

Knowledge Base

KB Home

Knowledge Base Help

Search the Knowledge Base

Search

View by Article ID

View

Products -->

Category -->

Private VLAN (PVLAN) on vNetwork Distributed Switch - Concept Overview



(5 Ratings)

Purpose

This article provides a concept overview of Private VLAN (PVLAN).

Resolution

The definition of Private VLAN is:

- **Virtual LAN (VLAN)** is a mechanism to divide a broadcast domain into several logical broadcast domains.
- **Private VLAN** is an extension to the VLAN standard, already available in several (most recent) physical switches. It adds a further segmentation of the logical broadcast domain, to create "Private" groups.
- **Private** means that the hosts in the same PVLAN are not able to be seen by the others, except the selected ones in the promiscuous PVLAN.
- **Standard 802.1Q Tagging** indicates there is no encapsulation of a PVLAN inside a VLAN, everything is done with one tag per packet.
- **No Double Encapsulation** indicates that the packets are tagged according to the switch port configuration (EST mode), or they arrive already tagged if the port is a trunk (VST mode).
- Switch software decides which ports to forward the frame, based on the tag and the PVLAN tables.

A **Private VLAN** is further divided into the groups:

1. **Primary PVLAN** – The original VLAN that is being divided into smaller groups is called Primary, and all the secondary PVLANS exist only inside the primary.
2. **Secondary PVLANS** – The secondary PVLANS exist only inside the primary. Each Secondary PVLAN has a specific VLAN ID associated to it, and each packet travelling through it is tagged with an ID as if it were a normal VLAN, and the physical switch associates the behavior (Isolated, Community or Promiscuous) depending on the VLAN ID found in each packet.

Note: Depending upon the type of the groups involved, hosts are not able to communicate with each other, even if they belong to the same group.

Three types of Secondary PVLANS:

1. **Promiscuous** – A node attached to a port in a promiscuous secondary PVLAN may send and receive packets to any node in any others secondary VLAN associated to the same primary. Routers are typically attached to promiscuous ports.
2. **Isolated** – A node attached to a port in an isolated secondary PVLAN may only send to and receive packets from the promiscuous PVLAN.
3. **Community** – A node attached to a port in a community secondary PVLAN may send to and receive packets from other ports in the same secondary PVLAN, as well as send to and receive packets from the promiscuous PVLAN.

Notes:

- Promiscuous PVLANS have the same VLAN ID both for Primary and Secondary VLAN.
- Community and Isolated PVLANS traffic travels tagged as the associated Secondary PVLAN.
- Traffic inside PVLANS is not encapsulated (no Secondary PVLAN encapsulated inside a Primary PVLAN Packet).
- Traffic between virtual machines on the same PVLAN but on different ESX hosts go through the Physical Switch. Therefore, the *Physical Switch must be PVLAN aware and configured appropriately*, to allow the secondary PVLANS to reach destination.
- Switches discover MAC addresses per VLAN. This can be a problem for PVLANS because each virtual machine appears to the physical switch to be in more than one VLAN, or at least, it appears that there is no reply to the request, because the reply travels back in a different VLAN. For this reason, it is a requirement that each physical switch, where ESX with PVLANS are connected, must be PVLAN aware.

Additional Information

For related information, see [Configuration of a Private VLAN \(PVLAN\) on a vNetwork Distributed Switch \(1010703\)](#).

Actions

- Bookmark Document
- Email Document
- Print Document
- Subscribe to Document

SHARE

KB Article: **1010691**Updated: **Aug 14, 2009**

Products:

VMware ESX

Product Versions:

VMware ESX 4.0.x

Request a Product Feature

To request a new product feature or to provide feedback on a VMware product, please visit the [Request a Product Feature](#) page.

Feedback



(5 Ratings)

Did this article help you?

- ☐ This article resolved my issue.
☐ This article did not resolve my issue.
☐ This article helped but additional information was required to resolve my issue.

What can we do to improve this information? (4000 or fewer characters)

Email address (optional)

Submit

Permalink to: [Private VLAN \(PVLAN\) on vNetwork Distributed Switch - Concept Overview](#)



[Read our blog](#)



[Watch KBTV](#)



[Follow us](#)

Download Products

Visit Download Center
Download SDKs & APIs
Download Patches
Sign Up for Patch Alerts
Read Downloads Help Guide

Purchase Support

Review VMware Support Options
Request Renewal/Upgrade Quote
Contact VMware Sales
Locate a VMware Reseller
View Support Policies

Connect with Experts

Visit Community Forums
Join VMware User Groups
Visit VMworld
Browse Training
Register for Support Days

Find Answers

Visit Product Support Centers
Read Product Documentation
Search the Knowledge Base
Login to Your Account
Find Support Help Documents