Software Characteristics

OSL Unified Virtualisation Environment - UVE 4.8

Simplification through integration

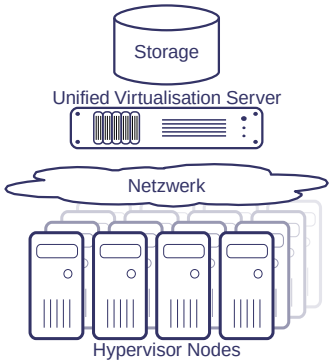
The Unified Virtualisation Environment (**UVE**) was developed by OSL specifically for the operation of fully virtualized VM infrastructures. Well-established standards in the OS and network virtualisation come together with our own clustering, storage virtualisation and network I/O technology in a single highly integrated solution. The resulting software-defined IT infrastructure module possesses internal redundancy capabilites on multiple levels, is flexible and scalable, and can feed services to existing IT infrastructures on defined transfer points. Therefore it can be also particularly attractive for private cloud concepts.
Separation of responsibilities between the administration of storage, SAN, network and OS, and the application control, operation, backup and recovery, is nowadays an often preferred way to deal with an enormous complexity of dynamic, virtualized and highly available infrastructures. This is frequently reflected in the division of a complete process into multiple departments. Environments that utilize products with complex concepts from various manufacturers, each being used for solving a specific task, often experience interface incompatibilities, friction losses, operating expenses and insecurities. This presents a substantial challenge even for large data center hosters, while smaller companies may be completely barred from obtaining a manageable and cost-effective package solution.
OSL, on the contrary, centers on the entire process of provisioning, operation and management of resilient, dynamic infrastructures. With the UVE we created a complete solution that allows for enormous simplification and cost savings through its unified, software-centric concept.

One server for all virtualisation functions

The IT architects, decision makers and users are still used to more or less complex storage systems with a number of virtualisation functions. The connection of the hosts is done via SAN, the access is defined through zoning and LUN masking, various multipath solutions guarantee a stable connection. For the VMs there is a separate product, special backup solutions on top of it. If there are higher requirements for the storage access, the complete stack is often extended by additional I/O virtualisation appliances. Quite complex network models secure live migration, system management and data flow of the applications. For many areas of responsibility there are separate management frameworks, an overall view cannot be presented in many cases.

The OSL Unified Virtualisation Environment integrates a large number of functions in one server application:

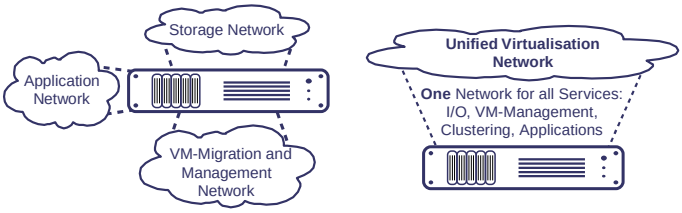
- Providing a global, flexible storage pool
- Integration of different storage systems
- Storage virtualisation incl. data mirroring, Disaster Recovery capabilities, data mobility, I/O bandwidth control and more
- Providing Virtual Storage to the Virtual Machines via RSIO
- Provisioning, Administration and Monitoring of the VMs
- Live Migration and High Availability of the VMs
- All storage access controls for the VMs
- Backup Services for the VMs
- Resource Management of the Hypervisor Nodes / Load Balancing
- Virtual Redundant Networking for the VMs
- Central administration for all functions listed above



UVS delivers the entire infrastructure for VMs on Hypervisor Nodes via network.

Enormous simplification of the infrastructure

The RSIO protocol integrated in the OSL UVE possesses superior features which make it possible for the Hypervisor Nodes to have a Block I/O access to a global, virtualized storage pool via network, The same physical network can be used for the regular data transfer at the same time. This results in notably simplified infrastructure and removes the need for several previously required administration tasks, which ultimately means more clarity and improved protection from failures.

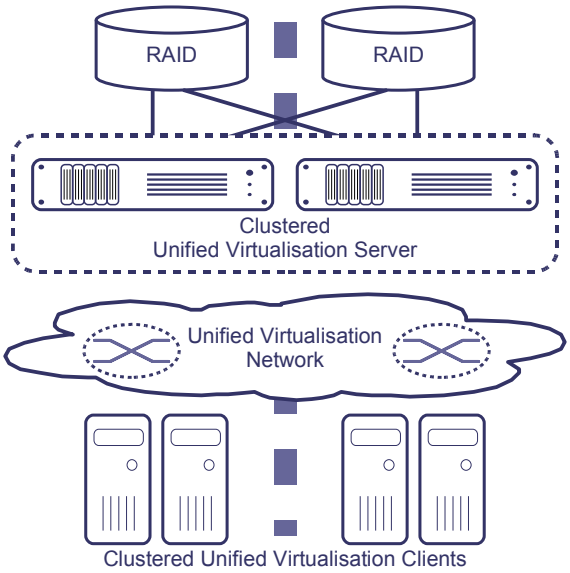


Connectivity requirements for a Hypervisor Node in a conventional virtualisation environment (on the left) compared to those when UVE is used (on the right).

The cost reduction made possible by abandoning the FC fabric and by reducing the number of network ports, stands out immediately from the business point of view. At the same time, potentially higher port density, energy saving and reduced space requirements would be certainly of interest for the IT managers. The administrators would profit the most from the cleanly organized and easy-to-overview infrastructure.

Availability through redundancy on all levels

With the OSL Unified Virtualisation Server all levels of the complete solution can be decoupled in the best way possible and be organized redundantly. Unnecessary redundancies become dispensable, the entire solution stays easy in use, and basically all the hardware components can be replaced in principle without service interruption. At the same time, the solution can be easily configured to be fit for DR (Disaster Recovery). This does not change anything in the daily administration.



The intelligence for controlling all essential functions is moved from the partial components to the UVE Server (UVS). This reduces complexity and interdependencies, improves the availability and allows the replacement of individual components, also with the products of other manufacturers with different capabilities, configuration parameters and other features. This way, for example, the RAID systems can be replaced by a new generation, the switches or the hardware of the Hypervisor Nodes or even of the UVS can be exchanged, in principle without requiring a downtime.

Extended functionality

In addition to the capability to provide Virtual Storage, an integrated VM framework and the high availability features of the entire solution, the OSL UVE also offers many other useful details. Here are some of them:

- Simple mirroring of the VMs e.g. for Backup to Disk/Tape
- Restore-free Instant Recovery for the VMs
- Redundant network connection for guest systems over a single VNIC, making the entire network configuration incl. routing in the guest system very easy to manage
- Simple and fast provisioning of new VMs using cloning
- Central network configuration
- Possible usage of the unmanaged network components
- Network-sided separation of the VMs
- Central, high available router connection via UVS

With the OSL Unified Virtualisation Environment it is possible to have the functions that otherwise could be achieved only with much more expensive components and with considerable administration and integration efforts. For example, simple RAID systems can be used without losing the availability. The UVS can mirror the entire data between the RAID systems transparently. Thanks to the hardware-independent storage virtualisation, even the migration to other systems is possible, without requiring any configuration changes or the interruption of the running VM cluster. Such things as the LUN masking, the administration of the FC fabrics, the administration of the network switches, multipath configurations for the block I/O, complex network configurations and IP multipath solutions in VM guest systems, using VLANs in the Virtual Machines and an extensive device management for the Virtual Machines are in principle not necessary anymore. The OSL UVE can control multiple hypervisor technologies using a unified interface.

Selected features of the OSL Unified Virtualisation Environment

Find below a selection of functional features of the OSL UVE:

SCSI/SATA/IDE Storage Connectivity (SCSI, SAS, SATA, FC, FCoE, iSCSI)	✓
SAN Disk Inventory (foreign/native Disks)	✓
Global Storage Pools and LUN/Target Sharing	✓
Global Volume Management, Global Namespace, Automated Global Access Management	✓
Volumes over multiple LUNs / Disks and multiple Volumes per LUN / Disk	✓
System-assisted Storage Allocation with different Allocation Strategies	✓
Disk Groups	✓
Extend VM Volumes Online without Modifying Disk Layout	✓
LUN-EFI Support	✓
Virtualized I/O Multipathing	✓
Extended Volume Controls and I/O Bandwidth Control	✓
Hypervisor Node Monitoring	✓
Central Management Storage, Virtualisation, Network	✓
HA Engine for Virtual Machines	✓
Load Balancing	✓
Datacenter-appropriate Command Line Interface and Automatisation Possibilities	✓
Graphical Administration Interface (in a Web Browser)	✓
VM Console Server	✓
Live Migration Control	✓
Central Network Management	✓
Fast Provisioning of VMs using Clone Functionality	✓
Server-based Master-Image Data Mirroring	✓
Time-consistent (restart-ready) Mirrors and Clones per VM	✓
Move and Reorganise Data Online	✓
Hypervisor Abstraction / Support KVM, Virtual Box (XEN and others upon request)	✓

The OSL Virtualisation Server can be installed both on Solaris 11 and on Linux Systems (preferably SUSE Linux Enterprise Server starting with SLES 15 SP3, openSUSE Tumbleweed and others upon request). Possible hardware platforms are conventional x86 systems with AMD64 ISA (for Solaris consider the HCL!) and Sparc systems starting with T4. The entire UVE administration, including management of the Virtual Machines, is done using CLI or WebGUI from the UVS only (Single Point of Administration).

Selected features of the OSL Virtualisation Clients

The OSL Virtualisation Client is the counterpart to the OSL UVS and is installed on the Hypervisor/Compute Nodes. Important UVC functions include:

RSIO Storage Connectivity incl. Trunking and I/O Multipathing	✓
Support KVM, Virtual Box (Xen, Solaris Zones and others upon request)	✓
Management of all hypervisor functions from the UVS Server	✓
Central Monitoring and Management of the Hypervisor Nodes from the UVS Server	✓

The OSL Virtualisation Client can be installed on Linux-based systems (Solaris upon request). OSL recommends to use SUSE Linux Enterprise Server starting with SLES 15 SP3 (others upon request). Possible hardware platforms are conventional x86 systems with AMD64 ISA. Additionally the CPU functions required by used hypervisor (e.g. Intel VT) must be available. The entire administration of the UVE incl. management of the Virtual Machines is done from the UVS only (Single Point of Administration). Therefore previous knowledge about Linux or used hypervisor technologies is barely required.

Further information

For software information, solution examples, configuration help and consultancy please contact us at:
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