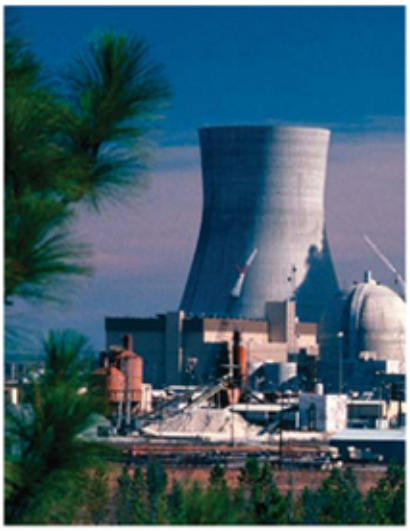
SmartPlant 3D

Interference Checking Guide

Process, Power & Marine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Preface

This document describes how to install, configure, and use SmartPlant® 3D Interference Detection Service. This document pulls together information from several other SmartPlant 3D administrative and user documentation guides. The content includes a list of new features, definitions of terminology, administrative tasks such as installation and configuration, and user tasks such as approving interferences.

SmartPlant 3D Documentation Set

The SmartPlant® 3D documentation set is available as Adobe® PDF files. The content of the PDF files is the same content as online Help. To access these PDF documents in the software, click **Help > Printable Guides**.

The documentation set is divided into four categories:

- Administrative guides contain information about installing, configuring, customizing, and troubleshooting SmartPlant 3D.
- User's guides provide command reference and how-to information for working in each SmartPlant 3D task.
- Reference data guides define the reference data workbooks. Not all tasks have reference data.
- ISOGEN guides

Administrative Guides

Project Management User's Guide - Provides instructions for setting up the databases, creating permission groups, backing up and restoring project data, assigning access permissions to the model, managing interference detection, defining and managing locations for Global Workshare, controlling duplication and consolidation of plants, tools for synchronization, regeneration of report databases, and version upgrade.

SmartPlant 3D Database Integrity Guide - Provides information about the error messages in the database integrity reports, including meaning, cause, and possible corrective action.

SmartPlant 3D Global Workshare Guide - Provides instructions for setting up the software and the databases to work in a workshare environment.

SmartPlant 3D Installation Guide - Provides instructions on installing and configuring the software on both the client and server computers.

SmartPlant 3D/IntelliShip Programmer's Guide - Provides information about custom commands, naming rules, and symbol programming.

SmartPlant 3D Integration Reference Guide - Provides information about installing, configuring, and using SmartPlant 3D in an integrated environment.

SmartPlant 3D Interference Checking Guide - Provides information on installing, configuring, and using the interference detection service.

SmartPlant 3D Interpreting Human Piping Specifications - Provides information about how to interpret human piping specifications so that you can create the corresponding piping specification in the software.

SmartPlant 3D Plant Design System (PDS) Guide - Provides all information needed to use PDS with SmartPlant 3D. Topics include referencing active PDS projects in SmartPlant 3D, exporting PDS data and importing that data into SmartPlant 3D, converting PDS reference data to SmartPlant 3D reference data, and converting EDEN symbols to Visual Basic symbols.

SmartPlant 3D Release Bulletin - Provides what's new, hardware/software requirements, and support information for the current release.

SmartPlant 3D Troubleshooting Guide - Provides information on how to resolve errors that you may encounter in the software by documenting troubleshooting tips, error messages, and to do list messages.

User's Guides

Catalog User's Guide - Provides information about viewing, editing, and creating reference data and select lists (codelists).

Common User's Guide - Provides information about defining workspaces, navigating in the model, precision input, filtering, manipulating views, and running reports.

Drawings and Reports User's Guide - Provides information about creating drawing and report deliverables.

Electrical User's Guide - Provides information about routing electrical cable, cableway, cable tray, and conduit.

Equipment and Furnishings User's Guide - Provides information about placing equipment.

Grids User's Guide - Provides instructions for creating coordinate systems, elevation grid planes, vertical grid planes, radial cylinders, radial planes, grid arcs, and grid lines.

Hangers and Supports User's Guide - Provides instructions on placing piping, duct, cableway, and conduit supports in the model.

HVAC User's Guide - Provides instructions for routing HVAC duct.

Piping User's Guide - Provides instructions for routing pipe and placing valves, taps, and pipe joints.

Space Management User's Guide - Provides instructions for placing volumes (such as drawing volumes, obstruction zones) in the model.

Structural Analysis User's Guide - Provides instructions for defining loads, load cases, load combinations, and the importing and exporting of analytical data.

Structure User's Guide - Provides instructions for placing structural members such as: beams, columns, braces, slabs, openings, stairs, ladders, equipment foundations, and handrails.

Systems and Specifications User's Guide - Provides instructions for creating systems and their hierarchies and selecting which specifications are available for each system type.

SmartPlant 2D Symbols User's Guide - Provides instructions for creating cross section symbols.

Reference Data Guides

Drawings and Reports Reference Data Guide - Provides information about reports reference data.

Electrical Reference Data Guide - Provides information about electrical cable, cableway, cable tray, and conduit reference data.

Equipment and Furnishings Reference Data Guide - Provides information about equipment reference data and name rules.

Hangers and Supports Reference Data Guide - Provides information about hangers and supports reference data.

HVAC Reference Data Guide - Provides information about HVAC reference data.

Piping Reference Data Guide - Provides information about piping reference data including piping specifications, piping specification rules, piping parts, piping symbols, and name rules.

SmartPlant 2D Symbols Reference Data Guide - Provides information about the two-dimensional symbols used in all tasks.

SmartPlant 3D Reference Data Guide - Provides instructions about the Bulkload utility, codelists, and the reference data common to several disciplines.

SmartPlant 3D Symbols Reference Data Guide - Provides information about the Visual Basic Part Definition Wizard and the three-dimensional symbols used in all tasks.

Space Management Reference Data Guide - Provides information about space management reference data.

Structure Reference Data Guide - Provides information about structural reference data and name rules.

ISOGEN Guides

AText Reference Guide - Provides information about alternative text for isometric drawings. This guide is from Alias, the makers of ISOGEN®.

Option Switches Reference Guide - Provides information about the ISOGEN option switches for isometric drawings. This guide is from Alias, the makers of ISOGEN.

Symbol Keys Reference Guide - Provides information about the symbol keys for isometric drawings. This guide is from Alias, the makers of ISOGEN.

Documentation Comments

Send documentation comments or suggestions to PPMdoc@intergraph.com.

What's New in Interference Checking

The following changes have been made to the interference checking.

Version 2007

- The **ConfigureIFCSvc** command has been renamed to **Configure Interference Service**.

Checking Interferences: An Overview

Interference checking (IFC) ensures that parts do not occupy the same volumetric space and that each part meets the design criteria for clearance. A successful interference check assures that there is sufficient space around the parts so that they can operate properly, be serviced properly, and be easily installed or removed when necessary. The IFC process can look at all model data, including data from a referenced PDS project and referenced MicroStation files.

There are two methods for interference checking:

- Server-based interference checking called **Database Detect**. For more information, see *Server-Based Interference Checking (Database Detect): An Overview*, page 16.
- Interactive interference checking called **Local Detect**. For more information, see *Interactive Interference Checking (Local Detect): An Overview*, page 31.

The major differences between the two methods are:

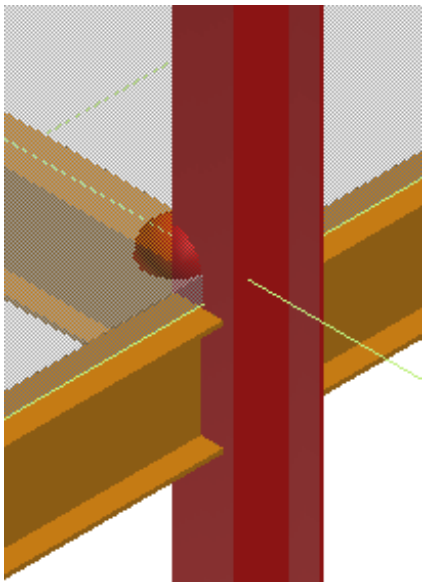
Database Detect	**Local Detect**
Runs all the time (System Administrator choice)	Works only within the current session
Minimizes impact on users and improves performance	Provides immediate graphical feedback (works immediately after commit.)
Creates persistent interferences that are stored in the Model database	Shows interferences when the pointer is idle for a brief amount of time; based on a hesitation approach
Based on administrator settings (controlled by permission groups)	Based on individual user settings
Provides feedback on how much has been checked	Checks only created and modified objects
Allows users to visualize the interferences (persistent objects)	Clears dynamic interferences after refreshing workspace
Requires that the **SP3D-Foreign Interferences** option is selected in the settings in order to include a referenced PDS project and referenced MicroStation objects	Finds interferences involving PDS objects and referenced MicroStation objects in the workspace without requiring a specific setting

Interference checking objects, or clashes, appear in the model until other objects are moved so the interferences no longer exist, or the aspects for the interference process are changed. It is not possible to delete an interference object in the same way you can delete other objects in the model. However, you can tailor the display to hide acceptable interferences.

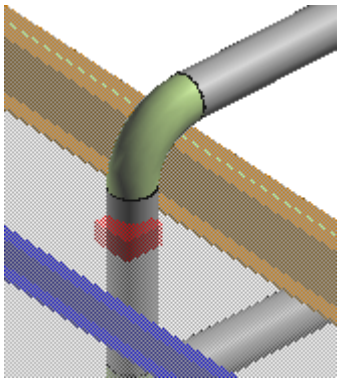
Interference checking can be used with rules in the reference data. The delivered rules include post-processing rules and clearance rules. For more information about the delivered IFC rules, see *Interference Checking Reference Data: An Overview*, page 49.

How Interference Checking Results Appear

The Database Detect process notes any persistent interferences with spherical interference markers at the location of the interference. For example, the Database Detect service found an interference between this floor slab and this column so it placed a spherical interference marker at that location.



The Local Detect process notes any interferences it finds with a cube interference marker. For example, right after this pipe was placed and the pointer paused, the Local Detect service found an interference between the pipe and the floor so it placed a cube interference marker at that location.



For both processes, the color of the marker indicates the type of the interference: red for severe, yellow for clearance, and green for optional. You can modify the default interference marker colors by using the **Format > Surface Style Rules** command. You can change the size of both the Database Detect and Local Detect interference markers by using the **Marker size** option on the **Interference Server Setting** dialog box in Project Management task or the **Interference Checking Settings** dialog box in the Common task.

You can clear the acceptable interferences from your workspace by changing the required action on the **Interference List** dialog box (see *Interference List Dialog Box*, page 39) and then editing the display properties on the **Interference Checking Settings** dialog box, see *Interference Checking Settings Dialog Box*, page 33.

In general, the software checks the parts involved in interfering objects to find and report the interferences. For example, if you have a pipe run which consists of a pipe, an elbow, and a pipe, each intersecting another pipe. The interfering pipe intersects the pipe run at each of the three positions. The software generates three interferences and displays them in the **Interference List** dialog box.

If an object has an interference with two other objects, these interferences are listed as two separate interferences in the **Interference List**. You can also view all of the possible associated interferences (selected aspects) of an interference by double-clicking the interference in the **List** view to display the **Interference Settings** dialog box, and then clicking **Other Aspects** to see a list of all the aspects at the interfering location.

Note

- When an object is brought into the workspace, all of its associated interferences appear even if they are not part of the filter used to define the workspace.

Role of the Administrator

An administrator can limit the access to interference checking to the proper permission groups. An administrator sets up the options for the background interference checking at the beginning of the project and is the only one permitted to change these options. This capability requires that an administrator have read access to all objects in the database for the background interference checking to work properly. Users do not need to have access to all objects.

The server-based interference checking process can only be started from a client machine on which both the **Project Management** and the **Database Interference Detection Process** options are installed. The administrator has the capability to run the detection process on more than one model simultaneously on the interference server. When an administrator starts Database Detect, progress and statistical information is displayed on the **Status** tab of the dialog box.

Important

- Only an Administrator can start the Interference Detection Service (IfcNtSvc) on the system and set up the Interference Detection process (IFCProcess).
- If an administrator changes any of the options on the **Database Detect** tab while the background interference checking is suspended, a warning message appears. This message states that all existing interferences will be deleted, including any approvals and notes associated with those interferences, and the background interference checking will be restarted. Therefore, the administrator must set up the background interference checking early in the project and leave it alone throughout the entire project.

Related Topics

- *Check Interference Command*, page 32
- *Check Interference Ribbon*, page 32
- *Checking Interferences Common Tasks*, page 15
- *Display the Interference Status*, page 48
- *Set Interference Checking Parameters on a Workstation*, page 44

Checking Interferences Common Tasks

The following tasks are used frequently when you want to check interferences in your workspace.

Installing and Configuring Database Interference Detection Service

To install and configure the Database Interference Detection Service, follow these procedures in order:

Install Database Interference Detection Service, page 18
Configure Interference Service Properties, page 20
Start the Database Interference Detection Service, page 21
Create IFC Permission Group Folder and Permission Group, page 23
Set IFC Permissions, page 24
Check Database Interferences, page 25

Setting the Local Interference Checking Parameters

You can edit the local interference checking parameters to meet your specific requirements. For more information, see *Set Interference Checking Parameters on a Workstation*, page 44.

Displaying Interferences

You can control the display of interferences as follows:

- Show all the interferences or only those related to selected objects.
- Hide all the interferences or only those related to selected objects.
- Fit the interferences detected by the software in a view.

For more information, see *Control Interference Display*, page 45.

List Interferences

You can display the list of detected interferences and edit the objects to correct the problem. For more information, see *List Interferences*, page 46.

Change Required Action

You can change the required action for the interferences selected in the graphic or list view. For more information, see *Change Required Action*, page 48.

Server-Based Interference Checking (Database Detect): An Overview

Unlike the traditional file-based method of manually defining groups of parts to check against each other, **Check Interference** is a separate software process that runs directly on the Model database. Although the interference detection process can be run on any computer on which the **Database Interference Detection Service** has been installed, due to the intensive nature of the interference check computations, the recommendation is to have a computer dedicated to run as an interference server.

Note

- In order to monitor interferences, you must install the **Database Interference Detection Service** option on the same computer on which the **Project Management** option is installed.

Database detection options are set in the Project Management task. You also start and stop the interference detection service in the Project Management task.

Interference detection requires disk space for the file cache that temporarily stores the interference data. Before starting the interference process, the interference server checks to see if enough space exists in the TMP location for the file cache. The server also checks to see if you have the proper permissions to write, read, and delete files in the TMP location. During the process, if the space becomes too low, the software stops IFC and displays an error message. These checks primarily apply to the server-based interference process, although they can apply to the local checking process if extremely low or no disk space is available for the temporary folder on the local computer.

Important

- Configure automatic disk defragmentation in order to free space for the file cache.

After you start the process, you can use the **Status** tab on the **Interference Server Settings** dialog box to monitor the start time, progress of the interference checking, time when the last part was modified, and the status of the checking. A box at the top of the dialog box identifies the model that you are checking.

The software automatically checks new or modified objects apart from existing objects. When you create or modify an object, the software checks for interference against all objects in the Model database. The interferences generated by this process are persistent; that is, the interferences are stored in the database like any other objects in the software. You can also modify these objects by changing the properties. Interferences are also assigned to a permission group, thereby the entire process is under the control and restrictions of an administrator.

You can interrupt the automatic interference checking process during a work session without forcing a recheck of all parts in the database when the process is brought back online. When you restart the interference check process, the software begins checking where it left off when the process went offline. However, if you change any of the options on the **Interference Server Settings** dialog box for Database Detect, all pre-existing interference checking processes are cleared from the database, and checking begins from scratch.

The server-based interference checking runs continuously; therefore, you can perform an interference check at any time and view the interferences of interest that result from the background check by refreshing the workspace. After you have reviewed the interferences, you can remove an interference automatically from the database by editing the objects so that the interference no longer exists. You can then see the results of your edit by refreshing the workspace. Be aware that there is a four minute interval between the time you make your edits and the time that the database detect service rechecks the objects. The four minute interval allows you to change your mind regarding a recent change because the interference process marks objects as modified, and thus nullifying the ability to undo the last change involving the objects. Because certain types of interferences are allowable, you also have the capability to mark such interferences as acceptable.

When the Database Detect process reaches 100%, it does not mean that all clashes between SmartPlant 3D and other foreign objects, such as PDS or referenced MicroStation objects, have been processed. The 100% indicates that all SmartPlant 3D on SmartPlant 3D objects have been processed.

Notes

- You must stop the Database Detect process before starting a backup of the databases.
- You must run the Database Detect process before running an interference report. The report is not intended to run on local interferences.

Related Topics

- *Check Database Interferences*, page 25

Install Database Interference Detection Service

Prior to installing the Database Interference Detection Service on a computer, verify that all prerequisite software has been installed. If you have an older version of the Database Interference Detection Service installed on your computer, uninstall it before loading the new software.

You must have administrator privileges on the computer to install the software.

1. Insert the **Intergraph SmartPlant 3D Product** CD.

   Tip

   - If the setup does not start automatically, double-click **Setup.exe** in the root directory of the CD.
2. Select **SmartPlant 3D Installation**.
3. Click **Next** on the **Welcome to the SmartPlant 3D Installation Wizard** page.
4. On the **Software License Agreement** page, select your country from the list, and click **Display** to view the license agreement.

   Important

   - The license agreement is delivered as a PDF file; consequently, you must have Acrobat Reader installed on the computer in order to view the license agreement. If the software detects that Acrobat Reader is not installed, a message box appears. To install Acrobat Reader (from the **Intergraph SmartPlant 3D Product** CD) and continue with the installation, click **Yes**. If you click **No** on the message box, the setup process immediately stops without installing the SmartPlant 3D client software.
5. Carefully read the license agreement. Close the PDF document, and click **Yes** on the **Software License Agreement** page to accept the terms.
6. On the **User Information** page, enter information in the **Full Name** and **Organization** boxes.
7. Click **Next**.
8. On the **Select Features** page, click **Browse** and select the directory location for the software, and click **OK**.

   Important

   - If you install the Database Interference Detection Service on a computer on which the SmartPlant 3D Reference Data software is also installed, they must be install in two separate directories.
9. On the **Select Features** page, set the following options to **Will be installed on local hard drive**: Project Management, SmartPlant 3D Server Connectivity, and Database Interference Detection Service.

10. Set all other options to **Entire feature will be unavailable**.
11. Click **Next**.
12. Click **Next** on the Custom Documentation Page.
13. Click **Next** on the **Start Copying Files** page to begin installing the software.
14. Click **Finish** to exit the installation sequence.
15. Restart the computer to complete the installation.

Notes

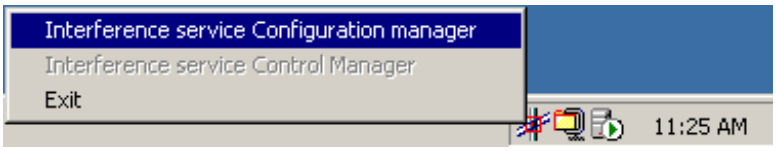
- During the setup, the %temp% value is defined as the user %temp% of the person who runs the setup. In Windows, each user's C:\Documents and Settings*username*\Local Settings\Temp is protected from other Windows users. Consequently, you must set the system environment variable TEMP value to a folder location where everyone has write access (e.g. C:\Temp). For more information about editing system variables, see the Windows online documentation (click **Start > Help** from the Windows task bar).
- If you plan to check interferences with a referenced PDS® project, you must install and configure the PDS Data Access component (with all prerequisites) on the IFC database detection server. For more information, see the *SmartPlant 3D Plant Design System (PDS) Guide*.

Related Topics

- *Interactive Interference Checking (Local Detect): An Overview*, page 31
- *Server-Based Interference Checking (Database Detect): An Overview*, page 16

Configure Interference Service Properties

1. Click **Start > All Programs > Intergraph SmartPlant 3D > Database Tools > Configure Interference Service**.
2. Right-click **Interference service configuration** in the system tray and select **Interference service Configuration manager** or double click on the system tray icon to display the **Configure Interference Service** dialog box.



3. In the **Configure Interference Service** dialog box, select the Site and Site schema databases connection information on which the Interference service will run.

   Tips

   - If your database provider type is MSSQL, only those servers that are registered with SQL Server Management Studio are shown in the list.
   - If your database provider type is Oracle, only those Oracle net services that are added with Oracle Net Configuration Assistant are shown in the list.

4. Click **OK**.

Related Topics

- *Create IFC Permission Group Folder and Permission Group*, page 23
- *Start the Database Interference Detection Service*, page 21

Start the Database Interference Detection Service

Prior to starting the Database Interference Detection Service, you must configure its properties. For more information, see *Configure Interference Service Properties*, page 20.

1. Log on with administrative privileges to the computer where you have installed the **Project Management** task and **Database Interference Detection Service** option.
2. Open the **Control Panel** and double-click **Administrative Tools**.
3. In the **Administrative Tools** window, double-click **Services**.
4. Right-click the **SmartPlant 3D Interference Detection Service**, and select **Properties** from the shortcut menu.
5. On the **Log On** tab, enable the **This account:** option, and then type the user name that has administrative privileges.

   Note

   - This version of the software does not support the **Local System account** option.
6. In the **Password** and **Confirm password** boxes, enter the password for the user account.
7. On the **Recovery** tab, set the options as required.
8. On the **General** tab, verify that the **Startup type** is set to **Automatic**.
9. In the **Service status** section, click **Start**.
10. Click **OK**.

Note

- Errors that are encountered during startup of the Database Interference Detection service are logged to the Event Viewer Application Log with the source name **IfcNtSvc**.

Related Topics

- *Configure Interference Service Properties*, page 20
- *Create IFC Permission Group Folder and Permission Group*, page 23

IFC Permission Requirements

An **Interference Server** icon is placed under the Plant node in the Project Management tree. After the proper access permissions are configured, you can start and stop the Database Detect process from any computer on which the Project Management task and the Database Interference Detection Service are installed.

The SmartPlant 3D database hierarchy is comprised of a Plant that consists of the Model and Catalog databases. For the Database Detection process to run correctly, permissions must be set on the Plant and Plant permission groups according to the following guidelines:

Log on privileges for the IFC Administrator include:

- Read access on the Plant (Model database) at a minimum
- Full Control permissions or access on a minimum of one permission group

  Tip

  - In the Project Management task, create a new permission group folder and permission group under the plant icon to store the IFC results. For example, type **IFC Permission Group Folder** and **IFC Permission Group** in the **New Permission Group Folder** and **New Permission Group** dialog boxes, respectively. For more information, refer to *Create IFC Permission Group Folder and Permission Group*, page 23.
- Read access on all other Plant (Model database) permission groups at a minimum

Important

- Full control access on the IFC permission group allows users to delete objects with associated interferences. In the absence of full control access to the IFC permission group for all other users, if an interference is corrected (either by moving or deleting one of the two objects) the IFC entry is not deleted, and a **To Do List** entry is created. The administrator or another person with full control access to the IFC permission group will have to update the **To Do List** to remove the out-of-date entries.

Create IFC Permission Group Folder and Permission Group

1. Log on with administrative privileges to the computer where you have installed the **Project Management** task and **Database Interference Detection Service** option.
2. In the Project Management tree view, navigate to the **Plants** icon on the tree view.
3. Expand the **Plants** folder.
4. Right-click on a plant under the **Plants** folder.
5. On the shortcut menu, select **New Permission Group Folder**.
6. Enter **IFC Permission Group Folder** for the name of the new permission group folder.
7. Click **OK** to close the **New Permission Group Folder** dialog box.
8. In the tree view, navigate to the **IFC Permission Group Folder** icon on the tree view.
9. Right-click **IFC Permission Group Folder**.
10. On the shortcut menu, select **New Permission Group**.
11. Enter **IFC Permission Group** for the name of the new permission group.
12. Click **OK** to close the **New Permission Group** dialog box.

Note

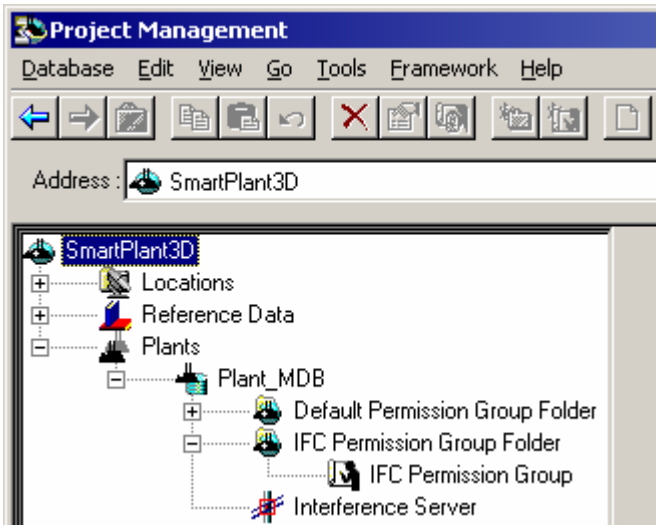
- After the IFC permission group is created, you must assign the proper access permissions. For more information, see *Set IFC Permissions*, page 24.

Related Topics

- *Interactive Interference Checking (Local Detect): An Overview*, page 31
- *Server-Based Interference Checking (Database Detect): An Overview*, page 16

Set IFC Permissions

1. Log on with administrative privileges to the computer where you have installed the **Project Management** task and **Database Interference Detection Service** option.
2. In Project Management tree, navigate to the **IFC Permission Group** icon on the tree view.



3. Right-click **IFC Permission Group**.
4. Select **Permissions**.
5. On the **Access Permissions** dialog box click **Add**.
6. In the **Add names** grid, double-click in the **User** cell, type the domain and name of the user or group that you want to add.

   Tips

   - You can also click **Add** and search for users using the **Select Users and Groups** dialog box. This is a common Windows dialog box. For information regarding the options in this dialog box, see your Windows documentation.
   - To remove a user or group from the **Add names** grid, select the appropriate row and click **Remove**.

   In the **Type of access** list, select the type of access you want to assign. The software automatically updates the associated row in the **Add names** grid.
7. Click **OK**.
8. Click **OK** again to close the **Access Permissions** dialog box.

Check Database Interferences

Before performing the following procedure, you must first manually configure the Interference Detection Service on the computer where the service is installed. For more information, see *Configure Interference Service Properties*, page 20

1. In the Project Management tree, right-click the **Interference Server** icon under the Plant for which you want to start Database Detect. Then select **Properties** on the shortcut menu.
2. In the grid, assign interference checking priorities to aspects.

   Tip

   - **Maintenance**, for example, is a typical aspect listed in the **Aspect** column. If a check of this aspect is important, you can indicate the priority as **Required**. If **Maintenance** is low priority or not important, you can indicate the priority as **Optional** or **Not Checked**.
3. Specify the interference comparison criteria:

   - **Required - Required** - Defines interferences classified as hard/hard. For example, one pipe physically intersects with another pipe.
   - **Required - Optional** - Defines interferences that are not as severe and are classified as hard/soft. For example, one pipe overlaps the optional aspect of the other object.
   - **Optional - Optional** - Defines interferences that are not severe and are classified as soft/soft. For example, the maintenance aspect of one piece of equipment overlaps the maintenance aspect of another.
   - **SP3D-Foreign Interferences** - Considers PDS objects and referenced MicroStation objects for interferences. For **Local Detect**, this option is enabled by default. For **Database Detect**, this box must be checked if you want PDS objects and referenced MicroStation objects to be considered.
4. In the **Include clearance** list, select the desired clearance rule.
5. From the **Assign results to permission group** box, choose the permission group to which all the detected interferences are assigned.
6. In the **Marker size** field, type the value for the size of the interference symbols that will be generated in the model.

   Tip

   - Choose a marker size that is clearly readable, but one that does not interfere with the smaller details in the workspace view.

7. Click **Start** on the **Database Detect** tab. After you click **Start**, the **Status** tab on the **Interference Server Settings** dialog box displays the progress of the processing for parts that existed previously and for new or changed parts during the run.

Important

- If the IFC Server detects that your system resources are too low (due to a significant process requiring the majority of system memory), then the IFC process will stop and display a message box notifying you that the service has stopped for this reason.

Notes

- To start the server interference detection process, you must have at least Read access to all objects in the model and Write access to the model itself. Access privileges are assigned for each permission group in the Project Management task. During the IFC process, if the software denies access to an object, the server process stops and a message appears.
- To view the status of the database interference detection process, right-click the **Interference Server** icon in the Project Management tree, and click **Properties**. On the **Interference Server Settings** dialog box, click the **Status** tab.
- When the database interference check process is running, only the **Stop** command is available. When the process is not running, the **Start** command and all process property gadgets are available. The **Stop** command is not available.
- When the database interference check is running and you add any permission group without Read permissions for the server, the server automatically receives Read permissions and finds collisions with the placed objects in that permission group.
- When you modify permission groups in Project Management, the host for the existing, running task does not receive the changes. To update the information, you must exit and restart the interference detection process.
- The **SP3D-Foreign Interferences** check box is available by default. For Database Detect, this box must be checked for PDS objects and referenced MicroStation objects to be considered. For information on how to reference a MicroStation file, see the *Common User's Guide*. For more information about PD_Shell and PDS Data Access component, see the *SmartPlant 3D Plant Design System (PDS) Guide*. Both guides are available with the **Help > Printable Guides** command in the software.

Related Topics

- *Interactive Interference Checking (Local Detect): An Overview*, page 31
- *Server-Based Interference Checking (Database Detect): An Overview*, page 16

Interference Server Settings Dialog Box

Provides options to change or accept the default properties for the interference marker size and the status of those interferences. Also, you can assign interference checking priorities to aspects and indicate whether the interferences are optional or required. Optionally, you can indicate if you want interference checking to include a clearance rule. You can activate this dialog box in the Project Management task by right-clicking on the Interference Server node under the Model database, and then selecting **Properties**.

Remember, if you change any of the options on this dialog box for Database Detect, all pre-existing interference checking processes are cleared from the database, and checking begins from scratch.

Important

- The **Interference Server Settings** dialog box is only available on computers on which the **Project Management** and **Database Interference Detection Service** options are installed.

Related Topics

- *Check Database Interferences*, page 25

Database Detect Tab (Interference Dialog Box)

Provides options for assigning interference checking priorities to aspects, specifying the comparison methods, and optionally including a clearance rule. You can also assign the interference results to a selected permission group.

All properties on this tab when viewed outside the Project Management task are read-only.

Note

- You must run the **Database Detect** option before running the delivered Interference report. The Interference report is not intended to run on local interferences.

Check plant - Specifies the name of the model that the server process needs to check. The server software must have the Site database locations predefined. This option is not available if you are in the Project Managment task.

On server - Specifies the name of the server on which the interference checking is completed for the identified model.

Assign interference checking priority to aspects - Provides a two-column table listing the object aspects in one column and the type of comparison to check against that object in the other column.

- **Aspect** - Lists all the object aspects identified for use in the model. This list includes the system-defined aspects and the user-defined aspects. Select those aspects in the **Aspect** column that apply to your objects, and then specify the type of comparison in the **Type** column. The delivered aspects include **Simple physical**, **Detailed physical**, **Insulation**, **Operation**, **Maintenance**, and **Reference Geometry**. The Diagnostic Interference Checking report lists these aspects settings in its header.
- **Type** - Lists the types of checking you can apply to the selected aspect: **Required**, **Optional**, and **Not checked**. Choose the appropriate type for each aspect you select in the **Aspect** column. **Not checked** means the software does not use the selected aspect for interference checking.

Compare - Provides the following check box options for specifying which aspect types are to be compared against each other to find interferences.

- **Required - Required** - Defines interferences classified as hard/hard. For example, one pipe physically intersects another pipe.
- **Required - Optional** - Defines interferences that are not as severe and are classified as hard/soft. For example, one pipe overlaps the optional aspect of the other object but does not actually intersect the other object.
- **Optional - Optional** - Defines interferences that are not severe and are classified as soft/soft. For example, the maintenance aspect of one piece of equipment overlaps the maintenance aspect of another.
- **SP3D-Foreign Interferences** – Considers PDS objects and reference MicroStation objects for interferences. This option is enabled after you have selected a plant at the top of this tab, and the selected plant has an attached PDS project. For Database Detect, this box must be checked if you want PDS objects considered. In the case of Local Detect, the software by default considers PDS objects and MicroStation objects that are referenced in the workspace.

Include clearance rule - Specifies the clearance rule to add to the **Required** type of interference check.

Assign results to permission group - Specifies the permission group to which all the detected interferences are assigned. The list displays only those permission groups to which the server containing the interference checking software has Write access.

Marker size - Specifies the size of the interference graphic marker. Choose a size that is clearly readable, but one that does not interfere with the smaller details in the workspace view.

Check all objects in database - Provides buttons to start and stop the interference checking process.

Start - Begins the process. This option is only available in the Project Management task.

Stop - Halts the process. This option is only available in the Project Management task.

Related Topics

- *Interference Checking Settings Dialog Box*, page 33

Status Tab (Interference Dialog Box)

Displays the status of the Database Detect process on the server. The status information includes the percentage of checking that has been completed, the amount remaining, when the process was started, and the estimated completion time.

The information on this tab is read-only.

Plant - Displays the name of the model that is checked.

New and modified parts since process start - Displays the following time information for any new and modified parts since the process was started.

Last part modified - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the last part was created or modified in the Model database.

Current range to - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the last part modified was in consideration for interference checking.

from - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the interference check completed checking the last part modified.

Elapsed time - Displays the amount of time (hour, min, sec) during which the interference checking has been running for the new or changed parts.

Estimated completion - Displays the amount of time (hour, min, sec) estimated until the interference checking process completes. Then displays **Completed** when the process is complete.

Process start - Displays the time (mm/dd/yyyy hh:mm:ss) the process started.

Existing parts at process start - Displays the following time information for existing parts when the process was started.

Current range to - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the interference checking started for the existing parts.

from - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the interference checking ended for the existing parts.

First part created - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the first part was created in the database.

Elapsed time - Displays the amount of time (hour, min, sec) during which the interference checking has been running for the existing parts.

Estimated completion - Displays the amount of time (hour, min, sec) estimated until the interference checking process completes. Then displays **Completed** when the process is complete.

Status message - Displays textual information about the current status of the process on the server.

Related Topics

- *Interference Checking Settings Dialog Box*, page 33

Interactive Interference Checking (Local Detect): An Overview

Any user can start and stop local interference checking from a user workstation. You can start the local interference checking by clicking the **Check Interference** command on the **Tools** menu. This action invokes the Check Interference ribbon that provides all the necessary tools for you to set up and run the local interference checking process.

When you run local interference checking, interferences are calculated on your workstation, not on the interference-checking server. Therefore, interactive and background interference checking processes can run simultaneously. Local interference detection is limited to checking objects that you create or edit while the **Local Detect** option is turned on. The status of the local interference check appears in the lower right corner of the application window.

Interactive interference checking provides real-time help through graphical feedback about potential interferences. You can see the interferences immediately after placing the object in the model. For example, when routing a pipe, the software checks interferences for that pipe soon after the commit to the database.

Because interactive interference checking occurs in real time, the interferences detected interactively are more current than those detected from background interference checking. You can view these background interferences from your workstation. If you have appropriate permissions, you can change the required action of the interferences.

Interactive interference checking only looks for interferences between objects in the active workspace. Hidden objects are not checked. Thus, what you see is what is checked for interferences. Interactive interference checking is not persistent. Therefore, if you close and open or refresh the session file, all the local interferences are removed. However, when you refresh the session, your local interferences become part of the Model database if server-based interference checking is running on the same model.

Related Topics

- *Check Database Interferences*, page 25

Check Interference Command

Checks the database or your workspace to verify that parts do not occupy the same volumetric space and that each part meets the design criteria for clearance. A successful interference check assures that there is sufficient space around the parts so that they can operate properly, be serviced properly, and be easily installed or removed when necessary. This command is available on the **Tools** menu.

Related Topics

- *Checking Interferences Common Tasks*, page 15
- *Checking Interferences: An Overview*, page 11

Check Interference Ribbon

Provides the following options related to the interference checking process at your workstation.

 **Settings** - Displays the **Interference Checking Settings** dialog box. This dialog box allows you to specify the properties for the **Local Detect** interference. For more information, see *Interference Checking Settings Dialog Box*, page 33. The **Database Detect** properties must be configured at the server in the Project Management task.

 **Show Interferences** - Displays the types of interferences you specified on the **Display** tab of the **Interference Checking Settings** dialog box. These are the interferences that may exist for the objects you select. For example, if you check **Clearance** as your interference type and **Edit** as the option for **Required Action** and then select four pipes in your workspace on which to run the interference check, the software displays only **Clearance** interferences for those four pipes when you select the **Show** command. If you do not select any parts, then interferences appear for all parts in the workspace.

 **Hide Interferences** - Hides the interferences that exist for the currently selected parts. If you do not select any parts, then all interferences in the workspace are hidden. All **Local Detect** interferences in the workspace are automatically hidden when you select this option. For example, if four **Database Detect** and two **Local Detect** interferences appear and you select two of the **Database Detect** interferences to hide, the two **Database Detect** interferences you selected and all of the **Local Detect** interferences are hidden. Thus, your workspace contains only the two unselected **Database Detect** interferences.

 **Fit Interferences** - Fits the active graphic view to the parts that match the interference check criteria. For example, you might have six severe interferences and two of these interferences are between a pump and a boiler. If you select this pump and boiler and then click the **Fit** command on the **Check Interference** ribbon, the software fits only these two parts into the graphic view. If you do not select any of the six interferences, the **Fit** command is unavailable.

List View - Toggles the display of the **Interference List** dialog box. The list on this dialog box shows all interferences that currently appear in the workspace. The list automatically updates whenever you add an interference object to the workspace. You can add an interference from the **Local Detect** process, or when you select the **Refresh Workspace** or **Define Workspace** commands. For more information, see *Interference List Dialog Box*, page 39.

Required Action – Displays the action required to deal with the selected interference. You cannot edit this option for local interferences.

Tip

- The choices in the **Required Action** box are controlled by the **IFC Required Action** select list in the Catalog task. For more information about select lists, see the *Catalog User's Guide* available from the **Help** > **Printable Guides** command in the software.

Close - Closes the **Check Interference** ribbon.

Related Topics

- *Check Interference Ribbon*, page 32
- *Checking Interferences Common Tasks*, page 15
- *Control Interference Display*, page 45
- *List Interferences*, page 46
- *Set Interference Checking Parameters on a Workstation*, page 44

Interference Checking Settings Dialog Box

Provides options to change or accept the default properties for the interference marker size and the status of those interferences. Also, you can assign interference checking priorities to aspects and indicate whether the interferences are optional or required. Optionally, you can indicate if you want interference checking to include a clearance rule.

The **Interference Server Settings** dialog box at the server has two tabs: a **Database Detect** tab and a **Status** tab. However, the dialog box on your computer has four tabs: **Display**, **Database Detect**, **Local Detect**, and **Status**.

The **Status** tab provides current information on the progress of the **Database Detect** interference checking process running on the server. The progress of the **Local Detect** interference checking process appears at the bottom right corner of the application window when you are working in a task.

Related Topics

- *Check Interference Command*, page 32
- *Database Detect Tab (Interference Dialog Box)*, page 27
- *Display Tab (Interference Dialog Box)*, page 34
- *Local Detect Tab (Interference Dialog Box)*, page 37

Display Tab (Interference Dialog Box)

Sets options for displaying the different types of interferences. This tab does not appear on the server.

Type - Displays the following types of interferences.

- **Severe** - Select this box if you want to display the most critical interferences. They represent situations where a piece of equipment overlaps another piece of equipment. The symbol that is slightly transparent red represents this type of interference.
- **Optional** - Select this box if you want to display optional interferences, interferences that you must decide whether or not to accept. For example, the maintenance area of one piece of equipment overlaps the maintenance area of another. The symbol that is slightly transparent green represents this type of interference.
- **Clearance** - Select this box if you want to display clearance interference, interferences where two or more pieces of equipment do not meet the specification clearance criteria. The symbol that is slightly transparent yellow represents this type of interference.

Required Action - Displays the following interference options based on their associated required actions.

- **Undefined** - Select this option if you want undefined types of interferences to appear.
- **Edit** - Select this option if you want unacceptable types of interferences to appear.
- **None** - Select this option if you want acceptable types of interferences to appear.

Related Topics

- *Interference Checking Settings Dialog Box*, page 33

Database Detect Tab (Interference Dialog Box)

Provides options for assigning interference checking priorities to aspects, specifying the comparison methods, and optionally including a clearance rule. You can also assign the interference results to a selected permission group.

All properties on this tab when viewed outside the Project Management task are read-only.

Note

- You must run the **Database Detect** option before running the delivered Interference report. The Interference report is not intended to run on local interferences.

Check plant - Specifies the name of the model that the server process needs to check. The server software must have the Site database locations predefined. This option is not available if you are in the Project Managment task.

On server - Specifies the name of the server on which the interference checking is completed for the identified model.

Assign interference checking priority to aspects - Provides a two-column table listing the object aspects in one column and the type of comparison to check against that object in the other column.

- **Aspect** - Lists all the object aspects identified for use in the model. This list includes the system-defined aspects and the user-defined aspects. Select those aspects in the **Aspect** column that apply to your objects, and then specify the type of comparison in the **Type** column. The delivered aspects include **Simple physical**, **Detailed physical**, **Insulation**, **Operation**, **Maintenance**, and **Reference Geometry**. The Diagnostic Interference Checking report lists these aspects settings in its header.
- **Type** - Lists the types of checking you can apply to the selected aspect: **Required**, **Optional**, and **Not checked**. Choose the appropriate type for each aspect you select in the **Aspect** column. **Not checked** means the software does not use the selected aspect for interference checking.

Compare - Provides the following check box options for specifying which aspect types are to be compared against each other to find interferences.

- **Required - Required** - Defines interferences classified as hard/hard. For example, one pipe physically intersects another pipe.
- **Required - Optional** - Defines interferences that are not as severe and are classified as hard/soft. For example, one pipe overlaps the optional aspect of the other object but does not actually intersect the other object.
- **Optional - Optional** - Defines interferences that are not severe and are classified as soft/soft. For example, the maintenance aspect of one piece of equipment overlaps the maintenance aspect of another.
- **SP3D-Foreign Interferences** – Considers PDS objects and reference MicroStation objects for interferences. This option is enabled after you have selected a plant at the top of this tab, and the selected plant has an attached PDS project. For Database Detect, this box must be checked if you want PDS objects considered. In the case of Local Detect, the software by default considers PDS objects and MicroStation objects that are referenced in the workspace.

Include clearance rule - Specifies the clearance rule to add to the **Required** type of interference check.

Assign results to permission group - Specifies the permission group to which all the detected interferences are assigned. The list displays only those permission groups to which the server containing the interference checking software has Write access.

Marker size - Specifies the size of the interference graphic marker. Choose a size that is clearly readable, but one that does not interfere with the smaller details in the workspace view.

Check all objects in database - Provides buttons to start and stop the interference checking process.

Start - Begins the process. This option is only available in the Project Management task.

Stop - Halts the process. This option is only available in the Project Management task.

Related Topics

- *Interference Checking Settings Dialog Box*, page 33

Local Detect Tab (Interference Dialog Box)

Provides options for assigning interference checking priorities to aspects, specifying the compare methods, and optionally including a clearance rule.

Activate local interference detection - Starts the local interference checking process.

Assign interference checking priority to aspects - Provides a two-column table listing the object aspects in one column and the type of comparison to check against that object in the other column. Use this box to choose each aspect you want checked and assign a priority to it.

- **Aspect** - Lists all the object aspects that are identified for use in the model. This includes the system-defined aspects and the user-defined aspects. There are currently five aspects in the list. Select those aspects in the **Aspect** column that apply to your objects, and then specify the type of comparison in the **Type** column.
- **Type** - Lists three types of checking you can apply to the selected aspect: **Required**, **Optional**, and **Not checked**. Choose the appropriate type for each aspect you select in the **Aspect** column. **Not checked** means the selected aspect is not used for interference checking.

Compare - Provides the following three check box options for specifying which aspect types to compare against each other to find interferences.

- **Required - Required** - Designates severe interferences classified as hard/hard. For example, one pipe physically intersects another pipe.
- **Required - Optional** - Designates interferences that are not as severe as the hard/hard and are classified as hard/soft. For example, one pipe overlaps the optional aspect of the other object but does not actually intersect the other object.
- **Optional - Optional** - Designates interferences that are not severe and are classified as soft/soft. For example, the maintenance aspect of one piece of equipment overlaps the maintenance aspect of another.

Include clearance rule - Specifies the clearance rule to add to the **Required** type of interference check.

Marker size - Specifies the size of the interference graphic marker. Choose a size that is clearly readable, but one that does not interfere with the smaller details in the workspace view.

Related Topics

- *Interference Checking Settings Dialog Box*, page 33
- *Set Interference Checking Parameters on a Workstation*, page 44

Status Tab (Interference Dialog Box)

Displays the status of the Database Detect process on the server. The status information includes the percentage of checking that has been completed, the amount remaining, when the process was started, and the estimated completion time.

The information on this tab is read-only.

Plant - Displays the name of the model that is checked.

New and modified parts since process start - Displays the following time information for any new and modified parts since the process was started.

Last part modified - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the last part was created or modified in the Model database.

Current range to - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the last part modified was in consideration for interference checking.

from - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the interference check completed checking the last part modified.

Elapsed time - Displays the amount of time (hour, min, sec) during which the interference checking has been running for the new or changed parts.

Estimated completion - Displays the amount of time (hour, min, sec) estimated until the interference checking process completes. Then displays **Completed** when the process is complete.

Process start - Displays the time (mm/dd/yyyy hh:mm:ss) the process started.

Existing parts at process start - Displays the following time information for existing parts when the process was started.

Current range to - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the interference checking started for the existing parts.

from - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the interference checking ended for the existing parts.

First part created - Displays the date and time (mm/dd/yyyy hh:mm:ss) at which the first part was created in the database.

Elapsed time - Displays the amount of time (hour, min, sec) during which the interference checking has been running for the existing parts.

Estimated completion - Displays the amount of time (hour, min, sec) estimated until the interference checking process completes. Then displays **Completed** when the process is complete.

Status message - Displays textual information about the current status of the process on the server.

Related Topics

- *Interference Checking Settings Dialog Box*, page 33

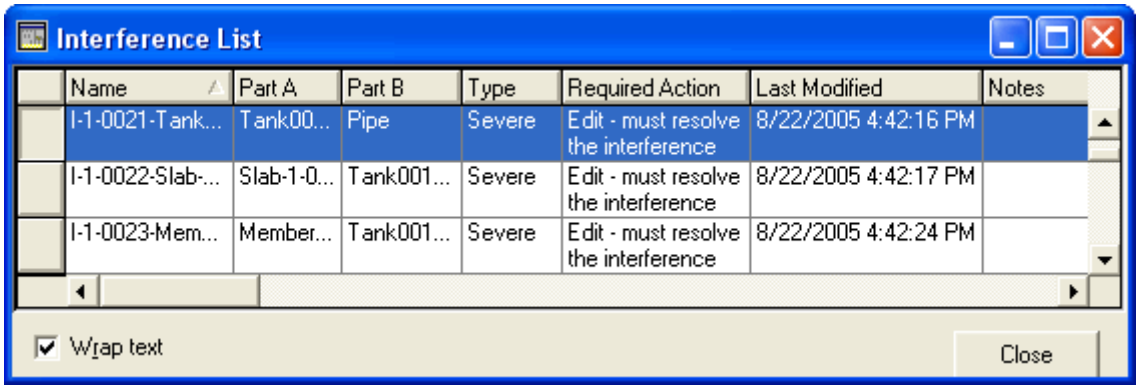
Interference List Dialog Box

Shows all the interferences that currently appear in the workspace. The list automatically updates whenever you add an interference object to the workspace. These interferences can come from the **Local Detect** process, or from database interferences loaded through the **Refresh Workspace** or **Define Workspace** commands. The software places the newly added interferences at the bottom of the list, where they remain until you sort them. You can view more columns and rows on the list by resizing the dialog box.

Positioning your pointer over a row in the list view highlights the row and simultaneously highlights the interference in your workspace.

To display **Properties** for a row, double-click the row button. For more information, see *Interference Properties Dialog Box*, page 40.

You can alphabetize the interferences listed in the view by clicking the column header.



Name - Displays the read-only name of the interference. This field is blank for local interferences.

Part A - Displays the read-only name of the first part involved in the interference.

Part B - Displays the read-only name of the second part involved in the interference.

Type - Displays a read-only status of the severity of the interference: **Severe**, **Clearance**, or **Optional**.

Required Action - Provides options for the action applied to the interference. You cannot edit the **Required Action** option for a local interference.

Tip

- The choices in the **Required Action** box are controlled by the **IFC Required Action** select list in the Catalog task. For more information about select lists, see the *Catalog User's Guide* available from the **Help** > **Printable Guides** command in the software.

Last Modified - Displays the read-only date the interference was found or updated. This field is blank for local interferences.

Notes - Provides a text box for entering comments about the interferences. For example, you can explain why you designated a certain interference as **Acceptable** or **Unacceptable**. This information can serve as a record of your actions. This field is blank for local interferences.

Wrap text - Wraps the text on this dialog box for easier reading.

Related Topics

- *Check Interference Ribbon*, page 32
- *Checking Interferences Common Tasks*, page 15
- *Display the Interference Status*, page 48
- *List Interferences*, page 46
- *Set Interference Checking Parameters on a Workstation*, page 44

Interference Properties Dialog Box

Sets options for a database interference. This dialog box also allows you to view any additional aspects involved in the interference and provides a box for you to add any explanatory notes. To access this dialog box, double-click a row button on the **Interference List** dialog box. For more information, see *Interference List Dialog Box*, page 39.

Note

- The **Interference Properties** dialog box is available only for database interferences. Go to the **General Tab**, and click **Other Aspects** for all aspect interferences at the location. For local interferences, you can access the **Other Aspects** dialog box by double clicking the row button on the **Interference List**.

Related Topics

- *Check Interference Ribbon*, page 32
- *Checking Interferences Common Tasks*, page 15

General Tab (Interference Properties Dialog Box)

Specifies the common database interference properties.

Category - Select the class of properties you want to view or edit.

Other Aspects - Displays a list of all aspect interferences for the interference. Because the interference checking process displays only the first aspect of interference at the location in the graphic view, this button allows you to check for all aspect interferences at that location. For more information, see *Other Aspects Dialog Box*, page 43.

Name - Specifies the name of the interference.

Name rule - Specifies the naming rule for the interference.

Part A - Displays the name of the first part involved in the interference.

Aspect A - Displays the aspect of Part A that conflicts with the aspect of Part B.

Part B - Displays the name of the part that conflicts with Part A.

Aspect B - Displays the aspect of Part B that conflicts with the aspect of Part A.

Type - Displays the type of interference: **Severe**, **Optional**, or **Clearance**.

Check date - Displays the date the interference was located.

Required Action - Provides a box to accept the displayed option for the **Required Action** of the selected part. You can change the required action by selecting another option. This box is unavailable if the interference is from the **Local Detect** process.

Notes - Provides a box for entering comments about the interferences. For example, you can explain reasons for designating a certain interference as **Acceptable** or **Unacceptable**. This information can serve as a record of your actions. This box is unavailable if the interference is from the **Local Detect** process.

Related Topics

- *Check Interference Ribbon*, page 32
- *Checking Interferences Common Tasks*, page 15
- *List Interferences*, page 46

Configuration Tab

Displays the creation, modification, and status information about an object.

Plant - Displays the name of the plant. You cannot change this value.

Permission Group - Specifies the permission group to which the object belongs. You can select another permission group, if needed. Permission groups are created in the Project Management task.

Transfer - Re-assigns ownership of the selected model objects from their current permission group to another satellite or host permission group. This button is only available if the active model/project is replicated in a workshare configuration. The button is not available if all of the objects in the select set already belong to another location and are non-transferable.

Status - Specifies the current status of the selected object or filter. Depending on your access level, you may not be able to change the status of the object.

Created - Displays the date and time that the object was created.

Created by - Displays the user name of the person who created the object.

Modified - Displays the date and time when the object was modified.

Modified by - Displays the user name of the person who modified the object.

Other Aspects Dialog Box

Provides a list of all object aspects involved in the interference. This dialog box appears when you click **Other Aspects** on the **Interference Properties** dialog box. The interference checking process shows only the first aspect of interference in the graphic view. Click **Other Aspects** when you want to see all the aspects involved at the interfering location.

Note

- For local interferences, you can access this dialog box by double-clicking the row button on the **Interference List** dialog box.

Aspect Part A - Displays the aspect for part A that conflicts with the aspect for Part B.

Aspect Part B - Displays the aspect for part B that conflicts with the aspect for Part A.

Type - Displays the type of interference between the two aspects: **Severe**, **Optional**, or **Clearance**.

Related Topics

- *Check Interference Ribbon*, page 32
- *Checking Interferences Common Tasks*, page 15
- *List Interferences*, page 46

Set Interference Checking Parameters on a Workstation

1. If the Interference Checking ribbon is not currently displayed, select **Tools** > **Check Interference**, then click **Settings** to display the **Interference Checking Settings** dialog box.
2. On the **Display** tab, set the display for each type of interference and the type of interference that appears based on the required action.
3. If you have the appropriate privileges, you can edit the values on the **Local Detect** tab. For example, you can assign interference checking priorities to aspects.

   Tip

   - **Maintenance**, for example, is a typical aspect listed in the **Aspect** column. If a check of this aspect is important, then you can indicate the priority as **Required**. If **Maintenance** is not as important, then you can indicate the priority as **Optional** or **Not checked**.
4. Specify the interference comparison criteria.

   Tip

   - In Local Detect, the software by default considers Foreign objects referenced in the workspace.
5. Specify a rule in the **Include clearance rule** box, if necessary.
6. Specify the interference marker in the **Marker size** box.
7. When you have completed all your settings, click **Apply** and **OK** on the **Local Detect** tab.
8. To view the current interferences list, click **List View**.

Related Topics

- *Checking Interferences Common Tasks*, page 15
- *Checking Interferences: An Overview*, page 11
- *Interference Checking Settings Dialog Box*, page 33

Control Interference Display

You can control the display of interferences with the **Check Interference** command. If interactive interference checking is not already running, click **Tools > Check Interference**. Notice the three display-related buttons  on the **Check Interference** ribbon.

Hide Interferences

1. To hide interferences, select the interfering objects you want to hide.
2. Click **Hide Interferences** on the **Check Interference** ribbon.

Notes

- If you have not selected any objects to hide when you click this command, the software removes all the interferences from the view.
- If you select specific interfering objects when you click this command, the software removes the interferences from the view that are related to the objects that you selected.
- When you click this command, the software automatically hides any local interferences in the workspace.
- Interfering objects can be selected from either the graphic view or the interference list.
- You can clear acceptable interferences from your workspace by changing the required action and then editing the display properties for interferences. For example, in the **Required Action** column of the **Interference List**, select **None - Ignore the interference**. Then, clear the **None** box on the **Display** tab of the **Interference Checking Settings** dialog box.

Show Interferences

Click **Show Interferences** on the **Check Interference** ribbon.

Notes

- If you do not select any objects in the active view before clicking this command, the software displays the interferences for all parts in the workspace. To view interferences between specific objects, select these objects first and then click **Show Interferences**.
- If you selected parts or groupings before clicking this command, the software displays interferences related to the displayed aspects of selected parts and all parts that belong to the selected grouping of objects.

Fit Interferences

1. Select the interfering objects you want to fit.
2. Click **Fit Interferences** on the **Check Interference** ribbon.

Notes

- The software adjusts the active view to the interfering objects you selected. If you do not make a selection, the command is unavailable on the ribbon.
- You can select the interfering objects from the graphic view or from the interference list shown in the list view.

Related Topics

- *Check Interference Command*, page 32
- *Checking Interferences: An Overview*, page 11

List Interferences

1. If interactive interference checking is not already running, click **Tools > Check Interference**.
2. Click **List View** on the **Check Interference** ribbon.

   Tip

   - You must have at least one interference in your workspace in order for the **List View** button to be available.
   - To view properties for a row, double-click the row button. For more information, see *Interference Properties Dialog Box*, page 40.
3. Review the list and edit rows as necessary. The following table provides a definition of each column property:

Column	Description	Instructions
Name	Name of the interference	Available only for **Database Detect**. You can edit the name from the **Properties** dialog box but not from the list view.
Part A	Name of the interfering part	Read-only; you cannot edit.
Part B	Name of the interfering part	Read-only; you cannot edit.
Type	Display of interference severity: **Severe**,**Clearance**, **Optional**.	Read-only; you cannot edit.
Required Action	Provides a list with three choices: **Undefined**, **Edit**, **None**.	You can edit this box but not for interferences the local process detected.

Column	Description	Instructions
Last Modified	Displays the date that the interference was found	Read-only; you cannot edit.
Notes	Text entry field for other pertinent information	You can edit this box. Add additional information as needed. Does not apply to local interferences.

Notes

- You can resize the **Interference List** like a graphic view. The resize action shows more grid columns and rows.
- The **Interference List** automatically updates when you add an interference object to the workspace. This addition can be a local process interference, or database interferences loaded through the **Refresh Workspace** or **Define Workspace** commands. The software initially adds these additions to the bottom of the **Interference List**, but you can relocate them by sorting the column.
- When you position your pointer over a row in the **Interference List**, the row highlights in bold print and the interference highlights in the graphic views. When you select an interference, the parts related to the interference are shown in the select color in the graphic views as well.

Related Topics

- *Checking Interferences: An Overview*, page 11

Change Required Action

1. If interactive interference checking is not already running, click **Tools > Check Interference**. The **Check Interference** ribbon appears.
2. In a graphic view or in the interference list view, select an interference.
3. On the ribbon, select an action in the **Required Action** box.

Tip

- The choices in the **Required Action** box are controlled by the **IFC Required Action** select list in the Catalog Data. For more information about select lists, see the *Catalog User's Guide* available from the **Help > Printable Guides** command in the software.

Notes

- You can select the interfering objects from a graphic view or from the interference list. If you do not select any interferences, the **Required Action** box is unavailable on the ribbon.
- You can change the required action for database detect interferences but not for local interferences.

Related Topics

- *Checking Interferences: An Overview*, page 11

Display the Interference Status

1. If interactive interference checking is not already running, click **Tools > Check Interference**.
2. Click **Settings** on the **Check Interference** ribbon.
3. Click the **Status** tab on the **Interference Checking Settings** dialog box to view the status of the Interference Checking process.

Related Topics

- *Checking Interferences: An Overview*, page 11

Interference Checking Reference Data: An Overview

Interference checking reference data consists of rules that control the interference checking process. The rules include processor rules and a clearance rule.

You can customize the delivered IFC rules or create new IFC rules. For more information, see *Creating and Distributing IFC Rules*, page 49.

Related Topics
- *IFC Clearance Rule Sheet*, page 52
- *IFC Post Processor Rule Sheet*, page 51
- *Interference Checking Sheets: An Overview*, page 50

Creating and Distributing IFC Rules

The software makes it possible to create and customize the rules for interference checking. The process of customizing IFC rules is similar to the process for customizing the symbols. For more information, see the Visual Basic Symbols section in the *SmartPlant 3D Symbols Reference Data Guide* available from the **Help > Printable Guides** command in the software.

The main difference between distributing new symbols and distributing new rules is the point at which the check for new rules is made. Each time the IFC database or local process is started, the software checks the information about the IFC rules in the Model database table. If a new rule is available in the CAB (versus what is in the Model database table), then the software pulls the new rule dll to the client computer.

Related Topics
- *IFC Clearance Rule Sheet*, page 52
- *IFC Post Processor Rule Sheet*, page 51
- *Interference Checking Sheets: An Overview*, page 50

Interference Checking Sheets: An Overview

The **IFCRule.xls** workbook contains a list of interference checking rules. You can create new rules or modify the Visual Basic rules listed in **IFCRule.xls** to match your company construction and design standards. Any changes that you make to the rules do not take effect until you bulk load the new data to the Catalog and re-start the interference checking process.

For more information about Visual Basic rules in the software, refer to the *SmartPlant 3D/IntelliShip Programmer's Guide*. This guide is available when you install the programming resources. For more information about installation, see the Install Additional Product Software section in the *SmartPlant 3D Installation Guide*.

Some sheets in the **IFCRule.xls** workbook, such as the **Legend** sheet and the **Revision History** sheet, are common to all the workbooks. For more information on common sheets, see *Describing the Common Sheets in the Workbooks: An Overview* in the *SmartPlant 3D Reference Data Guide*.

The sheets that are unique to **IFCRule.xls** are listed below.

IFC Post Processor Rule - Specifies rules for processing interferences. These rules include a pre-processor rule and processor rules.

The pre-processor rule looks at each object and determines if it will be ignored or considered in the interference detection process.

The processor rules include 1) a rule that determines if an interference will be saved to the database, 2) a rule that sets interference parameters, such as the status, when modifications occur, and 3) a rule that asks the user to specify the aspect to use in the interference detection process.

For more information, see *IFC Post Processor Rule Sheet*, page 51.

IFC Clearance Rule - Specifies a rule that controls the detection of interferences around objects in the model.

For example, an equipment object, such as a pump, can have a physical aspect and a maintenance aspect. A pipe can have a physical aspect and an insulation aspect. The IFC clearance rule can specify a clearance of 10 mm between the physical aspects of the two objects, or, the rule can specify a clearance of 0 mm between the equipment maintenance aspect and the pipe insulation aspect.

Another example is if you had two pumps near each other in the model, and the maintenance aspects of the pumps overlapped. If employees work on only one pump at a time, the overlapping aspects do not pose a problem.

Clearances must always be greater than or equal to 0. For more information, see *IFC Clearance Rule Sheet*, page 52.

Related Topics

- *Interference Checking Reference Data: An Overview*, page 49

IFC Post Processor Rule Sheet

The **IFC Post Processor Rule** sheet in the **IFCRule.xls** workbook defines processing rules for interference checking.

RuleName - Specifies a name for the rule.

RuleProgID - Provides the identifier for the Visual Basic program that drives the rule.

Related Topics

- *Interference Checking Sheets: An Overview*, page 50

IFC Clearance Rule Sheet

The **IFC Clearance Rule** sheet in the **IFCRule.xls** workbook defines rules for clearances around object aspects. Clearances pertain to any object in the model that is a part. You can specify a clearance rule on the **Interference Checking Settings** dialog box available from the server or a workstation.

RuleName - Specifies a name for the rule. Each rule can have many sub-rules that control the clearance between objects and aspects. If you have sub-rules, you do not need to list the main rule name in each cell of the **RuleName** column.

Note

- The **RuleName** column is blank in the delivered **IFCRule.xls** workbook.

ObjectType1 - Provides the type of object for the first object. Clearances are usually defined between two types of objects and their aspects. This sheet shows all the acceptable object type pairs on which the interference checking process can run.

Aspect1 - Provides the aspect of the first object. Aspects are listed on the **Aspect Code** sheet in the **AllCodeLists.xls** workbook.

ObjectType2 - Provides the type of object for the second object. Clearances are usually defined between two types of objects and their aspects. This sheet shows all the acceptable object type pairs on which the interference checking process can run.

Aspect2 - Provides the aspect of the second object. Aspects are listed on the **Aspect Code** sheet in the **AllCodeLists.xls** workbook.

Clearance - Specifies the clearance in millimeters.

Related Topics

- *Interference Checking Sheets: An Overview*, page 50

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