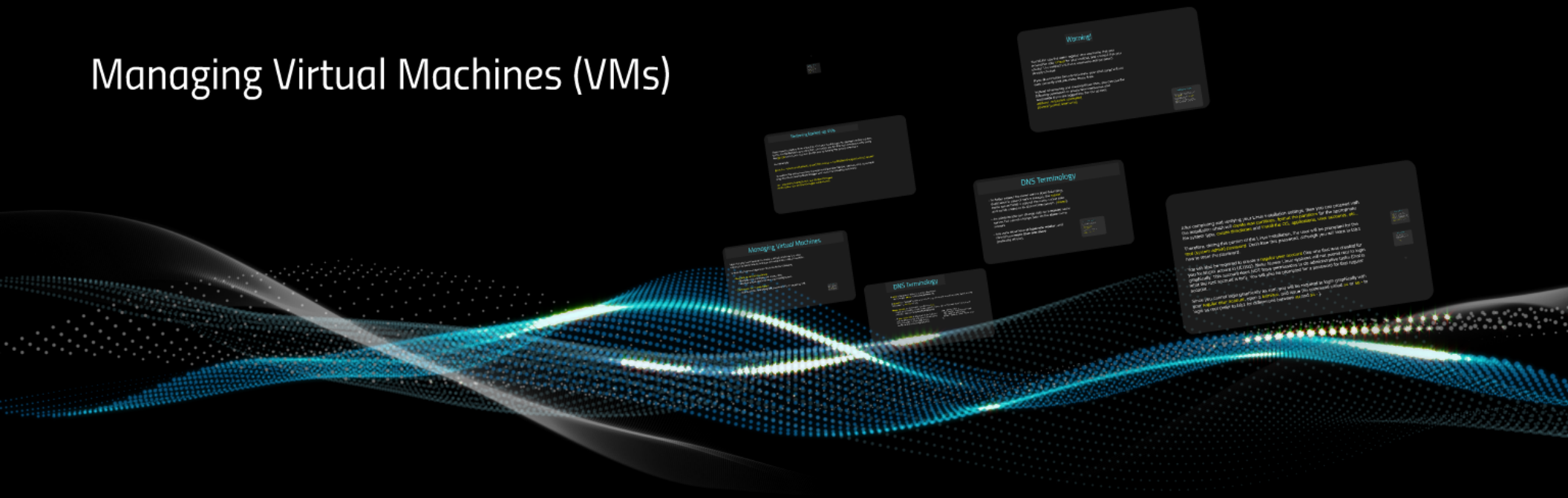
OPS235

Managing Virtual Machines (VMs)



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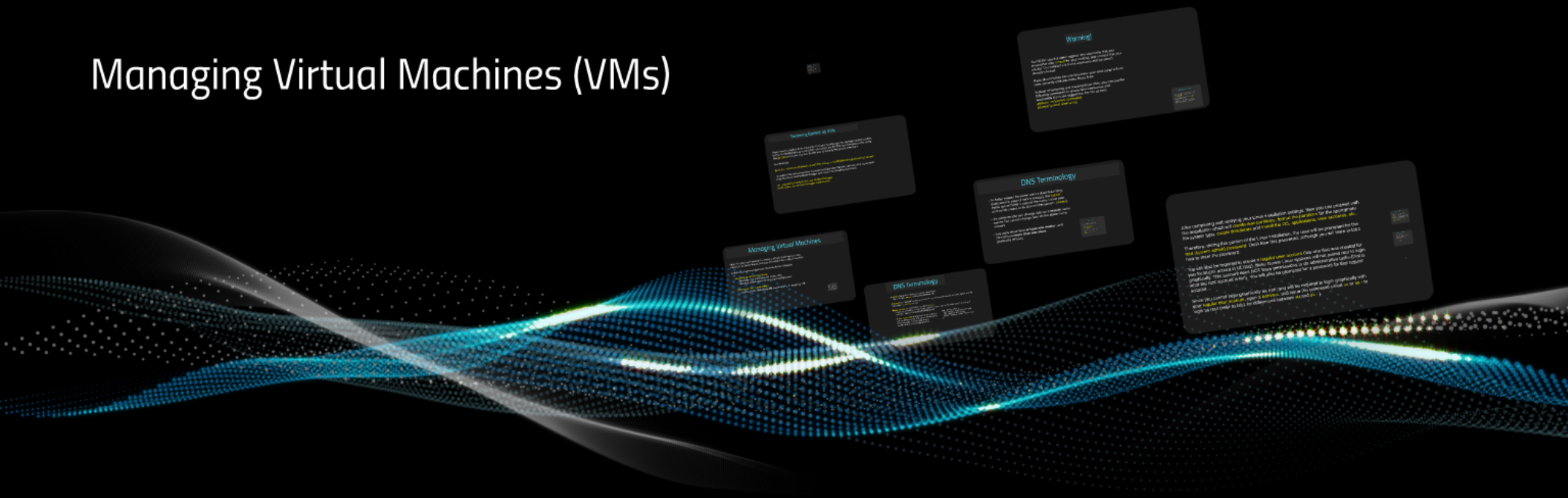

Managing Virtual Machines

Now that you have learned to create a virtual machine, it is also important to know how to manage or manipulate a virtual machine.

Virtual machine management can include the following:

- Backing up virtual machines:
  - Backup and compress VM image files
  - Backup virtual machine manager configuration
- Command line manipulation:
  - status of VM, launching VM, pausing VM, or stopping VM

Backing-up Virtual Machines Images

All VM images are stored in the /var/lib/libvirt/images directory of your c7host machine. This is the reason why you needed to create a large size for this partition (100 GB).

In order to make a backup, we need to make copy of that VM image, but also compress that copy to take up less space. We do this by using the gzip utility. Below is an example of using the gzip command to create a compressed backup of the centos1 image assuming the current directory location is /var/lib/libvirt/images:

```
gzip < centos1.qcow2 > ~username/centos1.qcow2.backup.gz
```

It is IMPORTANT to include the redirection symbols (< , >) since we want to create a new compressed file. If you don't use the redirection symbols, it will TRANSFORM (change) that centos1.qcow2 file (in the example above) to the compressed image, and you will be UNABLE to start your centos1 in the virtual machine manager!

Backing-up Virtual Machines Images

If you only back-up the virtual machine image files to your home directory, what would happen if your c7host crashed and you could not boot your c7host machine?

You would be in trouble, if you only backed up to your home directory. Therefore, it is necessary to also backup to your USB key.
Refer to instructions in lab2.

Also, if you re-installed your c7host machine, you would have lost all data, including the virtual machine manager configuration, and although you can redo labs 1 and 2, but even if you restored the backups, they would not appear in your virtual machine manager!

You should also perform a "one-time" backup for all your VMs by using the virsh dumpxml command. Here is an example for just centos1:
virsh dumpxml centos1 > centos1.xml

(You MUST perform this one for EACH virtual machine - copy to USB key!)

Restoring Backed-up VMs

If you need to restore from a backup, then you would copy the appropriate backup files to the /var/lib/libvirt/images direction, and unzip any file that was compressed by using the gunzip command. You can do this just by issuing the gunzip command

For example:

```
gunzip < ~username/centos1.qcow2.backup.gz > /var/lib/libvirt/images/centos1.qcow2
```

To restore the virtual machine manager configuration file (eg. centos1.xml), you would copy the file to /var/lib/libvirt/images and issue the following command:

```
cp ~username/centos1.xml /var/lib/libvirt/images
virsh define /var/lib/libvirt/images/centos1.xml
```

Using the virsh command

In a previous slide, you saw an example using the virsh command to backup the virtual machine manager configuration.

The virsh command stands for Virtual Shell. This command acts like a shell prompt (like the Bash shell), except you include a command as the argument and it will run the command in its own shell to manipulate your VM.

For example, the command: virsh dumpxml centos1 > centos1.xml run the command dumpxml centos1 > centos1.xml in its own shell for virtual machine manager configuration backup.

Using virsh to Display VM Status

There are other commands that can be issued using the virsh command. The following are used to provide information regarding the status of the virtual machine:

virsh list (only display VM names that are running)

virsh list --all (display all VM names running or not running)

virsh list --inactive (only display VM names that are not running)

Using virsh to Manipulate VMs

You can also use the virsh command to manipulate your VMs like starting or stopping the VM. This is useful if you want to create a shell script that will automatically manipulate your VMs.

Here are some examples:

virsh start centos2 (run the VM called centos2)

virsh shutdown centos2 (stop or shutdown the centos2 VM)

At the end of lab2, you will observe how a Bash shell script can use the virsh command to manipulate your VMs. The next set of notes will discuss more Bash shell scripting tools to allow us to create those scripts.