



FAQ

# 3Com Virtual LAN Drive Frequently Asked Questions

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This FAQ paper answers commonly asked questions regarding 3Com Virtual LAN Drive (VLD)

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## ***What is 3Com Virtual LAN Drive?***

Virtual LAN Drive (VLD) is a software product from 3Com that allows network administrators to create and manage virtual hard drives image files for client PCs. The Virtual LAN Drive software transfers the functionality usually handled by local, physical hard drives to special image files on a Windows 2000 or Windows NT server. Operating system, data, and software are stored on the server hard drive image files, but the application processing takes place at the client PC. Although the server treats the virtual hard drive image files as regular files, client PCs utilize virtual hard drive images file like ordinary drives that can be formatted, partitioned, configured and maintained as usual.

## ***What applications can I use 3Com Virtual LAN Drive software for?***

3Com Virtual LAN Drive's unique architecture offers a solution that can be used in applications that typically use thin clients or Windows terminal server products. And Virtual LAN Drive, offers benefits that these technologies can't always provide.

3Com Virtual LAN Drive is targeted towards organizations that require task oriented terminals, kiosks, school labs, visitor-based networks, gaming farms, call centers, etc. It is appropriate wherever Citrix or Windows TSE might be considered on a LAN segment but where applications may require a broader range of compatibility in the area of console applications, legacy or CPU intensive applications, or multimedia applications that require local hardware peripherals to be present (CD-ROM drives, sound cards, graphic cards), or require extensive local processing, or require extensive local file I/O.

## ***Why is Virtual LAN Drive needed?***

- Useful in task-oriented environments such as schools, training institutions, data entry, and kiosks.
- Reduces the total cost of ownership of client and desktop administration by decreasing client setup and administration time.
- Provides a convenient way to manage client PCs, update their operating systems, drivers, files and software -- without visiting or even turning on the client PC.
- Expands network disaster recovery, redundancy, and security options to include client PCs.
- Provides a security-based network boot solution for 32-bit operating systems and facilitate a fault-tolerant strategy.
- Facilitates isolated or experimental software installations.
- Provides cost benefits by eliminating physical local storage on clients.
- Makes client hard drives physically secure – all content is stored in (usually) physically inaccessible Network Servers.

### ***What is the difference between Virtual LAN Drive and a physical hard drive?***

Virtual LAN Drive is a software product, which emulates a physical hard drive. It functions like a physical hard drive which is located on a Network Server drive. To the client PC, the virtual hard drive appears as a local drive from where it loads the Operating System and applications.

### ***What is the difference between Virtual LAN Drive and a mapped network drive?***

Virtual LAN Drive provides the same functions as a physical hard drive, from which an operating system is stored and loaded. An operating system cannot be executed from a mapped network drive nor can a mapped network drive be partitioned or formatted.

Virtual LAN Drive offers the capability to boot an entire Operating System from the server-hosted virtual drive image. It also offers the ability to present the virtual drive as a regular drive letter, without consuming memory as a RAMDISK, and transparency to applications or utilities that are sensitive to network-mounted drives.

### ***What is the difference between Virtual LAN Drive and the network boot facility (Server-Based Setup) provided by Windows 95?***

Virtual LAN Drive overcomes many of the restrictions that were inherent with Server-Based Setup (no support for PCI NICs, no support for Internet Explorer, difficulties adding protocols and hardware devices after installation, no upgrade path for Windows 98, and general reliability). Virtual LAN Drive clients have their own dedicated drive image. Virtual LAN Drive clients may only share drive images if they are designated read-only.

### ***What are the system requirements?***

#### **Server**

- Microsoft Windows 2000 or Windows NT 4.0 Server (Service Pack 4 or higher)
- Internet Explorer 4.0 or higher
- TCP/IP protocol
- Hard drive with sufficient speed and disk space to store and access the virtual hard drive image file(s). Note: Virtual hard drive image files should be stored on an NTFS partition for optimal performance.
- Network interface card (Fast Ethernet is recommended)

#### **Administrator Workstation (optional)**

- Microsoft Windows 95, Windows 98, Windows 2000, or Windows NT 4.0
- Internet Explorer 4.0 or later
- TCP/IP protocol
- Network interface card

#### **Client**

- PC capable of running Windows 95 or Windows 98
- Network interface card (Fast Ethernet is recommended) with 3Com Managed PC Boot Agent (MBA) or PXE-compliant boot ROM
- Microsoft Windows installation CD

**BIOS** Basic Input/Output System

**DHCP** Dynamic Host Configuration Protocol

**DOS** Disk Operating System

**FTP** File Transfer Protocol

**IPX** Internet Packet Exchange

**NCP** NetWare Core Protocol

**NIC** Network Interface Card

**OS** Operating System

**POST** Power-On Self-Test

**PXE** Preboot Execution Environment

**ROM** Read-Only Memory

**RWU** Remote Wake Up

**TCO** Total Cost of Ownership

**TCP/IP** Transmission Control Protocol/Internet Protocol

**TFTP** Trivial File Transfer Protocol

### ***What Operating Systems are supported on the client PC?***

Version 1.x of Virtual LAN Drive supports Microsoft Windows 95 and Windows 98.

A future release will also support Windows NT 4.0 Workstation, Windows 2000 Professional and Windows XP.

### ***Does Virtual LAN Drive support any security?***

Yes, Virtual LAN Drive does support security in terms of user authentication. Whenever a client PC is powered on, the end user is prompted for a username and password. Virtual LAN Drive's Login Service validates this information. If valid, a session identifier is assigned for that client PC and is used for every client/server transaction until the client PC is powered off. The level of authentication is optional and configured by the Administrator.

### ***Can an administrator access and manage the client's virtual hard drive?***

Yes. Using Virtual LAN Drive's Administrator application, an administrator can create and configure a virtual hard drive image for a client PC. Also, the administrator can map a virtual hard drive image as a removable drive with an assigned drive letter. The virtual hard disk image can now be accessed as if it were a removable drive on the administrator's workstation. For example, the administrator can add, delete, and view files that are included in the virtual hard disk image.

### ***How scalable is Virtual LAN Drive?***

This can vary based on the type and power of the server system and the amount of transactions per client. If more clients are added and there is unacceptable performance degradation due to the server being over utilized, another server can be added and the clients can be split between them. This is accomplished by installing another instance of the Virtual LAN Drive Input Output (IO) Service on each server. Please refer to the license agreement regarding the usage of multiple IO Services. Additional servers can be used as the number of clients increase.

### ***Can multiple virtual hard drive images be assigned to a client PC?***

#### ***How are they selected?***

A client PC can have a maximum for four virtual hard drive images and each one can be a maximum of 2000MB in size. On the client PC, virtual hard drive images are assigned drive letters and are accessed via these drive letters – just like multiple physical hard drives. The drive letters that are assigned will be the first set of available letters on the client PC. The order in which the virtual drive images are seen by the OS is based on the their boot order that is setup in the Administrator application.

For more information on  
3Com Virtual LAN Drive visit:  
[www.3com.com/vld](http://www.3com.com/vld)

### ***Performance impact with Virtual LAN Drive?***

Network bandwidth will be a key factor that will affect the Virtual LAN Drive end user experience because each client's hard drive resides on the file server. To reduce network bottleneck consider implementing some or all of the following recommendations:

- Set up your Virtual LAN Drive clients on a 100Base-T or 1000Base-T local area network to maximize network bandwidth.
- Install a server NIC pool to increase data throughput and to provide fault tolerance.
- Segment the LAN to reduce network collisions and congestion.
- Connect Virtual LAN Drive clients directly to a switch instead of a hub.
- Install as much memory on the client PC as possible to reduce memory paging.
- Use the Virtual LAN Drive client's local hard drive, if available, to store the swap file.

### ***What is the maximum size of a virtual hard drive image?***

A virtual LAN drive is restricted to a size of 2000MB. A client PC can be assigned a maximum of four virtual hard drive images.

### ***How many clients can it handle?***

The number of clients a Virtual LAN Drive server can handle is mainly dependent on the server hardware configuration. The following chart shows the suggested minimum hardware requirement.

# of Clients	User Type	RAM (MB)	# of CPU	Speed	# of NICs	Disk Drive	Raid Level
1-5	Data Entry	64	1	300MHz	1	IDE	N/A
	Knowledge Worker	128	1	300MHz	1	IDE	N/A
6-10	Data Entry	256	1	500MHz	1	SCSI	0,5
	Knowledge Worker	256	1	500MHz	2	SCSI	0,5
11-15	Data Entry	256	1	500MHz	2	SCSI	0,5
	Knowledge Worker	256	1	500MHz	2	SCSI	0,5
16-25	Data Entry	512	1	800MHz	3	SCSI	0,5
	Knowledge Worker	512	1	800MHz	3	SCSI	0,5
26-50	Data Entry	512	2	1GHz	4	SCSI	0,5
	Knowledge Worker	512	2	1GHz	4	SCSI	0,5

### ***Can an existing Win9x hard drive be migrated to Virtual LAN Drive?***

No. There is no mechanism at this time to migrate your local Windows 9x to a virtual hard drive image.

### ***Can clients share virtual hard drive images?***

No. Windows 9x is not a multi-user operating system. Therefore, sharing virtual hard drives is neither recommended nor supported. However, one can have a virtual disk containing read only files to be shared between multiple clients, assuming that this disk is used for read operations, for example the source files of the operating system, drivers, installation programs etc.

### ***Can off-the-shelf disk utilities be used on a virtual hard drive image?***

Since a virtual hard drive is indistinguishable from a local hard drive any disk utilities that are supported by the operating system should work on a virtual hard drive.

***Can a virtual hard drive image be created from a Symantec Ghost image?***

Yes. Ghost will recognize Virtual LAN Drive images as a hard drive. Basic disk cloning can be accomplished to and from existing hard drives and Virtual LAN Drive drive images.

***How can I optimize Virtual LAN Drive performance?***

The key bottlenecks affecting a Virtual LAN Drive server performance are network bandwidth and the speed of the hard drive on the server. For optimum performance you should install a RAID SCSI array and server NIC pool with fault tolerance and load balancing.

The more physical memory (RAM) a client PC has, the less disk paging it will perform. Hence, you should equip your client PCs with as much memory as possible.

***How much does Virtual LAN Drive cost?***

Virtual LAN Drive costs \$500 US per server, including 10 client access licenses. (SKU number 3CVLD300-00).

Additional client access licenses (CALs) are available in blocks of ten, at \$300 US per block. (SKU number 3CVLD300-10PK).

***Do I need Windows NT or Windows 2000 client access licenses?***

Users of Virtual LAN Drive will require separate Windows NT or Windows 2000 client access licenses, one for every Virtual LAN Drive client accessing an NT server.

***Is there an evaluation version of Virtual LAN Drive?***

You can download a fully-functioning 30-day evaluation version of Virtual LAN Drive from the Managed PC web site at 3Com (<http://www.3com.com/vld>).

***What are the network requirements for Virtual LAN Drive?***

Virtual LAN Drive is LAN-centric; it is not intended for use across a WAN. While a 10 mbps network will work, the network environment should optimally include a 100 mbps or faster switch connection to the server running the Virtual LAN Drive Input Output (IO) Service. Further performance can be gained by running load-balancing-capable server NICs, such as the 3Com 3C980C-TXM EtherLink Server 10/100 PCI Managed Server NIC.

## What is the difference between Virtual LAN Drive and other Windows terminal emulation products?

	Virtual LAN Drive (VLD)	Thin Client/Windows Terminal Emulator
Client hardware resources	Same as traditional WIN9x client, less the hard drive	Can use slower processor, less RAM, less powerful graphics, does not require hard drive
Server hardware resources	Requires fast file storage subsystem. Hard drive content / data is as physically secure as network server is	Optimal setup requires more costly investment, including multiple CPUs, far more RAM
Security	No local client data storage. Hard drive content / data is as physically secure as network server is	No local client data storage. Client data is as physically secure as network server is
Manageability	VLDs can be managed (partitioned, formatted, updated) from one administrative desktop.	Individual desktops easily managed, down to application level
Flexibility - Local I/O capabilities	Unrestricted	Some sound / streaming video support.
Flexibility – Application support	No restrictions – as capable as any traditional WIN9x	Not well suited for: client/server, database centric, graphics/CAD/multimedia, console apps
Flexibility – Load balancing / redundancy	Restricted, via multiple VLD login servers and VLD Input Output (IO) server	Advanced load balancing / server fail over available via Citrix
Cost – hardware	Client cost is the same as traditional WIN9x desktop, but can re-use existing workstations.  Additional server costs may include \$\$ for SCSI or RAID high performance disk subsystems, or load balancing NICs The price of large hard disks continues to decline rapidly.	Client cost is less vs. new workstations.  Additional server costs typically include multiple CPUs, large amounts of RAM
Cost – software	\$500 for server includes 10 CALs, \$350 for 10 CAL pack	Licensing costs can be prohibitive e.g. 11/16/00 FirstSource pricing for MetaFrame 15 client = \$3300, plus NT / 2K CAL prices
Cost of ownership	Easy to setup and maintain	Requires greater administrator training, has proven stability track record.
Remote access	Not capable	Very capable
Client OS Emulation	VLD v1.x: Windows 95 and Windows 98 VLD v2.x and higher: Windows NT and Windows 2000	WIN NT, WIN2k
Client OS support	OS absent	DOS, UNIX, Macintosh (Citrix) WIN32 (Microsoft)
Scalability	Limited by file I/O bandwidth – estimate logical limit to be 50 clients per server. Limited to LAN segments	Citrix offers advanced scalability features, including server farm capability, fault tolerance / redundancy WAN / RAS capable.

