Ellucian Solution Manager User Guide

Release 1.6
March 2016

Notices

Without limitation: Ellucian®, Banner®, Colleague®, and Luminis® are trademarks of the Ellucian group of companies that are registered in the U.S. and certain other countries; and Ellucian Advance™, Ellucian Course Signals™, Ellucian Degree Works™, Ellucian PowerCampus™, Ellucian Recruiter™, Ellucian SmartCall™, are also trademarks of the Ellucian group of companies. Other names may be trademarks of their respective owners.

© 2014-2016 Ellucian.

Ellucian
4375 Fair Lakes Court
Fairfax, VA 22033
United States of America

Contents

Get Started with Ellucian Solution Manager

Ellucian Solution Manager is installed on a server (referred to as the admin server) connected to an institution's managed Banner environments.

Ellucian Solution Manager refers to the product. The web user interface is referred to as *Solution Manager* or the *Solution Manager Admin Console*.

Note: Review the *Ellucian Solution Manager Installation and Configuration Guide* before continuing. Use the current guide after Ellucian Solution Manager has been installed.

Navigate the admin console

Review a summary of how to navigate the Solution Manager admin console.

Before you begin

Access the Solution Manager application though a browser using the following URL scheme:
`http://<your-admin-server-hostname>:8081/admin/adminMain`

Note: Use the available Worksheets contained in the *Ellucian Solution Manager Installation and Configuration Guide* to record configuration information needed to complete forms in Solution Manager

Environments and system settings will not be populated after first signing into the admin console.

To access all Ellucian Solution Manager documentation, go to the **Ellucian Client Support** > **Ellucian Hub** > **Ellucian Support Center**. Select **Ellucian Solution Manager** from the Documentation Libraries drop-down list.

Procedure

1. Click on the main navigation tabs to access the associated Solution Manager functionality.
2. Click the **Help** icon at the top of the admin console for information to assist in completing the forms.

   The initial landing page for the Solution Manager application is the **Environments** page, which can be accessed by clicking on the **Environments** navigation tab. When Solution Manager is first installed, there will be no environments defined, so the page will be blank except for two buttons at the bottom of the page.

   • Click **Add** to add a new environment.
   • Click **Get new releases** to download updates.

   See Options to provision, install, and connect to Banner environments for more information.

   After you have added environments to Solution Manager, the **Environments** page will display a table listing all of the environments.

3. Click in a row of the environment table to view and edit detailed information related to that environment. The **Environment** page will display the following navigation pane.

Each of the tabs relates to the selected environment. Select an item from the secondary navigation tabs to the left, such as **Env Settings**.

4. Click **Add** to add an item for the selected environment.

5. Update settings for the environment, then click **Save**.

6. To return to the main navigation tabs, click on the **Home** icon at the top of the navigation panel.

7. To end the session, click **Sign Out** in the upper right corner of the admin console before closing the browser.

Enter system settings

Define the Solution Manager system settings at first use. These credentials will be used to connect to the Ellucian Solution Manager automated release download services. The login and password must be authorized to access the Ellucian Documentation & Download Center.

About this task

If you receive an error message when trying to log in, the Solution Manager Admin Server may be unable to connect to the Release Services Server. See the "Prerequisite Validation Scripts" section of the *Ellucian Solution Manager 1.6 Prerequisites* document for more information. Go to **Ellucian Client Support** > **Ellucian Hub** > **Ellucian Support Center**. Select **Ellucian Solution Manager** from the Documentation Libraries drop-down list.

Procedure

1. Complete **System Settings** fields after logging in.

The login and password will be used to authenticate web service requests that Solution Manager sends to Ellucian. The web service requests will check for and download environment provisioning templates, scripts and associated content files, and available Banner upgrade releases and associated documentation and installation metadata.

Table 1: System settings fields

Property	Description	Sample Data
Download Root URL	Read-only field that displays the Ellucian URL from which software is being downloaded.	`https:// esmsvc.ellucian.com:8443`
Institution Name	Enter the institution name.	`Ellucian University`
Download Center Login	Enter your login to the Ellucian Documentation & Download Center. The login and password are used to authenticate web service requests that Ellucian Solution Manager sends to Ellucian.	`ddpom`

Property	Description	Sample Data
	The login entered must be authorized for code download in the Ellucian Download Center. The credentials will be validated when you attempt to save the page through the connection to the Ellucian Solution Manager Release Services at the URL specified in the Download Root URL field.	
Password	Enter the password to the Ellucian Documentation & Download Center.	*****
Send on Downloads	Select or clear the check box under Diagnostic Info to indicate whether or not to upload diagnostic configuration information from Ellucian Solution Manager to Ellucian when checking for available releases.	

2. Click **Send Now** to send environment information to Ellucian.

3. Click **View Info** to view the environment information that was sent.

4. Select **Save** to validate your Download Center login credentials and save the data entered on the page. You will not be allowed to save the page with invalid Download Center login credentials.

5. Select **Environments**, to display the institution name at the top of the **Environments** page.

Manage users

Define and manage users who have access Ellucian Solution Manager. Credentials must be authorized to access the Ellucian Documentation & Download Center.

Procedure

1. In the admin console, click **Users**.

2. Click **Add** to add a new user. Otherwise, click in the row of an existing user.

3. Update the user management information.

Table 2: User fields

Property	Description	Sample Data
Username	Add a name for the user you are defining in Solution Manager.	admin
New Password	Enter a password for the user.	*****
Confirm New Password	Confirm the password for the user.	*****

Property	Description	Sample Data
User Role	Select a check box to specify a role for the user: Admin, User, or Scripts. **Note:** The User role is not fully implemented. When logging in, you need the Admin role. The Script role is only for scripting users.	`Admin`

4. Select **Add** or **Update**.

Manage Banner Environments with Solution Manager

Configure the Solution Manager admin console and Banner environments.

Use the available worksheets to record configuration information needed to complete forms in Solution Manager. Access the developer worksheets found in the *Ellucian Solution Manager Installation and Configuration Guide*.

Tip: To enter paths for Windows environments on machine, application, and app server forms, make sure to specify Windows paths (with backslashes). To enter paths for Unix / Linux environments, enter Unix paths (including forward slashes).

Note: Windows users must configure a Windows environment setup batch script with the name `WinEnvSetup.bat` on the Jobsub machine. Do not change the name of the script.

1. Complete the fields in the template script provided.
2. Create an Upgrades folder under $BANNER_HOME if one does not exist already.
3. Place the file in the Upgrades folder in the Banner home directory. The batch script will be run automatically by Solution Manager during an upgrade, when needed. For the template batch script, see Sample Windows environment setup batch script on page 64.

Topic	Comments
Define an existing Banner environment in Solution Manager on page 11	Define the characteristics of your Banner environment to Solution Manager, including the global environment settings, environment credentials, login sequence, machines, and applications hosted on those machines.
Configure Banner environment servers on page 26	To manage your Banner environment using Ellucian Solution Manager, define characteristics of your environment in the Solution Manager Admin Console. This includes global environment settings, machines, applications hosted on the machines, and may include environment credentials and login sequences, depending on what you plan to accomplish.
Automatically install Banner upgrades on page 29	Use Ellucian Solution Manager to install Banner upgrade releases into managed Banner environments.
Deployment Jobs on page 52	Banner releases can contain one or more associated deployments. A deployment job is created automatically when the release is included on an upgrade job that has been started. Solution Manager supports Banner 9 application, Banner 9 online help, Banner 8 online help, and Banner Pages deployments.
Sample Windows environment setup batch script on page 64	Use this as your Windows environment setup batch script template WinEnvSetup.bat. (You must not change the name of the script.)

Define an existing Banner environment in Solution Manager

Define the characteristics of the Banner environment to Solution Manager, including the global environment settings, environment credentials, login sequence, machines, and applications hosted on those machines.

Network communication between machines

Consider the network access requirements for Ellucian Solution Manager for running upgrades and deployments.

On the admin server, open the following ports for every environment machine:

Port	Protocol	Reason
8080	tcp	Jenkins
8081	tcp	Admin Console
8082[1]	tcp	JNLP for Jenkins

Add an existing environment to Ellucian Solution Manager

Connect Solution Manager to an existing Banner environment.

About this task

View installed products, access release documentation, and enable automated upgrade and deployment features of Solution Manager for the environment.

Procedure

1. Select **Environments**, then click **Add**.
2. Enter an environment name and description.
3. Select **Existing** to define an existing environment to Solution Manager.

Table 3: Environment configuration settings

Field	Description	Sample Data
Environment Name	Specify a name for the existing environment in Ellucian Solution Manager.	M013036

---

[1] Port 8082 is recommended. Go to Jenkins. Choose **Manage Jenkins** > **Configure Global Security** > **TCP port for JNLP slave agents** to set a different JNLP communication port.

Field	Description	Sample Data
Description	Enter an environment description in Ellucian Solution Manager.	`Banner environment MO13036`
Environment Type	Define an existing environment.	`Existing`

4. Click **Add**.

Define existing environment details

Add details of the existing Banner environments to Solution Manager to view the Banner products installed in that environment.

Procedure

1. On the main **Environments** page, click anywhere in the row of the newly created environment in the Environments table (excluding icons).
2. Click on the **Env Settings** tab to display the **Environment Configuration Information** page.
3. Enter basic configuration information about the existing environment.

Table 4: Add existing environment fields

Field	Description	Sample Data
Environment Name	Specify a name for the existing environment in Ellucian Solution Manager.	M013036
Description	Enter an environment description in Ellucian Solution Manager.	`Banner environment MO13036`
Environment Type	Define an existing environment.	`Existing`

4. Complete the fields to define an existing environment to Ellucian Solution Manager.

Table 5: Existing environment detail fields

Property	Description	Sample Data
Description	Displays the information that was entered when adding the environment to the Ellucian Solution Manager configuration database. Change the description if necessary.	`Banner environment MO13036`
Environment Type	Displays the environment type.	`Existing`
DB SID	Enter the Oracle database SID for the environment.	`SMPL`
DB Version	Displays the database version.	`11.2.0.2.0`

Property	Description	Sample Data
Database Port	Displays `1521`, which is the default Oracle communications port. **Note:** If the Oracle database for the environment does not use port 1521 for Oracle database communications, enter the appropriate port number.	`1521`
Is Production	Select the check box if this is your production environment. Otherwise, clear the check box.	*Not selected*
Banner Code Tree Path	Enter the Banner code tree path on the Jobsub machine (also referred to as the Banner home directory) for the environment.	`/u01/app/sghe/ banner/SMPL`
Upgrade Agent Name	Enter the upgrade agent name defined during installation and configuration.	`M019036_ BMUI_AGENT`
Upgrade Debug Level	Select the appropriate upgrade debug level, which defaults to Debug.	
Agent Status	Displays the online status of the agent.	*Idle*
Banner XE Shared Config Dir	This value should contain the text `shared_configuration`. There is no need to change the default.	`shared_ configuration`
Banner Wait For (secs)		`3600`
Banner Wait For Forms (secs)		`7200`
Wait For Display		*Cleared*
Upgrade Debug Level	Select a debug level, such as Trace, Debug, Info, Warn, Error, or Fatal.	`Debug`
Admin Server - Private Network		
Subnet	For use when adding a new environment for provisioning: Enter the IP subnet for the network that connects the admin server to the application in the existing Banner environment containing the Banner code tree (either the database application or the Jobsub application for the environment).	
Network IP	For all functions: Enter the IP address of the admin server on the network that connects the admin server to the existing Banner environment.	`192.168.100.101`
Gateway IP	For use when adding a new environment for provisioning: Enter the domain name of the	

Property	Description	Sample Data
	network that contains the appservers in the existing Banner environment.	
Environment Application Servers - Public Network		
Domain	Enter the domain used to access the application servers in the Banner environment.	`ellucian.com`
Subnet	For use when adding a new environment for provisioning: Enter the IP subnet used to connect to the application servers in the Banner environment you are provisioning.	
Gateway IP	For use when adding a new environment for provisioning: Enter the gateway IP address of the network that contains the application servers in the Banner environment you are provisioning.	
Environment Status	Displays the environment status.	`Ready`
Environment Configuration		
Identity Services URL	For Banner Pages deployments on page 58: Enter the URL of the user authentication service used with the Banner Pages deployment, such as Ellucian Identity Services (EIS) or Central Authentication Service (CAS). For additional information see the *Installation Guide* for a Banner Pages release, such as the Human Resources 9.0 release or Banner Admin Pages 9.2 release.	`https:// m03420.ellucian.com:8443/ cas`
Application Navigator URL	For Banner Pages deployments on page 58: Enter the base URL for accessing the Application Navigator instance used to access the Banner Pages deployment. For additional information see the *Installation Guide* for a Banner Pages release, such as the Human Resources 9.0 or Banner Admin pages 9.2 release.	`https:// m034197.ellucian.com:8888`
Reports Server URL	For Banner Pages deployments on page 58: Enter the URL for the reports server. For additional information, see the "Jasper Server Installation and Configuration for Banner Finance	`https://034185.ellucian.com jasperserver- pro`

Property	Description	Sample Data
	Reports" section of the *Banner Admin Pages 9.2 Installation Guide*.	

5. Click **Save**.

Manage machines

For each physical or virtual machine that resides in the Banner environment, create a definition for the machine in Solution Manager. Enter either private or public network information for a machine.

To define public and private properties for all *logical* servers, define a machine and assign it to various applications. Note that a VM is a physical machine with its own IP address and host name.

Note: The configuration pages for the database and Jobsub machines only prompt for network configuration information for the private admin network because Solution Manager does not require the IP addresses of those machines, if any, on the external institution network.

Add a machine

Add and configure the properties of an environment machine.

Before you begin

If you are entering configuration information for an existing Banner environment where the Banner code tree is the same machine as the database, Solution Manager requires that the machine be defined as two separate machines with unique hostnames. You may need to set up an alias hostname for the machine for that purpose. Configure the DB machine role to reference the machine using one hostname, and the Jobsub machine role to reference the machine using the other hostname.

Procedure

1. Select **Machines**, then click **Add** to add a new machine

2. Enter an Admin Host name.

3. Select the type of machine and click **Add** to return to the **Machines** page.

   Note: It is possible to change the properties associated with a machine later, but the same cannot be done for Admin Host Name or Role. If you add a machine with an incorrect Admin Host Name or Role, you must remove the machine by selecting the machine and clicking on **Remove Machine**, then re-adding the machine with the correct Admin Host Name and Role.

Table 6: Add machine fields

Property	Description	Sample Data
Admin (Private) Host Name	Enter the host name of the machine. **Note:** Although the host name for the machine is labeled Admin (Private) Host Name, a private network connecting Solution Manager and the environment is not required for existing environments. When adding any machine for an existing environment you should enter the hostname and IP address that Solution Manager needs to use to connect to the machine as the Admin (Private) Host Name and IP address.	`m019036-jobsub`
Role	Select a machine role such as DB, App or Jobsub. DB: the database machine Jobsub: the machine with the Banner code tree (typically also runs Banner Job Submission) App: any application server machine	*Jobsub*

Configure machine properties

Configure the properties of an existing environment.

Before you begin

If you are entering configuration information for an existing Banner environment where the Banner code tree is on the same machine as the database, Solution Manager requires that machine to be defined as two separate machines with unique hostnames. You may need to set up an alias hostname for the machine for that purpose. Configure the DB machine role to reference the machine using one hostname, and the Jobsub machine role to reference the machine using the other hostname

Procedure

1. Click in a row from the **Machines** tab to configure an existing machine.
2. Provide configuration information for the machine.

Table 7: Configure machine fields

Property	Description	Sample Data
Machine Role	Displays the role of the machine.	
Jobsub Network Type	This field is not used for existing environments.	
Machine Status	Set the machine status: • Ready: Use this status for any machine in the existing environment which already has Banner software installed and operating. • Unprovisionedor OSInstalled: Should only be specified if you are adding a machine for the purpose of provisioning a new application.	*Ready*
Machine OS	Select an operating system from the drop-down list. Unix should be used if the machine is running Linux or any Unix variant.	Unix
Admin (Private) Network Host Name	The machine host name.	m019036-jobsub
IP	The IP address for the machine on the network that the Admin Server will use to communicate with the machine unless you are configuring a machine for provisioning a new application into the existing environment. In that case, if you want to provision the application onto a machine which already has the operating system installed, you should set the Machine Status to OSInstalled and enter the root password here. Solution Manager will use the root password you specify to log onto the machine through SSH to configure the machine and install a Jenkins agent for provisioning the new application onto the machine..	149.24.19.36
Root Password	This field is not used for existing environments unless you are configuring a machine for provisioning a new application into the existing environment. In that case, if you want to provision the application onto a machine which already has the operating system installed, you should set the Machine Status to OSInstalled and enter the root password here. Solution Manager will use the root password you specify to log onto the machine via SSH to configure the machine and install a Jenkins agent for	

Property	Description	Sample Data
	provisioning the new application onto the machine.	
Deployment Agent Name	Enter the name of the deployment agent you defined in Jenkins for the machine, if applicable. See Verify deployment agents on page 52.	`M019036_DEPLOY_AGENT`
Agent Status	Displays the deployment agent status if known.	*Online: Idle*
Bash Shell Path	Specify the path to the Bash shell. on the machine, if different from the value /bin/sh.	`/bin/sh`
Public Network (for machine type App only)		
Host Name	Specify the host name for the machine on the public network used by users to access the application server machine. If the public network is the same as the admin network used by Solution Manager to communicate with the machine, enter the same host name you entered for Admin (Private) Network Host Name. Note that this hostname should not include the domain name you specified for the Public Network on the Env Settings configuration page. For example, if the fully qualified hostname of the machine is appserver1.myinstitution.edu, and you entered myinstitution.edu as the Public Network Domain on the Env Settings configuration page, enter only `appserver1` here. When Solution Manager uses the Public Network Host Name to configure software that needs to access the machine via the public network it will combine the Host Name you specify here and the Domain you specified on the Env Settings configuration page.	`appserver1`
IP	Enter the IP address of the machine on the public network. If the public network is the same as the admin network, enter the same IP address you entered for the Admin (Private) Network IP field.	`149.26.17.101`

3. Enter the required configuration information for the machine, then click **Save** and return to the **Machines** page.

4. **Optional:** Remove the machine configuration information from Solution Manager by clicking **Remove Machine**.

5. Select the **Home** icon to return to the **Environments** page.

Manage applications

It is possible to define multiple applications per machine. Each application can have either private only or both private and public network information associated with it, depending on the application type.

Unless you are specifically directed by the documentation associated with the provisioning template you selected for the environment to be provisioned, it is not necessary to enter any additional application configuration information for the environment, since that information is normally supplied by the provisioning template.

Add a new application

Add a new application to an environment.

About this task

To view installed Banner products and available releases in an environment, it is necessary to configure the DB (database) application for an environment.

To use Solution Manager to install Banner upgrades into the environment, you must also configure a Jobsub application, at least one INB application, and an SSB application.

To use Solution Manager for automated deployments, you may need to define additional applications. See Deployment jobs for more information..

Procedure

1. Select **Environments**. Click on an environment and select **Applications**.

2. Click **Add** to add an application.

3. Complete the new application fields as follows:

Table 8: Add new application fields

Field	Description	Sample Data
Application Name	Specify a name for the application.	`database`
Application type	Select an application type. For example, DB (database), Jobsub (Banner code tree/job submission), IDM (Identity Management), Workflow, ODS EDW, INB, SSB, BXE (any Banner XE application), or Luminis.	`INB`

4. Click **Add**.

5. Enter configuration information for that application by clicking in that application's row in the Applications table. Access the **Application Configuration Information** page.

6. Complete the application fields.

Configure application properties

Define properties for each application. A machine must exist in the system before you can configure applications for that machine.

Procedure

1. Click **Applications**.

   When provisioning an environment, machines will be associated to their respective applications automatically.

   Note: After the machine properties are defined, the system automatically populates the corresponding machine application properties. Depending on the template, additional properties may appear for each application or machine based on its type or role. If additional properties appear, populate them before continuing. See Verify upgrade-specific configuration data for managed environments on page 34 for more information.

2. Click in a row of the **Applications** table to configure an existing application.

3. Provide configuration information for the application server.

   Review application-specific configuration information: Verify upgrade-related application configuration information on page 34.

   Note: Windows deployments require the use of an IP address.

   Each example below contains an example Linux path and an example Windows path.

Table 9: Configure application fields

Property	Description	Linux Sample Data	Windows Sample Data
Application Type	Displays the application type	`jobsub`	
Machine / App Server		`Machine m013036-jobsub-149.24.19.36`	

Table 10: Managed Server Deployment

Property	Description	Linux Sample Data	Windows Sample Data
Local deployment root (Windows only)	(Optional) Specify a local path for Solution		

Property	Description	Linux Sample Data	Windows Sample Data
	Manager to copy large files		
Banner 8 Online Help Staging Path	Enter the path to the staging area for Banner 8 online help	`/u50/test/tmp/deployments/ban8help`	`\\IP-ADDRESS\PATH\ban8help`
Banner 9 Online Help Staging Path	Enter the path to the staging area for Banner 8 online help	`/u50/test/tmp/deployments/ban9help`	`\\IP-ADDRESS\PATH\ban9help`
Banner 9 War File Staging Path	Enter the path to the staging area for Banner 9 WAR file	`/u50/test/tmp/deployments/ban9war`	`\\IP-ADDRESS\PATH\ban9war`

4. Click **Save**.

5. Click **Go to Machine** and complete the fields as laid out in the Configure Machine Properties section of the *Installation and Configuration Guide*.

   The Private Admin Network Host Name and IP address should reflect the address that the admin server can use to communicate with the configured environment server.

6. **Optional:** Add a new managed app server to an environment application list by navigating to the **App Servers** tab.

7. **Optional:** Remove the application configuration information from Solution Manager by clicking **Remove Application**.

8. Click **Save** and return to the **Applications** page.

9. Review the INB application field information.

Table 11: INB application fields

Field	Description	Sample Data
INB Host Forms Path	The path on the INB machine to the directory where the form executables ".fmx" and associated file types are stored	`/u01/app/sghe/banapps/SMPL/inb/forms/fmx`
INB Host Reports Path	The path on the INB machine to the directory where the report executables ".rep" and associated file types are stored	`/u01/app/sghe/banapps/SMPL/inb/reports/rep`
INB Host User	The user login that should be used by the automated upgrade installation process when logging on to the INB	`oracle`

Field	Description	Sample Data
	machine to update the form or report executables	
INB Host Pwd	The password for the login that should be used by the automated upgrade installation process when logging on to the INB machine to update the form or report executables	* * * * * * *

10. Review the INB compiler properties. These fields should only be entered if the INB application that you are configuring is one that will be used to compile INB forms during upgrade processing.

Table 12: INB compiler properties

Property	Description	Sample Data
Host SID Name	This is the Oracle SID used on the INB forms compiler machine to set up the proper environment for the forms and reports compilations. (For more information about how this field is used, see the description of the Compile Login Sequence below.)	SMPL
Host TNSADMIN Path	The path to the Oracle admin directory in the Oracle instance on the INB forms compiler machine that is set up for forms and reports compilation.	/u01/app/oracle/ middleware/as_1/ network/admin
Host FMB Path	The path on the INB forms compiler machine to the directory where the ".fmb" files (and associated file types) are stored for forms compilation.	/home/oracle/ compiledir/formcompile
Host RDF path	The path on the INB forms compiler machine to the directory where the ".rdf" files (and associated file types) are stored for reports compilation.	/home/oracle/ compiledir/ reportcompile
Banner Links	The path on the Banner code tree server (the Jobsub	

Property	Description	Sample Data
	machine for the environment) to the "links" directory in the Banner code tree. **Warning!** On Windows, it is necessary to create this folder / path manually. The automated upgrade installation process uses this directory to access form and report source files to transfer them to the forms compiler machine and performs the form and report compilations.	
Compile Host Oracle Home Path	The path to Oracle home directory for the Oracle instance on the INB forms compiler application that is set up for forms and reports compilation.	`/u01/app/oracle/` `middleware/as_1`
Compile Host User	The user login that should be used by the automated upgrade installation process to log on to the INB forms compiler application to do forms and reports compilation.	`oracle`
Compile Host Pwd	The password for the login that should be used by the automated upgrade installation process to log on to the INB forms compiler application to do forms and reports compilation.	`*******`

Compile Login Sequence	A series of instructions for the automated upgrade installation process to use when logging on to the INB forms compiler for forms and reports compilation.
	
	The login instructions must be set up to recognize any prompts that occur during the login sequence and to provide appropriate responses to those prompts. The login
		`Wait $`
		`RC source/usr/local/`
		`bin/oraenv`
		`Wait ORACLE SID`
		` =[SMPL] ?`
		`RC as_1`
		`Wait $`
		`ADDPROP`
		`banner.form.compile.twotask.enable`
		`ADDPROP`
		`banner.form.compile.twotask=`

Property	Description	Sample Data
	sequence must also set the Oracle environment for doing the forms and reports compilation. See INB Applications: explanation of the default compile login sequence for more information.	

11. Review the SSB application field information.

Table 13: SSB application fields

Field	Description	Sample data
Local Deployment Root	(Optional) Specify a local path for Solution Manager to copy large files.	
Banner 8 Online Help Staging Path	The location where Banner 8 online help files are made available for deployment.	`/banapp/staging/ban8help`
Banner 9 Online Help Staging Path	The location where Banner 9 online help files are made available for deployment.	`/banapp/staging/ban9help`

Table 14: SSB Application Properties

Field	Description	Sample data
User ID	The login that should be used by BMUI to connect to the SSB application for copying items to the web server's document root.	`oracle`
Password	The password that should be used by BMUI to connect to the SSB application for copying items to the web server's document root.	`*******`
WebServer Doc Root Path	The path to the folder on the SSB application server where the upgrade process will place images, CSS and JS files.	`/banapp/ssb`
Banner SSB Cascade EAR File Staging Path	The path to the folder on the SSB application server	`/banapp/ssb/java`

Field	Description	Sample data
	where EAR files needing SSB deployment will be placed by BMUI.	

INB Applications: explanation of the default compile login sequence

Review the following examples from the default compile login sequence.

Table 15: Default compile login sequence commands

Command	Description
Wait ORACLE SID = [oracle] ?	This command waits for a prompt character string `ORACLE SID = [oracle] ?`. This is coded this way because in the default sequence, the previous command executes the environment setup script which issues this prompt.
RC {banner.form.compile.host.sid.name}	This command enters the value that you supplied for the Host SID Name field for the INB forms compiler application in response to the `ORACLE SID = [oracle] ?` prompt.
Wait $	This command waits for a prompt ending in the character `$` following entry of the Host SID Name by the previous command. This is waiting for the standard operating system prompt before the forms compilation processor continues.

Enter environment credentials

Enable Solution Manager to connect to your Banner environment, by entering credentials information for the environment.

Procedure

1. From the Ellucian Solution Manager home page, click **Environments**.
2. Click anywhere in the row for the environment in the Environments table to edit that environment.
3. Click on the **Credentials** tab.
4. Enter or edit the information in the fields on the **Credentials** page.

Banner schema passwords file path

The Banner schema passwords file path is used to provide an alternative source for Banner schema passwords.

The Banner upgrade process (BMUI) will use this path to locate a file containing the schema passwords on the Jobsub machine. A full file path and filename should be entered in the field. The file should specify all required schema passwords in the same format as a Banner upgrade "login.sql" file.

```
/local/file/path/filename.sql
```

Configure Banner environment servers

Manage Banner environments using Ellucian Solution Manager, define characteristics of your environment in the Solution Manager admin console. This includes global environment settings, machines, applications hosted on the machines, and may include environment credentials and login sequences.

Access administrative links

Complete the fields to define an existing environment to Ellucian Solution Manager. For each Environment, access to administrative URLs is provided on the **Links** tab.

Table 16: Existing environment detail fields

Field	Description	Sample Data
Environment Name	Specify a name for the existing environment in Ellucian Solution Manager.	M013036
Description	Enter an environment description in Ellucian Solution Manager.	Banner environment MO13036
Environment Type	Define an existing environment.	Existing

Verify wget

To use the upgrade feature, wget 1.16.1 or later must be installed on the Banner environment Jobsub machine and any app servers where Banner 8 OH, Banner 9 OH, or Banner 9.x apps will be deployed.

Add wget to the system path on your machine so that it can be found by Solution Manager. For example, `/etc/profile` or `/etc/profile.d` in Linux. Review Enter system settings on page 7 for any additional requirements before you begin.

Note: Verify that Jenkins is installed.

Create script execution user for managed environment

Ellucian Solution Manager requires that a special script execution user be set up to allow managed environments to execute automated installation jobs.

About this task

Note: It is only necessary to define one scripting user in the Solution Manager admin console. The credentials for this scripting user can then be used on the JobSub machine and all application server machines and across environments.

Ellucian Solution Manager automatically creates the script execution user for environments provisioned by Ellucian Solution Manager

Perform these steps to create the script execution user and to set up credentials for the user in your existing managed Banner environment.

Procedure

1. Click on the **Users** tab to display the **User Management** page.
2. Click **Add** to add a new user. The **User** page displays.
3. Complete the script execution user information:

   Table 17: Script execution user fields

Field	Description	Sample Data
Username	The username for the script execution user for your environment.	TEST1_SCRIPTING
New Password	The password of your choice for the new script execution user.	*****
Confirm New Password	Confirms the password of your choice for the new script execution user.	*****
User Role	Select the Scripts check box for the user role.	Scripts

4. Click **Add** to add the new script execution user.

Set up script execution user credentials on the Jobsub machine

Set up the credentials for the new script execution user in the managed Banner environment.

Procedure

1. Log onto the Jobsub machine in your environment as the user that is used to run the Banner upgrade installation script. This is the same user specified in the *Install User* field when setting up credentials for the environment.

2. Create a file named `.wgetrc`, containing the following lines in the home directory of the *Install User* (substituting the scripting user name and password set up in place of *<envt-scripting-username>* and *<envt-scripting-user-pwd>*):

   ```
   http_user =
   http_password = <scripting-user-pwd>
   auth-no-challenge = on
   ```

3. Save the file.

4. Change the permissions on the file so that only the *Install User* can view the contents of the file by entering the following command:

   ```
   $ chmod 600 .wgetrc
   ```

Set up script execution user credentials on the Jobsub machine (Windows)

Set up the credentials for the new script execution user in the Windows managed Banner environment.

Procedure

1. Log onto the Jobsub machine in your environment as the user that is used to run the Banner upgrades.

   This is the same user you will specify as the Install User when setting up credentials for the environment.

2. Locate the home directory for this user, then create a subdirectory named `esm` if it does not already exist. For instance, if the user is "Banner", the directory would be similar to `c:\Users\Banner\esm`.

3. In the `esm` directory, create a file titled `esmGetFromWeb.xml`, containing the following lines (substituting the scripting user name and password you set up):

   ```
   <Settings>
     <Creds>
       <Username><scripting-username></Username>
       <Password><scripting-user-pwd></Password>
     </Creds>
   </Settings>
   ```

4. Save the file.

Automatically install Banner upgrades

Use Ellucian Solution Manager to install Banner upgrade releases into managed Banner environments.

A managed Banner environment constitutes either an environment provisioned with Banner, as described in Provision a new Banner environment on page 67, or an existing Banner environment for which configuration information has been entered into the Ellucian Solution Manager configuration database. Managed Banner environments are described further in Add an existing environment to Ellucian Solution Manager on page 11.

Set up staging directories

Many Banner product releases have associated deployments (packaged web applications like Banner Online Help or Banner XE applications) that must be configured for use after a release upgrade is installed.

About this task

Solution Manager automatically handles staging of this content during an upgrade, and after the upgrade, deploys the content to web application servers.

Procedure

1. Ensure that the staging directories have been created on the Jobsub machine.

   The Install User must have full permissions to the staging directories.

   Ellucian recommends creating and maintaining separate staging directories for each environment.

   The staging directories must be identified in the Solution Manager admin console on the Jobsub's application detail page. This is where Solution Manager places deployment artifacts during the upgrade process.

2. Ensure that the staging paths are entered on the application detail pages for the targeted application servers.

   These should indicate a path on the targeted application server that points to the Jobsub's staging area using a share or a mounted directory.

3. Create unique staging directories for each of the deployment types (i.e., Banner 8 Online Help, Banner 9 Online Help, and Banner 9 XE deployments).

4. Enter the paths on each appropriate application defined in the Solution Manager admin console.

   For additional information regarding configuring application paths, see Configure application properties on page 20. Information on application deployment can be found in Deployment Jobs on page 52.

Set up the known_hosts file

The Solution Manager Banner upgrade process (BMUI) uses SSH and SFTP connections between Banner environment servers during the upgrade process.

About this task

For all expected communication paths between Banner environment servers, Solution Manager automatically populates the known_hosts file. The BMUI process will search for the "`Are you sure you want to continue connecting?`" prompt and will automatically send a response of `yes`. In some cases the connection may fail because of an invalid entry for the target server in the known_hosts file so that BMUI does not receive the expected message, which will cause the upgrade job to fail. If that happens, use the following procedure to fix the problem.

Procedure

Open a secure session manually (using SSH) from the admin server to the environment server where the connection failed as the system user that was being used by BMUI when the connection failed. Then manually attempt to connect via SSH to the target server for which the BMUI connection failed.

The table below shows the conditions that may occur when you attempt the SSH connection depending on what is contained in the `known_hosts` file.

Relationship is not defined	A prompt will appear (see example 1 below). Respond `yes` to continue. The `known_hosts` will automatically update. The next secure session will not include a prompt.
Relationship is defined and is correct	The secure session will be opened if the relationship is already defined and correct for the current user-id to the target host. No additional prompting will occur.
Relationship is defined and is incorrect	You will receive a message indicating that the connection cannot be completed because host key verification failed (see example 2 below). This can happen if the operating system was re-installed on the target server, or if you are attempting to connect using a hostname, the IP address has changed since the last connection was made to the targeted server from the current server. In this case, you must edit the known_hosts file and remove any lines in that file (stored in the SSH directory of the login ID you used to log in to the system to attempt the SSH connection) that match the hostname or IP address of the target machine. Try the

	connection again to ensure that the prompt appears as illustrated in the first row above.

Example 1

```
 [root@somehost ~]# ssh 192.168.100.1


The authenticity of host '192.168.100.1
(191.168.100.1)' can't be established. RSA key
fingerprint is 45:1c:49:d2:27:a4:c8:e7:a5:1c:05:cf:2f:8d:41:5a.
Are you sure you want to continue connecting (yes/no)?
```

Example 2

```
[someuser@somehost ~]$ ssh banner@192.168.100.113
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ @ WARNING: REMOTE HOST
IDENTIFICATION HAS CHANGED!
@ @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
Someone could be eavesdropping on you right now (man-in-the-middle
 attack)!
It is also possible that the RSA host key has just been
changed. The fingerprint for the RSA key sent by the remote host
 is 45:d8:51:e3:e6:31:f2:a5:9e:ea:63:ac:31:f4:9b:5b. Please contact
 your
system administrator. Add correct host key in /home/someuser/.ssh/
known_hosts
to get rid of this message. Offending key in /home/someuser/.ssh/
known_hosts:2 RSA host key for 192.168.100.113 has changed and you
 have requested strict checking.
Host key verification failed.
```

Download new releases

Download Banner and other upgrade releases, associated documentation, and installation metadata from the Ellucian Solution Manager Release Services.

To download available Banner upgrade releases, provide a login and password that is a valid login for the Ellucian Documentation & Download Center. Specify the login, by using the **System Settings** tab on the main Solution Manager page. See the "Install Ellucian Solution Manager" section of the *Ellucian Solution Manager Installation and Configuration Guide*.

To access related documentation, go to the **Ellucian Hub** > **Ellucian Support Center**. Select **Ellucian Solution Manager** from the Documentation Libraries drop-down list.

View and download available releases in Solution Manager

Use Ellucian Solution Manager to automatically download Banner and other upgrade releases, associated documentation, and installation metadata from the Ellucian Solution Manager Release Services hosted on ellucian.com.

Before you begin

Note that a BMUI upgrade occurs each time "Get new releases" is selected. This is done to ensure that the latest version is available.

Procedure

1. On the Solution Manager, **Environments** page, click **Get New Releases**.

   A download progress page that monitors the progress of checking for and downloading available releases will appear. The download log summary may list releases that Solution Manager Release Services reports as "available" but could not be downloaded.

2. Control the refresh rate of the screen by navigating to the **Auto Refresh (secs)** field, then adjusting the refresh interval. Click **Refresh**.

   When the download is complete, a `"Download Complete"` message will appear in the **Monitor** page.

3. Navigate to the **Environments** page, then click on the Environment you wish to update.

4. Display the available upgrades by clicking on **Products**.

View installed products and available releases

Use Ellucian Solution Manager to view the products installed in the Banner environment, and releases available for installation.

Releases may be available for either an environment provisioned by Ellucian Solution Manager as described in Provision Banner Environments on page 67, or for an existing environment defined to Ellucian Solution Manager as described in Add an existing environment to Ellucian Solution Manager on page 11.

Access currently installed products and available releases

The **Products** page provides access to the list of installed products and product versions.

Procedure

1. Click on a row in the Environments table, then select the **Products** tab on the **Environment Information** page to view currently installed product versions.

2. View the product's installation history in the corresponding **Current Installed Release** column.

3. Click **OK** to return to the **Products** page.

4. On the **Products** page, select the **Latest Available Release** column to view installation status information:

Field	Description	Sample Data
Name	Lists the Banner products that are installed in the environment or that are licensed but not installed.	`Banner Advancement`
Type	Displays the type of Banner product.	`BannerERP`
Application	Displays the application type.	`db`
Current Installed Release	Shows the latest release for the product installed in the environment	`8.6`
Latest Available Release	Shows the latest available upgrade release that has been downloaded by Ellucian Solution Manager but has not yet been installed into the environment.	`8.7.1`
Selected Target Release	Shows any available releases that have been selected for installation but have not yet been installed.	`8.7.1`

View Ellucian Solution Manager supported upgrades

Solution Manager supports the automated installation of most standard Banner product upgrades released June 1, 2012 and later, and all Banner XE (9.x) upgrades.

*   For the latest information on upgrades that are supported for automated installation by Solution Manager, see the *Banner Upgrades Status* document at **Ellucian Client Support** > **Ellucian Hub** > **Ellucian Support Center**. Select **Ellucian Solution Manager** from the Documentation Libraries drop-down list.

*   Solution Manager supports Banner upgrades released on or after June 1, 2012 and Banner patches released on or after September 1, 2015.

*   When determining if prerequisites have been satisfied during the upgrade process, Solution Manager identifies both patches and upgrades installed either manually or automatically.

*   Solution Manager does not support automated installation of any Banner upgrades into Banner environments that have been set up for Multi-Entity Processing (MEP). Note that since Banner HR 9.0 does not have database changes, Solution Manager can be used to install this release into a MEP environment.

Note: Solution Manager supports the automated deployment of help but requires set up in advance of installing upgrades containing the help for the newly deployed help to be correct. See

Verify upgrade tasks

The following tasks must be complete in order to upgrade Banner environments.

Verify that the items listed have been added or configured:

- Upgrade-specific configuration data for managed environments
- Upgrade-related application configuration
- Upgrade-specific credentials

Verify upgrade-specific configuration data for managed environments

Verify upgrade-specific configuration data for your managed environments.

Environments provisioned by Ellucian Solution Manager are managed Banner environments. It is not necessary to enter upgrade-specific configuration data for provisioned environments unless changes have been made to the configuration information from what was entered during the provisioning of the environment. If configuration information is changed, then you must also edit the configuration information for the existing Banner environments that you have added to Ellucian Solution Manager.

Verify upgrade-related application configuration information

Verify that the upgrade-related application configuration steps are complete.

Procedure

1. Click on the **Applications** tab to ensure that a database application have been defined, a Job Sub application, and at least one INB application. If you have not configured these minimally required applications, enter the information for those applications now. Complete the upgrade-related application configuration fields:

   Select target releases to install into your managed Banner environment and initiate an automated upgrade installation job. Solution Manager constructs a script that is used to automate the execution of the selected upgrades and any required prerequisites.

Field	Description	Sample Data
Database Application	The Database application is the application that is running the Oracle database for the environment.	`m013036-db`
Job Sub Application	The Job Sub application is the application on which the Banner code tree (or Banner home) directory is located. The Banner home directory for your environment may not be running on a separate physical server. It may be running on the same physical server as the database for the environment. Enter the configuration information that Solution Manager	`m013036-jobsub`

Field	Description	Sample Data
	requires to connect to the server on which the Banner code tree (home directory) is located.	
INB Application(s)	Solution Manager has the ability to compile forms and reports for the environment on a designated INB forms compiler server and to copy the compiled executable files to additional INB applications that are used to execute the forms and reports to provide access to the environment to users. • You must configure *at least one* INB application. • If you only configure one INB application, it must also be configured as the INB compiler application. • If you configure multiple INB applications, you *must* designate one of them as the INB forms compiler application by clicking on the radio button in the Compile column of the Applications table.	`m013036-inb`
SSB Application	The SSB deployment requires an SSB application.	`m013036-ssb`

2. To enter or edit configuration information for an application, click anywhere on the row for the application in the Applications table to access the **Application Configuration** page.

Verify app server deployment

Verify App Server Deployment properties.

If it is necessary to perform any Banner 9 application or Banner 8 or 9 online help deployments after installing an upgrade, the App Server Deployment properties must be defined. See Define app servers on page 55 for more information.

Verify INB Application Properties / INB Compiler Application Properties

For each INB server, verify that additional upgrade-specific configuration information is specified in the INB Application Properties section of the **Application Configuration** page.

Procedure

1. Enter or edit the information for INB Application Properties for each INB application.

Table 18: INB application properties

Field	Description	Sample Data
INB Host Forms Path	The path on the INB machine to the directory where the form executables	`/u01/app/sghe/banapps/SMPL/inb/forms/fmx`

Field	Description	Sample Data
	".fmx" and associated file types are stored	
INB Host Reports Path	The path on the INB machine to the directory where the report executables ".rep" and associated file types are stored	`/u01/app/sghe/banapps/SMPL/inb/reports/rep`
INB Host User	The user login that should be used by the automated upgrade installation process when logging on to the INB machine to update the form or report executables	`oracle`
INB Host Pwd	The password for the login that should be used by the automated upgrade installation process when logging on to the INB application to update the form or report executables	`*******`

2. Enter additional configuration information to allow the automated process to compile forms and reports to be installed. Enter or edit the INB Compiler Application Properties for the designated INB forms compiler application.

Do this if the INB application is the designated INB forms compiler application.

Table 19: INB compiler application properties

Property	Description	Sample Data
Host SID Name	The Oracle SID used on the INB forms compiler machine to set up the proper environment for the forms and reports compilations	`SMPL`
Host TNSADMIN Path	The path to the Oracle admin directory in the Oracle instance on the INB forms compiler machine set up for forms and reports compilation	`/u01/app/oracle/middleware/as_1/network/admin`
Host FMB Path	The path on the INB forms compiler machine to the directory where the ". fmb" files (and	`/home/oracle/compiledir/formcompile`

Property	Description	Sample Data
	associated file types) are stored for forms compilation	
Host RDF Path	The path on the INB forms compiler machine to the directory where the ".rdf" files (and associated file types) are stored for reports compilation	`/home/oracle/ compiledir/ reportcompile`
Banner Links	The path on the Banner code tree server (the Jobsub machine) for the environment to the "links" directory in the Banner code tree. **Warning!** On Windows, you must create this folder / path manually. The automated upgrade installation process uses this directory to access form and report source files to transfer them to the forms compiler machine. The upgrade process then performs the form and report compilations.	`/u01/app/sghe/ banner/SMPL/links`
Compile Host Oracle Home Path	The path to the Oracle home directory for the Oracle instance on the INB forms compiler machine that is set up for forms and reports compilation	`/u01/app/oracle/ middleware/as_1`
Compile Host User	The user login used by the automated upgrade installation process to log on to the INB forms compiler machine to do forms and reports compilation	`oracle`
Compile Host Pwd	The password for the login used by the automated upgrade installation process to log on to the INB forms compiler machine to perform forms and reports compilation	`*******`

Compile Login Sequence	A series of instructions for the automated upgrade installation process to use when logging on to the INB forms compiler for forms and reports compilation.
	
	This login instruction sequence must be set up to recognize any prompts that occur during the login sequence and to provide appropriate responses to those prompts. The login sequence must also set the Oracle environment for doing the forms and reports compilation. Please see INB Applications: explanation of the default compile login sequence on page 25 for more information.
		`Wait $`
		`RC source /`
		`usr/local/bin/`
		`oraenv`
		`Wait ORACLE_SID`
		`= [SMPL] ?`
		`RC as_1`
		`Wait $`
		`ADDPROP`
		`banner.form.`
		`compile.twotask.enable=yes`
		`ADDPROP`
		`banner.form.`
		`compile.twotask=`

3. The forms compilation process run by the automated upgrade installation process uses "SSH" to log into the INB forms compiler from the Banner code tree (or "Jobsub") machine to run the forms and reports compilations. The Compile Login Sequence allows you to customize what happens when the forms compilation process logs into the forms compilation machine to properly set up the environment for running forms and reports compilation.

The Compile Login Sequence uses properties containing values derived from previously entered configuration information:

- {banner.form.compile.host.user.password}

  This property contains the value entered in the Compile Host Pwd field.

- {banner.form.compile.host.sid.name}

  This property contains the value entered in the Host SID Name field.

Note: The Compile Login Sequence commands are executed by the automated upgrade installation process immediately after issuing the "login *<login-ID>*" (where "*<login-ID>*" is the value entered in the Compile Host User field) and responding to the password prompt with the corresponding password. To edit the Compile Login Sequence, use the `Wait` and `RC` commands and the properties listed above to respond to any additional prompts that occur after logging into the INB forms compiler machine to set the environment for forms compilation.

Verify upgrade-related credentials information

After entering or editing the upgrade-specific application configuration information, verify that the upgrade-specific credentials information for the environment has been entered.

Procedure

1. From the **Ellucian Solution Manager** home page, click **Environments**.
2. Click anywhere in the row for the environment in the **Environments** table to edit that environment.
3. Click on the **Credentials** tab.
4. Enter or edit the information in the fields on the **Credentials** page.

Field	Description	Sample Data
Show passwords	The **Show Passwords** check box at the bottom right of the screen.	*Cleared*
	Select the check box to temporarily display the contents of password fields shown on the screen to verify that the passwords are set correctly. After you update the page or if you clear the check box, any password fields are obscured.	
Database	The passwords for Oracle system administration users for the Oracle database (needed by the	

Field	Description	Sample Data
	Banner upgrade installation process to execute SQL scripts)	
SYSTEM Password	The password for the SYSTEM user	******
SYS Password	The password for the SYS user	******
Banner Installer	The logins and associated passwords needed by the Banner upgrade installation process, in addition to the login instruction sequence used by the upgrade installation process to log on to the application with the Banner code tree to run the upgrades.	
Upgrade Owner User	The Oracle user that is set up to own the modification tables for upgrades (defaults to "upgrade1").	`upgrade1`
Upgrade Owner Pwd	The password for the upgrade owner user.	******
Install User	The login that the upgrade installation process should use to log into the application containing the Banner code tree to install the upgrades.	`banner` or `Administrator` for Windows
Install Pwd	The install user password	******
Install User Login Sequence	Edit the instructions for the installation process for processing the login of the install user on to the application containing the Banner code tree to install the upgrades. **Note:** This uses the same commands described for the Compile Login Sequence for the INB forms compiler application, but different properties from the configuration information that you have entered for the environment. The Install User Login Sequence available properties are: • {banner.target.user.password} = The value entered in the Install Pwd field. • {banner.target.sid} = The value entered in the DB SID field on the Env Settings tab.	```Wait $ RC source\ u02/jobsub\ scripts\ banenv_{banner.target.sid} Wait $ RC export TNS_ADMIN="<path to the tnsnames.ora file in the jobsub/ db machine>" Wait $```

Install upgrades into Banner environment

To install available Banner upgrade releases into a managed Banner environment, first select the releases to be installed.

Before you begin

Administrators must set up the Banner 8 help, Banner 9 help, and Banner 9 application staging areas before installing software. The Banner 8 and Banner 9 help must be seeded into the deployment areas. See Mount staging areas and seed help content on page 53 for more information.

Specify the path to the Bash shell on the Jobsub machine definition, such as `/bin/sh`. Version 3.2.25 or later is the required Bash for Solution Manager.

Procedure

1. Access Solution Manager and click anywhere in the row for the environment you want to update.

2. Select **Upgrade** to display the **Start Upgrade Job** page to enter any final configuration information needed for the upgrade installation. Begin the upgrade installation job.

3. Select the upgrades that you want to install into the environment from the **Products** page.

4. Select the **Products** tab to view installed and available releases in the environment.

Select upgrade releases to install into banner environment

Select an upgrade to install into the managed Banner environment.

About this task

The **Products** page displays a table containing all of the Banner products that you have installed in the managed Banner environment and licensed Banner products that have not yet been installed in the environment.

Procedure

1. Select the **Latest Available Release** column in the row for a product that has an available release on the **Products** page.

    Solution Manager displays all of the upgrade releases available for the product (that are not yet installed into the environment).

2. Select the Target Release to be loaded.

    *   It is not necessary to choose the release that is the next release after the latest version currently installed.

    *   If you choose a later release, Ellucian Solution Manager will automatically determine any prerequisites that are required to install your selected target release and will select and install those releases in addition to your selected target release.

Note: If a prerequisite release is not installed in the environment and is also not in the available releases, an error message will be displayed. It will not be possible to select the target release without the prerequisite.

For example, to install the Financial Aid 8.17 release, click on the button on the 8.17 row in the **Available Releases** table. Ellucian Solution Manager determines that to install the 8.17 upgrade, the 8.16 upgrade must be installed. Ellucian Solution Manager automatically selects the 8.16 upgrade and indicates that by highlighting the 8.16 release row in the **Available Releases** table.

3. Select **OK** to accept your selected target release. Otherwise, click **Clear Selection** to clear the selected target release. Either action returns you to the **Products** page.

   In some cases, a selected target release could have a prerequisite from another product that needs to be installed. In that case, Solution Manager displays the prerequisites from other products in a separate table below the **Available Releases** table.

Select Releases	Displays the upgrade releases that you selected from the **Products** page before selecting **Upgrade**.
Prerequisite Releases	Displays any uninstalled prerequisites for the selected releases that will be installed along with the selected releases.

   After selecting a target release for a product, it will appear in the Target Selected Release column of the **Products** table (in the row for the product that the release applies to).

4. Optionally, to remove a selected target release that shows up on the **Products** page, click on the release you want to remove in the Target Selected Release column of the **Products** table to display the **Available Releases Detail** page for that product. Otherwise, select **Clear Selection** to clear the selected target release and return to the **Products** page.

Install releases with upgrade-specific properties

Some Upgrade Releases contain upgrade-specific properties that require additional action. Identify the type of release.

Procedure

1. Begin by selecting the upgrade release to be installed into the managed Banner environment.

2. Navigate to the **Selected Target Release** column of the **Products** table (in the row for the product that the release applies to). Click in the row to view the details.

   A selected target release may have a prerequisite from another product that needs to be installed as well.

   Solution Manager shows you the prerequisites from other products in a separate table below the **Available Releases** table.

3. Click on the icon featured in the **Upgrade Properties** column to view upgrade details.

4. Review the upgrade-specific instructions and enter any requested parameters, then select the check box for each step as indicated. If the check box is selected, the step has already been completed.

Note: All upgrade-specific properties must be entered and all upgrade-specific instructions must be acknowledged (by selecting the check boxes) before Solution Manager will allow you to start the upgrade process.

5. **Optional:** Click **Reset** to set all upgrade-specific properties to the values that were last saved in the database, rather than what has been entered so far on this form.

6. Click **Cancel** to close and return to the main form without saving.

7. Click **OK** when finished.

   For other application upgrades a template will be published for an application. When made available, the template and its contents will be available for download.

Start upgrade installation job

After selecting the desired target release for one or more products and the selected releases are ready for installation, it is possible to initiate automated installation of the selected releases and their uninstalled prerequisites.

Before you begin

Review the upgrade manuals for upgrades that have been selected to install and any prerequisite upgrades that were automatically selected for installation by Solution Manager. Ensure that the environment is ready for each upgrade to be installed. Sometimes, an upgrade manual contains instructions for performing steps manually, such as ensuring that certain data exists in the environment prior to installing the upgrade. Make certain that any required actions are performed in the environment prior to initiating the automated upgrade installation job.

About this task

During an upgrade, Solution Manager re-copies required library forms to the INB server with every upgrade. In addition to the forms delivered by the upgrade, Solution Manager copies all of these forms from the `$BANNER_LINKS` directory on the job sub server to the `fmb` directory on the INB server:

- toqolib.fmb
- goqrlib.fmb
- goqrpls.pll
- goqwflw.pll
- toqrpls.pll
- goqolib.fmb
- goqorep.pll
- eoqrpls.pll

If custom changes are made to any of these files, keep the necessary changes to the forms by ensuring that all customizations are made in the `$BANNER_LINKS` directory.

Procedure

1. Initiate the automated upgrade installation by selecting **Upgrade** on the **Products** page.

   The **Start Upgrade** page appears.

2. Enter a description for this upgrade job.

3. Some Upgrade Releases contain upgrade-specific properties that require additional action. If an icon is displayed in the Upgrade Properties column, click on it to view the details.

4. After reviewing the upgrade-specific instructions and entering any requested parameters, select the check box for each step as indicated.

   If the check box is selected, the step has already been completed.

   All upgrade-specific properties must be entered and all upgrade-specific instructions must be acknowledged (by selecting the check boxes) before Solution Manager will allow you to start the upgrade process.

5. Click **Start Upgrade**.

   If the **Auto-Start Jobs** check box is selected on the **Start Upgrade** page, the newly created upgrade job will have started automatically and should show a status of "In Progress" on the **Upgrade Job Monitor** page. If the **Auto-Start Jobs** check box is not selected, then the newly created upgrade job will appear on the **Upgrade Job Monitor** page with a status of "Not Initialized".

View and monitor upgrade jobs

View upgrade installation jobs that have been created as described in the "Install upgrades into Banner environment" topic by accessing Solution Manager.

Procedure

1. Click anywhere in the row for an environment (with the exception of the icons) in the **Environments** table.

2. Select the **Upgrades** tab to display the **Upgrade Job Monitor** page. Upgrade jobs will show an Install Status.

Not Initialized	Indicates that the upgrade job was created with the "Auto-Start Jobs" option not selected and the job has not yet been started.
In Progress	Indicates that the upgrade job is currently being executed but has not yet completed. The job may be in progress either because it was just created with the "Auto-Start Jobs" option selected or because it was manually started from the **Upgrade Job Monitor** page.
Error in BMUI	An error occurred after BMUI was initialized. Check the BMUI log files for this upgrade job. See Upgrade job log directory for information on viewing log files.

Successfully Completed	Indicates that the upgrade job has already been executed and completed successfully. If the job has already been run but did not complete successfully, its Install Status will be one of the following: Error in Pre BMUI, Error in BMUI, Error in Post BMUI, or Error in BMUI and Post BMUI. For additional information about what caused the upgrade job to fail, review the Console Log from the completed job as described in the discussion of the **Upgrade Job Status** page.

The **Upgrade Job Monitor** page shows all of the upgrade jobs that you have created. The jobs are sorted chronologically with the most recent upgrade job listed first. For each upgrade job, the table shows the Upgrade ID, the Description you entered for the job, the Install Status, the Start Date, and the Completion Date. The Start Date indicates when the upgrade job was created. The Completion Date is shown for jobs that have already completed successfully or ended with an error.

View the releases included in the upgrade job. Click anywhere in the row for the upgrade job to display the **Upgrade Job Contents** page. If a release has any deployments associated with it, an icon will appear in the **Deployments** column. Click on it to view and manage the list of deployment jobs associated with the release. See Manage Deployment Jobs for detailed instructions on viewing and kicking off deployment jobs. View the install status for each release job included in the upgrade. The statuses may include: Not Initialized, Initialized, In Progress, Errored Out, Manually Resolved, and Successfully Completed.

3. Click **OK** to return to the **Upgrade Job Monitor** page.

4. Click on the icon in the Monitor column in the row for a displayed upgrade job to view the **Upgrade Job Status** page.

    The upgrade job was created without the Auto-Start Jobs option (Install Status is "Not Initialized"), so the status screen shows that it has not yet started (the shadow check mark icon) and a **Start Upgrade Job** button appears in the upper right part of the page.

5. Click **Start Upgrade Job** to initiate the automated upgrade installation job.

6. Monitor the execution of the upgrade job from the **Upgrade Job Monitor** page.

7. Change the time interval that Solution Manager should wait before automatically refreshing the page contents by entering the desired time interval in seconds in the Auto Refresh field and then clicking on the **Refresh** button. It is also possible to refresh the page manually by clicking on **Refresh**.

    If the upgrade job completed successfully, the status icon will be a green circle with a white check mark in it on it. If the upgrade job did not complete successfully, the status icon will be a red circle with an exclamation point in it on it.

8. Scroll through the Console Log section of the page to see the console output from the execution of the upgrade installation script in the managed Banner environment.

Advanced upgrade features

Refer to the following advanced upgrade features that are available using Ellucian Solution Manager after performing an initial download of new releases and upgrade of an existing environment.

Banner upgrade restartablility

The following is applicable to Banner upgrade jobs only: If the previous Banner upgrade job fails and the release that failed is restartable, it is necessary to select that job before you can kick off another Banner upgrade job.

If manual installation is preferred, go to the **Upgrades** screen to mark it as Manually Resolved.

Unless one of these is executed, it will not be able to kick off any other upgrades. Please note that not all releases are restartable. If a release installation fails, you can do the following: Go to the Upgrades form, click and select the failed upgrade. Then verify whether the release is restartable or not in the Is Restartable column.

Note: Only use the **Manually Resolved** button when you are certain that the upgrade job is not currently in progress and the update has been manually installed successfully.

You should not use the **Manually Resolved** button when an update job is in progress.

Using environment variables to control BMUI functionality

You may use environment variables to control the Solution Manager Banner upgrade processor (BMUI) functionality one of two ways.

When the BMUI process is called to install a Banner upgrade, BMUI reads all of the environment variables that begin with BMUI_* on the job sub machine. Alternately, you can include the environment variables in the Solution Manager Admin Console Login sequence so that there is never a need to update a profile file on the Jobsub machine.

Note: Environment variables (defined or not) will have no impact on BMUI functionality if the related property name is explicitly mentioned in the `install.properties` file using the Solution Manager Admin Console.

You can control the tasks listed in the table below using environment variables. The same idea can be extended to other functionality, as appropriate.

Note: You must define each ENV variable in the shell's profile. Make sure to remove a variable from the profile when it is not needed. Otherwise, define the variable in the Solution Manager Admin Console Login sequence.

The Login sequence uses the following commands:

Command	Description
Wait <prompt text>	Instructs the automated upgrade installation processor to wait for a designated prompt (specified by "<prompt-text>").
RC <response-text>	The Remote Command specifies the response (specified by "<response-text>") to the prompt specified by the preceding "Wait" command
{banner.target.user.password}	Contains the value that you entered in the Install Pwd field.
{banner.target.sid}	Contains the value that you entered in the DB SID field from the Env Settings.

The Login Sequence commands are executed by the automated upgrade installation process immediately after issuing the "login *<login-ID>*" (where "*<login-ID>*" is the value you entered in the Install User field).

Note: If you use environment variables to skip a deployment (Banner 8 Help, Banner 9 Help, or Banner 9 War), then the upgrade process will skip the deployment steps. However, the Deployments jobs will still be created by the Admin Console. These corresponding deployment jobs should be ignored or marked as "Manually Completed".

Customize the automated upgrade installation script

If needed, administrators can influence the behavior of upgrade jobs using scripts that run prior to any upgrades. This includes scripts that run within BMUI on an upgrade-by-upgrade basis and scripts that run after all upgrades are applied.

Adding customizations before or after all upgrades

It is possible to customize the automated upgrade installation script for your environment by creating two scripts. These scripts are named `prebmui.sh` and `postbmui.sh`.

Store these scripts in a directory named *`<banner-home>`*`/upgrades/bmui_custom` on the Jobsub machine in the managed Banner environment (where *<banner-home>* is defined as described in the Automated Upgrade Installation Details.

Customization scripts are not required. If either script does not exist, then the installation script will skip it.

The scripts must have the execute privilege for the Install User and are run as the Install User. See Enter Upgrade-Related Credentials Information for more information about the Install User.

The current directory when each script is run is *<banner-home>*.

Both scripts have access to the following environment variables:

$BANNER_HOME has the value *<banner-home>* as defined above.

$UPGD_DIR has the value "$BANNER_HOME/upgrades".

Any output from either script is redirected into the Upgrade Job Logs directory (See Automated Upgrade Installation Details).

The `prebmui.sh` script is executed by the upgrade installation script before it executes the multi-upgrade installation tool. This script can be used to perform custom actions in the environment prior to installing the upgrades included in the upgrade job. For example, the script can verify that no users are logged into the environment database and can lock users out of the database while the upgrades are running.

Normal output from the `prebmui.sh` script is directed to the file named `prebmui.log` in the Upgrade Job Logs directory.

Error output from the `prebmui.sh` script is directed to the file named `prebmui_err.log` file in the Upgrade Job Logs directory.

If there is an issue during the execution of the `prebmui.sh` script that causes the installation job to halt, exit the script with a non-zero system return code. The installation script will halt and set an appropriate status for the upgrade job in Ellucian Solution Manager.

Template for the prebmui.sh script

Review the `prebmui.sh` script information.

```
#!/bin/bash
# This optional custom script allows you to perform any environment-
# or institution-specific tasks before BMUI is executed to install
# upgrades.
#
# A normal exit from this script will allow BMUI to run.
# Use exit with a non-zero code to stop BMUI from running.
#
echo "This is the prebmui.sh custom script."
```

The `postbmui.sh` script is executed by the upgrade installation script after BMUI finishes processing the upgrades installed by the upgrade job, and can be used to perform custom actions in the environment after upgrades are installed. For example, if you used the `prebmui.sh` script to lock users out of the environment database, use the `postbmui.sh` script to open up the database to user logins again if the installation of the upgrades was successful.

The `postbmui.sh` script is executed regardless of whether BMUI successfully installed the selected upgrades or not. The script can access the environment variable `$BMUI_STATUS` to test the exit status of the multi-upgrade installer.

Normal output from the `postbmui.sh` script is directed to the file named `postbmui.log` in the Upgrade Job Logs directory.

Error output from the `postbmui.sh` script is directed to the file named `postbmui_err.log` file in the Upgrade Job Logs directory.

Exit the script with a non-zero system return code with an integer value from 1 to 9 to indicate an error condition or other non-standard condition.

Template for the postbumui.sh script

Review the `postbmui.sh` script information.

```
#!/bin/bash
# This optional custom script allows you to perform any environment-
# or institution-specific tasks after BMUI is executed.
#
# The following environment variables are available:
#   BANNER_HOME: Path to current Banner code tree
#   UPGD_DIR: Path to the upgrades directory
#   BMUI_STATUS: BMUI status - 0 = success
#                             anything else indicates failure
#
# This script always executes regardless of whether BMUI was
# successful.
#
# Test BMUI_STATUS so separate paths can be taken depending whether
# BMUI succeeded or failed.
#
# Use exit with a non-zero code to flag a failure to the upgrade
# installation script.
#
echo "This is the postbmui.sh custom script."
if [ $BMUI_STATUS-eq 0 ]; then
echo "BMUI was successful."
# Perform custom tasks here that should be executed when BMUI
# was successful.
else
echo "Detected BMUI failure."
# Perform custom tasks here that should be executed when BMUI
# failed for any reason.
fi
echo "Exiting postbmui.sh custom script."
```

The status returned to Ellucian Solution Manager by the automated upgrade installation script is a composite of the status returned by the `prebmui.sh` script, the multi-upgrade installer, and the `postbmui.sh` script.

The returned status is calculated by a formula in which `BMUI_RETURN_CODE` is the composite return code for the automated upgrade installation script, `PREBMUI_STATUS` that represents the status returned by the `prebmui.sh` script, "BMUI_STATUS" represents the status returned by the multi-upgrade installation tool, and "POSTBMUI_STATUS" represents the status returned by the "postbmui.sh" script.

Additionally, the actual values returned for "PREBMUI_STATUS", "BMUI_STATUS", and "POSTBMUI_STATUS" are displayed in the console log for the upgrade installation job.

Here's the formula for BMUI_RETURN_CODE:

```
if PREBMUI_STATUS <> 0 then
BMUI_RETURN_CODE = 100
else
BMUI_RETURN_CODE = 0
endif
```

```
BMUI_RETURN_CODE = BMUI_RETURN_CODE + ( BMUI_STATUS * 10 ) +
POSTBMUI_STATUS
```

Adding pre upgrade custom scripting

It is possible to manage the following shell scripts with added customizations during an upgrade job. These scripts are run sequentially, and the return/exit code plays a significant role in the success of the BMUI installation process.

For every upgrade job that is run, Ellucian Solution Manager invokes the pre-BMUI script, then each of the BMUI custom installation scripts, and then finally the post-BMUI script after all upgrades are installed.

These scripts provides a variety of opportunities to influence the upgrade process. Scripts can be generic (not tied to any particular upgrade but occurring before or after each upgrade) or can be specific to a particular upgrade.

The table below contains information about the delivered custom installation scripts:

Task Name	Task Type	Shell Script
Pre Upgrade	Generic	pre_upgrade.shl
Pre Upgrade	Upgrade Specific	pre_ {banner.current.upgrade}.shl
Post Upgrade DB	Upgrade Specific	post_db_{banner.current.upgrade}.shl
Post Upgrade Code	Upgrade Specific	post_code_{banner.current.upgrade}.shl
Post Upgrade	Generic	post_upgrade.shl

Pre upgrade - generic task

This task is run unconditionally before an upgrade installation. It provides a way for customers to use their custom implementations for any Banner Upgrade installation.

For example, take a backup of code and database instance before each upgrade installation or perform a custom task before each upgrade installation. BMUI / Ellucian Solution Manager proceeds upon completing the task successfully; however BMUI stops installation of the upgrade if the task exits with error code other than zero(0).

```
# This optional custom script allows you to perform generic upgrade
 task
# before any upgrade installation is initiated.
#
# This is called by shell with command sh +xe <custom path>/
pre_upgrade.shl
# All the Shell environment variables are available
#
# Return/exit status - 0 = success
# anything else indicates failure
#
```

```
# Use exit with a non-zero code to flag a failure to the upgrade
# installation script so that installation aborts.
#
# Example:
# =======
# echo
# echo Start: pre_upgrade.shl
# echo
#
# echo `date`
#
# df -h
#
# echo
# echo Completed: pre_upgrade.shl
# echo
#
# exit 0
#
```

Pre upgrade - upgrade specific task

This task is run unconditionally before any upgrade installation. It provides a way to customers to implement their custom implementations for a specific Banner Upgrade installation.

For example, list of all valid objects before installing a specific Banner Upgrade (General 8.6 release). BMUI / Ellucian Solution Manager proceeds upon completing the task successfully; however BMUI stops installation of the upgrade if the task exits with error code other than zero(0).

pre_inst_upgrade.inst

Post upgrade db - upgrade specific task

This task is run unconditionally after any upgrade installation. It provides a way to customers to implement their custom implementations for a specific Banner Upgrade installation.

For example, display lists all invalid objects after a database installation of a specific Banner Upgrade (Student 8.5.5 release). BMUI / Ellucian Solution Manager proceeds upon completing the task successfully; however BMUI stops installation of the upgrade if the task exits with error code other than zero(0).

post_inst_upgrade_db.inst

Post upgrade code - upgrade specific task

This task is run unconditionally after any upgrade installation. It provides a way to customers to implement their custom implementations for a specific Banner Upgrade installation.

For example, perform code specific checks or take a backup of code tree or find code differences or any after code installation of a specific Banner Upgrade (Financial Aid 8.9 release) BMUI / Ellucian Solution Manager proceeds with the next upon completing the task successfully. BMUI stops installation of the upgrade if the task exits with error code other than zero (0).

post_inst_upgrade_code.inst

Post upgrade - generic task

This task is run unconditionally after any upgrade installation. It provides a way to customers to implement their custom implementations for any given Banner Upgrade installation.

For example, it is possible to check installation consistency and integrity of the Banner database or perform custom tasks after each upgrade installation. BMUI / Ellucian Solution Manager proceeds upon completing the task successfully; however BMUI stops installation of the upgrade if the task exits with error code other than zero(0).

post_upgrade.inst

```
# This optional custom script allows you to perform generic upgrade
 task
# after any upgrade is installed successfully.
#
# This is called by shell with command sh +xe <custom path>/
post_upgrade.shl
# All the Shell environment variables are available
#
# Return/exit status - 0 = success
# anything else indicates failure
#
# Use exit with a non-zero code to flag a failure to the upgrade
# installation script so that installation aborts,xi
# but Upgrade installation is fine because this is post action.
#
# Example:
# =======
# echo
# echo Start: post_upgrade.shl
# echo
#
# echo `date`
#
# df -h
#
# echo
# echo Completed: post_upgrade.shl
# echo
#
# exit 0
#
#
```

Deployment Jobs

Banner releases can contain one or more associated deployments. A deployment job is created automatically when the release is included on an upgrade job that has been started. Solution Manager supports Banner 9 Application, Banner 9 Online Help, Banner 8 Online Help, and Banner Pages deployments.

Manage deployment jobs

If a Banner release has a deployment associated with it, a *deployment job* is automatically created when the upgrade job for that release is executed.

Procedure

1. Prior to kicking off a deployment job, define one or more app servers for each application server where the jobs will be deployed.
2. Define additional deployment settings for an application before kicking off the deployment jobs.

   These settings need to be defined only for the Job Sub application and any other app server with which there is an associated app server.

Verify deployment agents

Deployment agents are Jenkins agents that facilitate the communication between servers, and orchestrate the deployment steps.

In order for all deployment steps to be executed, Solution Manager requires a Jenkins agent to be running on the Job Sub server (where Solution Manager builds the application), and an agent running on each application server targeted for deployment.

When the existing Banner environment was added to Solution Manager, an upgrade agent was created on the Jobsub machine. Ellucian recommends reusing your existing upgrade agent for deployment steps that run on the Jobsub machine. (Creating a separate agent on the Jobsub machine specifically for deployments is optional.) Be sure to specify this agent name in the Jobsub machine definition in the Admin Console, in the **Deployment Agent Name** field. Similarly, when the environment was added, a deployment agent was created on each application server targeted for deployment. Be sure to specify the deployment agent name in the corresponding application definition in the Admin Console, in the **Deployment Agent Name** field.

See the *Ellucian Solution Manager Installation and Configuration Guide* for more information.

Verify Jenkins slave on application server (Windows)

Verify the Jenkins slave on your Windows application server in your managed Banner environment.

See the "Install Jenkins slave on Windows application server" section of the *Ellucian Solution Manager Installation and Configuration Guide* for more information.

Verify Windows service

After the installation is complete, it will start up the agent in a small Java window. Verify that a Windows service was added so that Jenkins will start each time the system boots up.

Banner XE application and Banner Online Help deployments

Deploy Banner 9.x Applications, Banner 9 Online Help, and Banner 8 Online Help.

About this task

For specific instructions regarding deployment of Banner Pages, see Banner Pages deployments on page 58 .

Mount staging areas and seed help content

To perform automated deployments, Solution Manager requires access from the target application server to staged deployment content on the Jobsub machine.

About this task

These staging directories should already exist on the Jobsub machine prior to executing upgrades. See Manage applications on page 19 for more information.

Procedure

1. Create NFS mounts to the staging areas on the Jobsub machine on the application server. Solution Manager retrieves new deployment content from these directories and builds the application .war file from the content.

2. Define the NFS mounted paths to the Banner 9 Online Help, Banner 8 Online Help and Banner 9 WAR staging directories that should already be in place on the Jobsub machine.

3. In Solution Manager, navigate to the appropriate application and enter the newly mounted paths for the three staging areas.

   This allows Solution Manager to access the staged content the Jobsub machine.

4. **Optional:** For Online Help Only: Deploy a seed copy of Online Help in the Online Help staging area. This must be done before running any online help deployment jobs in Solution Manager.

   a) Retrieve and unpack `bannerOH.war` into Banner 8 help staging directory.

   b) Retrieve and unpack `banner9OH.war` into Banner 9 help staging directory.

   Note: If the seed copy of the online help .war file is not deployed, online help deployment jobs will cease. Java errors regarding a missing MANIFEST.MF file will appear.

Set up script execution application user credentials

Set up the wget credentials for the appropriate user on the target application server.

Procedure

1. Log onto the target application in the environment as the user who is responsible for installing deployments.

2. In the home directory of this user, create a file named `.wgetrc`, containing the following lines (substituting the scripting user name and password set up in place of *scripting-username* and *scripting-user-pwd*):

```
http_user = <scripting-username>
http_password = <scripting-user-pwd>
auth-no-challenge = on
```

3. Save the file.

4. Change the permissions on the file so that only the user can view the contents of the file by entering the following command: `$ chmod 600 .wgetrc`

Set up script execution application user credentials (Windows)

Set up the Windows application credentials for the script execution user in your managed Banner environment.

Procedure

1. Log onto the target application server in your environment as the user who is responsible for installing deployments.

2. Locate the home directory for this user, and create a subdirectory named `esm` if it does not already exist. For instance, if the user is "Administrator", the directory would be similar to `c:\Users\Administrator\esm`.

3. In the `esm` directory, create a file named `esmGetFromWeb.xml`, containing the following lines (substituting the scripting user name and password you set up for the environment):

```
<Settings>
  <Creds>
    <Username><scripting-username></Username>
    <Password><scripting-user-pwd></Password>
  </Creds>
</Settings>
```

4. Save the file.

Define machines

In Solution Manager, define the machine(s) on which the target web application server is installed.

Procedure

1. Go to the **Machines** tab for the environment to add a new machine.
2. Enter the **Admin (Private) Host Name** of the machine.

    a) Choose the app role, then click **Add** to save the new machine definition.

    b) Click in the row for the new machine in the Machines table to open up the **Machine configuration** page.

    c) Enter the **Deployment Agent Name**.

    d) Enter the rest of the configuration information for the machine and click **Save**.

    For detailed instructions on defining a machine in Solution Manager, see Manage machines on page 15.

Define app servers

Add one or more app servers for the application and define properties for the app server.

About this task

Banner environments may have one or more App Servers that serve Banner Online Help or Banner 9 applications. The App Servers must be identified in Solution Manager. A single VM may contain one or more of these App Servers, so Solution Manager supports multiple App Servers per VM.

Note: Solution Manager supports both WebLogic and Tomcat app servers. Solution Manager does not natively support Weblogic Clusters. Ellucian recommends following Oracle's guidelines for using the Oracle Tool Suite to use Solution Manager for deployments to a Weblogic Cluster.

Procedure

1. Click on the **App Servers** tab.
2. Select **Add AppServer**.
3. Enter appropriate information.

Table 20: Application configuration fields

Property	Description	Sample Data
Machine	Select the desired machine from the drop-down list.	M03036-EXISTINGENVIRONMENT-Xe2Machine-ADMIN - 192.168.50.10

Property	Description	Sample Data
		`– m034241 – 149.24.34.241`
App Server Name / Type	Specify the name and type of the app server.	`Banner9– Admin1 / webLogic`
Managed Server Name	For WebLogic: Enter the name of the associated Banner managed server.	`Banner9– Admin1`
Admin Port Number	Specify the port associated with the app server.	`7001`
Use SSL	Select the check box to use SSL. Otherwise, leave it cleared.	*Cleared*
Application Port Number	Specify the application port number.	
Admin Username	Specify the server administrator's username.	`weblogic`
Admin Password	Specify the server administrator's password.	`password1`
Domain Name	For WebLogic: Specify the domain name associated with the app server.	`base_domain`
Domain Environment Setup Script	For WebLogic: Allows you automate the domain environment configuration by specifying the location of the setup script.	`/u01/app/ oracle/ Middleware/ user_projects/ domains/ basicType2/ bin/ setDomainEnv.sh`
Catalina WebApps Path	For Tomcat: Enter the path to the Catalina WebApps.	`/u01/app/ tomcat/ webapps`
Show passwords	Select the check box to show passwords on the app server. Otherwise, leave the check box cleared.	*Cleared*

4. Click **Save**.

Define applications

In Solution Manager, define the applications associated with the target web application server.

Procedure

1. Navigate to the **Applications** tab and locate the environment to add a new application.

2. Enter the Application Name.

   a) Choose the type of application, and click **Add** to save the new definition.

   b) Click on the row for the new application in the table to open up the application configuration page.

   c) Use the **Machine/App Server** drop-down to select the App Server and Machine combination that corresponds to the web application server installed for deployment of this application.

   d) Enter the paths to the mounted staging areas.

3. Click **Save**.

   For detailed instructions on defining an application in Solution Manager, see Manage applications.

Kick off deployments

After the deployment settings have been defined and one or more app servers have been defined for the environment, you can kick-off the deployment jobs for a release.

Procedure

1. Click on the **Upgrades** tab to view the list of deployments associated with a particular release.

2. Click on the row for a particular upgrade to see the list of releases included on that upgrade. Alternatively, you can click on the **Deployments** tab to see all the deployment jobs for an environment.

   If a release has one or more deployment jobs associated with it, a deploy icon will be displayed in the Deployments column.

3. Click on the **Deployments** icon to view the list of deployments for that release.

4. Click on the row that corresponds with the deployment to be kicked off.

   If an upgrade job containing multiple upgrades is installed, each upgrade with deployment content will create a new entry in the **Deployments** tab. For multiple online help deployment jobs, only one deployment needs to be run.

5. Choose one or more App Servers where you would like to deploy.

6. Edit any information that shows on the deploy screen (for example, the App Name can be customized, if desired, for Banner 9 War deployments).

7. Click on **Start Deployment** to start the deployment job.

   The **Start Deployment** button will only appear if the corresponding release is successfully installed in the environment. As the deployment job is running, a monitor window will show the progress of the deployment.

8. Click on **Start Deployment** to start the deployment job.

   The **Start Deployment** button will only appear if the corresponding release is installed successfully in the environment. As the deployment job is running, a monitor window will show the progress of the deployment. When the deployment job completes successfully, each of the three steps should show an icon that is a green circle with a white check mark.

If the deployment job fails, hangs or displays an error message, manually mark the deployment job as either "Cancelled" or "Completed". For example, if the deployment is manually resolved outside of Solution Manager, click **Mark Cancelled** or **Mark Completed**.

The application can be re-deployed after a deployment job has completed by running the deployment job again. This is useful if you would like to deploy to a new app server or simply re-deploy to the original app server. The deployment screen will show a history of deployment runs in a table at the bottom of the deployment screen.

Banner Pages deployments

This section describes instructions for deploying Banner Pages deployments, such as the Banner Human Resources 9.x or Banner Admin Pages 9.2 releases.

For all other deployment types, see Banner XE application and Banner Online Help deployments on page 53. Before using Solution Manager to deploy a Banner Pages application, you must enter web application server configuration information into Solution Manager as described below.

For additional information about requirements for deploying a Banner Pages application, see the *Installation and Configuration Guide* accompanying the release.

Set up Banner Pages

Define an App Server in Solution Manager for the web application server to which you wish to deploy the Banner Pages application.

About this task

You must also set up a deployment agent on the machine where the web application server machine. The deployment agent should be installed to run as the same system account that you use to run the web application server. See Verify deployment agents on page 52 for additional information on setting up a deployment agent.

Procedure

Define the machine on which the web application server is installed.

1. Define the machine as part of the environment setup.

   a) Navigate to the **Machines** tab.

   b) Enter the Admin (Private) Host Name of the machine.

   c) Choose the App role, and click **Add** to save the new machine definition.

   d) Click on the row for the new machine in the Machines table to open up the Machine configuration page.

   e) Enter the Deployment Agent Name. This is the name of the agent you defined for this particular server in Verify deployment agents on page 52.

   f) Enter the rest of the configuration information for the machine.

Table 21: Define machine fields

Property	Description
Admin Port Number	The port number of the WebLogic admin server. This number is used by the deployment process to connect to Weblogic and deploy to the application.
Admin Username and Password	The same username and password that you use to log into the WebLogic admin console. The admin **Username** and **Password** are used by the deployment process to connect to Weblogic to deploy the application.
Application Port Number	The port number of the WebLogic managed server that you set up to run the Banner Pages application. The **Application Port Number** will be used to configure the Banner Pages application when it is deployed.
Weblogic Domain Name and Domain Environment Server	The WebLogic **Domain Name** and the correct full path to the **Domain Environment Setup Script** for the WebLogic server are used by the deployment process to deploy the application to WebLogic.

a) Click **Save**.

The Public Network Host Name will be used to form the URL for accessing the Human Resources 9.0.1 transformed pages web application. The name entered must be just the first node of the fully qualified domain name of the machine. Enter the domain name in the **Env Settings** configuration page for the environment. For example, if the qualified domain name of the machine is `appserver1.`*`myinstitution.edu`*, enter `appserver1` for the Public Network Host Name of the machine.

For additional detailed instructions on defining a machine in Solution Manager, see Manage machines on page 15.

Define app servers

2. Go to the **App Servers** tab for the environment to add a new app server.

   a) Enter the name for either the Weblogic or Tomcat web application server.

   The App Server name may be any name that uniquely identifies that web application server for the environment in Solution Manager.

   b) Choose the appropriate Type and add a new app server definition.

   c) Click in the row for the new app server in the table to access the **App Server** configuration page.

   d) Use the **Machine** drop-down list to select the corresponding machine.

   e) If the web application server you are adding is a Weblogic managed server, enter the Weblogic managed server name in the **Managed Server Name** field.

   f) Enter additional configuration information as described in Define app servers on page 55.

3. Click **Save** to save the configuration information.

4. Set up a staging directory on your Jobsub machine and enter the Banner 9 War File Staging Path on the Application that you defined for the Jobsub machine for your environment.

   This path will be used by the deployment process to stage the Banner Pages application for deployment. See Manage deployment jobs on page 52 for more information about setting up staging directories for Solution Manager automated deployments.

5. Go to the **Applications** tab for the environment.

   a) Click on the row for the Jobsub type application in the Applications table.

   b) Enter configuration information for the Jobsub application.

6. Enter the Banner 9 War File Staging Path and click **Save** to save the configuration information.

Define a Banner Pages App Server

Define an Application in Solution Manager for the Banner Pages application

Procedure

Note: If the application has not yet been defined in Solution Manager, do so now.

1. Go to the **Applications** tab for the environment.

2. Give the application a unique name and select the *BXE* type.

3. Click **Add** to add the new application.

4. Click on the row for the new application in the Applications table to enter configuration information.

   • Use the **Machine/App Server** drop-down to select the app server and machine combination that corresponds to the web application server installed for deployment of the Banner Pages application.

   • Enter the Banner 9 War File Staging Path from the perspective of the machine on which the transformed pages web application server is installed. This path will be used by the deployment process to stage the Banner Pages application for deployment.

   See Manage deployment jobs on page 52 for detailed instructions of how to set up staging directories for Solution Manager automated deployments.

5. Click **Save** to save the application configuration information.

   Environment Configuration

6. Go to the **Env Settings** tab for the environment and enter the required information in the **Define Environment Details** fields.

   This information will be used by the deployment process to configure and deploy the Banner Pages application.

7. Click **Save** to save the **Env Settings** configuration information.

   Enter the Credentials information

8. Go to the **Credentials** tab for the environment. Enter the required information in the Enter environment credentials on page 25 section of this guide.

This information will be used by the deployment process to configure and deploy the Banner Pages application.

9. Click **Save** to save the Credentials configuration information.

Kick off Banner Pages deployments

Kick off deployment jobs after the Banner Pages deployment settings and associated app servers are defined for the environment.

Procedure

Note: For customized Banner Pages to be deployed automatically by Solution Manager with the Ellucian-released Banner Pages, follow the instructions in Deploy Banner Pages Customizations on page 61 first.

1. Go to the **Deployments** tab for the given environment and click on the row in the Deployments table that corresponds to the upgrade job you used to install the Banner Pages upgrade.

2. Select the application server to target for deployment of the Banner Pages application from the table of application servers.

3. Click on **Start Deployment** to start the deployment job.

4. Go to the **Deployments** tab for the environment and click on the **Monitor** icon to monitor the deployment job.

5. After deployment is completed, check the *Installation Guide* for the Banner Pages release to see if there are any additional steps that need to be performed following deployment before the application is ready for use.

   Banner Pages are now accessible by logging into Application Navigator and selecting the desired page.

Deploy Banner Pages Customizations

Customization of Banner Pages releases is performed using the Banner pages extensions toolkit provided by Ellucian. The modified and custom pages are then built into an extension JAR file, which must be included in the Banner Pages WAR file that is deployed by Solution Manager.

After you build the Banner pages extension JAR file, Solution Manager can automatically deploy your extensions along with the Banner Pages release from Ellucian, as long as you place your extension files in the appropriate location in the Banner code tree in a ZIP file (with the appropriate name and structure).

Ellucian Banner Pages releases are delivered in a set of files named `release-<name>-<version>.zip`.

• For the Banner Human Resources and Position Control 9.0. 9.1, and 9.1.1 releases, the *<name>* portion of the filename is `HumanResources` (for example, `release-HumanResources-9.1.1.3.zip`).

• For the Banner Admin Pages 9.2 release, which includes Banner General, Finance, Human Resources, Position Control, Document Management and Document Retention. The *<name>*

portion is *Admin* (for example, `release-Admin-9.2.0.18.zip`, and `release-Admin-Finance-9.2.0.18.zip`).

Ellucian Banner Pages releases are delivered into the java sub-directory of the appropriate product in the Banner code tree.

Extension ZIP file name and location

In order for Solution Manager to automatically deploy your extensions along with the Ellucian Banner Pages release, your extension JAR files must be packaged in a ZIP file with the `name release-<name>-<ext-unique-ID>-<version>.zip`, where *<name>* matches the name of the Ellucian Banner Pages release that you are extending, *<ext-ID>* is an identifier for your extension, and *<version>* matches the version of the release you are extending. The extension ZIP file may contain one or more extension JAR files. You may create more than one extension ZIP file as long as each has a unique *<ext-ID>*.

For the Banner Human Resources 9.0, 9.1, and 9.1.1 releases:

- The extension file must be named `release-HumanResources-<ext-ID>-<version>.zip`. For example, an extension ZIP file for the Banner Human Resources 9.1.1 release might be named `release-HumanResources-MyHRExt-9.1.1.3.zip`.

- In order for an extension ZIP file to be automatically deployed by Solution Manager it must be located in the `<banner-home>/payroll/java` directory, the same directory where the Ellucian-delivered file is stored (where *<banner-home>* is the value in the Banner Code Tree Path field on the **Env Settings** page in Solution Manager for the environment, commonly referred to as "Banner home").

For the Banner Admin Pages 9.2 release:

- The extension file must be named `release-Admin-<ext-ID>-<version>.zip`, where *<ext-ID>* is a unique identifier that is different from any of the product identifiers for release packages that are part of the Ellucian Banner Admin Pages 9.2 release and is unique for the Banner product that is extended, and *<version>* must be at least a three-part version number in the format "9.2.*x*". For example, valid extension ZIP file names for extensions of the Finance product for the Banner Admin Pages 9.2 release (which is delivered as `release-Admin-Finance-9.2.0.x.zip`) would be `release-Admin-MyFinExt-9.2.0.zip`, or `release-Admin-MyFinExt2-9.2.0.1.zip`.

- If you have multiple extensions, the *<ext-ID>* portion of the name must be unique within a Banner product directory. For example, two files named `release-Admin-MyFinExt-9.2.0.zip` and `release-Admin-MyFinExt-9.2.1.zip` would be considered two versions of the same extension, and only the higher version number would be deployed. But in the example given in the previous item, both `release-Admin-MyFinExt-9.2.0.zip` and `release-Admin-MyFinExt2-9.2.0.1.zip` would be deployed because they each have a unique *<ext-ID>* portion of the name and so would be considered to be different extensions.

- In order for an extension ZIP file to be automatically deployed by Solution Manager it must be located in the "java" sub-directory of any Banner product directory under Banner home except it must not be under the "upgrades" directory or the "bmui" directory. For example files named `<banner-home>/posnctl/java/release-Admin-MyPCExt-9.2.0.3.zip` and `<banner-home>/custom/java/release-Admin-MyBanExt-9.2.0.2.zip` would both be picked up by the Solution Manager deployment logic. A file named `<banner-home>/upgrades/general-admin-9020018u/java/release-Admin-MyBanExt-9.2.0.5.zip` would not be picked up for deployment because even though the name is the proper format the

directory path in which the file is located contains a directory named "upgrades". A file named `<banner-home>/custom/java/ext/release-Admin-MyBanExt-9.2.1.zip` also would not be picked up because it is not directly in a sub-directory named "java".

At deployment time, Solution Manager will deploy the JAR files in the extension ZIP file with the highest valid version number with the same <ext-ID>. For example, if there are two files in the `<banner-home>/finance/java` directory named `release-Admin-MyFinExt-9.2.0.5.zip` and `release-Admin-MyFinExt-9.2.1.zip`, the JAR files from the file with the version number "9.2.1" would be deployed because "9.2.1" is a higher version number than "9.2.0.5". A file in the same directory named `release-Admin-MyFinExt-9.3.0.1.zip` would not be selected for deployment because the first two components of the version number don't match the Ellucian release ("9.2").

Extension ZIP file structure

The JAR files in each extension zip file must be stored in an appropriate directory structure in order to be automatically deployed with the Ellucian-released Banner Pages release. The JAR file names must not duplicate the names of any of the JAR files delivered in the Ellucian releases.

- An extension ZIP file for the Banner Human Resources 9.0, 9.1, or 9.1.1 release may contain one or more extension JAR files and must have the following directory structure:

```
BannerHumanResources
            ext
                    WEB-INF
                        lib
                                    <file-name-1>.jar
                                    <file-name-2>.jar
```

- Extension ZIP files for the Banner Admin Pages 9.2 release may contain one or more extension JAR files and must have the following directory structure (note that this is the same directory structure as the ZIP files delivered by Ellucian as part of the Banner Admin Pages 9.2 release for all products except Banner General):

```
BannerAdmin
        ext
                WEB-INF
                    lib
                            <file-name-1>.jar
                            <file-name-2>.jar
```

<unique-identifier> is a string that uniquely identifies the extensions (the string must contain alphabetic and numeric characters only), and *<version>* matches the version number of the Ellucian Banner pages being extended and customized.

Sample Windows environment setup batch script

Use this script as the Windows environment setup batch template `WinEnvSetup.bat`.

Note: The script name must be changed.

```
REM @echo off
REM ###################################################################
REM BANNER_HOME, Banner code tree location
REM Example:
REM SET BANNER_HOME=F:\univ\SMPL
REM ###################################################################
SET BANNER_HOME=
REM ###################################################################
REM
REM
REM ###################################################################
REM ORACLE_HOME, Oracle home path location
REM Example:
REM ORACLE_HOME=E:\Oracle\product\11.2
REM ###################################################################
SET ORACLE_HOME=
REM ###################################################################
REM
REM
REM ###################################################################
REM ORACLE_SID, DB SID on database
REM Example:
REM SET ORACLE_SID=SMPL
REM ###################################################################
SET ORACLE_SID=
REM ###################################################################
REM
REM
REM ###################################################################
REM ICU_HOME, ICU Compile path
REM Example:
REM SET ICU_HOME=F:\icu
REM ###################################################################
SET ICU_HOME=
REM ###################################################################
REM
REM ###################################################################
REM PERL_HOME, PERL home path
REM Example:
REM SET PERL_HOME=C:\Perl
REM ###################################################################
SET PERL_HOME=
REM ###################################################################
REM
REM
REM ###################################################################
REM COBOL_COMP_HOME, COBOL Compiler home path
REM Example:
```

```
REM SET COBOL_COMP_HOME=E:\NetCobol10_1
REM ####################################################################
SET COBOL_COMP_HOME=
REM ####################################################################
REM
REM
REM ####################################################################
REM COBOL_HOME, COBOL Library path
REM Example:
REM SET COBOL_HOME=C:\Program Files\Common Files\Fujitsu\NetCOBOL
REM ####################################################################
SET COBOL_LIB_HOME=
REM ####################################################################
REM
REM
REM ####################################################################
REM VS_VC_PATH, Visual Studio's Visual C path
REM Example:
REM SET VS_VC_PATH=D:\msvc8\VC
REM ####################################################################
SET VS_VC_PATH=
REM ####################################################################
REM
REM
REM ####################################################################
REM MS_SDK, Microsoft Software delevopment kit path
REM Example:
REM SET MS_SDK=D:\msvc8\SDK
REM ####################################################################
SET MS_SDK=
REM ####################################################################
REM
REM
REM ####################################################################
REM VC_VER, Microsoft Visual Studio batch script to set environment
REM variables
REM Example:
REM SET VC_VER=vcvars32.bat
REM ####################################################################
SET VC_VER=
REM ####################################################################
REM
REM
REM ####################################################################
REM ProC's default configuration path
REM Example:
REM PROC_DFLT=PROC config=E:\Oracle\product\11.1\precomp\admin
\pcscfg.cfg
REM ####################################################################
SET PROC_DFLT=PROC config=
REM ####################################################################
REM
REM
REM ####################################################################
REM ProCOB's default configuration path
REM Example:
```

```
REM PROCOB_DFLT=PROCOB config=E:\Oracle\product\11.1\precomp\admin
\pcbcfg.cfg;F:\univ\SMPL\alumni\plusccob7.cfg
REM ###############################################################
SET PROCOB_DFLT=PROCOB config=
REM ###############################################################
REM
REM
REM ###############################################################
REM Please do not modify the below settings.
REM ###############################################################
SET BANNER_C_COMPILER=MSVC
SET BANNER_COB_COMPILER=FJS
SET BANNER_COBPREF="perl banfjsv.pl "
SET BANNER_COBSUFX=exe
SET BANNER_PATH_POS=END
SET NLS_LANG=AMERICAN_AMERICA.AL32UTF8
REM ###############################################################
SET BANNER_PROC_INC=INCLUDE=%BANNER_HOME%\proc_inc
SET BANNER_EXE=%BANNER_HOME%\general\exe
SET BANNER_STUDENT_DATA_HOME=%BANNER_HOME%\student
SET BANNER_WORK_DIR=%BANNER_HOME%\temp
SET BANNER_FINAID_DATA_HOME=%BANNER_HOME%\finaid
SET BANNER_JOBSUB_HOME=%BANNER_HOME%\jobsub
SET BANNER_PATH=%BANNER_HOME%\general\misc;%BANNER_HOME%\baninas\misc;
%BANNER_HOME%\finaid\misc;%BANNER_HOME%\student\misc;%BANNER_HOME%
\alumni\misc
SET LIB=%MS_SDK%\Lib\x64;%ORACLE_HOME%\lib;%COBOL_LIB_HOME%
REM ###############################################################
SET PERL5LIB=%BANNER_HOME%\general\misc
REM ###############################################################
SET PRO22=%ORACLE_HOME%\precomp
SET PRO18=%ORACLE_HOME%\precomp
SET INCLUDE=%ICU_HOME%\include;%MS_SDK%\Include
SET SQLPATH=%BANNER_HOME%\general\misc;%BANNER_HOME%\general\plus;
%SQLPATH%
SET FORMS_PATH=%BANNER_HOME%\winfmx
SET TNS_ADMIN=%ORACLE_HOME%\NETWORK\ADMIN
SET BANNER_COBOL_LINK_PATH=%COBOL_COMP_HOME%
SET COBLIB=%COBOL_COMP_HOME%
SET PATH=%ICU_HOME%\bin;%PERL_HOME%\bin;%ORACLE_HOME%\BIN;
%COBOL_COMP_HOME%;%BANNER_HOME%\general\exe;%BANNER_HOME%\general\misc;
%MS_SDK%\Bin\x64;%BANNER_HOME%\plus
REM ###############################################################
call "%VS_VC_PATH%\bin\%VC_VER%"
```

Provision Banner Environments

Provision a Banner environment or provision a new application to an existing Banner environment.

Provision a new Banner environment

Solution Manager allows for the installation of a complete Banner environment, including the operating system and infrastructure software and Banner ERP software, onto a set of physical or virtual machines (VMs) pre-allocated with appropriate hardware resources.

The installation process is referred to as "provisioning the environment". The environment is provisioned based on a provisioning template (referred to as "template") that contains provisioning scripts and content files. Solution Manager allows for the automatic download of provisioning templates, associated scripts, and content files from the Ellucian Solution Manager Release Services hosted on ellucian.com.

Appropriate hardware resources include items such as CPUs, memory, disk storage, and network interface cards.

Note: If the `provisionCleanup` flag is not present or is set to anything other than "Yes" in the `config.properties` file for the Ellucian Solution Manager application (`/u01/adminApp/config.properties`), then all of the provisioning scripts will be left in the provisioned environment for diagnostic purposes. These scripts contain passwords. If the provisioning scripts are to be deleted as a final step in provisioning, set the cleanup flag by adding the line "`provisionCleanup=Y`" to the `config.properties` file before provisioning an environment. If the script artifacts are left in place when provisioning an environment, you must manually remove these files to remove the leftover information. These files are in the Jenkins workspace directory (`/u01/Jenkins/workspace`) for each provisioned application.

Provisioning overview

Solution Manager supports two modes for provisioning an environment.

The first mode provisions the software, including the operating system, onto machines that have no software installed except for a BIOS with pxe-boot capability. This mode requires using a separate, virtual private network for each managed environment, with the admin server having separate connections to each environment's private admin network. During provisioning, the Solution Manager admin server acts as the DHCP server on the private network and responds to the pxe-boot of each machine to initiate the download and installation of the operating system on each machine (a process called "kickstarting" the machine).

The private admin network also ensures that administration and transactional communications within each environment are not visible to the admin networks of other environments or to the general institutional network. For non-critical environments, a single private admin network for multiple environments can be used, with the admin server having a single connection to the network. Ensure that each machine in each environment has a unique address on the private admin network.

The following diagram illustrates the network topology used for the full provisioning mode in which Solution Manager uses the pxe-boot/kickstart process to provision the operating system and the application software in the new environment.
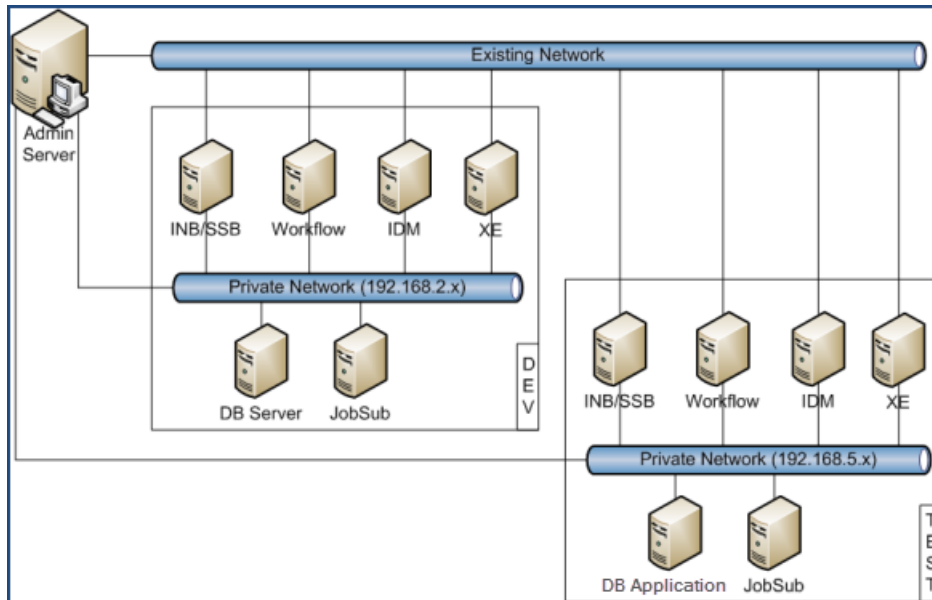
The second provisioning mode supported by Solution Manager, referred to as "OS-installed provisioning", requires you to pre-install the operating system on each machine in the environment to be provisioned. Solution Manager then uses SSH to connect to each machine initially during provisioning to finalize the configuration of the machine and install a Jenkins agent before initializing the provisioning steps which install the application software in the environment.

OS-installed provisioning does not require a private admin network connecting the Solution Manager admin server to the machine in the environment, but Solution Manager still refers to the connections between the admin server and the machines in the environment as the "Private Admin Network" in the forms used to configure the environment.

You choose whether to use the full provisioning mode or the OS-installed provisioning mode (with the operating system already installed) when you enter the configuration information into Solution Manager for the machines in the environment to be provisioned, as described in Configure an environment.

Solution Manager uses a template to provision an environment (referred to as a "provisioning template"). The template provides the information needed by Solution Manager to define the environment configuration and to install the software needed to provision a Banner environment on the targeted machines. Templates can be designed for different environment configurations, and each template has its own specific hardware and networking requirements, in addition to specifications for the operating system version and configuration that needs to be pre-installed on the machines in an environment to be provisioned if you choose the OS-installed provisioning option. Templates are downloaded automatically when you download new releases with Solution Manager. Each template has associated documentation that you can get from the Ellucian Support Center Documentation Library, under Ellucian Solution Manager. Each provisioning template also

requires you to download provisioning content files. For more information about how to manage provisioning templates and content items associated with each template see Templates.

Before beginning the environment provisioning process:

1. Ensure that you have a set of virtual machines defined or physical machines installed with the necessary specifications and network topology. To get the full requirements for the hardware, software, and network topology for the environment you wish to provision, see the documentation that accompanies the template that you plan to use for provisioning, along with the *Ellucian Solution Manager Installation and Configuration Guide*.

2. Determine which subnet address will be used for the virtual private network (that will serve as the admin network for the environment) if you plan to use the full provisioning mode.

3. Determine which IP addresses and host names are to be assigned to the Admin Server and to each of the environment machines on the admin network.

4. Assign IP addresses and host names to the environment application server endpoints exposed on the institution network (the "public network").

Note: Record this information so that it is available to enter into Solution Manager during the provisioning configuration process.

Provision an environment

The process of "provisioning" the environment entails installing Banner ERP software including Oracle database software and required application server software, optionally including the operating system and infrastructure software if you choose the full-provisioning mode, onto a set of physical or virtual machines that have been pre-allocated with appropriate hardware resources (CPUs, memory, disk storage, and network interface cards).

Procedure

1. Define (or "add") the new environment into Ellucian Solution Manager.

2. Enter appropriate configuration information for the environment.

3. Tell Ellucian Solution Manager to provision the environment, which generates kickstart or configuration scripts for all environment machines and a series of provisioning jobs that install Banner and all of the required infrastructure software for the Banner environment.

   The kickstart or configuration scripts are tailored for each machine in the environment. Each kickstart or configuration script installs the OS (if the full provisioning mode is chosen) and certain common infrastructure software, including a Jenkins remote job execution agent, on the target machine according to its role in the Banner environment and configures the machine according to its role in the Banner environment.

   The series of provisioning jobs that installs Banner into the environment installs additional required infrastructure software (such as Oracle database, Oracle Fusion Middleware, single sign on, and LDAP) and the Banner database schema and programs on each machine as appropriate for that machine's role in the environment.

4. After generating the provisioning scripts and jobs (which occurs when you kick off provisioning) if the full provisioning mode is chosen you must pxe-boot each machine from the private admin

network interface so that it gets the operating system installled with the appropriate kickstart script.

In this mode the admin server serves as the DHCP server for the private admin network to assign each environment machine the appropriate IP address (based on the MAC address of the network adapter that connects the machine to the private admin network) and as the TFTP server for the kickstart scripts.

After each machine is kickstarted, it connects to the Admin Server, and the Admin Server starts the series of provisioning jobs via Jenkins to install the appropriate Banner components on each machine according to its role in the Banner environment.

If the OS-installed provisioning mode is chosen, when you kick off provisioning the Admin Server will connect to each machine you configured for the new environment via SSH using the configuration information, including the root password that you entered for the machine. This will execute a configuration script that will set the machine up for the provisioning jobs, including installation of the required Jenkins remote job execution agent, before starting the provisioning jobs via Jenkins that install the Banner system.

Templates

Review information about the template to be used for defining, populating, or provisioning an environment.

Template information

Review information about the template used to define and populate an environment. You can also use the template to provision an environment.

Procedure

1. Select **Templates** to view templates that you have downloaded.

   If the **Templates** table does not display any rows, click **Refresh Templates** at the bottom of the page.

2. Click anywhere except in the **View** column on the row for the template in the **Templates** table to access the **Template Contents** page to acquire the content files associated with the provisioning template.

Set up an environment

Add an environment the first time you use Ellucian Solution Manager. Then define and configure the environment for provisioning.

About this task

Note: Upon opening Solution Manager, the **Environments** and **System Settings** will be empty.

Procedure

1. From the **Solution Manager** options, select **Environments**.

2. Click **Add**.

3. Provide the environment details:

Table 22: Add environment fields

Field	Description	Sample Data
Environment name	Specify a name for the environment.	`M013036`
Description	Enter an environment description.	`Banner environment MO13036`
Environment type	Define a new or existing environment.	`New`
Template	Choose a template to use for provisioning a new environment.	`BannerProducts`

4. Enter an **Environment Name** and **Description**.

5. Choose an action.

Entry	Description
New	Define an environment that is not yet provisioned.
Existing	Define an environment that has already been provisioned.

Configure an environment

Define and configure an environment for provisioning.

Procedure

1. Enter the relevant environment configuration information for the environment being provisioned by selecting the **Env Settings** tab.

   Note: On the **Env Settings** page, the **Environment Type** field will display "Existing" if the environment was added to Solution Manager as an existing environment. It will display "New" if it was added as a new environment to be provisioned. If it was added as a new environment to be provisioned, the **Template** field displays the name of the provisioning template that was selected when the environment was added.

Table 23: Configure environment fields

Property	Description	Sample Data
Description	Displays the information that was entered when adding the environment to the Ellucian Solution Manager configuration database. You can change the description.	`Banner environment MO13036`
Environment Type	Displays the environment type.	`New`
DB SID	Enter the SID name you want to use for the Oracle database instance in the environment to be provisioned.	`SMPL`
Admin Server - Private Network		
Subnet	Enter the IP subnet for the network that connects the Admin Server to the machines in the environment to be provisioned	`192.168.100`
Network IP	Enter the IP address of the Admin Server on the admin network that connects the Admin Server to the machines in the environment to be provisioned.	`192.168.100.101`
Gateway IP	Enter the gateway IP address of the admin network.	
Environment Appservers - Public Network		
Domain	Enter the domain name that will be used to access the application servers in the environment to be provisioned.	`ellucian.com`
Subnet	Enter the IP subnet for the network that will be used to access the application servers in the environment to be provisioned.	
Gateway IP	Enter the gateway IP address of the network that will be used to access the application servers in the environment to be provisioned.	
Environment Status	Displays the environment status.	`Unprovisioned`
Environment Configuration		
Is Cascade used (Y/N)	Not used during environment provisioning.	`Y`

Property	Description	Sample Data
Banner 9x Help URL	Not used during environment provisioning.	
Identity Services URL	Not used during environment provisioning.	
Application Navigator URL	Not used during environment provisioning.	

2. Select **Save**.

Machines

Update configuration information for the machines in the environment you are provisioning.

Each machine can have either private only or both private and public network information associated with it, depending on the machine type.

The machines for the environment are initially defined by the provisioning template, but you need to provide the network connection information for each machine based on the hardware environment you have provided for provisioning.

In some cases you may need to add a new machine definition during provisioning if directed to do so by the provisioning template documentation. To add a new machine, click **Add** on the **Machines** page.

Configure a machine

Configure a machine in an unprovisioned environment.

Procedure

1. Click in a row from the **Machines** tab to configure an existing machine.
2. Provide configuration information for the machine.
3. Enter the required configuration information for the machine, then click **Save**.

Table 24: Configure machine fields

Property	Description	Sample Data
Machine Role	Displays the role of the machine. DB: The machine will be provisioned as the Database server. Jobsub: The machine will be provisioned as the Jobsub server. App: The machine will be provisioned as an application server.	`jobsub`

Property	Description	Sample Data
Network Type	Displays the network type of the machine.	`internal`
Machine Status	Set the machine status: • Unprovisioned: An empty machine that Ellucian Solution Manager will kickstart when the machine is pxe-booted during provisioning to install the OS and required infrastructure software, including the Jenkins provisioning agent. • OSInstalled: Machines that already have an operating system on them. Solution Manager uses SSH to connect to the machine to perform post configuration processes (this requires a root password to connect to the existing root account). The post configuration process will update configuration information on the machine and will reboot several times before the machine is ready to start executing provisioning jobs. • Ready: This status is only used for configuring machines in an existing environment and should not be used when configuring machines for environment provisioning. **Note:** Before provisioning, all machines in an Unprovisioned state must have the Admin Host Name, Admin IP, and Admin MAC properties completed. All machines in the OSInstalled state must have the Admin Host Name, Admin IP, and Root Password properties completed.	*Ready*
Admin (Private) Network Host Name	The machine host name on the admin network.	`m019036-jobsub`
IP	The admin network IP address for the machine.	`149.24.19.36`
MAC Address admin network	The MAC address of the network card connecting the machine to the admin network. (Only used for machines in the Unprovisioned state.)	`149.24.19.36`
Root Password	Enter the root password for the network. (Only used for machines in the OSInstalled state.	
Bash Shell Path	Not used for provisioning.	
Public Network Host Name	This field only appears if the Machine Role is defined as App. Enter the host name for the machine on the public network used by users to access the application server machine. If the public network is the same as the admin network used by Solution	`appserver1`

Property	Description	Sample Data
	Manager to communicate with the machine, enter the same host name you entered for Admin (Private) Network Host Name. Note that this hostname should not include the domain name you specified for the Public Network on the **Env Settings** configuration page. For example, if the fully qualified hostname of the machine is appserver1.myinstitution.edu, and you entered myinstitution.edu as the Public Network Domain on the **Env Settings** configuration page, enter only `appserver1` here. When Solution Manager uses the Public Network Host Name to configure software that needs to access the machine via the public network it will combine the Host Name you specify here and the Domain you specified on the **Env Settings** configuration page.	
Public Network IP	Enter the IP address of the machine on the public network. If the public network is the same as the admin network, enter the same IP address you entered for the Admin (Private) Network IP field.	`149.26.17.101`

Add applications

Enter configuration information for the virtual machines in your environment. Each server can have private only or both private and public network information associated with it, depending on the application type.

Configure application properties

Define properties for each application. A machine must exist in the system before you can configure applications for that machine.

Procedure

1. Click **Applications**.

    When provisioning an environment, machines will be associated to their respective applications automatically.

    Note: After the machine properties are defined, the system automatically populates the corresponding machine application properties. Depending on the template, additional properties may appear for each application or machine based on its type or role. If additional properties appear, populate them before continuing. See Verify upgrade-specific configuration data for managed environments on page 34 for more information.

2. Click in a row of the **Applications** table to configure an existing application.

3. Provide configuration information for the application server.

Review application-specific configuration information: Verify upgrade-related application configuration information on page 34.

Note: Windows deployments require the use of an IP address.

Each example below contains an example Linux path and an example Windows path.

Table 25: Configure application fields

Property	Description	Linux Sample Data	Windows Sample Data
Application Type	Displays the application type	`jobsub`	
Machine / App Server		`Machine m013036-jobsub-149.24.19.36`	

Table 26: Managed Server Deployment

Property	Description	Linux Sample Data	Windows Sample Data
Local deployment root (Windows only)	(Optional) Specify a local path for Solution Manager to copy large files		
Banner 8 Online Help Staging Path	Enter the path to the staging area for Banner 8 online help	`/u50/test/tmp/ deployments/ ban8help`	`\\IP-ADDRESS \PATH\ban8help`
Banner 9 Online Help Staging Path	Enter the path to the staging area for Banner 8 online help	`/u50/test/tmp/ deployments/ ban9help`	`\\IP-ADDRESS \PATH\ban9help`
Banner 9 War File Staging Path	Enter the path to the staging area for Banner 9 WAR file	`/u50/test/tmp/ deployments/ ban9war`	`\\IP-ADDRESS \PATH\ban9war`

4. Click **Save**.

5. Click **Go to Machine** and complete the fields as laid out in the Configure Machine Properties section of the *Installation and Configuration Guide*.

   The Private Admin Network Host Name and IP address should reflect the address that the admin server can use to communicate with the configured environment server.

6. **Optional:** Add a new managed app server to an environment application list by navigating to the **App Servers** tab.

7. **Optional:** Remove the application configuration information from Solution Manager by clicking **Remove Application**.

8. Click **Save** and return to the **Applications** page.

9. Review the INB application field information.

Table 27: INB application fields

Field	Description	Sample Data
INB Host Forms Path	The path on the INB machine to the directory where the form executables ".fmx" and associated file types are stored	`/u01/app/sghe/banapps/SMPL/inb/forms/fmx`
INB Host Reports Path	The path on the INB machine to the directory where the report executables ".rep" and associated file types are stored	`/u01/app/sghe/banapps/SMPL/inb/reports/rep`
INB Host User	The user login that should be used by the automated upgrade installation process when logging on to the INB machine to update the form or report executables	`oracle`
INB Host Pwd	The password for the login that should be used by the automated upgrade installation process when logging on to the INB machine to update the form or report executables	`*******`

10. Review the INB compiler properties. These fields should only be entered if the INB application that you are configuring is one that will be used to compile INB forms during upgrade processing.

Table 28: INB compiler properties

Property	Description	Sample Data
Host SID Name	This is the Oracle SID used on the INB forms compiler machine to set up the proper environment for the forms and reports compilations. (For more information about how this field is used, see the description of the Compile Login Sequence below.)	`SMPL`

Property	Description	Sample Data
Host TNSADMIN Path	The path to the Oracle admin directory in the Oracle instance on the INB forms compiler machine that is set up for forms and reports compilation.	`/u01/app/oracle/middleware/as_1/network/admin`
Host FMB Path	The path on the INB forms compiler machine to the directory where the ".fmb" files (and associated file types) are stored for forms compilation.	`/home/oracle/compiledir/formcompile`
Host RDF path	The path on the INB forms compiler machine to the directory where the ".rdf" files (and associated file types) are stored for reports compilation.	`/home/oracle/compiledir/reportcompile`
Banner Links	The path on the Banner code tree server (the Jobsub machine for the environment) to the "links" directory in the Banner code tree. **Warning!** On Windows, it is necessary to create this folder / path manually. The automated upgrade installation process uses this directory to access form and report source files to transfer them to the forms compiler machine and performs the form and report compilations.	
Compile Host Oracle Home Path	The path to Oracle home directory for the Oracle instance on the INB forms compiler application that is set up for forms and reports compilation.	`/u01/app/oracle/middleware/as_1`
Compile Host User	The user login that should be used by the automated upgrade installation process to log on to the INB forms	`oracle`

Property	Description	Sample Data
	compiler application to do forms and reports compilation.	
Compile Host Pwd	The password for the login that should be used by the automated upgrade installation process to log on to the INB forms compiler application to do forms and reports compilation.	`*******`

Compile Login Sequence	A series of instructions for the automated upgrade installation process to use when logging on to the INB forms compiler for forms and reports compilation.
	
	The login instructions must be set up to recognize any prompts that occur during the login sequence and to provide appropriate responses to those prompts. The login sequence must also set the Oracle environment for doing the forms and reports compilation.
	
	See INB Applications: explanation of the default compile login sequence for more information.
		`Wait $`
		`RC source/usr/local/`
		`bin/oraenv`
		`Wait ORACLE SID`
		` =[SMPL] ?`
		`RC as_1`
		`Wait $`
		`ADDPROP`
		`banner.form.compile.twotask.enable`
		`ADDPROP`
		`banner.form.compile.twotask=`

11. Review the SSB application field information.

Table 29: SSB application fields

Field	Description	Sample data
Local Deployment Root	(Optional) Specify a local path for Solution Manager to copy large files.	
Banner 8 Online Help Staging Path	The location where Banner 8 online help files are made available for deployment.	`/banapp/staging/` `ban8help`
Banner 9 Online Help Staging Path	The location where Banner 9 online help files are made available for deployment.	`/banapp/staging/` `ban9help`

Table 30: SSB Application Properties

Field	Description	Sample data
User ID	The login that should be used by BMUI to connect to the SSB application for copying items to the web server's document root.	`oracle`
Password	The password that should be used by BMUI to connect to the SSB application for copying items to the web server's document root.	`*******`
WebServer Doc Root Path	The path to the folder on the SSB application server where the upgrade process will place images, CSS and JS files.	`/banapp/ssb`
Banner SSB Cascade EAR File Staging Path	The path to the folder on the SSB application server where EAR files needing SSB deployment will be placed by BMUI.	`/banapp/ssb/java`

Kick off environment provisioning

Use the Kick Off Environment Provisioning form to start the provisioning process after defining and configuring an environment. Ensure that all configuration information is accurately entered for the machines in the target environment before kicking off environment provisioning for the new environment.

Procedure

1. Select **Environments** from Ellucian Solution Manager options, .

2. In the list of available Environments, click the **Provision** icon associated with the new unprovisioned environment.

3. Complete the required fields.

Table 31: Kick off environments fields

Property	Description	Sample Data
Kickstart OS Dir	Specify a path to the directory where the operating system installation file is stored. The Kickstart OS Dir should not be changed unless the documentation associated with the provisioning template you	`/u02/installs/oel5/58`

Property	Description	Sample Data
	selected when you added the environment directs you to do so.	
Reboot After Kickstart	Select the check box to reboot the machines automatically after they are kickstarted. Otherwise, unselect the check box so that you can manually control the reboot sequence.[2]	*Selected*
	In some VM managers, you must configure the VM to "pxe-boot" initially to run the kickstart script, but then you must reconfigure the VM to boot from the disk drive after the initial kickstart script has completed. In that case, clear the check box.	
	This option is only relevant if you choose the full provisioning mode, rather than the OS-installed provisioning mode.	
Disk Type	Select an appropriate san disk type for the machines you are provisioning. Use the default of "scsi" on VMware. The default is fine in most cases, with a possible exception on Oracle VM.	`scsi`
Kernel Type	Select an appropriate Kernel type for the VMs being provisioned. The Kernel Type is typically "standard" if using VMware to manage your VMs. If using Oracle VM Manager, select "uek" if you want the VMs to be set up to utilize the Oracle Unbreakable Enterprise Kernel. Otherwise, select "standard".	`uek`
Autostart Jobs	Specify whether or not to autostart provisioning jobs. If the check box is cleared, you will need to start the provisioning jobs manually once the machines have all been kickstarted (if using full provisioning) or configured (if using OS-installed provisioning).	*Selected*

4. Click **Start Provisioning** to generate the kickstart or configuration scripts and provisioning VM for the environment being provisioned.

   The **Provisioning Monitor** page will be opened in a new browser tab. The monitor will not display anything until the machines in the environment are all kickstarted or configured and starting to run their provisioning jobs. There is no way to monitor the VMware pxeboot/kickstart and OS configuration processes from Solution Manager.

5. **Optional:** Monitor the provisioning jobs.

   The display will return to the Environments page, where the status of the new environment is now set to "Provisioning in Progress".

---

[2] In VMWare, use the default value of "Reboot after kickstart"= checked. Solution Manager should be allowed to control the reboot sequence. This is only an issue on other VM managers (for example, Oracle VM).

Start the environment machines

After jobs are provisioned, start the machines for the environment.

If you chose the full provisioning mode, pxe-boot each machine from the private admin network (if you are using VMs you will need to boot the machines from the VM manager) to access the kickstart script for the machine which loads

- the operating system

  and

- the Ellucian Solution Manager required infrastructure software onto the machine then registers the Solution Manager administration agent on the machine with the admin server.

If you chose the OS-installed provisioning mode, make sure that each machine is started and ready to accept SSH logins from the Admin Server so that Solution Manager can run the machine role specific configuration scripts generated when you kicked off environment provisioning on each machine.

Virtual machine-specific information

The procedure for kickstarting VMs varies for different VM managers.

For VMware, the VMs can be set to boot from the network interface that is on the private virtual network, then fall through to boot from the disk drive if the network boot times out. With that setup, you power on the VM and then access the console. The console should show the VM acquiring its IP address on the admin network from the admin server acting as the DHCP server on the admin network, and then display a "boot" prompt as it boots from the admin network interface.

Pxeboot machines

Configure virtual machines to pxeboot.

Procedure

1. Go to the console on the database server to access the BIOS configuration screen for the VM.
2. Set the machine to boot from the network.
   a) Access the BOOT menu.
   b) Use the up/down sequence to move the network interfaces (intel e1000) to the top of the list.
3. Press **F10** to save and exit the BIOS screen.
4. Type `linux` in the boot: field after encountering the BIOS prompt.
5. To begin the kickstart process, press **Enter**.

   If using VMWare, consult *Get started with VMWare*.

During the kickstart process, the virtual machine will reboot several times. Each time after the initial reboot, the virtual machine will pause at the boot: prompt for about 15 seconds before booting from the disk drive.

After a VM has registered itself with the Admin Server, then any provisioning jobs for that application can be run by Solution Manager.

6. Start each of the machines.

The provisioning jobs adhere to the sequence **db application** > **job sub** > **application** > **appservers**. For optimal results, start the machines in the following order:

a) Start `db`.

b) Start `job sub`.

c) Start `bannerapp`.

d) Start `apps`.

e) Start `idm`.

f) Start `bxe`.

Monitor provisioning jobs

You can monitor provisioning jobs and review the status of each job.

Procedure

1. Click the **Monitor** icon on the environment being provisioned.

The **Provisioning Monitor** page appears. The status column indicates the status of each provisioning job.

Status Icon	Description
	The provisioning job has not yet started.
	The provisioning job is in progress.
	The provisioning job completed successfully.
	The provisioning job failed. **Note:** If a provisioning job fails and you reset the environment to kickoff provisioning again by PXE booting any machines, then you need to ensure that the machine statuses for those machines is set back to "Unprovisioned" in Ellucian Solution Manager before kicking off provisioning.
	The provisioning job is complete.

2. Control the refresh rate of the screen by changing the refresh interval in the **Auto Refresh (secs)** field, then click **Refresh**.

Access newly provisioned environments

When provisioning jobs are complete, and you have completed any post-provisioning instructions in the documentation that is associated with the provisioning template you selected when you added the environment to Solution Manager, the newly provisioned Banner environment will be ready for use.

Completed provisioning jobs can be viewed by clicking on the **Monitor** icon in the row for the environment in the **Environments** table.

To begin managing the new environment with Solution Manager, including processing upgrades and deployments, click anywhere in the row for the environment in the **Environments** table to access the **Environment** page. Use the navigation tabs on the **Environments** page to view installed and available releases, add additional machines, appservers, or applications to the environment or modify configuration information for any of those, and install and deploy upgrades. Select the Links tab to access Banner components in the environment, as described in the documentation associated with the provisioning template you selected when you added the environment to Solution Manager

Use VMWare to provision an environment

A system administrator can use the VMWare console to access and configure the settings particular to provisioning that will ensure that the VMs will come online. Provisioning can then begin through use of the Solution Manager server provisioning functionality..

Get started with VMWare

The VMWare console contains a list of available machines that you can access in order to configure the settings for provisioning. This will ensure that the VMs come online.

Procedure

1. Access the **Summary** tab.

   View an empty VM shell that was set up by IT with memory, CPU, and disk space allocated. These specifics needed are documented in *Ellucian Solution Manager Installation and Administration*. The VMWare administrator at your client site will create this.

2. View Oracle Linux installed on a VM.

   VMs that will be fully provisioned by Solution Manager start without an operating system installed. Solution Manager will install the operating system during the pxeboot/kickstart of the machine unless you specifically want to add an operating system and set the machine to the "OSInstalled" state within Solution Manager to force a machine to be configured using SSH instead of pxeboot.

3. Go to the **Commands** > **Edit Settings** tab.

Network adapters are defined for this virtual machine (VM). The two-network configuration example is for an appserver type. (Other server types may have single network configurations.)

Note: The two machines can communicate with one another, but outside servers cannot go through VLAN38 to access the servers on the internal network.

- The internal network adapter (for example, OSD_VLAN908) is defined with addresses that are not route-able and also contains the Solution Manager admin server.
- The VLAN38 network adapter is publicly accessible unless blocked by a firewall. This is the public network for the environment's VMs.

The internal network can be set up as shared across multiple ESX servers. If the internal VLAN is not configured (for example, OSD_VLAN908) to span ESX servers, then the VMs must all live on the same ESX server.

Note:

The network adapters must be added in a particular order. The publicly accessible adapter must be set up after the internal network adapter.

4. The only Adapter Type that will work with Solution Manager is E1000.

   Note the MAC address. The MAC address of the private network will be necessary in order to provide appropriate boot information later on.

5. Go to **Edit Settings > Advanced > Boot Options** and select the check box that corresponds with the **Force BIOS Setup** option.

   Prior to booting a server for the first time, check that it is capable of booting from the network, rather than just from the hard disk. Then when you access the BIOS settings, you can modify the boot order of the VM to specify that it will boot from the network.

6. Click **OK**, then provision an application server to ensure that it goes online.

Provision a new application to an existing environment

Provision a new application using Solution Manager in an existing Banner environment.

The environment must be in the "Ready" state. Execute either **Add a New Environment for Provisioning** or **Add an Existing Environment to Solution Manager**. After the environment has been provisioned using Solution Manager, follow the procedure.

Prerequisites

Review the items below before beginning the provisioning process.

Procedure

1. Select **Environments** and click **Get New Releases**.
2. Select and download an application provisioning template.

For example, "bnr_svr_provision".

3. After selecting **Templates**, click on the row for the application provisioning template.

4. Download the template contents using either the **Get Local** option or by selecting the **Get From Ellucian** option.

5. After all of the content is downloaded, select **Mark Template Active**.

   The template will appear in the Application Provisioning workflows.

Provision a new Banner application

An environment that displays a status of "Ready" can have an application provisioned to it.

Procedure

1. After selecting the **Environments** tab, click in the **Provision** column for the selected environment.

2. Choose an application provisioning template from the drop-down list. A template may provision one or more applications to the environment.

3. Enter a name for each new application to be provisioned. The template may require one or more existing applications during the provisioning process.

4. If the template prompts for existing applications, select the existing application(s) that the template will use during provisioning. The existing application(s) that are referenced by the template must have a Solution Manager agent that is online when provisioning is kicked off, as provisioning steps may execute on these systems.

   A template may contain additional properties. These properties could be application-specific or environment-specific, or simply specific to that provisioning job.

5. Click the **Setup Server Provisioning** button. This sets the environment to an "Application Provisioning Pending" status and defines the entries for the new applications that will be provisioned.

   The following two steps are essential even if properties have been previously specified. Selecting a new template for provisioning could add new fields to these pages that are required by the provisioning process.

6. Go to those new machines and applications to define all of the relevant properties.

7. Now return to the **Environment Settings** page and to all of the existing application pages to specify any new fields that appear.

8. On the **Provision** page, complete the provisioning fields.

9. Clear the check box for any Goals that can be skipped during the provisioning process. This is advanced functionality and should only be used when requested by Ellucian support staff.

   A template may contain additional properties. These properties could be application-specific or environment-specific or simply specific to that provisioning job.

10. Select the **Kickoff Application Provisioning** button to start the application provisioning process. It may take several minutes before the first job starts up and appears in the **Monitor Provisioning Jobs** page.

- For an OSInstalled application, SSH will run automatically then run the Solution Manager agent. The machine will come online to do its provisioning.

- For the kickstart via PXE Boot option (no OSInstalled), consult Using VMWare to Provision an Environment.

- The environment will show a status of "Application Provisioning in Progress".

11. Use **Monitor** on the **Environments** page to monitor the provisioning progress. Once complete, the environment will revert to a "Ready" state.

Using VMware to provision a new Banner application

Return to the Solution Manager Admin Console to an environment in a "Ready" state.

Procedure

1. Click the **Provision** icon for an environment in the Ready state from the **Environments** page and add a new application to the environment by selecting an appropriate application provisioning template from the drop-down list.

   The environment will enter a Server Provisioning Pending state. Additional applications, appservers, or machines may be added to the environment based on the application provisioning template chosen (see the documentation accompanying the template you selected for details of what the template will add to the environment).

   Configure any new machines (see Machines), applications (see Manage Applications), or appservers required for the application provisioning template. Additional information regarding required configuration information will be in the documentation accompanying the template you selected.

2. Return to the **Provision** page by clicking on the **Provision** icon in the row for the environment in the table on the **Environments** page.

   See the documentation accompanying the application provisioning template for information on what data to enter for the fields on this page.

3. Select **Kickoff Server Provisioning**.

   The status will change to "Server Provisioning in Progress".

   For an OSInstalled server, ensure that the machine is booted and ready to accept SSH connections so that Solution Manager can automatically run SSH to configure the machine and install the Jenkins agent. Then the machine will come online to execute any required provisioning steps.

4. If you chose full provisioning mode for any new machines, return to the VMware console.

   a) Select the machine to boot from the menu. Click on it and select **Open the Console**. Repeat this sequence for all of the machines that need to be booted.

   b) Select the **Play** icon and **Power On**.

      f you have the system set to force boot to BIOS on the next startup, continue with the next step. Otherwise, skip to step "e" below.

   c) Click within the window in order to control the virtual machine.

   d) On the Boot tab, move "Intel E1000" to the top of the list.

e) Click **Save** and **Exit**.

f) Enter `linux` at the boot prompt and hit **Enter**.

This initiates the kickstart process, with the operating system installation files being pulled from the Solution Manager server. Several reboots will occur as the post installation processes occur. Then the machine comes online in Jenkins awaiting its Solution Manager jobs and provisions the IDM service.

Warning! Repeat that set of steps in VMWare for each machine.

5. Click **Save** and **Exit**.

You can now use the Monitor Provisioning Jobs functionality in Solution Manager.

Self-Update Ellucian Solution Manager

When updates are available for the Solution Manager application or database, they can be downloaded into the database. At the end of the download process, there is an automatic check for available Ellucian Solution Manager updates.

Procedure

1. Access Solution Manager through either Google Chrome or Mozilla Firefox.

   Microsoft Internet Explorer is not supported.

2. Use a supported operating system for Ellucian Solution Manager.

Self-update feature

When updates are available for the Ellucian Solution Manager application or database, they can be downloaded to the database.

Procedure

1. Click on the **Get New Releases** button. After downloading Ellucian Solution Manager updates, a new **System Updates** tab appears if a more current version is available.

2. Refresh the URL when the download completes. The **System Updates** tab will appear.

   The page within the **System Updates** tab lists all of the available update versions with links to the associated release documentation.

3. Click on an icon in the **Rel Doc**. Review the related documentation, then click **Perform Update**.

   If only one available update version number is higher than the current Ellucian Solution Manager version, the page will automatically show details about that update.

   The application will shut down temporarily while the update is performed.

   An `Upgrade in Progress` notification will appear. Ellucian recommends avoiding clicking on that page, as it may result in a `404 Not Found` error. No further action is necessary. If an error occurs, a backup of the war file was made before the update and can be restored manually. The backed up war file will be located in the persistence directory on the admin server under `EsmUpgradesStage\StageBackup\`.

   If the administrator is unable to access Solution Manager after an upgrade attempt and finds that Tomcat is not running, they should attempt to restart the program.

   When the update is complete, the page will refresh and display the updated application.