# Nimbus
## Infrastructure

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Cloud Client
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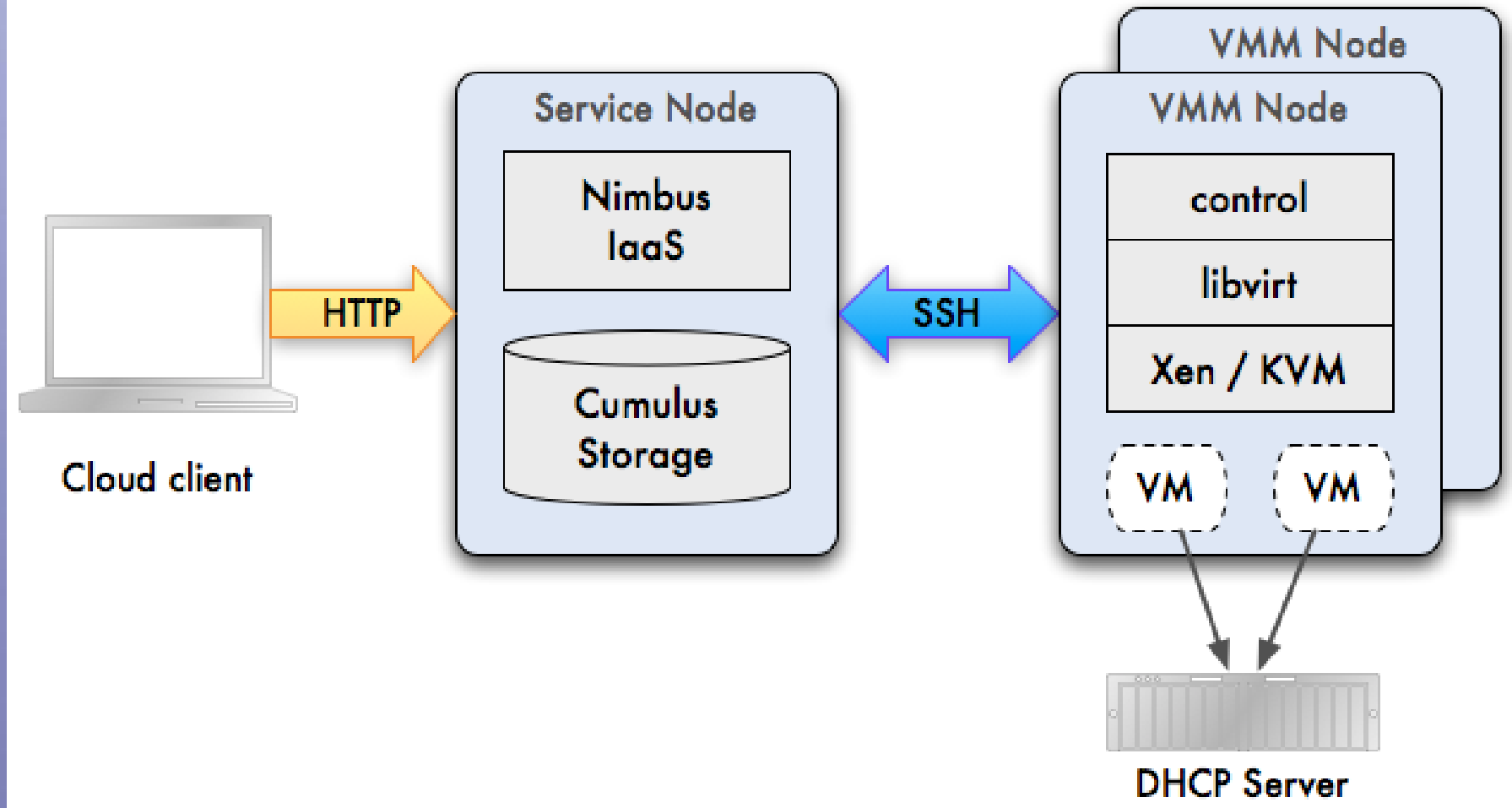
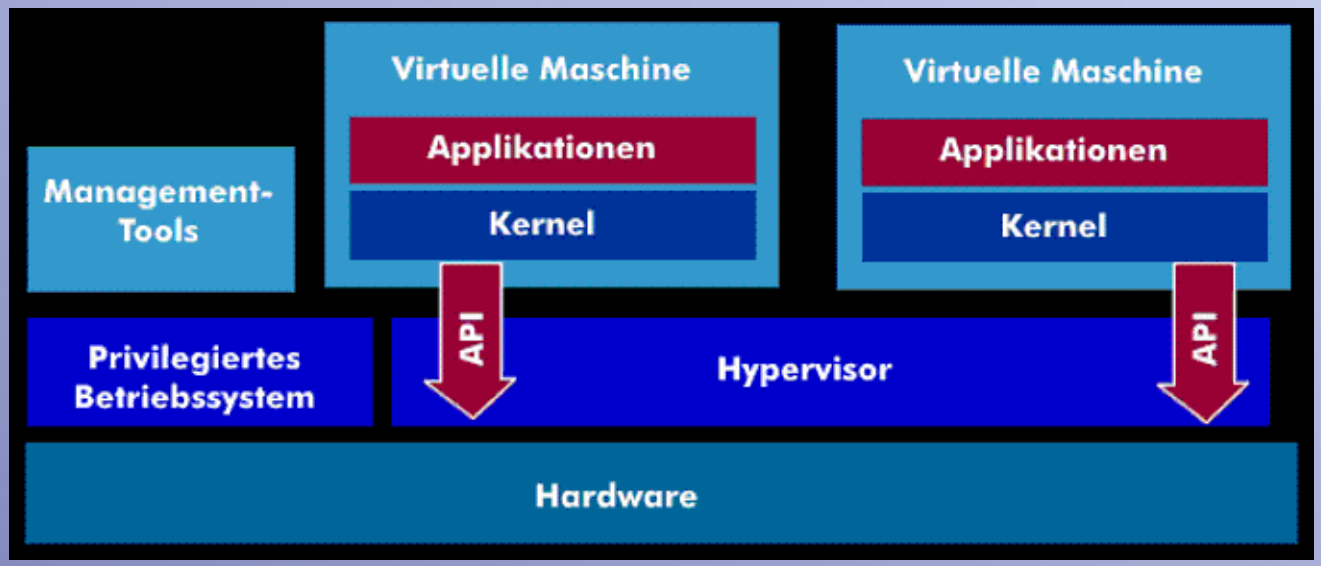
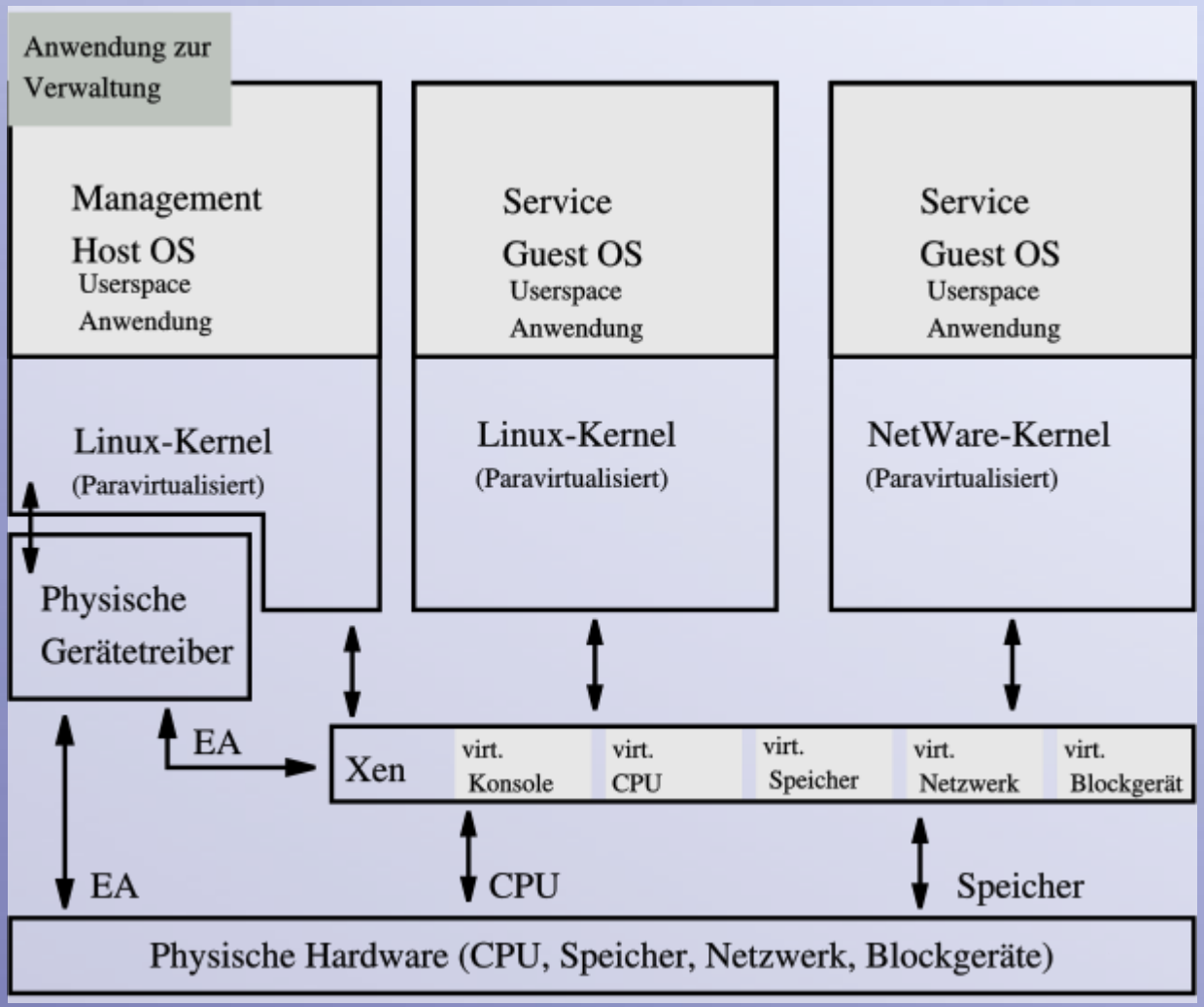

VMM Node
VMM Node
Service Node
Nimbus
IaaS
control
libvirt
Xen / KVM
HTTP
SSH
Cumulus
Storage
VM
VM
Cloud client
DHCP Server

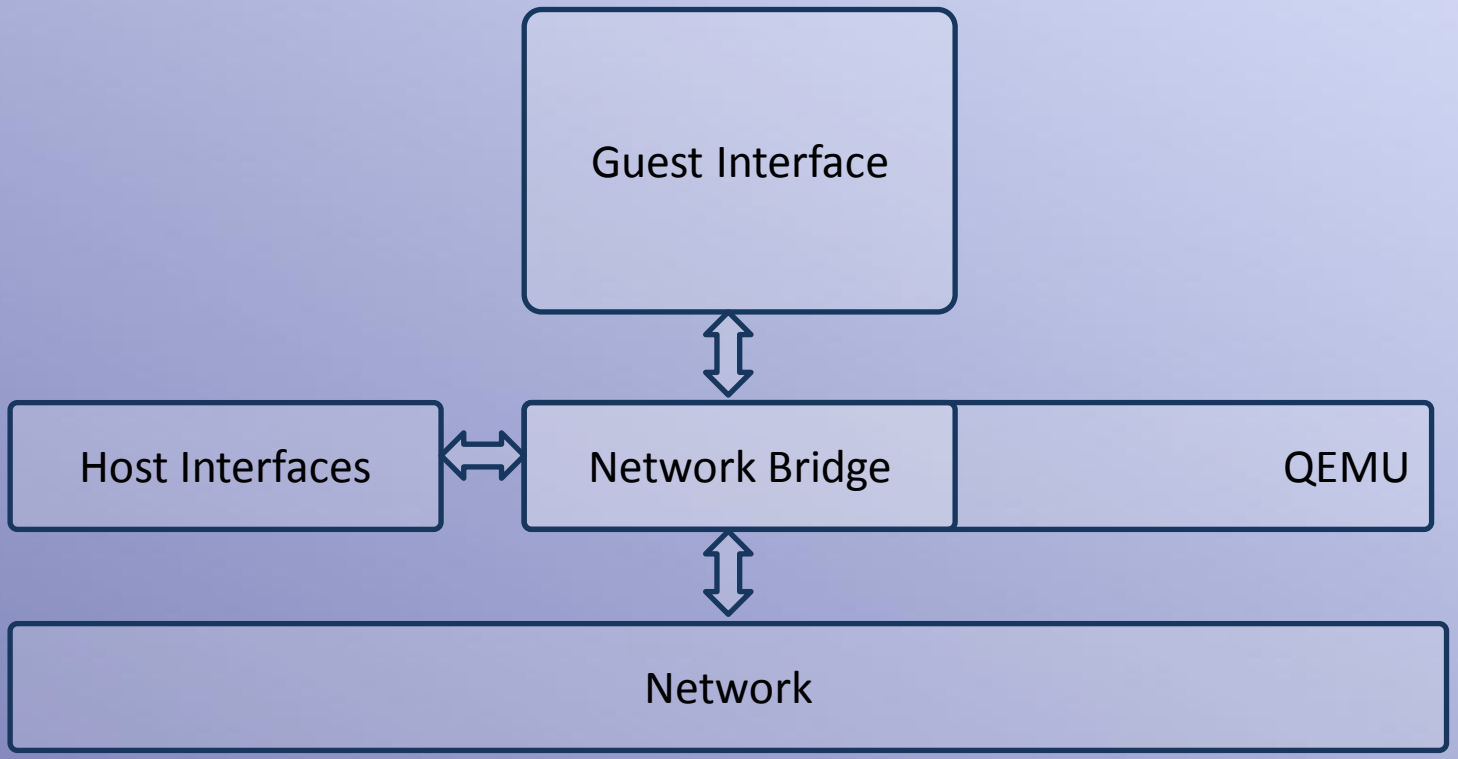
| | | | | |
|---|---|---|---|---|
| Service ✓ | Service ✓ | Service ✗ | Service ✗ | Service ✓ |
| VMM ✓ | VMM ✓ | VMM | VMM ✓ | VMM ✓ |
| KVM ✓ | KVM ✓ | KVM | KVM ✓ | KVM ✓ |
| XEN ✗ | XEN ✗ | XEN ✓ | XEN ✗ | XEN ✗ |

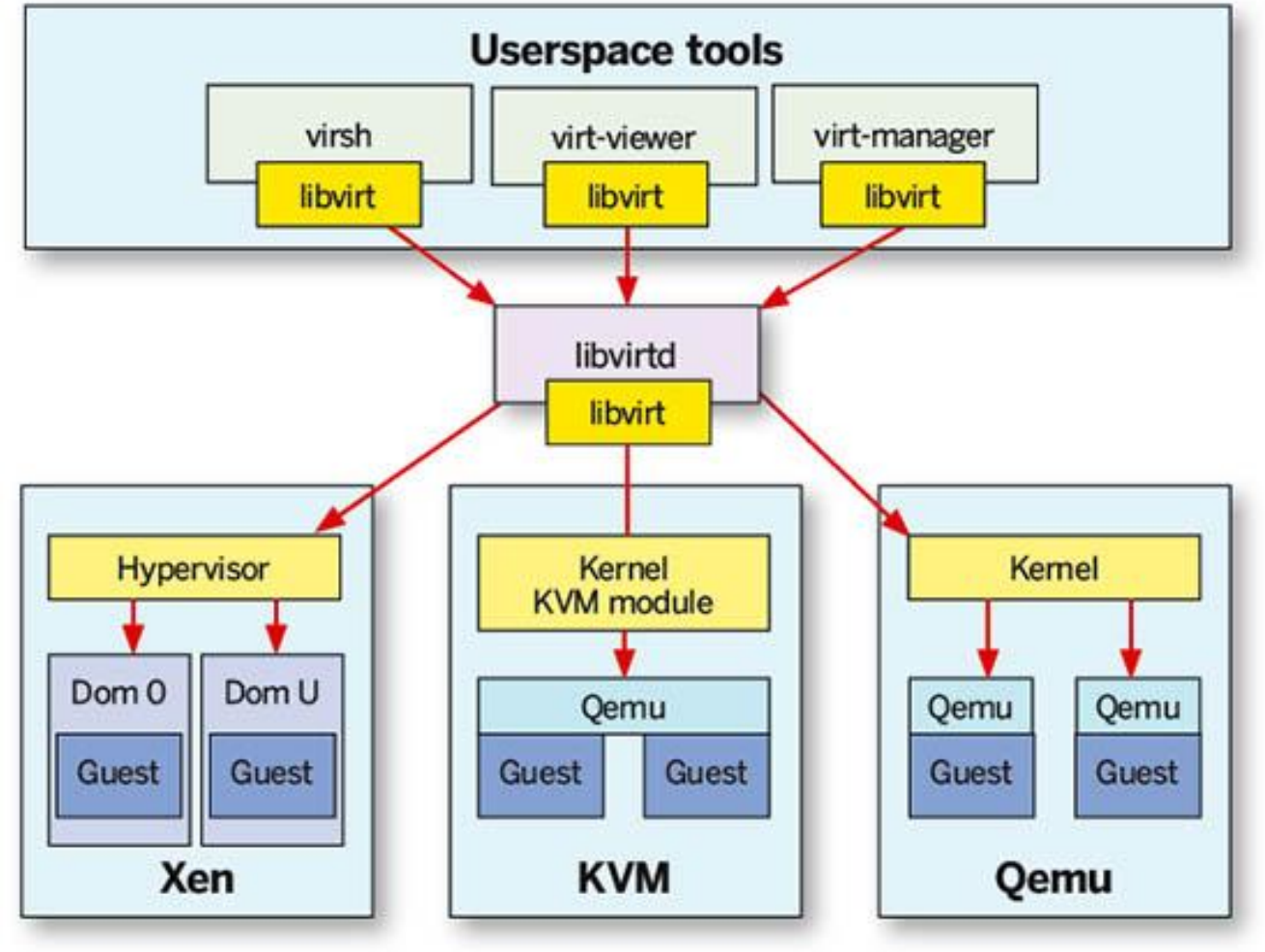
## Paravirtualisierung



## XEN


Anwendung zur Verwaltung
Management Host OS
Userspace Anwendung
Service Guest OS
Userspace Anwendung
Service Guest OS
Userspace Anwendung
Linux-Kernel
(Paravirtualisiert)
Linux-Kernel
(Paravirtualisiert)
NetWare-Kernel
(Paravirtualisiert)
Physische Gerätetreiber
EA
Xen
virt. Konsole
virt. CPU
virt. Speicher
virt. Netzwerk
virt. Blockgerät
EA
CPU
Speicher
Physische Hardware (CPU, Speicher, Netzwerk, Blockgeräte)


Guest Interface
Host Interfaces
Network Bridge
QEMU
Network


Userspace tools
virsh
libvirt
virt-viewer
libvirt
virt-manager
libvirt
libvirtd
libvirt
Hypervisor
Dom 0
Guest
Dom U
Guest
Xen
Kernel
KVM module
Qemu
Guest
Guest
KVM
Kernel
Qemu
Guest
Qemu
Guest
Qemu

| | |
|---|---|
| help | Prints basic help information. |
| list | Lists all guests. |
| dumpxml | Outputs the XML configuration file for the guest. |
| create | Creates a guest from an XML configuration file and starts the new guest. |
| start | Starts an inactive guest. |
| destroy | Forces a guest to stop. |
| define | Outputs an XML configuration file for a guest. |
| domid | Displays the guest's ID. |
| domuuid | Displays the guest's UUID. |
| dominfo | Displays guest information. |
| domname | Displays the guest's name. |
| domstate | Displays the state of a guest. |
| quit | Quits the interactive terminal. |
| reboot | Reboots a guest. |
| restore | Restores a previously saved guest stored in a file. |
| resume | Resumes a paused guest. |
| save | Save the present state of a guest to a file. |
| shutdown | Gracefully shuts down a guest. |
| suspend | Pauses a guest. |
| undefine | Deletes all files associated with a guest. |
| migrate | Migrates a guest to another host |

| | |
|---|---|
| setmem | Sets the allocated memory for a guest. |
| setmaxmem | Sets maximum memory limit for the hypervisor. |
| setvcpus | Changes number of virtual CPUs assigned to a guest. |
| vcpuinfo | Displays virtual CPU information about a guest. |
| vcpupin | Controls the virtual CPU affinity of a guest. |
| domblkstat | Displays block device statistics for a running guest. |
| domifstat | Displays network interface statistics for a running guest. |
| attach-device | Attach a device to a guest, using a device definition in an XML file. |
| attach-disk | Attaches a new disk device to a guest. |
| attach-interface | Attaches a new network interface to a guest. |
| detach-device | Detach a device from a guest, takes the same kind of XML descriptions as command attach-device. |
| detach-disk | Detach a disk device from a guest. |
| detach-interface | Detach a network interface from a guest. |

virsh -c 'qemu:///system' list

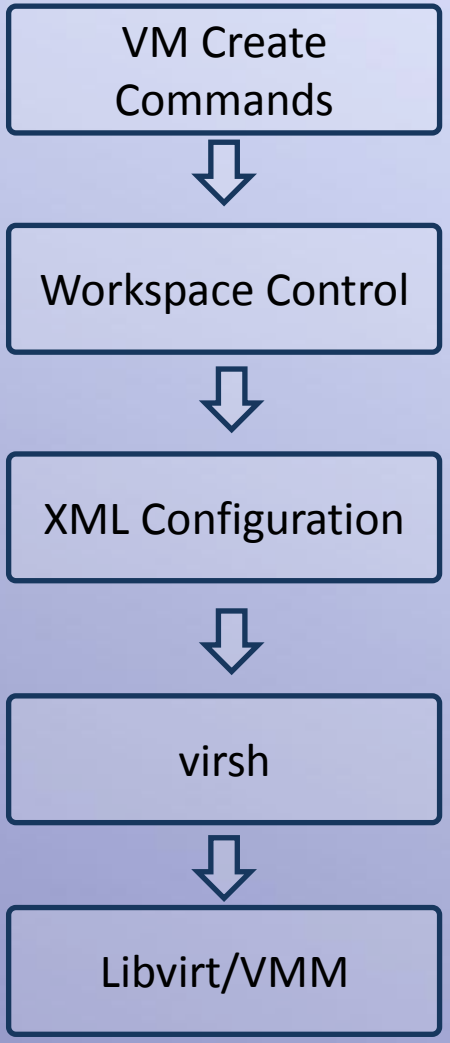
Workspace Control Dependencies

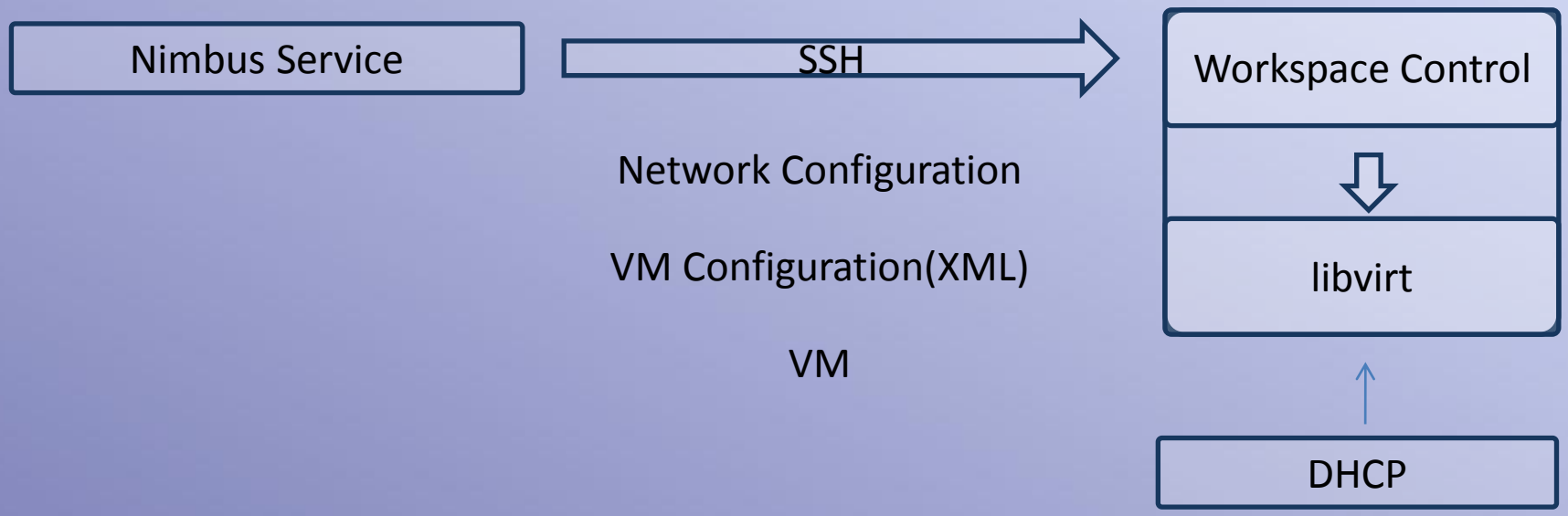
Workspace Control Konfiguration (Network)

./sbin/libvirt-xml.sh --image /tmp/nimbus-z2c --netsample \ /tmp/control.netsample.txt --memory 256 --mountpoint hda > /tmp/z2c.xml

virsh -c 'qemu:///system' create /tmp/z2c.xml

./sbin/destroy-control-test.sh




Nimbus Service
SSH
Network Configuration
VM Configuration(XML)
VM
Workspace Control
libvirt
DHCP

**Dependencies**

Java
Python
GCC
Sqlite 2,3
Apache Ant
libssl

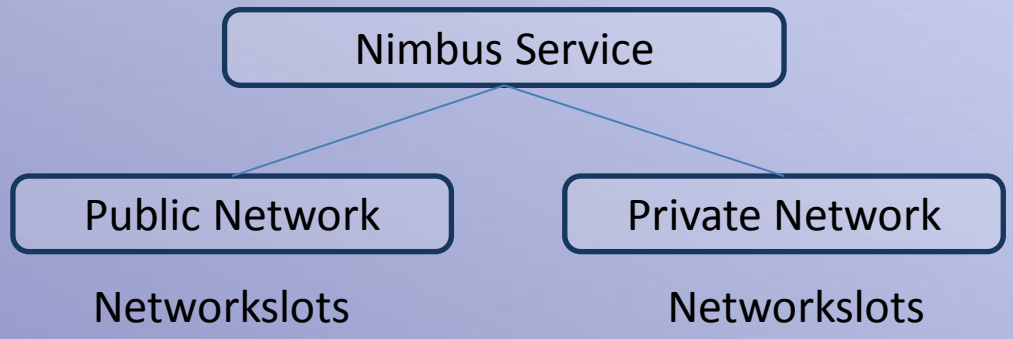
**Service Node**

Nimbus Service

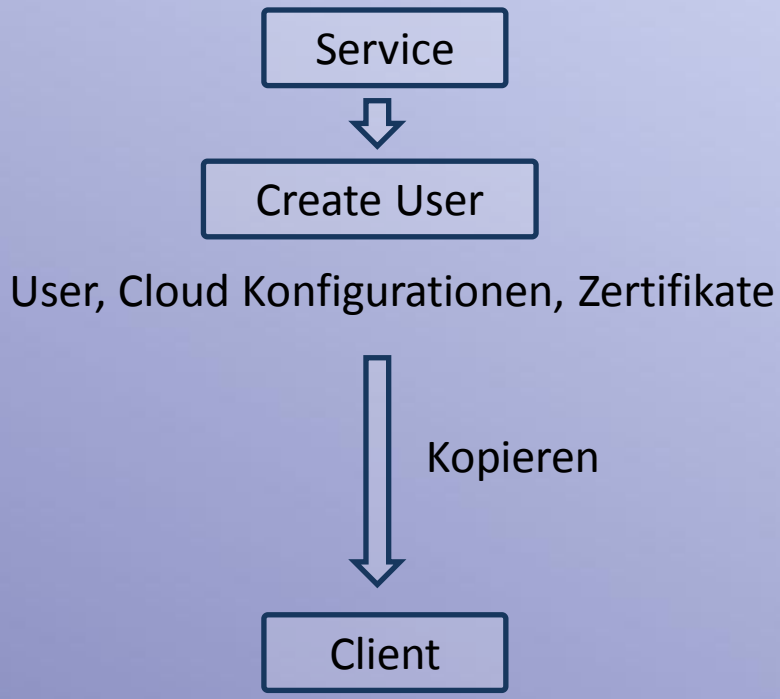
Cumulus Service

Default Ports
Cumulus : 8888
Nimbus Service interface : 8443
EC2 compatible Query Interface: 8444

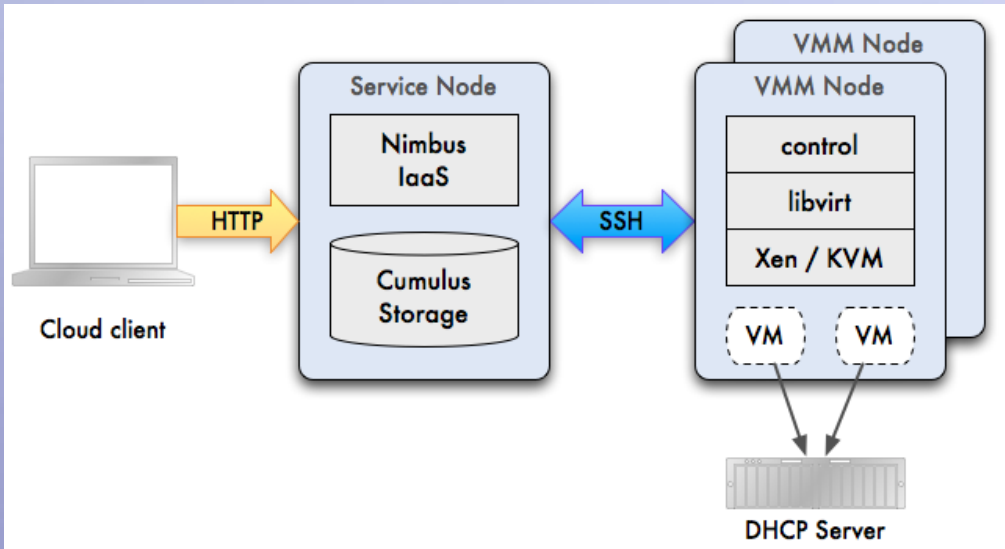
Service integriert und registriert VMM Nodes



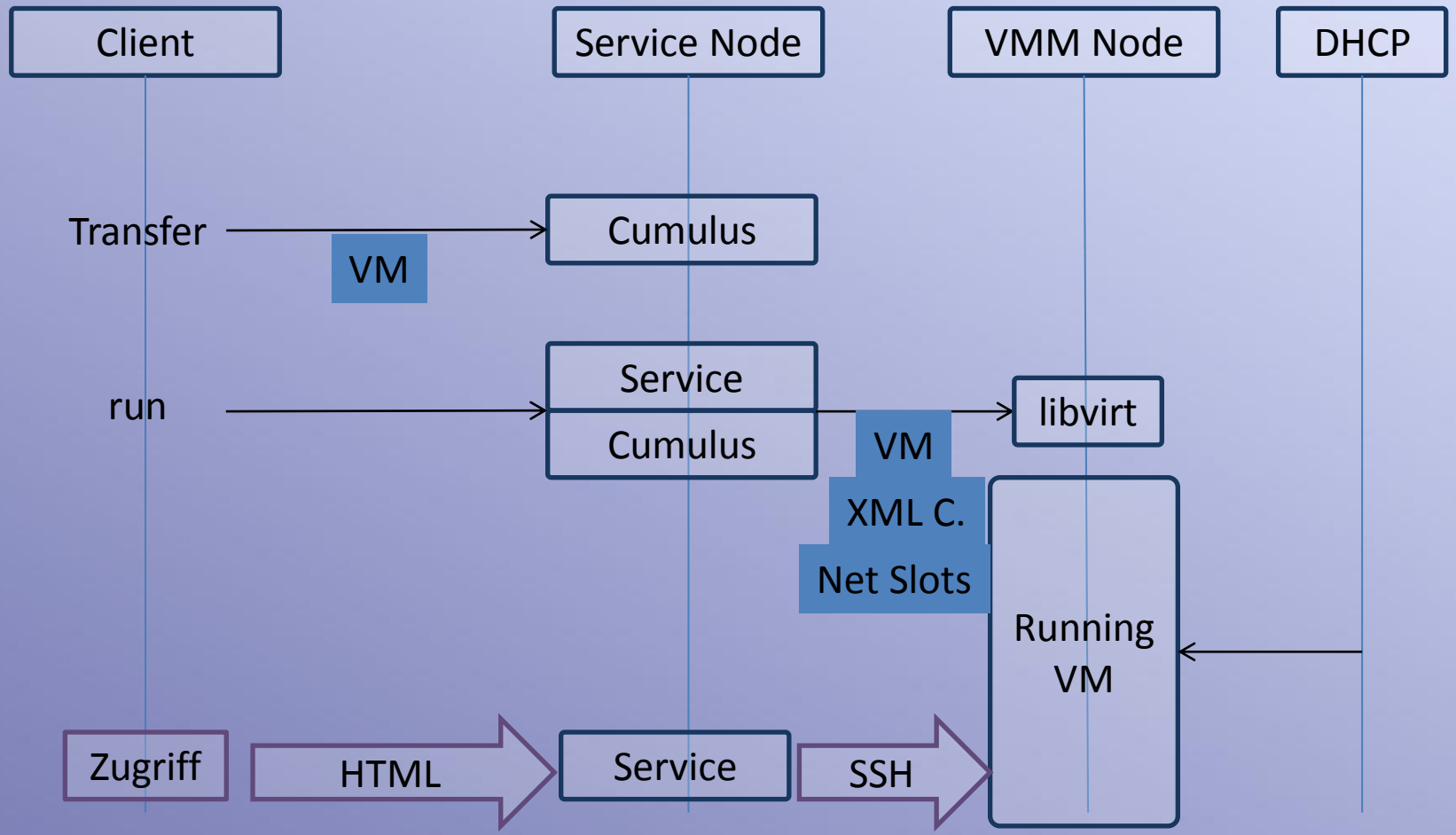

```
# DNS server IP address (or 'none') 192.168.0.1
# hostname ipaddress gateway broadcast subnetmask [MAC]
pub02 192.168.0.2 192.168.0.1 none none
pub03 192.168.0.3 192.168.0.1 192.168.0.255 255.255.255.0
pub04 192.168.0.4 192.168.0.1 192.168.0.255 255.255.255.0
```


Service
Create User
User, Cloud Konfigurationen, Zertifikate
Kopieren
Client

./bin/cloud-client.sh
--list
--transfer --sourcefile <path>
--delete --name <name>
--run --name <name> (optional) --hour <zahl>
--status
--save –handle <handle>
--terminate –handle <handle>




- DHCP Server
- SSH Setup
- VM Setup
- Service Integration


Client
Service Node
VMM Node
DHCP
Transfer
VM
Cumulus
run
Service
Cumulus
libvirt
VM
XML C.
Net Slots
Running VM
Zugriff
HTML
Service
SSH

Vielen Dank
für Ihre Aufmerksamkeit

Nimbus
Infrastructure