

Verde VDI™ Reference Architecture



NComputing' VERDE VDI (Virtual Enterprise Remote Desktop Environment) powers the deployment of cost-effective, secure and scalable centrally-managed Microsoft Windows and Linux virtual desktops. VERDE VDI offers a lower TCO, through an architecture designed for desktop virtualization, and is designed to offer high availability and performance to PC desktops located anywhere in the enterprise.

The reference architecture provides general guidelines for sizing and configuration of the server and storage infrastructure to ensure a successful VDI deployment with VERDE VDI. The ideal configuration blends consideration across CPUs, storage, memory, and bandwidth. Evaluate expected workloads for virtual machines thoroughly and expect to fine-tune as the deployment progresses.

Understanding VERDE VDI Virtual Desktop Workloads

Example Sizing for Windows 7 Knowledge Worker Workload

50 Concurrent Sessions

- 2 x86 64 bit 8 Core CPU, 128 GB RAM
- Local Storage 100 GB per node
- NFS/CIFS Storage 300 GBStorage system should provide a minimum 5 IOPS per active user

300 Concurrent Sessions

- 4 x86 64 bit 24 Core CPU, 256 GB RAM
- Local Storage 260 GB per node
- NFS/CIFS Storage 1.3 TB

1000 Concurrent Sessions

- 13 x86 64 bit 24 Core CPU, 256 GB RAM
- Local Storage 250 GB per node
- NFS/CIFS Storage 4 TB

TASK WORKER

Task workers run only one or two applications concurrently e.g. a web browser or web-based application, and Microsoft Word

- Memory allocation of 1GB (XP), 1GB-2GB (Windows 7, 10), 2GB (Win 2008, 2012), and from 1-2 GB(Linux) per virtual machine
- 2 virtual CPUs per virtual machine
- As many as 8-10 active virtual machine sessions per core can be allocated
- Storage system should provide a minimum 5 IOPS per active user



KNOWLEDGE WORKER

Knowledge workers run multiple applications simultaneously, including Microsoft Office suite

- Memory allocation of 1GB (XP), 2GB – 4GB (Windows 7, 10 or Win 2008, 2012), and from 2-4GB (Linux) per virtual machine
- 2 virtual CPUs per virtual machine
- As many as 6-8 active virtual machine sessions per core
- Storage system should provide minimum 5-10 IOPS per active user



POWER WORKER

Power users leveraging scientific applications, high-end graphics, or software development tools

- Memory allocation of 2GB to 4GB or more per virtual machine (Windows or Linux) session
- 2-4 virtual CPUs per virtual machine
- Only 4-6 active virtual machines sessions per core
- Storage system should provide minimum 10-15 IOPS per active user



STORAGE OPTIMIZER™

Storage Optimizer™ removes the VDI network storage challenge – reducing read and write IOPS below 5 per user on remote storage - reducing storage hardware requirements dramatically, in turn lowering VDI CAPEX cost. The Storage Optimizer automatically copies Gold Master images to the server's local storage subsystem, and caches to server memory enabling fast reads of the operating system during user sessions while eliminating the IOPS load on shared storage.

Storage Configuration

The recommended architecture utilizes shared storage in NFS or CIFS based repositories. Single server implementations support the use of local drives only or in conjunction with NFS/CIFS based storage. Leveraging VERDE VDI Storage Optimizer™ CacheIO™ technology, the IOPS to the external NFS/CIFS storage are reduced significantly when compared to other VDI solutions. Allowing the VERDE VDI solution to avoid costly local SSD drives, Fusion IO cards and other costly hardware solutions.

The following storage related components and configurations are recommended:

Each VERDE VDI Virtual Desktop

- Local Storage for each VERDE VDI Virtual Desktop compute node of two 15k SAS drives configured in a RAID-0, RAID 10, or SSD
- Contains VERDE VDI OS
- 'Copy on Write' Cache - delta files presented to the user as virtual desktops operating system. (These deltas are discarded at the end of each session.)
- Image Read Cache - a dynamic copy of the gold master image is stored locally on disk and loaded in local free system RAM for faster access

Shared Storage (NFS or CIFS) required for a cluster

- Gold Master Images
- User Profiles - VERDE VDI creates persistent user profile disks on the NFS share. The user profile for each user is redirected onto the respective user disk for persistency
- Cluster Meta Data – VERDE VDI cluster metadata and configuration files

VERDE VDI Node Sizing

Virtual machines with 6-10 sessions per CPU core:

- Typical virtual machine load utilizes from 10% to 12.5% of physical CPU, equal to 6 -10 virtual machines per core
- Sufficient IOPS are required for optimal performance
- Local disk use two SAS 15k RAID0, RAID 10, or SSD
- Lower performance disks may be used with fewer or less demanding virtual machines
- Either direct attached storage (DAS) or iSCSI/FC SANs may be used