IBM Storwize V7000

Storage virtualisiert

best OpenSystems Day
Mai 2011

Unterföhring

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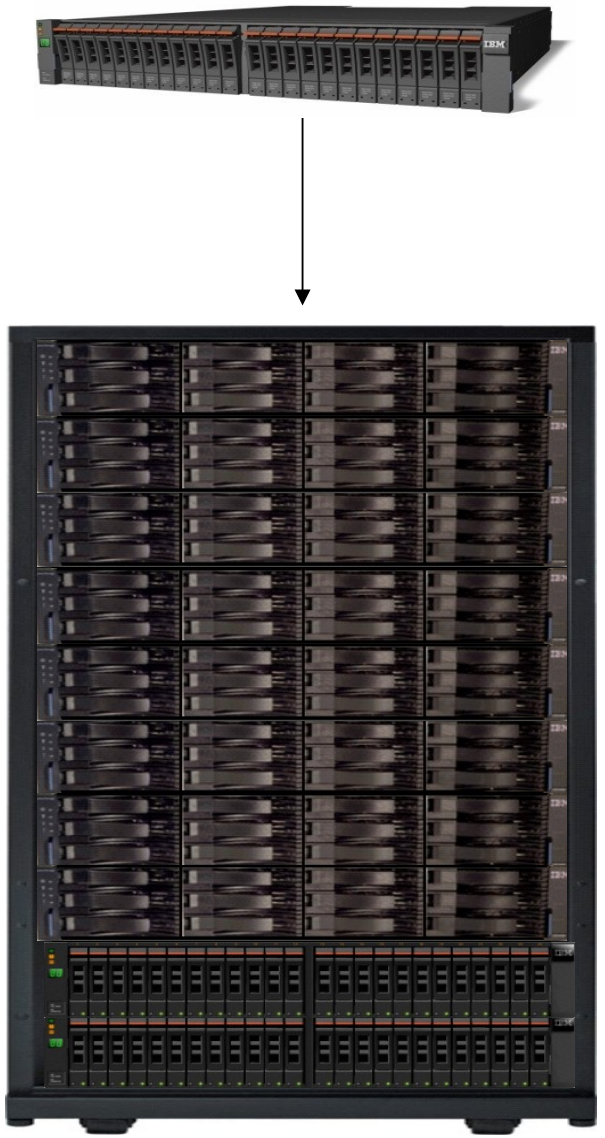
Agenda

- Was es ist.
- Wie es aussieht.
- Was es kann.
- Was es kostet.

V7000 – just another storage system?

- (Midrange) Storage-System
  - → RAID 0, 1, 5, 6, 10
  - → SAS / Nearline SAS (=SATA) / SSD
  - → 8Gb/s FC oder 1Gb/s iSCSI
  - → erweiterbar
- Virtualisierung auf Storage-Layer
  - → Thin Provisioning
  - → Flash Copy
  - → Metro / Global Mirror
  - → Easy Tiering
  - → Data Migration / External Virtualization
- schickes GUI
  - → CLI möglich (Scripting)



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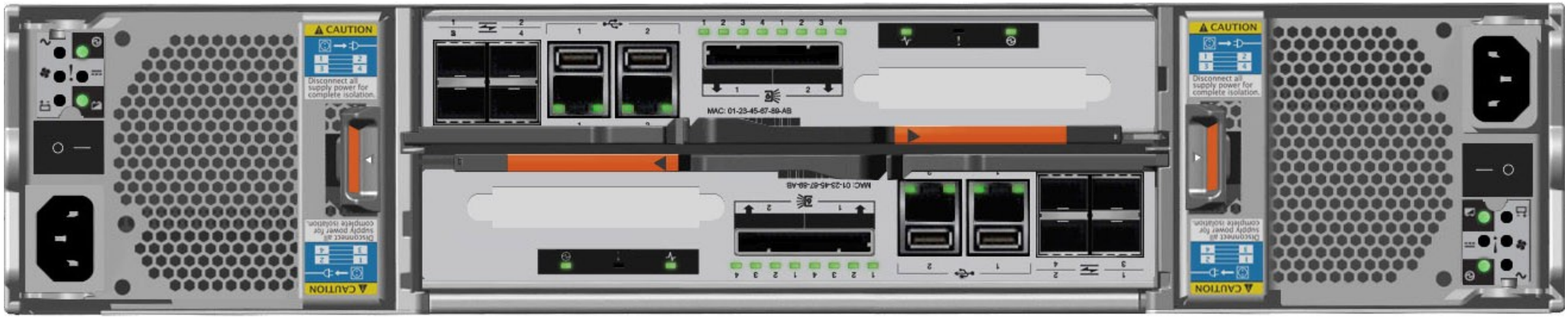
V7000 – Frontansicht

12x SATA

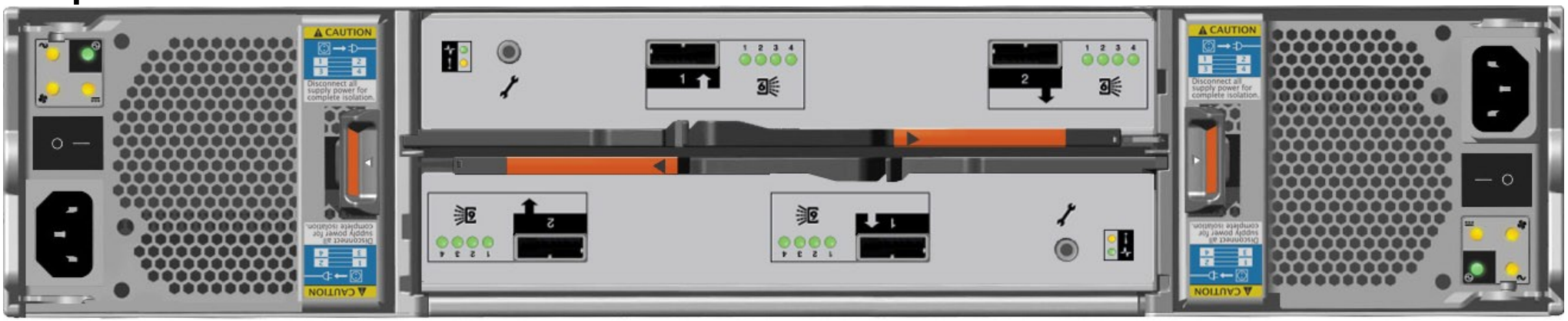
24x SAS

V7000 – Rückansicht

Control Enclosure

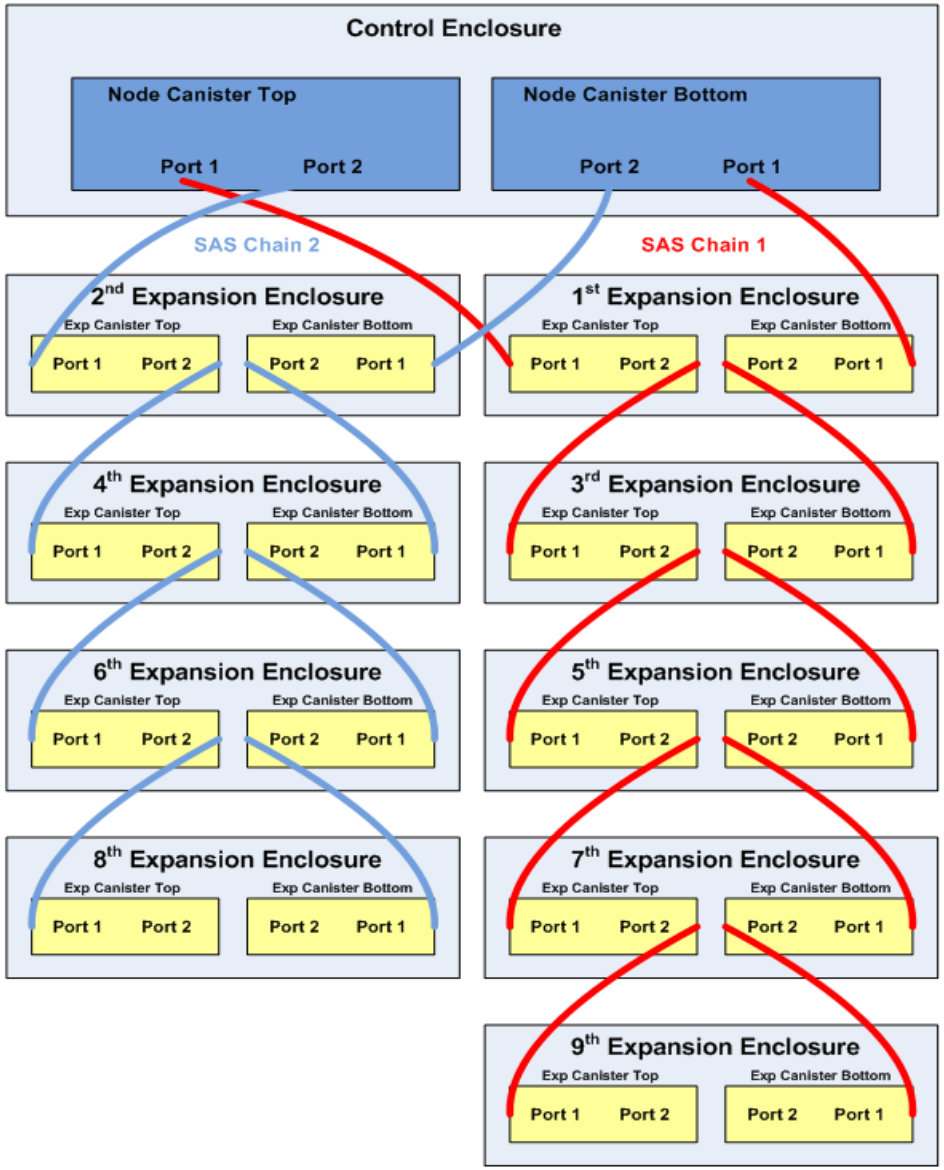


Expansion Enclosure



V7000 – Erweiterung

- zwei SCSI-Chains, je 5 Enclosures
- Control Enclosure zählt mit
- max. 9 Expansion Enclosures
- SAS/SATA Enclosures beliebig mischbar



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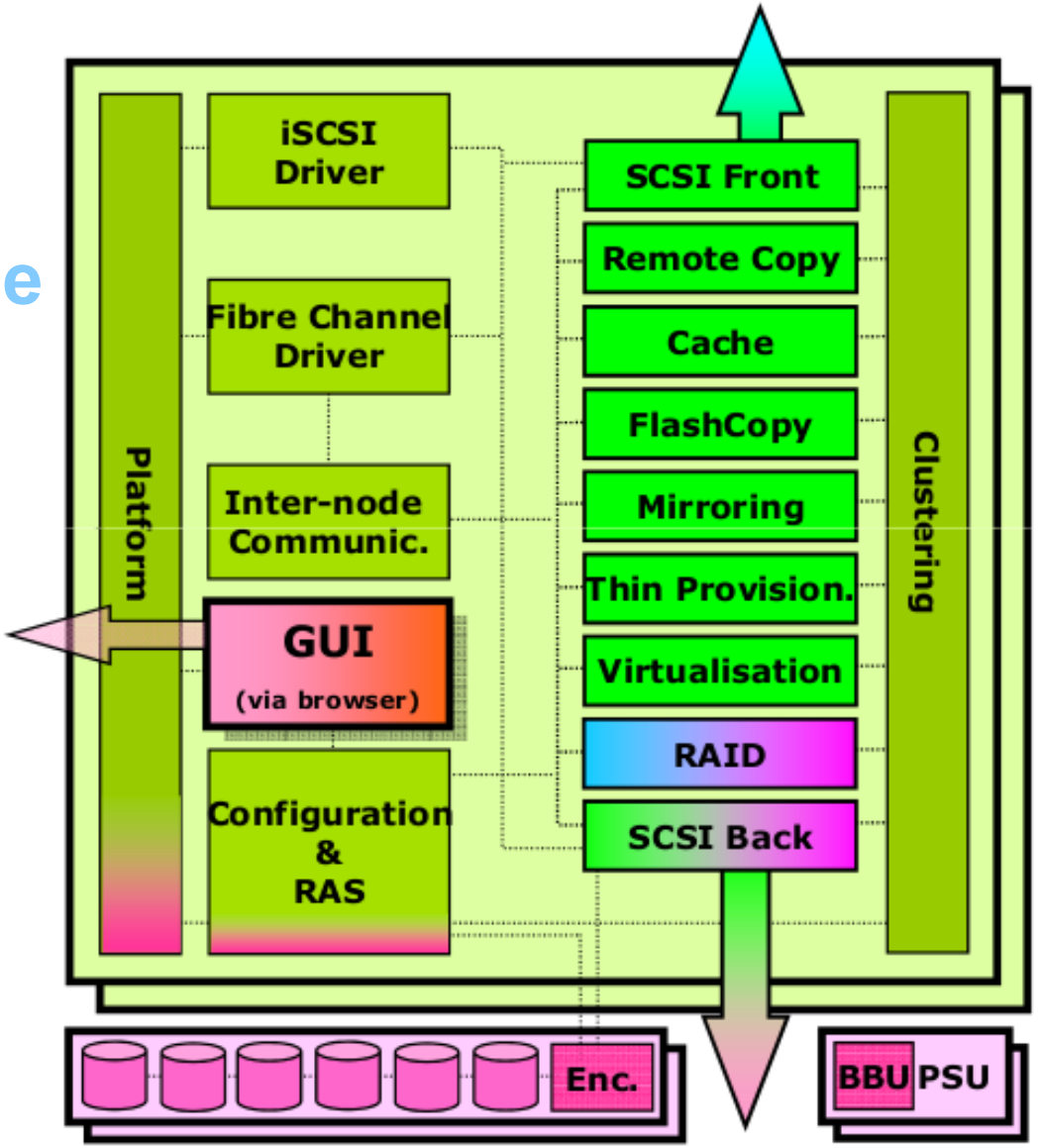
V7000 Software Architektur

- **SVC v5.1 Software**
  → identisch zw. V7000 und SVC
- **DS8000 Device Adapter Code**
  → RAID-Code
  → Easy Tiering
- **GUI von XIV**
- **neu in SVC v6.1/V7000**

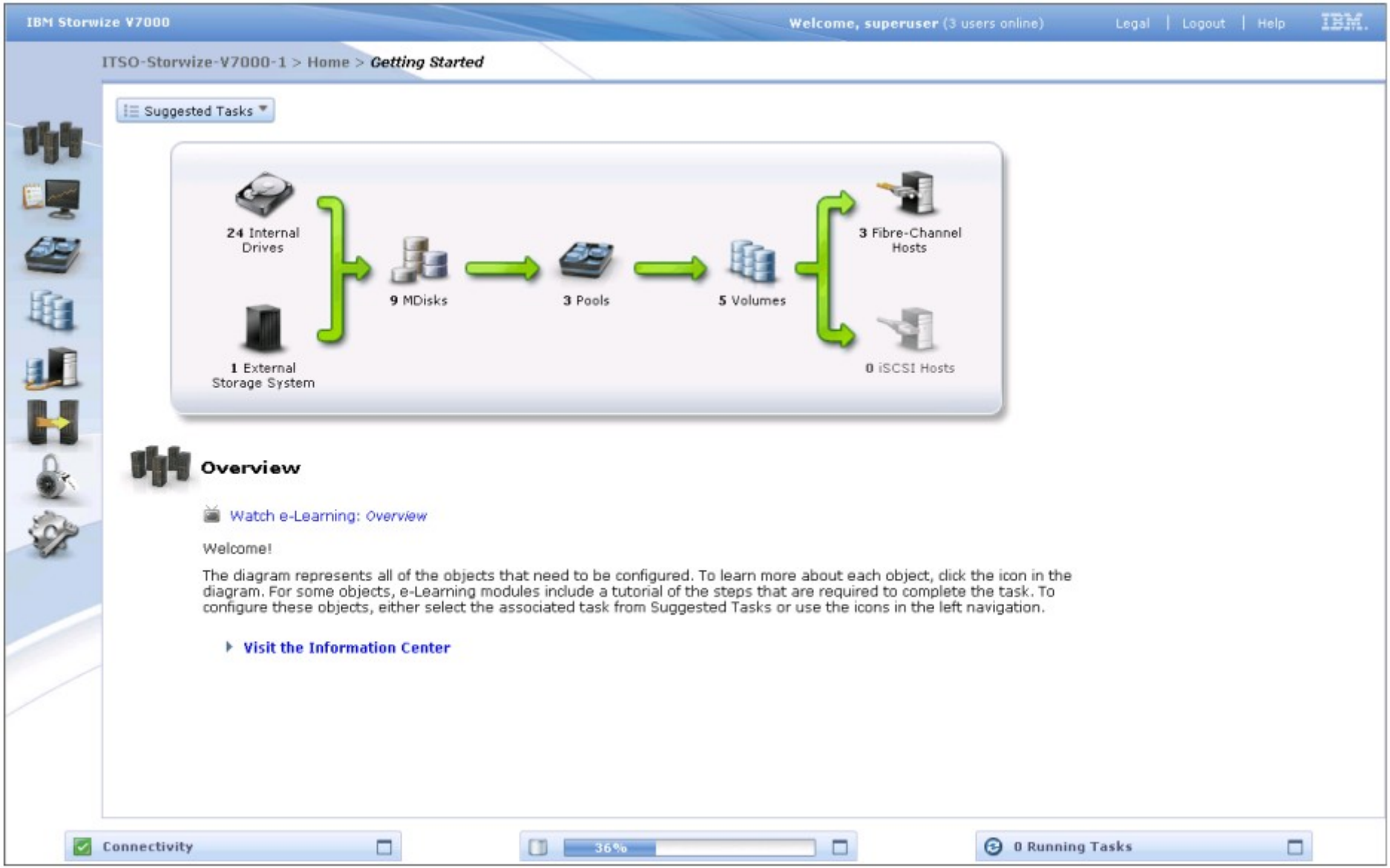
- identisch zw. SVC und V7000:
  → Host Interface
  → Virtualisierung
  → Copy Services



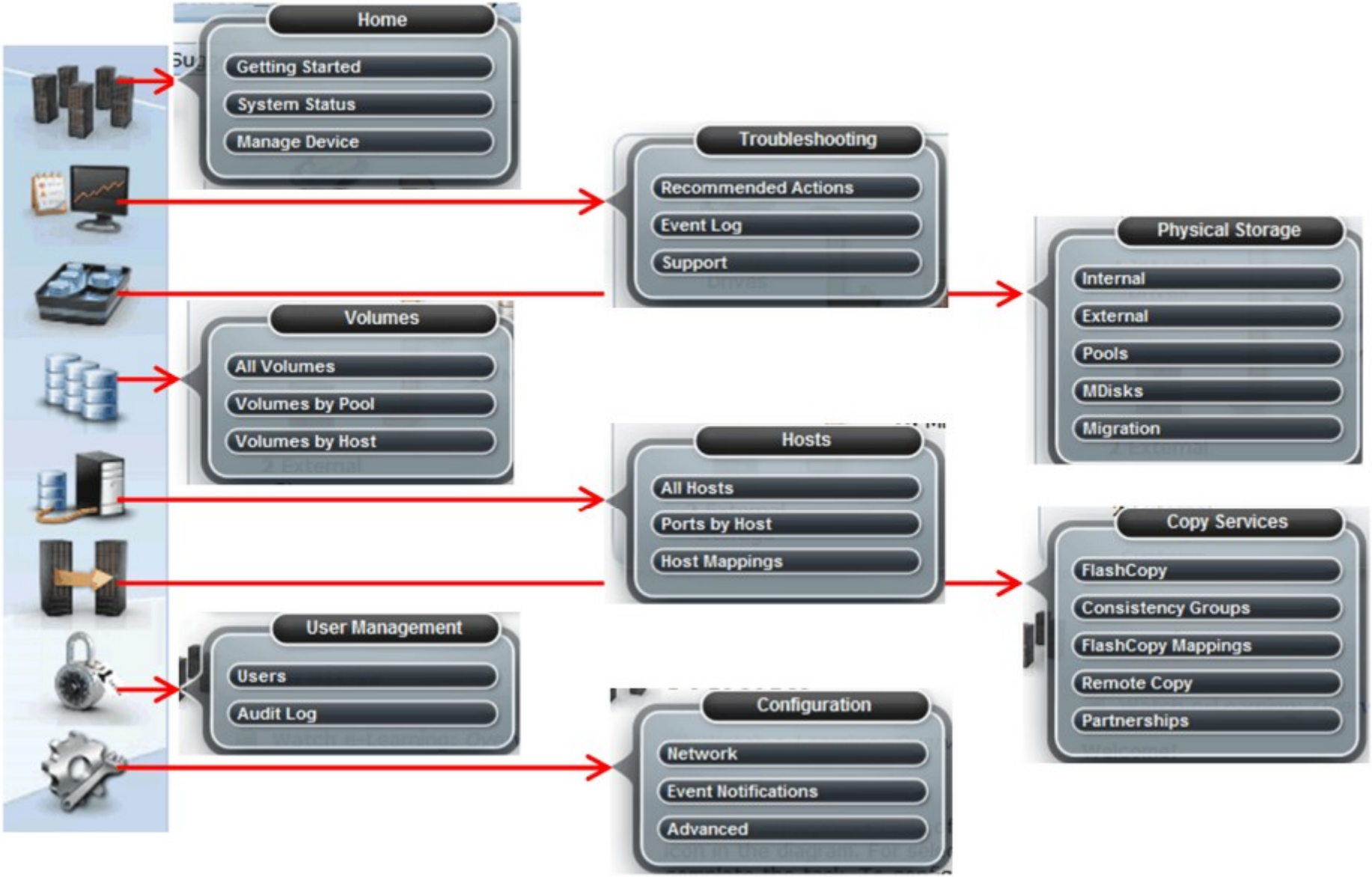
V7000 Software Features

- Thin Provisioning
- Volume Mirroring
  auch über virtualisiertes Storage
- Flash Copy
  full/increment, multitarget, cascaded, reverse,
  consistency groups
- *Metro Mirror*
  synchroner Spiegel bis 300km
- *Global Mirror*
  asynchroner Spiegel bis ca. 8.000km
- *Data Migration bzw. Virtualisierung von 3rd Party Storage*
- Easy Tier

V7000 GUI – Getting Started

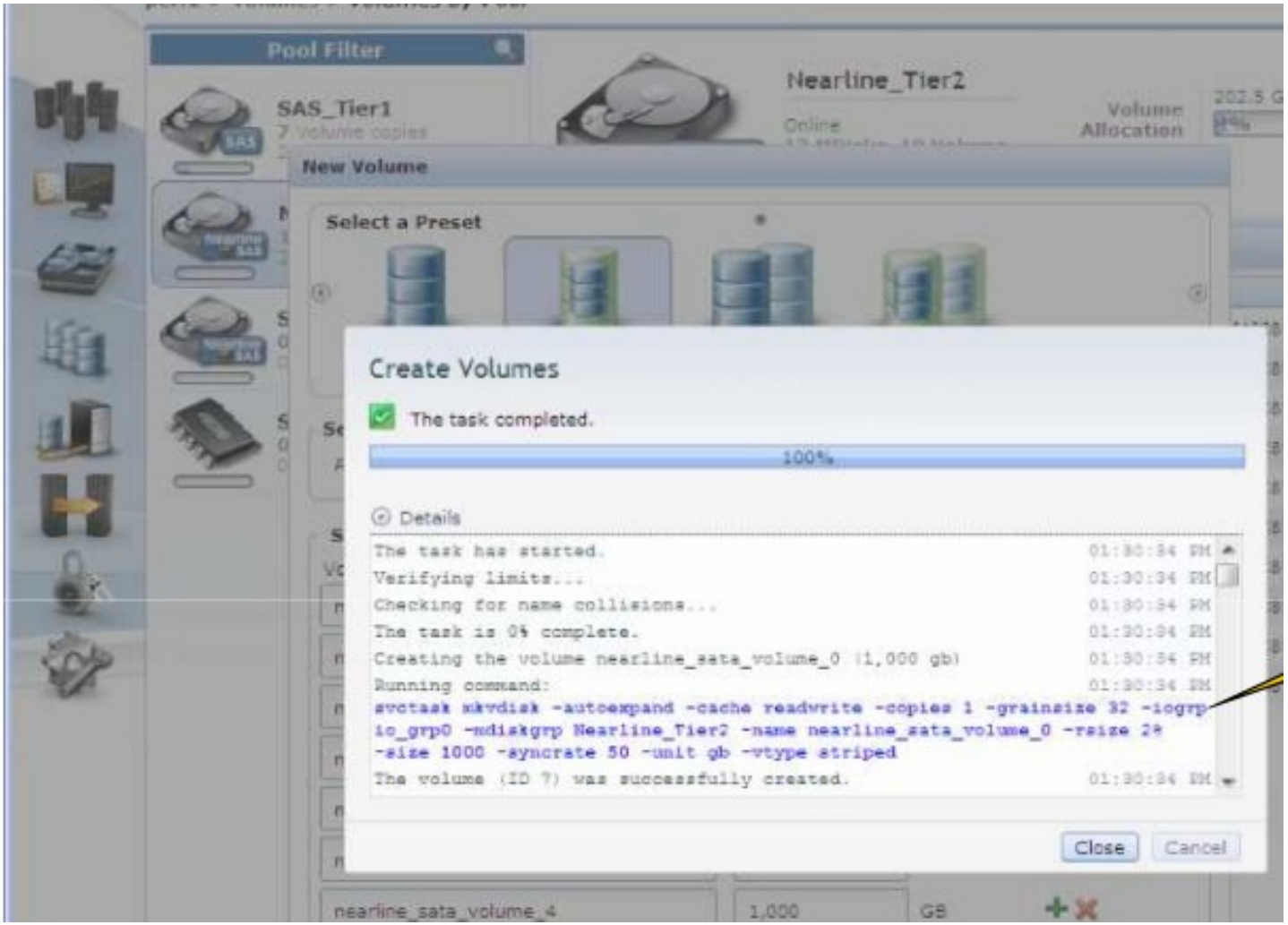


V7000 GUI – Funktionen



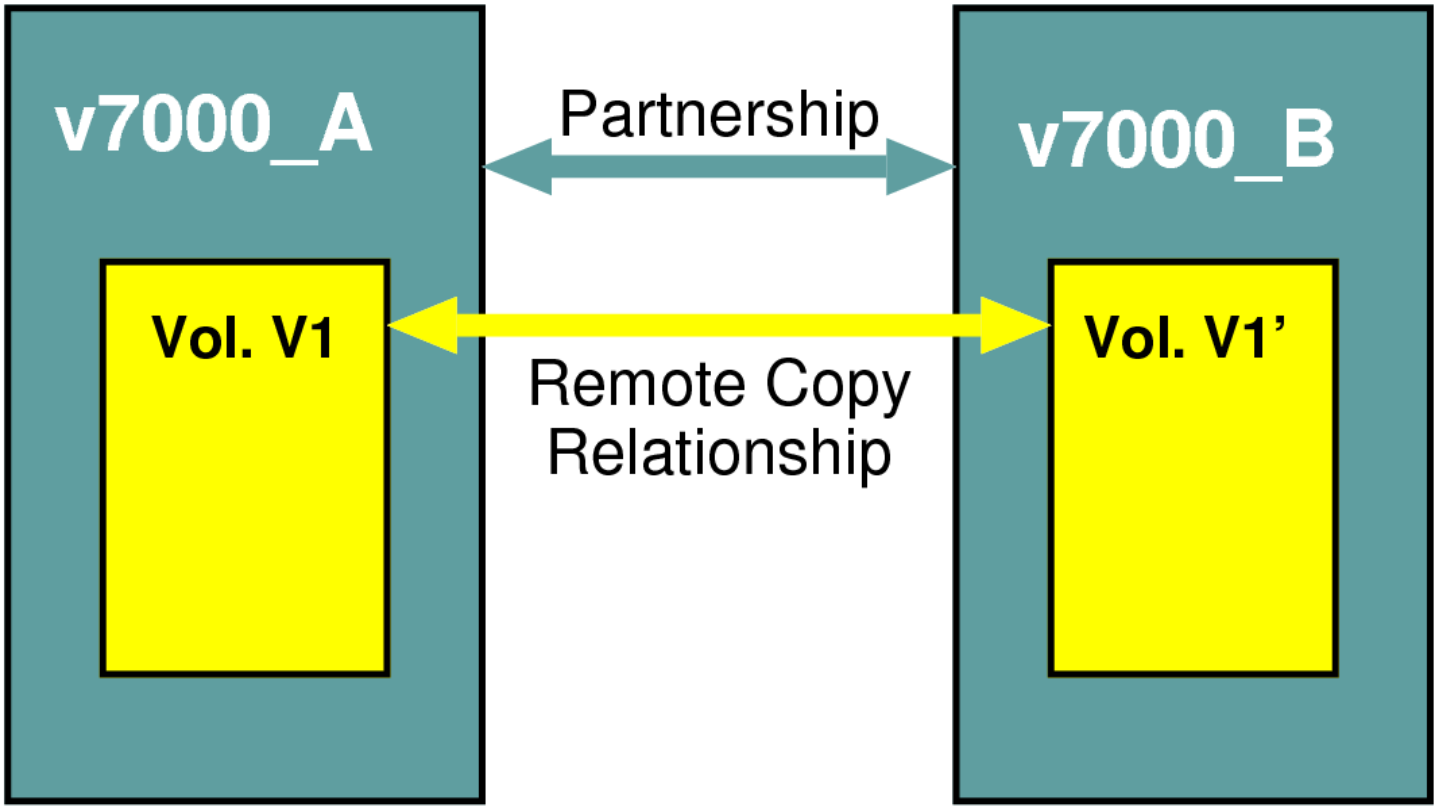
V7000 GUI – Thin Provisioning

V7000 GUI – Command Line



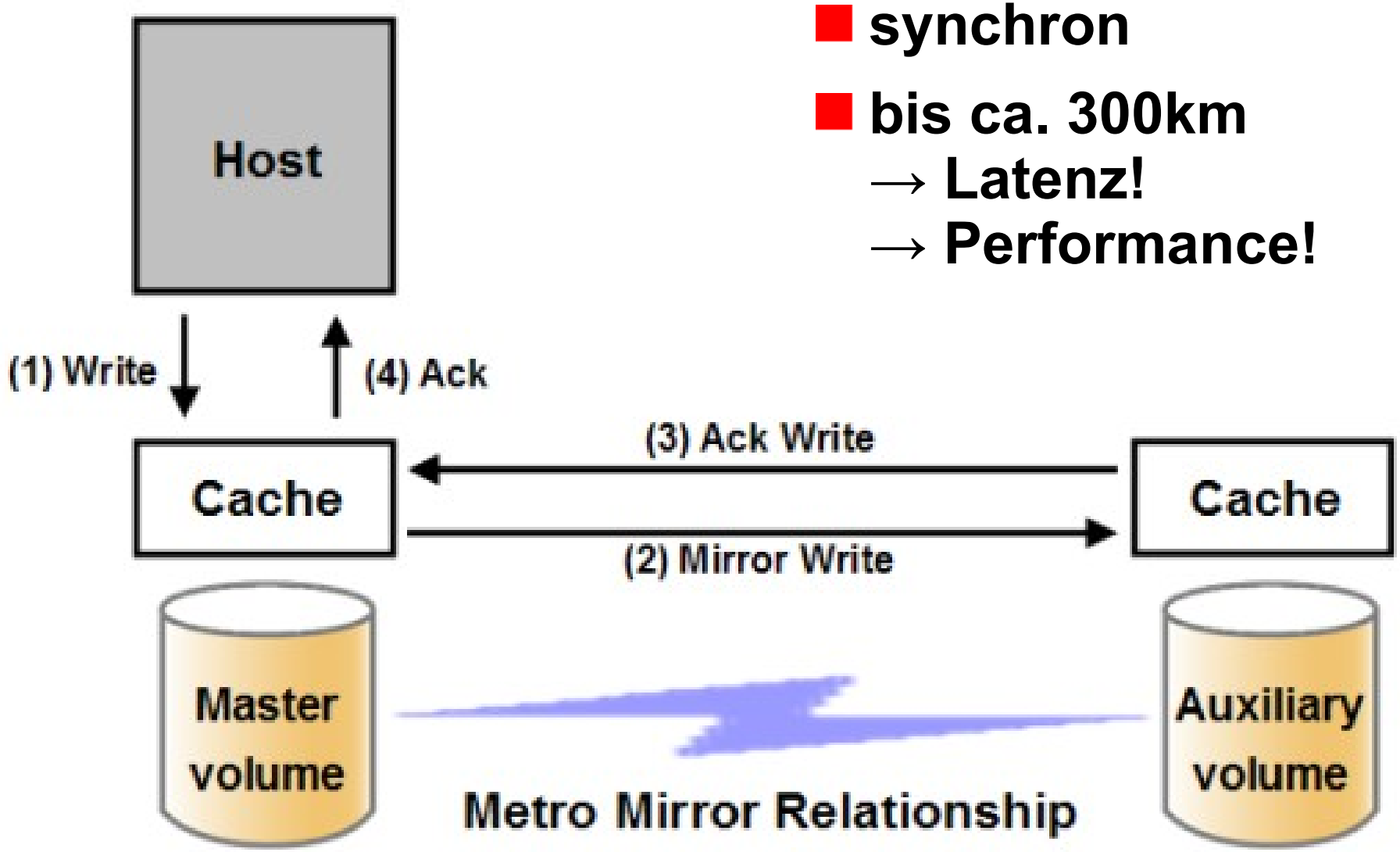
V7000 Remote Copy

- Controller → Partnership
- Volumes → Remote Copy Relationship



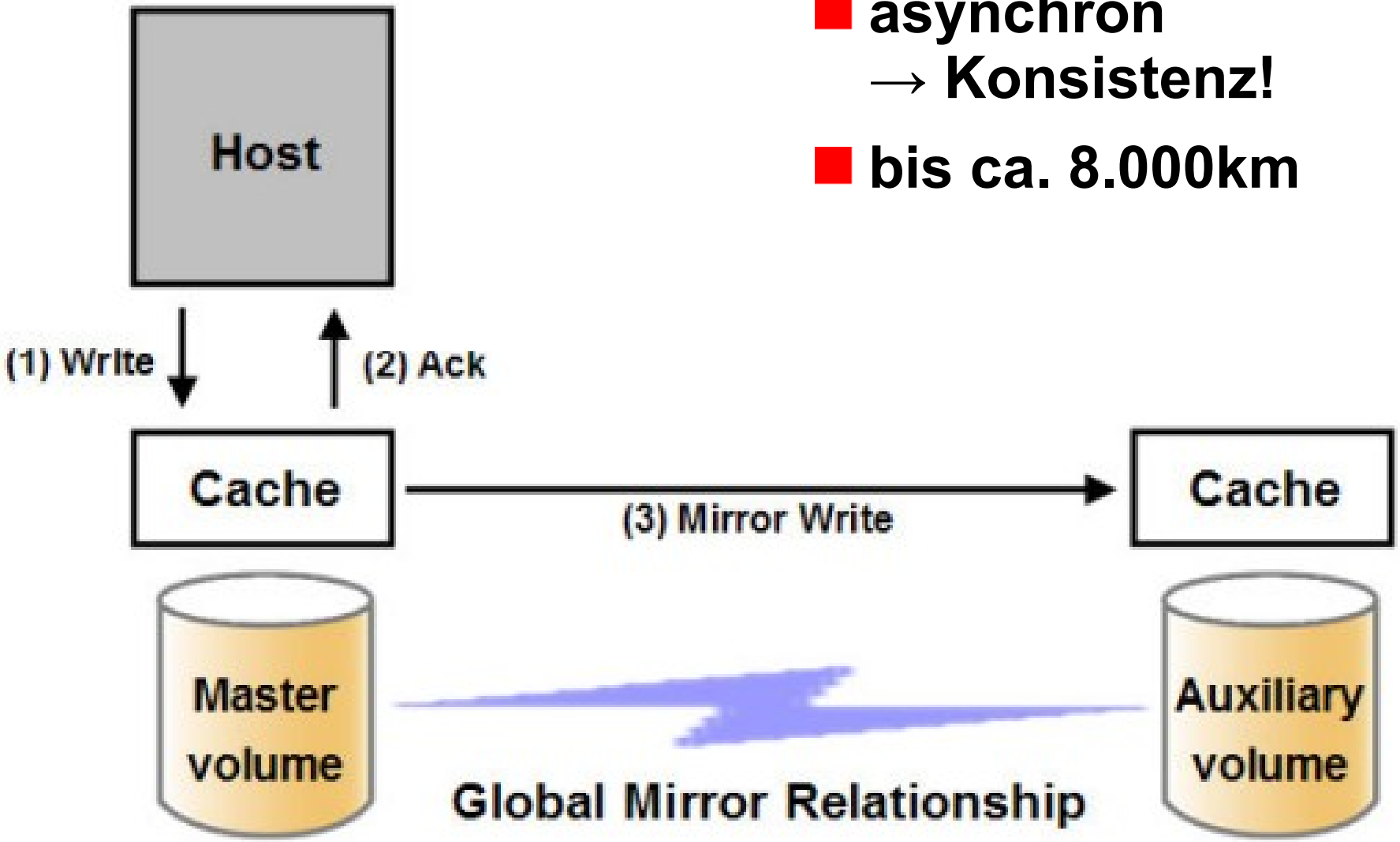
V7000 Metro Mirror

- synchron
- bis ca. 300km
  → Latenz!
  → Performance!

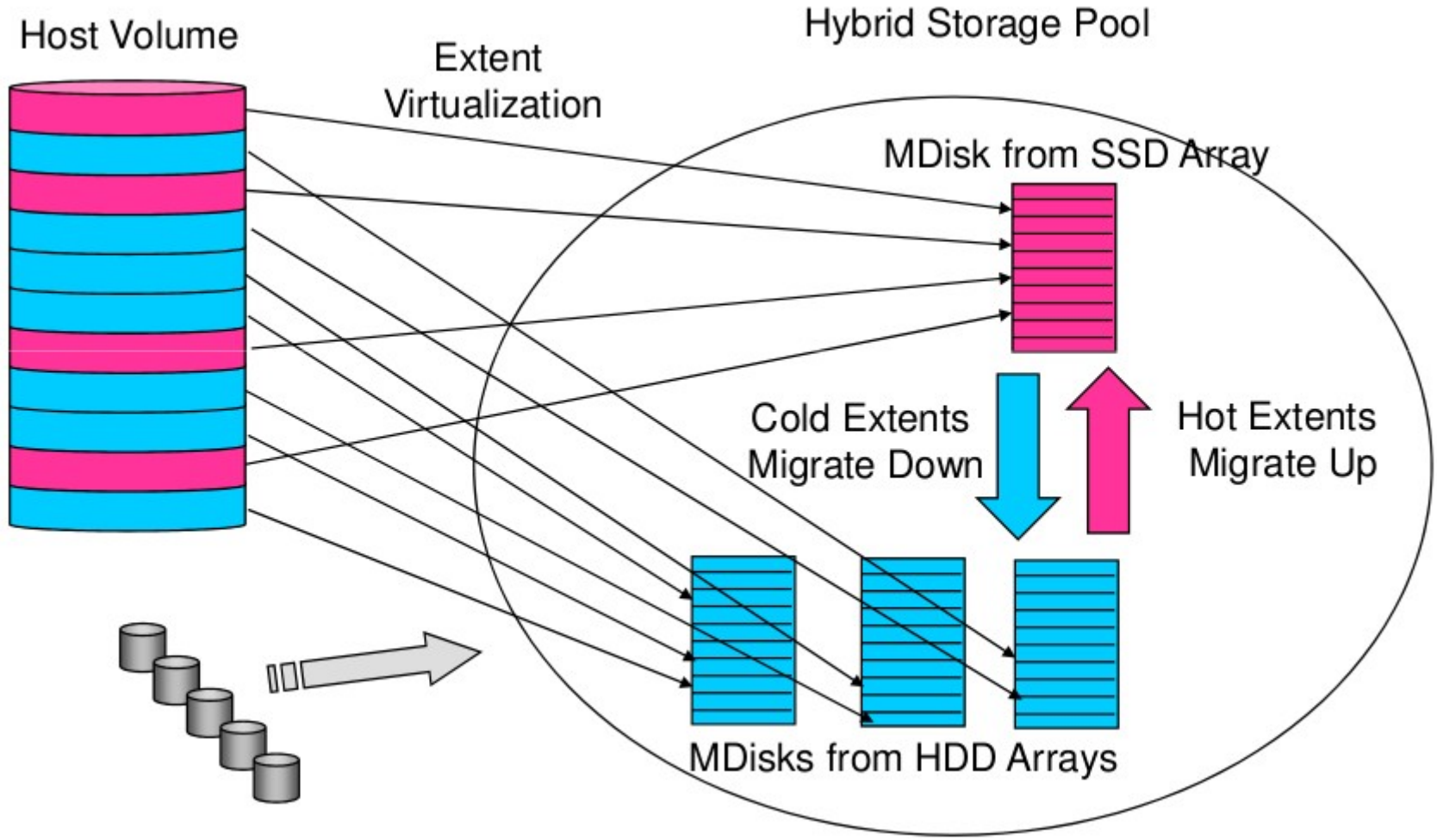


V7000 Global Mirror

- asynchron
  → Konsistenz!
- bis ca. 8.000km



V7000 Easy Tiering



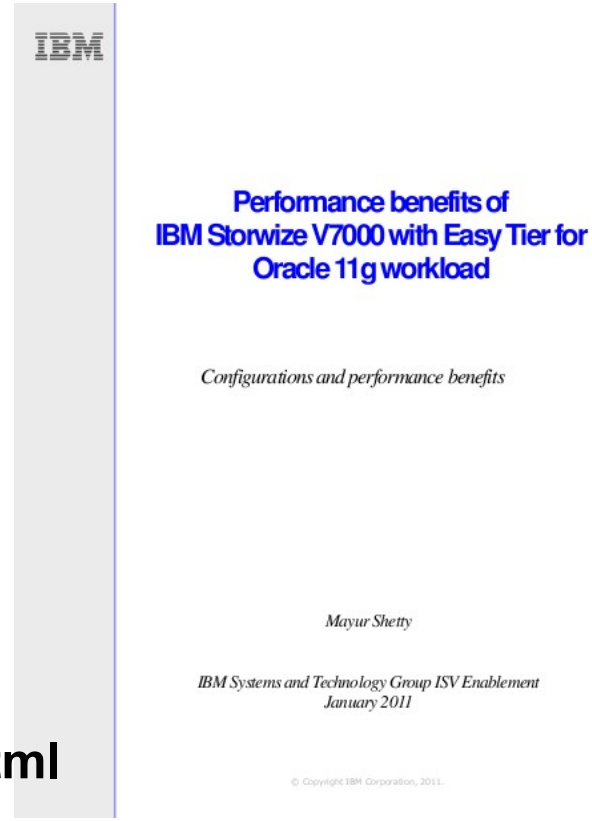
V7000 Easy Tiering – Performance

- **IBM Whitepaper**
  Performance benefits of IBM Storwize V7000 with Easy Tier for Oracle 11g workload
  http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101838

- **V7000**
  → 32x 300GB 10k SAS (4x8xRAID10)
  → 6x 300GB E-MLC SSD (3x2xRAID10)
  → daraus 4 Volumes á 500GB
  → alles „performance optimized“
  → keine Hot Spares

- **Vdbench (5.0.2)**
  http://sourceforge.net/projects/vdbench/

- **Oracle ORION (11.1.0.7.0)**
  http://www.oracle.com/technetwork/topics/index-089595.html


IBM

Performance benefits of IBM Storwize V7000 with Easy Tier for Oracle 11g workload

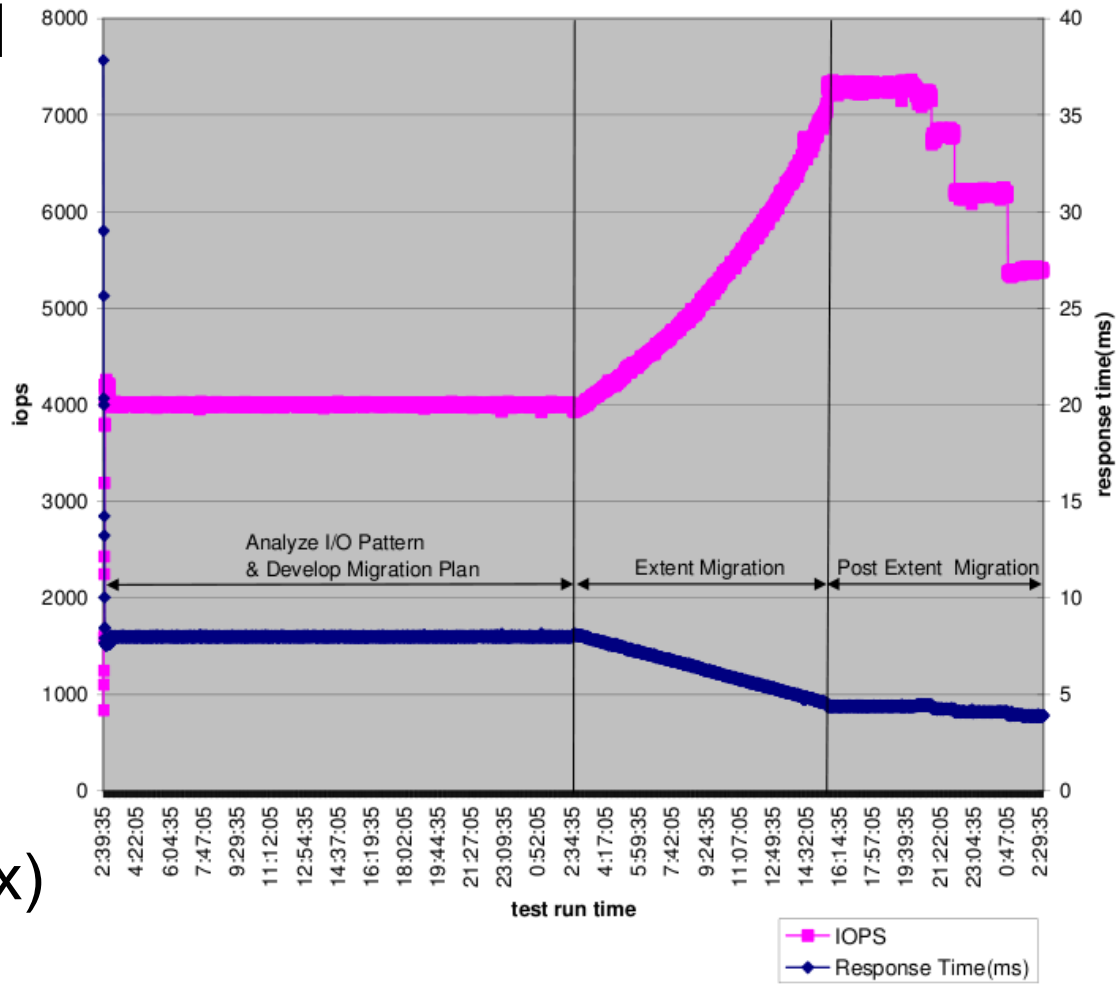
Configurations and performance benefits

Mayur Shetty

IBM Systems and Technology Group ISV Enablement
January 2011

V7000 Easy Tiering – Performance

- vdbench, 100% random read
  3720 IOPS → 5640 IOPS (1.51x)
  8.63 ms → 4.85 ms (1.78x)
- vdbench 70/30 rd/wr
  4000 IOPS → 5414 IOPS (1.35x)
  8.00 ms → 3.88 ms (2.06x)
- vdbench 50/50 rd/wr
  4342 IOPS → 5000 IOPS (1,15)
  7.39 ms→ 3.00 ms (2.46)
- ORION, 21 outstanding I/O
  6109 IOPS → 10.713 IOPS (1.75x)
  13.09 ms → 7.47 ms (1.75x)
- Preis-/Leistung!?



V7000 Latest News – The Register, 2011-05-10

- neue Software v6.2
  → Clustering von zwei Control Enclosures
  → doppelte Kapazität (480TB)
  → realtime performance monitoring
  → Flash Copy mit Remote Mirror Volumes (ähnlich DS8000)
- 10 Gb/s Ethernet → bis 700% schnelleres iSCSI
  → Upgrade für bestehende Controller möglich
- 146GB 15k SAS-Disks
- Support für *VMware vStorage API for Array Integration*
  → „offload“ Storage-Arbeit (Snapshots, Clones)
- neue externe Storage-Systeme:
  EMC VNX, HDS VSP, HP P9500, Texas Memory RamSan-620
- GA im Juni 2011

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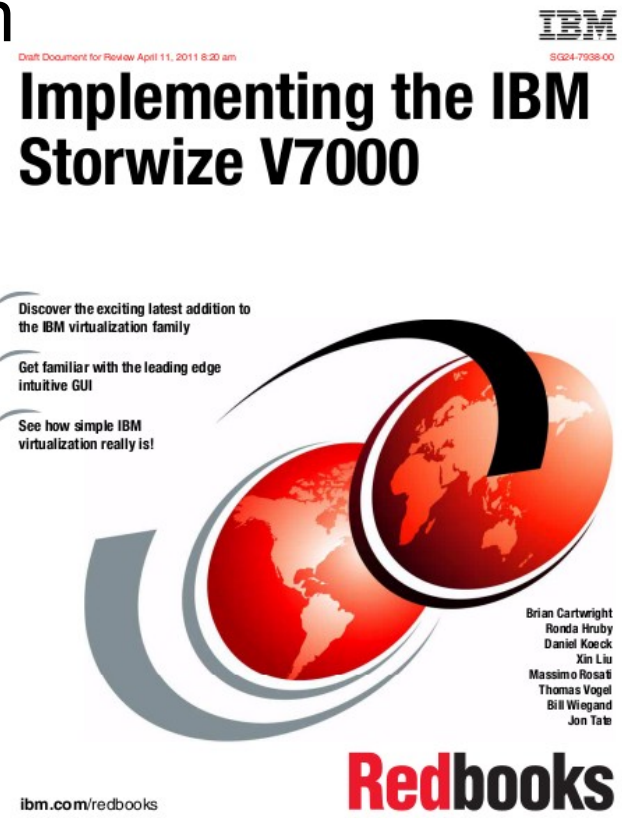
V7000 Lizensierung

License Type	Unit	Required?
Enclosure	Grundeinheit und Anzahl Expansion Enclosures	ja
External Virtualization	Anzahl physischer Enclosures je externes Storage	optional
Remote Mirror	Anzahl physischer Enclosures	optional
Flashcopy	–	included
Volume Mirroring	–	included
Thin Provisioning	–	included
Volume Migration	–	included (45 Tage)
Easy Tier	–	included

weitere Details

- IBM Redbook
  Implementing the IBM Storwize V7000
  http://www.redbooks.ibm.com/redpieces/abstracts/sg247938.html?Open
- IBM Storwize V7000 Midrange Disk System
  http://www-03.ibm.com/systems/storage/disk/storwize_v7000/



Danke für die Aufmerksamkeit.
Fragen?

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