EMC Converged
Platforms

VxRack System 1000 Series

- **Easy to deploy.** All-inclusive solution including networking.

- **Flexible consumption model.** Rapidly deploy applications through integrated hyper-converged system.

- **Scale on demand**. Start small with a single rack and grow to data-center scale.

- **Asymmetric Scale.** Flexibly add compute and storage capabilities.

- **No more silos**. Dissolve data-center silos through a hyper-converged environment.

- **Simplified Operations.** Manage through a standard framework that provides a comprehensive systems and data-center view of infrastructure.

- **VCE Experience.** VxRack™ Systems are pre-built, pre-tested, and receive pre-validation on new firmware/and software releases (Release Certification Matrix).

VXRACK™ SYSTEM 1000 WITH SDDC NODES

VCE has expanded the industry's broadest converged infrastructure system portfolio to include rack-scale hyper-converged systems. The VxRack™ System 1000 series is a VCE engineered and manufactured product family with industry-best life cycle management and assurance, adding rack-scale capabilities to complement VCE Vblock® Systems and VxBlock™ Systems. In addition, the VxRack 1000 connects through VCE Vscale™ Architecture, enabling additional Enterprise and Service Provider use cases and consumption models.

Only VCE provides standardization, modular scale, tightly integrated converged solutions, life cycle management, and industry-best customer experience—enabling on-demand IT services that further accelerate business outcomes and time-to-value.

HYPER-CONVERGED SOFTWARE-DEFINED DATA CENTER

VCE VxRack System 1000 with SDDC Nodes powered by VMware EVO SDDC is a new class of hyper-converged integrated systems that provides the easiest path to a VMware software-defined data center. This turnkey solution is a fully software-defined system that takes advantage of market leading hardware and software technologies from VCE and VMware to deliver a complete self-contained private cloud. Designed to enable a unique, radically simpler operational experience, VxRack with SDDC Nodes will transform and future proof your data center by removing the focus on maintaining infrastructure. Leveraging VxRack with SDDC Nodes you can now deliver infrastructure as a service through a private cloud in less than 24 hours. As a result, your cloud will be a competitive advantage by allowing you to provide services faster, deploy applications sooner, reduce downtime, and spend less time keeping the lights on.

VxRack with SDDC Nodes is a hyper-converged rack-scale system intended for enterprise scale deployments of virtual infrastructure, infrastructure as a service, and virtual desktops infrastructure (VDI). Each system is based on a standardized architecture that combines qualified customizable hardware (x86 nodes and top of rack and spine switching) with pre-loaded integrated software components in a complete and validated solution. The VxRack with SDDC Nodes provides capabilities that far exceed simple hyper-converged appliances by addressing—in addition to compute and storage needs requirements for networking (physical and virtual)—cloud operations and system management automation.

The significance of networking at scale:

- Plan for growth – Expand your environment easily without the worry of complicated network calculations.

- Integrated networking – Networking is a critical part of the hyper-converged infrastructure. Don't treat it as a separate technology silo.

- Performance at scale – Oversubscription and spine density best practices will be needed to ensure performance at scale.

- Simplify the complexity – A multi-rack architecture cannot be built spontaneously. Logical planning and a massive number of physical connections are a necessity.

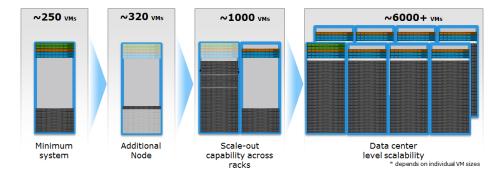## VxRack System 1000 Networking benefits:

- Standardized and repeatable

- Easily extensible

- Greatly simplifies operations

- Lowers risk

- Superior application performance at scale

VMware EVO SDDC is the foundation software suite of VxRack with SDDC Nodes. VMware EVO SDDC combines VMware's market leading SDDC software into a seamlessly integrated solution. In addition, a new capability of EVO SDDC Manager, EVO SDDC delivers radically simpler user experience by automating day 0 to day 2 system operations. EVO SDDC includes:

- VMware vSphere (hypervisor)

- VMware NSX (network virtualization)

- VMware Virtual SAN (software-defined storage)

- VMware vRealize Operations and Log Insights (cloud operations)

- VMware EVO SDDC Manager (end-to-end system management automation)

- Customers can also choose to include VMware Horizon for VDI use casesSubtitle

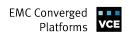## Start Small and Grow to Web-Scale

VxRack with SDDC Nodes enables scale-out capabilities to your data center. Start small with as little as eight nodes and grow to web-scale. Add nodes one by one within a single rack or scale-out with additional racks as compute and storage resources are consumed. This provides your infrastructure with elastic sizing and efficient scalability, allowing you to start small with your proof of concept or new application and grow to web-scale size as your requirements evolve.

~250 VMs — Minimum system
~320 VMs — Additional Node
~1000 VMs — Scale-out capability across racks
~6000+ VMs — Data center level scalability
* depends on individual VM sizes

Policy-based Provisioning

Supporting up to 1,000 server virtual machines (VMs) or up to 2,000 VDI per physical rack, VxRack with SDDC Nodes has the flexibility to host multiple workloads with distinct availability, performance, and security characteristics across resource pools. Unique to EVO SDDC, this is used by administrators to simultaneously run heterogeneous applications on the same-shared standardized infrastructure. EVO SDDC abstracts physical resources across multiple physical racks into a logical pool of compute, storage, and networking resources; a Virtual Rack that a cloud admin can dynamically allocate to different use cases; or Workload Domains. For instance, a single multi-rack deployment could be used to run a workload domain for a dev/test workload that has different performance (balanced) and availability (low) requirements than a separate workload domain for a production workload requiring high availability and high performance. Provisioning is entirely policy driven and completely automated through EVO SDDC Manager. VMware NSX ensures network isolation between workload domains that share the same physical infrastructure. Each workload domain can be managed independently using well-known tools such as VMware vCenter Server and VMware vRealize Operations.

Physical and Virtual Networking

A hyper-converged network can be difficult to build as needs arise and many solutions simply exclude it. Overlooking the network makes it very difficult to plan for growth and as the environment scales, performance degrades. These forgotten components consist of the physical, top-of-rack switches, as well as software-defined networking (SDN) technologies.

The VxRack with SDDC Nodes system integrates support for networking—both physical and virtual. Physical networking consists of a leaf-spine topology with top of rack (ToR) and spine switches. The EVO SDDC Manager in the VxRack with SDDC Nodes system includes support for configuring, controlling, and managing the physical network elements. In addition, virtual networking is handled through VMware NSX.

Each physical rack contains two ToR switches, which control network traffic and redundancy, and a management switch for out-of-band connectivity. With scale-out across multiple racks, east-west traffic is fully self-contained. Connectivity between racks is provided using the two inter-rack spine switches.

Oversubscription, spine density, switch ports, high density, low density, wire rates, and the list goes on. The VxRack with SDDC Nodeswas designed with industry best practices already applied. Best in class Cisco Nexus ToR and Spine switches provide 10 GbE or 40 GbE IP connectivity between VxRack with SDDC Nodes and the external network for superior performance. The 10 GbE network switches eliminate the network bottleneck that limits the scale of other hyper-converged infrastructure solutions in the market and provides a path for future growth.

Enhanced VM security through software-defined networking with VMware NSX in EVO SDDC offers automated and intelligent operations and delivery of security services, including firewall, data security, activity monitoring, and VPN (IPSEC, SSL). This is achieved through intelligent groupings, security policy and services assigned to groups, and adaptable and proactive security using IF/THEN policy mechanisms to assign responses.

Specifications

VxRack with SDDC Nodes makes the transition to a software-defined data center and private cloud simple by removing complexities such as architecting and integrating a build-it-yourself solution.

Table 1.   BASE SYSTEM CONFIGURATION FOR VXRACK SYSTEM 1000 WITH SDDC NODES:

COMPONENTS	CONFIGURATION
COMPUTE	Compute based on x86 standard architecture
STORAGE	DAS storage attached to the x86 servers
NETWORKING	Top of Rack, Spine and Management switches
SERVER VIRTUALIZATION	VMware vSphere 6.0 VMware ESXi, VMware vSphere Server Enterprise Plus, VMware vCenter Server
STORAGE VIRTUALIZATION	Virtual SAN
NETWORK VIRTUALIZATION	VMware NSX
MANAGEMENT INFRASTRUCTURE	VMware EVO SDDC Manager
ENVIRONMENTAL	Intelligent Physical Infrastructure consisting of • Cabinet 2.0—fully welded and dynamically load-rated • Smart Power Deliver Units (PDU) • Hid Reader and Thermal Sensors
DATA PROTECTION	Options for EMC Avamar,EMC Data Domain, EMC RecoverPoint for VMs

The enclosure for each VxRack with SDDC Nodes is 1U and 1 node and fits within 28-inch 42U cabinets.

Table 2.   SDDC ENCLOSURES SPECIFICS

CONFIGURATION NAME	SDDC Node
NUMBER OF DISK DRIVES	10
CHASSIS -# OF NODE	1RU-1N
POWER SUPPLY	Dual 750W platinum PSU AC
PROCESSORS PER NODE	Dual Intel E5-2670V3, 12C, 2.3GHz
DDR4 MEMORY PER NODE	384 GB (24x16GB)
EMBEDDED NIC PER NODE	Intelligent Physical Infrastructure consisting of • Cabinet 2.0—fully welded and dynamically load-rated • Smart Power Deliver Units (PDU) • Hid Reader and Thermal Sensors
RAID CONTROLLER PER NODE	1x LSI3008 in Pass-Through Mode
SOLID STATE DRIVES PER NODE	1.6 TB (2x 2.5-inch 800GB eMLC)
HARD DISK DRIVES PER NODE	9.6 TB (8x 1.2TB 2.5-inch HDD)
SATADOM PER NODE	2x 16GB SLC
10GBE PORT PER NODE	2x 10Gbps ports SFP+

System Management Layer

The VCE VxRack™ with SDDC Nodes systems management software is comprised of VMware EVO SDDC Manager.

VMware EVO SDDC Manager

VMware EVO SDDC Manager is a new innovative system management solution from VMware designed to deliver a radically simplified user experience. EVO SDDC Manager automates critical operations across physical and virtual infrastructure such as: Initial system bring-up, configuration of servers and switches, auto-discovery of new physical capacity, resource provisioning, reporting and notifications, life cycle management of low-level hardware and software components. The EVO SDDC Manager serves as the primary interface for an operator's day-to-day tasks and provides an integrated view of both the physical and virtual infrastructure. It complements well-known VMware management tools such as vCenter Server and vRealize Operations that continue to be available for advanced administration tasks and integration with third-party software tools.

VCE EXPERIENCE

VCE is a leading innovator of intelligent converged infrastructure systems. VxRack Systems are the extended offering in the VCE world's most advanced converged infrastructure and are engineered to deliver massive scale with enterprise-grade availability, resiliency, and security.

Every VxRack 1000 is a true converged infrastructure—each is engineered, manufactured, managed, supported, and sustained as ONE product.

- VxRack 1000 are hyper-converged infrastructures based on the standard x86 architecture and VMWare Virtual SAN storage virtualization technology.

- Every VxRack 1000 is pre-integrated, tested, and validated in a VCE factory environment, and delivered within 45 days as a prepackaged solution, operational within hours of arrival.

- Every VxRack 1000 requires backup and recovery. VCE offers a complete portfolio of data protection solutions with EMC Avamar plus Data Domain and EMC RecoverPoint for Virtual Machines.

- System Management with VCE Vision software is pre-installed on all VxRack Systems, providing a near real-time perspective of your system as a single object—to simplify managing system configurations and overall system health.

- VxRack 1000 are sustained with life cycle system reassurance. VCE supplies the latest Release Certification Matrix (RCM)—based on pre-testing of a wide array of upgrades and patches—to ensure optimum system performance across every hardware and software component.

VCE engineering expertise delivers application optimization. VCE continually tests a range of customer applications and use cases that have been configured according to industry best practices—to ensure optimum application and workload performance.

ABOUT VCE

VCE, an EMC Federation Company, is the world market leader in converged infrastructure and converged solutions. VCE accelerates the adoption of converged infrastructure and cloud-based computing models that reduce IT costs while improving time to market. VCE delivers the industry's only fully integrated and virtualized cloud infrastructure systems, allowing customers to focus on business innovation instead of integrating, validating, and managing IT infrastructure. VCE solutions are available through an extensive partner network, and cover horizontal applications, vertical industry offerings, and application development environments, allowing customers to focus on business innovation instead of integrating, validating, and managing IT infrastructure.
For more information, go to vce.com.