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TECHNICAL PAPER

USING VERSION 9.3 OF THE SAS INTELLIGENCE PLATFORM TO
ASSIGN UNIQUE SAS APPLICATION SERVERS TO
SAS INVENTORY OPTIMIZATION

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Introduction

With the advent of version 9.3 of the SAS System for Business Intelligence (BI), many SAS products will take advantage of the concept of a SAS Application Server. A SAS Application Server is a logical entity that represents the SAS server tier. This logical entity contains specific servers (for example, a SAS Workspace Server or a SAS Stored Process Server) that execute SAS code. Depending upon what software is licensed and purchased, a SAS Application Server will be created during deployment. By default, a typical SAS BI deployment will see two SAS Application Servers created.

SAS solutions will also leverage the use of a SAS Application Server and at times, may require “exclusive” access to one. “Exclusive” means that the fundamental nature of the SAS Application Server, or the entities it contains, will be changed in such a way that it no longer resembles the one created by default for the SAS BI platform. These changes make it usable only by a specific SAS solution or suite of solutions.

SAS Inventory Optimization is a solution going out after the release of SAS 9.3, and it needs “exclusive” access to SAS Application Servers as defined above. Furthermore, a SAS Workspace Server, SAS Stored Process Server, a SAS OLAP Server, and a SAS Pooled Workspace Server are required. There are two usage cases for SAS Inventory Optimization.

1. SAS Inventory Optimization deployed and configured on a “clean” system. In this case, “clean” implies that while there may be previous versions of SAS software present, no SAS 9.3 software is on the system. The customer has purchased SAS Inventory Optimization as well as other SAS offerings and intends to deploy and configure them.
2. SAS Inventory Optimization deployed and configured on an already configured system with SAS 9.3. In this case, SAS Inventory Optimization is an upsell and is being added to an existing SAS 9.3 deployment, which more than likely already contains one or more SAS Application Servers.

Each of these cases is discussed below.

Deployment on a “Clean” System

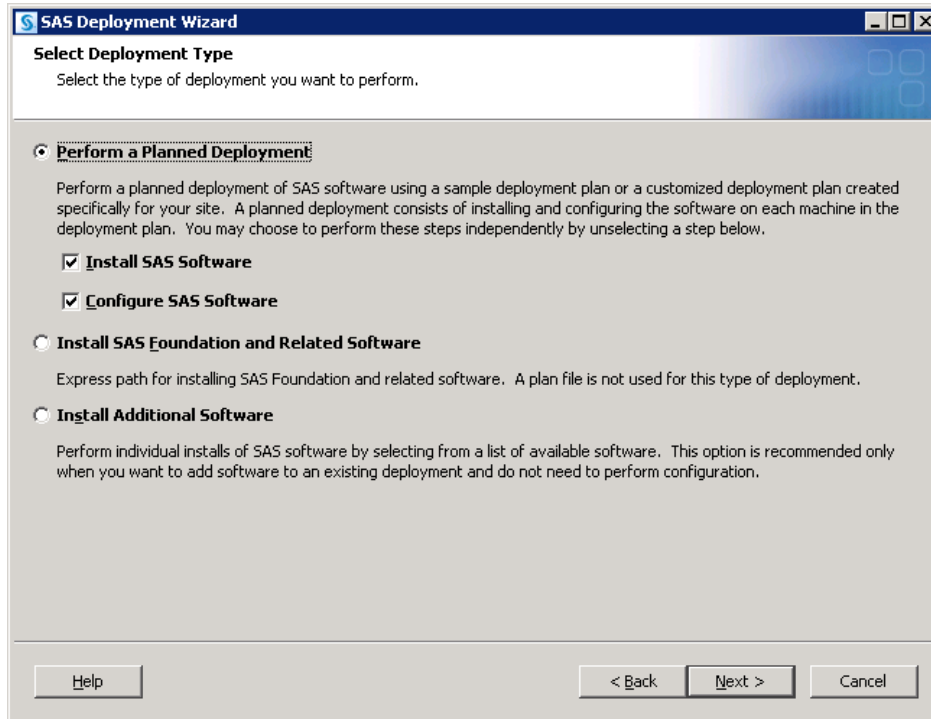
A “clean” system implies that no SAS 9.3 software is on the customer’s system. A customer would have ordered SAS Inventory Optimization along with any other required/dependent products. A deployment plan would be created and an image made available. The customer (or consultant) would make sure the third-party requirements and the pre-install checklist items had all been met and then could begin installation and configuration using the SAS Deployment Wizard. Software updates, if applicable, will be installed along with whatever products are in the deployment plan.

In this example, the default SAS Application Server created during this deployment will be associated with SAS Inventory Optimization. As noted above, SAS Inventory Optimization requires “exclusive” use of a SAS Application Server. Thus, if a generic SAS Application Server is needed, the SAS Deployment

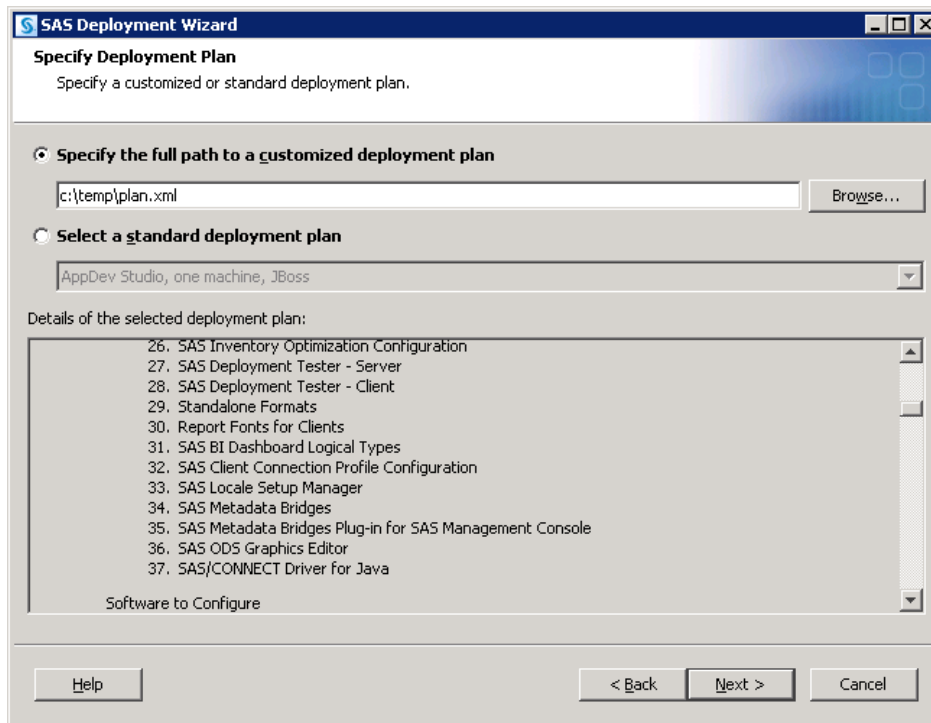
Wizard will have to be executed more than once. See the appendix for more details for creating such a SAS Application Server.

Begin by starting the SAS Deployment Wizard.

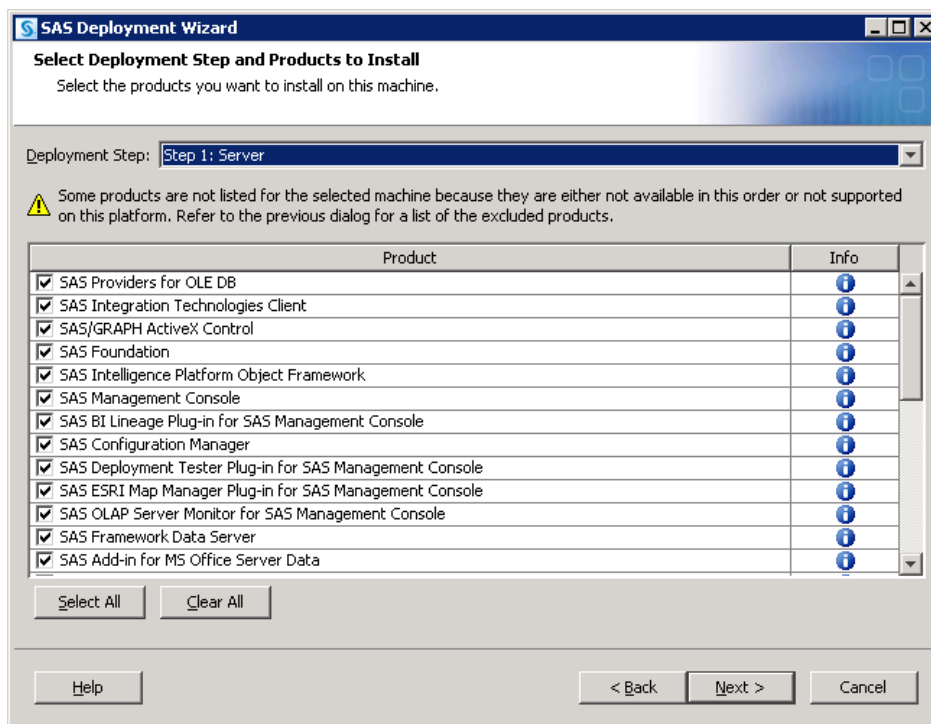
After specifying the order, select a deployment type, usually a “Planned Deployment” with **Install SAS Software** and **Configure SAS Software** selected.



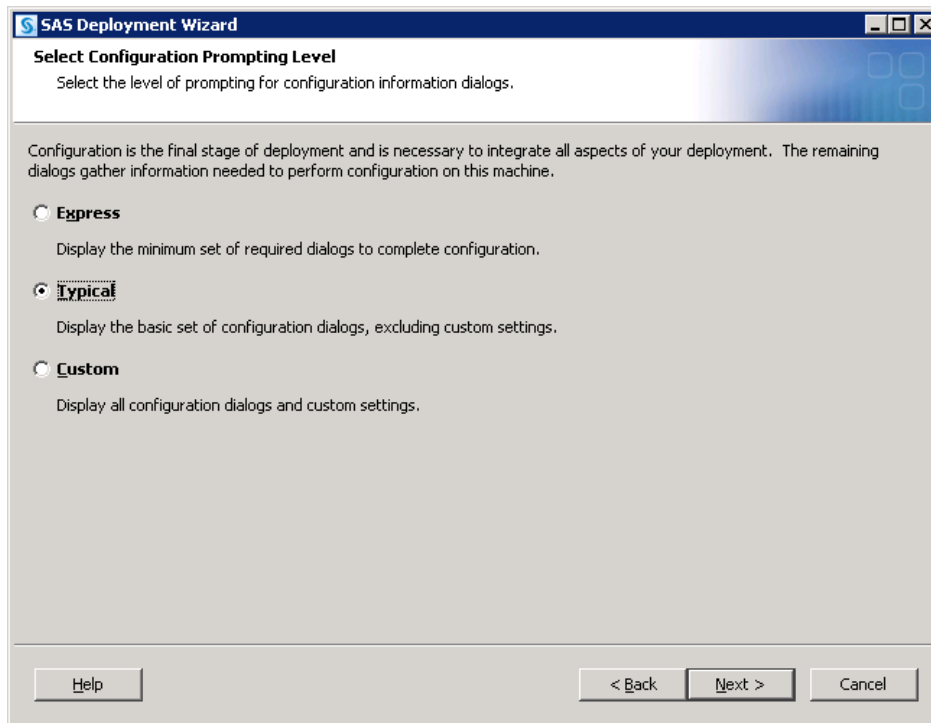
Next, select the deployment plan provided with the image.



Specify the machine. In this example, the **Server** machine is used.



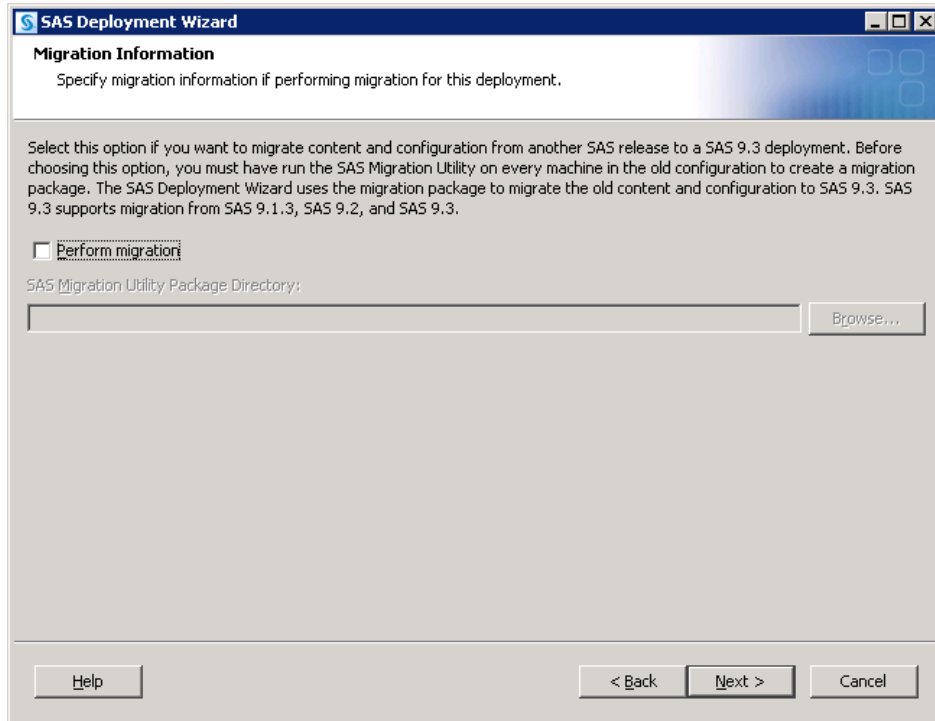
Continue through the pages until the **Select Configuration Prompting Level** page opens.



The **Typical** prompting level can be used, but if more customizations are desired, select **Custom** and refer to the SAS® 9.3 *Intelligence Platform: Installation and Configuration Guide* at <http://support.sas.com/documentation/cdl/en/biig/62611/HTML/default/titlepage.htm> for additional information.

Continue on, specifying appropriate values for your system.

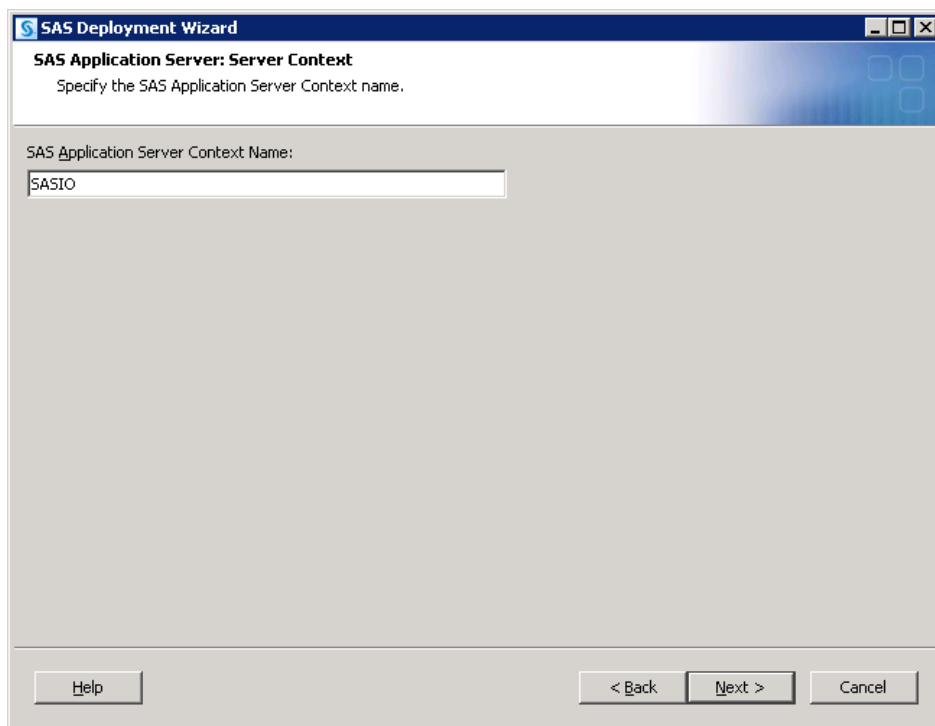
In the event that previous versions of SAS software are present, such as SAS 9.2, migration may be required or selected. Please see the *SAS® 9.3 Intelligence Platform: Migration Guide* at <http://support.sas.com/documentation/cdl/en/bimig/62613/HTML/default/titlepage.htm> for more details and information.



The screenshot shows the 'SAS Deployment Wizard' window with the 'Migration Information' tab selected. The window has a blue header bar with the title 'SAS Deployment Wizard'. Below the header, the 'Migration Information' section is highlighted. The text inside the window reads: 'Specify migration information if performing migration for this deployment.' followed by a detailed instruction: 'Select this option if you want to migrate content and configuration from another SAS release to a SAS 9.3 deployment. Before choosing this option, you must have run the SAS Migration Utility on every machine in the old configuration to create a migration package. The SAS Deployment Wizard uses the migration package to migrate the old content and configuration to SAS 9.3. SAS 9.3 supports migration from SAS 9.1.3, SAS 9.2, and SAS 9.3.' Below this text is a checkbox labeled 'Perform migration' which is currently unchecked. Underneath the checkbox is a text field labeled 'SAS Migration Utility Package Directory:' and a 'Browse...' button to its right. At the bottom of the window, there are three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button on the far right.

Continue on, specifying appropriate values for your system, including required user credentials information.

Of special interest is the **SAS Application Server: Server Context** page.



Since SAS Inventory Optimization requires “exclusive” access to a SAS Application Server, using a name that identifies the SAS Application Server with SAS Inventory Optimization is suggested. In this example, the name **SASIO** has been chosen. Again, if a non-SAS Inventory Optimization SAS Application Server context is desired, see the appendix for details on creating one. If an additional SAS Application server is going to be created, it is important to make note of what ports are associated with the various SAS servers to avoid potential conflicts.

Continue through the pages, addressing assorted database panels, choosing appropriate values. Upon reaching the **Deployment Summary**, click **Start** to begin the installation and configuration process. When the SAS Deployment Wizard finishes, SAS Inventory Optimization and its dependent components have been deployed and configured on the selected **Server** machine and are ready to use.

Deployment in an Upsell Scenario

In this case, we use an “upsell scenario” involving a customer purchasing SAS 9.3 and other products, then adding SAS Inventory Optimization to their existing 9.3 environment later. It is important to note that starting with the third maintenance release of the SAS 9.2 System for Business Intelligence, maintenance releases are available. For more detailed information, see *SAS® 9.3 Guide to Software Updates* at <http://support.sas.com/documentation/cdl/en/whatsdiff/63859/HTML/default/viewer.htm>.

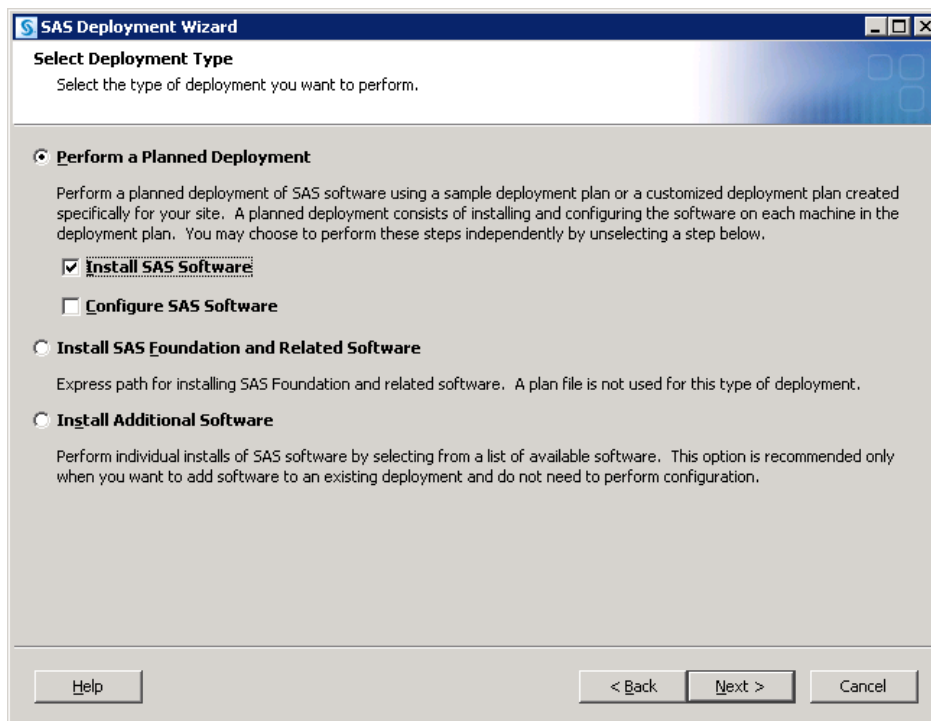
Before invoking the SAS Deployment Wizard, SAS strongly recommends that any active SAS sessions on the machine SAS Inventory Optimization is going to be installed on, including but not limited to SAS Object Spawners and SAS servers, are stopped. Upon invoking the SAS Deployment Wizard, if any

product updates are required, the SAS Deployment Wizard goes into update mode and installs those product updates on that machine. Updates that are installed in a maintenance release apply only to software that is already installed at your site. No new software is installed during a maintenance installation. When all updates are installed, customers will have the opportunity to update any existing configurations. It is strongly recommended that all configurations be updated, but in particular, the configuration intended to be used with SAS Inventory Optimization should be updated. Again, see SAS® *9.3 Guide to Software Updates* at <http://support.sas.com/documentation/cdl/en/whatsdiff/63859/HTML/default/viewer.htm> for more information.

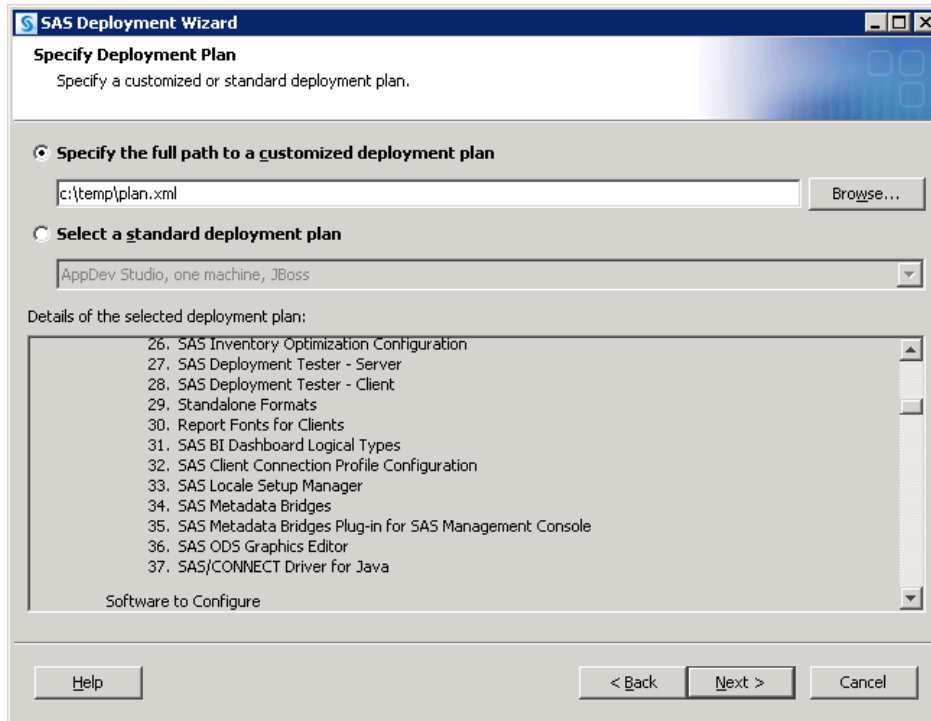
Since this is an “upsell scenario”, existing SAS Application Servers will more than likely be present. As a result, selecting a SAS Application Server to use with SAS Inventory Optimization is important. The customer can use an existing SAS Application Server, such as **SASApp**, or choose to create a new SAS Application Server. The latter approach is more flexible since any existing SAS Application Server configurations and definitions would not be modified. Both approaches are discussed below.

Using an Existing SAS Application Server

When all intended configuration updates are complete, make sure that all SAS servers are stopped. Since SAS Inventory Optimization software has yet to be installed, SAS recommends that no SAS software be running during installation. After stopping all running SAS servers and applications, invoke the SAS Deployment Wizard, choose a “Planned Deployment,” and specify only **Install SAS Software**.

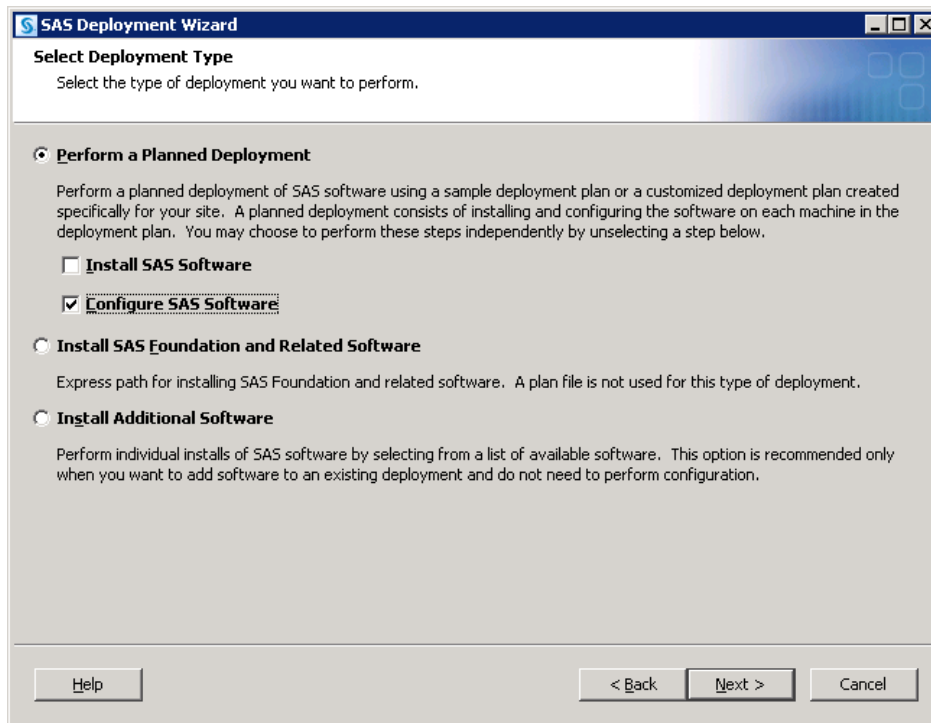


Next, specify the deployment plan provided with the image.

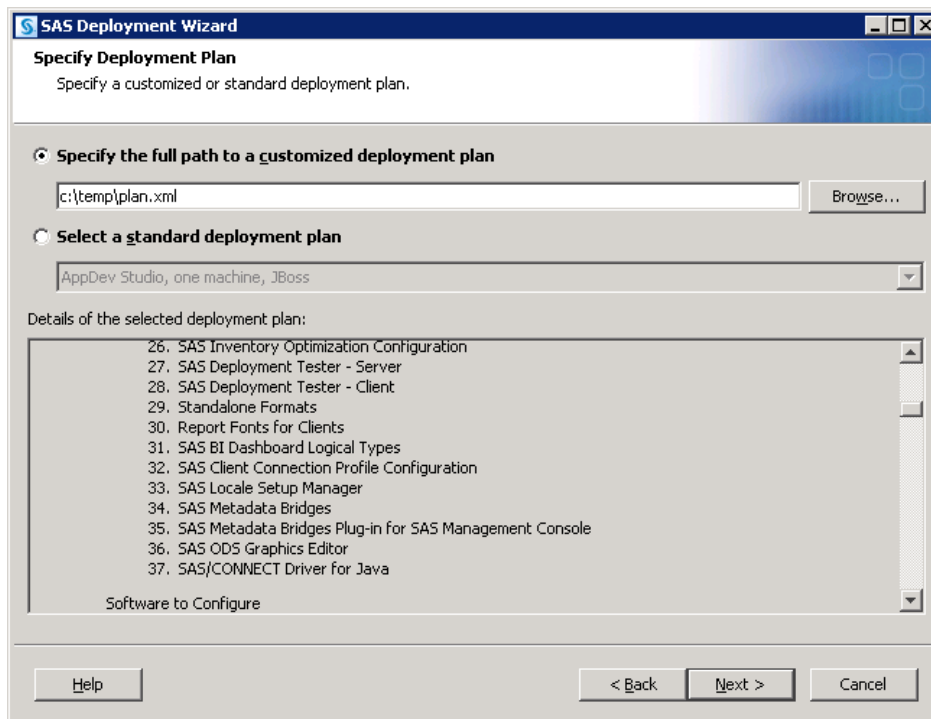


Select the machine. For this example, the **Server** machine is used. Continue on through the pages, and when you reach the **Deployment Summary**, click **Start** to begin the installation process. When the SAS Deployment Wizard finishes, SAS Inventory Optimization and its dependent components have been installed on the selected **Server** machine and are ready to be configured. Restart all SAS servers and spawners and then invoke the SAS Deployment Wizard.

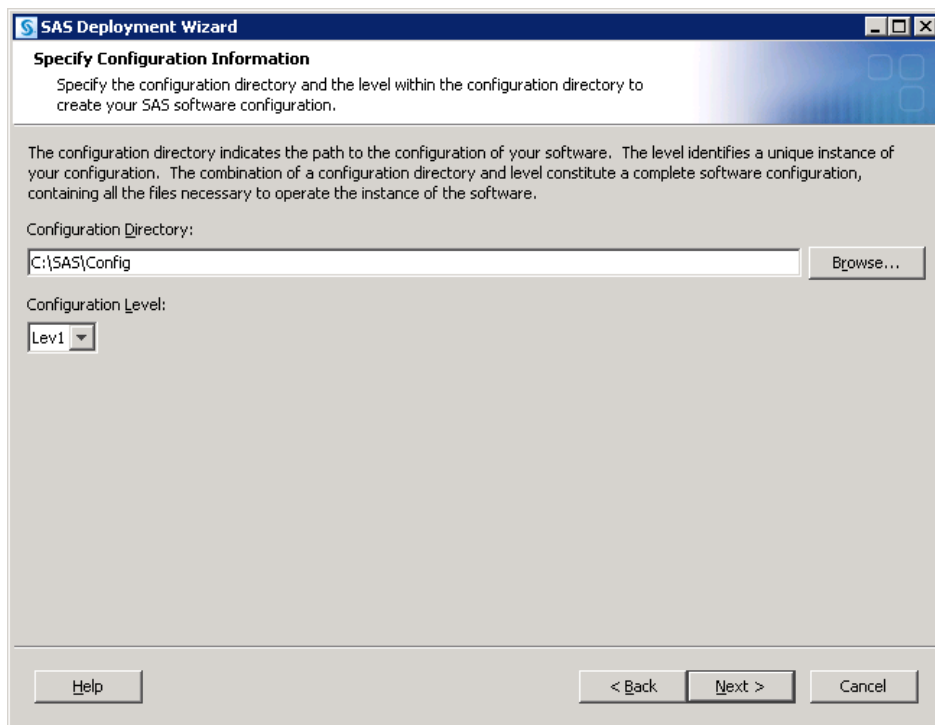
Select a “Planned Deployment” and specify **Configure SAS Software**.



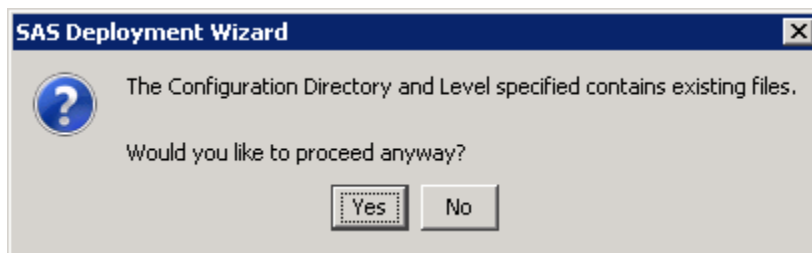
Next, specify the deployment plan provided with the image.



Select the machine. For this example, the **Server** machine is used. When prompted, specify the same configuration directory and level that is currently in use.

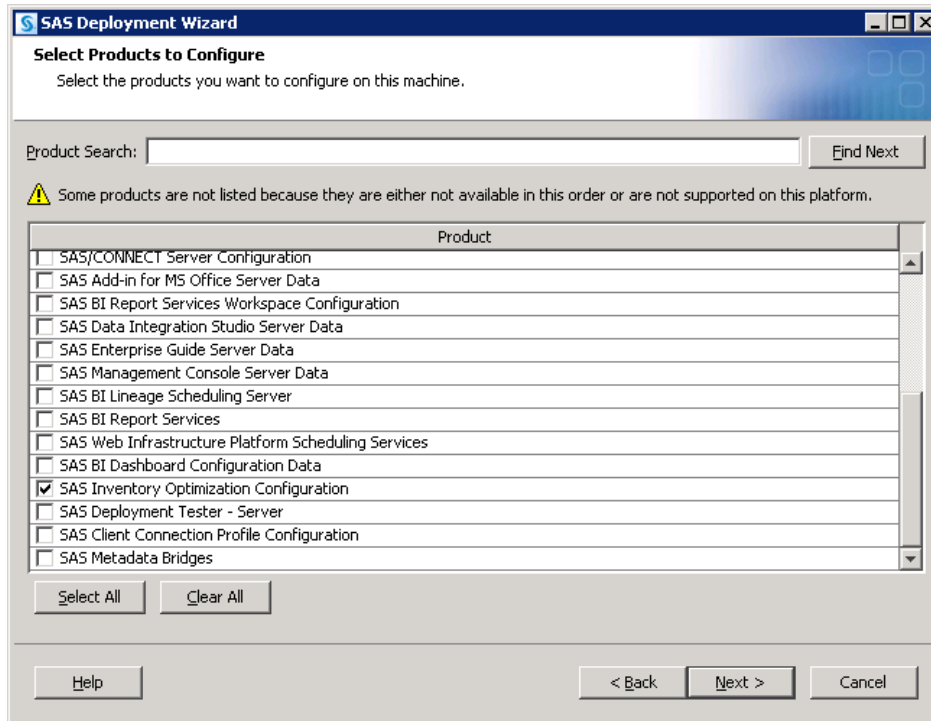


The SAS Deployment Wizard will recognize that this configuration directory and level directory already contain files.



Click **Yes** to proceed.

A page listing the products to configure opens.



By default, the SAS Deployment Wizard will present only products that have not been configured. Any products required by SAS Inventory Optimization but not yet configured will be selected. Since an existing SAS Application Server is going to be used in this configuration, no SAS servers such as a SAS Workspace Server need to be selected. Select **Next** to proceed.

The same values that were used during the initial deployment must again be used. Specify the host information for the SAS Metadata Server as well as valid credentials for the SAS Administrator, the SAS Trusted User, and SAS Spawned Servers account.

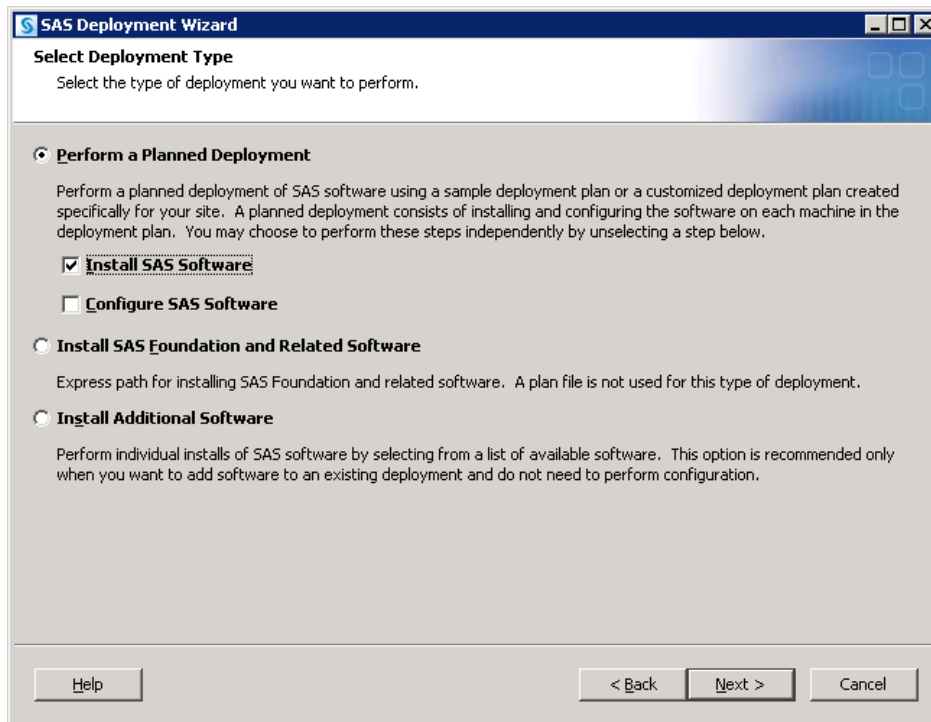
Continue on, specifying the appropriate information. Depending on the number of SAS Application Servers in the configuration specified, a page will open, asking you to select the SAS Application Server dependency for SAS Inventory Optimization. If this page appears, select the SAS Application Server intended for use.

Continue through the pages, addressing assorted database panels. Upon reaching the **Deployment Summary**, click **Start** to begin the configuration process. When the SAS Deployment Wizard finishes, SAS Inventory Optimization and its dependent components will be deployed on the selected **Server** machine and are ready to use.

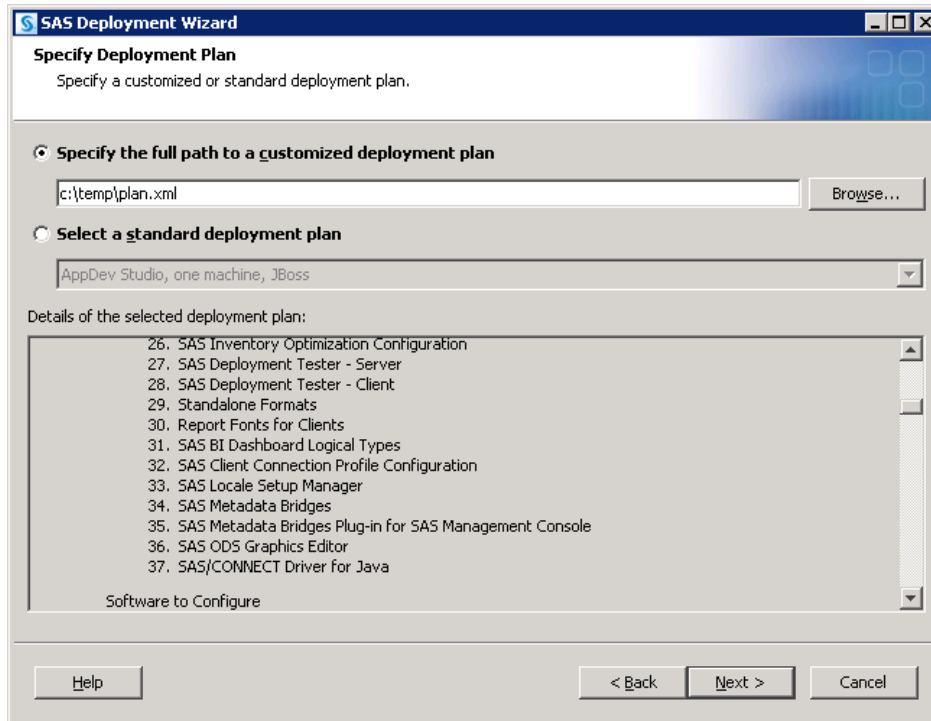
Creating a New SAS Application Server

When all intended configuration updates are complete, make sure that all SAS servers are stopped. Since SAS Inventory Optimization software has yet to be installed, SAS recommends that no SAS software is running during installation.

After stopping all running SAS servers and applications, invoke the SAS Deployment Wizard, choose a “Planned Deployment,” and specify only **Install SAS Software**.

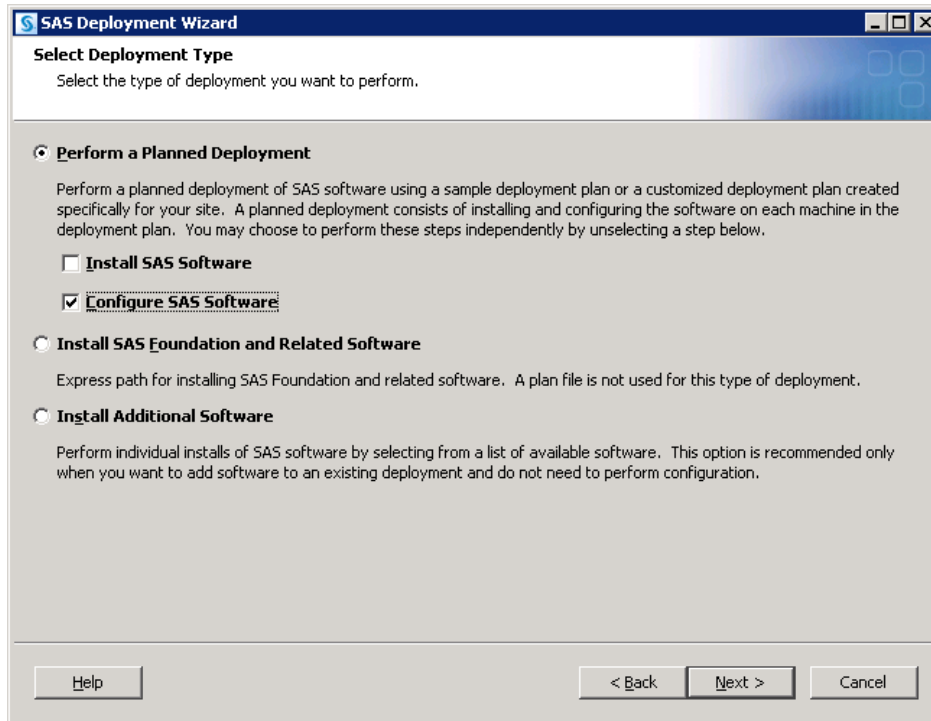


Next, select the deployment plan provided with the image.

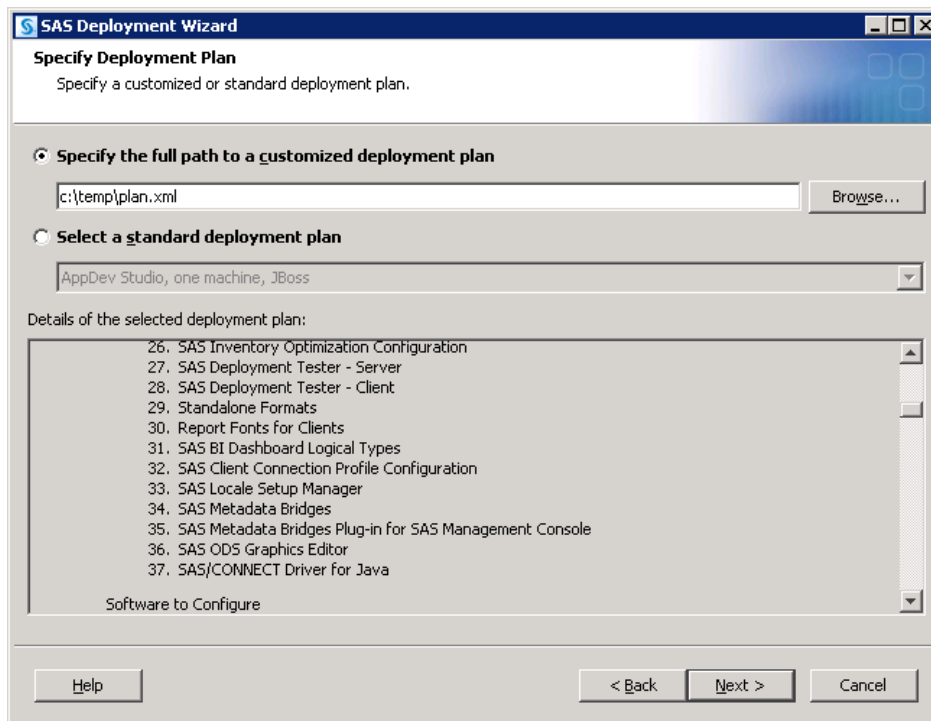


Select the machine. For this example, the **Server** machine is used. Continue on through the pages and upon reaching the **Deployment Summary**, click **Start** to begin the installation process. When the SAS Deployment Wizard finishes, SAS Inventory Optimization and its dependent components will be installed on the selected **Server** machine and are ready to be configured. Restart all SAS servers and spawners and then invoke the SAS Deployment Wizard.

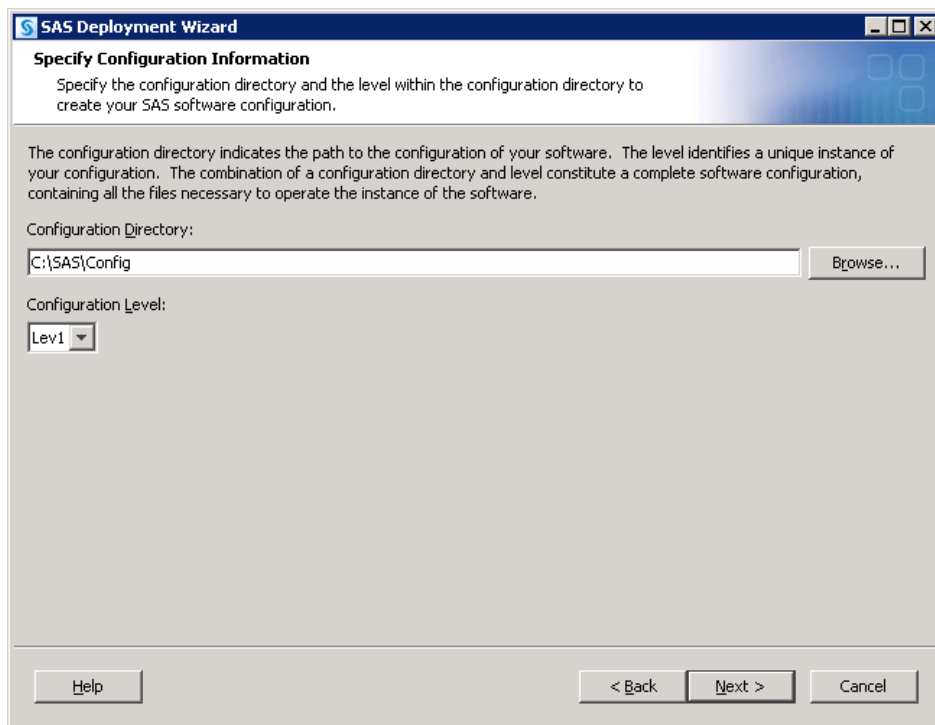
Select a “Planned Deployment,” and specify only **Configure SAS Software**.



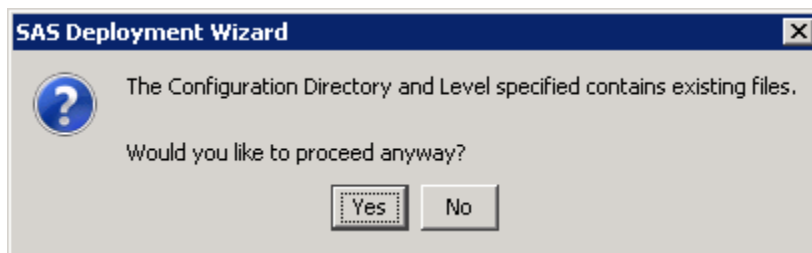
Next, specify the deployment plan provided with the image.



Select the machine. For this example, the **Server** machine is used. When prompted, specify the same configuration directory and level that is currently in use.

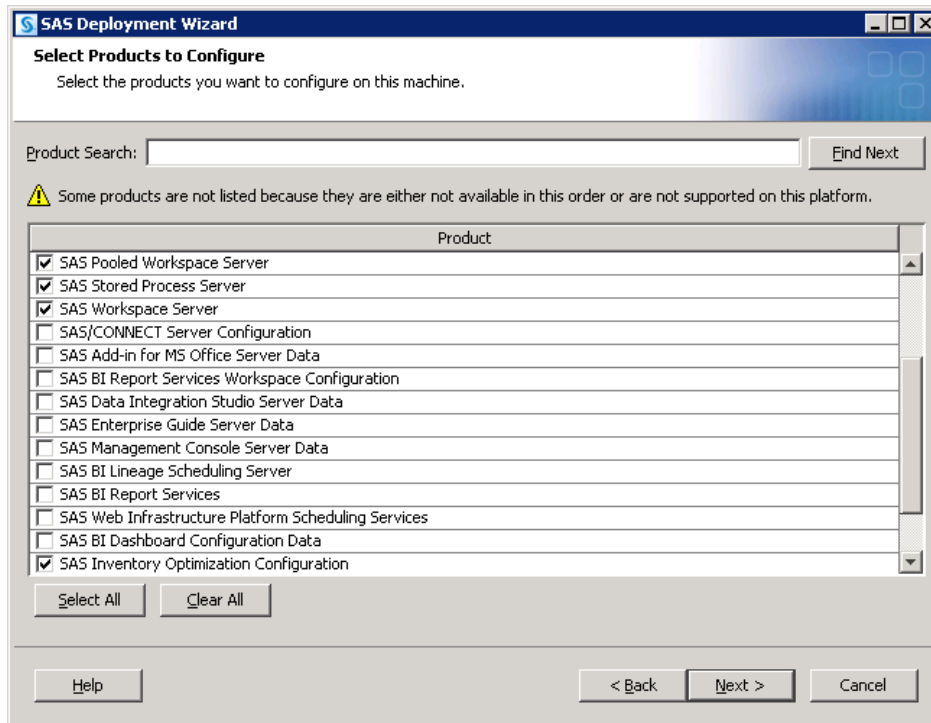


The SAS Deployment Wizard will recognize that this configuration directory and level directory already contain files.



Click **Yes** to proceed.

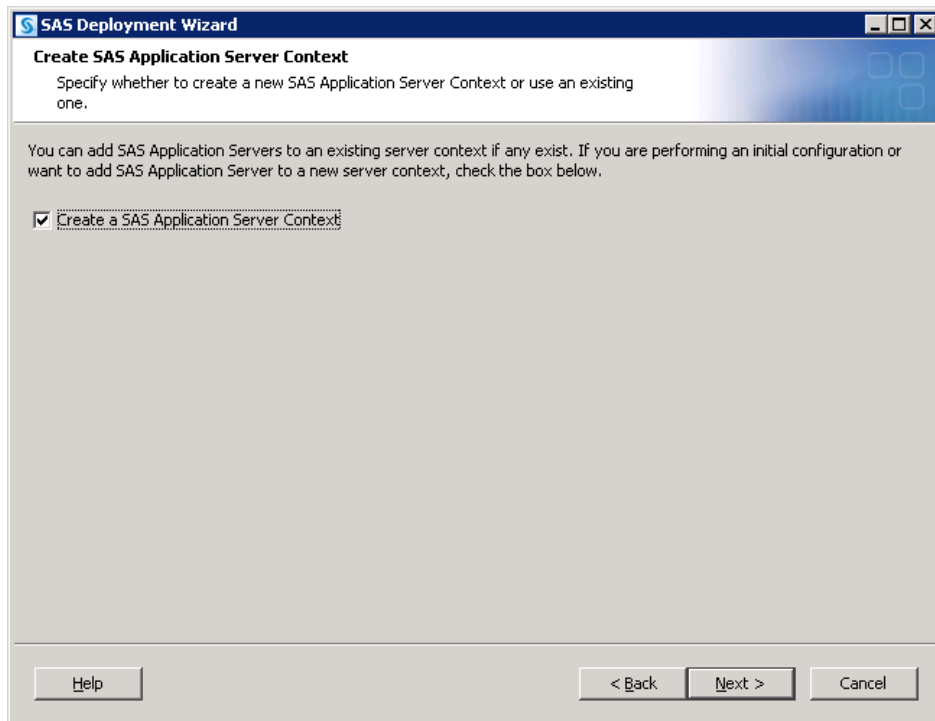
A page listing the products to configure opens. By default, the SAS Deployment Wizard will present only products that have not been configured. Any products required by SAS Inventory Optimization but not yet configured will be selected. However, since a new SAS Application Server is going to be created, the SAS servers required and used by SAS Inventory Optimization will have to be configured.



Therefore, a SAS Pooled Workspace Server, a SAS Workspace Server, a SAS OLAP Server, and a SAS Stored Process Server have been specified in addition to SAS Inventory Optimization to provide the required “exclusive” access. Select **Next** to proceed.

The same values that were used during the initial deployment must be used here. Specify the host information for the SAS Metadata Server as well as valid credentials for the SAS Administrator, the SAS Trusted User, and SAS Spawned Servers account.

Continue on, specifying the same connection information until the **Create SAS Application Server Context** page opens. Select **Create a SAS Application Server Context**.



The screenshot shows a Windows-style dialog box titled "SAS Deployment Wizard". The main heading is "Create SAS Application Server Context". Below the heading, it says "Specify whether to create a new SAS Application Server Context or use an existing one." A paragraph of text follows: "You can add SAS Application Servers to an existing server context if any exist. If you are performing an initial configuration or want to add SAS Application Server to a new server context, check the box below." There is a single checkbox labeled "Create a SAS Application Server Context" which is checked. At the bottom of the dialog, there are three buttons: "Help", "< Back", and "Next >", followed by a "Cancel" button.

SAS Deployment Wizard

Create SAS Application Server Context

Specify whether to create a new SAS Application Server Context or use an existing one.

You can add SAS Application Servers to an existing server context if any exist. If you are performing an initial configuration or want to add SAS Application Server to a new server context, check the box below.

☒ Create a SAS Application Server Context

Help < Back Next > Cancel

A page prompting for the name of the SAS Application Server opens. A unique name is required, and SAS suggests that a name easily associated with SAS Inventory Optimization be used. In this example, **SASIO** is specified.

The screenshot shows a window titled "SAS Deployment Wizard" with a sub-header "SAS Application Server: Server Context". Below the sub-header is the instruction "Specify the SAS Application Server Context name." A text input field labeled "SAS Application Server Context Name:" contains the text "SASIO". At the bottom of the window are three buttons: "Help", "< Back", and "Next >", and a "Cancel" button.

Each server being added to the SAS Application Server will prompt for which context to use. The same name that is used in the server context page should be used with each server.

The screenshot shows a window titled "SAS Deployment Wizard" with a sub-header "SAS Workspace Server Dependencies". Below the sub-header is the instruction "The SAS Workspace Server has dependencies on instances of other products. Select the product instances to use for this SAS Workspace Server." A dropdown menu labeled "SAS Application Server Context:" has "SASIO" selected. At the bottom of the window are three buttons: "Help", "< Back", and "Next >", and a "Cancel" button.

Each server being added will also prompt for their main port. The SAS Workspace Server and SAS Pooled Workspace Server being added to **SASIO** can use whatever port is desired, including the same port the previous configuration might have used for them (provided that no other conflicts exist). The SAS 9.3 Object Spawner is fully capable of handling this issue such that no conflicts will occur in the spawning of these servers.

However, the SAS Stored Process Server needs unique port values for its multibridge connections. This example uses a variation on the default values of 8611, 8621, and 8631 combined with calculated defaults for ports not reserved. Any ports that are appropriate and available can be used—they merely have to be unique and not in use.

SAS Deployment Wizard

Stored Process Server: Multibridge Connections
Specify multibridge connection information for the SAS Stored Process Server.

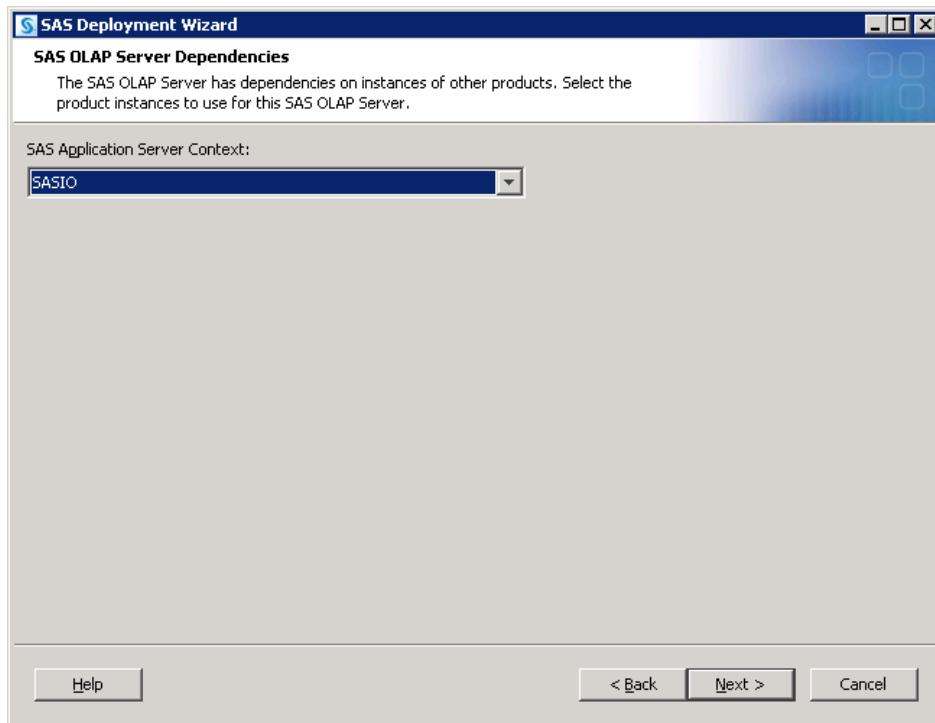
Multibridge Port 1:
8612

Multibridge Port 2:
8622

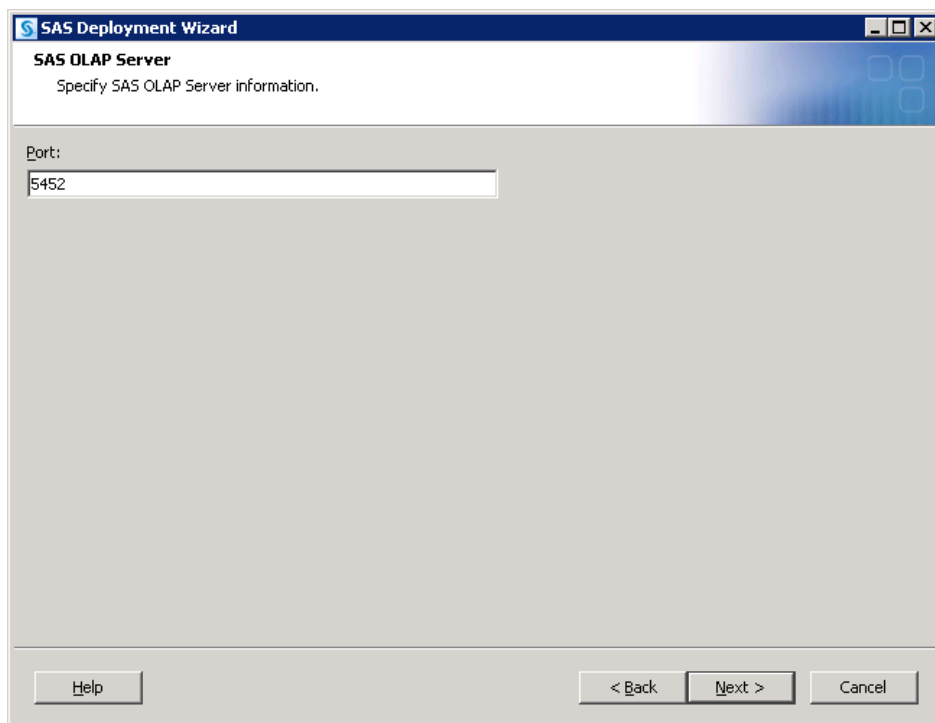
Multibridge Port 3:
8632

Help < Back Next > Cancel

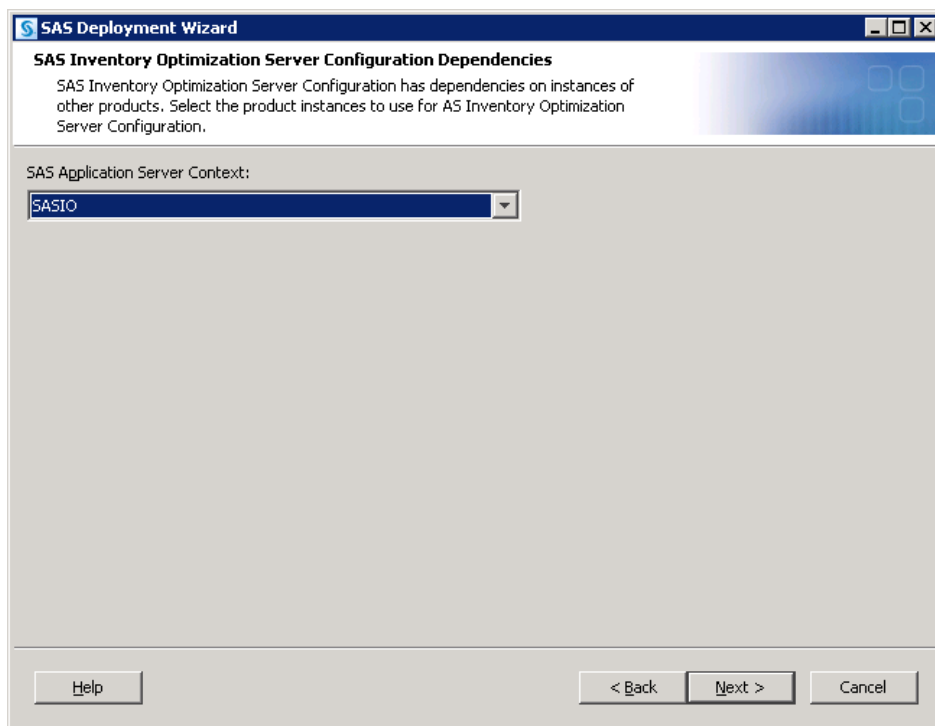
The SAS OLAP Server being added should also be associated with **SASIO**.



The SAS OLAP Server must have a unique value for its main port. This example uses a calculated variation on the default value of 5451. Any port that is appropriate and available can be used—it merely has to be unique and not in use.



Continue through the pages, addressing assorted database panels. When prompted, specify the dependency for SAS Inventory Optimization Server Configuration using the newly created SAS Application Server, **SASIO**.



Continue through the pages, addressing assorted database panels. Upon reaching the **Deployment Summary**, click **Start** to begin the configuration process. When the SAS Deployment Wizard finishes, SAS Inventory Optimization and its dependent components have been deployed and configured on the selected **Server** machine and are ready to use.

The *Configuration Guidelines and Details* will be presented upon completion of the SAS Deployment Wizard. As new servers have been added that are managed by a SAS Object Spawner, the SAS Object Spawner associated with this configuration will need to be restarted to detect them.

Conclusions

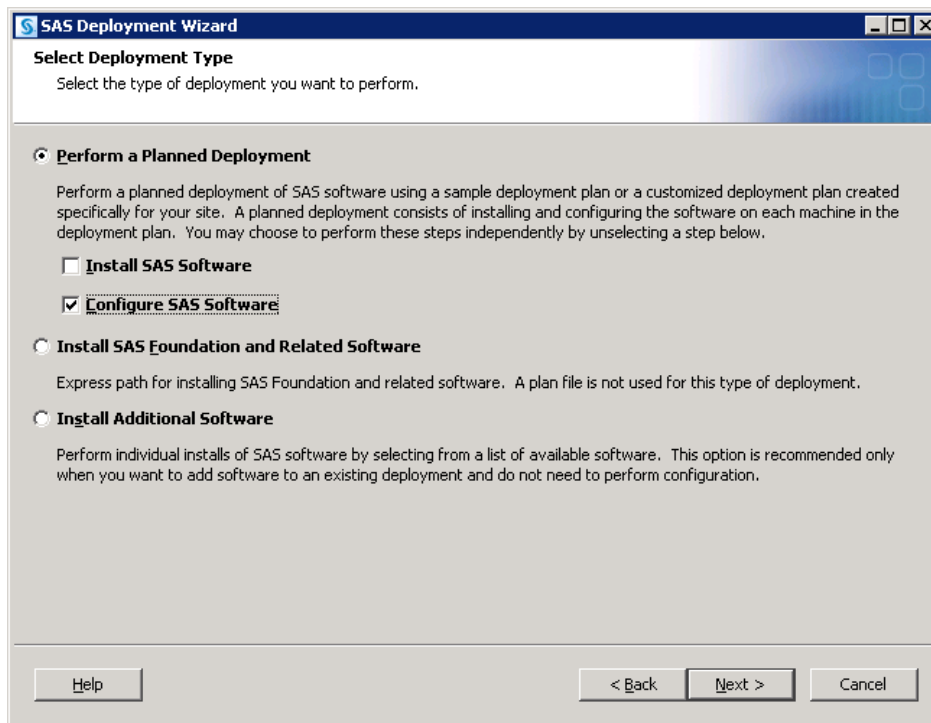
SAS Inventory Optimization is a SAS solution that requires “exclusive” access to a SAS Application Server. The main issues to consider are what products are required in support of this solution and whether or not it will be installed and configured on top of an existing configuration. Either of the approaches discussed above should be able to handle most requirements. Be sure that unique ports are used when applicable and name things in such a way that they are easy to associate with the solution in question.

Appendix

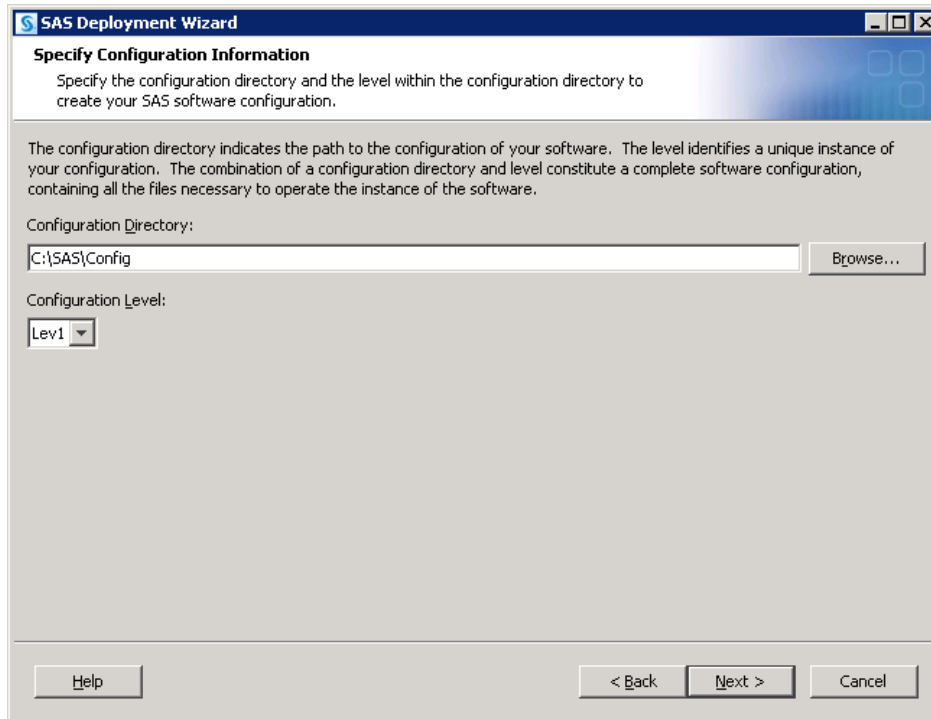
Creating an additional SAS Application Server

If the previous steps in this document were followed, deploying SAS Inventory Optimization on a “clean” system resulted in the creation of the SAS Inventory Optimization specific SAS Application Server, **SASIO**. As mentioned above, in the event that an additional “vanilla” SAS Application Server is needed, the SAS Deployment Wizard can be used to create one.

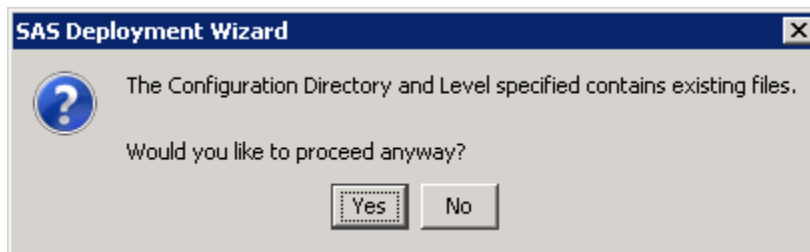
Invoke the SAS Deployment Wizard. Choose **Perform a Planned Deployment** and specify **Configure SAS Software**.



Choose the same deployment plan and machine as before, for example, **Server**. Also, for this example, the same configuration location and level used in the initial deployment are specified.

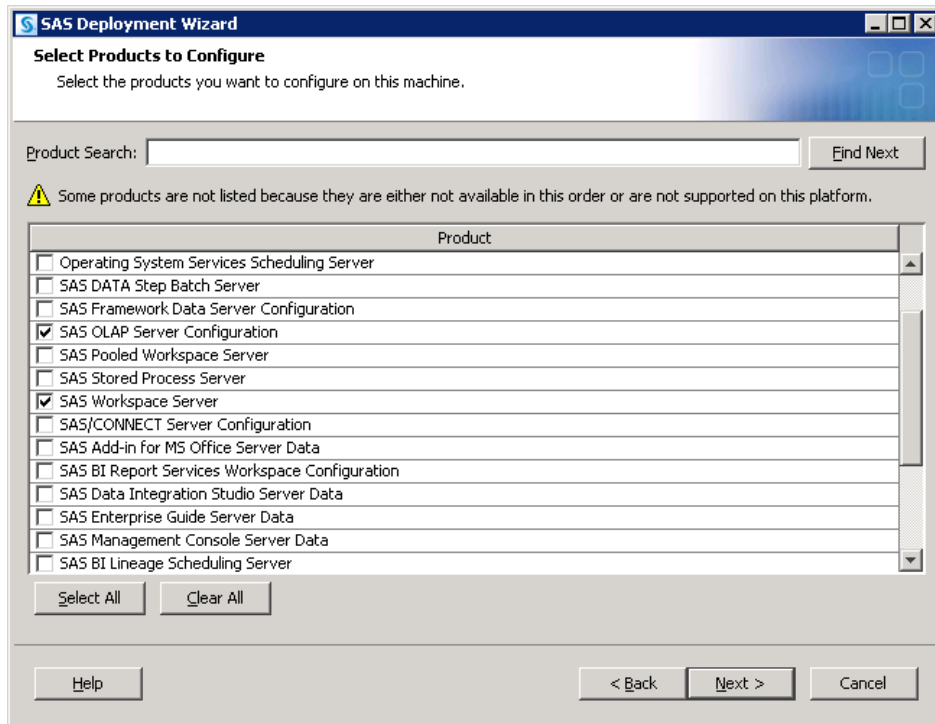


The SAS Deployment Wizard will recognize that this configuration directory and level directory already contain files.

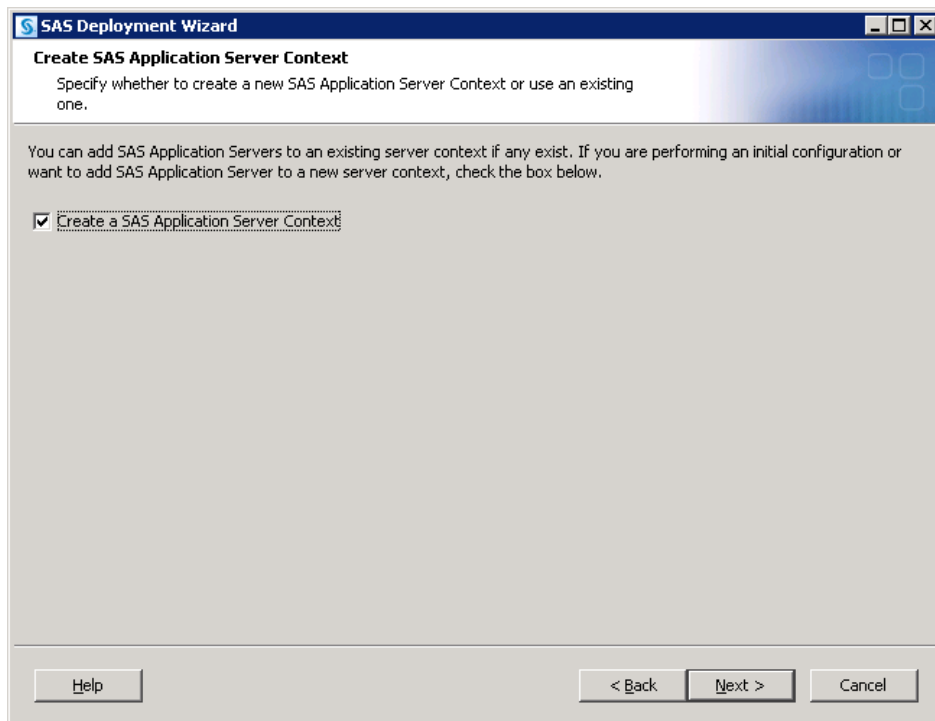


Click **Yes** to proceed.

A page listing the products to configure opens. Choose any of the SAS Application Servers that are desired to be added to the SAS Application Server that will be created. The examples below show a SAS OLAP Server and a SAS Workspace Server.



Continue through the panels until the **Create SAS Application Server Context** appears.



It is important here to create a SAS Application Server Context. This is done in order to provide an additional SAS Application Server. Assuming a SAS Application Server (**SASIO**) specific to the SAS Inventory Optimization solution has already been created, the usual default of **SASApp** can be used.

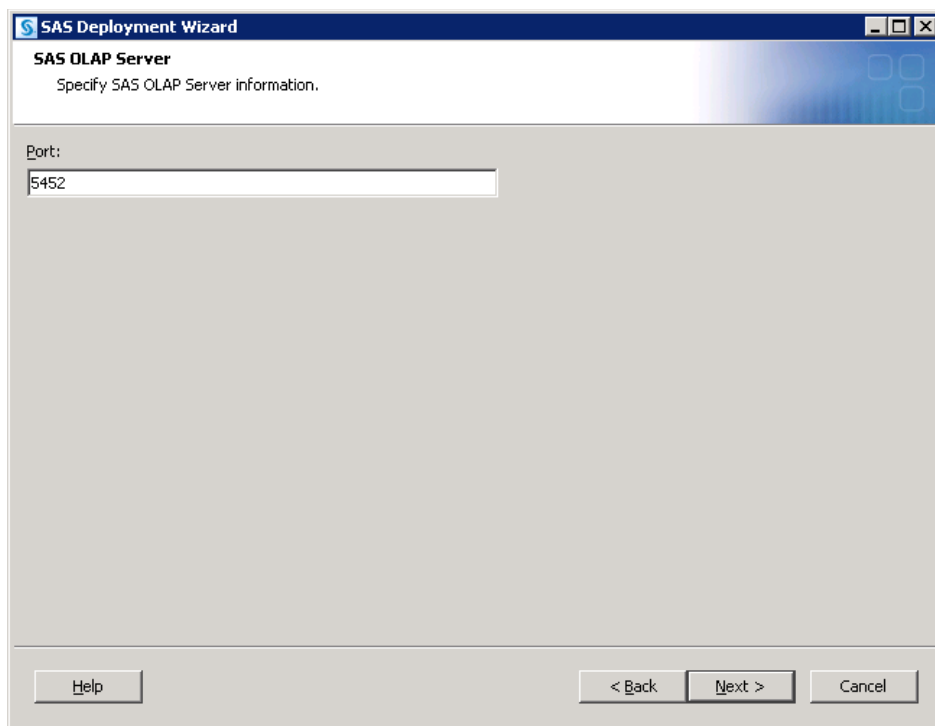
The screenshot shows the 'SAS Deployment Wizard' window at the 'SAS Application Server: Server Context' step. The title bar reads 'SAS Deployment Wizard'. The main heading is 'SAS Application Server: Server Context' with the instruction 'Specify the SAS Application Server Context name.' Below this, there is a label 'SAS Application Server Context Name:' followed by a text input field containing 'SASApp'. At the bottom of the window, there are three buttons: 'Help', '< Back', and 'Next >', along with a 'Cancel' button.

Dependencies for the application servers being added will then need to be specified.

The screenshot shows the 'SAS Deployment Wizard' window at the 'SAS Workspace Server Dependencies' step. The title bar reads 'SAS Deployment Wizard'. The main heading is 'SAS Workspace Server Dependencies' with the instruction 'The SAS Workspace Server has dependencies on instances of other products. Select the product instances to use for this SAS Workspace Server.' Below this, there is a label 'SAS Application Server Context:' followed by a dropdown menu showing 'SASApp'. At the bottom of the window, there are three buttons: 'Help', '< Back', and 'Next >', along with a 'Cancel' button.

Since these servers are intended to be associated to the new SAS Application Server, **SASApp** should be selected.

Each server being added will also prompt for their main port. For this example, the SAS Workspace Server can use whatever port is desired, including the same port the previous configuration might have used for them (provided that no other conflicts exist). The SAS 9.3 Object Spawner is fully capable of handling this issue such that no conflicts will occur in the spawning of this server. However, the SAS OLAP Server requires a unique port. 5451 is the default port for a SAS OLAP Server, so for this example, a calculated variation is used, 5452. Any port that is appropriate and available can be used—it merely has to be unique and not in use.



Continue on through the pages and upon reaching the **Deployment Summary**, click **Start** to begin the configuration process. When the SAS Deployment Wizard finishes, SAS Inventory Optimization and its dependent components have been deployed and configured on the selected **Server** machine and are ready to use.

The *Configuration Guidelines and Details* will be presented to upon completion of the SAS Deployment Wizard. As new servers have been added that are managed by a SAS Object Spawner, the SAS Object Spawner associated with this configuration will need to be restarted to detect them.