A Block Storage Multi-Protocol Converter:

The core for versatile data storage products.

TechnoMages, Inc.

- Privately held company: HQ in Maryland
- Focuses on Disk and Tape Storage management
- Develops software for versatile, adaptable volume-management
- Integrates this software into disk arrays and router appliances
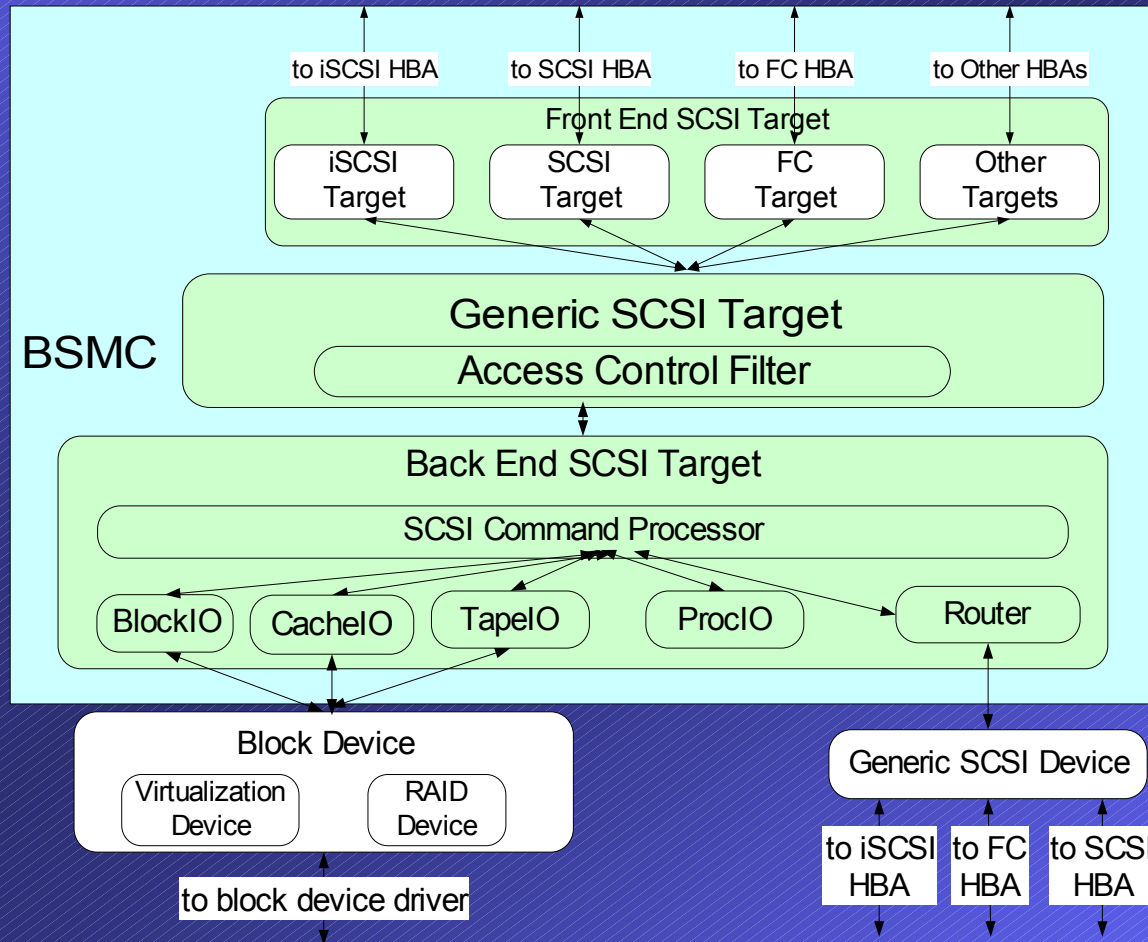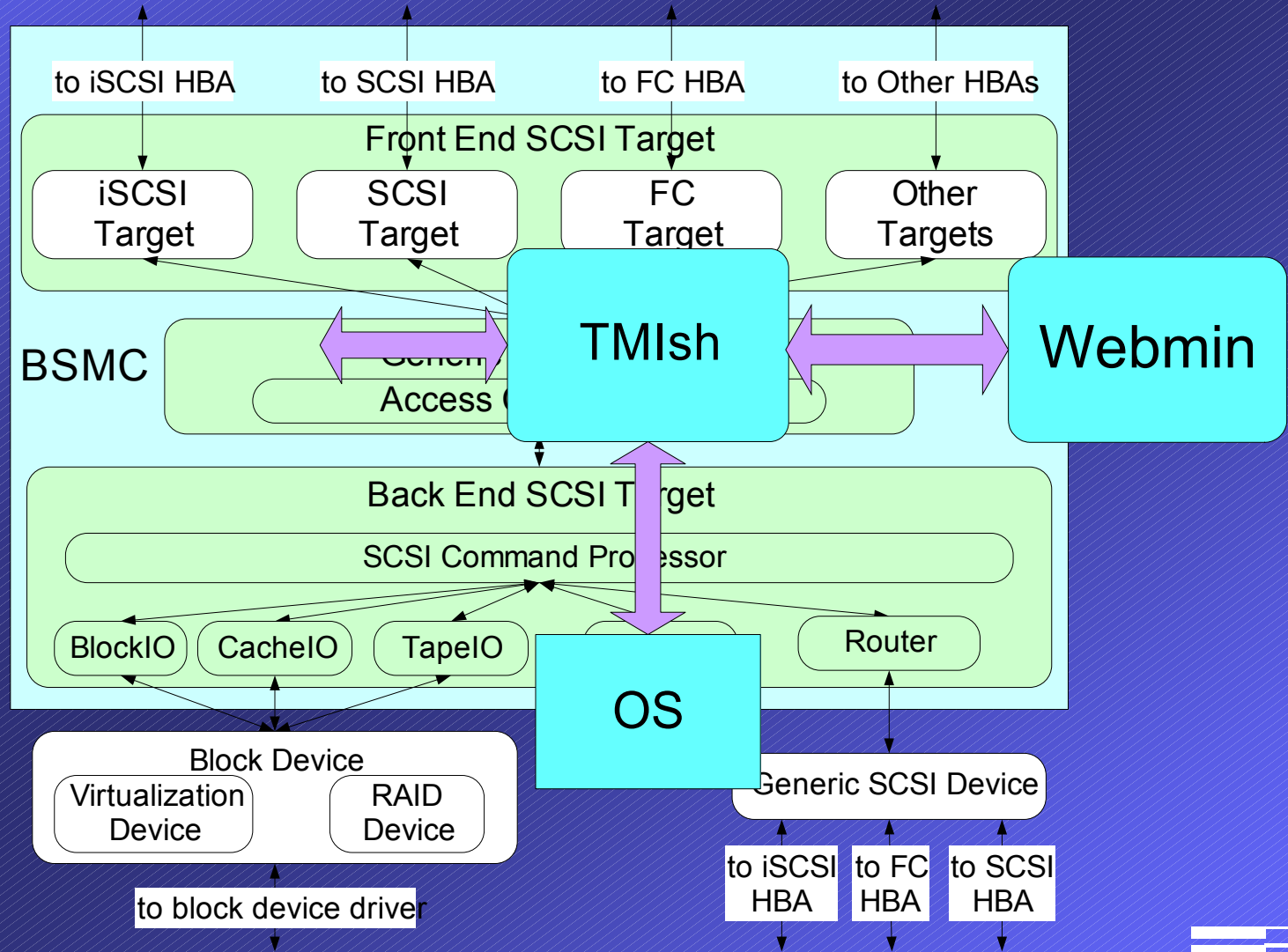
Block Storage Multi-Protocol Converter

– Kernel-level router of SCSI Commands and Data

– Capable of any-to-any routing between targets and initiators that are cabled via…

  • Ultra160 SCSI (Ultra320 coming)   [SPI-2,3,4]

  • FibreChannel (1 and 2 Gbps)   [FCP]

  • Ethernet   [iSCSI]

  • Other IP transports (ATM, other WAN)   [iSCSI]

  • EIDE (initiator only)   [ATA]

– Commercial name: DTP ("Data Transport Processor")

  • <u>Subsets</u> of the BSMC's capabilities

  • GUI and CLI <u>configuration tools</u>

  • Packaged in embedded OS

Internal Structure of BSMC

to iSCSI HBA   to SCSI HBA   to FC HBA   to Other HBAs

Front End SCSI Target

| iSCSI Target | SCSI Target | FC Target | Other Targets |

BSMC

Generic SCSI Target

Access Control Filter

Back End SCSI Target

SCSI Command Processor

BlockIO   CacheIO   TapeIO   ProcIO   Router

Block Device

Virtualization Device   RAID Device

to block device driver

Generic SCSI Device

to iSCSI HBA   to FC HBA   to SCSI HBA

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Internal Structure of DTP
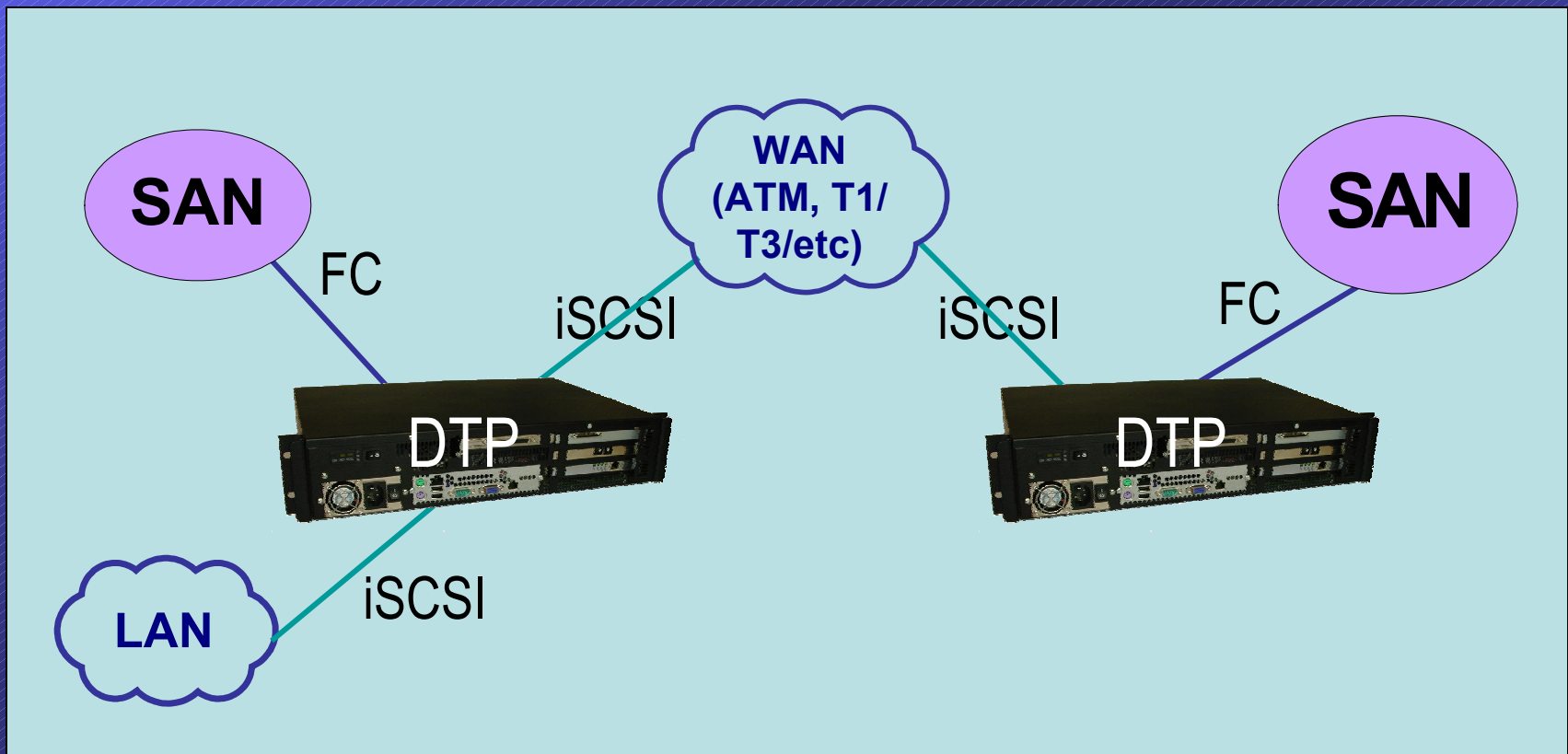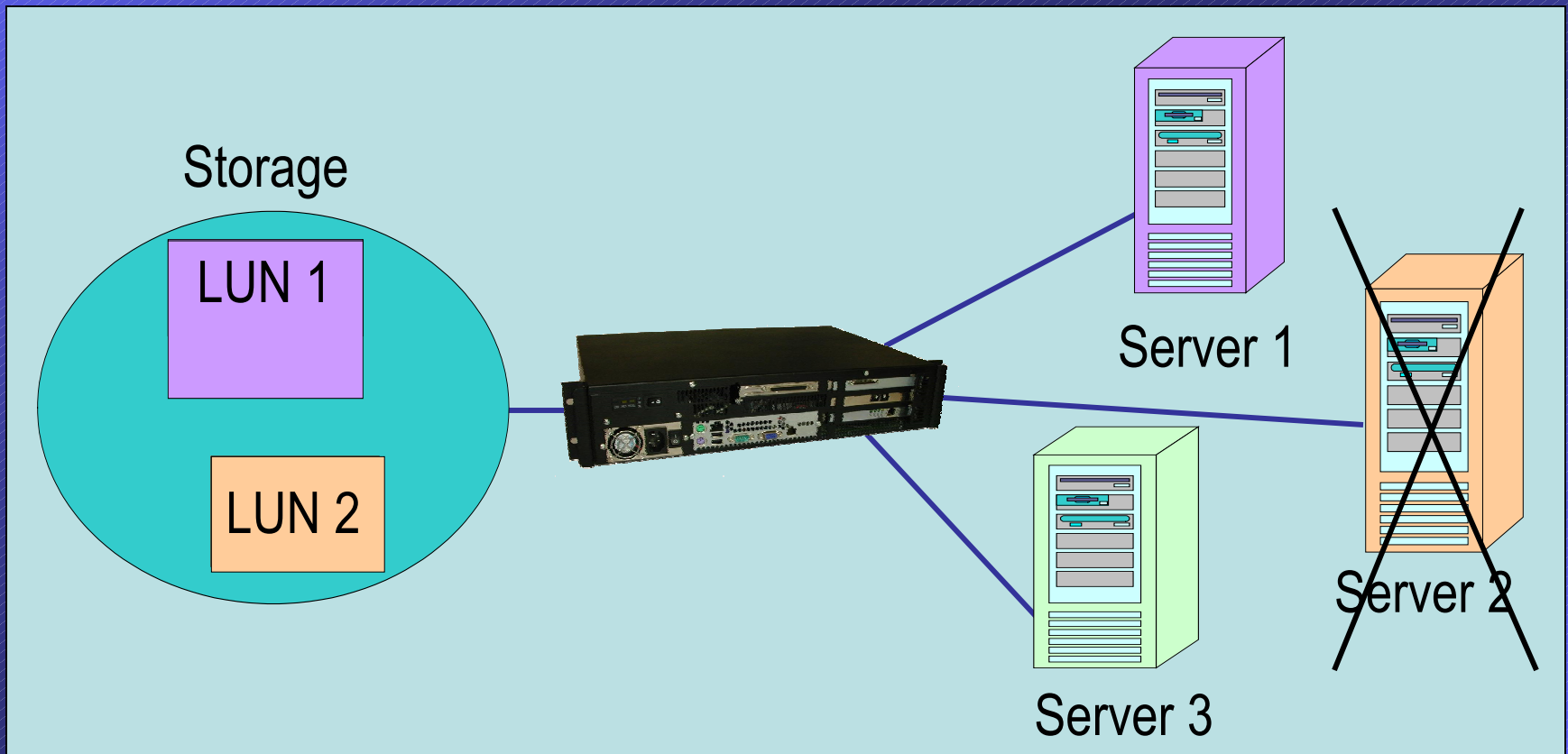

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Performance

- The engine is PCI bound: currently about 1000 MB/sec theoretical max throughput

- InfoSlice with SCSI disks is disk bound, with ATA disks is ATA interface bound

- Can saturate two 2 Gbps FC links

- Best iSCSI over a single Gig-E result today is ~70 MB/sec

Uses of DTP:
Protocol Interconnect capabilities

Uses of DTP:
LAN Management

Storage

LUN 1

LUN 2

Server 1

Server 2

Server 3

BSMC: the flexible core of storage management products

- Interface conversion:
  - SCSI
  - Fibre Channel
  - iSCSI
- LUN management:
  - Logical Volume Management
  - RAID
  - Access Control

InfoSlice: multi-interface disk array

- All of the DTP capabilities
- Interfaces: any mix of
  - iSCSI (Gig-E available)
  - SCSI (U-160)
  - Fibre Channel (1 and 2 Gbps)
- RAID 0, 1, 10, 5

- SCSI or ATA disks
- 3 form factors,
  from 0.25 TB to 4 TB
- Initiator interfaces for connecting tape drives et al. to many servers

Questions?

An annotated copy of this presentation and information about TMI's products can be found at http://www.technomagesinc.com