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Assignment 3
IA462 – Advanced Operating Systems
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Installing Services and Configuring the Deployment

The first thing I did for this assignment was to make sure the Windows server was updated to the most recent version of Server 2019. Upon verifying the newest OS build, I needed to go to Microsoft's website to download the required packages for using MDT. The first of these packages is the Windows Assessment and Development Toolkit (Found at https://docs.microsoft.com/en-us/windows-hardware/get-started/adk-install). From the same webpage, I also installed the PE add-ons for the toolkit. Next, I downloaded the Microsoft Deployment Toolkit from https://www.microsoft.com/en-us/download/details.aspx?id=54259. Once these tools finished downloading, I installed the packages from the administrator account.

After the installation was complete, the next step was to create a service account for the MDT, called SVC MDT. This allows for an employee to manage the MDT share from a specific account, rather than from their own account. Upon creation, I made sure that the account's password cannot be changed by the user, and that it never expires. This way, the account can be revoked and is completely managed by the server administrator. Next, I created a group for the SVC MDT account to sit in so that any other service accounts I create would be able to be in a group together and permissions can be shared between them. The Service-Accounts group sits under the ia462/groups/user OU. I also made sure that the SVC MDT account was added to this group.

Next, I had to create the share for the deployment to sit on. I created a folder on the drive I created in the last assignment called MDT. In the properties of this folder, I enabled the sharing option and added the Domain Admins group with full control and the Service-Accounts group with all permissions except modify. In the Deployment Workbench app, I created a share called MDT Deployment Share.

Under this newly created share, I went into the Operating Systems pane and created a copy of a Windows 10 ISO to deploy on the network as needed. Once import operating systems is selected, a wizard will appear and ask you to point to the desired operating system. The only issue with this wizard, however, is that it looks for WIM files when I had an ISO file containing multiple versions. Due to this limitation, I had to create a WIM from the ISO. The ISO contains every version of Windows 10 available, but I decided to only create a WIM for Education edition and Pro edition. To accomplish this, I opened PowerShell as an admin and typed the following commands:

- cd E:\w10\sources
- dism /get-wiminfo /wimfile:install.esd
- dism /export-image /sourceimagefile:install.esd /sourceindex:6 /destinationimagefile:install.wim /compress:max /checkintegrity

The last command used in the list above is used for the Pro edition of Windows 10. To create a WIM for the Education edition, I used the same command and changed the source index from 6 to 4. I also added an ISO of Windows Server 2019, but this did not require the creation of a WIM because it only contains one version.

After configuring the OSes in my deployment, I also included packages from the Windows Update Catalog (www.catalog.update.microsoft.com). I'll still include the process to show how it's done, but as you'll see in the troubleshooting section, these packages were later deleted due to an issue in testing the deployment. In the catalog, I searched for "x64 21h1" and downloaded the following MSU files:

- Cumulative update for 21h1 (2020-10)
- Servicing Stack for 21h1 (2021-8)
- .NET Framework for 21h1 (2021-10)

Under packages in the deployment workbench, I imported these files to be included in the deployment. Under the Applications pane, I added the VMWare Tools for Virtual Machines so that the OS that was deployed would be ready to be used with VMware. This step isn't completely necessary, but it is helpful.

My next task was to create a task sequence. This task sequence will prompt the user to install Windows 10 Education and create the settings specified below. The process can then be repeated for Windows 10 Pro. I did not add a product key for now, as this was just a lab environment test, but the OS will need to be activated in a professional environment. Under the Task Sequences pane, I added a new sequence with the following settings:

- Task ID: Inst-w10-001
- Task Sequence Name: Windows 10 21h1
- Select OS: Windows 10 Education
- OS Settings:
    - Full Name: Administrator
    - Organization: IA462

As we're nearing the end of the deployment configuration, here are the final steps I took to ensure that the deployment runs successfully. From the IA462 github page, I copied the code posted and pasted it into rules pane in the properties of the deployment share. Then, I changed the domain admin in these rules to be the Administrator account, set the password, and changed the OU to the Workstations OU. The settings are now complete, but the bootstrap.ini still needs to be configured. I copied the other piece of code from the IA462 website, changed the path to the share, changed the username entry to include an '=' and updated the log in information. After updating these settings, I updated the deployment share and copied the created ISO to the host drive. Then, I created a new VM to test the deployment. In the next section, I detail some of the issues and fixes I ended up going through for this process.

Troubleshooting:

- Initially, I downloaded the x86 version of MDT when I needed the x64 version. This threw an error and I promptly downloaded the correct version.
- Account was not in the admin group, so the installation of WADK did not complete. To fox this, I logged into the other sever account and made sure the Administrator account was added to the Administrators group.
- When trying to add the Windows 10 ISO, deployment toolkit was unable to find Windows 10 ISO on the server's drive. I added it to the E:\ drive I created before, and created WIM files using commands listed above.
- In the share properties, I had forgotten to uncheck the x86 option, as this will not be supported in the lab. I caught my mistake pretty quickly, so this did cause much issue. If this is not unchecked, creating the image will take an unnecessarily long amount of time.
- I had not previously created every OU that I needed, so I had to manually create some OUs that were required. I had to create the Users OU.
- Upon installing the VM, I received an error that said, "Cannot find network path." I had forgotten to change the path in the Bootstrap.ini code to my deployment share. Upon realizing my mistake, I went back into the Bootstrap.ini and changed the path to my share. When trying again, it still didn't work. I looked at the bootstrap.ini again and noticed an extra \ in the path. Removing this then allowed me to log in.
- After logging into the MDT prompt, the wizard never appeared. Upon further inspection, I found that the service-accounts group was not added to the share. This was a simple fix and had no issues after fixing the configuration and updating the share.