

6.3.RAW DISKS AND VIRTUAL DISKS pdf

1: Add Hard Disks to the Second Node for a Cluster of Physical and Virtual Machines

Not to mention, even if I wanted to let Linux do soft-RAID (or ZFS), I'd want to pass a set of disks through in raw mode to the VM, so that the disks would be portable and could be put in another machine and accessed.

This issue can occur if a reboot occurs on a node during maintenance on the nodes. This process requires running a full scan, which can take several hours to finish. A preventive fix is included in the October 18, , cumulative update for Windows Server KB to reduce the chances of filling the dirty region tracking DRT log, reduce the time that is required to run the data integrity scan and add performance counters to monitor progress. If the system is already experiencing this condition, you will need to use the resolution steps to clear the DRT. Resolution For issue 1 To fix this issue, follow these steps: Get-ClusterGroup Set the disk recovery action and then start the disk s. Wait for the repair to finish. It may go into a suspended state and start again. To monitor the progress: Run Get-StorageJob to monitor the status of the repair and to see when it is completed. After the repair finishes and the Virtual Disks are Healthy, change the Virtual Disk parameters back. A repair should automatically start. When it completes, it will show completed. Additionally, you can view the status of a running schedule task by using the following cmdlet: It is very similar to Maintenance Mode but can be invoked on a resource that is in a Failed state. DiskRunChkdsk value 7 is used to attach the Space volume and have the partition in read-only mode. This enables Spaces to self-discover and self-heal by triggering a repair. Repair will run automatically once mounted. It also allows you to access the data, which can be helpful to get access to whatever data you can to copy. This task can take several hours to complete. If you cancel the task or restart a node while this task is running, the task will need to start over from the beginning.

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2: Map VMware virtual disks and Windows drive volumes with a PowerShell script – 4sysops

Unlike thin virtual disks, EZT disk are not particularly flexible. But they do have one primary benefit-performance. Thin virtual disks only allocate space when needed.

Unsupported and Disabled Partitions Restrictions and Requirements Shrinking requires free disk space on the host equal to the size of the virtual disk you are shrinking. Shrinking applies only to virtual disks. The shrink feature is not enabled if the virtual machine Contains a snapshot Is a parent of a linked clone Is a linked clone The shrink feature is not enabled for a virtual machine if any of its virtual disks are Preallocated when created Not used in independent-persistent mode Legacy disks that are not in persistent mode Booted as independent disks Note: You can change the mode of a virtual disk before the virtual machine is powered on. See Excluding Disks from Snapshots for a discussion of independent disks. The Shrinking Process Shrinking a disk is a two-step process: In the first step, called wiping, VMware Tools reclaims all unused portions of disk partitions such as deleted files and prepares them for shrinking. Wiping takes place in the guest operating system. The second step is the shrinking process itself, which takes place on the host. When a virtual machine is powered on, you shrink its virtual disks from the VMware Tools control panel. You cannot shrink virtual disks if a snapshot exists. See Unsupported and Disabled Partitions. This way, you ensure the whole virtual disk is shrunk. Otherwise, if you shrink disks as a nonroot user you cannot wipe the parts of the virtual disk that require root-level permissions. To shrink a virtual disk: Launch the control panel. Click the Shrink tab. Select the virtual disks you want to shrink, then click Prepare to Shrink. A dialog box tracks the progress of the wiping process. If you deselect some partitions, the whole disk is still shrunk. However, those partitions are not wiped for shrinking, and the shrink process does not reduce the size of the virtual disk as much as it could with all partitions selected. Click Yes when VMware Tools finishes wiping the selected disk partitions. A dialog box tracks the progress of the shrinking process. Shrinking disks may take considerable time. Click OK to finish. Unsupported and Disabled Partitions In some configurations, it is not possible to shrink virtual disks. If your virtual machine uses such a configuration, the Shrink tab displays information explaining why you cannot shrink your virtual disks. For example, you cannot shrink a virtual disk if You preallocated disk space when you created the disk. Preallocating disk space is the default option for both typical and custom virtual machine creation paths. The virtual machine has any snapshots. The virtual machine contains physical disks. The virtual disk is not an independent disk in persistent mode.

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3: ESXi 6 and raw disks? (X-post /r/homelab) : vmware

The fundamental characteristic of a thin virtual disk is that the file that "is" the virtual disk does not take up 50 GB on the VMFS. It takes up space only as the VM writes to it. So if the VM writes 5 GB of data, that virtual disk takes up 5 GB of data on the VMFS.

Examples in this are giving from a FlashArray perspective. So mileage may vary depending on the type of array you have. The VMFS and above layer though are the same for all. This is the benefit of VMFS—it abstracts the physical layer. This is also the downside, as I will describe in these posts. Used to be the default back in the day and is still widely used. I will focus this conversation on EZT, not zeroedthick virtual disks, but for our purposes they are basically the same. The only space difference is eager writes zeroes first instead as needed. On a zero-removing array this difference therefore is irrelevant. Unlike thin virtual disks, EZT disk are not particularly flexible. But they do have one primary benefit—performance. Thin virtual disks only allocate space when needed. Then the write is committed. This happens every time a new block is written to. Once that block has been written to that process does not need to be repeated. Eagerzeroedthick gets that allocation penalty out of the way upon its creation. When you create a EZT disk, the whole potential capacity of the virtual disk is allocated on the VMFS and it is also fully zeroed out before it can be used at all by a guest. This means that new write latency penalty is not a factor for EZT. Though it does mean it takes longer to create. While this performance difference is small, it is non-zero. So for applications that are super sensitive to latency I need. Anyways, the point of this post is capacity. The underlying volume is also empty except for that metadata: On the array there is no change: This is because even though it writes a bunch of zeroes, that all gets discarded by data reduction. This is the natural state of EZT. As expected, there is no change in the VMFS reported size of the virtual disk. It will always be 40 GB: EZT will always report as the size they were created as—regardless to the fact that it is only half-full. The FlashArray though does report space usage: The space is always reserved. From a FlashArray perspective it looks no different from a thin virtual disk. You might not have a FlashArray, or some other array that automatically removes zeroes. Or you might have an array that can remove contiguous zeroes when requested. So on the array side, your mileage may vary. Once again, this stresses the importance of understanding how your array stores data. So now the NTFS is empty again: And the FlashArray is still reporting 3 GB used: This case, it is now zero. The file has been deleted. With EZT, allocated always equals the size of the virtual disk. It stays that way until it is overwritten. If something is simply deleted, and there is no overwrite, so the array is unaware. These are all different metrics and therefore mean different things. So how do we get VMware and the array to reflect what is actually in-use by the guest? Well there are a variety of methods, but it usually boils down to two options: A simple way to prove this out in Windows is to use the Optimize Drives tool. So we are left with zeroing. Reclaiming space by zeroing a EZT virtual disk To reclaim the space on the array, we need to essentially bypass VMware. If your array is zero-aware, this is the easiest option in the case of EZT disks. So in my Windows example, sDelete is my friend. This will zero out all of the free space on the VMDK. Nothing changes in the VMFS, as expected: But on the FlashArray everything is reclaimed: The disk is now gone off of the VMFS: The array still has data: So 3 GB of dead space. Part II Conclusion So space account is a bit more difficult with eagerzeroedthick or zeroedthick disks, because it is must harder to tell if there is dead space in the guest itself. Especially when there is more than one VMDK on the datastore. Look for the next post on conclusion thoughts on VMFS and capacity reporting.

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4: VMware ESXi: Shared Disk Between VMs – TheITBros

Howdy. My VirtualCenter is currently not working with my GSX servers (despite great efforts with VMware tech support). Meanwhile, I really would like to get my VMs off of raw disks and onto virtual disks. When VC worked, I could just copy a VM and the result would be using virtual.

The most optimal way is to use the vmdk disk physically located on the shared storage or locally on the ESXi host. If you want to use shared drives on different ESXi hosts, you can only use the shared storage datastore. On both virtual machines you need to add a new SCSI controller. Shared disk between virtual machines In the vSphere Client inventory select first virtual machine Node 1 , right click on it and select Edit Settings. Multi-writer Virtual Device Node: After that in the settings of the second virtual machine you need to add a new disk Existing Hard Disk. In the menu that appears, select Datastore, which kept the shared disk you created earlier. In the submenu, select the name of the first virtual machine and in the middle pane select the desired vmdk disc file. If you want to use more than one shared disk on VMware, keep in mind that each of them does not require the addition SCSI controller. One controller can serve up to 16 different drives. After changing the virtual machines settings, connect to the console of the guest OS virtual machine. In this case the VM with Windows. Right click and select Rescan Disk. The system detects the new disk and offer to initialize it. Similar operations must performed on the second VM. After these settings, both VMs use shared disk. You may also like: This means that after the ESX Time Configuration for a Virtualized Domain Contro Today we will talk about some of the features of time configuration on a virtualized domain controllers. Typically, the time synchronization scheme in The reason why Administrator can start to look for solution on disk conversion from Thick to Thin on VMware ESXi is the low speed of the disk subsystem

5: VMware Storage Capacity Reporting Part I: VMFS and Thin Virtual Disks | Cody Hosterman

Adding physical disks to existing virtual disks on a PERC 6/i Hi All, I have a PERC 6/i running the latest firmware package, and connected to this PERC 6/i I have 3 x WD TB SATA drives in RAID 5.

For example, you might need to provide additional disk space for an existing virtual machine with a heavy work load. During virtual machine creation, you might want to add a hard disk that is preconfigured as a boot disk. About this task During virtual machine creation, a hard disk and a SCSI or SATA controller are added to the virtual machine by default, based on the guest operating system that you select. If this disk does not meet your needs, you can remove it and add a new hard disk at the end of the creation process. If you add multiple hard disks to a virtual machine, you can assign them to several controllers to improve performance.

Prerequisites Ensure that you are familiar with configuration options and caveats for adding virtual hard disks. See [Virtual Disk Configuration](#).

Procedure Right-click a virtual machine in the inventory and select **Edit Settings**.

Optional To delete the existing hard disk, move your cursor over the disk and click the **Remove** icon. The disk is removed from the virtual machine. If other virtual machines share the disk, the disk files are not deleted. The hard disk appears in the **Virtual Hardware devices** list. Expand **New hard disk**.

Optional Type a value for the hard disk and select the units from the drop-down menu. Select the datastore location where you want to store the virtual machine files. **Option** **Action** Store all virtual machine files in the same location on a datastore. Apply a virtual machine storage policy for the virtual machine home files and the virtual disks from the **VM storage policy** drop-down menu. The list shows which datastores are compatible and which are incompatible with the selected virtual machine storage policy. Select a datastore and click **Next**. Store all virtual machine files in the same datastore cluster. The list shows which datastores are compatible and which are incompatible with the selected virtual machine storage profile. Select a datastore cluster. If you do not want to use **Storage DRS** with this virtual machine, select **Disable Storage DRS** for this virtual machine and select a datastore within the datastore cluster. Store virtual machine configuration files and disks in separate locations. For the virtual machine configuration file and for each virtual disk, click **Browse** and select a datastore or datastore cluster. **Optional** Apply a virtual machine storage policy from the **VM storage profile** drop-down menu. If you selected a datastore cluster and do not want to use **Storage DRS** with this virtual machine, select **Disable Storage DRS** for this virtual machine and select a datastore within the datastore cluster. Space required for the virtual disk is allocated during creation. Any data remaining on the physical device is not erased during creation, but is zeroed out on demand at a later time on first write from the virtual machine. Space required for the virtual disk is allocated at creation time. In contrast to the flat format, the data remaining on the physical device is zeroed out during creation. It might take much longer to create disks in this format than to create other types of disks.

Thin Provision Use the thin provisioned format. At first, a thin provisioned disk uses only as much datastore space as the disk initially needs. If the thin disk needs more space later, it can grow to the maximum capacity allocated to it. In the **Shares** drop-down menu, select a value for the shares to allocate to the virtual disk. Shares is a value that represents the relative metric for controlling disk bandwidth. The values **Low**, **Normal**, **High**, and **Custom** are compared to the sum of all shares of all virtual machines on the host. If you selected **Custom**, type a number of shares in the text box. In the **Limit - IOPs** box, enter the upper limit of storage resources to allocate to the virtual machine, or select **Unlimited**. Accept the default or select a different virtual device node. In most cases, you can accept the default device node. For a hard disk, a nondefault device node is useful to control the boot order or to have different SCSI controller types. For example, you might want to boot from an LSI Logic controller and share a data disk with another virtual machine that is using a Buslogic controller with bus sharing turned on. **Optional** Select a disk mode and click **OK**.

6: Manual VM copy from raw disks to virtual disks? |VMware Communities

I have to migrate 6 nodes from to I have to double check with the customer whether they have RDM or RAW (pretty sure they use RAW). We are planning to cold migrate via VirtualCenter from the old nodes to a new fresh installation of

General , Technology , VMWare. One of those is how to add a new virtual disk to a Linux virtual machine. The steps for adding a disk to a Windows machine is very much the same except you would use the Disk Management utility from the Control Panel. Open virtual machine settings Select your virtual machine, as you can see from the photo I selected the Infrastructure virtual machine. From this dialog you can also modify how much memory you dedicate to the machine when it boots. Select new hard disk From this screen we can see the many types of hardware we can add to a virtual machine. You can emulate just about any piece of hardware that one can expect in a modern operating system. It definitely makes testing with different configurations and devices much easier. Create the virtual disk In the next screen we see the three options for adding a new disk. This option is akin to NFS mounting a drive to a virtual machine. Select type of disk Next we want to select the type of disk. Set disk size and options Now we want to set the size of the disk we are creating. I will say this is a big performance hit you take when the disk has to extend, but for most applications its OK. Also, I will warn that if the virtual disk grows and there is no physical disk left on the host operating system you will see a catastrophic failure and in most cases both the host and guest operating systems lock up and become unusable. For this step we want to set our disk size 12 GB in this case , I chose not to allocate the disk space right now the machine has a GB drive and has only 20 GB on it and Split disk into 2 GB files. Name the disk file This is actually pretty simple in that you decide what you want to physically call the disk and where to put it. From here the disk acts just like it would if you added a new disk to a standalone server. Virtual machine start up The machine boots normally as it would any other time. Thanks to everyone that caught my typo here this utility works very much like the DOS utility of the old days and allows you to create and manage partitions. To create a new partition we enter the command `n` to create a new partition. This is going to be a primary partition `p`, and the first partition number `1`. Because I want this disk to consume the full 12 GB I specified earlier we start at the first cylinder and end it at the last cylinder. We then want to write the partition table with the new partition we have just created so we enter the command `w` which writes the new table and exits `fdisk`. For a good overview of Linux standard file systems check out this article: Once that is complete we then want to mount the newly created partition. Pretty simple and straight forward. To check that the partition is properly mounted we run `df -k` which shows us the mounted partitions and the amount of available space. Open the `fstab` file The `fstab` file holds all of the used disks and partitions, and determines how they are supposed to be used by the operating system. So we edit the file to add the newly created partition `http`: Modify the `fstab` for the new partition After we open the `fstab` file in the previous step we add the following line: The fourth is the mount options, in this case I used default which mounts the drive `rw`, `suid`, `dev`, `exec`, `auto`, `nouser` and `asynchronous`. The 5th and 6th options are for the `dump` and `fsck` options. If `dump` is set to `1` the filesystem is marked to be backed up, if you are going to have sensitive material on the drive its a good idea to set it to `1`. If `fsck` is set to greater than `1`, then the operating system uses the number to determine in what order `fsck` should be run during start up. If it is set to `0` it will be ignored such as in the case of a `cdrom` drive since its a solid state disk. For more information on the `fstab` file check out this article: So now that the `fstab` has been written the drive will be mounted and unmounted when the machine is either started or shutdown. So there you have it, the quick and dirty process for adding a brand new disk to a virtual machine. Until next timeâ€¦ Posts navigation.

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7: Standard SSD Disks for Azure Virtual machine workloads | Blog | Microsoft Azure

Premium SSD disks, on the other hand, perform better than Standard SSD disks, with very low latencies, high IOPS/throughput and even better consistency with provisioned disk performance, and it is the recommended disk type for all other production workloads.

Is it reducing 1. No of course not, the array is reporting a data reduction ratio of The point is that there are three things at play that cause this discrepancy: ESXi allocates space on the file system for many reasons, virtual disks being the primary one, but quite often does not actually subsequently write anything immediately. So the array is unaware of this allocation. Not a data write down to the array. So the array footprint is smaller. We Pure do not include things like zero removal in our data reduction ratio. A lot of the VMFS metadata space is zeroed upon creation. How does a thin virtual disk work? Well it only allocates as needed. As data is written to it eventually by the guest, it extends itself one block at a time, then zeroes those blocks out, then commits the data. Still around 2 MB on the FlashArray. This is a Windows machine, so I will use sDelete to write zeroes. This will write zeroes to the entirety of my E: But what about the VMDK itself? All the way up to 40 GB! ESXi of course saw writes to blocks, so it allocated those blocks-therefore growing the thin virtual disk the VMDK file. The data was then sent to the array. How does that look? This is because the FlashArray discards all of those zeroes. Windows sees zero GB. The FlashArray sees essentially zero GB. Is it possible to shrink the virtual disk? Note though, that this is an offline procedure. The virtual disk must either be removed from the VM, or the VM must be shutdown. This KB describes this process: So all three report the same thing. I now use vdbench to create a non-zero file and fill up my E: If we look at the FlashArray: It is reporting 5. In this case, the discrepancy is due to FlashArray data reduction. And the FlashArray does not change its reporting either: So now Windows is reporting 0 GB. The FlashArray reports 5. The guest OS in this case Windows reports how much it currently has written. This case, it is now zero. The file has been deleted. If the written goes down, the allocated does not. They are different things. It stays that way until it is overwritten. If something is simply deleted, and there is no overwrite, so the array is unaware. These are all different metrics and therefore mean different things. So how do we get VMware and the array to reflect what is actually in-use by the guest? Well there are a variety of methods, but it usually boils down to two options: Most arrays these days have the ability to automatically remove zeroes like the FlashArray or have a zero space reclamation procedure you can run after the fact. This is because ESXi just sees writes. The allocation of the VMDK is already full, so no changes are needed. The FlashArray though does respond. The FlashArray sees the new data being written, so it discards the previous data. Since the new data is all zeroes it discards these writes too. The virtual disk though is still reporting 40 GB. This is because no one has told VMFS that the data is not needed. Of course the downside of this is that it is offline. When the punch zero is done, the VMDK is down in size. From 40 GB to about 70 MB. This is a much cleaner option and is online. But it does have restrictions. In effect, achieving all of the zeroing steps, in one, built-in, online procedure. For how to do this, refer to the following blog posts:

8: How To Enlarge a Virtual Machine's Disk in VirtualBox or VMware

The PowerShell script (using PowerCLI) I discuss in this post maps virtual disks of a VMware vSphere host to volumes on Windows drives. This information is useful if you have to extend the storage space of Windows volumes.

9: Extend Storage Pool and Virtual Disk (Storage Space)

One of those is how to add a new virtual disk to a Linux virtual machine. So in response to that, here are the steps to adding a new SCSI based virtual disk to a CentOS Linux virtual machine. The steps for adding a disk to a Windows machine is very much the same except you would use the Disk Management utility from the Control Panel.

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