

Cross-Hypervisor Migration – XenServer 7.2 to VMware ESXi 6.7 (Manual P2V Conversion via Nested Hypervisor Bridge)

A contribution by Alessandro Giussani – 2019

1. Introduction

This document describes a fully manual procedure designed to migrate virtual machines from **Citrix XenServer 7.2** to **VMware ESXi 6.7** in the absence of a direct conversion path.

The method was developed through hands-on experimentation and provides a reliable, replicable approach for system administrators who must transfer workloads between incompatible hypervisors without losing data or functionality.

2. Problem Overview

XenServer and VMware ESXi use different disk formats and metadata structures.

- **XenServer** exports virtual machines in its own **OVF** flavor that cannot be directly imported into VMware.
 - VMware tools such as *vCenter Converter* cannot natively interpret XenServer exports. As a result, administrators often face an apparent dead end when attempting to move legacy workloads.
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3. Solution Concept

The solution involves creating a **nested environment** where XenServer is installed as a virtual machine inside VMware.

This nested Xen environment acts as an **intermediate bridge**, allowing the exported Xen VMs to be imported into a compatible Xen instance and then converted using VMware tools as if they were physical machines.

This process is known as a **manual P2V (Physical-to-Virtual) conversion via a Nested Hypervisor Bridge**.

4. Architecture Overview

Logical layout

```
[ Source XenServer (France) ]
  |
  | Export native OVF (Xen format)
  v
[ Nested XenServer VM ] <-- running inside VMware ESXi 6.7
  |
  | (Internal Virtual LAN)
  |
[ Windows 10 Control VM ]
  - XenCenter
  - VMware vCenter Converter Standalone
  |
  v
[ VMware ESXi 6.7 Target Host (Germany) ]
```

Description

- **Source XenServer (France):** Original environment containing production VMs.
- **Nested XenServer VM:** A replica Xen 7.2 installation hosted inside VMware ESXi 6.7.
- **Internal Virtual LAN:** Isolated virtual network connecting the nested Xen and Windows control VMs.
- **Windows 10 Control VM:** Equipped with XenCenter for managing the nested Xen, and VMware vCenter Converter for converting VMs via network.
- **VMware ESXi Target (Germany):** Destination platform for the converted machines.

5. Tools Used

- Citrix XenCenter 7.2
- VMware vCenter Converter Standalone (latest at the time of test)
- Internal Virtual LAN (VMware virtual switches, isolated)
- Linux Rescue ISO (for post-conversion system corrections)
- WinSCP / SCP (for transferring small files and logs)

6. Step-by-Step Procedure

Step 1 – Prepare the Nested Environment

1. On the VMware ESXi 6.7 host, create a new VM and install XenServer 7.2 as a nested hypervisor.
2. Create a Windows 10 VM and connect both (Xen + Win10) to the same **internal virtual LAN**.
3. Install XenCenter and vCenter Converter on Windows 10.

Step 2 – Export from Source XenServer

1. From the original XenServer (France), export each VM in **native Xen OVF format**.
2. Transfer exported files to the **nested XenServer** using secure copy or shared storage.

Step 3 – Import into Nested Xen

1. In XenCenter (on Win10), import the OVF files into the nested XenServer VM.
2. Verify that each imported VM starts correctly under the nested Xen environment.

Step 4 – Convert Using VMware vCenter Converter

1. On the Windows 10 Control VM, open **vCenter Converter**.
2. Choose the **P2V conversion mode** and point it to the nested XenServer VM as the source.
3. Configure each Xen VM as a network-accessible “physical” source.
4. Select the target ESXi host and specify storage, CPU, and memory settings.
5. Start the conversion and monitor progress.

Step 5 – Post-Conversion Fixes

For Linux guests:

- Boot from a Linux Rescue ISO.
- Mount the root partition manually.
- Edit `/etc/fstab` to replace old Xen device names (`/dev/xvda`, `/dev/xvdb`) with VMware equivalents (`/dev/sda`, `/dev/sdb`).
- Run `update-initramfs -u` if required.
- Reboot and verify proper boot.

For Windows guests:

- Boot normally on VMware.
- Install VMware Tools.
- Remove any Xen-specific drivers or services.

7. Results

- All migrated virtual machines were successfully started on VMware ESXi 6.7.
- No data loss occurred.
- The conversion worked for both Windows and Linux systems.
- Performance was equivalent to natively created VMware VMs after installation of VMware Tools.

This process avoids the need for third-party migration suites or dual-stage conversions and is fully replicable with basic system administration skills.

8. Conclusion

This method provides a **practical, low-cost solution** for cross-hypervisor migration from XenServer to VMware, bridging an otherwise unsupported scenario.
It demonstrates that a nested hypervisor bridge can serve as a universal intermediary between isolated virtualization platforms.

9. Author

Alessandro Giussani (2019)

This is a contribution for those who need to move from Xen to VMware.

Why Nested Virtualization Was Required

vCenter Converter performs stable P2V conversions only over **low-latency local networks**.
When attempting direct migration between remote Xen and VMware hosts (for example, France → Germany),
the process usually fails because of WAN latency, TCP timeouts, or asynchronous disk I/O.

To solve this, a **nested XenServer** was created *inside* the target VMware host.
This configuration replicated the original LAN locally and allowed the conversion to run entirely within an **Internal Virtual LAN**, achieving full bandwidth and stability.

In practice, the converter believed it was operating on a local physical machine,
while the entire process was running in a virtualized sandbox.