



MOOSE VIEWS

What's Inside

**Better Health
in One
Minute
(Page 2)**

**Four Best
Exercises for
Seniors
(Page 2)**

**Did You Know
(Unusual Words)
(Page 2)**

**The Lighter
Side
(Page 4)**

Moose Views

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Two Ways to Provision Desktops

XenDesktop 5 introduced a new way to provision desktops, called “Machine Creation Services” (“MCS”). If you’re planning a XenDesktop implementation, it’s important to understand the difference between MCS and Provisioning Services (“PVS”), so you can choose the one that’s best for your deployment.

Both of these technologies are intended to save you money by letting you boot and run multiple systems from a single OS image—so you only have one copy of the OS image taking up storage space in the data center. If your desktop virtualization project simply trades inexpensive desktop SATA storage for expensive data center SAN storage, it’s going to be tough to cost-justify it. Using MCS or PVS can offer tremendous storage savings.

PVS came from Citrix’s acquisition of Ardence a few years ago. It can be used to provision servers as well as workstations, and can stream an OS to a physical machine just as easily as it can stream an OS to a virtual machine.

To use PVS, you first create a master image of your OS. If you’re going to be streaming the OS to physical computers, and your physical systems are not identical, you will probably need to have different images for different system configurations, to insure that the images contain the correct device drivers for the systems you’ll be streaming to. This generally isn’t an issue when you’re streaming into a virtual environment.

You then need a couple of Provisioning Servers (for redundancy), which are responsible for streaming the OS on demand to the target devices. The target devices (whether physical or virtual)

are configured to boot from the network—namely, from the Provisioning Servers.

If you’re going to be streaming to more than a couple of hundred systems, it’s strongly recommended that your Provisioning Servers be physical systems.

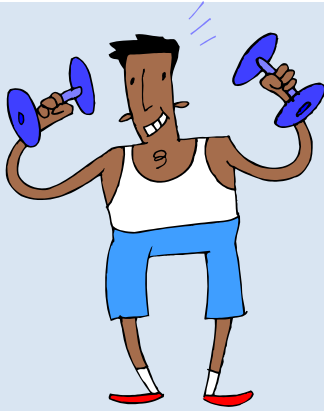
The next question is where to put the image files. You want both Provisioning Servers to have access to them, so your first inclination might be to put them on a SAN volume. But you can’t have two servers accessing the same SAN volume at the same time unless you have some kind of clustered file system software layer (e.g., Sanbolic’s Melio product), which adds cost and complexity to your deployment.

So, if you only have a few images to maintain, the simplest thing to do is to manually copy them to local storage on both of your Provisioning Servers. If, on the other hand, you have lots of images to maintain, something like Sanbolic will probably pay for itself fairly quickly through ease of management.

MCS does not require separate Provisioning Servers. Instead, the Desktop Delivery Controller (“DDC”) leverages the built-in capability of the hypervisor to create clones and snapshots. This means that MCS is *strictly* for provisioning virtual desktops. You cannot use MCS to stream to physical, nor can you use it to stream server Operating Systems (at least, not at the moment).

With MCS, you instruct the DDC to use a particular image to provision a specific number of virtual systems on a specific storage repository that has been presented to your virtual hosts. (Assume

(Continued on Page 3)



Better Health in One Minute!

Improving your health doesn't need to take long. There are some things you can do in about a minute that will make you and your family safer and feeling better:

- Check your posture: Make sure that you are sitting correctly when at a desk. Your knees should not be bent more than 90 degrees, and your back should be straight.
- Cut your salt: Instead of adding extra salt to your food, sprinkle on some herbs and spices.
- Take off the weight: A heavy purse, computer bag, or backpack can be bad for your back and shoulders. Lighten the load by removing any unnecessary items.
- Get new shoes: If your running or workout shoes are more than a year old, you may need to upgrade. Do this to help prevent problems with your heels and feet.
- Give your mood a boost: If you have been feeling stressed, take time to lighten up. Going out to dinner with friends, catching a funny movie, or going away for a weekend can release brain chemicals that make you feel better.
- Turn off the TV: Watching television right before bed can lead to sleep problems. Instead of watching TV in bed, turn it off and listen to some relaxing music before you go to bed.

Four Best Exercises for Seniors

Some of us are having to face the fact that we're not quite as spry as we used to be. But even if you're still in the bloom of youth, these exercise tips can still be useful—and you can also pass them along to a friend or relative who may not be as young as you are!

It's important to maintain good health as we age. Besides eating right, exercising is crucial to staying strong and healthy. But which exercises are best? According to the National Institutes of Health, the following four kinds of exercises result in the most benefit:

Balance Exercises

Because the risk of falling increases as we get older, maintaining good balance is crucial. These types of exercises reinforce good posture, increase balance, and strengthen leg muscles. Stand on one foot and then alternate to the other. You can also go from sitting in a chair to standing without using your hands or arms.

Stretching Exercises

While stretching alone will not neces-

sarily increase strength, it can give you more freedom of movement. This helps you stay active and also improves balance. Begin with simple stretches and work up to a longer session. Remember that you should never stretch so much that it causes pain.

Endurance Exercises

Aerobic Exercises, such as swimming, walking, and biking, increase your heart rate. With consistent exercise of this type, you will improve your heart health and better regulate your breathing. Build up to at least 30 minutes of this type of activity each day. Daily activities, like climbing stairs or raking leaves, give you this same benefit.

Strength Exercises

Lifting weights is a great way to help build your muscles and increase your metabolism. With added muscle, it's easier for your body to maintain good blood sugar and weight levels. You are also less likely to fall when your leg and hip muscles are strong.

Did You Know? (Unusual Words)

The only 15 letter word that can be spelled without repeating a letter is "uncopyrightable."

The dot over the letter "i" is called a "tittle."

"Underground" is the only word in the English language that begins and ends with the letters "und."

The combination "ough" can be pronounced in nine different ways. The following sentence contains them all: "A rough-coated, dough-faces, thoughtful ploughman strode through the streets of Scarborough; after falling into a slough, he coughed and hiccoughed."

"Redivider" is the longest common palindromic word (a word that reads the same backwards and forwards).

"Dreamt" is the only English word that ends in the letters "mt."

"I am" is the shortest complete sentence in the English Language.

Of all the words in the English language, the word "set" has the most definitions.

There is no English word that rhymes with "orange."

The longest one-syllable word in the English language is "screched."

Two Ways to Provision Desktops (continued)

for the moment that we're using XenServer.)

The first thing the DDC does is to instruct the XenServer to take a snapshot of the designated master image, and place that snapshot on the designated storage repository. We'll call that snapshot your "base image."

If the storage repository is on a block-level SAN volume (e.g., iSCSI), that snapshot is the same size as the original master image. If, however, the storage repository is on an NFS volume, the snapshot will only take as much space as needed for the actual data—so, for example, if your image is a 15 Gb file, but there's only 12 Gb of actual data in it, the snapshot will only consume 12 Gb on an NFS volume.

Then, if you have told the DDC to provision x virtual desktops, it will proceed to create x "identity disks," which are only a few Mb in size each, and contain information such as the PC name, MAC address, IP address, etc., as well as x "differencing disks," which will contain the differences between each VM and the base image.

If you are creating pooled desktops (as opposed to dedicated desktops that will be assigned permanently to users who will have full read/write access to them), the differencing disks are discarded and recreated each time the VM boots.

The big question, though, is how much space the differencing disks will consume. If the storage repository is a block-level SAN volume, then by default, each differencing disk will be created as exactly the same size as the base image, meaning that you're going to consume a **lot** of SAN storage, **unless** the SAN can handle the thin-provisioning.

In our testing with a couple of SAN products, it appeared that you were actually better off **not** to use the StorageLink connector between XenServer and the SAN storage system. What we saw (in what admittedly was limited testing) was that when StorageLink was there, the XenServer wanted to create a separate virtual volume for each differencing disk,

and created it at the full size as the base image. If, on the other hand, we did not use StorageLink, but presented the XenServer with a thinly-provisioned SAN volume as the designated storage repository, the differencing disks were thinly provisioned as well.

If the storage repository is an NFS volume, then the differencing disks are going to be thinly provisioned by default—which is one reason why you'll hear people say that you should use NFS if you're using MCS to provision virtual desktops.

MCS can also do one thing that PVS cannot do, and that's create "pooled—static" desktops. Those are desktops that are assigned to a given user upon first logon, and that retain the same PC name, MAC address, and IP address from one session to another, even though the differencing disk is not retained. That's important to some applications, and, at the moment, it's something that PVS cannot do: with PVS you've either got a dedicated desktop or a pooled desktop.

So why not just use MCS for everything? It can do things that PVS can't do, and you don't need to have dedicated Provisioning Servers or worry about clustered file system software.

The answer is that PVS is more scalable than MCS.

If you've been reading this newsletter for a while (and/or following our blog), you know that one of the most important factors in the performance of your virtual desktop infrastructure is IOPS (Input/Output Operations Per Second). A desktop OS accesses its disk subsystem very differently than a server OS. For one thing, it has far more writes than reads once you're past the boot and logon stages.

With PVS, you can separate the read and write operations. Since a properly designed Provisioning Server can cache the entire master image in RAM, read operations do not necessarily generate any kind of actual disk I/O or SAN traffic. And the write cache can be placed on local XenServer storage, so it doesn't traverse the SAN either.

By contrast, **all** I/O operations performed by a system that was provisioned with MCS are going to take place on the storage repository where the VMs were provisioned, meaning that they will all be hitting that SAN or NFS volume. If you're not careful in your design, disk I/O will become a bottleneck as you scale up your environment.

I've been told by some of my Citrix buddies that in some of their own lab testing of PVS vs. MCS, all other factors being equal, the MCS-provisioned environment started having performance issues at about 1,200 desktops, while the PVS-provisioned environment scaled to over 6,000.

Those same Citrix sources suggested that, in the real world, they wouldn't feel comfortable scaling an MCS environment above 400—500 desktops, although you could break a larger environment into smaller segments, and integrate them at the Web Interface. As always, your mileage may vary!

Would You Like To Submit An Article, Story, or Tip for Moose Views?

Do you have a funny story or a resource you want to share with other subscribers?

Send it to me! We are always looking for new and useful content to add to Moose Views, including partners who want to submit articles!



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Repairing the Friendly Skies

The following has been variously attributed to the pilots of several different airlines, UPS pilots, and military pilots. Regardless of the actual source, they're pretty funny. They're drawn from the "gripe sheets," that pilots fill out after every flight, telling mechanics about problems with the aircraft, and which the mechanics use in turn to document their repairs:

Pilot: Left inside main tire almost needs replacement.

Response: Almost replaced left inside main tire.

Pilot: Something loose in cockpit.

Response: Something tightened in cockpit.

Pilot: Dead bugs on windshield.

Response: Live bugs on backorder.

Pilot: Autopilot in altitude-hold mode produces a 200 feet per minute descent.

Response: Cannot reproduce problem on ground.

Pilot: Evidence of leak on right main landing gear.

Response: Evidence removed.

Pilot: DME volume unbelievably loud.

Response: DME volume set to more believable level.

Pilot: Friction locks cause throttle levers to stick.

Response: That's what friction locks are for.

Pilot: Suspected crack in windshield.

Response: Suspect you're right.

Pilot: Number 3 engine missing.

Response: Engine found on right wing after brief search.

Pilot: Aircraft handles funny.

Response: Aircraft warned to straighten up, fly right, and be serious.

Pilot: Target radar hums.

Response: Reprogrammed target radar with lyrics.

Pilot: Mouse in cockpit.

Response: Cat installed.

Famous Birthdays

- April 1—Debbie Reynolds, 1932
- April 2—Hans Christian Andersen, 1805
- April 3—Eddie Murphy, 1961
- April 6—Butch Cassidy, 1866
- April 7—Jackie Chan, 1954
- April 10—John Madden, 1936
- April 12—David Letterman, 1947
- April 14—Pete Rose, 1941
- April 15—Roy Clark, 1933
- April 16—Charlie Chaplain, 1889
- April 17—Nikita Khrushchev, 1894
- April 18—Conan O'Brien, 1963
- April 19—Tim Curry, 1946
- April 21—Queen Elizabeth II, 1926
- April 22—Vladimir Ilyich Lenin, 1870
- April 23—William Shakespeare, 1564
- April 24—Barbra Streisand, 1942

Coming Events

View all coming events with registration links at:
<http://www.mooselogic.com/events>

Citrix Synergy is coming! Plan now to attend this 3-day virtualization conference in San Francisco May 25—27. More info at <http://www.citrixsynergy.com/>