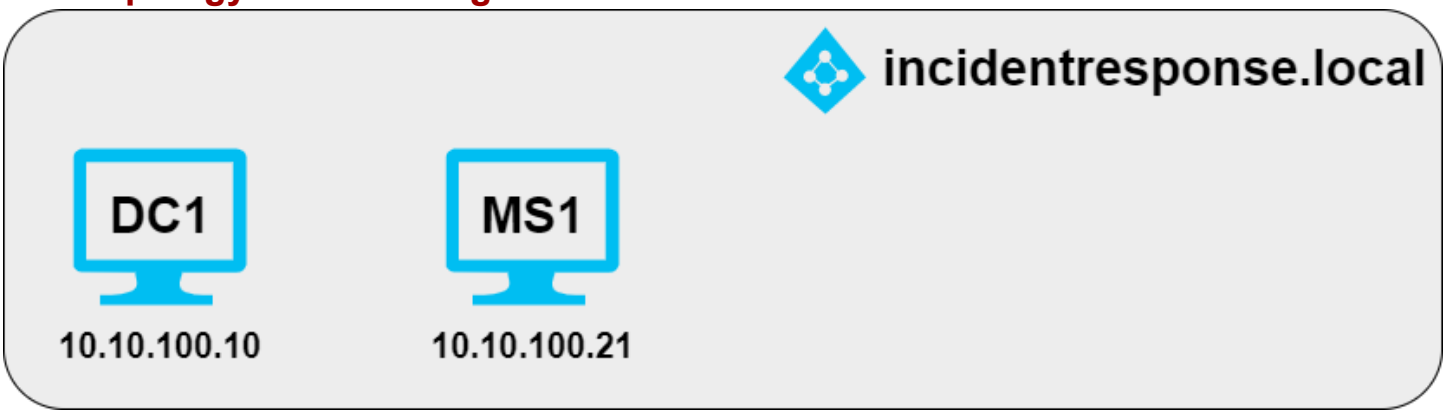
# Lab 6 – Backup and Recovery

## Lab Topology and Learning Goals




Backups are a critical component of disaster recovery and business continuity as a whole. In this lab you will perform a bare metal backup and restore of a server.

## Required Resources

- **VMware Workstation 15**
- **_Server2016(1607)GUI** VM Template
  - **DC1** VM (Linked Clone)
  - **MS1** VM (Linked Clone)
- **Windows Server 2016 Recovery ISO** (en_windows_server_Recovery.iso)**

*All software can be found on the Software Library of the FOL Course Site

**The Windows Server 2016 Recovery ISO is a normal Windows Server 2016 ISO that has had the Windows installation image (install.wim) removed from the ISO file. This was done to reduce the image size.

## Submission Instructions

Submit your completed lab to the appropriate lab quiz on FOL

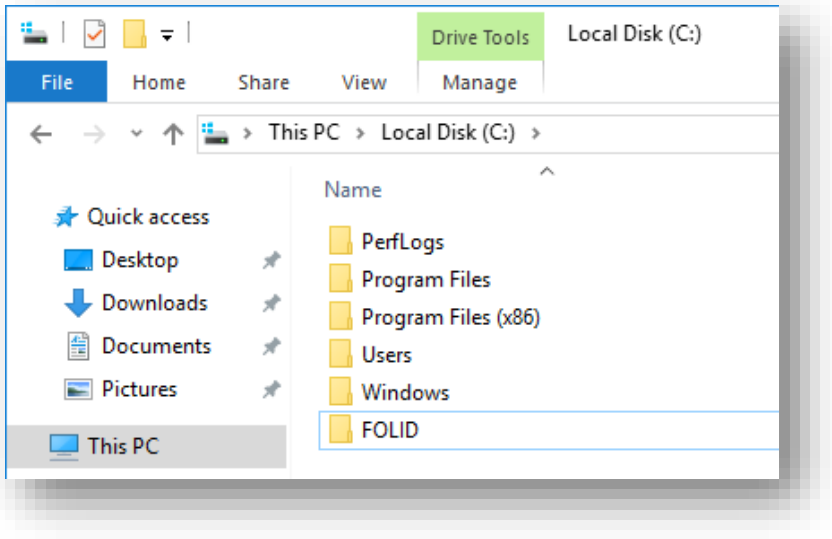
- You can attempt the quiz multiple time, but only the last attempt will be graded
- Submissions are accepted until 11:59 PM of the same day
- Submissions by email will not be accepted
- All screenshots must include you FOLID (where FOLID is your FOL username)

# Lab 6 – Backup and Recovery

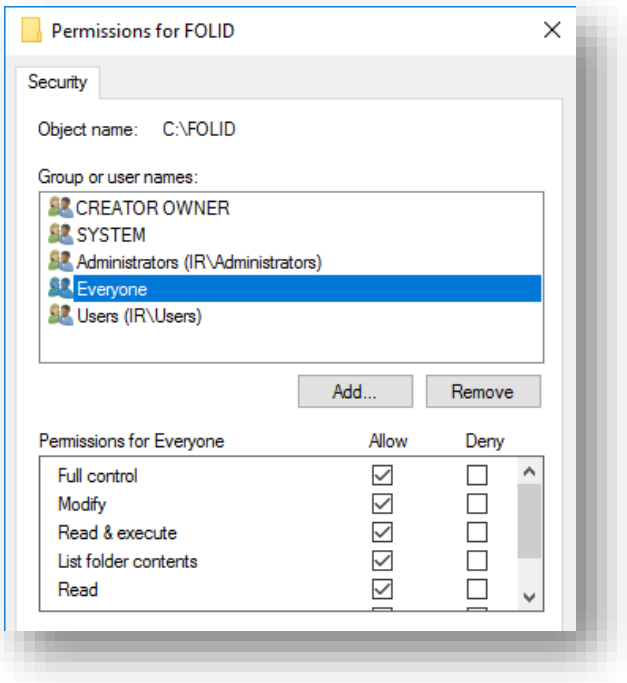
## Bare Metal Backups

A bare metal backup performs a backup operation on operating system files and all data that is stored on the main drive of the system.

### Configure a File Share to Store the Backups

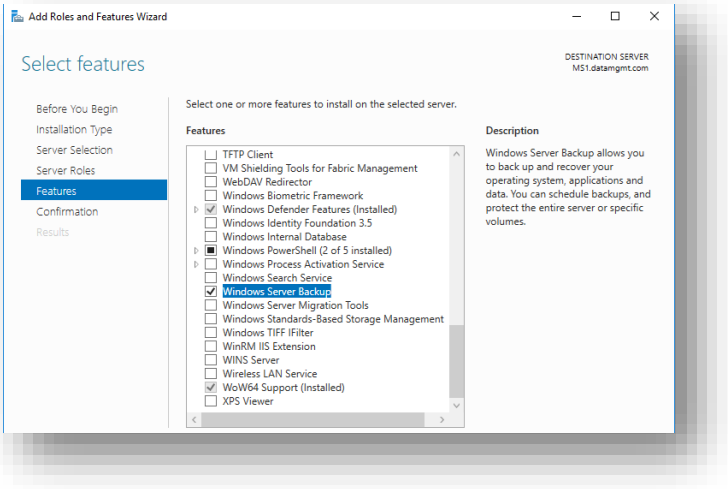



On **DC1**, create a new folder called **FOLID** (where FOLID is you FOL username) on the root directory of the **C:** drive (we are storing the backup here to reduce the amount of drive space used on your laptop).




Open the folder **Properties** and switch to the **Sharing** tab. Click the **Advanced Sharing** button and share the folder. Click the **Permissions** button and grant **Full Control** to the **Everyone** group. Accept and save all changes to the **FOLID** folder.

## Windows Server Backup




On **MS1**, open **Server Manager** and from the **Manage** menu, choose **Add Roles and Features** to start the wizard.

Use the **Next** button to continue through the wizard accepting the defaults until you get to the **Features** Selection screen.

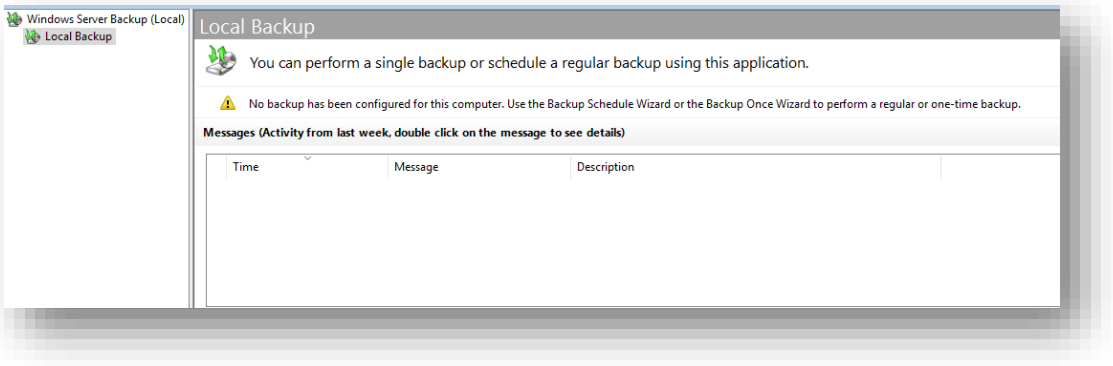
From the list, add the **Windows Server Backup** feature

Use the **Next** button to continue through the wizard, accepting default options until you see the **Install** button.  Click on **Install** to continue.

When the installation is complete, close the **Add Roles and Features Wizard**.

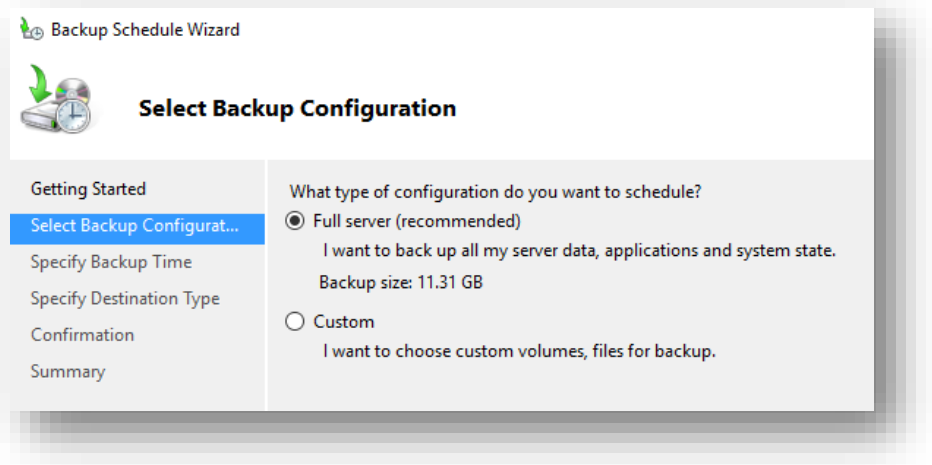
## Perform a Backup Operation

On **MS1**, open Windows Server Backup from the Start menu. Click on Local Backup and wait for the panel to refresh.

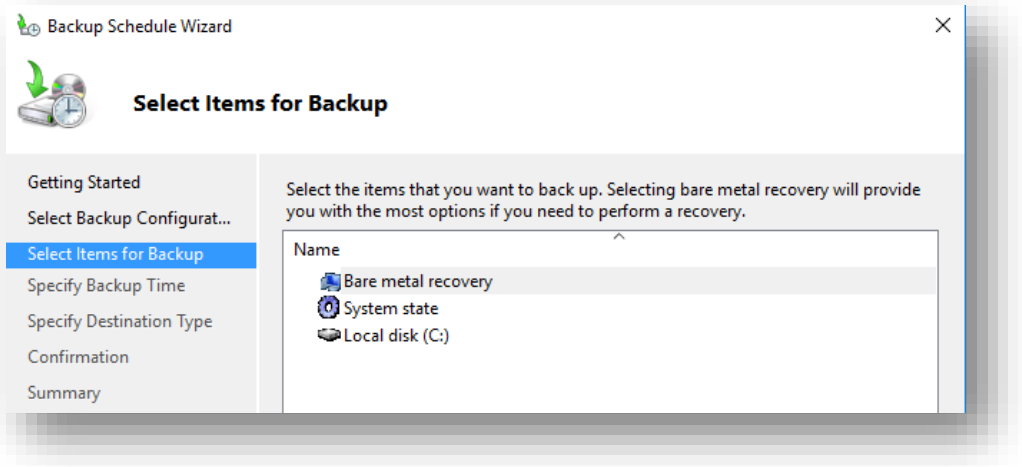



Next, right-**click Local Backup** from the left panel and select **Backup Schedule** from the popup menu.  The Backup Schedule Wizard opens.

Press the **Next** button to on the **Getting Started** page.



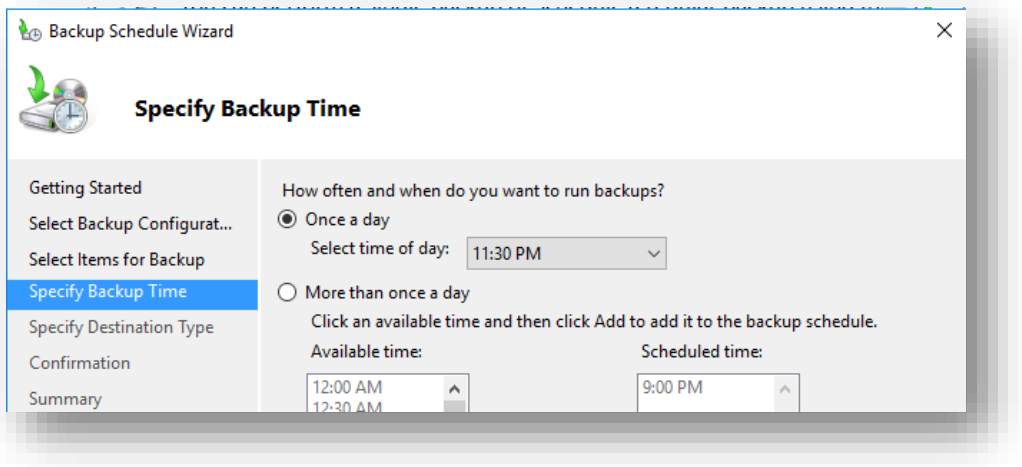

Choose **Custom** on the **Select Backup Configuration** page followed by the **Next** button.




On the **Select Items for Backup** page, use the **Add Items** button to add the following components to the backup:

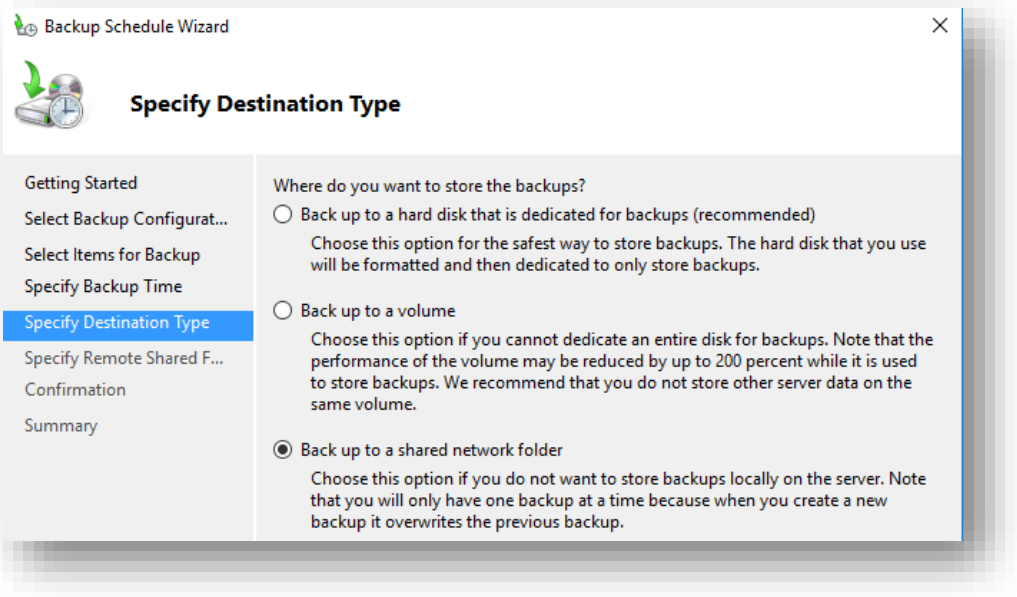
- **Bare Metal Recovery**
- **System State**
- **Local Disk (C:)**

Click **Next** to continue.

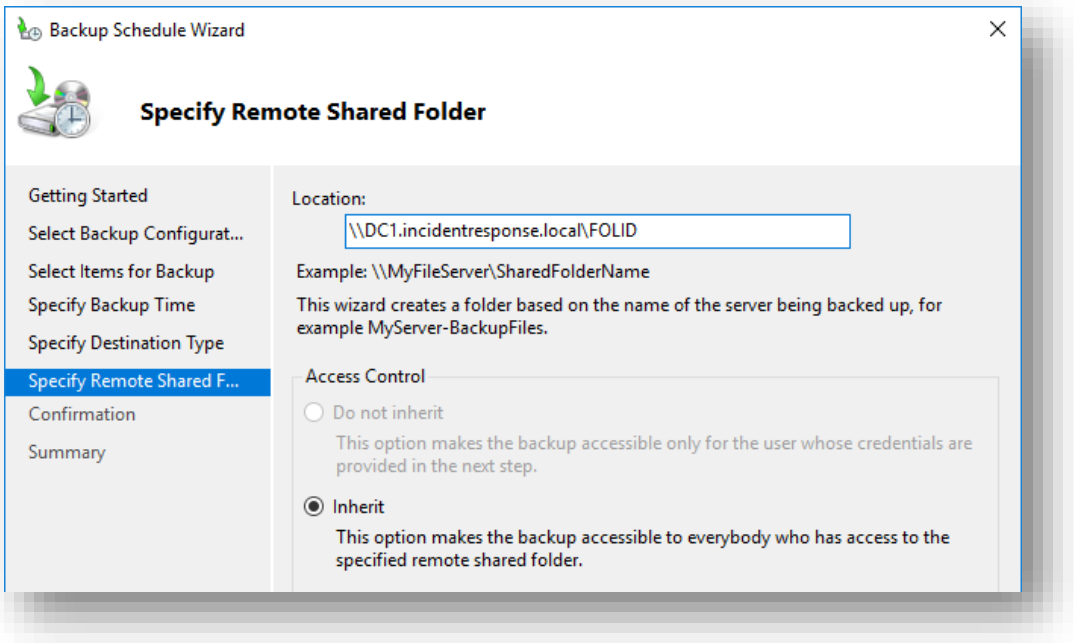



On the **Specify Backup Time** page, schedule the backup to run **Once a day** at **11:30 PM**

Click **Next** to continue.



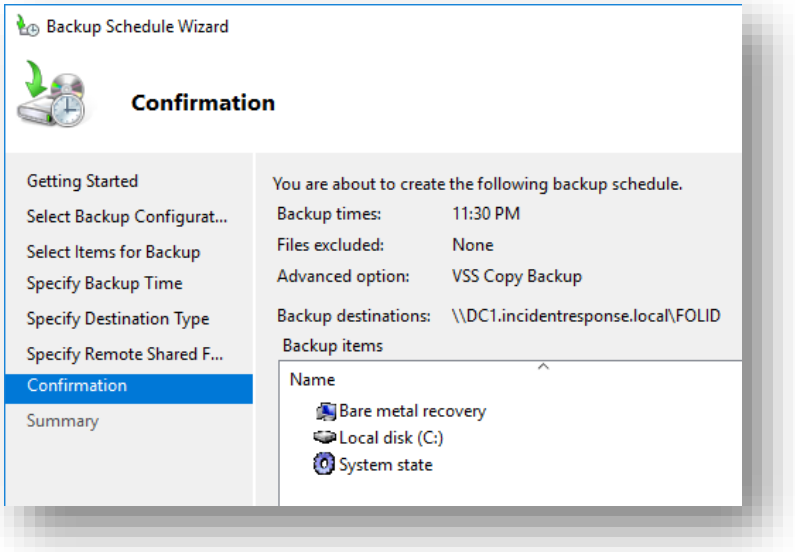

On the **Specify a Destination Type** page, select **Backup to a shared network folder** and click **Next**. Accept the warning that appears stating that only one backup will be saved.




On the **Specify a Remote Shared Folder**, add the network location **\\DC1.incidentresponse.local\FOLID**

Click **Next** to continue.

When prompted, enter the credentials **administrator@incidentresponse.local** and the password **Windows1**

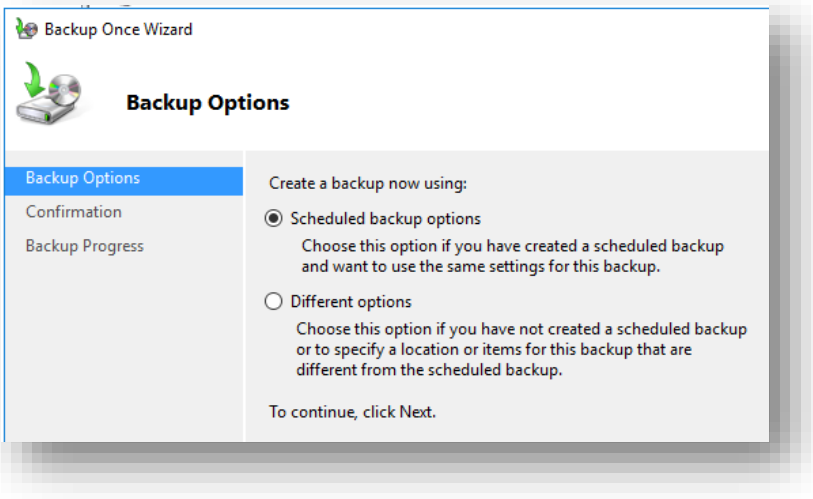



Review your settings on the **Confirmation** screen and click **Finish** to continue.

Click **Close** on the **Summary** screen.

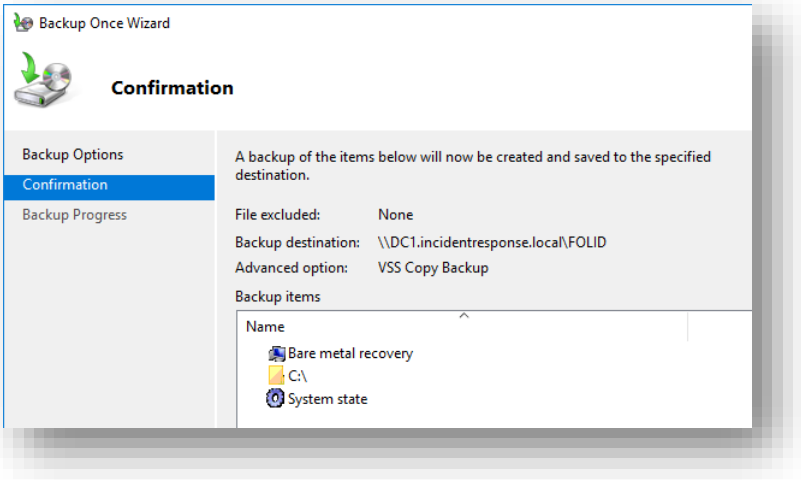
## Perform an ad-hoc backup

As you do not want to wait until 11:30 PM for the backup operation, perform an ad-hoc backup by selecting **Backup Once** from the Actions menu to start the **Backup Once Wizard**.

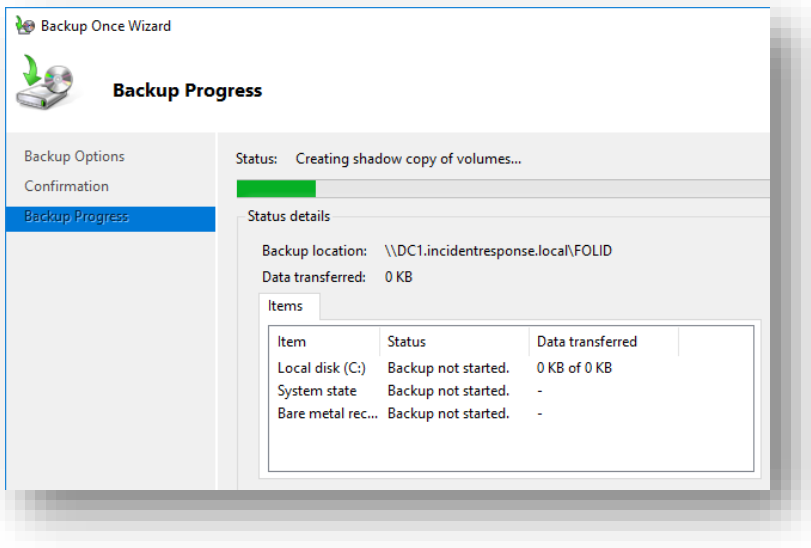



On the **Backup Options** page, click **Next** to accept **Scheduled backup options** as the template for this backup operation.

Click **Next** to continue.




On the confirmation page, select **Backup** to start the backup task.




Allow the backup to complete, monitoring the progress.

When the task is complete, click **Close** to continue.

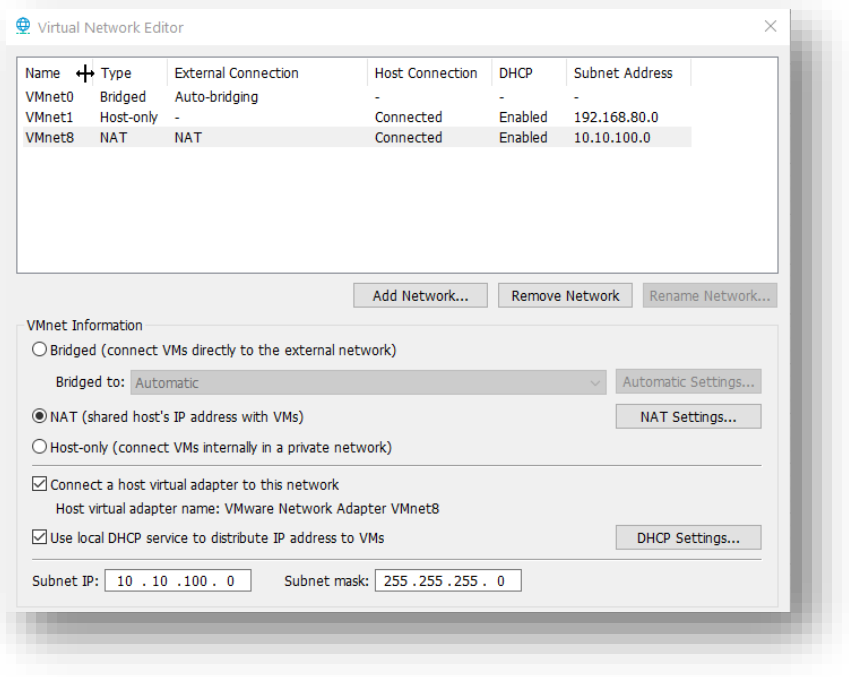
Investigate the backup files on **DC1**.

Shut Down **MS1**.

# Lab 6 – Backup and Recovery

## Perform a Bare Metal Restore

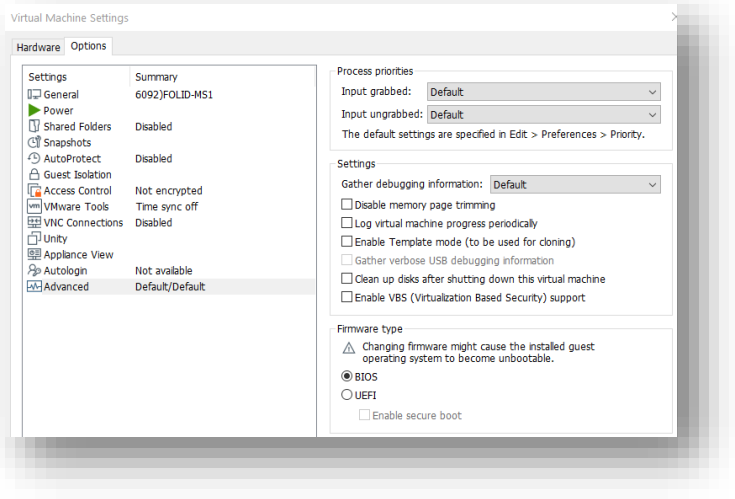
Before you begin, modify the NAT network settings in VMware so DHCP will assign addresses in the 10.10.100.0 255.255.255.0 network.




In VMware, create a new virtual machine with the following specifications:

- **Guest Operating System Installation:** Install the operating system later
- **Guest OS:** Microsoft Windows: Windows Server 2016
- **Virtual Machine Name:** FOLID-MS1 (replace FOLID with you FOL username)
- **Maximum Disk Size:** 100 GB

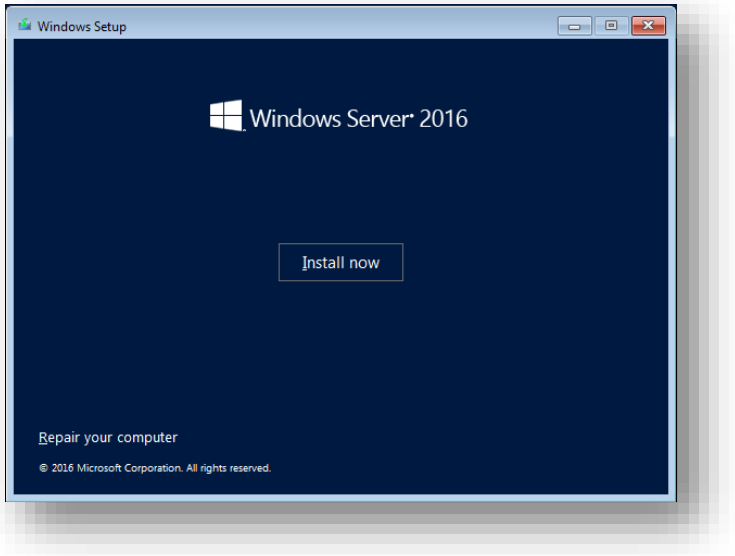
# Lab 6 – Backup and Recovery




Open the **VM settings**, on the **Options** tab, under **Advanced Options**, confirm the firmware type is set to **UEFI**.

**Add a screenshot of the VM Settings, showing the VM Name and the Firmware type to the Lab 6 Quiz**

Mount the **Windows Server 2016 ISO** and power on the server.



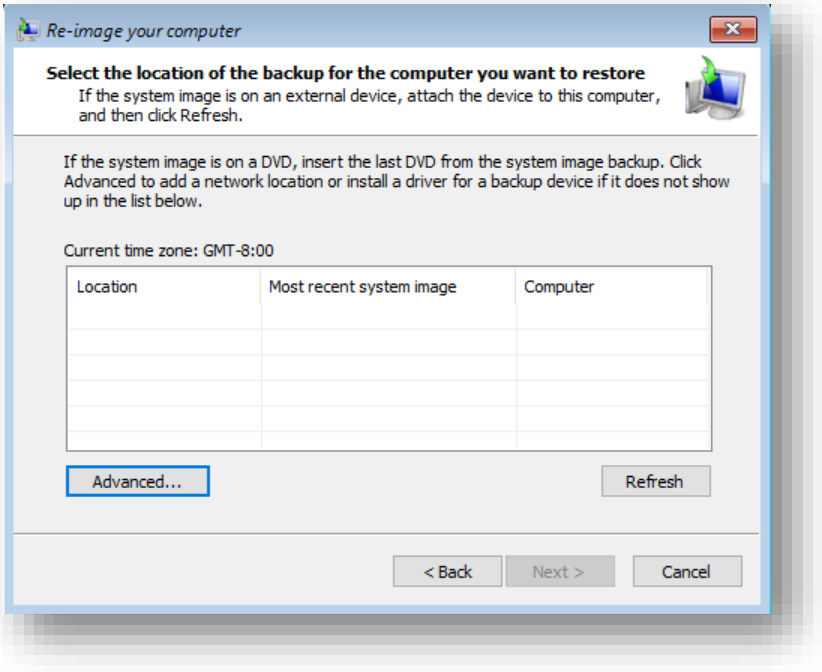

When Windows Setup loads, click **Next** to continue.

On the next screen, click Repair your computer to continue.

Click **Troubleshoot**, then **System Image Recovery** to begin the wizard.

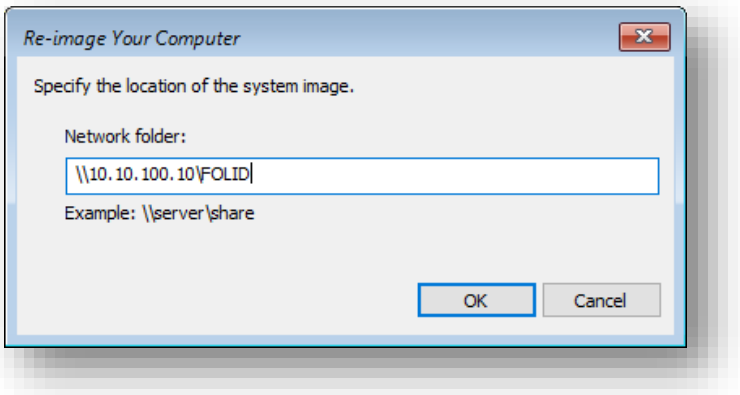
Click **Cancel** on the **Windows cannot find a system image on this computer** dialog box. (you will need to mount the share)

Click **Next** on the **Select a system image backup** page.




On the **Select the location of the backup for the computer you want to restore** page, click the **Advanced** button.

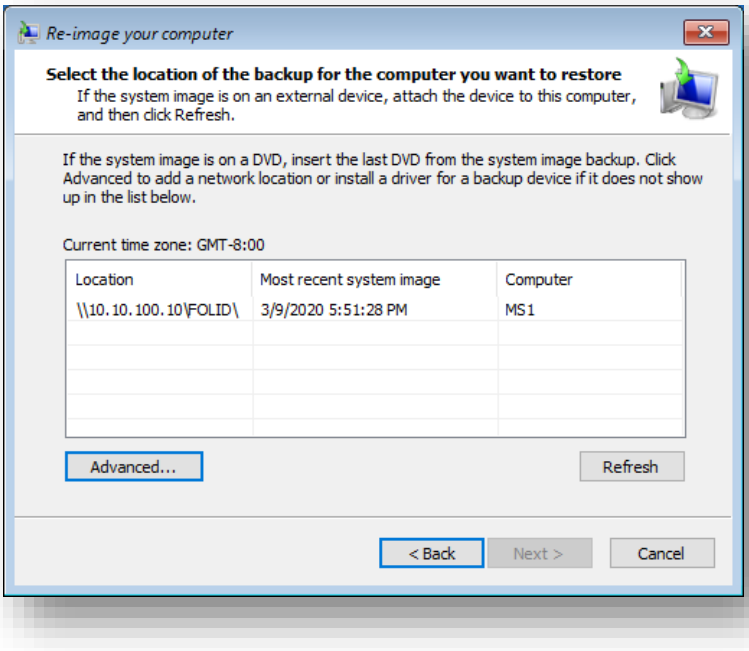
When prompted, select **Search for a system image on the network**, and **Yes** on the confirmation screen.



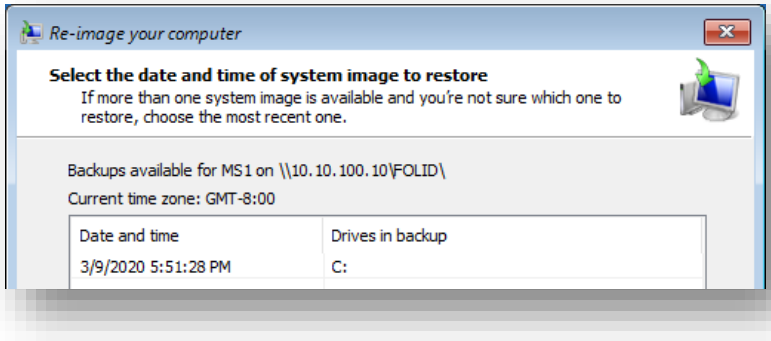
# Lab 6 – Backup and Recovery

Enter **\\10.10.100.10\FOLID** as the network location (you need to use the IP address of DC1, as DNS is not configured)

Login with the domain administrator credentials when prompted.



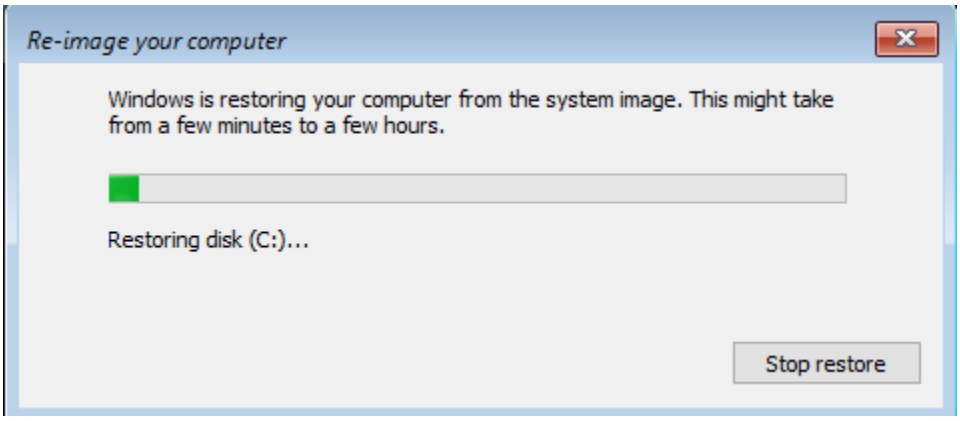

On the **Select the location of the backup for the computer you want to restore** page, click the backup and then click **Next** to continue.




On the **Select the date and time of system image to restore** page, select the image and click **Next** to continue.

On the **Choose additional restore options page**, click **Next** to continue.

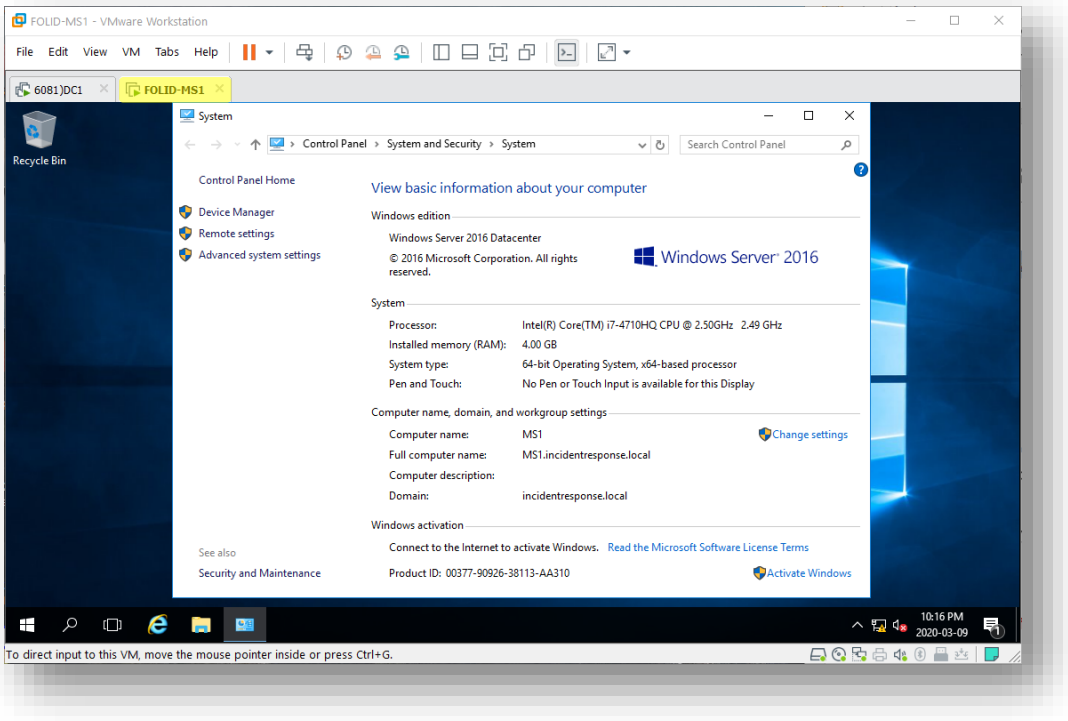
On the final page of the wizard, click **Finish** to continue.  Click **Yes** when prompted to continue.




Wait for the restore operation to complete, the machine should automatically reboot.

Login and open the **System** properties (right-click the Start menu > **System**)

Boot the original **6081) MS1** and open the **System** Properties.




**Arrange your windows so that both VM windows are visible side-by-side. Add a screenshot of both System Settings, including the VM tab showing both MS1 VMs to the Lab 6 Quiz**

## Snapshots and Windows Shadow Copies

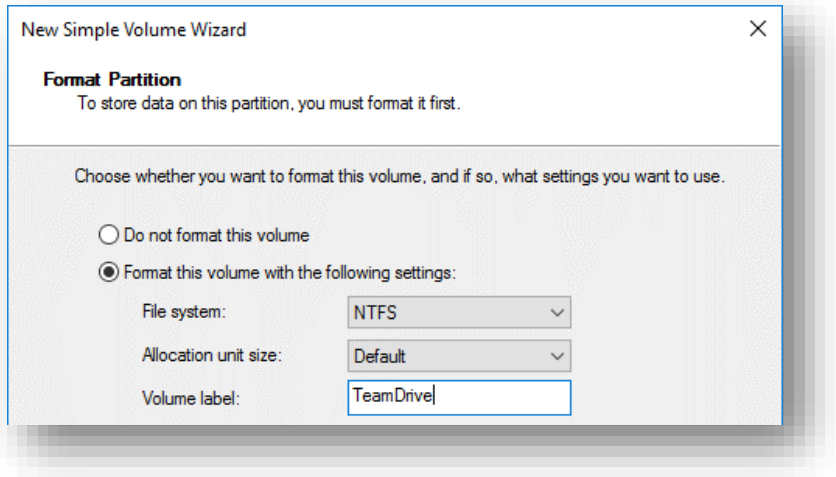
Snapshots and backups are terms that are often used when discussing ways to recover from a data loss. While the end result may be that you regain access to data that was lost, both technologies do so in a different way, and one is not a replacement of the other.

Snapshots provide versioning, or the ability to reverse an unintended change or deletion event. Snapshots are generally a short-term copy of data that is removed when it is no longer needed, or the data has been backed up. On Windows Server, the Shadow Copy Service provides snapshot capabilities.

Shadow copies provides the ability to recover lost or modified files, provided that a snapshot was created, and a previous version exists. When a snapshot is taken, The Shadow Copy service tracks changes to the volume, with a specific area of the volume allocated to changes. When you access a file, the read operation may read the updated section of the file and combine it with the original.

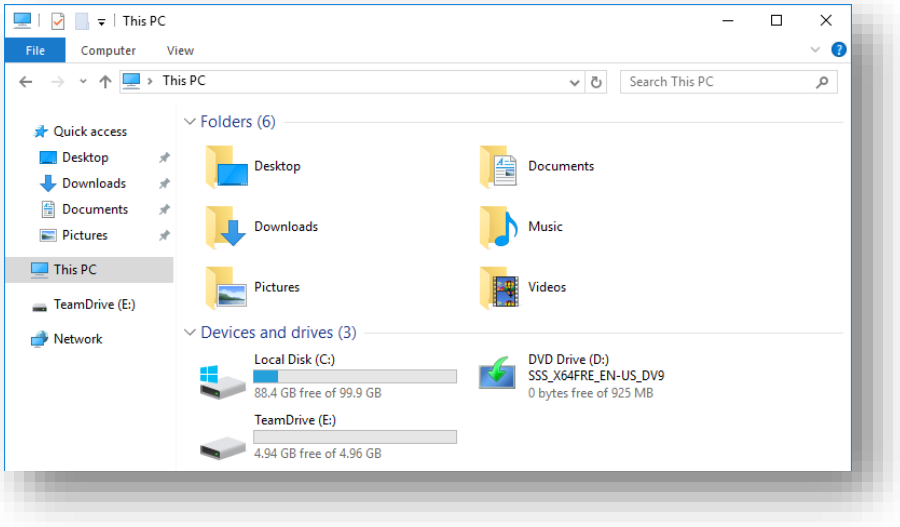
One benefit of Shadow Copies is that the operations are available across a network on compatible Windows operating systems, and end users can restore previous versions without administrator intervention.

### Enable Shadow Copies

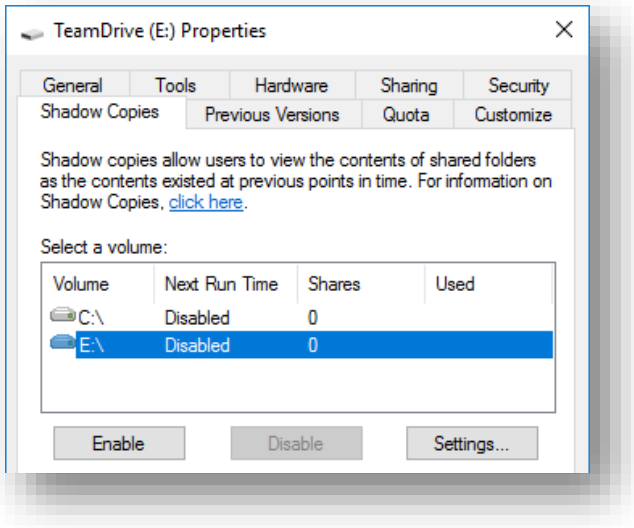



On **FOLID-MS1**, add a new 5 GB disk to the VM. Using the **Disk Management** administrative tool, Initialize the disk with a **GPT** partition table, and format the disk as **NTFS**, providing the disk label **TeamDrive** when formatiing.

# Lab 6 – Backup and Recovery



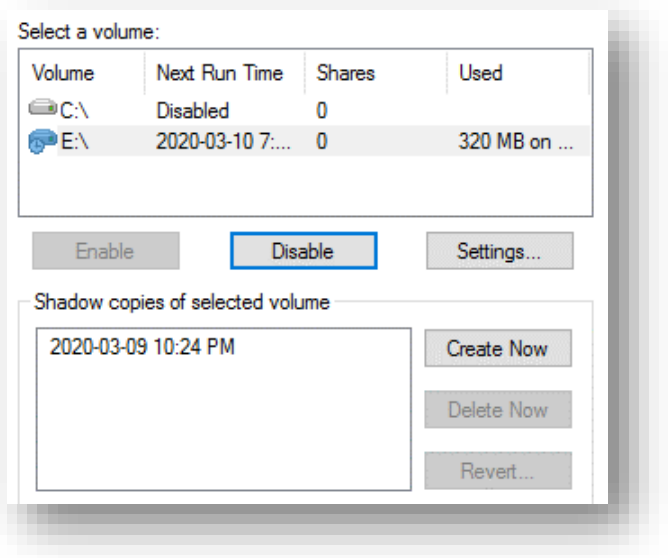

Open **Windows Explorer** and navigate to the **This PC** special location. Right-click the volume **TeamDrive** and seect **Properties** from the list.



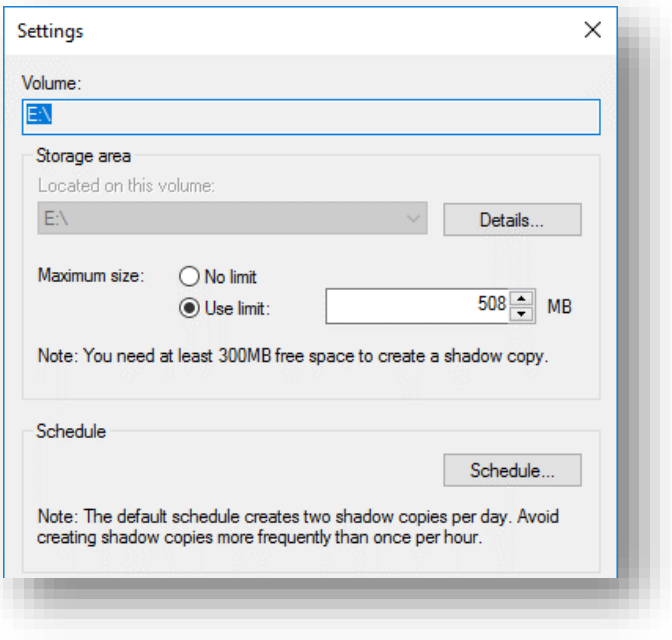

Switch to the **Shadow Copies** tab, notice that shadow copies in not currently enable on any drive.

Select the **E:** drive from the list and click the **Enable** button.

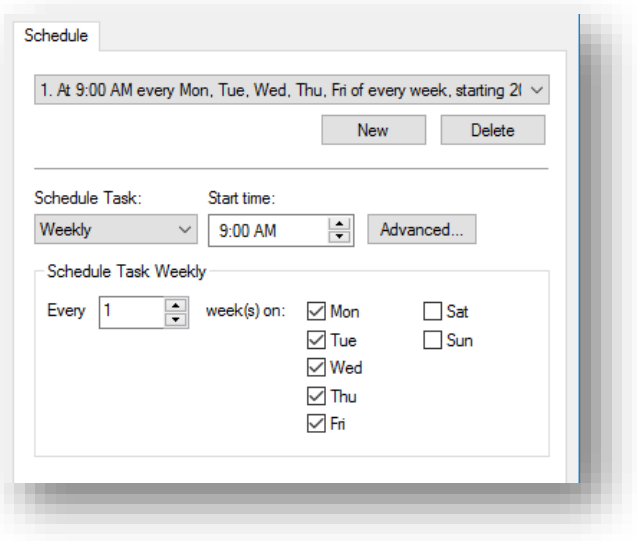
Read the warining that appears on the screen, then select **Yes** to continue.




Enabling Shadow Copies automatically creates a new snapshot and applies the default schedule. To modify advanced options related to Shadow Copies, click the **Settings** button.



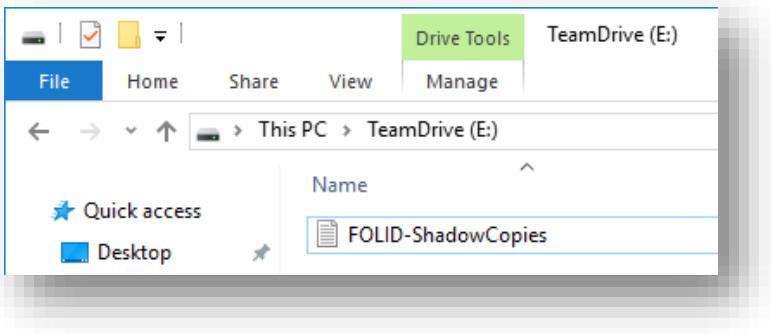

By defalt, shadow copies are stored on the source drive. If it is desired that the shadow copies should be available for a longer period, an alternate storage area should be provided (a different drive). You can also set the maximum size available to the Shadow Copy service, this prevent the drive from filling up uncontrollabily.




To set an alternative schedule, click the **Schedule** button. Modify the schedule to run **every two hours** between **9 AM** and **5 PM, Monday** to **Friday**.

Click **OK** three times to accept the changes.

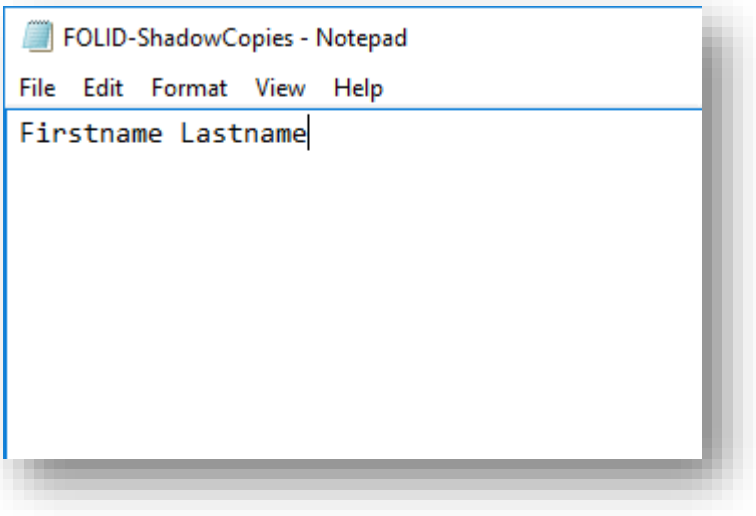
## Verify Shadow Copies Operation




To verify the Shadow Copies operation, create a new file on the **E:** drive called **FOLID-ShadowCopies.txt**. (where FOLID is your FOL username)

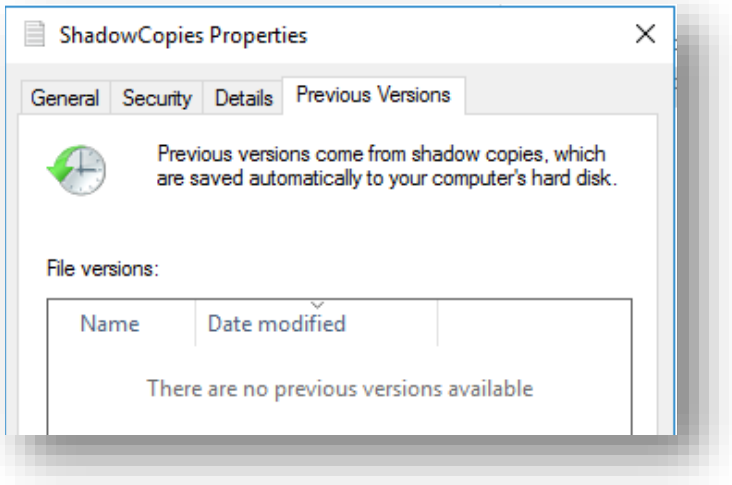
Right-click the file and select **Restore Previous Versions** from the list. Notice that no previous versions are available. Close the dialog.

# Lab 6 – Backup and Recovery

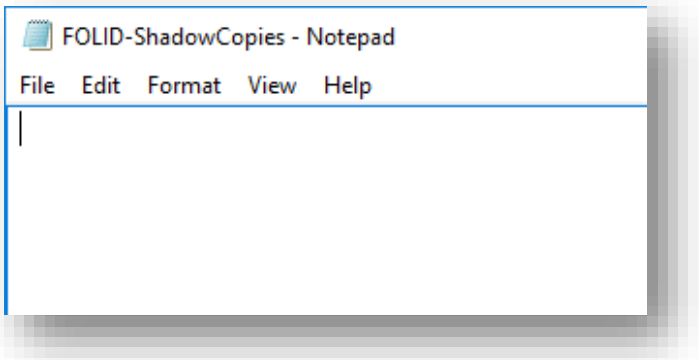



Open the **FOLID-ShadowCopies.txt** file and type your **first** and **last** name into the file, **save** and **close** the file.

Open the properties of the **E:** drive, switch to the **Shadow Copies** tab, and click the **Create Now** button.




Next, Right-click the **FOLID-ShadowCopies.txt** file and select **Restore Previous Versions**. Notice that again, no previous versions are available. Reflect for a minute why is this so?




Next, open the **FOLID-ShadowCopies.txt** file in **Notepad**, erase your name and **save** the file. Check to see if a Previous Version is now available. Why is this so?

**Add a screenshot of the FOLID-ShadowCopies.txt Properties to the Lab 6 Quiz**

Submit your completed **Lab 6** Quiz

The linked clones for this lesson are no longer required and may be deleted after submission.