

IPv6-capable vSphere platform

RECOMMENDATIONS

Audience

These recommendations are written for System and Network administrators that manage VMware vSphere platforms.

The document describes the issues I ran into while implementing VMware vSphere 5.1 in an IPv6-only network. It also describes various reasons to move to such a network environment. The resulting implementation recommendations are based on whether your organisation is running on one ESXi hypervisor, or a vSphere-environment.

An “IPv6-capable vSphere Platform” is defined as a vSphere Platform that can be *managed* over IPv6, and should not be confused with running VMs on an IPv6 network.

Why would you want an IPv6-capable vSphere platform?

The main question here could also be: “Why shouldn’t you want an IPv6-capable vSphere platform?”

Almost all parts of VMware vSphere support IPv6: VMware Single Sign On, vSphere Inventory Service, vCenter Server, vCenter Client and vCenter Web Client. VMware Update Manager does support management via IPv6, but the CDN that is used to distribute the VMware updates is only reachable via IPv4.

The vStorage APIs do currently not support IPv6. Backup products exclusively use these APIs, thus rendering them unusable in IPv6-only networks. These products do work in a dual-stack environment.

Implementation of IPv6 for vSphere should be done using the same security measures as you would use with IPv4, i.e. IPv6 Access Control Lists (ACLs). All documentation to deploy a secure IPv6-capable vSphere Platform can be found on the TERENA wiki¹.

Reasons to stick to an IPv4 Management Network

- Your networking environment does not support IPv6
- Your networking environment does not support the required security measures for IPv6

Reasons to move to a dual-stack Management Network

- Backwards compatibility as well as forwards compatibility, the Management Network will be reachable from both IPv4 and IPv6 networks.

Reasons to move to an IPv6-only Management Network

- Forward compatibility: your environment will be future proof
- Simpler network configurations: it is easier to manage one network than two networks

Issues with moving on to an IPv6-only Management Network

- The vStorage API’s do not support IPv4, thus backups cannot be made without IPv4 support

¹ <https://confluence.terena.org/display/~visser/IPv6>

Recommendations for implementing an IPv6-capable vSphere Platform

The recommendations have to be divided in two parts. One for smaller organisations (or small-scale test-environments) using one ESXi hypervisor, and a second part for the organisations using two or more ESXi hypervisors, managed by a vCenter Server.

One ESXi hypervisor

Implement ESXi in an IPv6-only environment. This is a quick overview of the steps required to install a simple, one-server ESXi environment, with backup and update functionality.

- Install ESXi, and configure it only to use IPv6 networking
- Enable SSH on the ESXi server
- Install a trusted SSL certificate on the server
- Copy and configure the GhettoVCB script for backup purposes
- Setup an NAT64 appliance (this can be a simple Linux VM with NAT64 software) to use VMware Update Manager (installed on a simple Windows Server VM)

Two or more ESXi hypervisors

Implement vSphere in a dual-stack environment. This is a quick overview of the steps required to install a more advanced, multi-server vSphere environment, with backup and update functionality.

- Install ESXi on all servers, and configure them only to use IPv6 networking
- Enable SSH on the ESXi servers
- Install thrusted SSL certificates on the servers
- Disable SSH on the ESXi servers
- Install a Windows Server VM, and install VMware vCenter Server (and all pre-requirements, this is documented on the TERENA wiki)
- When the whole vSphere installation works in a IPv6-only environment, enable IPv4
- Install a VADP-based backup-appliance

Once both the backup-appliance and the vStorage API's support IPv6, IPv4 can be disabled to create a true IPv6-only vSphere platform.