Chapter 1. Configure data center process automation

There is a joke that I heard at the Microsoft Management Summit a few years back on the subject of datacenter automation. When asked how many people would work at a new datacenter, the designer replied, "Only two, a security guard and his dog. And the job of the dog is to bite the security guard if he tries to touch anything." The point that the presenter was trying to make is that the modern datacenter is so highly automated that it requires few actual physical staff to keep things running. Another benefit of automation is that complex repetitive tasks are handled by pre-configured workflows. Automating a complex process provides you with repeatable results. When you perform complex processes manually, there is always the chance that things will go off the rails should you get distracted. In this chapter you'll learn about data center process automation using System Center 2012 R2 and Windows Server 2012 R2.

Objectives in this chapter:

- Objective 1.1: Implement workflows
- Objective 1.2: Implement service offerings

Important: Have you read page <u>xv</u>?

It contains valuable information regarding the skills you need to pass the exam.

Objective 1.1: Implement workflows

Part of an effective private cloud deployment means automating any task that is repeatable using the tools at your disposal. In terms of the 70-246 exam, this means using products in the System Center 2012 R2 suite. In this section, you'll learn how you can leverage the System Center suite to create complex automation for your organization's private cloud.

This section covers the following topics:

- Implementing runbook automation
- Automating remediation of incidents
- Change and activity management workflows

Implementing runbook automation

With runbook automation you can automate complicated workflows. Runbooks represent a set of procedures that a server administrator performs on a regular basis. Originally, runbooks were actual physical books. These books contained documentation that described to the server administrator how to perform specific procedures. Today runbooks are software parts that, when triggered, actually perform the procedures with little or minimal direct input from the server administrator. Runbook automation is important in Microsoft private cloud environments because it allows you to automate complex tasks. The System Center product that you use to create runbook automation is System Center 2012 R2 Orchestrator.

Orchestrator

Unlike Windows PowerShell, which requires you to write scripts using an editor like Windows PowerShell ISE, Orchestrator allows you to build automation using a drag and drop interface called the Runbook Designer. Orchestrator can still call Windows PowerShell scripts, but it also integrates with many other products, including products within the System Center suite through integration packs. An integration pack is a collection of product-specific tasks that you can trigger through Orchestrator. You can download integration packs from the Internet, import them using the System Center 2012 R2 Orchestrator Deployment Manager as shown in Figure 1-1, and then deploy them to your runbook servers.

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🔉 Refresh				
Server Name 🗧 ORCHESTRATOR			v 🔿	Go
X	Name	Description	Versio	<u>^</u>
🖃 🖞 Orchestrator Management	System Center Integration Pack	Activities for Active Directory	7.2	
Integration Packs	System Center Integration Pack	Activities for Exchange Admins	7.2	
🕀 🖳 Runbook Designers	System Center Integration Pack	Activities for Exchange Users	7.2	
🗄 📑 Runbook Servers	System Center Integration Pack	Activities for FTP	7.2	_
	System Center Integration Pack	Activities for SharePoint	7.2	=
	System Center Integration Pack I	Microsoft System Center Orchestrator integration pa	7.2	
	System Center Integration Pack	Activities for System Center 2012 Configuration Man	7.2	
	System Center Integration Pack	Activities for System Center 2012 Data Protection Ma	7.2	
	System Center Integration Pack	Activities for System Center 2012 Operations Manager	7.2	
	System Center Integration Pack	Activities for System Center 2012 Service Manager	7.2	
	System Center Integration Pack	Activities for System Center 2012 Virtual Machine Ma III	7.2	~
	Log Entries	Details		^
	🖉 Connecting to Orchestrator Manage	ement Server ORCHESTR		
	🖉 Connected to Orchestrator Manage	ment Server ORCHESTRA		
	🖉 Enumerating Integration Packs			
	Finished enumerating Integration P	acks		
	Registering Integration Pack System	n Center Integration Pack		
< III >	License terms for Integration Pack S	System Center Integration		~
Ready				

FIGURE 1-1 Orchestrator integration packs

An Orchestrator deployment consists of the following parts:

- Management server This server manages the runbook servers. You use the management server to distribute integration packs to runbook servers and runbook designers. The management server also manages communication between the runbook designers, runbook servers, and the orchestration database. There is only one management server in an Orchestrator deployment
- Runbook server This server runs Orchestrator runbooks. Each runbook server can run up to 50 runbooks concurrently. You can alter this number using the Runbook Server Runbook Throttling tools, but should monitor the runbook server's resource requirements. You can have multiple runbook servers in an Orchestrator deployment, with no maximum limit to the number of runbook servers specified in the Orchestrator documentation.
- Runbook Designer This designer allows you to build and test runbooks. The interface allows you to build runbooks by dragging and connecting activities that are available in integration packs. The Runbook Designer is shown in Figure 1-2.

a	System Center 2012 R2 Orchestrator Runbook Designer 📃 🗖 🗙	:
<u>Actions Edit Options View H</u>	<u>H</u> elp	
🔉 Refresh 🕨 Run 🔳 Stop 日	🕻 Check In 📝 Check Out 🍸 Undo Check Out 📉 Runbook Tester 🛛 🚺 Orchestration Console	
Connections	Z TailspinToys-Test Activities	
P 🏂 📫 🗛	E SC 2012 Configuration Manager	^
ORCHESTRATOR	SC 2012 Operations Manager	
Runbooks	SC 2012 Service Manager	ļ
Tailspin-Runbooks	SC 2012 Virtual Machine Manag	
🗄 📑 Computer Groups	REST	
Runbook Servers	Exchange Admin	
	Exchange User	
	FTP	
	→ 🚺 → 🚺 Microsoft SharePoint	
	Initialize Data Start/Stop	1
	Service initialize Data	i
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	Log Log History Audit History Events	
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- Orchestration database Hosted on a Microsoft SQL Server instance, the orchestration database stores configuration data, policies, and log information.
- Orchestration console A web interface that users can use to list, control, and view runbooks.
- Orchestrator Web Service This web service allows custom applications, third-party tools, and other System Center items such as Service Manager, to connect to Orchestrator and to interact with runbooks.
- Deployment Manager The Deployment Manager allows you to deploy integration packs, Runbook Designers, and runbook servers. You use the Deployment Manager to import and deploy integration packs that you've downloaded from the Internet.

More Info: Orchestrator

You can learn more about Orchestrator at <u>http://technet.microsoft.com/en-us/library/hh237242.aspx</u>.

Runbooks

Runbooks are collections of linked activities that perform a procedure. You build runbooks in Orchestrator by dragging activities from integration packs to the designer workspace. For example, the runbook shown in <u>Figure 1-3</u> uses two activities. The first activity, named Monitor Service, checks the state of a specific service on a specific computer and triggers if the service is in a specific state (started, stopped, or paused). The second activity, named Start/Stop Service, allows you to start, stop, pause, or restart a service. When the runbook is deployed, it will be triggered when the monitored service is in the state specified in the Monitor Service activity. After being triggered, the runbook will perform the task defined in the Start/Stop Service activity.

8	System Center 2012 R2 Orches	trator Runbook Designer 📃 🗖 🗙	
<u>A</u> ctions <u>E</u> dit <u>O</u> ptions <u>V</u> iew <u>H</u>	lelp		
🔉 Refresh 膨 Run 🔳 Stop 日	Check In 📝 Check Out 🍸 Undo Check 🛛	Out im Runbook Tester 👔 Orchestration Console	
Connections	📝 TailspinToys-Test 📝 Tailspin-Two	Activities	
je 💃 📫 🔥		System	~
		Scheduling	
Runbooks		Sector Monitoring	
Tailspin-Runbooks		Monitor WMI Service	
🗄 📑 Computer Groups	│ 🐘 → 👫 ।	< III >	1
Runbook Servers	Multin Chat(Chan	🔊 File Management	
Global Settings	Service Service	🖾 Email	
🖃 🖂 Variables		A Notification	
		Utilities	_
		🗸 Mindowa Arura	1
	Log		_
	0 X		
			1
	Log Log History Audit History Events		

FIGURE 1-3 Simple runbook

This example is very basic. When creating Orchestrator runbooks to perform sophisticated automation tasks, you are likely to use multiple activities and include conditional branches, loops, and error handling tasks. Each integration pack that you import into Orchestrator increases the number of activities that you can include in your runbooks.

Keep the following in mind when creating Orchestrator runbooks:

- Provide meaningful names for activities. You can rename activities after you drag them to the designer workspace. By renaming activities with descriptive names, then you can quickly understand what tasks a runbook is designed to accomplish. For example, with the runbook in the example above, you might rename the Monitor Service activity "Is the VMM Service Stopped" and the Start/Stop Service activity "Start the VMM Service."
- Minimize the number of activities that are performed in a runbook. You can call runbooks from within runbooks. This modular approach to creating runbooks will simplify the process of troubleshooting them.
- Configure runbooks to write logs to external files rather than to the orchestration database.

Orchestrator runbooks run according to configured schedules. You create each run separately, and

then assign the schedule to the runbook. You create runbook schedules in the Schedules node, under Global Settings, in the Runbook Designer as shown in <u>Figure 1-4</u>. Creating a runbook schedule involves assigning a name to the schedule, specifying what days of the week or days of the month the schedule applies to, and specifying which hours the schedule applies to.

•	New Schedule	x
Schedule Details This tab allows you to define	ne when this schedule applies.	
General Details Exceptions	 ● Days of week: ✓ Sun ✓ Mon ✓ Tue ✓ Wed ✓ Thu ✓ Eri ✓ Sat Occurrence: ✓ First ✓ Second ✓ Third ✓ Fourth ✓ Last Oays of month: Hours 	
	Finish Cancel Help	

FIGURE 1-4 Runbook schedule

Once you've created the schedule, you can apply it to a runbook. You do this by selecting the schedule on the General tab of the runbook's properties, as shown in <u>Figure 1-5</u>.

a	Tails	spinToys-Test Properties
General Information This tab allows you to define	ON e the name and c	description for this runbook.
<u> </u>	Name:	TailspinToys-Test
General	Description:	
Runbook Servers		
Logging		✓
Events	Schedule:	Tailspin Schedule
Job Concurrency		
Returned Data		
		Finish Cancel Help

FIGURE 1-5 Apply runbook schedule

You check out a runbook to make changes to the runbook. When you check in a runbook, the runbook will be deployed to runbook servers. Checked-in runbooks will also synchronize to Service Manager if you have configured a connector between Service Manager and Orchestrator.

More Info: Orchestrator Runbooks

You can learn more about creating Orchestrator runbooks at <u>http://technet.microsoft.com/en-us/library/hh403790.aspx</u>.

Automating remediation of incidents

As anyone who has worked on a service desk can tell you, there are certain types of problems that users report to the service desk, or which occur in the infrastructure which are easily remediated by performing a specific set of actions. For example, a service might fail, just needing a manual restart. Using the capabilities of the System Center suite, it's possible to detect these commonly occurring problems and automatically perform the steps required to remediate them without requiring direct manual intervention by members of the IT team.

Incidents

Service Manager incidents, which you might call trouble tickets or service desk jobs in non-Service Manager environments, describe an issue with some aspect of the server, client, network, or software infrastructure that requires resolution. In the context of the 70-246 exam, a Service Manager incident would describe an issue with some aspect of the private cloud deployment that requires resolution by the IT team.

You can create an incident manually using the Service Manager console by performing the following steps:

- 1. In the Configuration Items workspace of the Service Manager console, select the Computer or User for which you want to manually create the incident.
- 2. In the Tasks pane, click Create Related Incident.

- 3. In the Tasks pane of the Incident, click Apply Template. Depending on the issue, you can select one of the default templates shown in <u>Figure 1-6</u>. The default templates are as follows:
 - Default Incident Template
 - Generic Incident Request
 - Hardware Issue Incident Template
 - High Priority Incident Template
 - Networking Issue Incident Template
 - Printing Issue Incident Template
 - Software Issue Incident Template

9	Apply Template		_ [x
	Select Template			
Туре	to filter			P
Templ	ates:			
Nam	ne 🌥	Class		
	Incident portal template	Incident		-
000	Networking Issue Incident Template	Incident		
0.0	Printing Issue Incident Template	Incident		
	Software Issue Incident Template	Incident		-
4				•
Descri	ption:			
Tem	plate applied to incidents created via the po	ortal		
		OK	0	ancel

FIGURE 1-6 Incident templates

4. Click OK and the New Incident dialog box opens. The selection of the template causes certain fields of the incident to be automatically populated. For example, choosing the Networking Issue Incident Template causes the Classification category of the incident to be set to Networking Problems as shown in Figure 1-7.

IR5 Affected user: Created on: 5/19/2014 4:12: > Tasks New Contact info: Resolve by: 00:06 Incident General Activities Related Items Resolution Service Level History Incident Information Assign > Affected user: Alternate contact method: Title: Create Problem * Description: Create Release Record Weight in the problem Market of Units Incident Information Affected user: Alternate contact method: Incident Create Problem Iternate Incident Incident Information Incident Information<	
General Activities Related Items Resolution Image: Construct Cons	^
Classification category: Source: Networking Problems Console Impact: Impact: Urgency: Medium 9 Support group: Assigned to: Primary owner: Tier 1 Escalated OK Cancel Apply	as Parent st d t t cident er Articles Comment

|--|

- **5.** After selecting an incident template, you should provide the following additional information and then click OK:
 - Affected User This is the user who reported the incident.
 - **Title** Allows you to provide a name for the incident.
 - **Description** A description of the incident.
 - Other information as necessary based on the incident itself. Some information will automatically be included with the template.
- 6. On the Activities tab of the New Incident dialog box, you can add activities such as Manual Activities or Runbook Automation Activities that are related to the incident.
- 7. On the Related Items tab, you can add Work Items, Configuration Items, Knowledge Articles, and Attached Files.
- 8. On the Resolution tab, you provide information about how the incident was resolved, how much time it took, and specify a resolution category.

9. The Service Level tab allows you to view service level information.

10. The History tab allows you to view the history of the incident.

You can also automate the Service Manager email messages sent by users indirectly by having the users submit a form through the Service Manager Self-Service Portal, or by configuring the Operations Manager Alert connector to automatically generate incidents based on Operations Manager alerts.

More Info: Managing Incidents

You can learn more about managing incidents at <u>http://technet.microsoft.com/en-us/library/hh519697.aspx</u>.

Automatic incident creation

The Operations Manager alert connector for Service Manager allows you to automatically create Service Manager incidents based on Operations Manager alerts. An Operations Manager alert is created in Operations Manager when an object that Operations Manager monitors experiences a change that is deemed worthy of attention, such as a hardware or software failure occurring on a monitored server. There are two types of Operations Manager connectors for Service Manager: the alert connector, and the configuration item (CI) connector. The CI connector imports objects that Operations Manager has discovered into the Service Manager database. Alert connectors bring alert information into Service Manager.

To create the alert connector, perform the following steps:

- 1. In the Administration workspace of the Server Manager console, click Connectors.
- 2. On the Tasks pane, click Create Connector, and then click Operations Manager Alert Connector.
- **3.** On the General page of the Operations Manager Alert Connector Wizard, provide a name for the alert connector.
- 4. On the Server Details page, shown in Figure 1-8, specify the name of the Operations Manager server and a Run As account that has permission to connect to Operations Manager. Ensure that you use the Test Connection button to verify that the account works and has appropriate permissions.

8	Operations Manager Alert connector wizard
💾 Server Details	
Before You Begin General Server Details Alert Routing Rules Schedule Summary Completion	Enter the server name and credentials for the Operations Manager server Server Information Server name: opsmgr.tailspintoys.internal Credentials Run As account: Administrator New Iest Connection
	Cancel < <u>Previous</u> <u>N</u> ext > Crea <u>t</u> e

FIGURE 1-8 Alert connector configuration

- **5.** On the Alert Routing Rules page, click Add to add an alert routing rule. An alert routing rule allows you to specify which Service Manager incident template will be used to create an incident based on an Operations Manager alert.
- 6. In the Add Alert Routing Rule dialog box, shown in <u>Figure 1-9</u>, provide the following information:
 - **Rule Name** The name of the alert routing rule.
 - **Template** The Service Manager incident template that will be used when creating the Service Manager incident.
 - Criteria Type Here you can select the conditions that trigger the alert routing rule. You can choose between the alert being generated by a specific Operations Manager management pack, being generated by a specific computer or security group, a custom field, or an Operations Manager monitoring class.
 - Select Alert Severity And Priority Allows you to specify the alert priorities and severities that will trigger the alert routing rule.

S Add Alert Routing Rule
Add Alert Routing Rule
Rule Name
Network Alerts
Template
Networking Issue Incident Template
Select Criteria Type
 Operations Manager Management Pack containing the Rule or Monitor raising the alert
Management Pack Name Equals Network Management - Core
Computer for which the alert was raised
Computer is a member of group
Custom Field
v
Operations Manager class for which the alert was raised
Monitoring class name
Select alert severity and priority
Priority High 🔹
Severity Critical
OK Cancel

FIGURE 1-9 Alert routing rule

7. As <u>Figure 1-10</u> shows, alerts that don't match any of your configured rules will automatically be created as incidents using the Operations Manager Incident Template.

8	Operations N	lanager Alert connector wiz	ard	- • ×
🗓 Alert Routing	Rules		1AA	
Before You Begin	Specify the routing	g rules for incoming alerts		
General Server Details	Rule name Network Alerts	Template Networking Issue Incide		Edit
Alert Routing Rules				Remove
Summary Completion				Down
	Alerts that do not fit ar Operations Manager I	ny of the rules above will be routed	l with the following default t	emplate:
		Cancel	<pre>< Previous</pre> <u>N</u> ext >	Crea <u>t</u> e

FIGURE 1-10 Routing rules

8. On the Schedule page, select the frequency at which Service Manager will query the Operations Manager server for alerts. You can also configure the connector so that alerts within Operations Manager will be closed when the incident that relates to the alert is resolved or closed in Service Manager. You can also configure Service Manager to automatically mark incidents as Resolved if the incident that triggered the alert in Operations Manager is closed. Figure 1-11 shows these settings.

8	Operations Manager Alert connector wizard
🖵 Schedule	
Before You Begin General Server Details Alert Routing Rules Schedule Summary Completion	Create a schedule Poll alerts every 30 seconds Close alerts in Operations Manager when incidents are resolved or closed Resolve incidents automatically when the alerts in Operations Manager are closed
	Cancel < Previous Next > Create

FIGURE 1-11 Schedule settings

9. On the Summary page, review the connector setup, and then create the connector.

Once the connector is created, you can modify the alert routing rules by editing the properties of the connector as shown in Figure 1-12.

8		Edit			x
General	▲ Alert Routing Ru	les			*
Server Details	Specify the routin	g rules for incoming alerts			
Alert Routing Rules	Rule name	Template		<u>A</u> dd	2
Schedule	Network Alerts	Networking Issue Incide		Edit	
				Remove	
				🕈 Up	
				• Down	
	Alerts that do not fit a	Incident Template	d with the following def	ault template:	
	∧ Schedule				=
	Create a schedule	•			
	Poll alerts every 3	seconds			
	Close alerts in Ope	erations Manager when incidents ar	e resolved or closed		
	Resolve incidents a	automatically when the alerts in Op	erations Manager are c	losed	-
			ОК	Cance	

FIGURE 1-12 Connector properties

More Info: Operations Manager Connector for Service Manager

You can learn more about the Operations Manager Connector for Service Manager at <u>http://technet.microsoft.com/en-us/library/hh524325.aspx</u>.

Integrating Orchestrator with Operations Manager and Service Manager

You can configure Orchestrator to integrate with Operations Manager by configuring a connection to the Operations Manager server from the Orchestrator Management server. When you do this, you can monitor and collect information from Operations Manager alerts, which you can use when building Orchestrator runbooks. To integrate Orchestrator with Operations Manager, first install the Operations Manager integration pack. You can download this integration pack from Microsoft's website. You'll also need to install the Operations Manager console on the server that hosts the Runbook Designer and verify that you can use it to make a connection to the Operations Manager server.

Once you've performed that step, you configure a connection from the Orchestrator Management server to the Operations Manager Management Group by performing the following steps:

- 1. In the Runbook Designer's Options menu, click SC 2012 Operations Manager.
- 2. On the Connections tab of the SC 2012 Operations Manager dialog box, click Add.
- **3.** In the Connection dialog box, shown in Figure 1-13, type the name of the connection, the IP address or FQDN of the Operations Manager server, and then provide the credentials of an account that has access to the Operations Manager server.

	Connection		
<u>N</u> ame	TailspinToys Ops Mgr		
Server	opsmgr.tailspintoys.internal		
Credentials			
<u>D</u> omain	tailspintoys		
<u>U</u> ser name	administrator		
<u>P</u> assword	•••••		
Monitoring Intervals			
<u>Polling</u>	10 seconds		
<u>R</u> econnect	10 seconds		
Test Connectio	n Ok Cancel		

FIGURE 1-13 Connection configuration

4. On the SC 2012 Operations Manager dialog box, shown in Figure 1-14, click Finish.

SC 2012 Operations Manager			
Microsoft System Configure the connections	Center Operations Man for the Microsoft System Center Opera	ager Connectio tions Manager objects	ns
Connections	Connection TailspinToys Ops Mgr < <u>A</u> dd <u>E</u> dit	Domain tailspintoys	Server opsmgr.tailspint
		Finish C	ancel Help

FIGURE 1-14 Operations Manager connections

Once you have configured the connection, you'll be able to use the activities that are included in the Operations Manager integration pack when building Orchestrator runbooks. These activities are shown in Figure 1-15, and have the following functionality:

- Create Alert This activity allows you to create an alert in Operations Manager.
- Get Alert This activity allows you to extract data from an Operations Manager alert. Use this activity as the basis of creating runbooks that create incidents in Service Manager by extracting relevant information from alerts and using that information when creating incidents.
- Get Monitor Use this activity to collect monitoring data. You can take the data extracted from this activity and use it to populate incidents in Service Manager.
- Monitor Alert Use this activity to watch for specific new or updated Operations Manager alerts. You might use this when configuring a runbook to have additional steps taken when specific alerts are raised in Operations Manager during runbook initiation.
- Monitor State Use this activity to monitor and run when an object managed by Operations Manager has its state changed to Warning or Critical. You might use this when configuring a runbook to have additional steps taken when the state of specific Operations Manager monitored objects changes during runbook initiation.
- Start Maintenance Mode This activity allows you to put an Operations Manager managed object into maintenance mode. Maintenance mode is a special state that suppresses alerting. For example, you would put a server into maintenance mode when applying software updates so that Operations Manager alerts aren't generated by the software update process.
- Stop Maintenance Mode This activity allows you to take an Operations Manager managed object out of maintenance mode, so that Operations Manager alerts are no longer suppressed.
- Update Alert Use this activity to update an Operations Manager alert with data. For example, you could update an Operations Manager alert with information provided in a Service Manager incident.



FIGURE 1-15 Operations Manager activities

You configure integration between Orchestrator and Service Manager by performing the following steps:

- 1. Ensure that the Service Manager integration pack is installed on the management server.
- 2. Click SC 2012 Service Manager in the Options menu of the Orchestrator Runbook Designer console.
- 3. On the Connections tab of the SC 2012 Service Manager dialog box, click Add.
- **4.** In the Connection dialog box, shown in Figure 1-16, provide the following information. Ensure that you click Test Connection to verify that the connection to the Service Manager server functions correctly.
 - **Name** Name of the connection to the Service Manager server
 - Server FQDN of the Service Manager server
 - Credentials Credentials of an account that has permission to access the Service Manager server

	Connection		
<u>N</u> ame	Tailspin Service Manager		
Server	servicemanager.tailspintoys.internal		
Credentials			
<u>D</u> omain	tailspintoys		
<u>U</u> ser name	Administrator		
Password	•••••		
Monitoring Intervals			
Polling	10 seconds		
<u>R</u> econnect	10 seconds		
Test Connecti	on Ok Cancel		

FIGURE 1-16 Connection properties

5. On the SC 2012 Service Manager dialog box, shown in Figure 1-17, click Finish.

	SC 2012	Service Manage	er	x
Connections Configure the connections for	or Microsoft System Cen	ter Service Manager.		
Connections	Name Tailspin Service	Server servicemanager	User Administrator	Domain tailspintoys
			Finish Can	icel Help

FIGURE 1-17 Service Manager connection

Once the connection between the Orchestrator and Service Manager server is established, you can use the integration pack activities, shown in <u>Figure 1-18</u>, to build workflows.



FIGURE 1-18 Service Manager integration pack activities

These activities allow you to do the following:

- Create Change With Template Use this activity to create a change record using an existing change template. When you use this activity, mandatory fields in the service manager change record need to be configured using Orchestrator when you use this activity.
- Create Object Use this activity to create a Service Manager object based on a defined class. For example, you could use this activity to create a Service Manager incident, change, or problem record.
- Create Incident With Template Use this activity to create a Service Manager incident based on an existing template. When you use this activity, mandatory fields in the Service Manager incident record need to be configured using Orchestrator.
- Create Related Object Use this activity to create new Service Manager objects that have relationships to existing Service Manager objects.
- Create Relationship Use this activity to create relationships between Service Manager elements. For example, you could use it to create a relationship between an incident and a computer or user. You can also use it to relate multiple incidents with a Service Manager problem record.
- **Delete Relationship** Use this activity to remove a relationship between Service Manager elements.
- Get Activity Use this activity to instruct Orchestrator runbook to collect activity records based on specific criteria.
- Get Object Use this activity to search for a Service Manager activity, incident, or change records based on specific criteria.
- Get Relationship Use this activity to have Orchestrator generate a list of objects from separate classes that are related by specific criteria.
- Monitor Object User this activity to configure Orchestrator to find new and updated records based on specific criteria.
- Update Activity Use this activity to update Service Manager activity records.
- Upload Attachment Use this activity to upload a file to an existing Service Manager object. For example, you might use this activity to upload a log file so that it can be stored with the incident generated automatically by an Operations Manager alert.
- **Update Object** Use this activity to modify the values of a Service Manager object's properties.

Automatic incident remediation

Automatic incident remediation involves applying a specific solution to a known problem. You can configure Orchestrator runbooks triggered by specific Operations Manager alerts. Using some of the Orchestrator activities detailed earlier in this chapter, you can take the data contained in the alert and use it to populate a new Service Manager incident. The Orchestrator runbook can then perform the tasks necessary to automatically remediate the incident. For example, the Orchestrator runbook could run an activity that restarts the service that caused the original Operations Manager alert. Once the Operations Manager alert has been dealt with, the Orchestrator runbook could then update the Service Manager incident, closing both the incident and the Operations Manager alert once the issue that caused the alert has been resolved.

More Info: Incident Remediation

You can learn more about incident remediation with Operations Manager and Orchestrator by consulting the following TechNet article at *http://social.technet.microsoft.com/wiki/contents/articles/12602.system-center-operations-*

<u>manager-incident-remediation-with-system-center-orchestrator.aspx</u>.

Change and activity management workflows

Workflows allow you to automate processes within Service Manager, making interactions with Service Manager more efficient. For example, you can configure workflows that will automatically close completed change requests, or configure workflows that will automatically notify Service Manager users when approvals are required. Using the Server Manager console, you can configure change management workflows that configure change request conditions and apply change request templates. You can also configure activity management workflows to configure activity management conditions and apply activity templates.

More Info: Change and Activity Management

You can learn more about change and activity management in Service Manager by consulting the following TechNet article at <u>http://technet.microsoft.com/en-us/library/hh495590.aspx</u>.

Change request templates

Change request templates store a common set of settings, applying these settings to new change requests. For example, you can create a change request template related to adding a new database to a SQL Server instance that includes commonly used properties, minimizing the amount of information that a user is required to enter when requesting such a change.

To create a change request template, perform the following steps:

- 1. In the Library workspace of the Server Manager console, click Templates, and then in the Tasks pane, click Create Template.
- 2. On the Create Template dialog box, specify a name for the template. Select the Change Request Class as shown in Figure 1-19, and select a Management Pack in which to store the new template.

🛛 Create Template 🗕 🗖	x
Create Template	
Enter a name and description for the template	
Name:	
Tailspin SQL Database Add Change Request	
Description:	
Class:	
Change Request Browse.	
For example, to create an incident template, select the Incident class.	
Select an unsealed management pack where the template will be saved. <u>M</u> anagement pack	
Service Manager Change Management Configuration Library Last modified: 5/17/2014 5:07:35 AM	
When I click OK, open the template form.	
OK Cano	el

FIGURE 1-19 Create change request template

3. When you click OK, the Change Request Template form will be displayed. In this form, provide information that will be pre-populated on a change request template. As shown in Figure 1-20, this can include the area of the organization that the template applies to, the priority the change request should be assigned by default, as well as default impact and risk values.

Change Request Template: Tailspin SQL Database Add Change Req	uest 💶 🗖 🗙
10 Category: Created date:	> Tasks
New Template ID:	
General Planning Activities Results Related Items History Template Description:	Change Request
Reason:	Print Put On Hold Resume Return to Activity
	📾 Search for Knowledge Articles
Created By: Alternate contact method:	General A
Area: Assigned To: Software 	
Low	
ID Type Name Status Last Modified Add QK Cancel Apply	

FIGURE 1-20 Configure change request template

4. On the Activities tab, you can add activities to the template. These additions can include any configured activity including runbook automation activities. Usually with Change Requests, you'd add a Default Review Activity as shown in Figure 1-21, which would allow another user to review and authorize the change request.



FIGURE 1-21 Change request template activities

More Info: Change Request Templates

You can learn more about creating change request templates in Service Manager by consulting the following TechNet article at <u>http://technet.microsoft.com/en-us/library/hh495644.aspx</u>.

Change management workflows

You can use change management workflows to automate the process of dealing with change management requests. To create a change management workflow, perform the following steps:

- 1. In the Administration workspace or the Service Manager console, expand the Workflows node, and click Configuration.
- 2. In the Configuration pane, click Change Request Event Workflow Configuration, and in the Tasks pane, click Configure Workflow Rules.
- 3. In the Configure Workflows dialog box, click Add.
- 4. On the Workflow Information page of the Configure Workflows For Objects Of Class Change

Request dialog box, shown in <u>Figure 1-22</u>, specify a name, whether the event that triggers the workflow is when an object is created, or updated, and a management pack in which to store the workflow.

8	Configure workflows for objects of class Change Request
👔 Workflow Inf	ormation
Before You Begin	Descride e serve and description to indicate whether we define is intended to de. These service when
Workflow Information	Service Manager should check for the events that trigger this workflow.
Specify Criteria	N <u>a</u> me:
Apply Template	Tailspin Change Management Workflow
Select People to Notify Summary Completion	Description (optional):
	Check for events:
	When an object is created 🔹
	Select an existing unsealed management pack where this workflow will be stored. Management pack Service Manager Change Management Configuration Library Last modified: 5/20/2014 6:11:58 AM ✓ Enabled
	Cancel < Previous

FIGURE 1-22 Workflow information

5. On the Specify Criteria page, ensure that Change Request is selected. In the list of available properties, select a criteria that will determine whether the change management workflow is applied. For example, in Figure 1-23, the change management workflow will be applied if the change request area is set to Security.

8	Configure workflows for objects of class Change Request
💈 Specify Criter	ia
Before You Begin Workflow Information	First, add the criteria for events in objects of class Change Request that will trigger the workflow. Then, select criteria and specify the threshold for each one.
Specify Criteria	Changed to
Apply Template Select People to Notify Summary Completion	Affected User Assigned To User Closed By User Created By User Has Parent Work Item Requested By User Criteria: Criteria: [Change Request] Area equals Security
	Cancel < Previous

FIGURE 1-23 Workflow criteria

6. On the Apply Template page, click Apply The Selected Template. You can then choose one of the existing change management templates to apply. <u>Figure 1-24</u> shows the Security Release Change Request template selected.

8	Configure workflows for object	s of class Change Request	- 🗆 X
👔 Apply Templa	te		
Before You Begin Workflow Information Specify Criteria	Select the template you want to apply selected template, clear the checkbox. Apply the selected template.	to the objects of class Change Request. To stop a	applying the
Apply Template	Taraalataa		
Select People to Notify Summary Completion	Name Major Change Request Major Change Request Minor Change Request Publish Offering Security Release Standard Change Request Tailspin SQL Database Add Ch Description:	Class Change Request Change Request Change Request Change Request Change Request Change Request	
	Hea Cacurity Dalaaca tamalata for ca	curity natch contario. It includes tunical stone for	• •
		Cancel < <u>P</u> revious <u>N</u> ext >	Create

FIGURE 1-24 Apply template

- 7. On the Select People To Notify page, specify whether users should be notified when this change management workflow is triggered.
- 8. On the Summary page, review the settings, and click Create to create the change management workflow.

More Info: Change Management Workflows

You can learn more about creating change management workflows in Service Manager by consulting the following TechNet article at <u>http://technet.microsoft.com/en-us/library/hh519653.aspx</u>.

Activity management workflows

Activity management workflows allow you to automate the management of activities based on the properties of the activity. For example, you might create a workflow to assign all unassigned manual activities to a particular member of the IT staff. To create an activity management workflow, perform the following steps:

- 1. In the Administration workspace of the Server Manager console, click Configuration under the Workflows node.
- 2. In the Configuration pane, select the Activity Event Workflow node, and then click Configure Workflow Rules in the tasks pane.
- **3.** On the Select A Class dialog box, shown in <u>Figure 1-25</u>, click the activity class to which you want the workflow to apply.

pe to filter	Q	Frequent	ly used basic classes 🔹 🔻
Vame	Management Pack		Description
Dependent Activity	System Work Item Activity Library		Defines the basic properties of
Manual Activity	System Work Item Activity Library		Defines the basic properties of
Parallel Activity	System Work Item Activity Library		Defines the basic properties of
Portal software deployment activity	Microsoft System Center Service Manager Portal Library		Activity to perform software of
Publish Activity	System Service Catalog Library		Publish Activity
Review Activity	System Work Item Activity Library		Defines the basic properties of
Runbook Automation Activity	System Center Orchestrator Library		Runbook Automation Activity
Sequential Activity	System Work Item Activity Library		Defines the basic properties of

FIGURE 1-25 Activity class

- 4. On the Configure Workflows dialog box, click Add.
- 5. On the Workflow Information page of the Configure Workflows For Objects Of Class, specify a name for the activity management workflow, a management pack to store the workflow, and whether the workflow will be triggered upon object creation or object modification.
- 6. On the Specify Criteria page, select a property and criteria that will trigger the workflow. For example, in Figure 1-26, the criteria is that the Activity Status equals Failed.

8	Configure workflows for objects of class Manual Activity
Specify Criter	ria
Before You Begin	First, add the criteria for events in objects of class Manual Activity that will trigger the workflow. Then, select criteria and specify the threshold for each one.
	Changed to
Specify Criteria	Related classes: Available properties:
Apply Template Select People to Notify Summary Completion	Manual Activity Search> Skip Stage
completion	□ Status □ Title □ User Input ▲dd
	Criteria:
	[Activity]Status equals Failed X
	Cancel < Previous

FIGURE 1-26 Activity criteria

- 7. On the Apply Template page, you can choose to apply a template.
- 8. On the Select People To Notify, you can choose to notify specific people. When you choose to notify a person, you select who is to be notified and the message template.
- 9. On the Summary page, click Create.

More Info: Activity Workflows

You can learn more about creating activity management workflows in Service Manager by consulting the following TechNet article at <u>http://technet.microsoft.com/en-us/library/hh495617.aspx</u>.



Exam Tip

Remember that Operations Manager raises alerts, the cause of which can be resolved by running an Orchestrator runbook. Information about the alert and the resolution can be written to Service Manager by the Orchestrator runbook.



Thought experiment: Workflows at Tailspin Toys

You are in the process of configuring a private cloud trial deployment at Tailspin Toys. One of the aims of the eventual deployment is to empower users by allowing them to submit their own change requests through a web portal, rather than having them submit change requests using a more traditional pen and paper method. In the final deployment you want to have any alert raised by Operations Manager also raised as an incident in Service Manager. For the trial, you will restrict this to alerts raised in Operations Manager that are related to monitored SQL Servers.

You have the following goals for the trial:

- You want to have incidents automatically raised based on Operations Manager alerts generated by SQL Server management packs.
- You want users to be able to submit change requests through the Service Manager selfservice portal.
- You want to have all change requests that the IT staff set to completed, automatically closed by Service Manager.

With this information in mind, answer the following questions:

- 1. Which System Center products do you need to deploy to support this solution?
- 2. Which connectors must you configure to support this solution?
- 3. What type of workflow must you configure to accomplish your goal?

Objective summary

- Orchestrator allows you to create runbook automation. You do this by linking activities from integration packs.
- You can configure Operations Manager to automatically create Service Manager incidents from alerts generated in Operations Manager.
- You can configure an Orchestrator runbook to create Service Manager incidents using the Service Manager integration pack.
- You can configure a Service Manager incident to trigger an Orchestrator runbook, which you can use to automatically resolve some types of issues.
- Change request templates store a common set of settings, applying these settings to new change requests.
- You can use change management workflows to automate the process of dealing with change management requests.

Objective review

Answer the following questions to test your knowledge of the information in this objective. You can find the answers to these questions and explanations of why each answer choice is correct or incorrect in the "<u>Answers</u>" section at the end of this chapter.

- 1. You want to create a runbook in System Center 2012 R2 Orchestrator that creates Service Manager incidents in response to Operations Manager alerts. Your organization has one Operations Manager server, one Orchestrator server, and one Service Manager server. Which of the following steps should you take?
 - A. Configure a connection from the Operations Manager server to the Orchestrator server. Install the Orchestrator management pack on the Operations Manager server.
 - **B.** Configure a connection from the Orchestrator server to the Operations Manager server. Install the Operations Manager integration pack on to the Orchestrator server.

- C. Configure a connection from the Orchestrator server to the Service Manager server. Install the Service Manager integration pack on to the Orchestrator server.
- **D.** Configure the Operations Manager connector on the Service Manager server. Configure alert routing rules for the connector on the Service Manager server.
- 2. You want to have alerts from any of the SQL Server 2012 instances monitored by your organization's Operations Manager deployment automatically assigned as Service Manager incidents to Barry the SQL Server administrator. All SQL Server alerts on the Operations Manager server are triggered by rules stored within a SQL Server 2012 management pack. Your organization has one Operations Manager server and one Service Manager server. You have not deployed any other System Center products. Which of the following steps would you take to accomplish this goal?
 - A. Configure the Operations Manager connector on the Service Manager server.
 - B. Deploy the Operations Manager agent on the Service Manager server.
 - C. Create an incident template for SQL Server events that assigns the incident to Barry. Create an Alert Routing rule for alerts generated by the SQL Server 2012 Management pack that applies this incident template.
 - **D.** Create an Orchestrator runbook that creates an incident on the Service Manager server when an alert is raised on the Operations Manager server related to the SQL Server 2012 management pack.
- <u>3</u>. You want to configure Service Manager so that Barry the SQL Server Administrator is notified when a SQL Server related change request is entered into the Service Manager database. Which of the following would you configure in Service Manager to accomplish this goal?
 - A. Configure a change request workflow.
 - B. Configure an incident event workflow.
 - C. Configure an activity event workflow.
 - **D.** Configure a desired configuration management event workflow.
- <u>4</u>. You are creating a new change request template in Service Manager. Which class should you select when creating the template?
 - A. Change Request
 - B. Incident
 - C. Problem
 - D. Knowledge Article
- 5. Which activity in the Operations Manager integration pack for Orchestrator do you use to extract data from an Operations Manager alert?
 - A. Create Alert
 - B. Get Alert
 - C. Monitor Alert
 - **D.** Update Alert

Objective 1.2: Implementing service offerings

Another important aspect of private cloud automation is implementing as much self-service functionality for users as possible. Rather than having to always ring the service desk to log a job, self-service allows many routine IT requests to be initiated by the user through a web browser interface. In some cases, these requests can be resolved without requiring the direct intervention of a member of the IT team, and in others they can be resolved subject to approval.

This objective covers how to:

- Creating custom workflows
- Self-Service Portal
- Service catalog
- Request offerings
- Service offerings
- Catalog item groups
- Orchestrator and Service Manager
- Using Orchestrator runbooks with Service Manager
- Self-service provisioning of virtual machines

Creating custom workflows

Earlier in this chapter you learned how to configure change management and activity management workflows, functionality for which is built into Server Manager 2012 R2. You can create new custom workflows for Service Manager using the System Center 2012 - Service Manager Authoring Tool. By building custom workflows, you can further automate Service Manager processes. You can download the Service Manager Authoring Tool from Microsoft's website.

More Info: Creating Custom Workflows

You can learn more about creating custom Service Manager workflows at <u>http://technet.microsoft.com/en-us/library/hh519585.aspx</u>.

To create a new workflow that runs on a scheduled basis, perform the following steps:

- 1. In the Service Manager Authoring Tool, select the management pack that will store the workflow or create a new management pack.
- 2. Right-click Workflows, and click Create. This will launch the Create Workflow Wizard as shown in <u>Figure 1-27</u>. Provide a name for the workflow. If you want to modify the default values for the workflow, retry intervals and time to run, click Advanced. The maximum time to run must be greater than 60 seconds and less than 24 hours.

	Create Workflow Wizard
🛐 General	
General Trigger Condition Trigger Criteria	Name the workflow Name: Tailspin_Workflow
Summary Completion	Description(optional):
	To change the default limits on how the workflow runs, click Advanced.
	Cancel < Previous Next > Create

FIGURE 1-27 Create workflow

3. On the Trigger Condition page, select Run At A Scheduled Time Or At Scheduled Intervals as shown in Figure 1-28. You can also custom workflows to run in response to database object changes.

	Create Workflow Wizard
🛐 Trigger Condi	ition
General	Select the condition that will cause this workflow to run
Trigger Condition	
Trigger Criteria	Run at a scheduled time or at scheduled intervals
Summary	
Completion	Run only when a database object meets specified conditions
	Cancel < Previous Next > Create

FIGURE 1-28 Trigger condition

4. On the Trigger Criteria page, configure the schedule for running the custom workflow.

5. On the Summary page, click Create.

Once you've created the workflow, you can use the Service Manager Authoring Tool to edit the workflow. You do this by dropping and configuring activities in a manner similar to configuring an Orchestrator runbook. Figure 1-29 shows the Service Manager Authoring Tool.



FIGURE 1-29 Custom workflow authoring

To add a custom workflow to Service Manager, copy the workflow files, which will have the name of the management pack with the .xml and .dll file name extensions, to the Service Manager installation folder. In the Service Manager console, import the management pack from the Administration workspace. Once imported, you can use the workflow with Service Manager.

Self-Service Portal

The Service Manager 2012 R2 Self-Service Portal is a SharePoint 2010 website that customers can use to submit requests for service offerings and request offerings using their web browser. The Self-Service Portal leverages Service Manager user roles, meaning that users will be presented with different request and service offerings depending on role membership. Users are able to submit requests and view the status of those requests using the portal. Figure 1-30 shows the Service Manager 2012 R2 Self-Service Portal.



FIGURE 1-30 Self-Service Portal

When a user submits a request using the self-service website, the request is forwarded to the Service Manager server where the information submitted through the self-service website is processed. You can publish Service Manager requests and service offerings to the Self-Service Portal. Many organizations use the Self-Service Portal to allow users to submit their own incident tickets as an alternative to contacting the help desk.

This functionality is only the tip of the iceberg. If you integrate Service Manager with other System Center products, such as Operations Manager, Orchestrator, and Virtual Machine Manager, you can offer services that leverage these products through the Self-Service Portal. For example you could create a service offering that:

- 1. Allows users to request and deploy virtual machines through System Center Virtual Machine Manager, with the details of that request and subsequent deployment all logged within Service Manager.
- 2. Allows users to put SQL Server databases into protection, or perform self-service recovery by leveraging Service Manager integration with Data Protection Manager and Orchestrator.
- **3.** Allows users to trigger Orchestrator runbooks. Since runbooks can be created to perform almost any task within your organization's Windows-based infrastructure, you can provide users with the ability, through the Self-Service Portal, to trigger any task for which you can build a runbook.

The Self-Service Portal can be hosted on a separate computer from the Service Manager server. One

important thing to note is that you can only use SharePoint 2010 to host the Service Manager 2012 R2 RTM Self-service website. You cannot use SharePoint 2013 to host the Service Manager 2012 R2 RTM self-service website. This is important as you can deploy SharePoint 2010 on a computer running Windows Server 2008 R2, but cannot deploy it on computers running the Windows Server 2012 R2 operating systems. This means that you must deploy at least one computer running Windows Server 2008 R2 with SharePoint 2010 even if all of the other server operating systems in your environment are running Windows Server 2012 R2.

More Info: Self-Service Portal

You can learn more about the Self-Service Portal at <u>http://technet.microsoft.com/en-us/library/hh914195.aspx</u>.

Service catalog

The service catalog is a collection of Service Manager items, assistance, actions, or groupings of items, assistance, or actions. You make service catalog items available through the Self-Service Portal by publishing them either as request offerings or service offerings. Figure 1-31 shows the Service Catalog node of the Service Manager console.



FIGURE 1-31 Service catalog

You use the Request Offerings node to create service catalog items that are available to users. Request offerings allow you to specify what information you want to prompt the users to provide and any knowledge articles that you've created within Service Manager that might be related to the request offering. Service offerings allow you to create service catalog items that assign categories to request offerings.

More Info: Service Catalog

You can learn more about the service catalog at <u>http://technet.microsoft.com/en-us/library/hh495564.aspx</u>.

Request offerings

Request offerings are items or actions that you can make available to users through the service catalog. You usually collect request offerings in groups termed service offerings. You can publish service offerings and request offerings to the Self-Service Portal. To give users access to these service and request offerings, you need to assign them to Service Manager user roles that are associated with a catalog group that contains these items.

To create a request offering, perform the following steps:

- 1. In the Library workspace of the Service Manager console, expand the Service Catalog node, click the Request Offerings node, and in the Actions pane, click Create Request Offering.
- 2. On the Before You Begin page of the Create A Request Offering Wizard, click Next.
- 3. On the Create Request Offering page, shown in Figure 1-32, provide the following information:

8	Create Request Offering
General	
Before You Begin	Specify the information for this offering
General	
User Prompts	Title:
Configure Prompts	Typical Incident Kequest
Map Prompts	Image (32 x 32):
Knowledge Articles	Browse
Publish	
Summary	Description, shown on the request offering page:
Completion	Typical Incident Request
	Template name:
	Default Service Request 🦢 Select template 🔻
	Management pack
	Service Catalog Generic Incident Request Last modified: 5/17/2014 5:14:07 AM
	Cancel < <u>P</u> revious <u>N</u> ext > Crea <u>t</u> e

FIGURE 1-32 Create request offering

- **Title** Use this to specify the name of the request offering.
- Image Allows you to associate an image with the request offering. This image will be present with the request offering in the Self-Service Portal.
- Description Use this to provide a description of the request offering. This description will be present with the request offering in the Self-Service Portal.
- **Template** Use this drop-down menu to select an existing service request template.
- Management Pack Use this option to specify an unsealed management pack in which to store the request offering.
- 4. On the User Prompts page of the Create Request Offering Wizard, shown in Figure 1-33,

provide prompts that users can respond to when accessing the request offering.

	Create Request Offering		– – X
User Prompts		Aa	
Before You Begin	Enter the prompts or information text		
General	Form instructions:		
User Prompts	Provide your name, department, and incident type		
Configure Prompts			
Map Prompts			
Knowledge Articles	Enter prompts or information text		🔶 🗙 🏠 🐥
Publish	User Prompts or Information	Response Type	Prompt Type
Summary	> 1 Enter Name	Required	Text
Completion	> 2 Select Department	Required	Simple List
	3 Incident Type	Required	Simple List
	*		
	-		
	You can configure the prompts above on the net above o	xt wizard pages.	
	Cano	tel < <u>P</u> revious <u>N</u>	ext > Create

FIGURE 1-33 Configure user prompts

You can configure the following prompt types:

- Date
- Decimal
- File Attachment
- Integer
- MP Enumeration List
- Query Results
- Simple List
- Text
- True/False
- **5.** On the Configure Prompts page, you specify additional required information to assist the user in providing information to the prompts. For example, if you specified one of the prompts as a simple list, you would create the list options that the user would be able to select from as shown in Figure 1-34.

3					Configure Simple List				x
	_			insula List					
l		Con	ingure s	imple List					
						🗣 🗡 1	N 🗣 🔽 S	et as defau	lt
		Order	Default	Display Name					
	4	1		Engineering					^
	•	2	2 2	Operations					
	Þ	3		Science					
	•	4	-	Command					
	•								
8									*
							<u>O</u> K	Cano	cel

FIGURE 1-34 Configure lists

- 6. On the Map Prompts page, associate the prompts with the service request template. The prompts required will depend on the service request template.
- 7. On the Knowledge Articles page, you can specify knowledge articles that will appear with the request offering in the Self-Service Portal. This allows you to associate useful documentation with the service offering. For example, you might associate a knowledge article listing the top problems submitted as service requests by users and their solutions.
- 8. On the Publish page, shown in Figure 1-35, you can configure whether the Offering Status is Published, and the Offering Owner.

3	Create Request Offering
Publish	
Before You Begin General User Prompts Configure Prompts Map Prompts Knowledge Articles Publish Summary Completion	Specify publishing information. Offerings must be set to Published in order for them to appear on the portal. Offering status: Offering owner: Published <
	Cancel < Previous Next > Create

FIGURE 1-35 Publish settings

9. The Summary page provides summary information about the request offering. The completion page will confirm the creation of the request offering.

You can configure a request offering's status to either Draft or Published. A request offering assigned the draft status won't be available to the service catalog and cannot be requested by users. Setting a request offering's status to Published will make it appear in the catalog to users that have been granted access to the catalog item group that has the request offering as a member.

More Info: Request Offerings

You can learn more about creating request offerings at <u>http://technet.microsoft.com/en-us/library/hh519639.aspx</u>.

Service offerings

Service offerings are collections of request offerings. A single request offering can be associated with multiple service offerings. Self-service users are only able to access service offerings and their associated request offerings if:

- Both the service offering and request offerings have their status set to Published.
- The end users are assigned to a user role associated with a catalog item group that contains the service offering and request offering catalog items.

To create a service offering, perform the following steps:

1. Click Service Offerings in the Library workspace of the Service Manger console.

- 2. In the Tasks pane, click Create Service Offering.
- **3.** On the General page of the Create Service Offering Wizard, shown in <u>Figure 1-36</u>, provide the following information:
 - **Title** The name of the service offering.
 - **Image** An image that will be associated with the service offering on the Self-Service Portal.
 - Category Allows you to specify a category to associate with the service offering. You can create your own custom categories.
 - **Language** Allows you to specify a language for the service offering.
 - Overview This short overview will be displayed on the Self-Service Portal home page.
 - **Description** This lengthier description will be available on the service offering's page in the Self-Service Portal.
 - Management Pack Allows you to specify the unsealed management pack in which the service offering will be stored.

	Create Service Offering
👔 General	
Before You Begin	Specify the information for this offering
General	Title: Image (32 x 32):
Detailed Information	Tailspin Toys Service Offering Browse
Related Services	
Knowledge Articles	Category: Language:
Request Offering	General English (Australia)
Publish	Overview, shown on the portal home page:
Summary	Collection of request offerings
Completion	Description, shown on the service offering page:
	Collection of tailspin toys request offerings
	Management pack
	TailspinToys-MP Last modified: 5/18/2014 4:10:32 AM
	Cancel < <u>P</u> revious Crea <u>t</u> e

FIGURE 1-36 Create service offering

- 4. On the Detailed Information page, you can specify the following information:
 - Service level agreement information
 - Link for additional information
 - Cost information
 - Link for additional information
- 5. On the Related Service page you can specify business services associated with the service

offering.

- **6.** On the Knowledge Articles page, you can specify Service Manager knowledge articles associated with the service offering.
- 7. On the Request Offering page, shown in Figure 1-37, you specify the request offerings that self-service users will see grouped with this service offering.

8	Create Servi	ce Offering		_ 🗆 X
🎢 Request Offer	ring		1A	
Before You Begin	Select the request offerings	that users will se	e grouped under this se	ervice offering
General Detailed Information Related Services	Reguest offerings: Title Generic Incident Request	Status Published	Last Modified 5/17/2014 5:10:50 AM	Add Remove
Request Offering	Typical Incident Request	Published	5/17/2014 11:53:40 PM	<u>O</u> pen
Publish				
Summary				2
Completion				
		Cancel	< <u>P</u> revious <u>N</u> ext >	Crea <u>t</u> e

FIGURE 1-37 Create service offering

- 8. On the Publish page, select between assigning the service offering the Draft or Published status.
- 9. On the Summary page, review the information related to the service offering.

More Info: Service Offering

You can learn more about creating service offerings at <u>http://technet.microsoft.com/en-us/library/hh519639.aspx</u>.

Catalog item groups

You use catalog item groups to restrict access to service manager catalog items. You add service manager catalog items to the catalog item group, and then configure access to the catalog item group by configuring a Service Manager user role. Service manager catalog items can be members of multiple catalog item groups. By default Service Manager has two catalog item groups:

- Generic Incident Request Catalog Items Group
- Global Operators Group

To create a catalog item group, perform the following general steps:

- In the Library workspace of the Service Manager console, click the Groups node.
- In the Tasks pane, click Create Catalog Group.
- On the General page of the Create Catalog Items Group Wizard, specify a group name, group description, and a management pack in which to save the group as shown in Figure 1-38.

8	Create Catalog items group
🔁 General	
Before You Begin	Group name:
General	TailspinToys Catalog Item Group
Included Members Dynamic Members Subgroups Excluded Members Summary Completion	Group description: TailspinToys Catalog Item Group Select an existing management pack where this group will be stored. Management pack TailspinToys-MP Last modified: 5/18/2014 4:01:07 AM
	Cancel < <u>P</u> revious Crea <u>t</u> e Crea <u>t</u> e

FIGURE 1-38 Catalog items group

1. On the Included Members page, specify the items that will be included as members of the group as shown in Figure 1-39. You can view by Catalog Item, Offering, Request Offering, or Service Offering.

W	Create Cata	alog items group	- 🗆 X
🔯 Included Mer	nbers		
Before You Begin General	Included Members Choose the items that will be	included as members of this group.	
Included Members Dynamic Members Subgroups Excluded Members Summary Completion	Name Generic Incident Request Typical Incident Request	Path ServiceManager.ServiceCata Offering30183491d8604787	<u>A</u> dd <u>R</u> emove
	·	Cancel < <u>P</u> revious	Next > Create

FIGURE 1-39 Included members

- 2. On the Dynamic Members page, you can have items added automatically on the basis of class and criteria.
- **3.** On the Subgroups page, you can select existing groups as members of the new group that you are creating.
- **4.** On the Excluded Members page, you can automatically exclude a class and specific objects based on class and criteria.

More Info: Catalog Groups

You can learn more about creating service offerings at <u>http://technet.microsoft.com/en-us/library/hh519639.aspx</u>.

To provide access to members of a specific user role, edit the properties of that role and specify the catalog item groups to which the user role should have access as shown in <u>Figure 1-40</u>.

9	Edit User Role 📃 🗖 🗙
General	Catalog item Groups
Queues	Select the catalog item groups to which user role has access
Configuration it	Selecting catalog groups limits access to Catalog Items. Select the catalog groups that you want to be available to the users in this user role. Catalog items in groups that are not selected will not be visible to
Catalog item Gr	users in this role.
Form Templates	<u>All catalog items can be accessed</u> Provide access to only the selected groups
Users	Name Management Packs
	Generic Incident Request Catalo Service Catalog Generic Incide
	TailspinToys Catalog Item Group TailspinToys-MP
	Catalog Item Group System Service Catalog Library
	▲ Form Templates
	Select the forms to which the user role has access
	OK Cancel

FIGURE 1-40 Edit user role

Orchestrator and Service Manager

Earlier in this chapter you learned how to connect Orchestrator to Service Manager, which allows you to use Orchestrator runbooks to perform tasks in Service Manager. You can also configure a connector that works the other way, between Service Manager and Orchestrator, which allows Service Manager to make reference to and utilize Orchestrator runbooks. To configure the connector between Service Manager and Orchestrator, perform the following steps:

- 1. In the Administration workspace of the Service Manager console, click Connectors.
- 2. In the Tasks pane, click Create Connector, and then click Orchestrator Connector.
- 3. On the General page of the Orchestrator Connector Wizard, enter a name for the connector.
- 4. On the Connection page, specify the Orchestrator Web Service URL as shown in <u>Figure 1-41</u>, and the operational database account. The URL of the Orchestrator web service will be <u>http://computer.fqdn:81/Orchestrator2012/Orchestrator.svc</u>. The Run As account you use must have the right to connect to Orchestrator. Ensure that you click Test Connection to verify that the connection is successful.

8	Orchestrator connector wizard
Before You Begin General Connection Sync folder Web Console URL Summary Completion	Provide the URL and credentials for the Orchestrator web service Server Information Orchestrator Web Service URL: http://orchestrator.81/Orchestrator2012/Orchestrator.svc Credentials Run As account: Administrator Ngw Itest Connection
	Cancel < Previous Next > Create

FIGURE 1-41 Orchestrator connector

- 5. On the Sync Folder page, select a Sync Folder, and click Next.
- 6. On the Web Console URL page, shown in Figure 1-42, specify the URL for the Orchestrator web console. The URL will be <u>http://computer.fqdn:82</u>.

8	Orchestrator connector wizard	_		x	
🖵 Web Console	e URL				
Before You Begin General	Provide an Orchestrator Web Console URL				
Connection Sync folder	If you would like to enable hyperlinks to runbook information and job details, enter the Orchestrator Web Console server (e.g.: http://webconsole:82/)	URL	of the		
Web Console URL Summary Completion	http://orchestrator:82				
	Cancel < Previous Next >]	Crea	te]

FIGURE 1-42 Web console URL

7. On the Summary page, review the settings, and click Create.

You will be able to verify that the process has worked by navigating to the Library workspace and clicking the Runbooks node. Any runbooks that you've created on the Orchestrator will be present in this node. Figure 1-43 shows this node with a runbook present.

0			Se	rvice Manager Console			_ D X
<u>F</u> ile <u>L</u> anguage <u>V</u> iew <u>G</u> o <u>T</u> ools T <u>a</u> sks		<u>l</u> elp					
🗲 🔶 👻 👫 🔪 🕨 Library 🕨 Libr	ary	 Runbooks 				•	¢ 🖉
Library	(Runbooks 1					> Tasks
🖌 🚘 Library	*	Filter			P Edit Cr	riteria 🗸	20
🔽 Groups		Name	Des	Folder Path	Status		TailspinToys-Test ^
Image: Image Im		TailspinToys-Test		\Tailspin-Runbooks\TailspinToys	Active		+ Create Runbook Automation Activity Ter
🐴 Lists							X Delete
Runbooks							Properties
 Service Catalog 							Search for Knowledge Articles
Request Offerings		TailspinToys-Test				*	View Runbook
All Request Offerings		Object				*	Runbooks ^
Draft Request Offerings	-						👔 Refresh
Standalone Request Offerings		Display Name:				_	
	Ŧ	TailspinToys-Test					
Administration							
		System Center On	chestra	tor Runbook Item			
🔋 Work Items		ld:			Name:		
Configuration Items	-	1243b45be6eb4b3	ea1e1a)96f4293920	TailspinToys-Te	est	
-		Description:			Folder Path:	Ŧ	
		4				÷	
Connected to SERVICEMANAGER							li.

FIGURE 1-43 Synchronized runbooks

More Info: Creating Orchestrator Connector

You can learn more about creating a connector between Service Manager and Orchestrator by consult the following article at <u>http://technet.microsoft.com/en-us/library/hh519779.aspx</u>.

Using Orchestrator runbooks with Service Manager

Once information about runbooks is imported from Orchestrator into Service Manager by configuring the Orchestrator connector for Service Manager, you can trigger the runbooks from Service Manager by configuring runbook automation activity templates.

To create a runbook automation activity template, perform the following steps:

- 1. In the Library workspace of the Service Manager console, click Runbooks, and click the Orchestrator runbook for which you want to create an activity template.
- 2. On the Tasks pane, click Create Runbook Automation Activity Template.
- **3.** In the Create Template dialog box, specify a name for the template as shown in Figure 1-44, ensure the class Runbook Automation Activity is selected, and select a management pack to store the runbook in.

Create Template	_ [x
Create Template		
Enter a name and description for the template		
Name:		
Tailspin Toys Runbook		
Description:		
Class:		
Runbook Automation Activity	Brov	vse
For example, to create an incident template, select the Incident class.		
Select an unsealed management pack where the template will be saved.		
Management pack		
Tailspin Toys MP	N <u>e</u>	w
Last modified: 5/20/2014 4:33:02 AM		
When I click OK, open the template form.		
ОК	C	ancel

FIGURE 1-44 Create template

4. When you click OK, the Runbook Activity Template will open. Provide a title for the template and ensure that the Is Ready For Automation option is selected, as shown in <u>Figure 1-45</u>.

8	Runbook Activity	Template: Tailspin Toys Runbook	_ 🗆 X
	Status: Parent Work Item:	Created On: 5/20/2014 4:35:46 AM Created By:	> Tasks
General Runbook Runbook Activity <u>Title:</u> Tailspin Toys Runbook	Configuration Items Scheduling	Related Items History	Runbook Automation A ^ * Create Change Request * Create Release Record • Print • Search for Knowledge Articles • View Associated Runbook • View Most Recent Job
Description:	Designer:	Stage:	General Refresh
		<u>O</u> K <u>Cancel</u> <u>Apply</u>	

FIGURE 1-45 Runbook Activity Template

- 5. On the Runbook tab, there will be a list of parameters that are used for runbook input and output. You can edit mappings and specify default values to be used when Service Manager triggers the runbook.
- 6. Click OK to close and save the runbook automation activity template.

More Info: Using Runbooks with Service Manager

You can learn more about using Orchestrator runbooks with Service Manager at <u>http://technet.microsoft.com/en-us/library/hh519695.aspx</u>.

Self-service provisioning of virtual machines

When you enable self-service virtual machine provisioning, users are able to navigate to a specially configured portal and are able to use the portal to request virtual machines by filling out a form providing relevant details. The type of portal and the details required will depend on the self-service strategy that you choose. There are three basic strategies that you can pursue when providing self-service virtual machine provisioning to users when using Hyper-V and the System Center products. These are:

- Self-service with Virtual Machine Manager, and App Controller
- Self-service with Virtual Machine Manager, Service Manager, and Orchestrator
- Self-service with the Windows Azure pack

Self-service with VMM and App Controller

System Center App Controller provides users with self-service virtual machine deployment functionality for VMM 2012 SP1 and VMM 2012 R2. App Controller runs as a web application, shown in <u>Figure 1-46</u>. To perform self-service virtual machine deployment using App Controller, a user must be a member of a VMM self-service user role.



More Info: Self-Service in VMM

You can learn more about self-service in VMM by consulting the following article at <u>http://technet.microsoft.com/en-us/library/gg610573.aspx</u>.

To create a self-service user role in VMM, perform the following steps:

- 1. Click Create User Role on the ribbon when in the Settings workspace of the VMM console.
- 2. On the Name And Description page of the Create User Role Wizard, provide a name for the role and an optional description.
- 3. On the Profile page, click Application Administrator (Self-Service User), as shown in Figure 1-<u>47</u>.

•	Create User Role Wizard	x
Profile		
Name and description Profile Members Scope Networking Resources Permissions Summary	Select a user role profile for this user role The profile that you select determines the actions that will be available for members of this user role. Eabric Administrator (Delegated Administrator) Read-Only Administrator Ienant Administrator Application Administrator (Self-Service User) User role profile description: Self-service users create, deploy, and manage their own virtual machines and services by using the VW console or a Web portal. A self-service user role specifies which tasks the users can perform on their virtual machines and services and can place quotas on computing resources and virtual machines.	IM
	<u>P</u> revious <u>N</u> ext Cancel	

FIGURE 1-47 Create User Role

- 4. On the Members page of the Create User Role Wizard, click Add, and add an Active Directory security group that will host the user accounts of the people who you want to grant self-service privileges to.
- 5. On the Scope page, shown in Figure 1-48, select the private cloud into which self-service users will be able to deploy VMs.

8	Create User Role Wizard
Scope	
Name and description Profile Members Scope Quotas for the Networking Resources Permissions Summary	Scope The scope of the user role determines the objects on which the the member of the user role can perform actions. Scope Image:
	Resource Optimization (PRO) tips.
	Previous Next Cancel

FIGURE 1-48 Create User Role

6. On the Quotas page, specify the quotas for the self-service user role. You can configure role level quotas, which apply to all users of the role, or individual quotas, that apply to individual users. For example, Figure 1-49 shows member level quotas configured so that each role member can use a maximum of 2 virtual CPUs, 8192 MB of RAM, 50 GB of storage, and deploy a maximum of 2 virtual machines.

8	Cr	eate User Role V	Vizard		x
Quotas fo	r the TailSpinTo	ys Cloud c	loud		
Name and description	Quotas for the Tail	SpinToys Cloud	cloud		
Profile	<u>R</u> ole level quotas:	8 X			
Martin	All members of this user	role combined can u	ise resources up	to the specified lin	nits.
Members	Dimension	Available Capacity	Use Maximum	Assigned Quota	
Scope	Virtual CPUs:	Unlimited	~	Unlimited	*
Quotas for the	Memory (MB):	Unlimited	\checkmark	Unlimited	-
Naturalian	Storage (GB):	Unlimited	~	Unlimited	-
Networking	Custom quota (points):	Unlimited	\checkmark	Unlimited	
Resources	Virtual machines	Unlimited		Unlimited	T
Permissions	Member level quotas:				
Cummon and	Each member of this use	r role combined can	use resources u	p to the specified li	mits.
Summary	Dimension	Available Capacity	Use Maximum	Assigned Quota	
	Virtual CPUs:	Unlimited		2 🖨	
	Memory (MB):	Unlimited		8192 🚔	
	Storage (GB):	Unlimited		50 🚔	
	Custom quota (points):	Unlimited		10 🖨	
	Virtual machines:	Unlimited		2 🖨	
				Previous	Next Cancel

FIGURE 1-49 Member level quotas

- 7. On the Networking page, select which networks, if any, to which you will restrict the selfservice users. If you don't specify any networks, self-service users can use any configured VM network.
- 8. On the Resources page, select which resources, if any, to which you will restrict the self-service users. If you don't specify any resources, self-service users can use any available VMM resources.
- 9. On the Permissions page, shown in <u>Figure 1-50</u>, configure the permissions that you want to assign to the users.

8	Crea	te User Role Wizard		x
Permission	5			
Name and description	Select the permitted	actions for this user role		
Members	🗾 Global permis	Name	Description	
Scone	lailSpinTovs	🗆 🗹 Checkpoint	Create and manage virtual	*
Scope		Checkpoint (Restore only)	Restore to but cannot create	
Quotas for the		🗆 🗹 Deploy	Create virtual machines and	
Networking		Deploy (From template only)	Create virtual machines and	
Resources		 Local Administrator 	Grants local administrator ri	
nesources		Pause and resume	Pause and resume virtual m	
Permissions		Remote connection	Remotely connect to virtual	
Run As accounts		✓ Remove	Remove virtual machines an	
Summan		✓ Save	Save virtual machines and se	
Summary		✓ Shut down	Shut down virtual machines	
		✓ Start	Start virtual machines and s	
		✓ Stop	Stop virtual machines and se	-
		Select all Clear all		
		<u>P</u> revio	us <u>N</u> ext Cance	<u>ا</u>

FIGURE 1-50 Permitted actions

10. On the Run As accounts page, select which VMM Run As Accounts that members of the user role can utilize.

Users assigned the appropriate permissions through the VMM role are able to sign in to the App Controller portal, connect to the private clouds hosted through VMM to which they have been assigned access, and deploy and manage virtual machines.

More Info: System Center App Controller

You can learn more about System Center App Controller by consulting the following article at <u>http://technet.microsoft.com/en-us/library/hh546834.aspx</u>.

Self-service with VMM, Service Manager, and Orchestrator

By integrating VMM, Service Manager, and Orchestrator, you can configure self-service virtual machines as Service Manager request offerings. To be able to perform this action, you'll need to configure the VMM Connector for Service Manager, and the VMM Connector for Orchestrator. When the user requests the VM through the Self-Service Portal, an Orchestrator runbook will start, which performs the necessary activities to trigger VMM tasks deploying the virtual machine.

Configuring the VMM connector for Service Manager will provide Service Manager with information about the VMM environment. To configure the VMM connector for Service Manager, perform the following steps:

- 1. In the Administration workspace of the Service Manager console, click Connectors.
- 2. In the Tasks pane, click Create Connector, and then click Virtual Machine Manager connector.
- **3.** On the General page of the Virtual Machine Manager Connector Wizard, type the connector name.
- 4. On the Connection page, shown in Figure 1-51, typeenter the FQDN of the VMM server, and specify a Run As account. This account needs to have permissions to access VMM. Click Test Connection to verify this account.

8	Virtual Machine Manager connector wizard			x
L Connection				
Before You Begin General Connection Summary Completion	Please provide the server name and credentials Server Information Server Name vmm.tailspintoys.internal Credentials Run As account: Administrator) N	ew	
	Cancel < Previous <u>N</u> ext >	(Crea <u>t</u> e	

FIGURE 1-51 VMM connector

5. On the Summary page, review the configuration information, and click Create.

To create Orchestrator runbooks that can use activities that perform tasks in VMM, you configure VMM integration for Orchestrator. To configure the VMM connector for Orchestrator, perform the following steps:

- 1. Ensure that the VMM integration pack is installed on the Orchestrator server.
- 2. Ensure that the VMM Administration console is installed on the Orchestrator server. It is possible to configure the connector without a local deployment of the VMM console, but this is a more complicated process than installing the console on the Orchestrator server.
- **3.** Ensure that the Windows PowerShell initiation policy on the Orchestrator server is set to Remote Signed.
- 4. In the Options menu of the Orchestrator Runbook Designer, click SC 2012 Virtual Machine Manager.
- 5. On the SC 2012 Virtual Machine Manager dialog box, click Add.

- **6.** On the Add Configuration dialog box, specify the name of the connection. Next to type, click the ellipsis (...).
- 7. On the Item Selection page, click System Center Virtual Machine Manager.
- 8. In the Properties section of the Add Configuration dialog box, shown in Figure 1-52, configure the following settings:
 - **VMM Administrator Console** Address of the server with the VMM console
 - **VMM Server** Address of the VMM server
 - User User account of user with permissions to the VMM server
 - **Domain** Domain that hosts the user account
 - Password Password associated with the account
 - Authentication Type (Remote Only) Needs to be configured if the VMM Administrator console is not installed on the Orchestrator server. You need to enable the authentication method for WinRM using Group Policy.
 - Port (Remote Only) Only required if the Orchestrator runbook server doesn't have an instance of the VMM Administrator console.
 - Use SSL (Remote Only) Only required if the Orchestrator runbook server doesn't have an instance of the VMM Administrator console.
 - **Cache Timeout** Amount of time in minutes before the session times out

	<u>2</u> 2				
Mame:	ame: Tailspin VMM				
[ype:	ype: System Center Virtual Machine Manager				
ropert	ies				
VMM A	Administrator Console	localhost	^		
VMM Server		vmm.tailspintoys.internal			
User		administrator	_		
Domain		tailspintoys			
Passw	ord	******			
Authe	ntication Type (Remote only)	Default			
Port (F	Remote only)	5985	~		

FIGURE 1-52 Connect VMM to Orchestrator

9. Click OK on the Add Configuration dialog box, and the SC 2012 Virtual Machine Manager dialog box.

As shown in Figure 1-53, the VMM integration pack contains 45 activities.



FIGURE 1-53 VMM activities for Orchestrator

These activities allow you to do the following:

- Apply Pending Service Update Apply a pending service update to a VMM service.
- Configure Service Deployment Configures a VMM service for deployment. Requires the service configuration name, service template name, and deployment target.
- Create Checkpoint Create a VM checkpoint. Requires the GUID of the VM.
- Create New Disk Creates a new virtual hard disk. Requires you specify IDE/SCSI, Dynamic or Fixed, File Name, Size, and VM GUID of VM to which the disk should be attached.
- Create New Disk From VHD Creates a new virtual hard disk from an existing virtual hard disk. Requires you specify IDE/SCSI, Dynamic or Fixed, file name of new disk, path to original disk, VM GUID of VM to which the disk should be attached.
- Create Network Adapter Creates a new network adapter and attaches it to a VM. Requires the VM GUID. You can also configure additional network adapter properties such as MAC Address, MAC Address Pool, Network Tag, Virtual Network ID, VLAN ID, and Logical Network.
- Create User Role Creates a VMM user role. Requires that you specify a role name and the VMM user role profile that the role will use.
- Create VM From Template Allows you to create a VM from an existing VMM template. Requires the Type Of VM, Destination, Path, Source Template Name, Cloud Capability Profile, and VM Name.
- Create VM From VHD Use this activity to create a VM from an existing virtual hard disk. Requires you to specify IDE or SCI, name of destination VHD, path, location of VHD from which you will be creating the VM, the name of the VM host, and the VM name.
- Create VM From VM Use this activity to create a new VM from an existing VM. Requires that you specify the type of VM to create, destination, VM path, the VM GUID of the source VM, and the name to apply to the newly created VM.
- **Deploy Service** Use this activity to create a VMM service using a VMM service template. Requires that you specify the new service's name, and the VMM template name.
- Get Checkpoint Use this activity to retrieve VM checkpoint information.
- Get Cloud Get information to view information about clouds on the VMM management server.
- Get Network Adapter View information about VMM virtual network adapters.
- Get Service Use this activity to return data on all services on the VMM management server.
- Get Service Configuration You use this activity to generate information about service

configurations on the VMM management server.

- Get Service Template This activity allows you to generate a list of all VMM service templates.
- Get Tier Provides information about all VMM tiers.
- Get User Role Use this activity to extract information about VMM user roles.
- Get User Role Quota Use this activity to return information about all user role quotas on VMM management server.
- Get VM This activity provides information on a specific VM.
- Get VM Host Use this activity to extract information about a virtualization host.
- Get VM Network This activity allows you to extract information about a VMM VM network.
- Get VM Subnet Use this activity to provide Orchestrator with information about a VMM VM subnet.
- Manage Checkpoint You can use this activity in an Orchestrator runbook to revert a VMM VM to a specific checkpoint, or to remove checkpoints that are no longer required.
- Move VM This activity allows you to move a VM to a new location.
- **Remove User Role** This activity deletes a user role from VMM.
- **Remove VM** Use this activity to delete a VM. This activity can only target a VM that is in a shutdown state.
- **Repair VM** Use this activity to issue a retry, undo, or dismiss action on a VMM VM.
- **Resume VM** This activity allows Orchestrator to resume a VM that is in a paused state.
- **Run VMM PowerShell Script** Use this activity to trigger a PowerShell script.
- Scale Tier In This activity allows Orchestrator to remove a virtual machine instance from a specific service tier.
- Scale Tier Out This activity allows Orchestrator to add a virtual machine instance to a specific service tier.
- Set Pending Service Update Use this activity to set a specific VMM service template as the pending service update.
- Shut Down VM This activity allows Orchestrator to shut down a stopped VM, taking the VM offline.
- Start VM Use this activity in an Orchestrator runbook to start a VM that has been paused, shut down, or stopped.
- **Stop Service** This activity will stop a VMM service.
- **Stop VM** Use this activity in an Orchestrator runbook to place a VM into a stopped state.
- **Suspend VM** This activity will place a VM into a suspended state.
- Update Disk This activity allows an Orchestrator runbook to change the properties of an existing disk.
- **Update Network Adapter** Use this activity to update the properties of an existing network adapter.
- Update User Role Property Updates the properties of a VMM user role.
- Update User Role Quota Updates the quota for a user role.
- **Update VM** Use this activity in an Orchestrator runbook to update a VM.

More Info: VMM Integration Pack

Learn more about the VMM integration pack for Orchestrator by consulting the following article at: <u>http://technet.microsoft.com/en-us/library/hh830704.aspx</u>.

To configure self-service deployment using VMM, Service Manager, and Orchestrator, you need to perform the following general steps:

- 1. Create an Orchestrator runbook that takes inputs to create a VM. At a minimum this would involve the Create VM From Template Orchestrator Runbook activity, but more complex runbooks might extract more information about the VM, the template, and the Private Cloud to which the VM is deployed. You use the Initialize Data activity to collect parameters to be used with the runbook.
- 2. In Service Manager, create a runbook automation activity template, ensuring that the template is configured as Ready For Automation. Configure the runbook automation activity template to collect the parameters that will be used with the Orchestrator runbook. For example, this might be the VM template name and the private cloud name.
- **3.** In Service Manager, create a service request template. In the template's Activities tab, link the runbook automation activity that you configured, which leverages the Orchestrator runbook that deploys the VM.
- 4. Create a Request Offering and use it to collect the parameters from the person using the request offering that will be passed to the Orchestrator runbook to perform VM deployment.
- **5.** Create and publish a Service Offering that links the request offering. This will update the Self-Service Portal. When complete, a user will use the portal to enter the parameters needed by the Orchestrator runbook to leverage VMM to deploy the requested VM.

More Info: Automating Self-Service VMM Deployment

Learn more about automating VMM deployment with Service Manager by consulting the following article at <u>http://technet.microsoft.com/en-us/magazine/jj933281.aspx</u>.

Self-service with Windows Azure Pack for Windows Server

An additional method to provide self-service virtual machine deployment to users in an organization is to deploy the Windows Azure Pack for Windows Server. Windows Azure Pack for Windows Server runs on top of Windows Server 2012 R2 and System Center 2012 R2, and provides a self-service multi-tenant cloud that uses the same interface as Microsoft's public cloud. Although not explicitly addressed by the 70-246 objectives, the Windows Azure Pack for Windows Server provides a pre-built alternative for organizations that want to provide on premises self-service virtual machine deployment.

More Info: Windows Azure Pack for Windows Server

You can learn more about the Windows Azure Pack for Windows Server by consulting the following article at <u>http://technet.microsoft.com/en-us/library/dn296435.aspx</u>.



Exam Tip

While Virtual Machine Manager 2012 RTM had a Self-Service Portal, this functionality was removed in Virtual Machine Manager 2012 SP1 and Virtual Machine Manager 2012 R2 in favor of App Controller.



Thought experiment: Self-service Virtual Machine deployment at WingTipToys

You want to trial self-service virtual machine deployment as a way of providing people at WingTipToys with the necessary IT infrastructure to complete their projects. You have the following goals:

- You want to provide users with the ability to deploy virtual machines. These users will be members of the Self-Service_VM security group in Active Directory.
- Users should be only able to deploy a maximum of 2 virtual machines.

With this information in mind, answer the following questions:

- <u>1</u>. Which System Center products can you deploy to support virtual machine self-service deployment?
- 2. What should you configure in VMM to allow members of the Self-Service_VM security group to deploy and manage VMs using System Center App Controller?
- 3. What steps would you take to ensure that users are only able to deploy a maximum of 2 virtual machines?

Objective summary

- Custom workflows allow you to further automate Service Manager processes. You create custom workflows with the Service Manager Authoring Tool.
- The Service Manager 2012 R2 Self-Service Portal is a SharePoint 2010 website that customers can use to submit requests for service offerings and request offerings using their web browser.
- The service catalog is a collection of Service Manager items, assistance, actions, or groupings of items, assistance, or actions.
- Request offerings are items or actions that you can make available to users through the service catalog.
- Service offerings are collections of request offerings.
- You use catalog item groups to restrict access to service manager catalog items.
- You can configure a connector between Service Manager and Orchestrator, which allows Service Manager to make reference to and utilize Orchestrator runbooks.
- You can trigger the runbooks from Service Manager by configuring runbook automation activity templates.
- System Center App Controller provides users with self-service virtual machine deployment functionality for VMM 2012 SP1 and VMM 2012 R2.
- By integrating VMM, Service Manager, and Orchestrator, you can configure self-service virtual machines as Service Manager request offerings.

Objective review

Answer the following questions to test your knowledge of the information in this objective. You can find the answers to these questions and explanations of why each answer choice is correct or incorrect in the "<u>Answers</u>" section at the end of this chapter.

- 1. Which of the following Service Manager items do you use to collect together request offerings for publication on the Service Manager Self-Service Portal?
 - A. Catalog item groups
 - B. Incident templates
 - C. Change Management workflows
 - **D.** Service offerings

- 2. Which of the following server and software configurations support hosting the System Center 2012 R2 Service Manager Self-Service Portal?
 - A. Windows Server 2012 R2
 - **B.** Windows Server 2008 R2
 - C. SharePoint Server 2010
 - **D.** SharePoint Server 2013
- <u>3</u>. You want to use an Orchestrator runbook as part of a Service Manager Change Management workflow. You have configured the Orchestrator connector for Service Manager. Which of the following must you also create to use the runbook with the workflow?
 - A. Manual activity
 - B. Review activity
 - C. Runbook automation activity
 - **D.** Sequential activity
- 4. Which of the following tools do you use to create a custom workflow for Service Manager?
 - A. Service Manager Authoring Tool
 - B. Orchestrator Runbook Designer
 - C. Service Manager console
 - D. Operations Manager console
- 5. Which of the following steps must you take prior to configuring a connection between Orchestrator server and a Virtual Machine Manager server?
 - A. Install the VMM Management Console on the Orchestrator server.
 - B. Install the Service Manager Authoring Tool on the Orchestrator server.
 - C. Install the VMM integration pack on the Orchestrator server
 - D. Install the Service Manager console on the Orchestrator server.

Answers

This section contains the solutions to the thought experiments and answers to the lesson review questions in this chapter.

Objective 1.1: Thought experiment

- 1. This solution can be configured using Operations Manager and Service Manager. Orchestrator is not required, though could also be used if more complicated automation is necessary.
- 2. To configure this solution, you only need to configure the Operations Manager connector for Orchestrator.
- <u>3</u>. You need to configure a change management workflow to automatically close completed change requests.

Objective 1.1: Review

- **<u>1</u>**. Correct answers: B and C
 - **A. Incorrect:** You don't need to configure a connection from the Operations Manager server to the Orchestrator server with this proposed solution.
 - **B. Correct**: You need to configure the connector from Orchestrator to Operations Manager so that you can then use the activities in the Operations Manager integration pack.
 - C. Correct: You also need to configure a connection from the Orchestrator server to the Service Manager server so that you can have the Orchestrator workflow create incidents triggered by Operations Manager alerts.
 - **D. Incorrect:** The solution mentions using an Orchestrator runbook. While it is possible to have incidents created using the Operations Manager connector for Service Manager, Orchestrator

runbooks allow you to configure more complex automation.

<u>2</u>. Correct answers: A and C

- **A. Correct**: In this scenario, you should configure the Operations Manager connector for Service Manager as a way of extracting alert information.
- **B. Incorrect**: It is not necessary to deploy the Operations Manager agent on the Service Manager server to accomplish this goal.
- **C. Correct**: You need to create specific incident template and then configure an alert routing rule that leverages this template.
- **D. Incorrect**: According to the question text, Orchestrator has not been deployed in this environment.

3. Correct answer: A

- **A. Correct:** By configuring a change request workflow, you can configure certain users to be notified when change requests that meet specific criteria are entered into Service Manager.
- **B. Incorrect**: You would configure a change request, rather than an incident event workflow.
- C. Incorrect: You would configure a change request, rather than an activity event workflow.
- **D. Incorrect**: You would configure a change request, rather than a desired configuration management event workflow.

<u>4</u>. Correct answer: A

- **A. Correct**: You should select the change request class when creating a change request template.
- **B. Incorrect**: You should select the change request class when creating a change request template.
- **C. Incorrect**: You should select the change request class when creating a change request template.
- **D. Incorrect**: You should select the change request class when creating a change request template.

5. Correct answer: B

- A. Incorrect: This activity allows you to create alerts.
- **B.** Correct: The Get Alert activity allows you to extract data from Operations Manager alerts.
- **C. Incorrect**: Use this activity to watch for specific alerts, rather than to extract information from those alerts.
- **D. Incorrect**: Use this activity to update an alert.

Objective 1.2: Thought experiment

- 1. You can use System Center App Controller and Virtual Machine Manager, or a combination of Service Manager, Orchestrator, and Virtual Machine Manager.
- 2. You need to configure a VMM user role that uses the Application Administrator role profile and configure it to have the Self-Service_VM security group define its membership.
- 3. You'll need to configure a self-service user role with a quota limiting each user to a maximum of 2 virtual machines.

Objective 1.2: Review

- 1. Correct answer: D
 - **A. Incorrect**: You use catalog item groups to collect together catalog items so that you can make them available to members of a specific user role.
 - B. Incorrect: An incident template forms the basis of an incident in Service Manager.
 - C. Incorrect: You use change management workflows to automate change management processes.

- **D. Correct**: You use service offerings to collect together request offerings for publication on the Service Manager Self-Service Portal.
- 2. Correct answers: B and C
 - **A. Incorrect**: The System Center 2012 R2 Service Manager Self-Service Portal can only be hosted on SharePoint 2010, which can be deployed on Windows Server 2008 R2.
 - **B. Correct**: The System Center 2012 R2 Service Manager Self-Service Portal can only be hosted on SharePoint 2010, which can be deployed on Windows Server 2008 R2.
 - C. Correct: The System Center 2012 R2 Service Manager Self-Service Portal can only be hosted on SharePoint 2010.
 - **D. Incorrect**: The System Center 2012 R2 Service Manager Self-Service Portal can only be hosted on SharePoint 2010.

3. Correct answer: C

- **A. Incorrect**: You need to create a runbook automation activity to use the runbook with the workflow.
- **B. Incorrect**: You need to create a runbook automation activity to use the runbook with the workflow.
- **C. Correct**: You need to create a runbook automation activity to use the runbook with the workflow.
- **D. Incorrect**: You need to create a runbook automation activity to use the runbook with the workflow.

<u>4</u>. Correct answer: A

- A. Correct: You use the Service Manager Authoring Tool to create custom workflows for Service Manager.
- **B. Incorrect**: You use the Service Manager Authoring Tool to create custom workflows for Service Manager.
- C. Incorrect: You use the Service Manager Authoring Tool to create custom workflows for Service Manager.
- **D. Incorrect**: You use the Service Manager Authoring Tool to create custom workflows for Service Manager.
- 5. Correct answers: A and C
 - A. Correct: You need to deploy the VMM Management Console on the Orchestrator server and install the VMM integration pack on the Orchestrator server prior to configuring a connection between the Orchestrator server and a VMM server.
 - **B. Incorrect**: You need to deploy the VMM Management Console on the Orchestrator server and install the VMM integration pack on the Orchestrator server prior to configuring a connection between the Orchestrator server and a VMM server.
 - C. Correct: You need to deploy the VMM Management Console on the Orchestrator server and install the VMM integration pack on the Orchestrator server prior to configuring a connection between the Orchestrator server and a VMM server.
 - **D. Incorrect**: You need to deploy the VMM Management Console on the Orchestrator server and install the VMM integration pack on the Orchestrator server prior to configuring a connection between the Orchestrator server and a VMM server.

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