Windows Azure Pack

Introducing Windows Azure Pack

Hands-on lab

Windows Azure Pack (WAP) is a collection of Windows technologies available at no cost that enables the delivery of Windows Azure-style cloud services to external customers and to internal consumers. With Windows Azure Pack, organizations can offer a self-service, multi-tenant cloud that provides an administrative and end-user experience that is consistent with Windows Azure.

In the first exercise, you will learn about the architecture and components that comprise Windows Azure Pack. You will then examine the configuration of System Center 2012 R2 Virtual Machine Manager to show the integration with Windows Azure Pack. Next, you will explore the features, configurations, and capabilities available to Service Administrators. Finally, you will explore the features, configurations, and capabilities available to service administrators.

Introduction

Estimated time to complete this lab

60 minutes

Objectives

After completing this lab, you will be able to:

- Install the Windows Azure Pack roles.
- Perform Windows Azure Pack initial configuration.
- Create cloud objects including tenants and users.
- Create subscriptions and create cloud resources.

Prerequisites

Before working on this lab, you must have:

- An understanding of cloud technologies especially Windows Azure.
- An understanding of basic database and website creation concepts.

Overview of the lab

Windows Azure Pack (WAP) is a collection of Windows technologies available at no cost that enables the delivery of Windows Azure-style cloud services to external customers and to internal consumers. With Windows Azure Pack, organizations can offer a self-service, multi-tenant cloud that provides an administrative and end-user experience that is consistent with Windows Azure.

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Virtual machine technology

This lab is completed using virtual machines that run on Windows Server 2012 Hyper-V technology. To log on to the virtual machines, press CTRL+ALT+END and enter your logon credentials.

Computers in this lab

This lab uses computers as described in the following table. Before you begin the lab, you must ensure that the virtual machines are started and then log on to the computers.

Virtual Machine	Role
WAPSQL	SQL Server database and Active Directory domain controller for WAP.Local domain
WAPPortal	Express installation of Windows Azure Pack Portal and Web App Gallery. Configured as an access point for service and tenant admin websites.
WAPSMA	Service Management Automation and Service Bus
WAPSPF	Service Provider Foundation

Virtual Machine	Role
WAPVMM	System Center Virtual Machine Manager 2012 R2 server
WAPHVS	Hyper-V server (virtualized), file server, and MySQL server
SitesCN	Web Sites Controller
SitesFE	Web Sites Front End
SitesMN	Web Sites Management
SitesPB	Web Sites Publisher
SitesWWR	Web Sites Reserved
SitesWWS	Web Sites Shared

◈   All user accounts in this lab use the password **Passw0rd!**

Navigation

Windows Azure Pack uses icons instead of labeled buttons for many tasks. While most are obvious, this document refers to them by action names. Below is a quick reference of action names and corresponding icons.

- Complete, Done or Finished – Check Mark
- Search – Check Mark
- Next – Right Arrow
- Previous – Left Arrow
- Close or Exit – X

Note regarding pre-release software

Portions of this lab may include software that is not yet released, and as such may still contain active or known issues. While every effort has been made to ensure this lab functions as written, unknown or unanticipated results may be encountered as a result of using pre-release software.

Note regarding user account control

Some steps in this lab may be subject to user account control. User account control is a technology which provides additional security to computers by requesting that users confirm actions that require administrative rights. Tasks that generate a user account control confirmation are denoted using a shield icon. If you encounter a shield icon, confirm your action by selecting the appropriate button in the dialog box that is presented.

Note on activation

The virtual machines for these labs may have been built by using software that has not been activated. This is by design in the lab to prevent the redistribution of activated software. The unactivated state of software has been taken into account in the design of the lab. Consequently, the lab is in no way affected by this state. For operating systems other than Windows 8, please press Cancel or Close if prompted by an activation dialog box. If you are prompted by an Activate screen for Windows 8.1, press the Windows key to display the Start screen.

Exercise 1: Understanding Windows Azure Pack Components and Architecture

In this exercise, you will not perform any tasks. You will be provided with an overview of the Windows Azure Pack and how it is deployed in this lab environment. Understanding this environment and deployment is the key to understanding the steps preformed in the lab exercises.

⬦ **Important**: If you already have a good understanding of the Windows Azure Pack and this environment, proceed to Exercise 2.

This lab initially configures the following components:

- Web Sites
- Infrastructure as a Service (IaaS)
- Service Bus
- Automation
- Databases

Windows Azure Pack components: Web Sites

The Windows Azure Pack: Web Sites service uses a minimum of 6 server roles: Controller, Management Server, Front End, Web Worker, File Server, and Publisher. Also required is a server running SQL Server for the Web Sites runtime database. These roles are separate from, and in addition to, the servers that form an express or distributed installation of the Service Management API. The roles can be installed on physical servers or virtual machines.

1. **Web Sites Controller** - The controller provisions and manages the other Web Sites roles. This role is installed first. This role is installed on the SitesCN virtual machine.

2. **Management Server** - This server exposes a REST endpoint that handles management traffic to the Windows Azure Pack Web Sites Management API. This role is installed on the SitesMN virtual machine.

3. **Web Workers** - These are web servers that process client web requests. Web workers are either Shared or Reserved (at minimum, one of each is required) to provide differentiated levels of service to customers. Reserved workers are categorized into small, medium, and large sizes. The SitesWWR is the reserved worker server, and SitesWWS is the shared worker server.

   ⬦ **Important**: Because web workers run customer code, they represent a potential risk to the Web Sites infrastructure. After installation, you should configure IP filtering from the Management Portal for Administrators to reduce the risk. For more information, see Configure IP filtering.

4. **Front End** - Accepts web requests from clients, routes requests to web workers, and returns web worker responses to clients. Front end servers are responsible for load balancing and SSL termination. This role is provided by the SitesFE server.

5. **File Server** - Provides file services for hosting web site content. The file server houses all of the application files for every web site that runs on the Web Sites cloud. The file server in this environment is WAPHVS. This is a general purpose server that provides several roles.

6. **Publisher** - Provides content publishing to the Web Sites farm for FTP clients, Visual Studio, and WebMatrix through the Web Deploy and FTP protocols. The publishing server is SitesPB.

In addition, up to three database servers are required. Note that in this environment, all SQL Server databases are located on WAPSQL. There is also a MySQL database instance on WAPHVS.

1. **Service Management API database** - The core installation of the Windows Azure Pack Service Management API uses a SQL Server server to store its configuration data. This database is configured as part of the overall Windows Azure Pack installation and is not specific to web sites.

2. **Web Sites runtime database** - Prior to installing Windows Azure Pack: Web Sites, you will need to prepare a SQL Server server to contain the runtime database that Web Sites uses for its operations.

3. **Application databases** - If your usage scenario includes providing database functionality for the tenant web sites, you will need to install separate SQL Server and/or MySQL databases to provide this service.

Windows Azure Pack components: Virtual Machines

Virtual Machines leverage several components to provide tenant based access to virtual machines hosted in a System Center Virtual Machine Manager (VMM) infrastructure.

1. **Service Provider Foundation** - Service Provider Foundation (SPF) is provided with System Center 2012 R2 Orchestrator (and System Center 2012 SP1 - Orchestrator). Service Provider Foundation exposes an extensible OData web service that interacts with Virtual Machine Manager (VMM). This enables service providers and hosters to design and implement multi-tenant self-service portals that integrate IaaS capabilities available on System Center 2012 R2. Service Provider Foundation is installed on WAPSPF.

2. **Virtual Machine Manager** – VMM-specific objects such as clouds, virtual machine templates, hardware profiles, networks, and gallery items are exposed as artifacts which can be used to

create virtual machine services. In this environment VMM is deployed on WAPVMM and the VMM environment has been populated with objects.

Windows Azure Pack components: Databases

You can add one or more Microsoft SQL Server or MySQL server instances for tenants to deploy and use. Tenants also use these databases with the Web Sites service.

Microsoft SQL Server databases can range from simple stand-alone databases to highly available, always-on databases. You should rely on your SQL Server database administrator to install and configure SQL Server for you, ensuing that both Windows and SQL Server authentication are available.

In this environment, SQL Server is deployed on WAPSQL. MySQL is deployed on WAPHVS. Both are very simple installations. The complexity of the SQL implementation is hidden by Windows Azure Pack, so you manage all types the same way, regardless of the underlying infrastructure.

Windows Azure Pack components: Service Bus

Service Bus for Windows Server is a set of installable components that provides the messaging capabilities of Windows Azure Service Bus on Windows Server. Service Bus for Windows Server enables you to build, test, and run loosely-coupled, message-driven applications in self-managed environments and on developer computers.

The purpose of Service Bus for Windows Server is to provide similar capabilities across Windows Azure and Windows Server, and to enable flexibility in developing and deploying applications. It is built on the same architecture as the Service Bus cloud service and provides scale and resiliency capabilities. The programming model, Visual Studio support, and APIs exposed for developing applications are symmetric to that for the cloud service making it easier to develop applications for either, and switch between the two. Going forward, the experience for managing entities on the Windows Azure Management Portal will be consistent across the on-premises and cloud versions.

Service Bus is installed on WAPSPF.

Windows Azure Pack components: Service Management Automation

Service Management Automation is a workflow management solution for Windows Azure Pack for Windows Server. It enables you to automate the creation, monitoring, and deployment of resources in your environment.

Service Management Automation can be used to leverage existing System Center infrastructure and automation, including System Center Orchestrator runbooks.

Service Management Automation is installed on WAPSMA.

Exercise 2: Overview of VMM Configuration

In this exercise, you will examine the configuration of System Center 2012 R2 Virtual Machine Manager, which provides the underlying Infrastructure-as-a-service (IaaS) capabilities for Windows Azure Pack. In later exercises, you will see the integration of these objects with Windows Azure Pack.

Virtual Machine Manager Configuration

The Service Provider Foundation (SPF) provides an integration path between Windows Azure Pack and System Center Virtual Machine Manager, allowing Windows Azure Pack to request and then deploy new virtual machines based on System Center Virtual Machine Manager library objects

In this task, you will explore and make note of the configuration of objects within System Center 2012 R2 Virtual Manager that are leveraged by Windows Azure Pack in this lab environment.

◇ **IMPORTANT:** Please note that these configuration objects represent the minimum configurations that are required this lab environment. For a production environment, additional configuration of these and other objects would be required.

✎ Begin this task logged on to **WAPVMM** as **WAP\Administrator** using the password **Passw0rd!**

1. On the desktop, double-click **Virtual Machine Manager**.

2. In the Connect to Service dialog box, click **Connect**.

3. In the workspace, click **Fabric**.

4. In the Fabric workspace, under Storage, click **File Servers**.

   ✦ The details pane shows the storage details for the certificates, VMs and web sites that are used by the tenants.

5. In the details pane, right-click **TenantVMs**, and then click **Properties**.

   ✦ The details pane indicates that the file share is managed by Virtual Machine Manager and that the classification for the storage is defined as SMB storage and can be made available to clouds defined within VMM. The full range of storage options available in VMM can be integrated with the Windows Azure Pack.

6. In the TenantVM Properties dialog box, click **Cancel**.

7. In the Fabric workspace, under Networking, click **Logical Networks**.

   ✦ The details pane shows one logical network, Tenant Virtual Machines, with a single IP address pool.

   ✦ Logical networks are an abstraction of the underlying physical network and are used to organize and simplify the network assignments for hosts, virtual machines, and services. Virtual machines connect to virtual machine networks, which are assigned to logical networks.

8. In the workspace, click **VMs and Services**.

9. In the VMs and Services workspace, click **VM Networks**.

10. In the details pane, right-click **Tenant WAP Network**, and then click **Properties**.

   ✦ All virtual machines must be connected to a VM network that is assigned to a logical network in order to gain access to the physical network resources. Within the logical network settings, network virtualization can be enabled, allowing multiple VM networks to be assigned to the same logical network. Each of these VM networks is isolated from the other VM networks, allowing multiple tenants to share the same logical network without being aware of each other.

11. In the Tenant WAP Network Properties dialog box, click **Cancel**.

12. In the VMs and Services workspace, under Clouds, right-click **Silver Tenant Cloud**, and then click **Properties**.

   ✦ In SCVMM 2012, a cloud is a way to organize delegated resources that can be scoped to meet administrative or business requirements.

13. In the Silver Tenant Cloud Properties dialog box, click **Logical Networks**.

   ✦ The logical network shown here is the same as the one you viewed in an earlier step.

14. In the SilverTenant Cloud Properties dialog box, click **Capacity**.

   ✦ Each cloud has a defined capacity that can be enlarged or reduced as determined by the needs of the consumers of the cloud or by administrative requirements.

   ✦ A subsequent lab exercise will refer to the values displayed, so please note them.

15. In the Silver Tenant Cloud Properties dialog box, click **Cancel**.

16. In the workspace, click **Library**.

   ✦ The library is the repository of re-usable objects and configuration settings that are used to quickly deploy virtual machines and applications.

17. In the Library workspace, under Templates, click **VM Templates**.

   ✦ A virtual machine template contains reusable settings to deploy virtual machines using System Center Virtual Machine Manager 2012. The virtual machine templates shown in the details pane were created for this lab environment.

18. In the Library workspace, under Profiles, click **Hardware Profiles**.

   ✦ These hardware profiles contain reusable hardware configurations that can be applied to virtual machines or virtual machine templates. The 4 hardware profiles were created as a demonstration for this lab environment.

Exercise 3: Windows Azure Pack Service Administration

In this exercise, you will learn about the capabilities provided to administrators in the Service Administrator portal. At the end of the exercise, you will create a user account and a plan to demonstrate the end user experience using the Tenant Administration portal in a subsequent exercise.

Log on to Service Administration portal

In this task, you will log on to the Service Administration portal.

✎ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. On the desktop, double-click **WAP-Admin**.

2. Click **Continue to this website (not recommended)**.

   ✦ You see this error because the lab environment is using self-signed certificates.

3. In the Windows Security dialog box, enter **Administrator** as the user name and **Passw0rd!** as the password, and click **OK**.

   ✦ The Service Manager Portal opens. Note that the UI has the same look and feel as Windows Azure.

   ✦ Wait a few moments until all the objects listed under all items show as Ready, or Public in the case of the Contoso Dev plan.

Examine and configure web sites cloud

In this task, you will look at some of the configuration elements of the web sites cloud, explore some of the administrative options, and add a role.

✎ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **WEB SITE CLOUDS**.

   ✦ The web sites clouds provide the service for creating scalable web sites for PaaS (Platform as a Service).

2. In web site clouds, click **SETTINGS**.

   ✦ Windows Azure Pack includes a customizable web application gallery of popular open source web applications. The web sites service includes support for ASP.NET, PHP, and Node.js web applications.

3. Click **SOURCE CONTROL**.

4. Scroll down the page to view the source control options that are available.

   ✦ The web sites service provides integration with source control systems such as BitBucket and GitHub.

5. In web site clouds, click **CLOUDS**.

6. Click **WAP Web Sites Cloud**.

   ✦ The dashboard view provides an overview of recent and current activity.

7. Click **ROLES**.

   - This page provides information on the roles that are required for the web sites service. As you learned in Exercise 1, the web sites role requires a minimum of 6 server roles: Controller, Management Server, Front End, Web Worker, File Server, and Publisher. These role servers and their respective status are shown on this page.

8. On ROLES page, select **SitesCN.WAP.local**, and then note the administrative options that are available on the taskbar.

9. Select **WAPHVS**.

   - The available options on the taskbar change to now include ROLE LOG.

10. On the taskbar, click **CLOUD LOG**, and then spend a few moments examining the content of the log.

11. Click **Complete** (check mark).

12. On the taskbar, click **ROLE LOG**, and then spend a few moments examining the content of the log.

13. Click **Complete**.

14. Click **SitesFE**.

    - The view changes to show the dashboard and a subset of administrative options relevant to the role.

15. Click **Previous** (left arrow).

16. On the taskbar, click **ADD ROLE**.

    - You have the option to add 3 cloud server roles: Web Worker, Front End, and Publisher.

17. Click **ADD NEW WEB WORKER**.

18. On the Setup a new Web Worker page, read the descriptions, and then click in the **WORKER TYPE** drop-down box.

19. In WORKER TYPE, select **Reserved – Small**, and then read the description.

20. Click **Close** (the "x" in the upper-right hand corner).

    - You will not adding any additional role servers.

21. On the wap web sites cloud page, click **Previous**.

Examine and configure VM clouds

In this task, you will look at some of the configuration elements of the VM clouds and explore some of the administrative options.

- Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **VM CLOUDS**.

   ✤ The VM clouds provide the Infrastructure-as-a-Service (IaaS) capability.

2. On the VM clouds page, click the small cloud icon on the left-hand side of the page.

   ✤ The page provides information on the components that provide the integration between VMM and Windows Azure Pack, the Service Provider Foundation, and also provide Service Manager automation.

3. Click **CLOUDS**.

4. Expand **wapvmm.wap.local** to display the clouds.

   ✤ **TIP:** Click the greater than sign to expand the element in the UI.

   ✤ These are the same clouds you saw earlier in Virtual Machine Manager.

5. Click **Silver Tenant Cloud**.

   ✤ The values you see displayed on this page are the same as those you made note of in VMM in an earlier exercise.

6. Click **Previous**.

7. On the VM clouds page, click **VIRTUAL MACHINES**.

8. Click **Search** (the check mark).

   ✤ No virtual machines have been provisioned at this point in the lab for end users of the portal. This is expected. Objects will be displayed here after a subsequent exercise.

9. On the VM clouds page, click **NETWORKS**.

10. Click **Search**.

    ✤ No virtual machine networks have been configured for virtual machines. This is expected. Objects will be displayed here after a subsequent exercise.

11. On the VM clouds page, click **GALLERY**.

    ✤ A list of available VM templates is displayed.

Examine service bus clouds

The service bus provides messaging between distributed applications.

✎ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **SERVICE BUS CLOUDS**.

2. On the service bus clouds page, click **Service Bus**.

   ✤ You can view the health of the service bus (see if the related services are running) and the configuration settings that were used during the installation and configuration of the service bus.

3. Click **DATABASES** to view information on the databases in use for the service bus.

4. Click **SETTINGS**.

   📌 Here you can see configuration settings information.

5. Click **Previous**.

Examine SQL Server and MySQL servers

You can configure either SQL Server or MySQL databases for tenant use.

In this task, you will examine the current SQL Server configuration and the options for creating a new SQL Server group. You will then examine the settings for the My SQL server to provide a point of comparison.

✎ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **SQL SERVERS**.

2. Click **wapsql**.

   📌 This causes the dashboard to display.

3. Click **Previous**.

4. Back on the SQL Servers page, click **GROUPS**.

5. On the taskbar, click **CREATE GROUP**.

6. On the NEW page, click in the **GROUP TYPE** drop-down box.

   📌 To increase fault tolerance and availability of tenant databases, you can enable SQL AlwaysOn availability groups, if you have first configured SQL AlwaysOn availability as part of your infrastructure.

7. Click **Close** without making any changes.

8. In the left navigation bar, click **MYSQL SERVERS.**

9. In the left navigation bar, click **WAPHVS**.

10. On mysql servers, click **WAPHVS**.

    📌 As was the case with the SQL Server node, this action causes the dashboard to display.

11. Click **Previous**.

12. Back on the mysql servers page, click **GROUPS**.

13. On the taskbar, click **CREATE GROUP**.

    📌 While you can create additional MySQL groups, you are not able to provide the additional fault tolerance and availability that would be possible using AlwaysOn availability.

14. Click **Close**.

Examine automation configuration settings

Service Management Automation is a workflow management solution available in Windows Azure Pack that enables you to automate the creation, deployment, and monitoring of resources. In this task, you will examine the administrative options available for automation in the Service Administration portal.

✎ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar , click **AUTOMATION**.

    📌 The dashboard displays the current runbook and job status.

2. On the automation page, click **RUNBOOKS**.

    📌 Windows Azure Pack provides a number of sample runbooks that can be used as a starting point to introduce additional automation into your environment. Also note that you can select and, from the taskbar, start runbooks.

3. Click **Sample-Using-VMCloud-Automation**.

4. On the sample-using-vmcloud-automation page, note the menu options, and then click **AUTHOR**.

    📌 A Windows PowerShell script that provides instructions for use appears.

5. Click **DRAFT**.

    📌 This action allows you to edit the runbook.

6. Click **EDIT RUNBOOK**.

    📌 The color changes to indicate you are in editing mode. A number of additional administrative options appear on the taskbar.

7. On the taskbar, click **DISCARD DRAFT**, and then click **YES**.

8. Minimize the activities notice that appears.

9. Click **Previous**.

10. On the automation page, click **ASSETS**.

    📌 A number of Windows PowerShell modules are listed. On the taskbar, you have the option to import modules.

11. Click **iSCSI**, and then scroll down the page to examine the module details.

12. Click **Previous**.

Examine user settings and create a user

In this task, you will look at the settings for a portal administrative account, and then create a new admin account.

✎ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar , click **USER ACCOUNTS**.

2. Click **admin@contoso.com**.

   📌 The account is associated with a subscription.

3. Click **Previous**.

4. On the taskbar, click **NEW**.

5. On the NEW page, click **QUICK CREATE**.

6. In ENTER EMAIL ADDRESS, type **TestAdmin@Contoso.com**.

7. In the PASSWORD and CONFIRM PASSWORD boxes, type **Passw0rd!**

8. Note that Contoso Dev (public) is selected as the default plan, and then click **CREATE**.

   📌 The account needs to be synchronized. After a few moments, it will appear with a status of Active.

9. Click **NOTIFICATIONS**.

   📌 In the notifications area, you can configure rules for sending links for password resets and so on. No SMTP server is available in this lab environment, and as a result, the rules and settings cannot be enabled.

10. Click **CONFIGURE**, and then spend a few moments examining the configuration settings.

    📌 Here you can view settings related to password strength, whether account validation is required, and so on.

Create a plan

In this task, you will examine the plan settings for the current default plan, and then create a plan you will use in the subsequent exercise.

✎ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar , click **PLANS**.

2. Click **Contoso Dev**.

   📌 The dashboard view appears showing the daily and total sign-up counts for the plan. Note that the plan is public. Unless the plan access is designated as public, it cannot be consumed by self-service tenants.

3. Click **SUBSCRIPTIONS**.

   📌 The two admin accounts from the previous task are subscribed to the plan.

4. Click **SETTINGS**.

   📌 Here you can configure an invitation code and the maximum number of subscriptions per account.

5. Click **ADVERTISE**.

➤ You can publish plan details in Microsoft's Web Hosting Gallery.

6. Click **Previous**.

7. On the taskbar, click **NEW**.

8. Click **CREATE PLAN**.

9. On the Let's Create a Hosting Plan page, in the PLEASE SELECT A FRIENDLY NAME FOR YOUR

   PLAN box, type **Fabrikam Corp**, and then click **Next**.

10. On the Select services for a Hosting Plan page, select all the services, and then click **Next**.

11. On the Select add-ons for the plan page, leave the **HIGH AVAILABILITY** checkbox clear, and then

    click **Done**.

➤ The status of the plan is Private. In order for it to be consumed by end users, it needs to be made public.

12. Click **Fabrikam Corp**.

➤ You receive a notification that one or more services is not configured. The Virtual Machine Clouds

   configuration needs to be completed. This is an expected result.

13. Under plan services, click **Virtual Machine Clouds**.

14. In VMM MANAGEMENT SERVER, select **wapvmm.wap.local**.

15. In VIRTUAL MACHINE CLOUD, select **Silver Tenant Cloud**.

➤ The usage settings that are associated with the Silver Tenant Cloud in VMM, and which you noted in an

   earlier exercise, are present on this page. Note that you can further limit these settings if you desire.

16. Scroll down the page, and then click **Add networks**.

17. On the Select networks to add to this plan page, check **Tenant WAP Network**, and then click

    Done.

➤ As you saw in an earlier exercise, this network is defined in VMM.

18. Click **Add hardware profiles**.

19. On the Select hardware profiles to add to this plan, check **SELECT ALL**, and then click **Done**.

➤ As you saw in an earlier exercise, these hardware profiles are defined in VMM.

20. Under templates, click **Add templates**.

21. On the Select templates to add to this plan, check **SELECT ALL**, and then click **Done**.

➤ As you saw in an earlier exercise, these templates are defined in VMM.

22. Under gallery, click **Add gallery items**.

23. On the Select gallery items to add to this plan, check **SELECT ALL**, and then click **Done**.

24. Under additional settings, select all the check boxes.

📌 In a production environment, depending on the plan, you would likely select only a subset of these settings.

25. On the taskbar, click **SAVE**.

26. Click **Previous**.

27. On the taskbar, click **CHANGE ACCESS**, click **Public**, and then click **Yes**.

28. Stay logged on and leave Internet Explorer open for the next exercise.

Exercise 4: Windows Azure Pack Tenant Administration

In this exercise, you will sign up for a self-service end user and then use the newly created account to log on to the tenant portal to create a hosted environment.

Sign up for tenant admin account and create subscription

In this task, you will sign up for a tenant admin account that will allow you to create a hosted environment. You will also add a subscription and choose a public plan.

✏ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In Internet Explorer, open a new tab so that the Service Admin portal tab will be unaffected.

2. In the new tab, on the favorites bar, click **WAP-Tenant**.

3. Click **SIGN UP**.

4. In Email Address, type **admin@fabrikam.com**.

5. In Password and Re-enter Password, type **Passw0rd!**

6. Click **Sign up**.

7. On the Welcome page, click **Next**.

8. On the Main Menu page, read the description, and then click **Next**.

9. On the Create New page, read the description, and then click **Next**.

10. On the Commands page, read the description, and then click **Next**.

11. On the Notifications page, read the description, and then click **Done**.

12. Click **MY ACCOUNT**.

13. Click **ADD SUBSCRIPTION**.

14. On the Choose a plan page, select **Fabrikam Corp**, and then click **Done**.

   ✦ It will take a few minutes for the subscription to be created. Once it is created, you will be presented with a UI admin that is identical to the one you would see if you were using Windows Azure.

   ✦ If, after a few minutes, you receive an alert indicating that the process is taking too long, press F5 to refresh the page.

Configure web sites

In this task, you will configure web sites in the hosted environment.

✏ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **WEB SITES**.

2. Click **CREATE A WEB SITE**.

> 📌 You have three methods available for creating a web site: quick create, custom create, or from a gallery.

3. Ensure **QUICK CREATE** is selected, and then in URL, type **FabrikamSales**, and then click **CREATE WEB SITE**.

4. Once the web site is created, click **FabrikamSales**.

   > 📌 A quick start page appears showing the option to install WebMatrix (a free, lightweight web development tool), publish your application, and integrate your application with source control.

5. On the Your site has been created! page, click **Set up deployment from source control**.

   > 📌 You have the option to store your source code in a Local GIT repository or an External GIT or Mercurial repository.

6. Click **Close**.

7. Click **DASHBOARD**.

   > 📌 Here you can get an overview of usage, errors, and settings.

8. Click **MONITOR**.

   > 📌 Here you can view more detailed information.

9. Click **CONFIGURE**.

10. Spend a few moments looking at the configuration options, and then click **SCALE**.

11. Under general, click **RESERVED**.

    > 📌 An instance size drop-down field appears.

12. In INSTANCE SIZE, select **Medium**.

13. In INSTANCE COUNT, move the slider bar to the right.

    > 📌 It is easy for end users to scale up instances.

14. Click **DISCARD**.

    > 📌 You are not going to scale up the web site.

15. Click **Previous**.

Configure virtual machines

In this task, you will configure virtual machines in the hosted environment.

✏️ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **VIRTUAL MACHINES**.

2. Click **CREATE A VIRTUAL MACHINE ROLE**.

3. Click **FROM GALLERY**.

4. Click **Windows Server 2012 R2**, and then click the **Next** icon.

5. In NAME, type **Server1**, and then click the **Next** icon.

6. Review the **VIRTUAL MACHINE SETTINGS**, and then click the **Cancel** icon.

7. Click **CREATE A VIRTUAL MACHINE ROLE**.

8. Click **FROM GALLERY**.

9. Click **Microsoft SQL Server 2012 - Workgroup**, and then click the **Next** icon.

10. In **NAME**, type **SQL1**, and then click the **Next** icon.

11. In VM **SETTINGS**, in **COMPUTER SIZE**, select **Medium**.

12. In **PASSWORD** and **CONFIRM**, type **Passw0rd!**, and then click the **Next** icon.

13. In **SQL SERVER 2012 PRODUCT KEY**, type **11111-22222-33333-44444-55555**.

14. In **INITIAL SQL SERVER SYSADMIN** type **SQLAdmin**.

15. In **SQL SERVER SA PASSWORD** and **CONFIRM**, type **Passw0rd**!

16. Click the **Done** icon.

17. Switch to the **WAPVMM Virtual Machine**, and then log on as **WAP/Administrator** using the password **Passw0rd**!

18. On the desktop, double-click **Virtual Machine Manager Console**.

19. Click **Use current Microsoft Windows session identity**, and then click **Connect**.

20. In the Virtual Machine Manager console, click **Jobs**.

   ↗ The failed job is the provisioning job you started in Windows Azure Pack. The job cannot complete because you are using a virtualized Hyper-V server.

Configure Networks

In this task, you will work with virtualized networks.

✎ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **Networks**.

2. Click **CREATE A VIRTUAL NETWORK**.

3. Click **CUSTOM CREATE**.

4. In **NAME**, type **Fabrikam Network**.

5. In DNS SERVERS, type **4.2.2.1**.

6. Check **Enable direct internet access using NAT**, and then click the **Next** icon.

7. Click the **Done** icon.

8. Optionally, switch to **WAPVMM**, and then review the VM Networks node in Clouds and Services to see the new network object created.

Configure Service Bus

In this task, you will create a new Service Bus entry.

✏ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **SERVICE BUS**, and then click **CREATE A NEW NAMESPACE**.

2. In **NAMESPACE NAME**, type **FabrikamSB**.

3. Click the **Done** icon.

   ◇   Wait for the status to be Ready before proceeding.

4. Click **FabrikamSB**, and then click **QUEUES**.

5. Click **CREATE A NEW QUEUE**.

6. Click **QUEUE**, and then click **CUSTOM CREATE**.

7. In **QUEUE NAME**, type **Fabrikam-Q**, and then click **Next**.

8. Review the default settings, and then click the **Done** icon.

   ◇   Wait for the status to be Active before proceeding.

9. Click **NEW**.

10. Click **TOPIC**, and then click **CUSTOM CREATE**.

11. In TOPIC NAME, type **Fabrikam-Topic**, and then click the **Next** icon.

12. Review the default settings, and then click the **Done** icon.

Configure SQL Server databases

In this task, you will create a new SQL Server database. You can also use this process to create MySQL databases; however you will not perform that process in this task.

✏ Begin this task on **WAPPortal** logged on as **WAP\Administrator** using the password **Passw0rd!**

1. In the left navigation bar, click **SQL SERVER DATABASES**.

2. Click **ADD A NEW DATABASE**.

3. In **NAME**, type **FabrikamDB**, and then click the **Next** icon.

4. In **ADMIN NAME**, type **DBAdmin**.

5. In **PASSWORD** and **PASSWORD CONFIRMATION**, type **Passw0rd!**

6. Click the **Done** icon.

This is the end of the lab.