Test Lab Guide: Demonstrate Windows Server "8" Beta Virtualized Domain Controller (VDC)

Microsoft Corporation

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Abstract

This Microsoft Test Lab Guide (TLG) introduces Active Directory Domain Services Virtualized Domain Controllers and provides step-by-step demonstration of new features in Windows Server "8" Beta.



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# Introduction to Test Lab Guides

Test Lab Guides (TLGs) allow you to get hands-on experience with new products and technologies using a pre-defined and tested methodology that results in a working configuration. When you use a TLG to create a test lab, instructions tell you what servers to create, how to configure the operating systems and platform services, and how to install and configure any additional products or technologies. A TLG experience enables you to see all of the components and the configuration steps on both the front-end and back-end that go into a single- or multi-product or technology solution.

# What Is Virtualized Domain Controller?

Domain controllers have unique characteristics that make duplication and restoration very dangerous. For instance, two domain controllers cannot coexist in the same forest with the same name and security identifier. In Windows Server 2008 R2 and older operating systems, every virtualized domain controller requires manual promotion as a uniquely built guest computer.

Windows Server "8" Beta introduces virtualized domain controller cloning capabilities. You no longer have to repeatedly deploy a sysprepped server image and then manually promote the domain controller. Instead, the cloned domain controller automatically syspreps and promotes with the existing local AD DS data as installation media, consuming administrator-provided settings like computer name and IP address. This allows faster deployment of new domain controllers in production or test labs, simpler disaster recovery, and the ability to scale out in hosting and branch office scenarios.

Virtualization technology such as Hyper-V includes snapshot facilities, where you create an image of a domain controller at a point in time. Restoring the snapshot discards all changes made since that checkpoint and in operating systems prior to Windows Server "8" Beta, forces the domain controller to quarantine itself with a process called USN rollback protection. Once USN rollback protection is in place, a domain controller no longer replicates again and must be either forcibly demoted or manually restored non-authoritatively. In cases where the domain controller has originated changes since the snapshot was taken, it also leads to lingering objects.

Windows Server "8" Beta domain controllers now detect snapshot restoration and non-authoritatively synchronize the delta of changes between the server and its partners for AD DS and SYSVOL. You can now use snapshots without risk of permanently crippling domain controllers and requiring manually forced demotion, metadata cleanup, and re-promotion. While this does not prevent other issues with snapshots - such as inconsistent databases for other technologies and applications - it does make domain controller virtualization safer.

Note

For information about Virtualized Domain Controllers, see [Understand and Troubleshoot Virtualized Domain Controllers in Windows Server "8" Beta](http://go.microsoft.com/fwlink/p/?LinkId=236370).

In addition, there are considerable changes to AD DS deployment and management, including Windows PowerShell-based deployment and extensions to the Active Directory Administrative Center.

Note

For more information about AD DS Simplified Administration, review [Understand and Troubleshoot ADDS Simplified Administration in Windows Server "8" Beta](http://go.microsoft.com/fwlink/p/?LinkId=237244) and [Test Lab Guide: Demonstrate ADDS Simplified Administration in Windows Server "8](http://go.microsoft.com/fwlink/p/?LinkId=237270)" Beta

## In this guide

This document contains instructions for setting up the Virtualized Domain Controller test lab through:

* Deploying a virtualized domain controller through cloning
* Safely restoring a domain controller snapshot

Important

The following instructions are for configuring the Windows Server "8" Beta test lab. While this document tries to reinforce best practices, it does not always reflect a desired or recommended configuration for a production network. The configuration, including IP addresses and all other configuration parameters, is designed only to work on a separate test lab network.

## Test lab overview

The VDC test lab consists of the Windows Server "8" Beta domain controllers configured as part of [Test Lab Guide: Demonstrate ADDS Simplified Administration in Windows Server "8](http://go.microsoft.com/fwlink/p/?LinkId=237270)" Beta, running as virtual machine guests.

Important

The Virtualized Domain Controller TLG is *not* designed for use with the Windows Server "8" Beta Base Configuration guide. The [Test Lab Guide: Demonstrate ADDS Simplified Administration in Windows Server "8](http://go.microsoft.com/fwlink/p/?LinkId=237270)" Beta is the prerequisite for [Test Lab Guide: Demonstrate Windows Server "8" Beta Virtualized Domain Controller (VDC)](http://go.microsoft.com/fwlink/p/?LinkId=237261).

## Hardware and software requirements

The following are the minimum required components of the test lab:

* Windows Server "8" Beta with the Hyper-V role installed and configured (or equivalent third party product that supports VM-Generation ID).
* The Windows Server "8" Beta domain controllers installed and configured as part of the AD DS Simplified Administration test lab guide (NEWDC1, NEWDC2, and NEWDC3)

For hypervisor options that support VDC and VM-Generation ID, review the following table:

|  |  |
| --- | --- |
| Virtualization Product | Supports VDC and VMGID |
| Microsoft Windows Server "8" Beta server with Hyper-V Feature | Yes |
| Microsoft Windows Server "8" Beta Hyper-V Server | Yes |
| Microsoft Windows 8 Consumer Preview with Hyper-V Client Feature | Yes |
| Microsoft Windows Server 2008 and Windows Server 2008 R2 | No |
| Non-Microsoft virtualization solutions | Contact vendor |

### User account control

When you are logged in as an administrative user other than the built-in Administrator account, you are required to click Continue or **Yes** in the User Account Control (UAC) dialog box for some tasks. Several of the configuration tasks require UAC approval. When prompted, always click Continue or **Yes** to authorize these changes. Alternatively, see the [Appendix](#_Appendix_1) of this guide for instructions about how to set the UAC behavior of the elevation prompt for administrators.

### Windows PowerShell and remote pasting in Hyper-V virtual machines

This guide makes frequent use of Windows PowerShell samples in order to familiarize you with this robust command-line tool. In Windows Server "8" Beta, there is an issue where copying and pasting long lines of text into a remote virtual machine can lead to garbled text. See the [Appendix](#_Appendix_1) of this guide for instructions about mitigating this behavior.

# Steps for deploying a virtualized domain controller

There are seven steps to deploying a virtualized domain controller in this lab. Skipping or altering any step is likely to result in failed cloning. There is no task-oriented graphical management program for VDC cloning in Windows Server "8" Beta; the provisioning steps are performed manually or using Windows PowerShell.

1. Create the customized DcCloneConfig.xml file on a source domain controller
2. Detect incompatible programs on the source domain controller
3. Ensure the PDC emulator runs Windows Server "8" Beta, is not the clone source, and is available
4. Authorize the source domain controller for cloning
5. Shutdown the source domain controller and copy its disk
6. Create a new clone virtual machine using the copied disks
7. Start the source and cloned domain controller, then allow cloning to occur

Note

You must logon as a member of the Domain Admins group to complete the steps described in this section. Perform steps 1-5 logged on to NEWDC1.

## Step 1: Create the customized DcCloneConfig.xml file on a source domain controller

NEWDC1 is a domain controller for the root.fabrikam.com domain. To clone, it must contain a valid customized **DcCloneConfig.Xml** file.

Note

Notepad is used as an editor in this example, but Microsoft recommends using an XML editor such as [Visual Studio 2010 Express](http://www.microsoft.com/visualstudio/en-us/products/2010-editions/express) to correctly configure VDC XML files. See the [Appendix](#_Appendix_1) for alternative steps to using the customized **DcCloneConfig.xml**. See the [Understand and Troubleshoot Virtualized Domain Controllers in Windows Server "8" Beta](http://go.microsoft.com/fwlink/p/?LinkId=236370) guide for more VDC XML information.

 Create the customized DcCloneConfig.xml file on NEWDC1

|  |
| --- |
| 1. Open the **Start** page and type **notepad** then hit ENTER.
2. Click **File**, click **Open**, and navigate to **c:\windows\system32**. Change the **Text Documents (\*.txt)** dropdown to **All Files (\*.\*)**.
3. Select the **SampleDCCloneConfig.xml** and click **Open**.
4. Click **File**, click **Save As**, and navigate to **c:\windows\ntds**. Change the **File name** to **DCCloneConfig.xml**. Change the **Save as type** dropdown to **All Files (\*.\*)**. Click **Save**.
5. Edit the XML to include the following settings for **ComputerName, SiteName, Address, DefaultGateway,** and **DNSResolver** (**highlighted bold** for easier reading):

<?xml version="1.0"?><d3c:DCCloneConfig xmlns:d3c="uri:microsoft.com:schemas:DCCloneConfig"> <ComputerName>**CLONED-NEWDC1**</ComputerName> <SiteName>**Default-First-Site-Name**</SiteName> <IPSettings> <IPv4Settings> <StaticSettings> <Address>**10.90.0.111**</Address> <SubnetMask>**255.255.255.0**</SubnetMask> <DefaultGateway>**10.90.0.1**</DefaultGateway> <DNSResolver>**10.90.0.101**</DNSResolver> <DNSResolver>**127.0.0.1**</DNSResolver> <DNSResolver></DNSResolver> <DNSResolver></DNSResolver> <PreferredWINSServer></PreferredWINSServer> <AlternateWINSServer></AlternateWINSServer> </StaticSettings> </IPv4Settings> <IPv6Settings> <StaticSettings> <DNSResolver></DNSResolver> <DNSResolver></DNSResolver> <DNSResolver></DNSResolver> <DNSResolver></DNSResolver> </StaticSettings> </IPv6Settings> </IPSettings></d3c:DCCloneConfig>1. Click **File** and then click **Save.** Click **File** and **Exit**.
 |

## Step 2: Detect incompatible programs on the source domain controller

Before cloning a domain controller, it must be scanned for installed programs and services that do not appear in the application Allow list.

To detect incompatible programs on the source domain controller

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| 1. Start Windows PowerShell from the taskbar or **Start** page.
2. In Windows PowerShell:

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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter the command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator. **Get-ADDCCloningExcludedApplicationList | format-list** |

1. Examine the output for any returned Services or Programs. By default, the only application returned in Windows Server "8" Beta is the **PrintNotify** service. Any installed applications not included as part of the operating system - such as anti-virus software - show here as well as any incompatible Windows services, like the DHCP Server service.
2. Open the **Start** page and type **notepad** then hit ENTER.
3. Click **File**, click **Save As**, and navigate to **c:\windows\ntds**. Change the **File name** to **CustomDCCloneAllowList.xml**. Change the **Save as type** dropdown to **All Files (\*.\*)**. Click **Save**.
4. Edit the XML to include an <Allow></Allow> rule for *each* service or program returned by the **Get-ADDCCloningExcludedApplicationList** cmdlet.

Example 1 (a default Windows Server "8" Beta domain controller):<?xml version="1.0" encoding="utf-8" ?><AllowList> <Allow> <Name>**PrintNotify**</Name> <Type>**Service**</Type> </Allow></AllowList>Example 2 (where Microsoft Forefront Endpoint Protection 2010 is installed):<?xml version="1.0" encoding="utf-8" ?><AllowList> <Allow> <Name>**Microsoft Forefront Endpoint Protection**</Name> <Type>**Program**</Type> </Allow> <Allow> <Name>**Microsoft Antimalware**</Name> <Type>**Program**</Type> </Allow> <Allow> <Name>**Microsoft Forefront Endpoint Protection 2010 Server Management**</Name> <Type>**Program**</Type> </Allow> <Allow> <Name>**Microsoft Security Client**</Name> <Type>**Program**</Type> </Allow> <Allow> <Name>**PrintNotify**</Name> <Type>**Service**</Type> </Allow> <Allow> <Name>**MsMpSvcy**</Name> <Type>**Service**</Type> </Allow> <Allow> <Name>**NisSrv**</Name> <Type>**Service**</Type> </Allow></AllowList>1. Click **File** and then click **Save.** Click **File** and **Exit**.
2. Exit the Windows PowerShell console.
 |

Note

**PrintNotify** always shows on Windows Server "8" Beta. This is likely to change in the final release version of the operating system.

## Step 3: Ensure the PDC emulator runs Windows Server "8" Beta, is not the clone source, and is online

You cannot clone the domain controller running the PDC emulator FSMO role, so the role must be moved to NEWDC2. The PDC role must be online and directly accessible from the clone later, as the cloning system contacts the PDC directly through RPC.

To transfer the PDC emulator role to NEWDC2
[Do this step using Windows PowerShell](#PS1)

|  |
| --- |
| 1. Open the **Start** page, and then type **DSA.MSC** and hit ENTER.
2. In the Active Directory Users and Computers snap-in console tree, right click **root.fabrikam.com**, click **change domain controller**, select **NEWDC2**, and click **OK**.
3. Right click the **root.fabrikam.com** node and then click **Operations Masters...**
4. In the **Operations Masters** dialog, click the **PDC** tab. Click the **Change** button to move the PDC FSMO role to **NEWDC2**. Click **Yes** to confirm.
5. Click **OK** when successfully transferred. Click **Close**.
6. Exit the Active Directory Users and Computers snap-in.
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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter this command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator.**Move-ADDirectoryServerOperationMasterRole -Identity "NEWDC2" -OperationMasterRole PDCEmulator**  |

## Step 4: Authorize the source domain controller for cloning

You are going to clone NEWDC1, so you must authorize the operation. This prevents administrators of a hypervisor from cloning computers without domain administrator rights.

To authorize the source domain controller NEWDC1
[Do this step using Windows PowerShell](#PS2)

|  |
| --- |
| 1. Open the **Start** page, and then type **DSAC** and hit ENTER.
2. In the Active Directory Administrative Center console tree, click **root (local)**, and then double-click **Domain Controllers**.
3. Right click the **NEWDC1** and click **Add to Group**.
4. In the Select Groups dialog, type **Cloneable Domain Controllers** and click **OK**.
5. Exit the Active Directory Administrative Center.
 |

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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter this command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator.**Get-ADComputer NEWDC1 | %{add-adgroupmember -identity "Cloneable domain controllers" -members $\_.samaccountname}** |

## Step 5: Shut down the source domain controller and copy its disk

To clone NEWDC1, it must be gracefully shutdown and its disk copied for use by a new virtual machine.

To shut down the source domain controller NEWDC1
[Do this step using Windows PowerShell](#PS3)

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| 1. Open the **Start** page, and then move the mouse to the upper right corner of the screen to expand the Charm Bar.
2. Click **Settings**, and then click **Power**. Click **Shutdown** and click **Continue**.
 |

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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter this command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator.**Stop-computer** |

To copy the source domain controller NEWDC1's disk
[Do this step using Windows PowerShell](#PS30)

|  |
| --- |
| 1. Logon to the hypervisor host computer as a member of the Administrators group.
2. Note the virtual disk path of the NEWDC1 virtual machine (if using the Hyper-V Manager snap-in, right click the virtual machine and click **Settings** to see the path)

Important If there are any snapshots of the NEWDC1 virtual machine, you *must* delete them. If the NEWDC1 virtual machine uses differencing disks, you *must* **Export** the virtual machine so that the parent and child disks merge. If you are using pass-thru disks, you *cannot* use the VDC feature.1. Start Windows Explorer from the taskbar or **Start** page.
2. Copy the exported disk to **CLONED-NEWDC1.VHDX** (or **.VHD**, if that is the extension)

Note Windows Server "8" Beta supports mounting of offline VHD and VHDX files, allowing you make many copies of a single source VHD/VHDX and add a unique DcCloneConfig.XML to each one. You can also mount virtual disks using Windows PowerShell. For more details and examples, review [Understand and Troubleshoot Virtualized Domain Controllers in Windows Server "8" Beta](http://go.microsoft.com/fwlink/p/?LinkId=236370)  |

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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter this command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator.**Copy-item -path c:\vm\newdc1.vhdx -destination c:\vm\cloned-newdc1.vhdx** |

## Step 6: Create a new clone virtual machine using the copied disk

To create the **CLONED-NEWDC1** clone, create a new virtual machine using the copied disk.

To create the CLONED-NEWDC1 virtual machine
[Do this step using Windows PowerShell](#PS4)

|  |
| --- |
| 1. Open the **Start** page, then type **virtmgmt.msc** and hit ENTER.
2. Create a new virtual machine, setting the desired name, memory, and networking information. When you reach the **Connect Virtual Hard Disk** page, select **Use an existing virtual hard disk**. Click **Browse** and select the location of the **CLONED-NEWDC1** virtual disk file.
3. Click **Finish** to create the new virtual machine.
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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter this command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator. In this example, the CLONED-NEWDC1.VHDX file is stored in c:\vm on the Windows Server "8" Beta hypervisor, the VM will have 2GB of memory, and the virtual switch is named "10.90":**New-VM -name "Cloned-NEWDC1" -memorystartupbytes 2147483648 -bootdevice harddrive -switchname "10.90" -vhdpath c:\vm\CLONED-NEWDC1.VHDX | format-list** |

## Step 7: Start the source and cloned domain controller, then allow cloning to occur

To begin cloning **CLONED-NEWDC1**, start the original source computer back up then start the new cloned virtual machine.

To clone the CLONED-NEWDC1 virtual machine
[Do this step using Windows PowerShell](#PS5)

|  |
| --- |
| 1. Start the NEWDC1 computer and allow it to complete booting.

Note It is not required that the source computer of a clone be running before cloning commences on the new virtual machine. This step is mainly to reinforce that a domain controller should not be left offline for long periods.1. Start the CLONED-NEWDC1 computer. If you have followed the steps correctly, it will show "Domain Controller cloning is at *X*%". Allow it to clone and restart automatically.

Note If the CLONED-NEWDC1 computer starts in Directory Services Restore Mode, review the Directory Services and System Event log to see why cloning failed. For advanced troubleshooting, review [Understand and Troubleshoot Virtualized Domain Controllers in Windows Server "8" Beta](http://go.microsoft.com/fwlink/p/?LinkId=236370).  |

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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter this command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator. **Start-VM -name "NEWDC1"****Start-VM -name "Cloned-NEWDC1"** |

# Steps for safely restoring a domain controller snapshot

There are four steps to demonstrating VDC safe snapshot restoration.

1. Take a snapshot of NEWDC1
2. Create a new Group Policy
3. Validate that the group policy's Active Directory and SYSVOL objects replicate to all domain controllers
4. Restore the NEWDC1 snapshot

Note

You must logon as a member of the Domain Admins group to complete the tasks described in this section.

Important

VDC safe restore is *not* a replacement for system state backups and the AD DS Recycle Bin. After restoring a snapshot, the deltas of previously un-replicated changes originating from that domain controller after snapshot are permanently lost. Safe restore implements automated non-authoritative restoration to prevent accidental domain controller quarantine *only*.

## Step 1: Take a snapshot of NEWDC1

Take a snapshot of NEWDC1 prior to creating some new objects, in order to have some replication convergence to demonstrate.

To take a snapshot of NEWDC1
[Do this step using Windows PowerShell](#PS20)

|  |
| --- |
| 1. Open the **Start** page on the Hyper-V host computer, and then type **virtmgmt.msc** and hit ENTER.
2. Right click NEWDC1 and click **Snapshot**.
3. Allow the snapshot to complete.
 |

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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter this command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator. **Checkpoint-VM -name "NEWDC1"** |

## Step 2: Create a new Group Policy

Create a group policy using the Group Policy Management Console. Group policies have both an Active Directory object and SYSVOL files.

Create a new group policy
[Do this step using Windows PowerShell](#PS21)

|  |
| --- |
| 1. Open the **Start** page, and then type **gpmc.msc** and hit ENTER.
2. Click the arrow next to **Forest:root.fabrikam.com** in the console tree, then click the arrow next to **Domains**, then right click **root.fabrikam.com** and click **Create a GPO in this domain, and Link it here…**
3. In the **New GPO** dialog, change the name to **Snapshot Sample Policy** and click **OK**.
4. Click the arrow next to **root.fabrikam.com**, then right click **Sample Snapshot Policy** and click **Edit**.
5. Click **OK**, then close the Group Policy Management Editor.
 |

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| Description: Description: Description: http://upload.wikimedia.org/wikipedia/en/7/7f/Windows_PowerShell_icon.png **Windows PowerShell commands**  |
| Enter this command on a single line, even though it may appear word-wrapped across several lines here because of formatting constraints. Always run Windows PowerShell as an elevated administrator. **New-Gpo -name "Snapshot Sample Policy" | New-GpLink -target "dc=root,dc=fabrikam,dc=com"** |

## Step 3: Validate that these new objects replicate to all domain controllers

Use the Group Policy Management Console's new replication Status capability to validate that all group policies are synchronized on all domain controllers.

Validate the objects



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| --- |
| 1. Open the **Start** page, and then type **gpmc.msc** and hit ENTER.
2. In the Group Policy Management console tree, click **root.fabrikam.com** (under **Domains**)
3. On the **Status** tab, click **Detect Now**. Allow the Status report to generate.
4. Validate that under status details, it shows **0 Domain controller(s) with replication in progress**. Validate that it shows **3 Domain controller(s) with replication in sync**.

Note Expanding this section shows the other domain controllers than the PDC emulator, which is the default baseline domain controller. The **GPMC Status** option is new to Windows Server "8" Beta. |

## Step 4: Restore the NEWDC1 snapshot and examine the results

Restore the snapshot to a time before the existence of the group policy, and then examine the virtual machine to see that the missing objects from the snapshot synchronized.

 Restore the NEWDC1 snapshot

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| 1. Open the **Start** page on the Hyper-V host computer, and then type **virtmgmt.msc** and hit ENTER.
2. Right click NEWDC1 and click **Revert**. When prompted to confirm, click **Revert**.
3. Allow the snapshot restoration to complete.
 |

 Examine the NEWDC1 virtual machine

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| --- |
| 1. Logon to the **NEWDC1** domain controller as an administrator.
2. Open the **Start** page, and then type **gpmc.msc** and hit ENTER.
3. In the Group Policy Management console tree, click **root.fabrikam.com** (under **Domains**)
4. On the **Status** tab, click **Detect Now**. Allow the Status report to generate.
5. Validate that under status details, it shows **0 Domain controller(s) with replication in progress**. Validate that it shows **3 Domain controller(s) with replication in sync**.
6. If not already running, start Server Manager from the taskbar or **Start** page. Click the **AD DS** link and right click **NEWDC1** in the **Servers** tile. Click **Computer Management**.
7. Expand the **Event Viewer** console node, then the **Applications and Services Logs**.
8. Click the **Directory Service** log and note the expected **2170-Warning** event ("A generation ID change has been detected") from the time you restored the snapshot.
9. If replicating the SYSVOL folder with the **File Replication Service**, click the **File Replication Service** log. Note the **13516-Information** event ("The File Replication Service is no longer preventing the computer %1 from becoming a domain controller. The system volume has been successfully initialized…")
10. If replicating the SYSVOL folder with the **DFS Replication Service**, click the **File Replication Service** log. Note the **4604-Information** event ("The DFS Replication service successfully initialized the SYSVOL replicated folder…")
11. Close the event viewer and group policy management console.
 |

# Appendix

## Set UAC behavior of the elevation prompt for administrators

By default, UAC is enabled in Windows Server "8" Beta and Windows 8 Consumer Preview. This service will prompt for permission to continue during several of the configuration tasks described in this guide. In all cases, you can click Continue in the UAC dialog box to grant this permission, or you can use the following procedure to change the UAC behavior of the elevation prompt for administrators.

To set UAC behavior of the elevation prompt for administrators

|  |
| --- |
| * 1. Click **the Search** charm**.** Click **Apps.**
	2. Type secpol.msc, and press ENTER.
	3. In the console tree, open Local Policies, and then click Security Options.
	4. In the contents pane, double-click User Account Control: Behavior of the elevation prompt for administrators in Admin Approval Mode.
	5. Click Elevate without prompting in the list, and then click OK.
1. 6. Close the Local Security Policy window.
 |

## Pasting text to Hyper-V guests sometimes results in garbled characters

When using a Hyper-V Virtual Machine Connection console to a running virtual machine on Windows Server "8" Beta Hyper-V and then using **Type Clipboard Text** menu option, the characters pasted may appear out of order or garbled. This makes copying and pasting Windows PowerShell commands difficult.

To work around this issue:

* Use the **mstsc.exe** RDP client to connect directly to virtual machines. Note that this requires attaching your client computer to the corpnet network described in this guide
* Increase the keyboard class buffer size in the virtual machine
* Disable the synthetic keyboard in the virtual machine to force using the emulated keyboard, which does not have this issue

 To Increase the keyboard class buffer size in the virtual machine

|  |
| --- |
| 1. Logon to a running virtual machine as a member of the Administrators group.
2. Open the **Start** page, type **regedit**, and hit ENTER.
3. Locate and then click the following registry entry:

**HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\kbdclass\Parameters**1. In the details page, double click:

**KeyboardDataQueueSize**1. Select **Decimal** and type a **value data** of:

**1024** 1. Click **OK**. Close the Registry Editor and restart the virtual machine.
 |

To disable the synthetic keyboard for a virtual machine

|  |
| --- |
| 1. Logon to a running virtual machine as a member of the Administrators group.
2. Open the **Start** page and type **devmgmt.msc** then hit ENTER.
3. Click **Keyboards**, right click **Microsoft Hyper-V Virtual Keyboard** and click **Disable**.
4. Close the Device Manager snap-in.
* Note On Windows Server "8" Beta Core, download [DevCon.exe](http://social.technet.microsoft.com/wiki/contents/articles/182.aspx) from the Windows Driver Kit to [disable](http://msdn.microsoft.com/en-us/library/windows/hardware/ff544722%28v%3Dvs.85%29.aspx) this driver using the command-line.
 |

## Automatically configuring cloned virtual domain controllers

If you want to deploy domain controllers with an automatic naming convention and networking, you can use a blank **DcCloneConfig.xml** file. If you choose to use a blank **DcCloneConfig.xml,** you must configure valid DHCPv4 or DHCPv6 (both providing DNS addressing) to allow cloned domain controllers to lease an IP address automatically. When using a blank **DcCloneConfig.xml** file, cloned domain controller names are automatically assigned as first seven characters of the source computer, a hyphen, the letters "CL", and an incrementing number from 0001 to 9999 (example: a server named **DCWaukeganIL** becomes **DCWauke-CL0001**).

# Additional Resources

For a list of all of the Windows Server "8" Beta TLGs, see [Windows Server "8" Beta Test Lab Guides](http://go.microsoft.com/fwlink/?LinkID=243062) in the TechNet Wiki.

For information about Windows Server "8" Beta Virtualized Domain Controllers, see:

* [Understand and Troubleshoot Virtualized Domain Controllers in Windows Server "8" Beta](http://go.microsoft.com/fwlink/p/?LinkId=236370)
* [AD DS Virtualization (Cloning and Virtualization safe improvements)](http://go.microsoft.com/fwlink/p/?LinkID=238316)

For more information about Windows Server Hyper-V, see:

* [Windows Server Hyper-V](http://www.microsoft.com/en-us/server-cloud/windows-server/hyper-v.aspx) (Portal)
* [Hyper-V](http://technet.microsoft.com/en-us/library/cc753637%28v%3DWS.10%29.aspx) (Windows Server 2008 R2 TechNet Portal)
* [Virtualization Team](http://blogs.technet.com/b/virtualization/) (Official Microsoft Product Team Blog)

For more information about Windows Server "8" Beta AD DS Simplified Administration, see:

* [Understand and Troubleshoot ADDS Simplified Administration in Windows Server "8" Beta](http://go.microsoft.com/fwlink/p/?LinkId=237244)
* [Active Directory Administrative Center Enhancements (FGPP UI, Recycle Bin UI, and Windows PowerShell Script Viewer)](http://go.microsoft.com/fwlink/p/?LinkID=238331)
* [Active Directory Replication and Topology Management Using Windows PowerShell](http://go.microsoft.com/fwlink/p/?LinkID=238337)
* [AD DS Deployment Guide](http://go.microsoft.com/fwlink/p/?LinkID=238318)
* [Test Lab Guide: Demonstrate ADDS Simplified Administration in Windows Server "8](http://go.microsoft.com/fwlink/p/?LinkId=237270)" Beta

For more information about Active Directory Domain services, see:

* [Active Directory Domain Services](http://technet.microsoft.com/en-us/library/cc770946%28WS.10%29.aspx)  (TechNet Portal)
* [Active Directory Domain Services for Windows Server 2008 R2](http://technet.microsoft.com/en-us/library/dd378801%28WS.10%29.aspx)
* [Active Directory Domain Services for Windows Server 2008](http://technet.microsoft.com/en-us/library/dd378891%28WS.10%29.aspx)
* [Windows Server Technical Reference](http://technet.microsoft.com/en-us/library/cc739127%28WS.10%29.aspx) (Windows Server 2003)
* [Active Directory Administrative Center: Getting Started](http://technet.microsoft.com/en-us/library/dd560651%28WS.10%29.aspx) (Windows Server 2008 R2)
* [Running Adprep](http://technet.microsoft.com/en-us/library/dd464018%28WS.10%29.aspx) (Windows Server 2008 R2)
* [USN and USN Rollback Protection](http://technet.microsoft.com/en-us/library/d2cae85b-41ac-497f-8cd1-5fbaa6740ffe%28v%3Dws.10%29#usn_and_usn_rollback) (Windows Server 2008 R2)
* [Active Directory Administration with Windows PowerShell](http://technet.microsoft.com/en-us/library/dd378937%28WS.10%29.aspx) (Windows Server 2008 R2)
* [Ask the Directory Services Team](http://blogs.technet.com/b/askds/) (Official Microsoft Commercial Technical Support Blog)

To provide the authors of this guide with feedback or suggestions for improvement, send email to tlgfb@microsoft.com.