

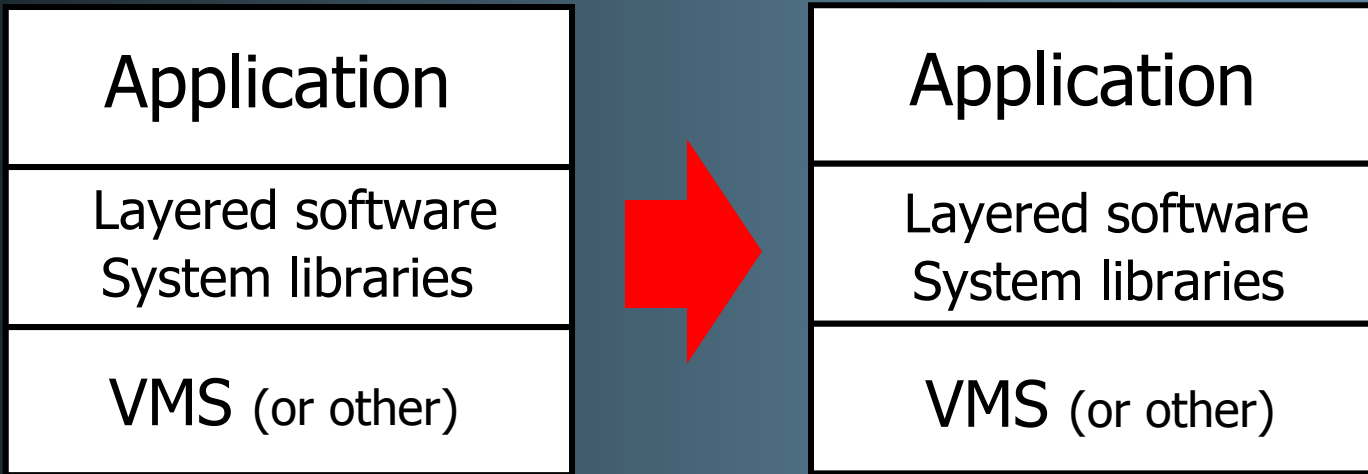
# CHARON-VAX

-

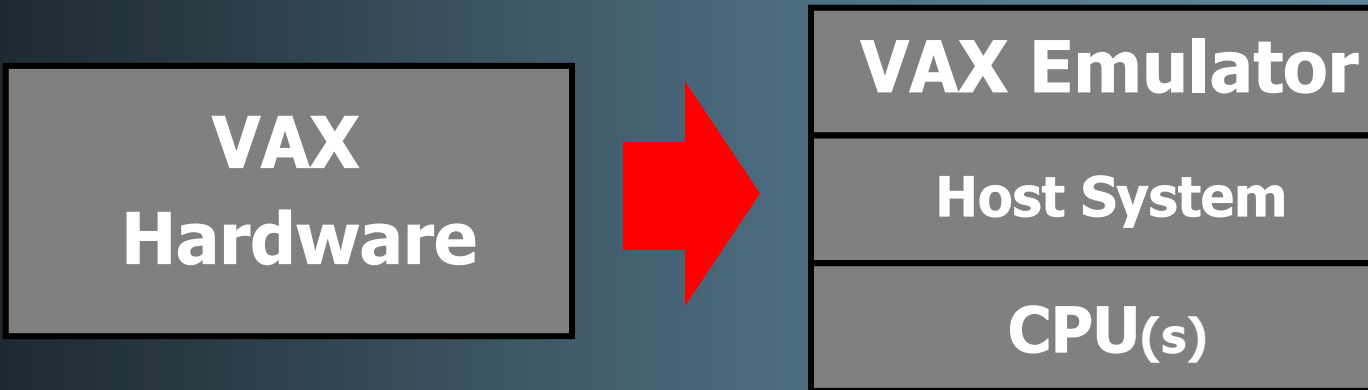
## Investitionsschutz für VAX- Anwendungs-Software

- ▶ Wozu ein VAX-Emulator
- ▶ Arbeitsprinzip des VAX-Emulators
- ▶ Kompatibilität
- ▶ CHARON-VAX Produkt-Familie
- ▶ Performance
- ▶ Migration
- ▶ VAX Cluster
- ▶ Zusammenfassung

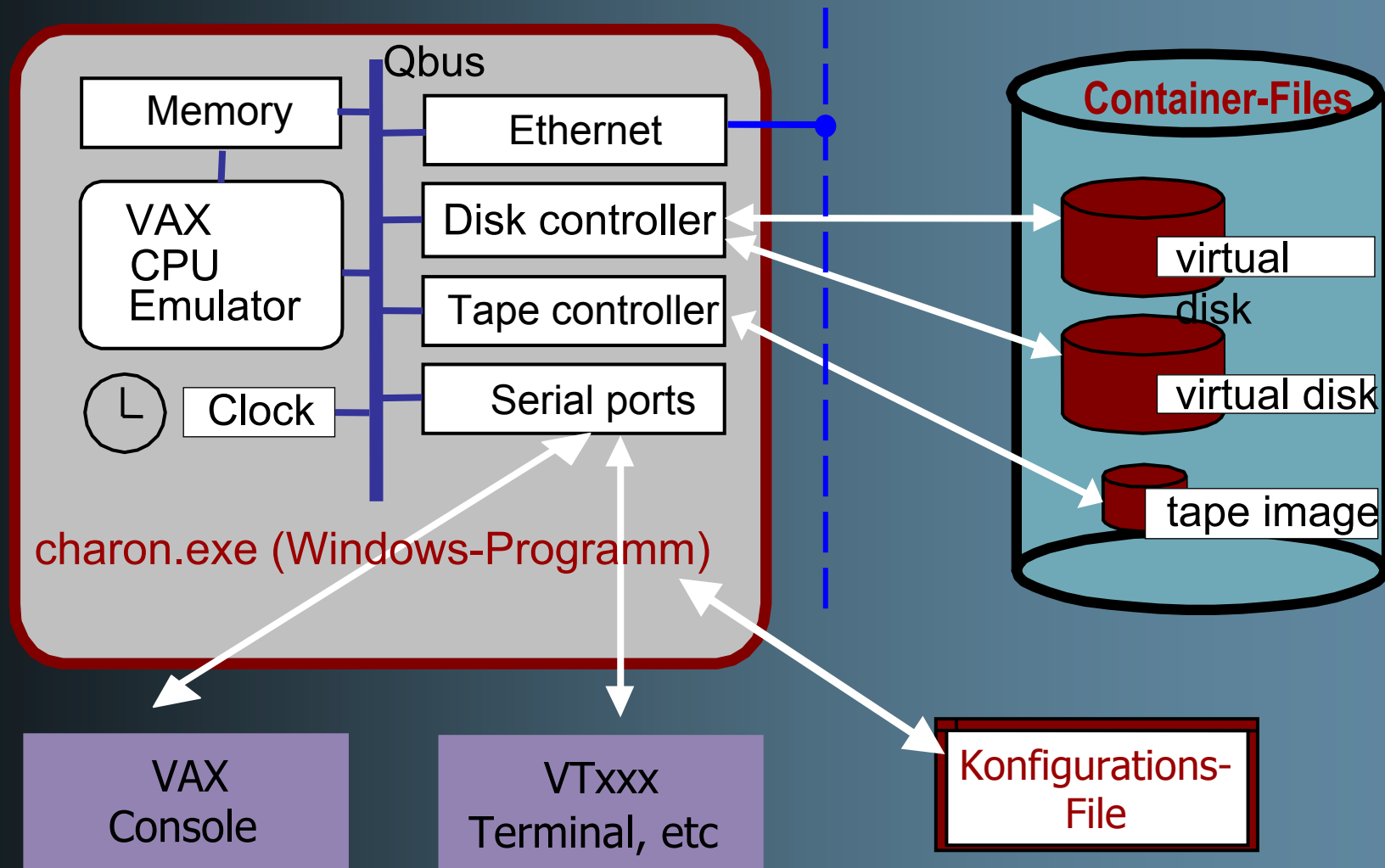
- ▶ Hardware ist end-of-life (insbesondere Disks)
- ▶ Service-Kosten steigen dramatisch bzw. Service abgekündigt
- ▶ Portierung der Anwendungen auf Nicht-VMS-Plattformen wird massive Kosten und Ausfallzeiten verursachen
- ▶ Für die Portierung auf Alpha-VMS fehlen oft Quellcode und Experten
- ▶ Automatische Code-Konversion (DECmigrate, VEST) funktioniert nicht immer
- ▶ Weltweit sind noch immer ca. 200.000 VAXen in Betrieb



*Anwendungs-Software und Betriebssystem bleiben Bit für Bit unverändert!*



# CHARON-VAX Arbeitsprinzip (2)



## Womit wird die Kompatibilität geprüft?:

- ▶ Hardware Diagnostics (XXDP, MDM)
- ▶ AXE: VAX Architecture Exerciser
- ▶ Running VMS, VAXEIn, Ultrix, NetBSD
- ▶ MDM fault-free 'hardware'
- ▶ UETP application level tests

Weniger als 100% Kompatibilität reicht nicht!

# CHARON-VAX-Familie (Übersicht)

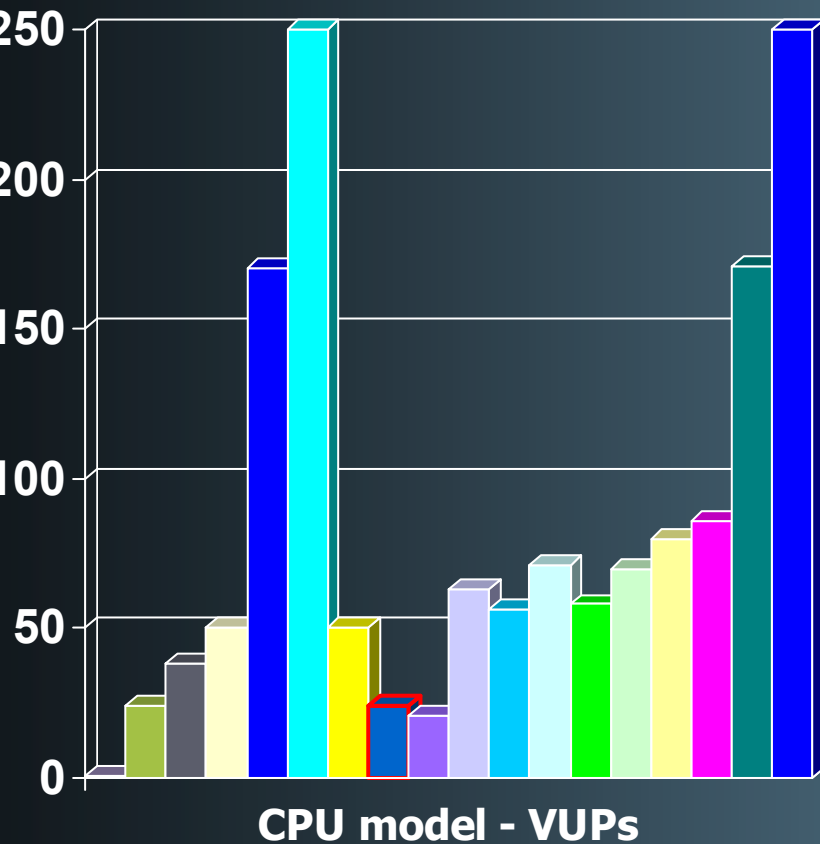
<u>Product</u>	<u>Platform</u>	<u>Earliest VMS version supported</u>	<u>Emulated Memory Size</u>
<b>CHARON-VAX/XM for Windows</b>	<b>Windows 2003 or XP</b>	<b>4.6 (*)</b>	<b>128 MB (*)</b>
<b>CHARON-VAX/XM <i>Plus</i> for Windows</b>	<b>Windows 2003 or XP</b>	<b>4.6 (*)</b>	<b>128 MB (*)</b>
<b>CHARON-VAX/XK <i>Plus</i> for Windows</b>	<b>Windows 2003 or XP</b>	<b>5.5-2H4</b>	<b>256 MB</b>
<b>CHARON-VAX/XL for Windows</b>	<b>Windows 2003 or XP</b>	<b>5.5-2H4</b>	<b>512 MB</b>
<b>CHARON-VAX/XL <i>Plus</i> for Windows</b>	<b>Windows 2003 or XP</b>	<b>5.5-2H4</b>	<b>512 MB</b>
<b>CHARON-VAX/6610 <i>Plus</i> for Windows</b>	<b>Windows 2003 or XP</b>	<b>5.5-2H4</b>	<b>1 GB</b>
<b>CHARON-VAX/6620 <i>Plus</i> for Windows</b>	<b>Windows 2003 or XP</b>	<b>5.5-2H4</b>	<b>2 GB</b>
<b>CHARON-VAX/6630 <i>Plus</i> for Windows</b>	<b>Windows 2003 or XP</b>	<b>5.5-2H4</b>	<b>2 GB</b>
<b>CHARON-VAX/Industrial for Windows</b>	<b>Windows 2000 or XP</b>	<b>4.6</b>	<b>64 MB</b>
<b>CHARON-VAX/Industrial <i>Plus</i> for Windows</b>	<b>Windows 2000 or XP</b>	<b>4.6</b>	<b>64 MB</b>
<b>CHARON-VAX/AXP <i>Plus</i> for OpenVMS/Alpha</b>	<b>OpenVMS Alpha V7.2 or later</b>	<b>5.5-2H4</b>	<b>512 MB</b>

(\*) Abhängig von emulierter CPU

- ▶ Standard Industrial, XM, XL Products:
  - Any platform: Factor 0.5 per 100 MHz CPU
- ▶ *PLUS* version Industrial, XM, XL Products:
  - On Intel platforms: Factor 1.9 per 100 MHz CPU
  - On AMD platforms: Factor 2.7 per 100 MHz CPU
  - On Alpha platforms: Factor 2.2 per 100 MHz CPU

NOTE: *PLUS* products utilize DIT  
(Dynamic Instruction Translation)

# CHARON-VAX Performance (2)



- VAX 11/780
- VAX 4000-500A
- VAX 3100-98
- VAX 7000-710
- VAX 7000-740
- VAX 7000-760
- CH-VAX/Industrial+ on dual Xeon, 2.8 GHz
- CH-VAX/AXP Plus on Alpha EV68, 1GHz
- CH-VAX/XM on dual P4, 3.4 GHz
- CH-VAX/XM+ on dual P4, 3.4 GHz
- CH-VAX/XL+ on dual AMD MP2800+, 2.1 GHz
- CH-VAX/XL+ on dual AMD 64, 2.4 GHz
- CH-VAX/XL+ on dual Xeon, 3.0 GHz
- CH-VAX/XL+ on dual AMD 248, 2.2 GHz
- CH-VAX/XL+ on dual AMD 250, 2.4 GHz
- CH-VAX/6610+ on DL585 2x AMD 850 CPUs, 2.4 GHz
- CH-VAX/6620+ on DL585 3x AMD 850 CPUs, 2.4 GHz
- CH-VAX/6630+ on DL585 4x AMD 850 CPUs, 2.4 GHz

# Transferring systems and data to CHARON-VAX/XM/XL

1. Re-installation of the system from scratch
2. Use backup on tapes
3. Use MKIMAGE utility
4. Use network (TCP/IP)
5. Connect VAX SCSI disk to CHARON-VAX/XM/XL host directly
6. Use DUMP/UNDUMP
  - Via TCPIP session on target host
  - Dumping to serial line
7. Use VTCOM or KERMIT
8. Use floppy drives

# 1. Re-Installation of the system from scratch



PC

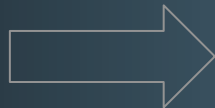


VMS Distributive

# 2. Use backup on tapes



VAX



PC

Tapes with backup  
(normal & standalone)

# 3. Use MKIMAGE utility



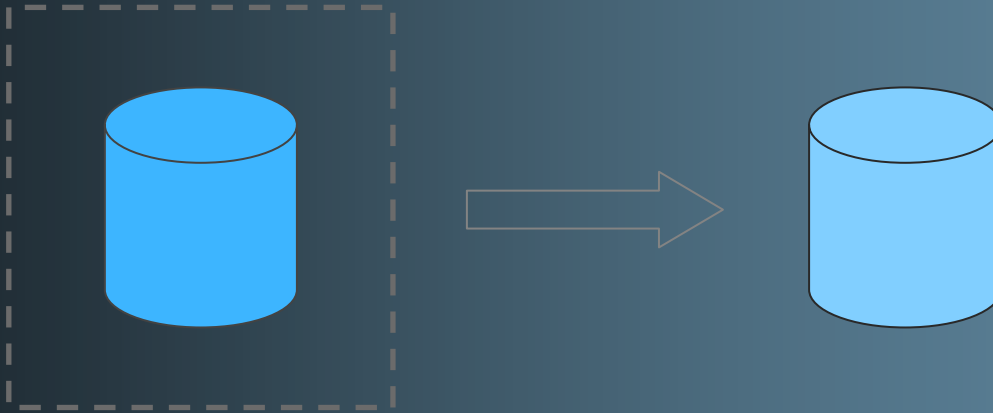
TCP/IP



Mkimage running  
as client

Mkimage running  
as server

# 3. Use MKIMAGE utility



Creating disk image on other disk (remote)

# 4. Use network

DecNet



Backup utility

DECnet



CHARON running  
with DecNet

```
backup/image dua100: chnode::dua0[000000]disk.sav/sav
```

# 4. Use network (TCP/IP)

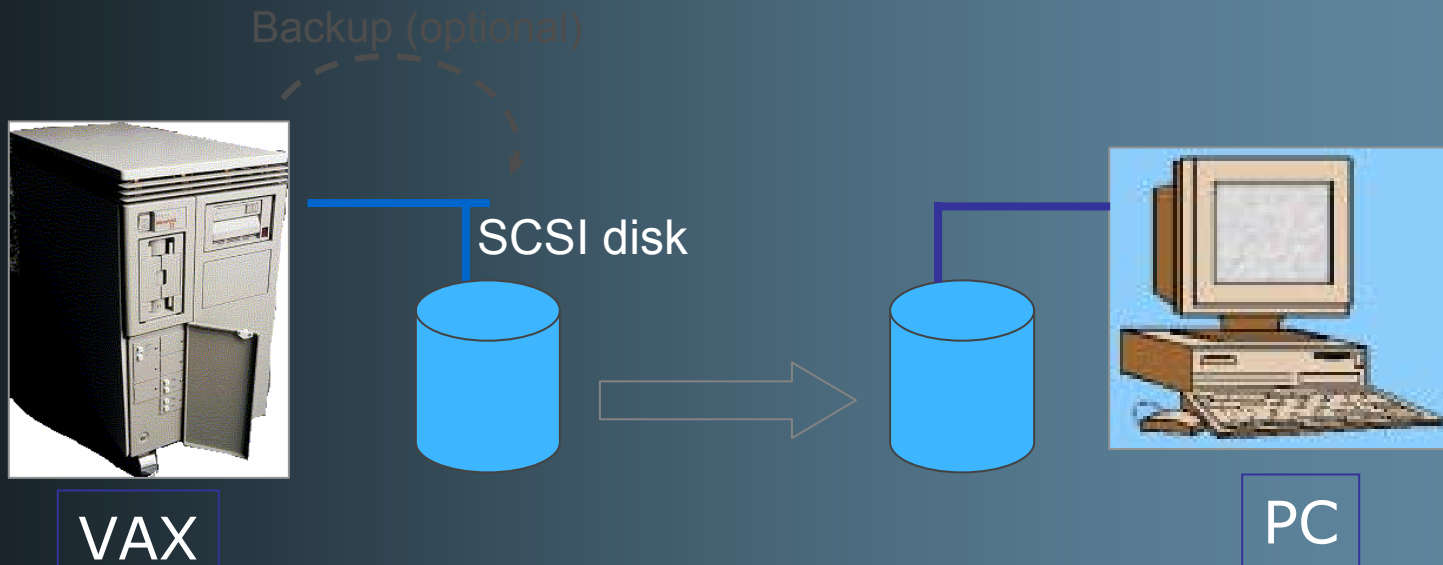
TCP/IP



FTP copy

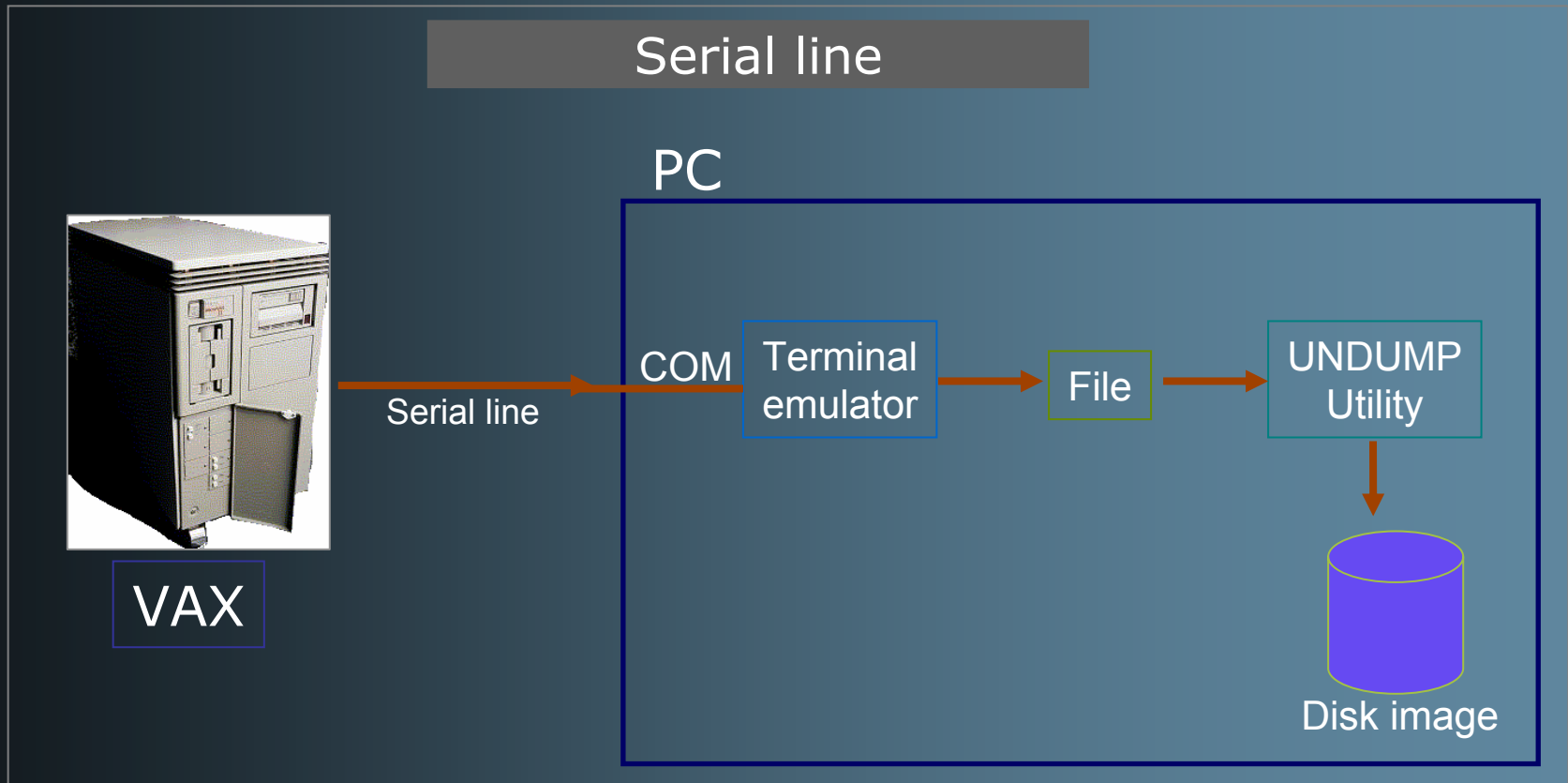


# 5. Connect VAX SCSI disk to CHARON-VAX/XM/XL host directly

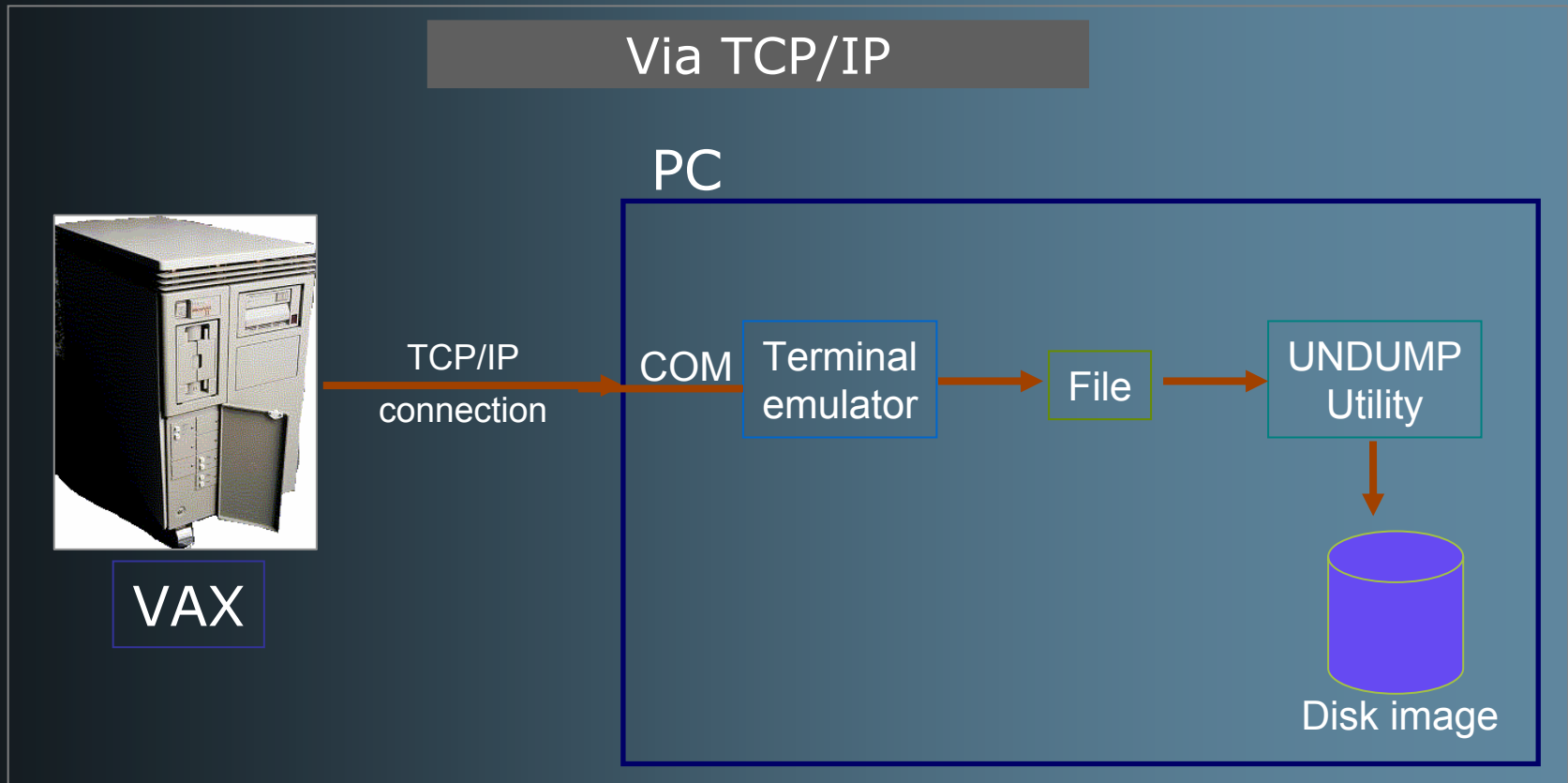


- Use Mkimage to transfer the content of the connected disk to file
- Boot from the disk directly

# 6. Use DUMP/UNDUMP



# 6. Use DUMP/UNDUMP



# 7. Use VTCOM or KERMIT



VTCOM running

Serial line



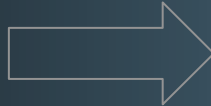
Preconfigured CHARON  
running with KERMIT up,  
communicating to **VAX**

# 3. Use floppy drives



VAX

Backup



Floppy



PC

Restore backup using  
preconfigured system

# VAX cluster types

- ▶ **Real VAX**
- ▶ CI (Computer Interconnect)
- ▶ DSSI (Digital Storage Systems Interconnect)
- ▶ FDDI (Fiber Distributed Data Interface)
- ▶ Ethernet (10/100, Gigabit)
- ▶ **CHARON-VAX**
- ▶ Ethernet (10/100, Gigabit)
- ▶ MSCP (Mass Storage Control Protocol)

## ► **Real VAX**

► CI

► DSSI

► FDDI

► Ethernet (10/100,  
Gigabit)

## ► **CHARON-VAX**

► Ethernet (10/100,  
Gigabit)

On CHARON-VAX the cluster traffic is done through Ethernet which is the only usable interconnect at this time.

- ▶ **Real VAX**
- ▶ CI
- ▶ DSSI
- ▶ FDDI
- ▶ Ethernet (10/100, Gigabit)
- ▶ **CHARON-VAX**
- ▶ SCSI
- ▶ iSCSI
- ▶ Windows share
- ▶ ATA/SATA
- ▶ Fiber Channel
- ▶ Ethernet (10/100, Gigabit)
- ▶ IEEE 1394 (Fire Wire)
- ▶ USB (Universal Serial Bus)

As long as CHARON-VAX can access the storage as a `\\./Physical_diskx` or has access to a container file on a windows file system it is usable.

# Shared-storage Interconnects (node to storage)

## ▶ **Real VAX**

▶ CI

▶ DSSI

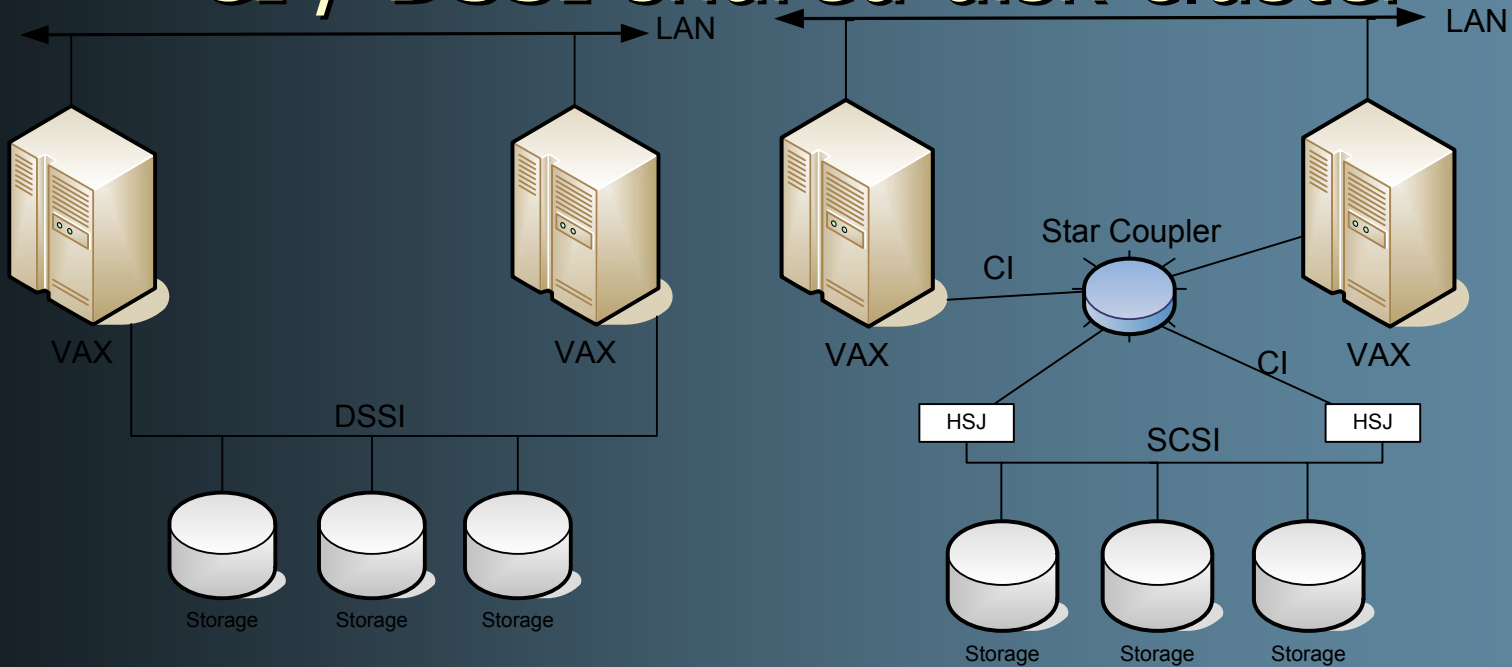
## ▶ **CHARON-VAX**

▶ SCSI

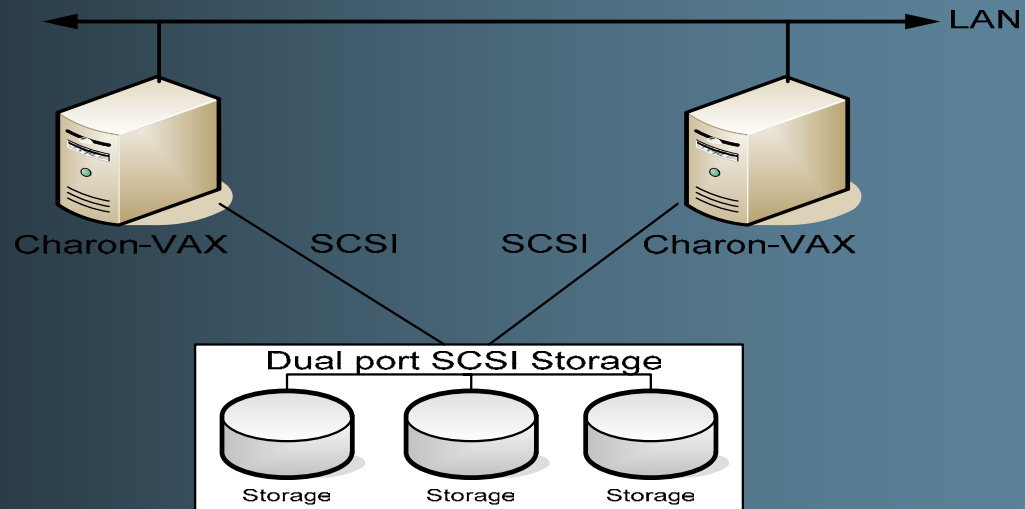
▶ iSCSI

▶ Windows share

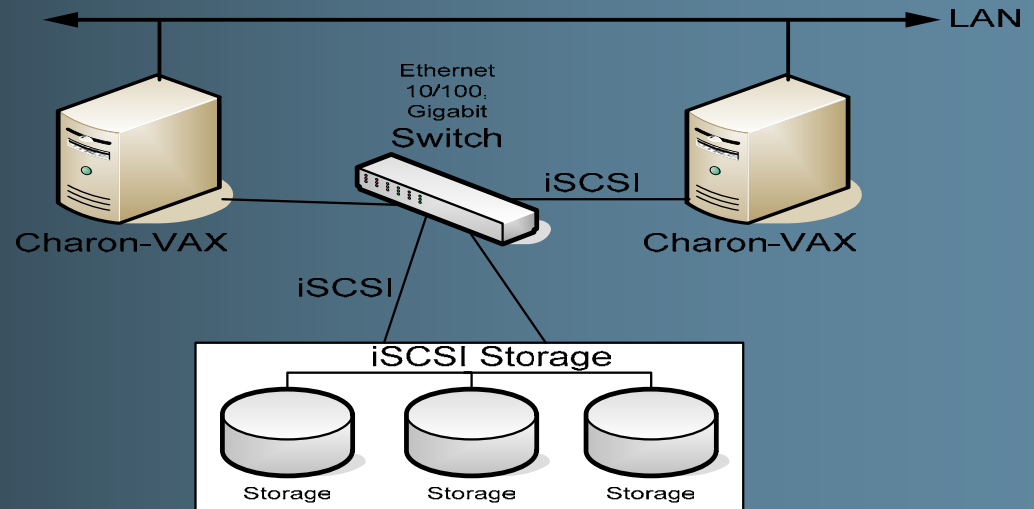
# CI / DSSI shared disk cluster



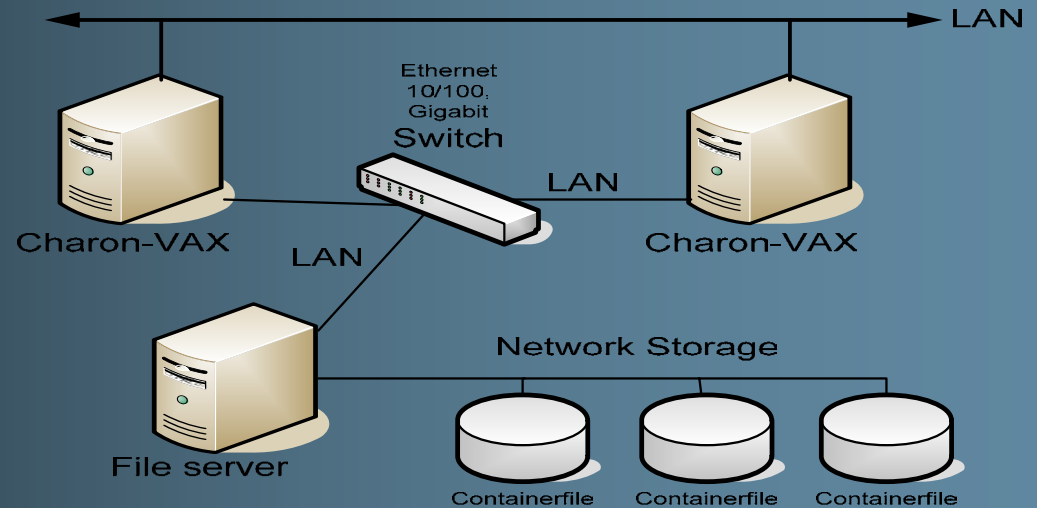
On a VAX a shared storage cluster like DSSI or CI would look like this.



The VAX shared storage CI and DSSI cluster can be replaced by a CHARON-VAX shared storage cluster like this.



The VAX shared storage CI and DSSI Cluster can also be replaced by a CHARON-VAX shared storage cluster using iSCSI as a storage interconnect.



A shared storage CI/DSSI replacement using Windows-shared container files.

Suitable for testing or very low budget solution. Need to restart CHARON-VAX if it loses physical connection to container file.

## ➤ **VAX**

### ➤ *Safety*

➤ Redundant connections

➤ Shadow sets

### ➤ *Scalability*

➤ Limited in nodes

➤ Special hardware

## ➤ **CHARON-VAX**

### ➤ *Safety*

➤ High-tech failsafe storage solutions

### ➤ *Scalability*

➤ Expandable to 96 nodes

➤ Simple hardware

## ► **Pro's**

- Easy to maintain
- Inexpensive in support
- Easy to expand or upgrade
- New MSCP Clustering

## ► **Con's**

- Only Ethernet for cluster traffic
- No CI, DSSI and FDDI possible

- ▶ Portabilität (Container+Konfiguration beschreiben die vollständige Umgebung)
- ▶ 'unbegrenzte' Nutzungszeit
- ▶ Kosteneinsparung gegenüber (jeder) Portierung (Software-Entwicklung+Lizenzen+Training)
- ▶ Server-Konsolidierung
- ▶ "Kontinuierlicher" Performance-Zuwachs durch Weiterentwicklung bei PC-Prozessoren
- ▶ CHARON-VAX amortisiert sich nach 1...3 Jahren!

## **Invenate GmbH**

Mengendamm 12  
30177 Hannover  
Tel.: 0511 357794-0  
Fax : 0511 357794-29

**[www.invenate.de](http://www.invenate.de)**