0.8.git5baa1e5.el7.x86_64
libglvnd-glx-1.0.1-0.8.git5baa1e5.el7.x86_64
libICE-1.0.9-9.el7.x86_64
libjpeg-turbo-1.2.90-6.el7.x86_64
libpng-1.5.13-7.el7_2.x86_64
libSM-1.2.2-2.el7.x86_64
libstdc++-4.8.5-36.el7.x86_64
libstdc++-8.5.0-18.el8.x86_64
libuuid-2.23.2-59.el7.x86_64
libX11-1.6.5-2.el7.x86_64
libXau-1.0.8-2.1.el7.x86_64
libxcb-1.13-1.el7.x86_64
libXext-1.3.3-3.el7.x86_64
libXft-2.3.2-2.el7.x86_64
libXmu-1.1.2-2.el7.x86_64
libXp-1.0.2-2.1.el7.x86_64
libXrender-0.9.10-1.el7.x86_64
libXt-1.1.5-3.el7.x86_64
mesa-libGLU-9.0.0-4.el7.x86_64
motif-2.3.4-14.el7_5.x86_64
zlib-1.2.7-18.el7.x86_64