V3 Systems
Desktop Replacement Grade Virtualization

10K: the V3 Way.

V3 Systems presents a proposed architecture for 10,000 virtual desktops using VMware View 4.6 and V3 Systems V-series line of high-performance virtual desktop appliances.

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Overview

V3 Systems, the world's first and only company to provide Desktop Replacement Virtualization (DRV) to the SMB/Enterprise marketplace, presents a first-of-its-kind proposed architecture for 10,000 virtual desktops. Leveraging V3 Systems' superior VDI architecture and V-series line of high-performance DRV Appliances, V3 Systems is the first company to present a viable DRV architecture for 10,000 virtual desktops.

Leveraging PCIe-based solid-state storage, V3's Appliances significantly decrease latency and enable a higher density of desktops per server. This means each V3 Appliance can serve hundreds of virtual desktops (50-400 virtual desktops per 1U or 2U appliance), with the solution scaling into the thousands simply by adding appliances. In addition, virtual desktop performance is 2-8 times faster than local physical desktops, **allowing V3 Systems to deliver true DRV desktops that perform as fast as or faster than local physical desktops.**

Through optimized configuration of VMware vSphere®, V3's Appliance can host dedicated desktop pools on local storage. To ensure availability of the hosted desktops, V3 offers V3 Optimized Desktop Allocation™ (ODA), which enables the intelligent distribution of virtual desktops across multiple appliances.

Through superior architecture, V3's high-density Appliances, and V3's ODA, V3 Systems is able to deliver Enterprise Desktop Replacement Grade Virtual Desktops that provide unparalleled performance, manageability and scalability, while maximizing our End User's experience and ROI.

V3 Systems is the first company to deliver true DRV on a scale that makes it possible to serve 10,000 desktops or more.

Introduction

Recent developments in local storage have given cause to re-think virtual desktop architecture. For years, central storage arrays have provided better throughput by aggregating traditional disks. Rather than place all storage on large spinning-disk arrays, V3 Systems builds enterprise-grade flash memory into each appliance. This tiered approach provides a very noticeable improvement in performance when compared with traditional SAN-centric architecture.

The V3 philosophy is that end-user acceptance is key to every desktop deployment. A virtual desktop must be as fast as or faster than a local physical desktop. Also, virtual desktops should not be reserved for niche or low-end users. Everyone should be able to use their virtual desktop at anytime from anywhere, on any available Internet-enabled device.

One way V3 ensures high performance is by keeping the execution components of the desktop as close to the CPU as possible. This means that the OS disks and page files are stored on the very machine(s) where they are executed. This decreases latency and achieves a higher density of desktops per server.

This document projects the deployment of a 10,000 user environment leveraging V3's architecture, V3 Appliances and V3 Optimized Technologies™. The configuration is based on a building-block architecture and VMware best practices.

Infrastructure Configuration

The following section provides details on the system configuration for building out the environment for ten-thousand V3 virtual desktops. It is proposed that thirty V3 Appliance servers be configured to achieve the required compute capacity.

The architecture illustrated below provides a high-level view of the full 10,000 virtual desktop configuration.

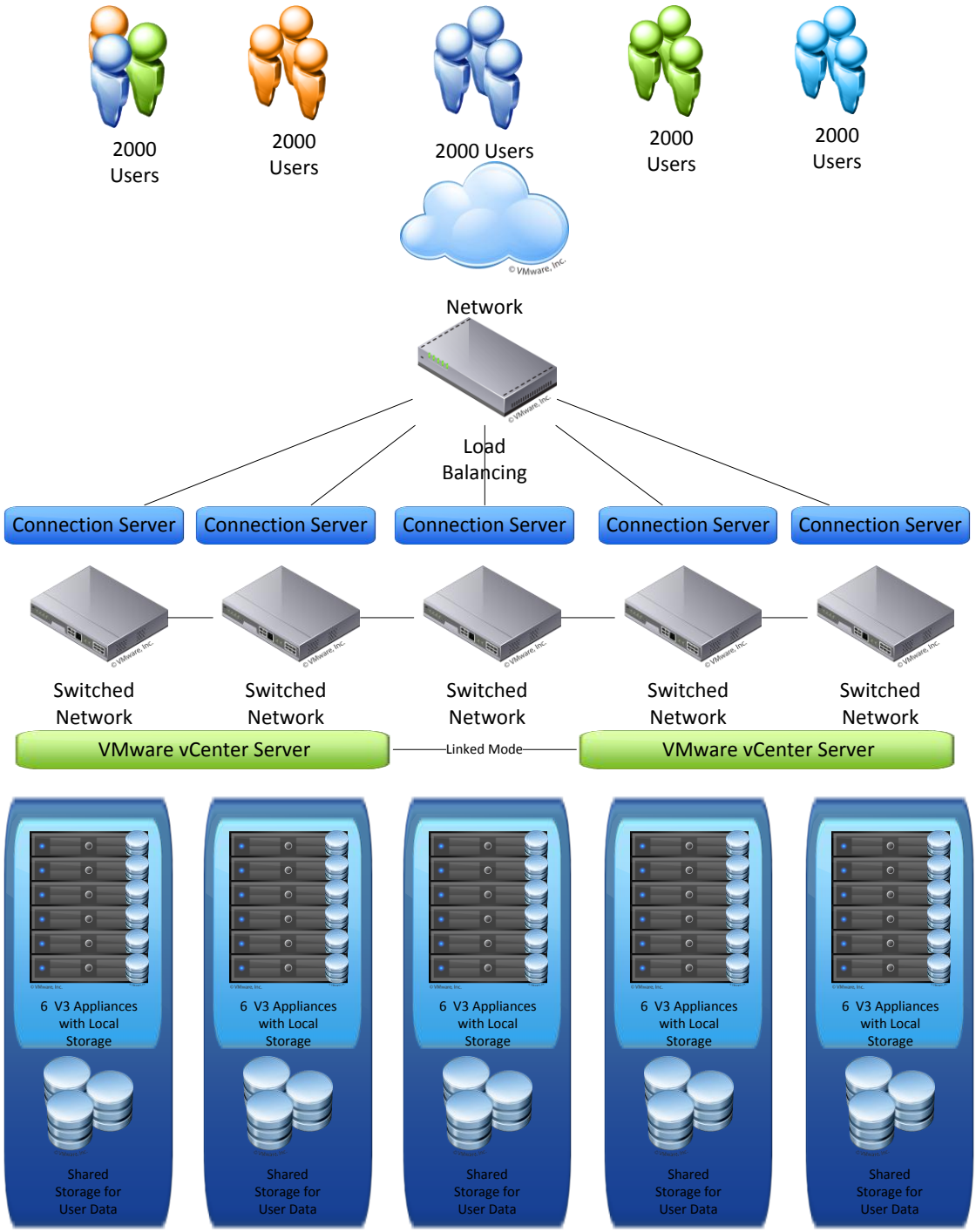

Figure 1. High-level Proposed Architecture for V3 Systems' Full 10,000 Virtual Desktop Configuration

Hardware Resources

In a typical approach used by other vendors, several racks of blade servers host the virtual desktops. Unlike these other solutions which use upwards of 100 blade servers (plus a support infrastructure and a high-performance storage area network) to support 10,000 virtual desktops, V3's solution requires only 30 V3 Appliance servers (plus the proposed support infrastructure of two vCenter servers, five connection servers, load balancer, shared-storage array for user data, domain controller, etc.).

The base "building block" proposed by V3 Systems includes:

- Six V3 Appliances, each with:
  - Two 10Gb FCoE capable Converged Network Adapters
  - Two 1Gb Network Interfaces
  - 1.8TB Solid State Storage
- Connectivity to a shared storage array which provides adequate bandwidth and space for user-data disk access.

Each V3 building-block supports 2000 power-users, with enough additional capacity that if one appliance of the six becomes unreachable, the load can be supported by the other five.

What about Availability?

V3 Systems' solution is unique in that it ensures availability for both types of desktop pools available in a VMware View deployment: Floating and Dedicated desktop pools. In this design, one V3 Appliance can fail per "building block" while maintaining availability. If more redundancy is desired, higher redundancy configurations can easily be built.

Floating Pool. In a floating pool scenario, no deployed desktop belongs to any specific user. These are essentially stateless virtual desktops to which any entitled user can connect and use. In order to provide a consistent and predictable environment, the user's desktop profile must be redirected to the network via Group Policy settings, or managed with third-party software. Managing these user profiles requires not only desktop administration, but backend network and system administration support as well.

Failover is inherent in floating pool desktops. Should a network or server component fail, the affected set of desktops will become unreachable. The connection server will then automatically route inbound connections to desktops which are still available.

Dedicated Pool. In a dedicated pool scenario every desktop is assigned to a user, and each has an attached Persistent Disk for user data**. V3's solution is unique in the industry because it supports dedicated pools across local storage, providing unparalleled increases in performance.**

Failover is not inherent in dedicated pool desktops because each user is assigned a particular desktop which exists on a single host. For availability in the event of a failure, the attached persistent disk must exist on a shared datastore. **V3 Systems' ODA (Optimized Desktop Allocation™) ensures availability for View deployments using dedicated desktop pools.**

What does V3's ODA (Optimized Desktop Allocation™) do?

The V3 ODA interfaces with both VMware View and VMware vCenter to provide a better experience for end-users and for administrators. V3's ODA ensures intelligent desktop distribution and availability for dedicated desktop pools.

Intelligent Desktop Distribution. To simplify virtual desktop management, ODA intelligently allocates desktops for users. It enables distribution of virtual desktops across multiple appliances, based on ideal policies. Suppose the desktop hosts are in different datacenters on different continents. ODA can rapidly provision a desktop in the datacenter nearest the end-user's location on the network, providing a lower-latency connection. This requires of course, that the data disks are synchronized and available on shared datastores in both locations.

Availability. V3's ODA enables N+1 redundancy by exploiting the similarity of desktops in a pool. In the event a host becomes unreachable, the ODA can reattach the affected Persistent Disks containing user data to fresh desktops running on an available host.

In this way, V3 Systems ensures availability for dedicated desktop pools, while delivering the added benefits of ideal performance, increased storage and simple scalability.

Summary

Using a superior architecture and V3's high-performance Appliances, combined with V3's ODA, V3 Systems has proposed the first viable DRV architecture for 10,000 "desktop replacement grade" virtual desktops.

V3 Systems is the first company to deliver true DRV on a scale that makes it possible to serve 10,000 desktops in a single deployment.

To learn more about how V3 Systems can implement a superior desktop virtualization solution for your organization, please contact a V3 Systems Solutions Expert today at 1.800.708.9896 or www.v3sys.com.

About V3 Systems

V3 Systems revolutionizes the speed, ease, deployment and even the size of the infrastructure required for Virtual Desktops. V3 Appliances host sets of 50-400 virtual desktops on either VMware View or Citrix XenDesktop. All virtual desktops installed on V3 Systems' Appliances are 2-8x faster than local desktops, giving companies the fastest virtual desktops on the market. V3 Systems achieves this level of speed through patent-pending technologies, and innovative software features that manage as well as enable the V3 Appliances to deliver Replacement Grade Virtual Desktops. Utilizing V3's technologies and configurations, the OS/hypervisor layers and systems manageability yield previously unobtainable performance and system efficiency.

V3 Systems serves as the vanguard and source for Enterprise Desktop Replacement Grade Virtual Desktops providing unparalleled reliability, manageability and security, while maximizing our End User's experience and ROI.

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