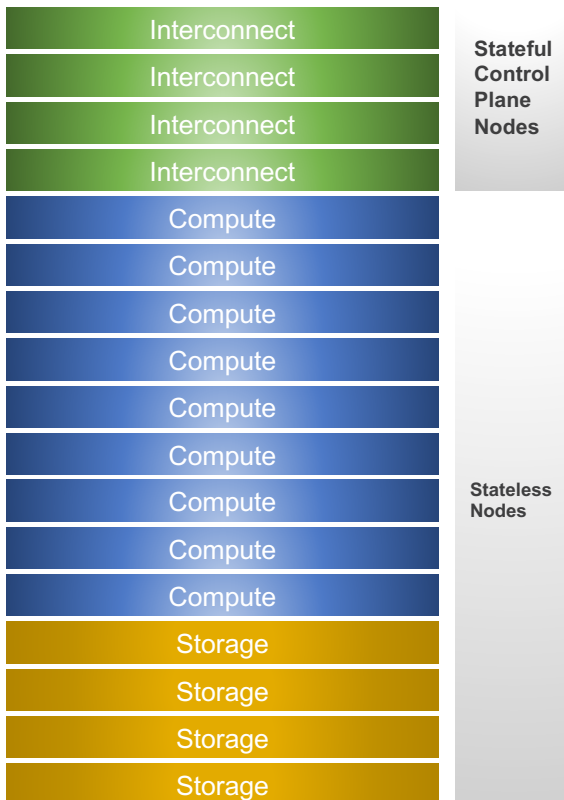
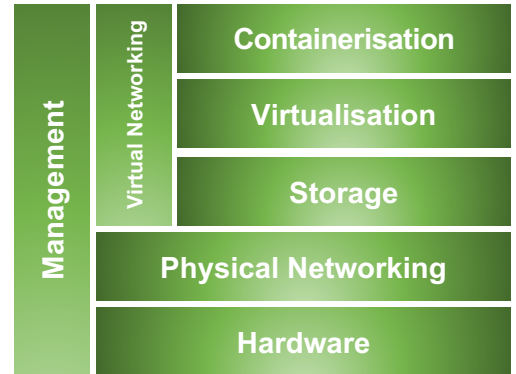


VMX7000

VMX hyperconverged infrastructure

- **Increased IT efficiency:** Hosting computing, storage, and networking resources in a single location reduces the number of systems and vendors to manage. Automation within VMX Hyper-Converged Infrastructure (HCI) eliminates manual processes, enhancing efficiency and saving IT time.
- **Simplified deployment:** VMX HCI solutions come in optimized, pre-defined packages, allowing businesses to purchase and implement them effortlessly. Centralized management of all virtual environments through a single interface simplifies system management.
- **Boosted performance:** VMX HCI enables organizations to deploy multiple applications and workloads without concerns about reduced performance. These systems utilize faster CPUs and SSD/NVMe storage devices capable of handling even the most intensive workloads with ease.
- **Improved flexibility and scalability:** Adopting a building-block approach, VMX HCI provides businesses with the flexibility to scale easily by adding units according to their specific requirements.



Hardware Layer

A hardware range designed flexibly like Lego blocks, covering networking, storage, and compute-focused appliances. This layer is accompanied by a comprehensive hardware management platform, which constructs and deploys standardized firmware and operating systems across the entire range and includes:

- Hardened operating system: A specialized operating system containing only the necessary components to operate host machines.
- Standardized delivery involves utilizing a single image that functions across interconnect, compute, and storage nodes.
- Stateless provisioning entails bare-metal provisioning that lacks any state, simplifying tasks such as managing failed nodes or upgrading machines to a mere 'reboot' operation.

Networking

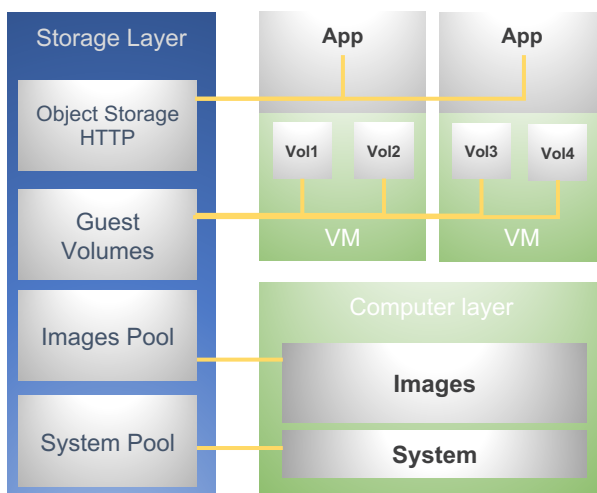
High-speed 10/25/100G Ethernet networking eliminates the challenges associated with L2/L3 switching and architecture. Instead, it introduces a physical/virtual appliance layer that is both simple and supportable. This leads to:

- Smart data center operations: The control plane simplifies tasks throughout the life cycle, such as deployment and maintenance, by automating low-level networking configuration, firmware deployment, and OS installation for all resource nodes. This significantly simplifies data center operations (DCOps) and break-fix scenarios.

- Virtual networking enables the seamless flow of high-speed connectivity to guest instances, allowing Virtual Machines (VMs), Containers, and multi-VM services to leverage the available bandwidth according to tenant permissions. Tenants also benefit from granular firewall management through security groups.
- Automated endpoint configuration: Stateless initialization automatically fetches a functional network configuration from the control plane and deploys new nodes using this configuration. Host networking becomes as straightforward as "plugging in the node and turning it on."

Storage

The storage layer in VMX is a flexible and resilient distributed storage layer that enables operators to build and deliver storage across a number of performance/cost tiers. The storage provides three main services:



Compute Layer Storage: Image and snapshot storage for the compute layer and marketplace
Guest Layer Block Storage: Persistent storage for virtual machines and containers.

Calculated Placement:

Data is systematically arranged using hashing algorithms, allowing compute nodes and guests to be cluster-aware, enabling direct read and write operations to storage nodes. This approach is fundamental to achieving scalability and optimal performance within the storage layer.

Journaling and Caching: In numerous instances, storage nodes incorporate various media types to enhance performance for challenging workloads. Technologies like write-ahead logs and in-kernel caching are utilized to optimize operations. While we cannot defy the laws of physics, our efforts are focused on approaching the maximum achievable performance.

Efficient Cloning and Snapshotting:

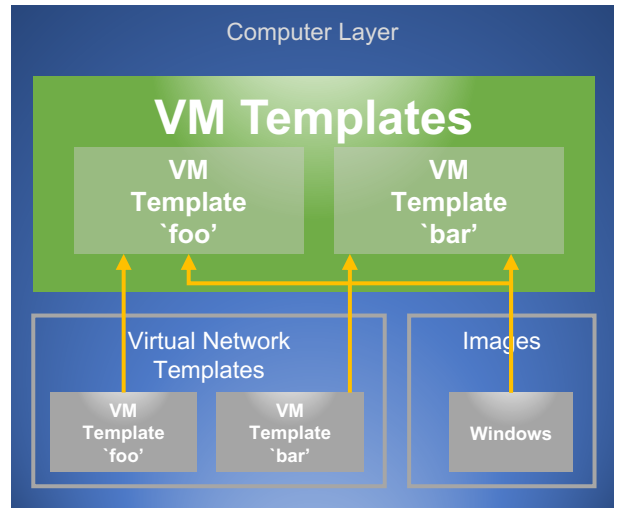
All volumes and snapshots operate as copy-on-write clones of their base image. This approach ensures highly efficient utilization of cloud storage across tenants, as only the changes (deltas) are written, making regular guest snapshots cost-effective.

Virtualisation/Containerisation


The virtualisation layer in VMX enables the deployment of:


- Traditional Virtual Machines
- Containers Deployment
- Multi-VM services Management

All the mentioned components function within the constraints of a strictly virtual machine (VM) environment. Moreover, there is an option to create foundational, consumable storage, and templates that can be optionally shared among tenants, as provided by the operator. These templates streamline the configuration of capacity, networking, persistent storage, and specific instance settings (e.g., boot order, memory, ssh-keys)




VMX7000 Technical Specifications

Chassis	
Form factor	7U enclosure with 8 slots hot-swappable 1-socket or 2-socket blade servers
I/O slots	2 USB 2.0 Type A or KVM control
Power Supplies	Up to 6 PSUs; Platinum rated – 3000W output with high line AC input; N+1 or Grid redundancy support
Fans	5 80 mm rear and 4 60mm front hot-swap fans
I/O Networking	Up to 2 pairs of redundant 25/100GB Ethernet switch or pass-through modular bays
Embedded Management	OpenManage Enterprise – Modular Edition (OME-Modular); running on up to 2 redundant management modules

Blade servers	
Form factor	Single-width, 2-socket server sled
Ideal workloads	Virtualization, system management, integrates Web Server, AD domain Server, HA Proxy load balancer
Chassis enclosure	Up to 8 sleds per VMX7000 7U chassis
Processor	2 x Intel® Xeon® 8-Core 3.6 GHz
Memory	32 DDR4 DIMM slots 8 x 32GB DDR4 ECC 3200 MHz
Disk	2 x 2.5-inch 960GB SSD SATA 6.0Gb/s Solid State Drive
NVMe	Up to 6 x 3.84TB Data Center NVMe Read Intensive AG Drive U2 Gen4 with Carrier
I/O Card	Dual Port 10/25GbE Mezzanine Card
Operating System	Windows Server 2022 Datacenter (16-core)

VMX7000 Technical Specifications

FABRIC SWITCHING ENGINE	
	
Performance	Uplink Speeds: 10/25/40/50/100GbE
Switch fabric capacity	6.4Tbps
Forwarding capacity (Mpps)	2380Mpps
Internal server ports (Speed)	16 (25GbE)
External QSFP28-DD Ports	12
External QSFP28 Ports	4
Layer2 Protocols	802.1D Compatible 802.1p L2 Prioritization 802.1Q VLAN Tagging 802.1s MSTP 802.1w RSTP 802.1t RPVST+ 7348 VxLAN
VLT (Virtual Link Trunking)	VRRP Active/Active RSTP, MSTP, RPVST+ Port Mirroring on VLT ports DCB, iSCSI, FSBonVLT RPM/ERPM over VLT VLT Minloss upgrade VxLAN with VLT VRF with VLT ICMP/MLD snooping over VLT PIM SM/SSM over VLT
RFC Compliance	768 UDP 793 TCP 854 Telnet 959 FTP 1321 MD5 1350 TFTP 2474 Differentiated Services 2698 Two Rate Three Color Marker 3164 Syslog 4254 SSHv2

OSPF (V2/V3)	1745 OSPF/BGP interaction 1765 OSPF Database overflow 2154 OSPF with Digital Signatures 2328 OSPFv2 2370 Opaque LSA 3101 OSPFNSSA 4552 OSPFv3 Authentication
Multicast	2236 IGMPv2 Snooping 3810 MLDv2 Snooping
Security	1492 TACACS (Authentication, Accounting, Authorization) 2865 RADIUS 3162 RADIUS and IPv6 3579 RADIUS support for EAP 3580 802.1X with RADIUS 3826 AES Cipher in SNMP Control Plane, VTY ACLS IP Access Control Lists
Automation	Control Plane Services APIs Linux Utilities and Scripting Tools CLI Automation (Multiline Alias) Ansible, Puppet, Chef, SaltStack Zero Touch Deployment (ZTD) 3rd party packages support on Docker Container
Network Management and Monitoring	SNMPv1/v2c/v3 IPv4/IPv6 Management support (Telnet, FTP, TACACS, RADIUS, SSH, NTP) Port Mirroring RPM/ERPM 3176 SFlow Support Assist (Phone Home) RestConf APIs, Auto-docs XML Schema CLI Commit (Scratchpad) Uplink Failure Detection Object Tracking FarEnd Failure Detection Bidirectional Forwarding Detection (BFD) – BGPv4/6, OSPFv2/3, Static Routes Streaming Telemetry System, Buffers, Data monitoring gRPC Transport with gPB encoding
IEEE Compliance	802.1AB LLDP TIA-1057 LLDP-MED 802.3ad Link Aggregation 802.1D Bridging, STP 802.1p L2 Prioritization 802.1Q VLAN Tagging 802.1Qbb PFC 802.1Qaz ETS 802.1X Network Access Control 802.3ac Frame Extensions for VLAN Tagging 802.3x Flow Control