

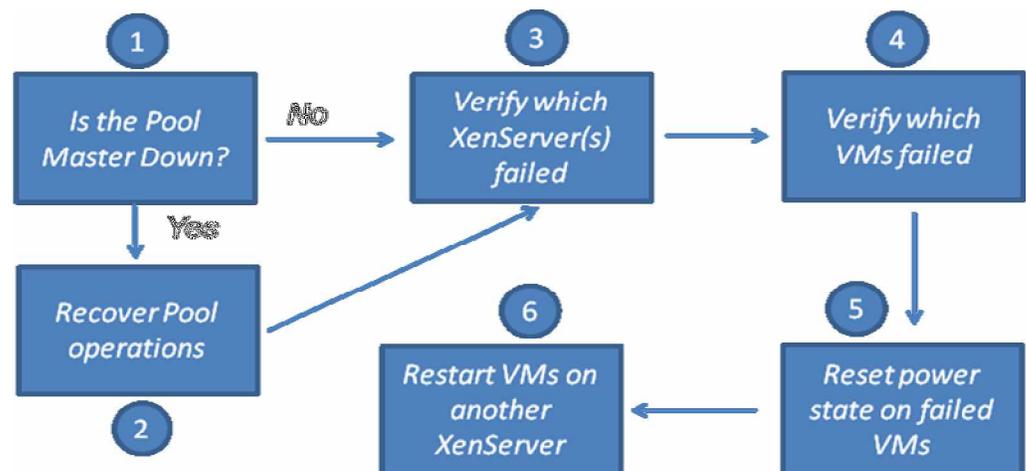
XenServer System Recovery Guide

Recovering Virtual machines in a XenServer Pool

In a typical environment, two or more XenServer hosts are grouped together in a resource pool to provide benefits such as centralized infrastructure management and Virtual Machine (VM) failover. Virtual machines are then located on remote, shared storage to allow them to run on any physical server within the resource pool.

If XenServer host maintenance is planned, Virtual Machines can be live migrated between servers with no service downtime using XenMotion. However, if a physical XenServer host fails, there are some simple steps that need to be completed to restore the virtual machines, depending on the nature of the failure.

Steps for Recovery



Step 1 - Is the Pool Master down?

All commands within a XenServer pool are managed by the server known as the “pool master.” If the server that is currently designated as the pool master has failed, servers running on other hosts will continue to run but lifecycle management (for example, starting or stopping VMs) within the pool will not be possible.

Note: Under some circumstances (such as power outages) there may have been multiple XenServer host failures in the pool. In this case, the pool master should be recovered first.

If connection to the XenServer pool is not possible from XenCenter, or issuing commands at the command line of a surviving host (such as “xe host-list”) returns a message “Cannot perform operation as the host is running in emergency mode” then the Master server cannot be contacted and is likely non-functional.

Note: If the Master Server has NOT failed, skip forward to Step 3 – Verifying which XenServer(s) failed.

Step 2 – Recover Pool operations (if applicable)

If recovery of the pool master is not possible within a short timeframe, it will be necessary to promote a member server to a master to recover pool management and restart any failed Virtual Machines.

- 1) Select any running XenServer within the pool that will be promoted. (Each member server has a copy of the management database and can take control of the pool without issue.)
- 2) From the server’s command line, issue the following command:
`xe pool-emergency-transition-to-master`
- 3) Once the command has completed, recover connections to the other member servers using the following command:
`xe pool-recover-slaves`
- 4) Verify that pool management has been restored by issuing a test command at the CLI (`xe host-list`)

Full details of how to recover from pool failures are available at:
<http://docs.xensource.com/XenServer/4.0.1/reference/ch02s06.html>

Step 3 – Verify which XenServer(s) failed

This step verifies which XenServer(s) in the pool have failed and gives the chance to note the Universally Unique Identifiers (UUIDs) of the failed servers for use later.

- 1) Issue the following command at the Command line of a surviving pool member:

```
xe host-list params=uuid,name-label,host-metrics-live
```

```
uuid ( RO)                : 3125fef0-e5d1-47a8-909c-
2b3812478541
    name-label ( RO): TRNSRV-C-08
    host-metrics-live ( RO): false
```

```
uuid ( RO)                : 7ca28816-3b28-4035-b29d-
3ba1129a402c
    name-label ( RO): TRNSRV-C-07
    host-metrics-live ( RO): true
```

- 2) Any servers listed as host-metrics-live = false have failed. If it was necessary to recover the Pool Master with Step 2, the Master will now show as true. Note down the first few characters of the UUID of any failed servers (or the UUID of the Master server if it originally failed). It is not necessary to note the whole UUID because tab-completion within the CLI can be used in the next step.

Important: Wherever possible, visually verify that the server has failed. If a failure has occurred in another subsystem on the server (for example, the xapi service has failed) and virtual machines are still active, starting the VMs again could in rare cases cause data corruption.

Step 4 – Verify which Virtual Machines have failed

Regardless of whether a Master or Slave server fails within a resource pool, virtual machines running on other hosts continue to run. The next step verifies which VMs were running on the failed server(s).

- 1) Issue the following command at the Command Line Interface (CLI) of a surviving server. Use the UUIDs noted in Step 3, type the first 3 digits of the UUID, and press [tab] to complete it:

```
xe vm-list is-control-domain=false resident-on=UUID_of_failed_server
```

```

uuid ( RO) : 0106cb35-e809-f598-3d4b-
16be79ec1a27
    name-label ( RW): CentOS 5.0 (1)
    power-state ( RO): running

uuid ( RO) : c7a0282c-3de2-9e21-4435-
4cc49f7556eb
    name-label ( RW): SUSE Linux Enterprise Server 10
SP1
    power-state ( RO): running

```

- 2) Note that the power state of these VMs is still “running” even though the server they were running on has failed. The next step resets this value to allow the VMs to be launched on a surviving pool member.
- 3) Repeat this step if necessary using the UUID of any other failed servers (including the master server if that originally failed).

Step 5 – Reset power state on failed VMs

To restart VMs after a host failure, it is necessary to reset their power state.

- 1) Issue the following command at the command line of a surviving server:

```
xe vm-reset-powerstate resident-on= UUID_of_failed_server --force --multiple
```

Caution! Incorrectly using the “--multiple” option could result in ALL virtual machines within the pool being reset. Be careful to use the “resident-on” parameter as well. Alternately, you can reset VMs individually.

- 2) Verify that there are no VMs still listed as resident on the failed server by repeating step 4. The vm-list command should now return no results.

More information on resetting a VM’s power state is available at:
http://docs.xensource.com/XenServer/4.0.1/reference/ch05s04.html#cli-xe-commands_vm-reset-powerstate

Step 6 – Restart VMs on another XenServer

- 1) Load XenCenter and verify that each VM that was originally running on the failed server is now marked as halted (Red icon next to the VM)

Note: VMs which have a home server assigned will not appear in XenCenter, because that specific home server host is still down. A workaround for this is changing the home server by changing the affinity parameter from the CLI:

```
xe vm-param-set uuid=<uuid of vm to change> affinity=<uuid of new home server>
```

After this, the VM will appear in XenCenter and the Home Server configuration can be changed.

2) Restart each VM on a surviving pool member as normal

Note: It is only possible to restart virtual machines on a surviving pool member if they are located on a remote shared storage repository. If one or all on the virtual disk files of a VM are located on the local hard disk of the failed server, it will not be possible to start them without recovering the failed server.

Administrator Notification of a host failure

It is important that failures of individual hosts within a pool are recognized as soon as possible. To this end, Citrix is developing a Pool monitoring script that will monitor the pool master and alert a designated administrator (using SMTP email) if a state change happens.

Check Knowledge Base article CTX117249 for more details.