Learning System Center App Controller

System Center App Controller provides an integrated console that helps you manage public and private clouds, as well as cloud-based virtual machines and services.

Learning System Center App Controller guides you through a successful implementation of App Controller in minimal time. The book starts by covering how to install the prerequisites and System Center Virtual Machine Manager Server and concludes with topics such as backup and recovery. By the end of this book, you will have extensive knowledge and a firm understanding of how to use App Controller efficiently.

This book is a step-by-step guide that introduces you to System Center App Controller and quickly moves on to the common tasks that are faced by an IT professional managing virtual and physical environments within a data center.

Who this book is written for

This book is intended for IT professionals working with Hyper-V, Azure cloud, VMM, and private cloud technologies who are looking for a quick way to get up and running with System Center 2012 R2 App Controller. To get the most out of this book, you should be familiar with Microsoft Hyper-V technology. Knowledge of Virtual Machine Manager is helpful but not mandatory.

What you will learn from this book

- Manage application services using System Center App Controller
- Install SQL Server 2012 Service Pack 1, System Center 2012 R2 Virtual Machine Manager, and App Controller
- Explore the advanced functionality provided by System Center 2012 R2 App Controller
- Install and configure an SCVMM server
- Integrate Virtual Machine Manager with App Controller
- Connect your Microsoft Azure subscription with App Controller
- Configure cloud services and virtual networks and deploy cloud services
- Migrate virtual machines from private cloud to Microsoft Azure cloud
- Create virtual machine templates, hardware profiles, and operating system profiles in Virtual Machine Manager
- Make disaster recovery planning decisions for App Controller recovery

In this package, you will find:

- The author biography
- A preview chapter from the book, Chapter 1 “Introduction to System Center 2012 R2 App Controller”
- A synopsis of the book’s content
- More information on Learning System Center App Controller

About the Author

Nasir Naeem lives in Birmingham, England. He works for Inframon as a system center consultant. He has been working in the IT field for just over a decade, mostly working on Windows-based networks with a combination of Cisco as well as VMWare.

When not working with clients to improve IT cost efficiency and administration improvements, he is an Arduino electronics hobbyist.

Writing a book is a huge task and this book is no exception. This book is dedicated to my parents and teachers; their debt I cannot pay back.

Over the years, many people have provided guidance and helped steer the direction of my career. Some of the prominent names are Chris Page (WCC), Alwyn Wayne (WCC), Paul Hewitt (IBM), Alexandra Webb (WCC), Paul Forkgen (NAK Group), and John Parker (NAK Group). Also, sincere thanks to Richard Gall for providing an opportunity to write this book.
Learning System Center App Controller

This book has been written specifically for IT professionals who need to learn System Center App Controller quickly. In this book, you will find chapters separated by topics that are task-specific, intentionally utilizing the minimum amount of theoretical jargon and providing step-by-step information to complete the task successfully. We hope you will enjoy this book as much as we enjoyed writing it for you.

What This Book Covers

Chapter 1, Introduction to System Center 2012 R2 App Controller, provides an introduction and outlines setting up App Controller, prerequisites, issues addressed by App Controller, a planning guide, and common issues to keep in mind during planning and deployment phases.

Chapter 2, Installing and Working with Different App Controller Components, provides step-by-step instructions for the installation of SQL Server, the installation of required services, and then deployment of System Center App Controller Server.

Chapter 3, Deploying and Configuring System Center Virtual Machine Manager Server, provides step-by-step instructions for completing a successful installation of SCVMM 2012 R2 Server. After completing the installation, further instructions are provided to create a private cloud.

Chapter 4, Customizing App Controller, introduces you to the App Controller administrative portal. Further instructions are provided to integrate the SCVMM server with App Controller. It also covers integrating the Azure cloud subscription, roles-based access, adding network share to the SCVMM server, and configuring the SSL certificate for the App Controller website.

Chapter 5, Exploring Advanced Options, provides some of the common day-to-day tasks faced by IT professionals administering a hybrid private and public cloud network. You will be introduced to the PowerShell module for App Controller, Windows Azure PowerShell module installation, and copying VHD files to the Azure cloud.

Chapter 6, Backup and Recovery, introduces you to the choices available for backing up App Controller. It provides step-by-step instructions to back up App Controller.
Introduction to System Center 2012 R2 App Controller

It has been a long journey for the evolution of App Controller. We will be discussing how this component evolved during the last couple of iterations of the VMM product.

App Controller is a component of the System Center family. Historically, it used to be the self-service portal in the Virtual Machine Manager 2008 R2 server. With the release of the System Center 2012 suite, Microsoft consolidated SCCM, SCOM, VMM, SCSM, Orchestrator, Data Protection Manager, and Software Update Publisher (SUP) as a single-bundle software suite to manage enterprise data centers. With the release of System Center 2012 Service Pack 1, the system center's virtual machine manager self-service portal was removed from Virtual Machine Manager Server and distributed as System Center App Controller. It was a well-timed change, as Microsoft was addressing its move towards a Cloud OS-centric approach.

To date, System Center App Controller is an extension of Virtual Machine Manager. It adds further functionality to Virtual Machine Manager by exposing role-based access control for users consuming resources allocated in the private cloud, as well as adding functionality to manage public cloud services such as Microsoft Azure.

In this chapter, we will cover the following topics:

- Introduction to App Controller
- Considerations before beginning installation
- Overview of the prerequisites required
Issues addressed by System Center App Controller

With the release of System Center 2012 Service Pack 1, the self-service portal was removed from Virtual Machine Manager and introduced as a separate component of the System Center suite. Up to this point, the private cloud and public cloud were two distinct technologies. To manage a public cloud such as Microsoft Azure, we had to log on to the Microsoft Azure Management portal; and to manage our private cloud, we had to log in to the System Center Virtual Machine Manager. System Center App Controller gave us a single pane where we can manage Windows Azure resources in the cloud, on-premises private cloud management capability, and ability to allow access to resources modelled around business function as a user role, hence simplifying security management and administration of a multi-tenant environment.

Quick planning primer

For planning and design purposes, App Controller is one of the simplest components of the System Center family. To get the App Controller up and running quickly, the Web IIS role is required on at least one of supported server operating systems. A supported SQL Server is required to store the App Controller database. To get extended App Controller features enabled, a component of the System Center family, named Virtual Machine Manager Server, is required in the environment. It can provision, manage, and convert virtual machines. We can also use a shared storage to convert and upload virtual machines to the Microsoft Azure cloud. There is also a requirement of Active Directory Certificates Services if we want to use a certificate from a trusted corporate certification authority, although a self-signed certificate can also be used.

If we want to make App Controller highly available, there are three options possible, as follows:

- Making the database highly available by installing the database on a clustered SQL Server instance
- Making the App Controller server highly available either by creating a virtual machine on a Hyper-V cluster and making the virtual machine highly available or installing multiple App Controller servers behind a load balancer
If multiple App Controller servers are installed behind a load balancer, an encryption key will have to be extracted using the Export-SCACAesKey PowerShell cmdlet. Then you will need to import the extracted key on each load-balanced App Controller server during the installation process.

Installing the prerequisites
Let's cover the prerequisites for successful installation of App Controller. System Center Virtual Machine Manager has to be deployed in the environment to extend App Controller's management capability of administrating a private cloud. App Controller extends Virtual Machine Manager's capabilities and allows conversion and uploads of virtual machines from a private cloud to the public cloud.

Windows assessment and deployment toolkit for Windows 8.1
The Windows ADK toolkit is required in order to install System Center 2012 R2 Virtual Machine Manager Server. Windows Assessment and Deployment Kit is a free toolkit from Microsoft, and can be downloaded from http://www.microsoft.com/en-gb/download/details.aspx?id=39982. It can be installed on the following operating systems:

- Windows 8.1
- Windows 8
- Windows 7
- Windows Sever 2012 R2
- Windows Server 2012
- Windows Server 2008 R2
- Windows Sever 2008
- Windows Vista

Microsoft .NET 4.5 is required for successful installation, and is installed automatically if it is missing. Windows Server 2012 has .NET 4.5 installed out of the box.
Windows Assessment and Deployment Kit for Windows 8.1 includes the following components:

- **Application Compatibility Toolkit (ACT):** This can be used to build inventories of software installed on computers and also to assess compatibility with Windows 8.1 after migration. This component requires SQL Server 2005 or newer versions. The SQL Server Express edition can also be used.

- **Deployment Tools:** This includes DISM and other deployment tools used to customize disk images and automate deployment.

- **Windows Preinstallation Environment:** This is a small-footprint operating system that can be used to prepare a computer for installation and servicing. It is dependent on Deployment Tools.

- **User State Migration Tool:** This tool is used to migrate user data from one Windows-based machine to another. It includes three packages: ScanState, LoadState, and USMTUtils.

- **Volume Activation Management Tool:** This tool can be used for automatic activation of Windows and Microsoft Office. SQL Server 2008 or a newer version is required to hold the database file.

- **Windows Performance Toolkit:** This tool can be used to monitor application performance against Windows operating system profiles. WPT includes Windows Performance Recorder, Windows Performance Analyzer, and Xperf tools.

- **Windows Assessment Toolkit:** This tool can produce diagnostic and remediation information against a local system by running jobs to measure reliability, performance, and functionality. It requires Deployment Tools, Windows PE, Windows Performance Tools and SQL Server. All of these are included in the ADK 8.1 download.

After downloading the `adksetup.exe` file, the setup process will attempt to download 4 gigabytes of files during the installation process. We can also download the ADK kit for offline usage, and transfer the files to the required server over LAN for easier access. For installation, perform the following steps:

1. To download the files for local access, browse to the location where `adksetup.exe` has been stored. Right-click and select **Run as administrator**, as shown in the following screenshot:
2. After the installation wizard starts, select the **Download the Windows Assessment and Deployment Kit for Windows 8.1 for installation on a separate computer** option. Then specify the download location path under **Download Path**. To keep the installation files isolated, I always create a subfolder in the same location where `adksetup.exe` is located. Ensure that enough space is available on the disk and then click on **Next**, as shown in this screenshot:
3. Select the appropriate answer according to your environment for **Join the Customer Experience Improvement Program**. It does help Microsoft in creating a better product. Then click on **Next**, as shown in the following screenshot:

![Select CEIP answer](image)

4. Accept the license agreement by clicking on **Accept**, as shown here:

![License Agreement](image)
5. After you accept the license agreement, the process of downloading the required files will begin, as shown in the following screenshot:

![Screenshot of file download progress]

6. Click on Close after the download has completed successfully, as shown in this screenshot:

![Screenshot of successful download]

Please find adksetup.exe in Z:\ISO\WADK8.1\adk8.1 to install Windows Assessment and Deployment Kit for Windows 8.1.
7. Once the download process has been completed, start `adksetup.exe` from the folder where the complete package files have been downloaded. The folder appears as shown in the following screenshot:

![Folder Screenshot]

8. This time, the installation options will be slightly different. Select the installation path and click on **Next**, as shown in this screenshot:

![Specify Location Screenshot]

9. Select the appropriate answer according to your organization in the **Join the Customer Experience Improvement Program** section, and click on **Next**, as shown in the following screenshot:
10. Accept the terms and conditions. Then you will be presented with the section about installation of features. Select the Deployment Tools and Windows Preinstallation Environment (Windows PE) features only, and then click on Install, as shown here:
Other application requirements and dependencies to consider

System Virtual Machine Manager is still required for App Controller to work with private cloud resources. For instructions on installing Virtual Machine Manager, refer to the Installing System Center 2012 R2 Virtual Machine Manager section in Chapter 3, Deploying and Configuring System Center Virtual Machine Manager Server.

We will be installing System Center 2012 R2 App Controller on Windows Server 2012 R2. App Controller's server-side components are supported by Microsoft on the following operating systems:

- Windows Server 2008
- Windows Server 2008 SP2
- Windows Server 2008 R2
- Windows Server 2008 R2 SP 1
- Windows Server 2012 R2 Standard, Datacenter edition

System Center 2012 R2 Application Controller requires the IIS role installed to function. If the IIS role is not enabled, the setup installer enables the role automatically, with the correct features enabled. The required IIS features are as follows:

- Static Content
- Default Document
- Directory Browsing
- HTTP Errors
- ASP.NET
- .NET Extensibility
- ISAPI Extensions
- ISAPI Filters
- HTTP Logging
- Request Logging
- Tracing
- Basic Authentication
- Windows Authentication
• Request Filtering
• Static Content Compression
• IIS Management Console

Microsoft .NET Framework 4.5 should also be installed. The setup wizard will install .NET 4.5 if it's missing. On Windows Server 2012 R2, .NET Framework 4.5 is installed by default.

The App Controller server must be member of an Active Directory Domain. Besides, Virtual Machine Manager Console needs to be installed as a software requirement on the App Controller server.

System Center 2012 R2 App Controller requires access to a SQL server to store critical data. Microsoft-supported versions of SQL Server for System Center 2012 R2 App Controller are as follows.

• SQL Server 2008 R2 SP2 Standard, Datacenter edition
• SQL Server 2008 R2 SP2 Standard, Datacenter edition
• SQL Server 2012 Enterprise, Standard (64-bit) edition
• SQL Server 2012 SP1 Enterprise, Standard (64-bit) edition

### System Center 2012 R2 App Controller scaling limitations

System Center 2012 R2 App Controller has the following scaling and performance limitations:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of SCVMM management servers</td>
<td>5</td>
</tr>
<tr>
<td>Maximum number of Windows Azure subscriptions per user</td>
<td>20</td>
</tr>
<tr>
<td>Maximum number of concurrent users</td>
<td>75</td>
</tr>
<tr>
<td>Maximum number of jobs that can be run in a 24-hour interval</td>
<td>10,000</td>
</tr>
<tr>
<td>Maximum number of objects in a Windows Azure storage directory</td>
<td>900</td>
</tr>
</tbody>
</table>
Summary
In this chapter, you learned the history of App Controller. Then we looked at the prerequisites required for successful installation. We also looked at the Microsoft supported versions of components. Finally, we looked at the limitations of App Controller.

In the next chapter, we will install prerequisites, required services, SQL Server, and App Controller.
Where to buy this book

You can buy Learning System Center App Controller from the Packt Publishing website. Alternatively, you can buy the book from Amazon, BN.com, Computer Manuals and most internet book retailers.

Click here for ordering and shipping details.