



NetBackup Appliances Partner Pre-Sales Enablement

Appliance Family and Technical Overview

Symantec Appliances

The story so far...

Symantec Appliances - Aren't we a S/W company?

Opportunity

- Symantec a market leader in Data Protection
- De-duplication is a huge adjacent market
- Symantec has >8yrs experience in this technology

Demand

- Customers are re-architecting their BU designs
- Tape market is being replaced with disk backup market
- New delivery / implementation preference is emerging

Accountability

- Sell a more powerful s/w & h/w combined solution
- Provide an end to end solution from one vendor

Symantec - Serious about appliances

Priority

- Provide our customers choice of form factor
- A more efficient method for customers to deploy s/w

Investment

- Dedicated appliance strategy team at corporate level
- Demo & POC units already in the field or delivered

Status

- **2600 Appliances sold to more than >800 Customers**
- Will form the foundation of an appliance ecosystem
- Already a key growth area for Symantec's business

Backup, De-Duplication → Appliances

A natural progression...

What's driving the demand: Backup complexity...

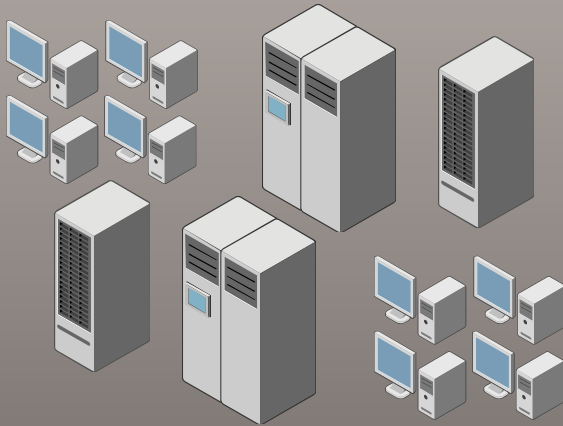


- Backup Application
- Operating System
- Hardware
 - Servers
 - Disk/Dedupe Storage
 - Tape Libraries
- Offsite Tape Management
- System Integrators

How many vendors do you deal with to run your backup operations?

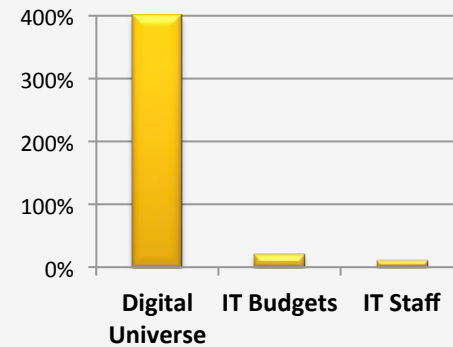
The World of Data Protection Has Changed

Continuous Data Growth



- Challenge to accommodate volume of information along with retention requirements
- Backup and recovery planning spread across vendors, fueled by shifting data needs

Tight IT Budgets



- Competing investment priorities (hardware, software, tools, etc)
- Less IT staff, less specialization

Enterprises looking to update backup environments



Move to Disk



**Avoid Multiple
Point Products**



**Protect
Everything**



**Choose
Application
Aware Solution**



**Extend DR Plan
to Cloud**

**Making use of end-to-end turnkey BU solutions
to support this transition can be powerful...**

Selecting an Enterprise Backup Solution Rachel Dines, Forrester Research (September 2010)

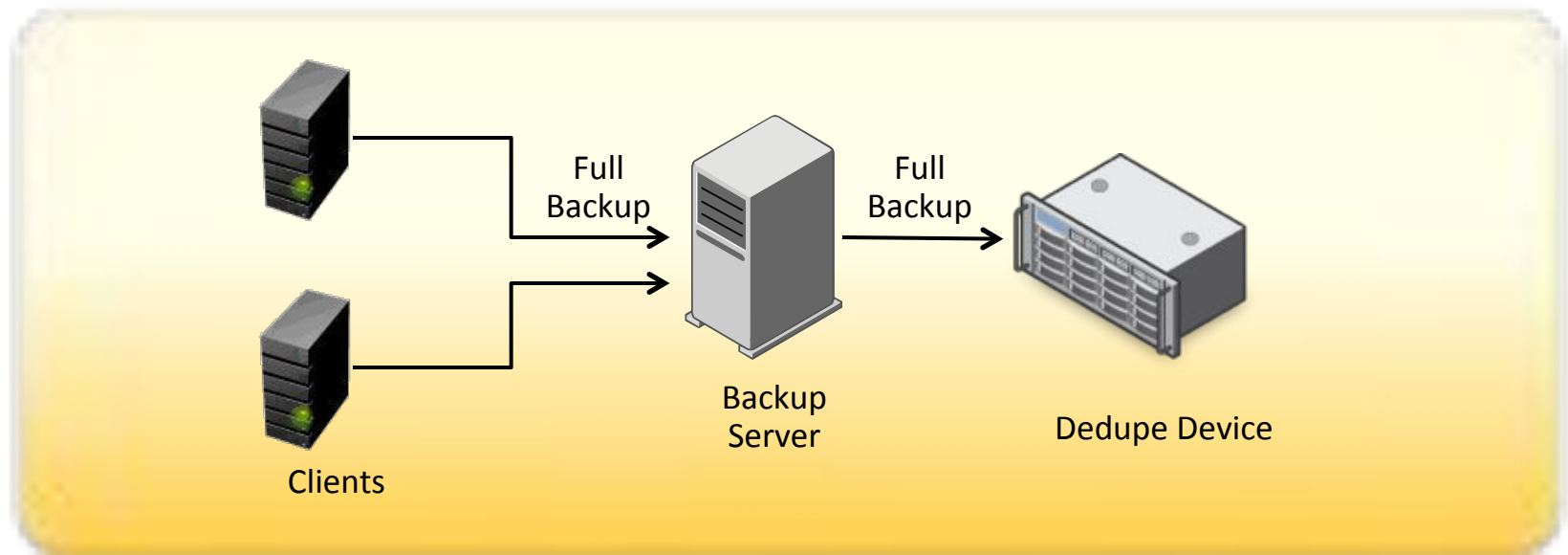
Characteristics of a Turnkey Backup Solution



On – Set – Go!

- H/W & S/W from a single vendor
- Single point for Support
- Streamlined test and buying process
- Ease of setup and use
- Hands off management
- Application aware protection

How Most Vendors Offer De-duplication for Backup



What is wrong with this approach?

- Not a comprehensive backup solution; the devices are just storage targets
- Each backup is a full backup until it reaches the dedupe storage
- **No bandwidth savings, backup window issue remains**
- **Dealing with multiple vendors**

Unlike Other Vendors, Symantec Offers Choice

Choice of
Places to Dedupe

1

Client Servers



Built-In Dedupe
at the client

2

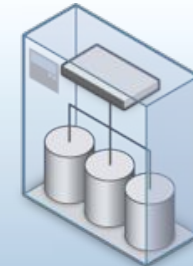
Media Server



Built-In Dedupe
at the media server

3

Target Device



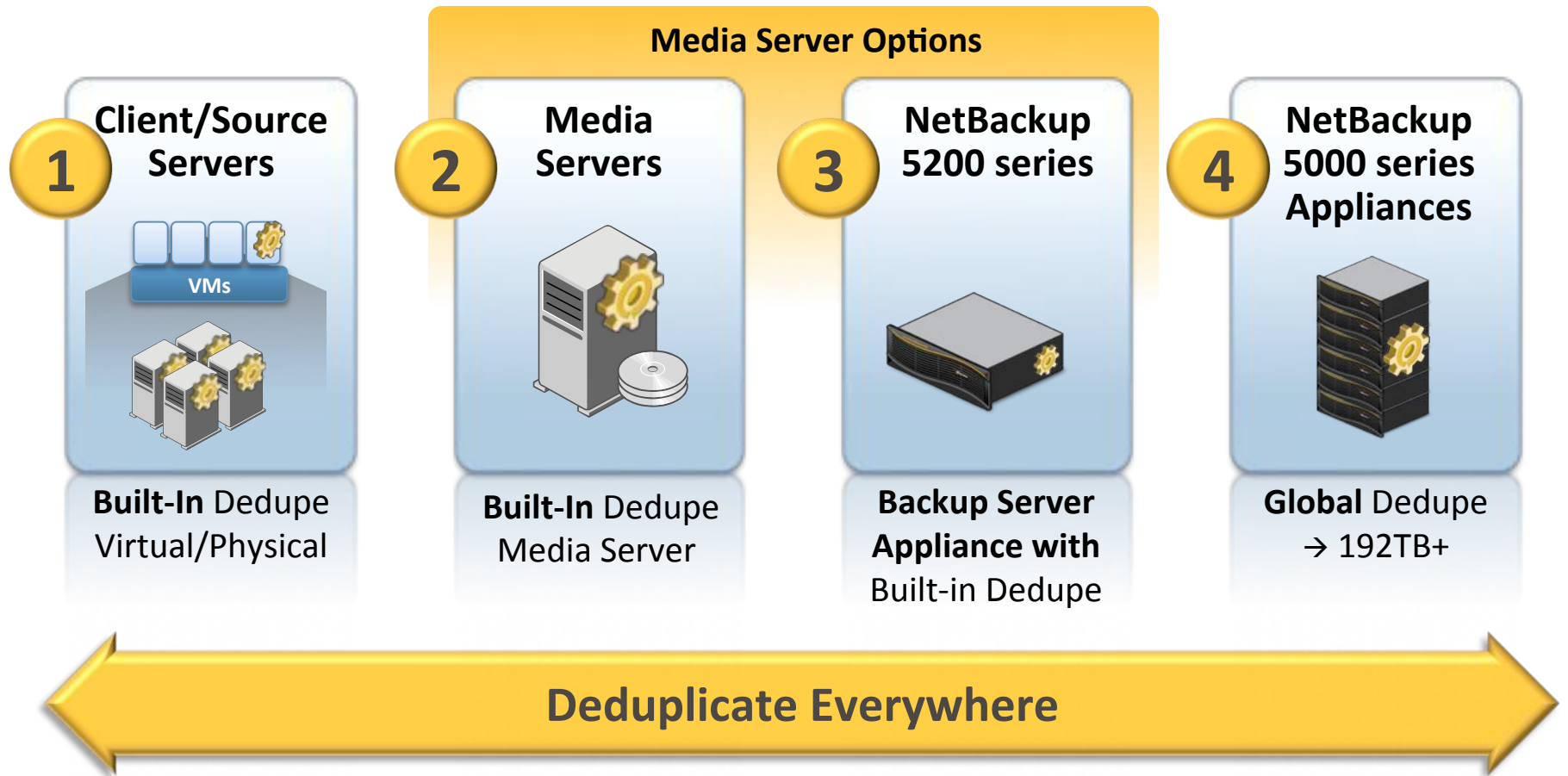
Dedupe at
backend storage target

Choice of
Form Factor

More Choices on a Single Platform—NetBackup



Symantec Difference - Leveraging the entire NBU stack



Why NetBackup Appliances?



Why Symantec Backup Appliances?

Build your own



Hardware Acquisition - Updates
Software Acquisition - Patches
Integration – Test – Deploy
Multiple Consoles
Multiple Vendor Relationships

Turnkey Appliances



Simplified Backup – Lower OpEx
Elimination of Integration
Complexity
Predictable Performance
One Vendor – Easier Acquisition
Single Pane of Glass Management

The Advantage of the Appliance Form Factor

Time to Value Savings, Lowers TCO, Lowers Risk

“You are the Integrator” Strategy

Pre-Deployment Activities

- **Design a Platform \$\$\$ + Time + Risk**

- Pick Platform Hardware
- Pick Configuration
- Candidate Lab, Testing
 - Connect to VSAN, LAN, NetBackup
 - Provision Storage
 - Configure Application
 - Test Configuration
 - Add workload
 - Validate and Document Configuration

- **Determine Standard Risk**

- **Purchase components \$\$\$\$ + Time**

- Server
- Storage
- SAN
- LAN

- **HW Assembly and configuration
\$\$ + Time + Risk**

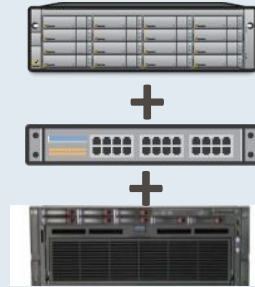
- **Storage Configuration, layout and provisioning
\$\$ + Time + Risk**

- **OS Installation and Patch
Time + Risk**

- **NetBackup Installation & Patch
Time + Risk**

- **Tuning Time + Risk**

- Storage
- Operating System
- Network
- NetBackup



Post-Deployment Activities

- **Deploy & Manage \$\$\$\$ + Time + Risk**

- Stage & Test updates
- Add OS + Patches
- Add NetBackup + Patches
- Customize to Hardware

- **Support Model \$\$\$ + Risk**

- Platform Support
- Storage Support
- NetBackup Support
- **Who Owns the Problem ?**
Time + Risk



Symantec Appliance Strategy



- **Select an Appliance**

- **Purchase**

- **Deploy & Manage**

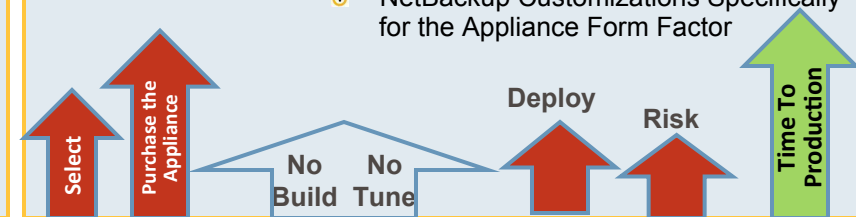
- Rapidly deploy & validate
- Simple, single patch updates

- **Support Model**

- (One Partner for both Software and Hardware)
- ✓ Symantec

Purpose Built Configurations:

- ✓ A Platform Designed Specifically for NetBackup
- ✓ Integrated Storage Designed, laid out, configured, and tuned Specifically for NetBackup
- ✓ A Customized, Patched Operating System Tuned Specifically for NetBackup
- ✓ Certified, configured and tuned Connectivity Options
- ✓ NetBackup Customizations Specifically for the Appliance Form Factor



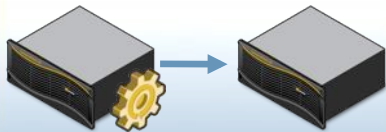
Symantec Dedupe Licensing Model Advantages

The 3 Rs – Replication, Retention, and Refresh

Others



Replication



- 💰 Pay same price for each additional copy
- 💰 Pay for replication engine

- ✓ No license cost for replica storage capacity
- ✓ No cost for replication engine

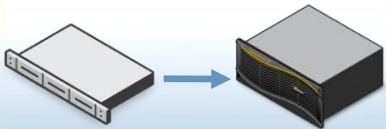
Retention



- 💰 Dedupe costs grow dramatically as data ages and back end storage grows

- ✓ No license cost for increased backup storage as data ages

Refresh



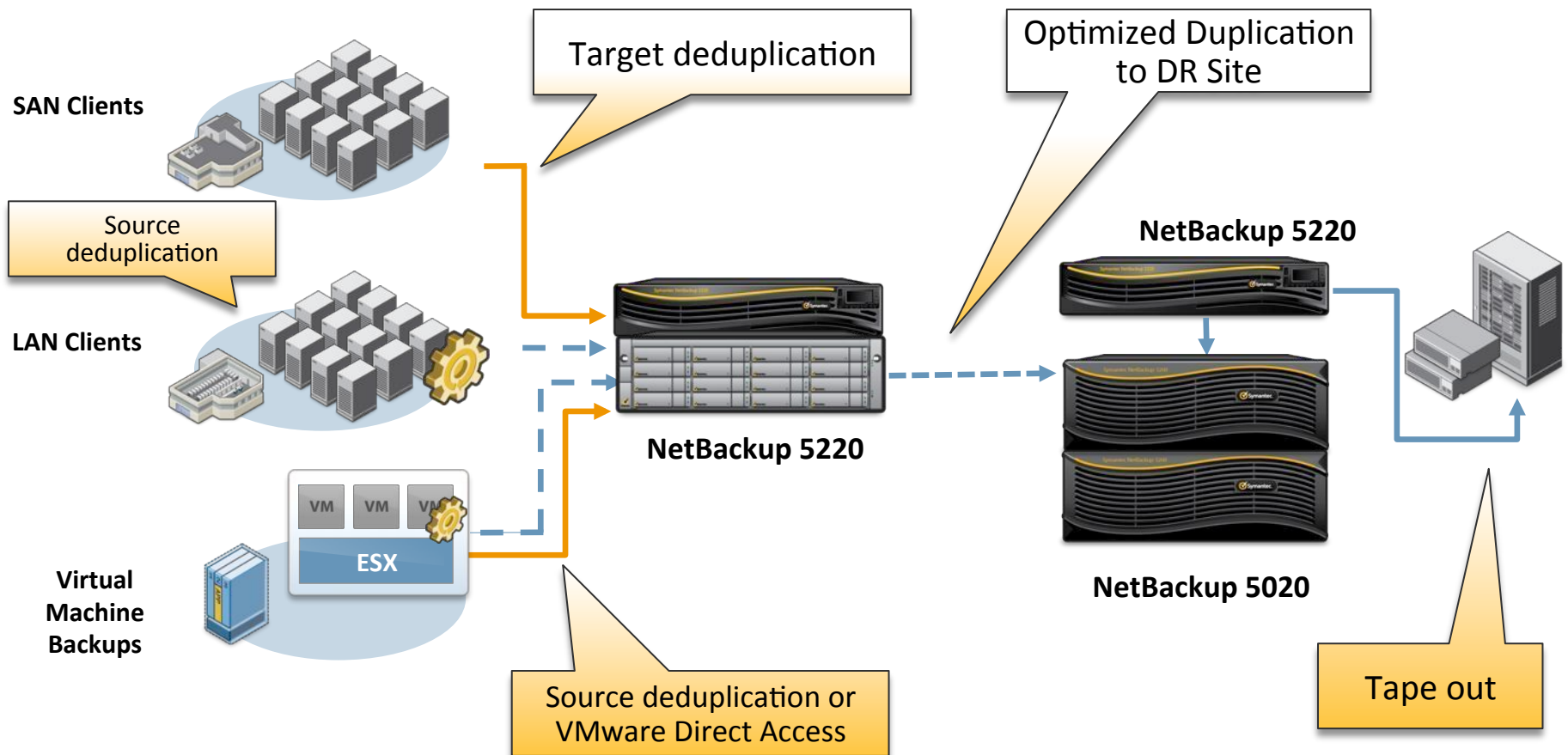
- 💰 Dedupe technology is purchased every time hardware is refreshed
- 💰 License NOT transferable to other platforms

- ✓ License is perpetual – buy once, own forever
- ✓ License not tied to hardware – no lock-in

NetBackup Appliances from Symantec

Building Blocks for More Efficient Data Protection

Complete backup solution with flexible deduplication and connectivity options for Enterprises of any size



Symantec Appliances

Options for De-duplication in Data Protection

NetBackup Appliances – Two different approaches



NetBackup 52XX Series
Integrated NetBackup Appliance

NetBackup 50XX Series
De-duplication Appliances

Appliance Deployment Scenario: NetBackup 5020



NetBackup 5020

- Plugs into existing NBU infrastructure
- 32TB de-duplicated storage per box
- Grow Modularly by stacking boxes
- Use existing Master and Media servers
- For NetBackup 6.5 and above

De-duplicated storage pools of up to 192TB each

Position for dedupe pools >64TB: Long term retention, DR hubs etc.

Appliance Deployment Scenario: NetBackup 5220



NetBackup 5220

- Complete NBU infrastructure HW & SW
- Up to 64 TB de-duplicated storage
- DC use-case as master / media
- Remote office use-case as master
- Regional DC (All in one)

Master & Media Servers + Deduplicated storage

Position as integrated media server and storage, SAN backups, remote offices, all-in-one backup server etc.

Appliance Deployment Scenario: 5220 + 5020



NetBackup 5220

- Master & Media Servers
- 4TB → 72 TB Storage (Dedupe/Adv. Disk)
- Multiple Interfaces



+

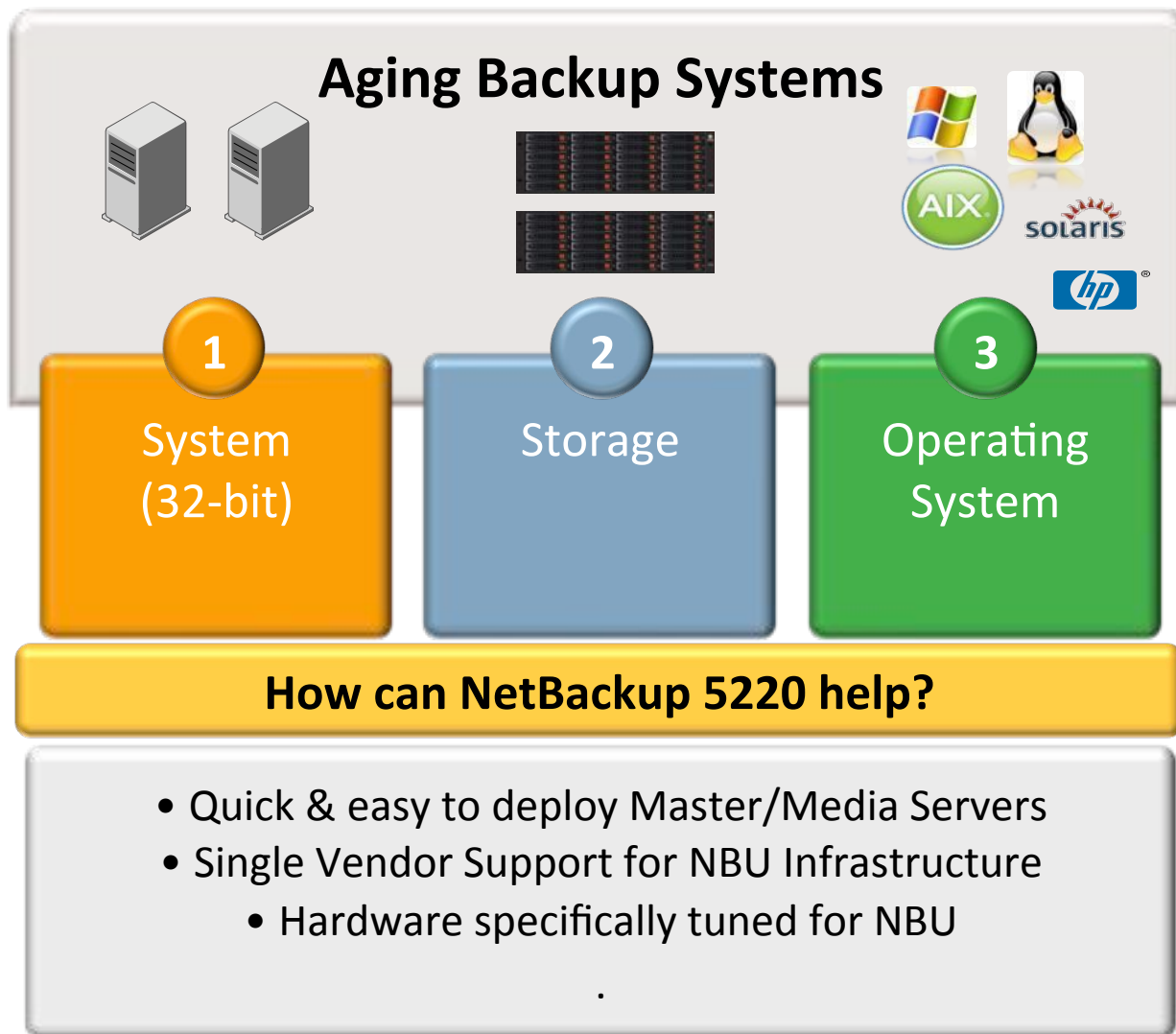


Up to 6 x NetBackup 5020

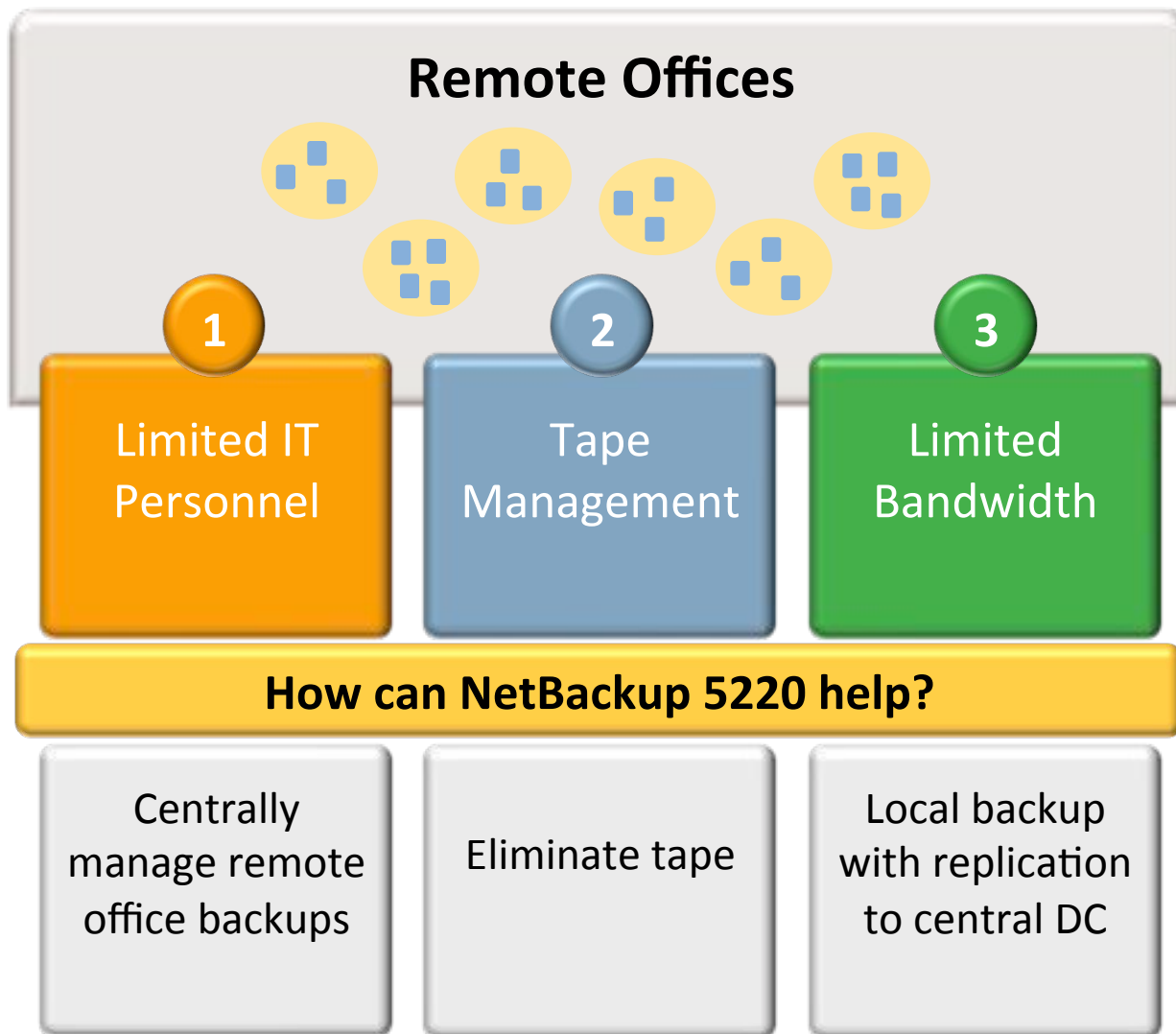
- 32TB → 192TB De-Duplicated Storage
- Multiple Interfaces

Master & Media Servers with scalable, deduplicated storage for building complete enterprise class recovery solution

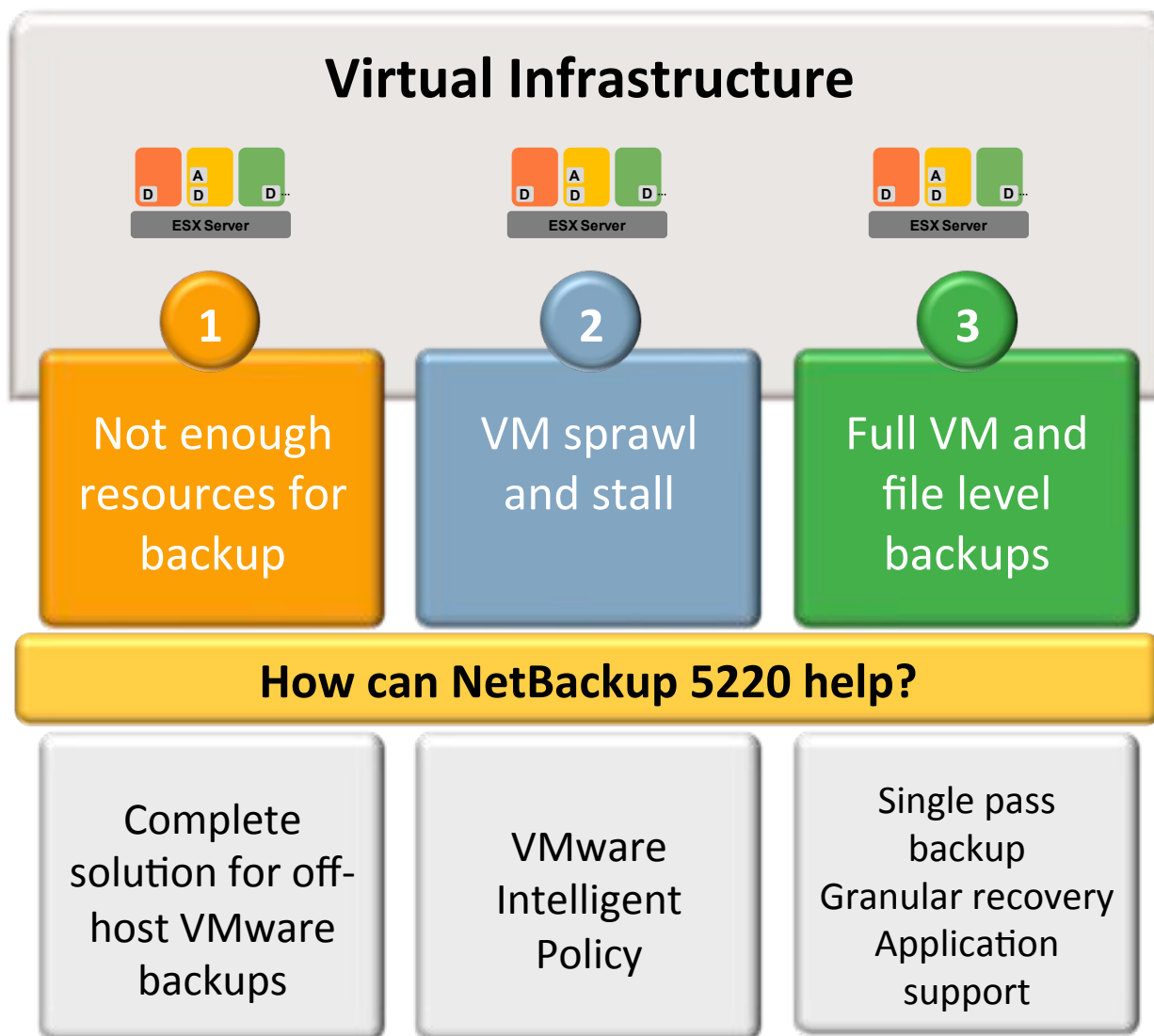
NetBackup 5220: Ideal for hardware refresh



NetBackup 5220: Ideal for Remote Offices



NetBackup 5220: Ideal for VM Protection



Symantec Appliances – Key Value Differentiators

Simplify Operations & Standardize

- Seamless integration with NetBackup
- Backup server, storage & de-duplication from one vendor
- SCALE OUT flexibility
- Deploy across all environments - DC, VMs, remote office

Save Time & Reduce Risk





- Deployment with reduced effort, time and risk
- Streamlined upgrade & patching process
- Enhanced backup, reduced downtime, improved reliability

Enhanced Support (H/W + S/W +BCS)

- Single vendor – one support call
- Appliance & related S/W integrated into BCS Contract
- Further enhanced with partner services

NetBackup Appliances Family Technical Features Overview

The Symantec NetBackup Appliance Family

NetBackup Backup Appliances with Deduplication		NetBackup Deduplication Appliances	
5220	5200	5020	5000
2U, 2U+3U, 2U+3U+3U (2, 5 or 8U) form factor	4U form factor	4U form factor	4U form factor
4-72TB capacity*	32TB capacity*	32TB capacity*	16TB capacity*
Media/Master server	Media/Master server		
Deduplication (Client/Target)	Deduplication (Client/Target)	Global Deduplication, scalable to 192TB with 6 nodes	Global Deduplication, scalable to 96TB with 6 nodes
Fibre Channel		Fibre Channel	
1 & 10GB Ethernet	1 & 10GB Ethernet	1 & 10GB Ethernet	1GB Ethernet
Transferable software licensing			
Replication at no charge			
Front-end capacity software licensing			
			

* Capacity is usable capacity

NetBackup Appliances from Symantec

NetBackup 5020 Appliance Hardware



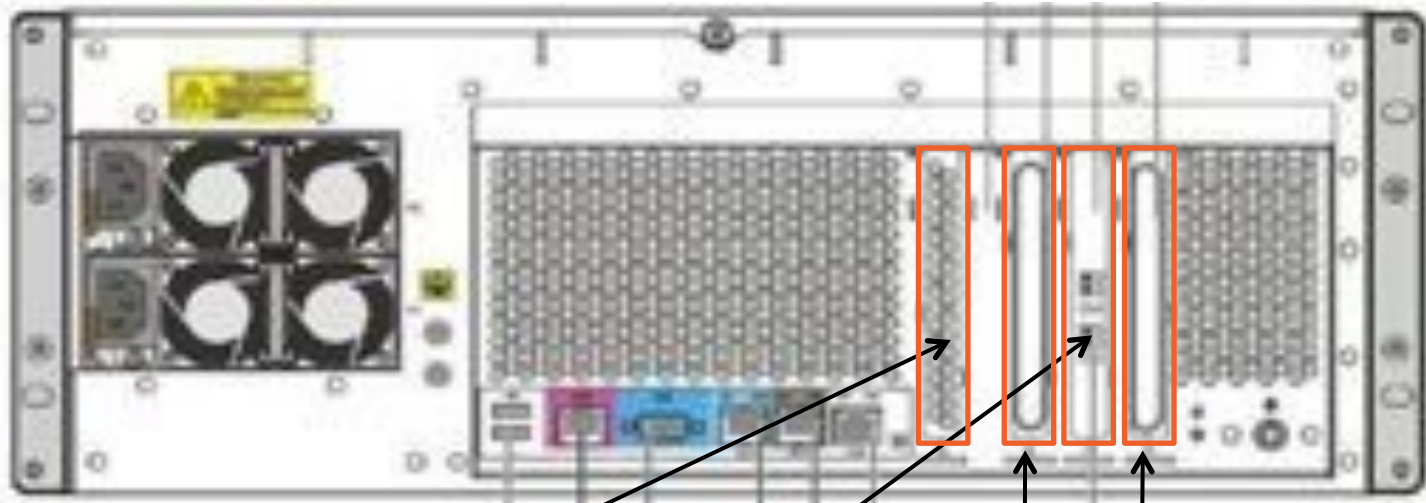
- 4U System Unit
 - Dual quad core CPU
 - 32GB RAM
 - 24 x 2 TB SATA disks
 - 2 x disks - Global hot spares
 - OS Volume
 - 2 x disks RAID 1
 - Deduplication Storage Volume
 - 20 x disks RAID 6
 - 32 TB useable capacity
- I/O Options
 - One from
 - 2 x 1 GbE, 2 x 10 GbE NICs
 - 2 x 1 GbE, 2 x 10 GbE NICs, 4 x 8 Gbit FC
 - 6 x 1 GbE NICs

FC Option

- 2 ports – Inbound
 - SAN Client via NetBackup 5220
 - Opt Dup from NetBackup 5020/5220
- 2 ports – Outbound
 - Opt Dup to NetBackup 5020



NetBackup 5020 Rear View



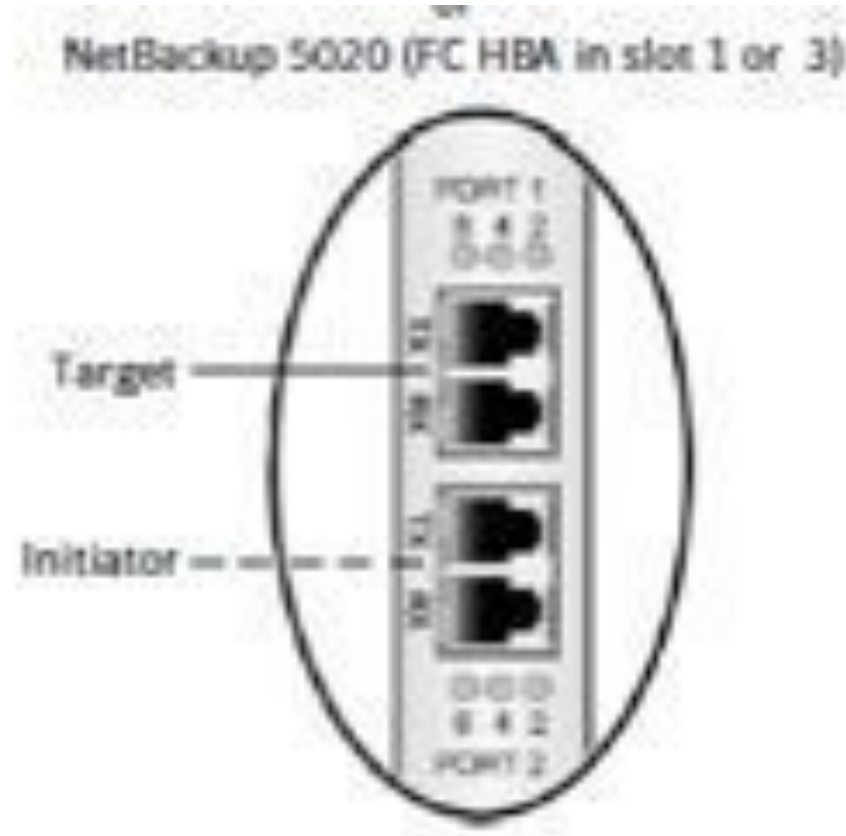
Slot 0:
RAID Controller

Slot 2:
2 x 10 GbE Ethernet
OR
4 x 1 GbE Ethernet

Slot 1 – 2 x 8 Gbit FC HBA
Slot 3 – 2 x 8 Gbit FC HBA

**“FC Backup
Option”**

NetBackup 5020 FC Options



NetBackup 5020 Software Specifications

- Symantec Appliance OS (based on SUSE 10 Linux)
- NetBackup Appliance Software Release D1.4.2
 - PureDisk 6.6.3a + plus installer, callhome etc. extensions
- Symantec Critical System Protection Integration (SCSP)
 - IPS, monitoring; IDS; unmanaged agent Symantec Web Console
- Veritas Storage Foundation 5.0 (storage management)
- CLISH (command line interface)
- LSI MegaRAID CLI/Storage Manager

NetBackup Appliances from Symantec

NetBackup 5220 Appliance Hardware Details

- 2U Head Unit
 - Dual quad core E5620
 - 2 banks 6 DIMMS DDR3-1333
 - 24GB (4TB old) /48GB (4TB) /96GB (24TB+)
 - 2 x 1 TB SATA OS disks – RAID 1
 - 6 x 1 GbE NICs
 - 4 TB Usable Storage
 - NetBackup Disk and/or Dedupe Disk Pool
 - 8 x 1 TB SAS disks – RAID 6 + 1 hot spare
- 3U Optional Storage Shelves
 - 24 or 36 TB Usable Storage
 - 2 or 3 TB SAS data disks
 - NetBackup Deduplication/ Advanced Disk Pools
- Head Unit I/O Options
 - Up to 6x 8Gb FC
 - Tape out/VMware/SAN Client & Opt Dup
 - 2 x 10 GbE NIC
 - 4x 1GbE NIC



H/W OEMs

- **Head Unit - NEI**
 - <http://www.nei.com>
- **Storage Shelf – Promise**
 - <http://www.promise.com>

Symantec Storage Shelf for NetBackup 5220























Disc Drive	2TB	3TB
Raw capacity of Shelf (base10 calculation)	32TB	48TB
Formatted Capacity with RAID 6 and Spare (base2 calculation)	23.65TB “24TB”	35.48TB “36TB”

Storage Combinations Permitted	Total Capacity* / Usable for MSDP*
5220 Base Unit Only	4TB / 4TB
5220 Base Unit + 24TB shelf	28TB / 28TB
5220 Base Unit + 36TB shelf	40TB / 40TB
5220 Base Unit + 24TB + 24TB shelf	52TB / 52TB
5220 Base Unit + 24TB shelf + 36TB shelf	64TB / 64TB
5220 Base Unit + 36TB shelf + 36TB shelf	76TB / 64TB

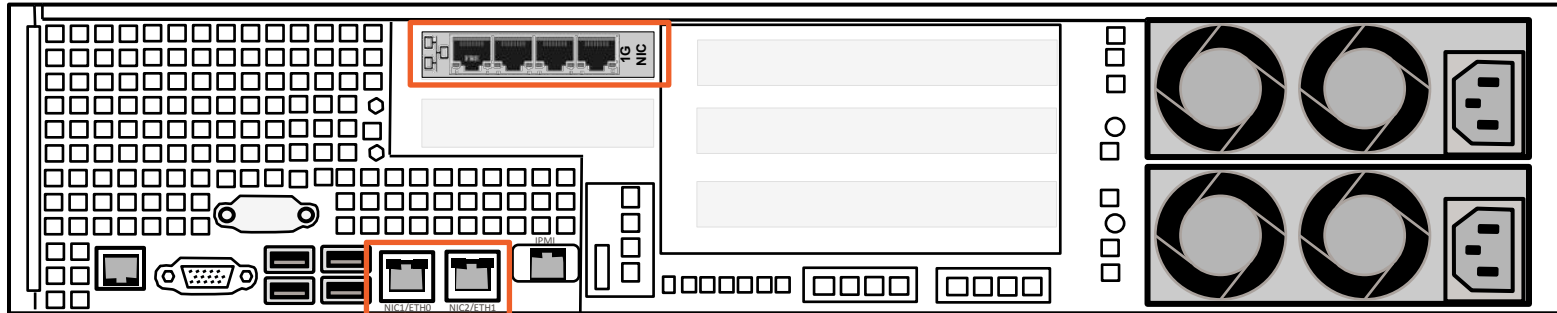
*Capacities are rounded in keeping with shelf capacity example above (eg. 24TB shelf = 23.65TB)

5220 Ethernet, Fibre Channel and Storage options

<p>6 X 1 Gb E RJ 45 Copper</p> <p>A-4 </p>	<p>6 X 1 Gb E RJ 45 Copper</p> <p>"A-24" </p>	<p>6 X 1 Gb E RJ 45 Copper</p> <p>"A-36" </p>	<p>6 X 1 Gb E RJ 45 Copper</p> <p>"A48/60" </p>	<p>6 X 1 Gb E RJ 45 Copper</p> <p>"A-72" </p>
<p>6 X 1 GbE RJ 45 Copper 2 X 8 Gb FC LC Optical</p> <p>B-4 </p>	<p>6 X 1 GbERJ 45 Copper 2 X 8 Gb FC LC Optical</p> <p>B-24 </p>	<p>6 X 1 GbE RJ 45 Copper 2 X 8 Gb FC LC Optical</p> <p>B-36 </p>	<p>6 X 1 GbERJ 45 Copper 2 X 8 Gb FC LC Optical</p> <p>"B48/60" </p>	<p>6 X 1 GbE RJ 45 Copper 2 X 8 Gb FC LC Optical</p> <p>B-72 </p>
<p>6 X 1 GbE RJ 45 Copper 2 X 10 GbE LC Optical 2 X 8 Gb FC LC Optical</p> <p>C-4 </p>	<p>6 X 1 GbE RJ 45 Copper 2 X 10 GbE LC Optical 2 X 8 Gb FC LC Optical</p> <p>C-24 </p>	<p>6 X 1 GbE RJ 45 Copper 2 X 10 GbE LC Optical 2 X 8 Gb FC LC Optical</p> <p>C-36 </p>	<p>6 X 1 GbE RJ 45 Copper 2 X 10 GbE LC Optical 2 X 8 Gb FC LC Optical</p> <p>"C48/60" </p>	<p>6 X 1 GbE RJ 45 Copper 2 X 10 GbE LC Optical 2 X 8 Gb FC LC Optical</p> <p>C-72 </p>
<p>6 X 1 GbE RJ 45 Copper 6 X 8 Gb FC LC Optical</p> <p>D-4 </p>	<p>6 X 1 GbE RJ 45 Copper 6 X 8 Gb FC LC Optical</p> <p>D-24 </p>	<p>6 X 1 GbE RJ 45 Copper 6 X 8 Gb FC LC Optical</p> <p>D-36 </p>	<p>6 X 1 GbE RJ 45 Copper 6 X 8 Gb FC LC Optical</p> <p>"D48/60" </p>	<p>6 X 1 GbE RJ 45 Copper 6 X 8 Gb FC LC Optical</p> <p>D-72 </p>

RED BOX Configurations are NOT orderable as a SKU but are valid Field Upgrades

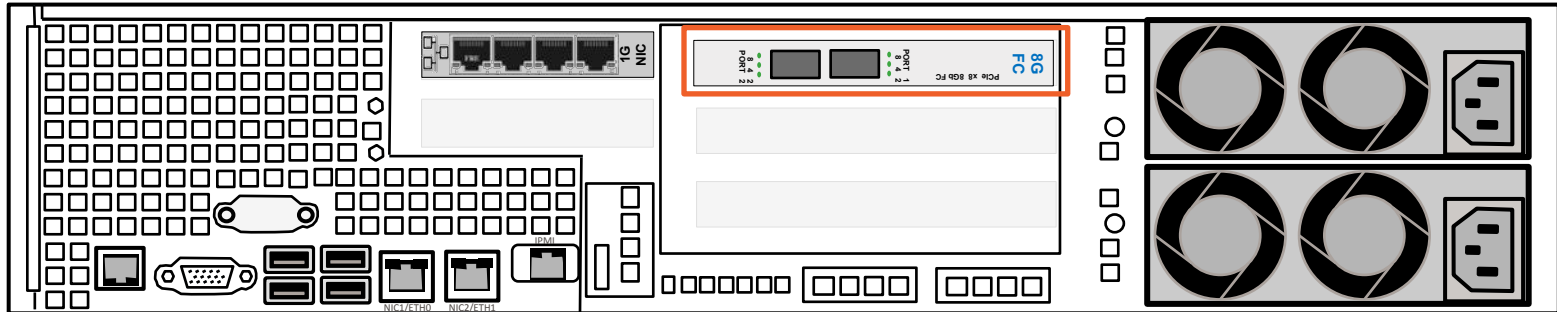
NetBackup 5220 Rear View – A-4



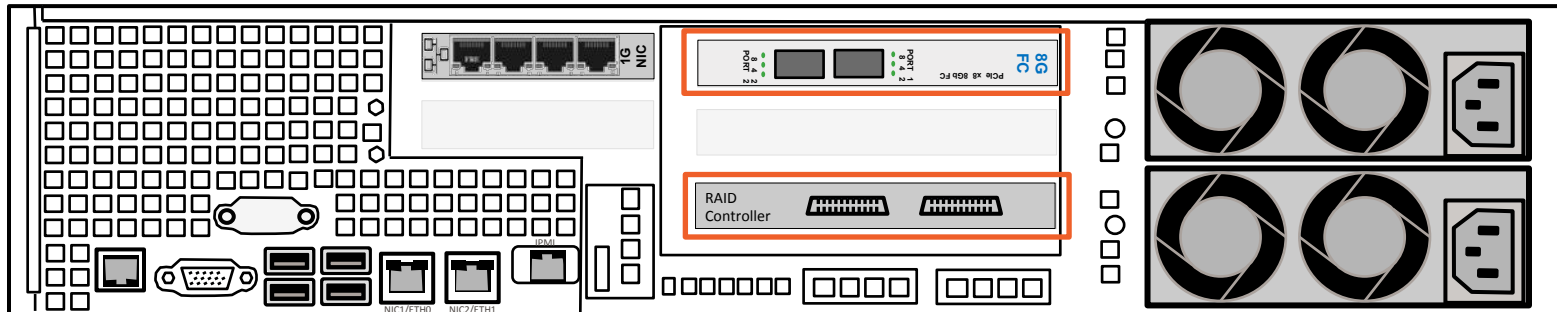
Version A-4

NETBACKUP 5220 - 4TB - 6 x 1GbE ETHERNET

NetBackup 5220 Rear View – B-4, B-24/36

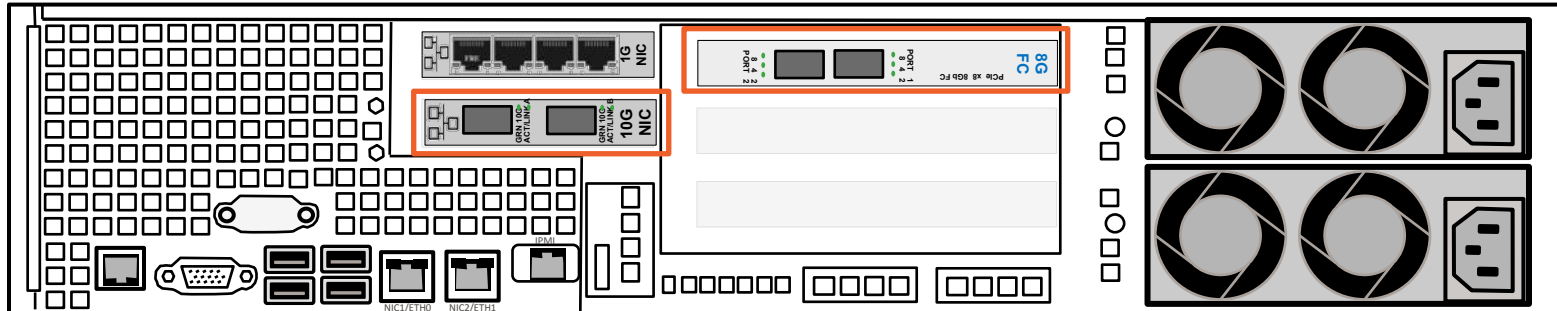


Version B-4 NETBACKUP 5220 - 4TB - 6 x 1GbE ETHERNET, 2 x 8 Gbit FC

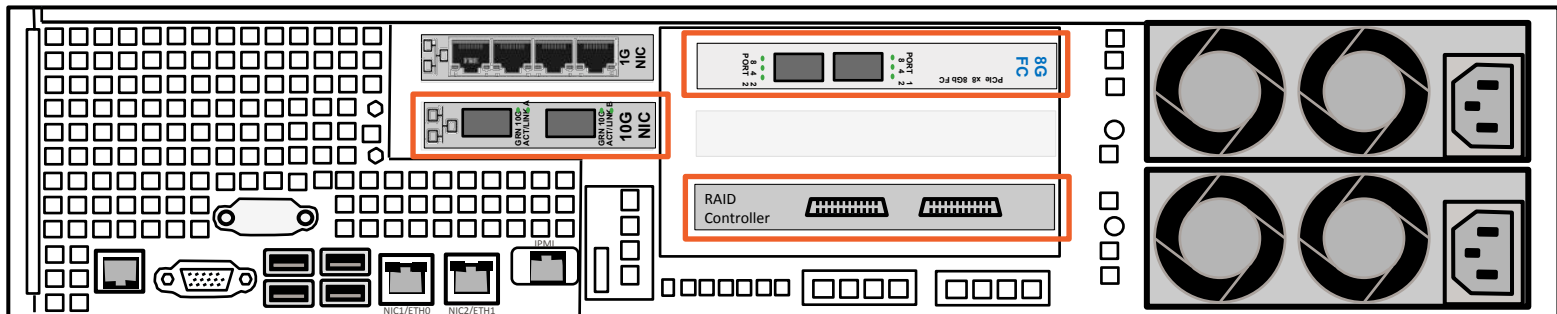


Version B-24/36 NETBACKUP 5220 – 24 or 36 TB, 6 x 1 GbE ETHERNET, 2 x 8 Gbit FC

NetBackup 5220 Rear View – C-4, C-24/36

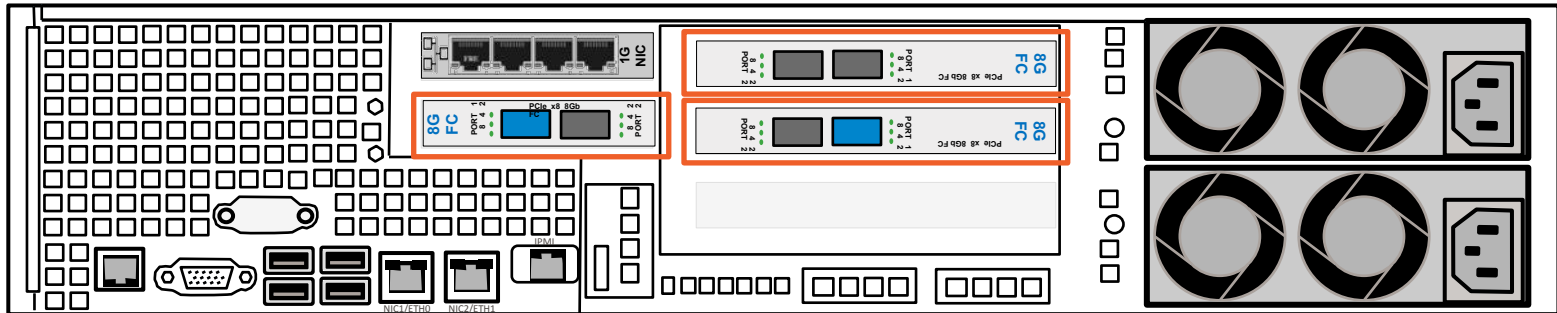


Version C-4 NETBACKUP 5220 - 4TB – 6 x 1GbE & 2 x 10GbE ETHERNET, 2 x 8Gbit FC

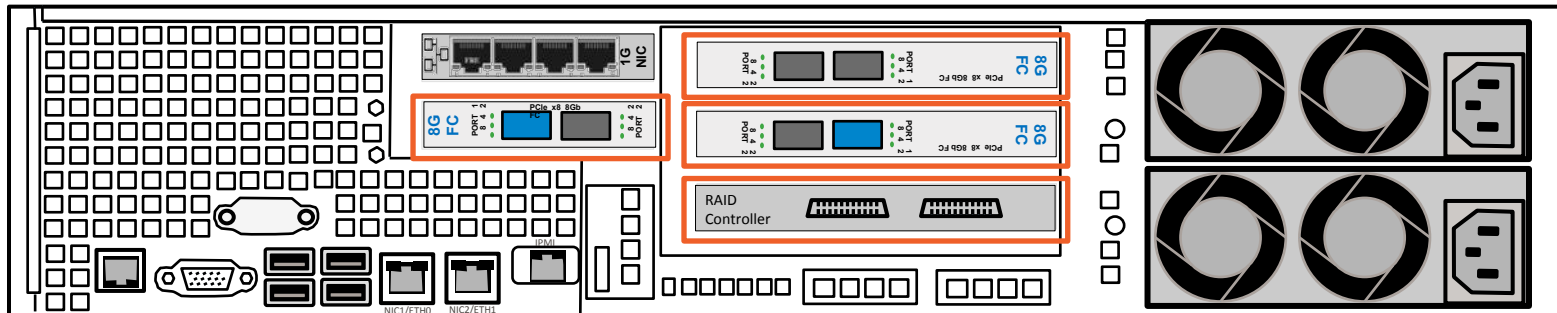


Version C-24/36 NETBACKUP 5220 - 24 or 36 TB, 6 x1GbE & 2 x 10G ETHERNET, 2 x 8Git FC

NetBackup 5220 Rear View - D-4, D-24/36



Version D-4 NETBACKUP 5220 - 4TB - 6 x 1GbE ETHERNET, 6 x 8Gbit FC

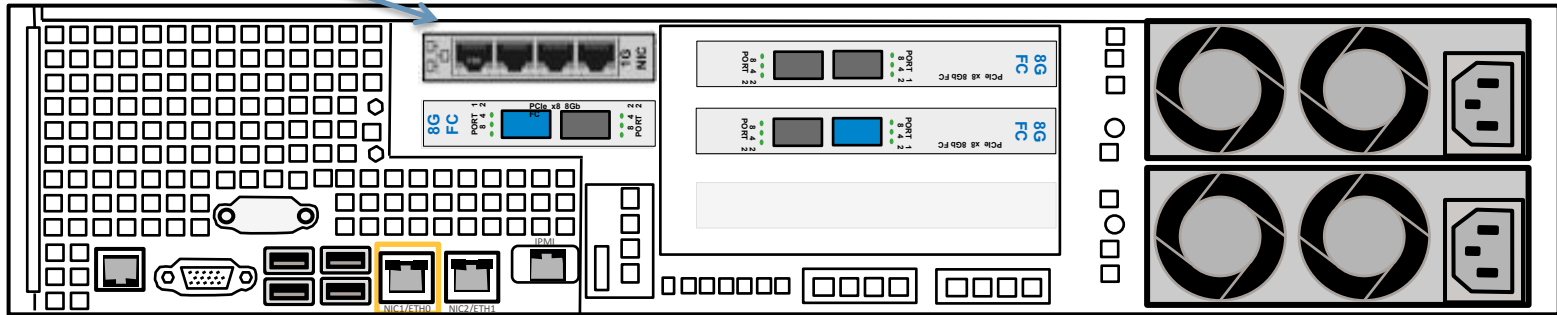


Version D-24/36 NETBACKUP 5220 - 24 or 36 TB, 6 x 1GbE ETHERNET, 6 x 8Gbit FC

NBU 5220 Rear View

Field conversion to Add 10GE + FT Media Server in one 5220

Quad Port 1GE



Requires A Support Exception

SYMC NETBACKUP 5220 APPLIANCE

WITH

2 QTY 1G ETHERNET,

2 QTY 10G ETHERNET

6 QTY 8G FIBRE CHANNEL

NO SKU AVAILABLE - FIELD CONVERSION ONLY

Can Start with

Model "D":

Add 1x Dual Port 10G Ethernet, Remove 1x Quad Port 1G Ethernet

Model "C":

Add 2x Dual Port 8Gb FC HBA, Remove 1x Quad Port 1G Ethernet, Reposition Dual Port 10G Ethernet



Dual Port 10GE

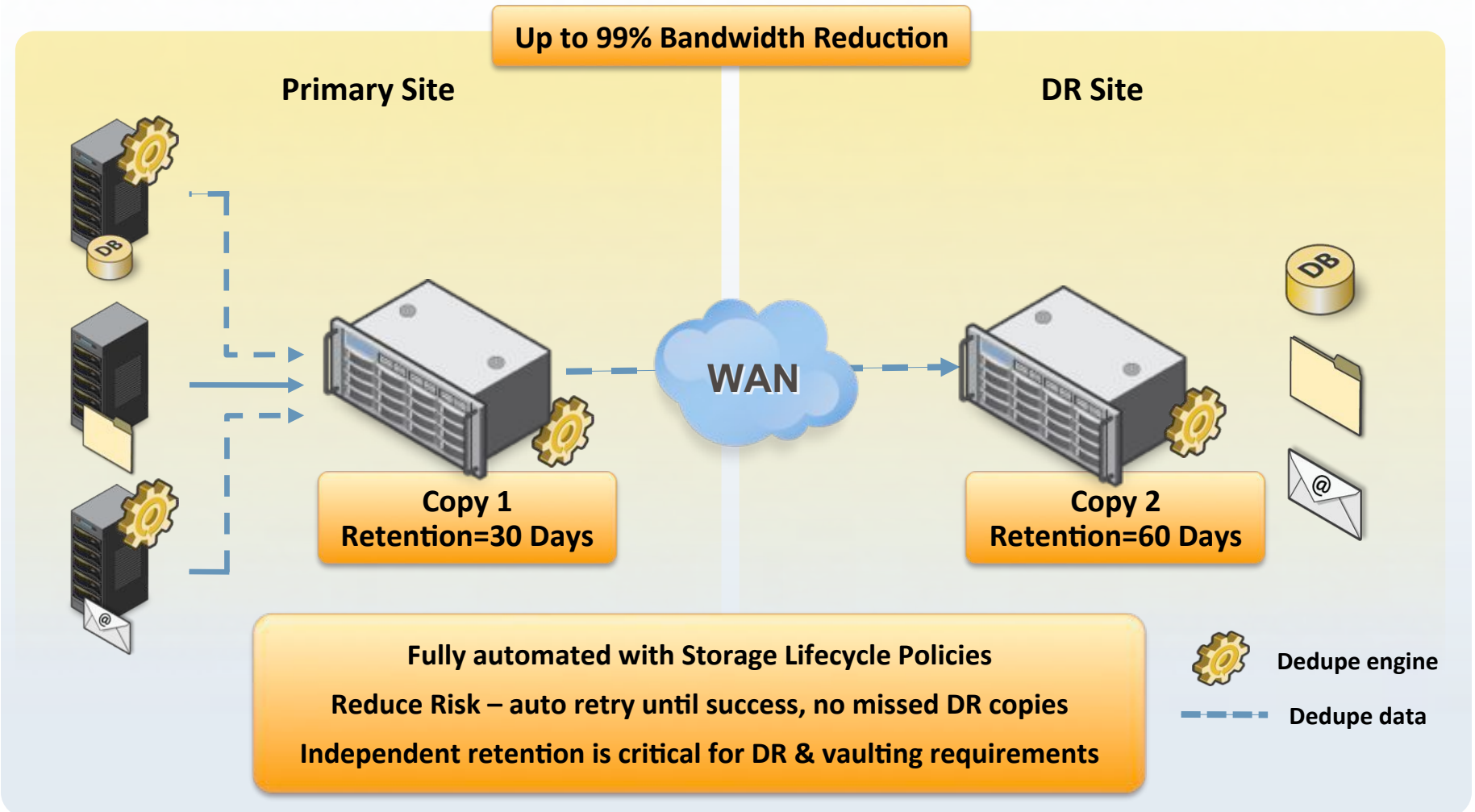
NetBackup 5220 Software Specifications

- Symantec Appliance OS (Based on SuSe 10 SP2 Linux)
- NetBackup Appliance Software Release N2.5
 - NetBackup 7.5.0.2 core plus installer, callhome etc. extensions
- Symantec Critical System Protection Integration (SCSP)
 - IPS, monitoring; IDS; unmanaged agent
- VADP Integration – VMware Direct Access Backup Host
- Veritas Storage Foundation 5.0 (storage management)
- CLISH (command line interface)
- LSI MegaRAID CLI/Storage Manager

NetBackup Appliances

Optimized Duplication – Network Efficient Backup Replication

Send only the data segments not already in remote dedupe pool



NetBackup Appliances

Optimized Duplication - Transport Support



- NetBackup Appliance Optimized Duplication
 - Over IP
 - NetBackup 50x0 to 50x0 i.e. PDDO to PDDO
 - NetBackup 52x0 to 50x0 i.e. MSDP to PDDO
 - NetBackup 52x0 to 52x0 i.e. MSDP to MSDP
 - **NetBackup 50x0 to 52x0 - PDDO to MSDP – NOT supported**
 - NB: Will run as “full fat” duplication
 - Over Fibre Channel (NetBackup 5020/5220 only)
 - Requires N2.x/>D1.3.x software & FC h/w option
 - NetBackup 5020 to 5020 i.e. PDDO to PDDO
 - NetBackup 5220 to 5020 i.e. MSDP to PDDO
 - **NetBackup 5220 to 5220 - MSDP to MSDP – NOT supported**
 - **NetBackup 5020 to 5220 - PDDO to MSDP – NOT supported**

NetBackup Appliances

Fibre Channel Backup & Replication

NetBackup Appliances

Fibre Channel Backup & Replication

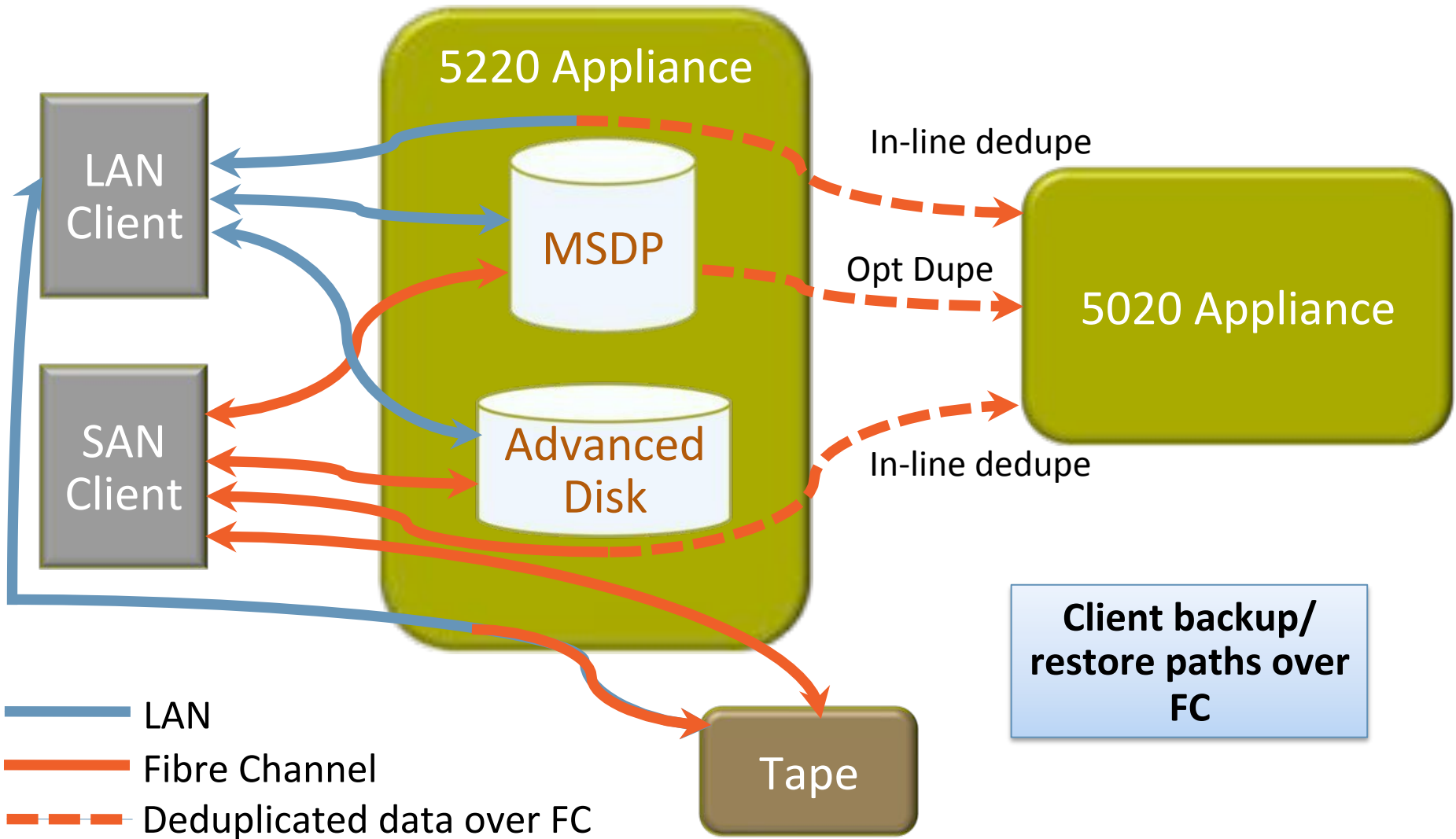


SAN Backup

- Supported on NetBackup 5220 and 5020
 - Client sends backup data streams over FC to NetBackup 5220
 - NetBackup 5220 stores backup locally or forwards to NetBackup 5020
 - Deduplication processing is on NetBackup 5220
 - Restore data streams also over FC
 - Appliance runs Fibre Transport (FT) Media Server
 - Target mode FC driver on Appliance FC ports
 - Requires Appliance “FC Backup” I/O Option
 - 4 Additional FC Ports
 - Not same as “FC Tape Out” I/O support
 - Available with new Appliance 5220 and 5020 orders
- No client deduplication
 - Does not make sense – point of SAN Client is to provide a “fat pipe”

NetBackup Appliances

Fibre Channel Backup & Replication



NetBackup Appliances

SAN Clients



SAN Clients can use ANY HBA (which works with the OS/switch etc.)

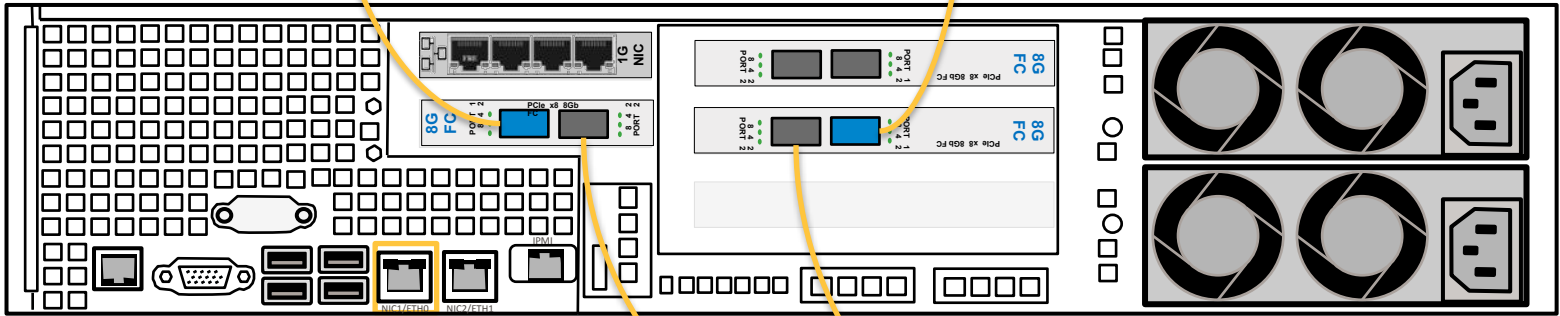
SAN

Target mode ports are ALWAYS slot 2 port 1 & slot 4 port 1 (outer ports)

Target ports receiving SAN backup data on separate HBAs for port/card redundancy

5220 D-4

MUST be a "D"

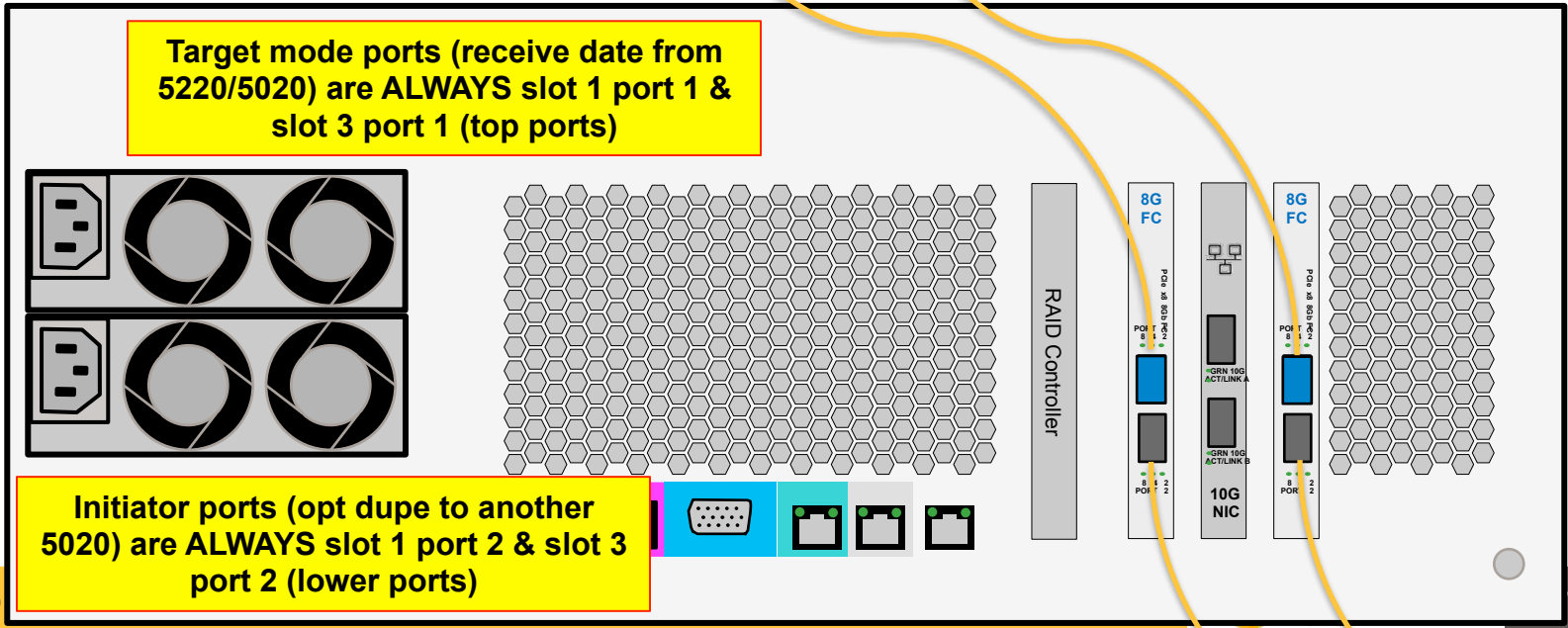


Initiator ports sending data to 5020 & target ports receiving data from 5220 on separate HBAs for port/card redundancy

Initiator ports to 5020 are ALWAYS slot 2 port 2 & slot 4 port 2 (inner ports)

5020 FC

Target mode ports (receive data from 5220/5020) are ALWAYS slot 1 port 1 & slot 3 port 1 (top ports)



Initiator ports (opt dupe to another 5020) are ALWAYS slot 1 port 2 & slot 3 port 2 (lower ports)

NetBackup Appliances

Reliability, Fault Tolerance and Alerting



NetBackup Appliance: Hardware Resilience

Disks	System Disks: RAID 1 Data Disks: RAID 6 Battery Backup for RAID controller <i>- Battery backup prevents cache based write hole for up to 3 days</i> Hot pluggable disks Automatically activated Hot Spares <i>- Appliance will tolerate 2 concurrent & 3 total drive failures before data volumes are at risk</i>
Power Supplies	Two Power Entry Modules (PEMs): Configured in 1+1 redundancy Hot pluggable PEMs
Fans	Fan modules tolerate multiple fan failures
Connectivity	Multiple Ethernet & Fibre Channel ports across multiple adaptors <i>- connectivity resilience against port or card failure.</i> FC connectivity for backup & replication supports 'fail back to IP'
Availability & Mean Time to Repair	Overall, Inherent Availability: $\geq 99.95\%$ MTTR: <1 hour
Call Home	Continuous monitoring & reporting of hardware state

NetBackup Appliance: Software Resilience

- Software Resilience & Availability

- Data resides on VERITAS Storage Foundation providing further storage and data resilience as well increased availability
 - Industry leading journaling filesystem maintains system integrity by intent logging all writes
 - Volume Manager can recover disk groups even in event of OS failure
 - Provides online management & expansion capabilities, further reducing downtime in the event of any maintenance activity
- Appliance provides multiple additional levels of self-healing and data resilience built into the software engine, including, but not limited to:
 - Metadata database crash consistency
 - User tunable parameter health checker configuration validation utility
 - Transactional consistency & redundancy
 - Appliances creates multiple inline copies of the transaction queues, with transaction log replay in the event of system interruption
 - Ongoing data integrity checks
 - Multi-node consistency checks and self-check verification

NetBackup Appliances: Hardware Monitoring

Following components are continuously monitored

- CPU presence and voltage
- Internal disks
- RAID groups
- Host Bus Adapters
- Power supplies
- Temperature
- Fans

The WebGUI and the CLI option provide an interface to monitor status and any alert conditions.

NetBackup Appliances: Hardware Monitoring

The screenshot displays a hardware monitoring dashboard with several sections:

- System:** A table with columns for ID, Name, Status, Capacity, Type, and Units. It lists three system entries.
- File:** A table with columns for ID, Name, and Status. It lists four file entries.
- Storage Usage:** A table with columns for ID, Name, and Status. It lists two storage usage entries.
- Performance:** A table with columns for ID, Name, and Type. It lists three performance entries.
- Power Consumption:** A table with columns for ID, Name, Status, and Power Usage. It lists three power consumption entries.

NetBackup Appliances - Alerting by E-mail & SNMP

- NetBackup Appliances e-mail alerts
 - E-mail address configurable
 - Alert email sent when fault conditions arise
 - Default notification for e-mail alerts is 15 minutes and configurable
 - Separate email alerts for hardware and software events
- NetBackup Appliances SNMP traps
 - Configurable through Web GUI & CLish
 - Can display/dump MIB to import into management platform

NetBackup Appliances - Call Home Feature

- Sends h/w fault alerts to Symantec's Call Home server
 - <https://www.symappmon.com>
- Each appliance tracked through a serial number
- Support will know history of hardware when case raised
- Can be enabled or disabled
- Secure http is used for communicating with Symantec's Call Home server

NetBackup Appliances - Support



- Support Options
 - 24x7 or “Next Business Day”
- Global hardware break-fix support
 - Subcontracted to major global services corporation
 - Four-hour/NBD on-site SLA for system down
- End to end support owned by Symantec Technical Services
 - Consistent Symantec customer experience
 - Symantec Business Critical Support (BCS) on s/w stack
 - Symantec “My Support” portal
 - Same process for all Symantec Enterprise support – software and hardware
 - Dedicated NetBackup Appliance queues and Appliance focused TSEs
- Hardware support entitlement via Appliance hardware SID
 - Note this is NOT the same as software entitlement
- Appliance Specific Options
 - Spare Power Supply, Spare Disk, Non-Returnable Disk

NetBackup Appliances - Management Options



- Web GUI
 - OpsCenter style GUI for Appliance
 - Appliance hardware monitoring supported in OpsCenter 7.5
- Appliance CLISH
 - Structured menus, command completion, context sensitive help etc.
 - Further options over GUI in some cases
 - Note on N5000/5020 (PureDisk stack)
 - One Appliance CLI for multi-node storage pools via “Storage Pool Authority” node
 - One Appliance management IP address per node - “Node IP Address”
- Linux root login
 - Hidden on NetBackup 5200 series
 - Use for trouble-shooting under TSE guidance
 - Can run NetBackup commands from the CLISH at N2.5+

NetBackup Appliances - Documentation sources

- Existing NetBackup and PureDisk documents apply
- NetBackup Appliances specific documents
 - New “NetBackup Appliances” supported product category
 - <http://www.symantec.com/business/support/index?page=landing&key=58991>
 - Documents typically include
 - Getting Stated Guide
 - Admin Guide
 - Commands Guide
 - Release Notes & Technotes
- NetBackup 5xxx Appliance Compatibility
 - <http://www.symantec.com/docs/TECH136970>
 - “Modifications to the NetBackup 5x00... result in an unsupported configuration”
 - Updates are Appliance specific
 - **Do not apply normal NetBackup or PureDisk upgrades!!!**



NetBackup Appliances - Licensing

- Appliance is **hardware only**
 - 3 years warranty included
 - Customers also need h/w support
- Appliance s/w
 - NetBackup Traditional licensing
 - Enterprise Server – 1 x Windows, Linux & Sol x64 Tier 2 license per NetBackup 5220
 - Data Protection Optimization Option -- relevant FETB
 - NetBackup Capacity (aka “Platform”) or xSP Licensing
 - Data Protection Optimization Add-on -- relevant FETB
 - Metric is Front-End TB (FETB)
 - Customer declaration - Not license enforced
 - NetBackup 7.5 includes “nbdeployutil” to report FETB & traditional usage
 - Also available as EEB for NetBackup 6.5/7.0/7.1
 - <http://www.symantec.com/docs/TECH148678>



NetBackup Appliances - Miscellaneous

- Sizing
 - h/w measured by Back-end TB
 - s/w licensed by Front-End TB
- Calculators exist e.g.
 - http://eval.symantec.com/flashdemos/products/netbackup/dedupe_calc2



NetBackup Appliances – Price Lists and SKUs

Sample SKUs

SKU	Item Type	SKU Description	MSRP £
21030874	Appliance	NETBACKUP 5000 16TB APPLIANCE	33,353.63
21042330	HW Support	NETBACKUP 5000 APPLIANCE SUPPORT INITIAL PURCHASE 12 MONTHS	4,002.44
21042331	HW Support	NETBACKUP 5000 APPLIANCE SUPPORT RENEWAL 12 MONTHS	4,002.44
21042327	HW Support	NETBACKUP 5000 NON-RETURNABLE DISK OPTION 12 MONTHS	1,334.15
21120612	CRUs	NETBACKUP 5000 POWER SUPPLY 100-127 VAC 50-60Hz 200-240 VAC 50-60Hz CRU	662.99

**Appliance SKUs only available on
Distributor Price Lists**





NetBackup Appliances - Misc Notes

- Appliance install media not on License Portal/FileConnect
 - Appliances provided with bootable USB device
- Do not update Appliances with non-Appliance upgrades
 - Linux, NetBackup or PureDisk
- Additional NetBackup 5020 support
 - Backup Exec 2010 R2/R3 - See Backup Exec HCL
- Appliance NICs
 - 1 GbE 1000BASE-T
 - Twisted pair cable (copper) - RJ45 connector
 - 10 GbE 10GBASE-SR
 - Short Range optical (fibre) - LC connector, 850 nm lasers
- NetBackup Optimized Duplication
 - IP and FC supported BUT NOT ALL COMBINATIONS

NetBackup Appliances



NetBackup Appliances

Solution Designs & Use Cases

NetBackup Appliances - Solution Design

Data Center Pain Points - 1

- Hardware, Operating System, Mandated IT apps and Backup software
 - Too many variables, increased interoperability challenges, too many vendors to deal with for maintenance
- Tape: Want to limit tapes to long term retention only
- Disk storage (DAS/SAN/NAS)
 - DAS requires additional hardware and file system maintenance
 - SAN brings more complexity and OpEx costs
 - NAS taxes the network
- Target deduplication appliances
 - Target dedupe requires additional hardware, management interfaces
 - Also requires SAN (VTL) or NAS connectivity adding OpEx
 - Scalability bottlenecks, forklift upgrades, increased downtime
 - Too many vendors to call and coordinate in case of issues

NetBackup Appliances - Solution Design

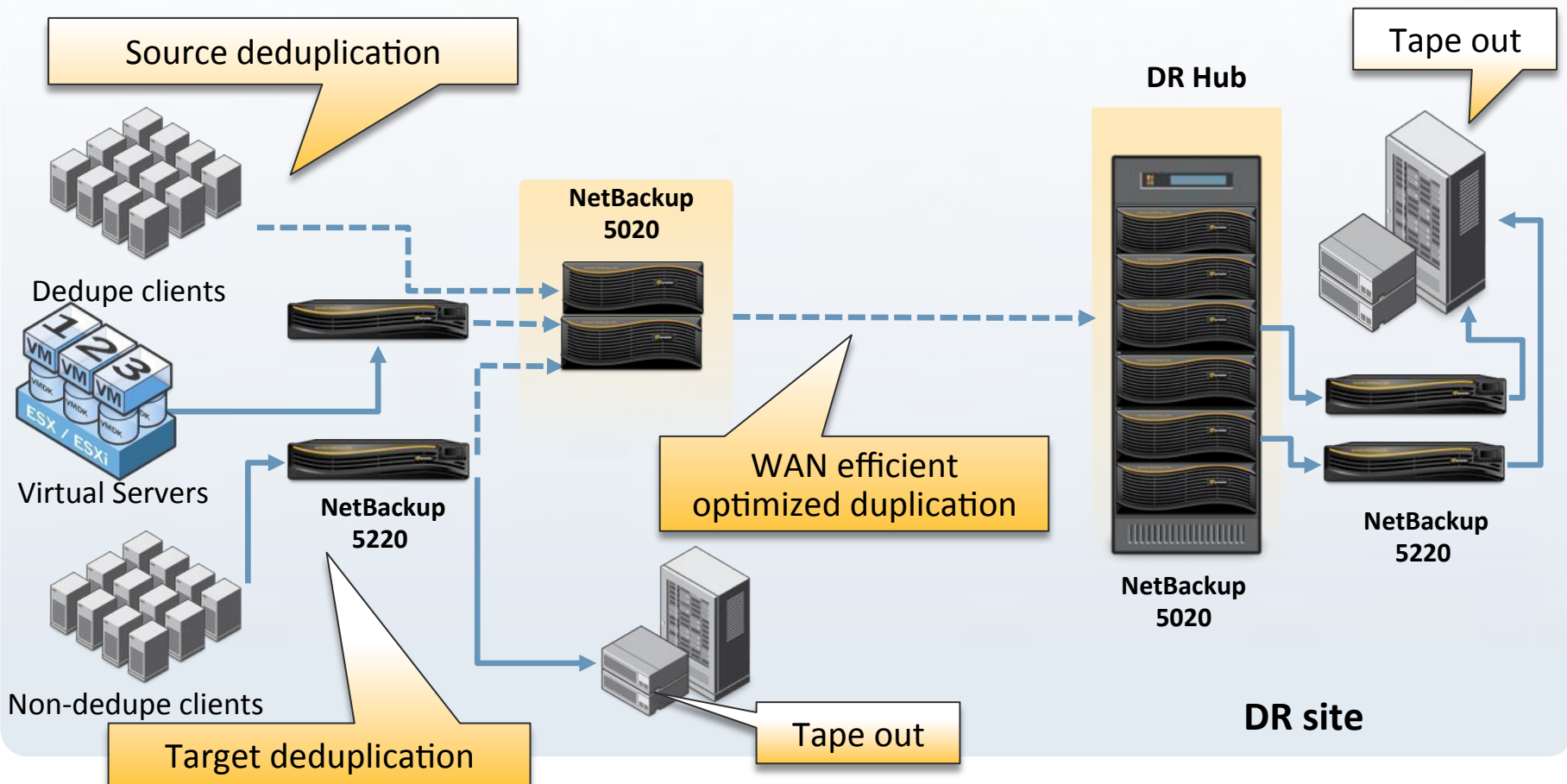
Data Center Pain Points - 2

- Clients with large data sets
 - Large databases, application servers
 - Large NAS Filers
 - Painful to run backups over network
 - Often requires dedicated backup network
 - Unable to run scheduled full backups etc.
 - Exceed backup window
- Virtual Machine Protection
 - VM sprawl
 - Point products
 - Disparate deduplication pools
 - Resource constrains

NetBackup Appliances - Solution Design

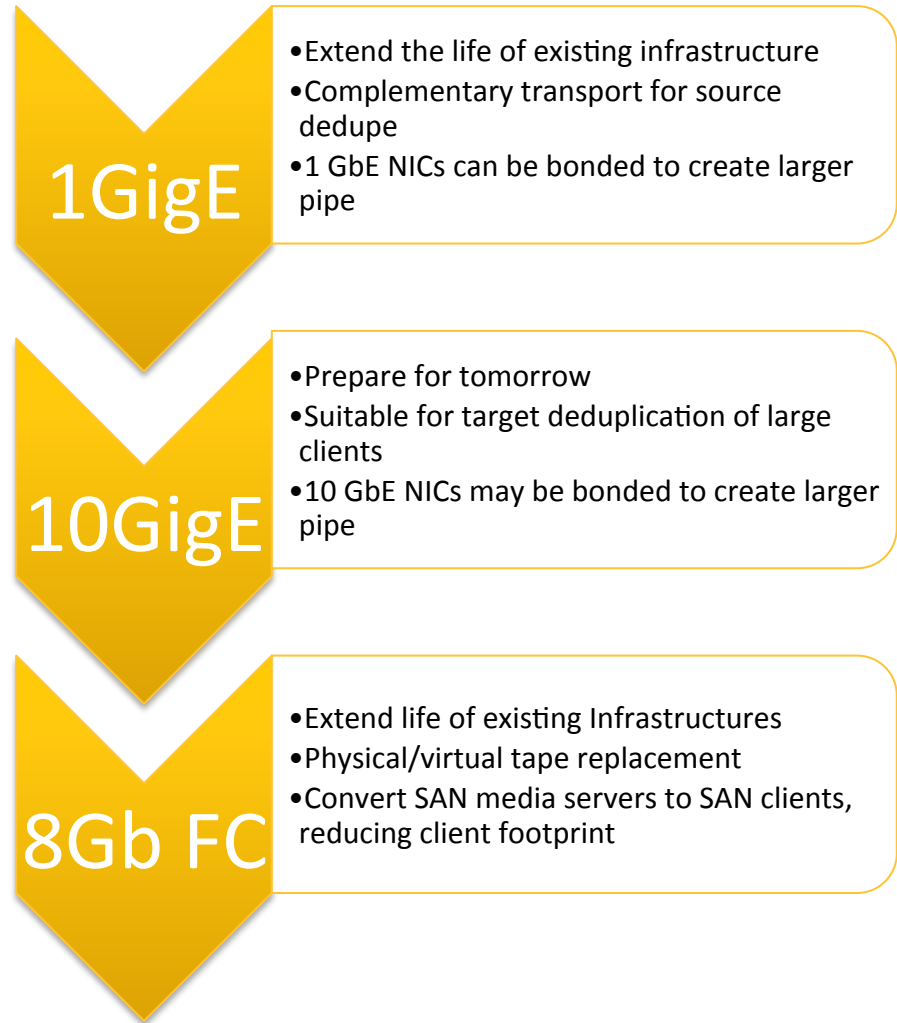
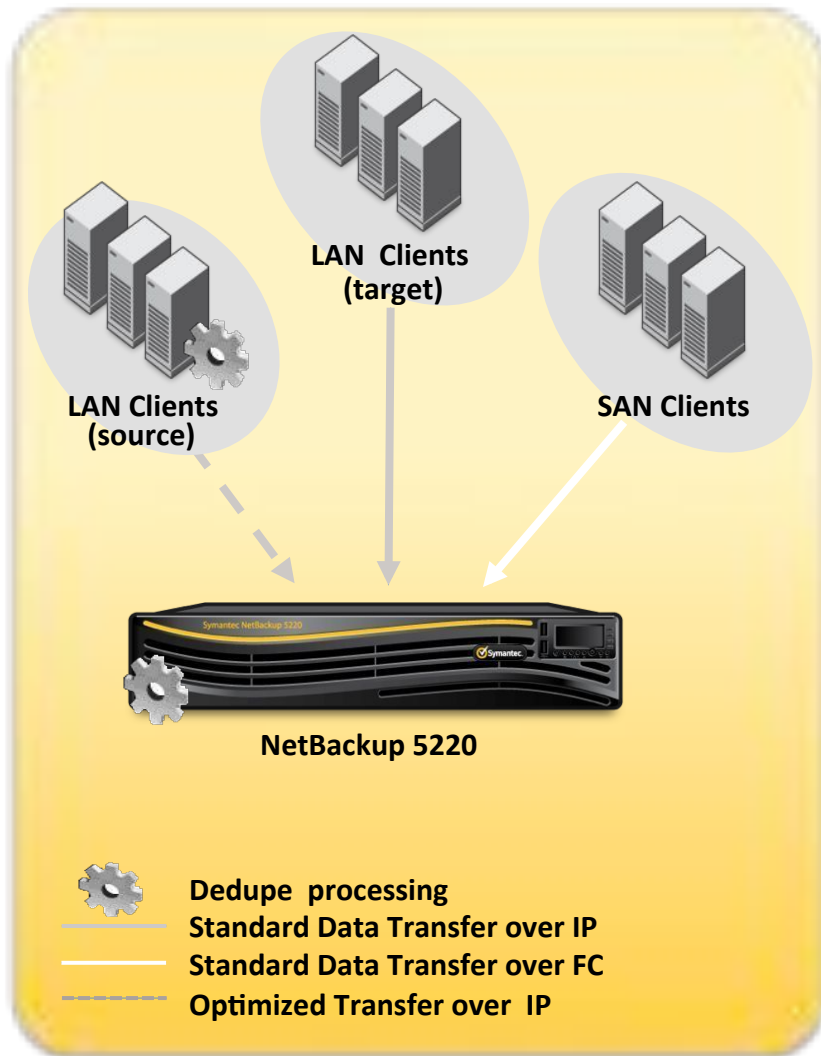
Simple building blocks for solving complex problems

Appliances for enterprises of any size



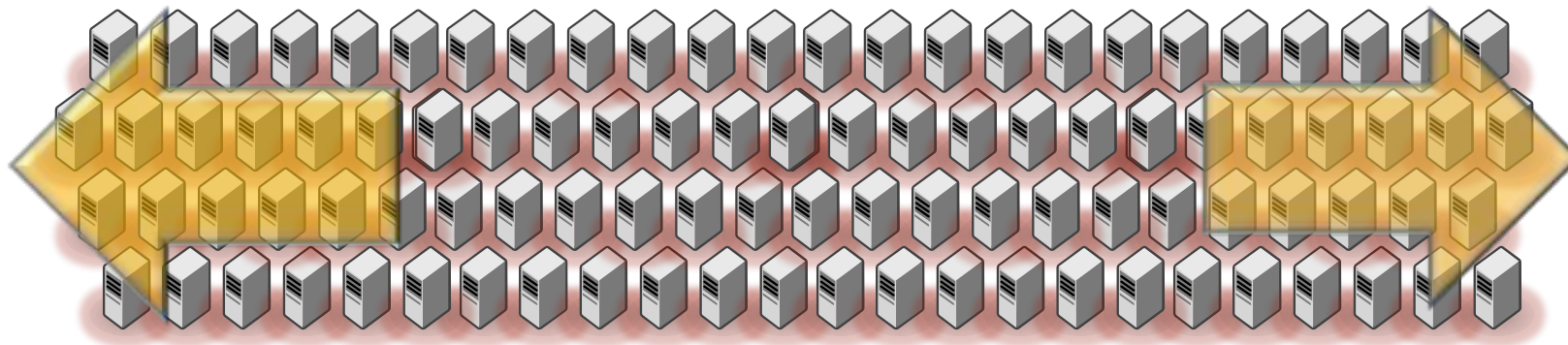
NetBackup Appliances - Solution Design

Multiple Connectivity Options



NetBackup Appliances - Solution Design

The power of scale-out in multiple dimensions



**Client
Deduplication**



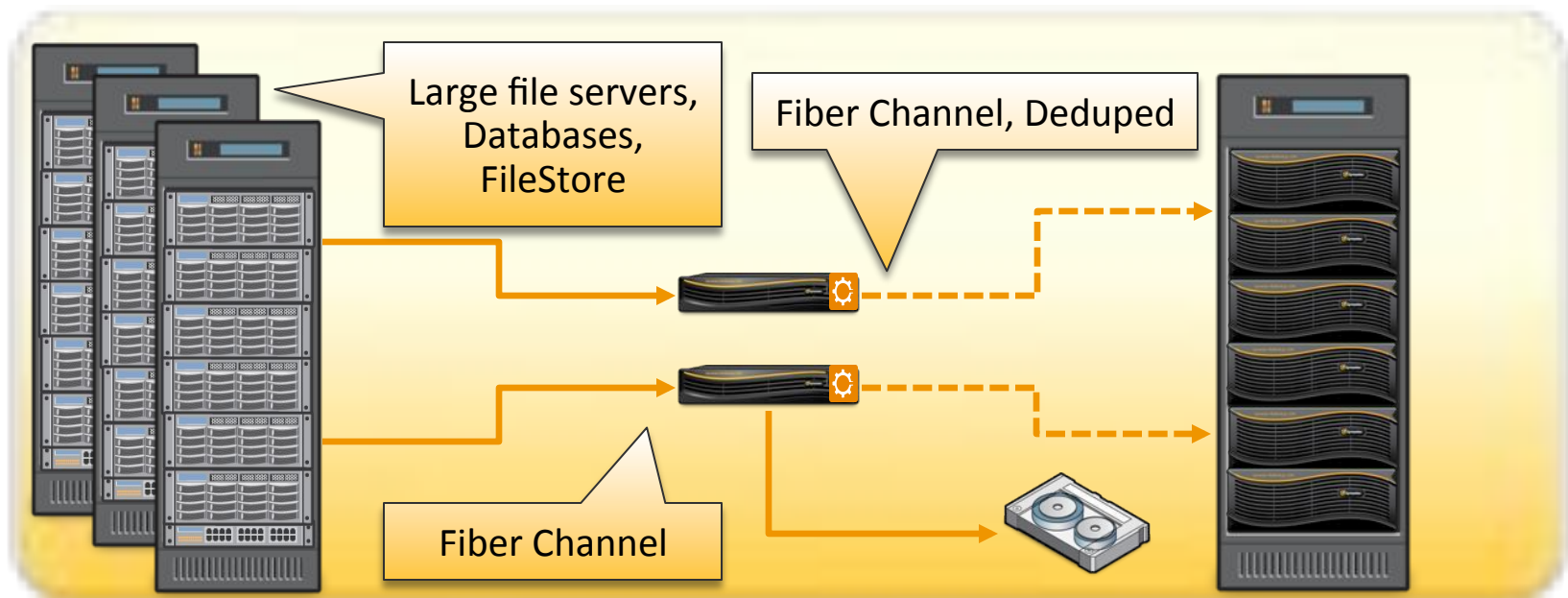
**Media Server
Deduplication**

**Target
Deduplication**



NetBackup Appliances - Solution Design

Protecting clients with large data set - SAN Client

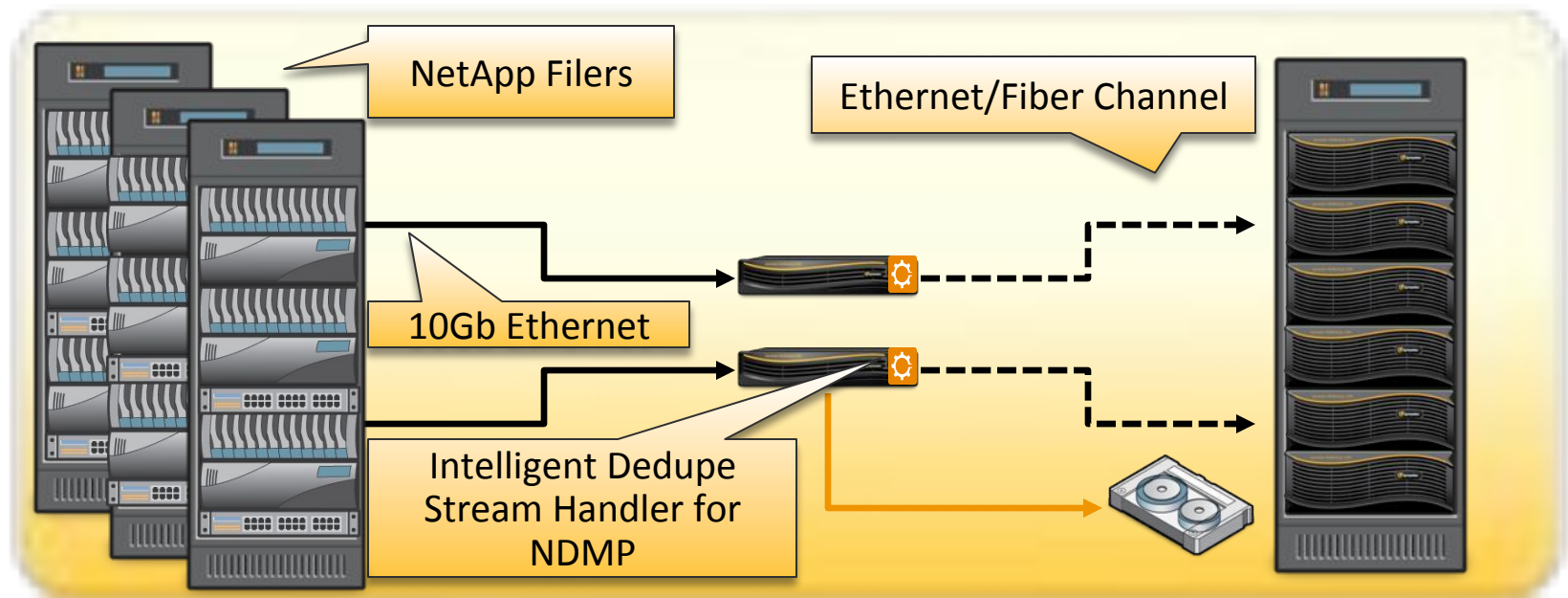


SAN Client with NetBackup 5220 and 5020

- High speed streaming through multiple Fiber Channel steams
- No need for off-host systems (low TCO)
- Use the processing power of Appliances for deduplication
- Avoid configuring clients as backup servers - conserve resources for critical applications
- Replace aging physical and virtual tape libraries

NetBackup Appliances - Solution Design

Protecting NetApp & EMC Filers



NDMP Filer backups couldn't get easier than this!

- Remote NDMP - resources are freed up from NetApp & EMC filers
- 10 GbE links for faster streaming, multiple links may be trunked for even larger pipes
- Intelligent Dedupe Stream Handlers for high deduplication rates
- Flexibility to stream to tape for long term retention
- Dedupe and replication offloaded from NetApp & EMC filers

NetBackup Appliances - Solution Design

Deduplication Stream Handlers

- Some data has a specific format, difficult to dedupe

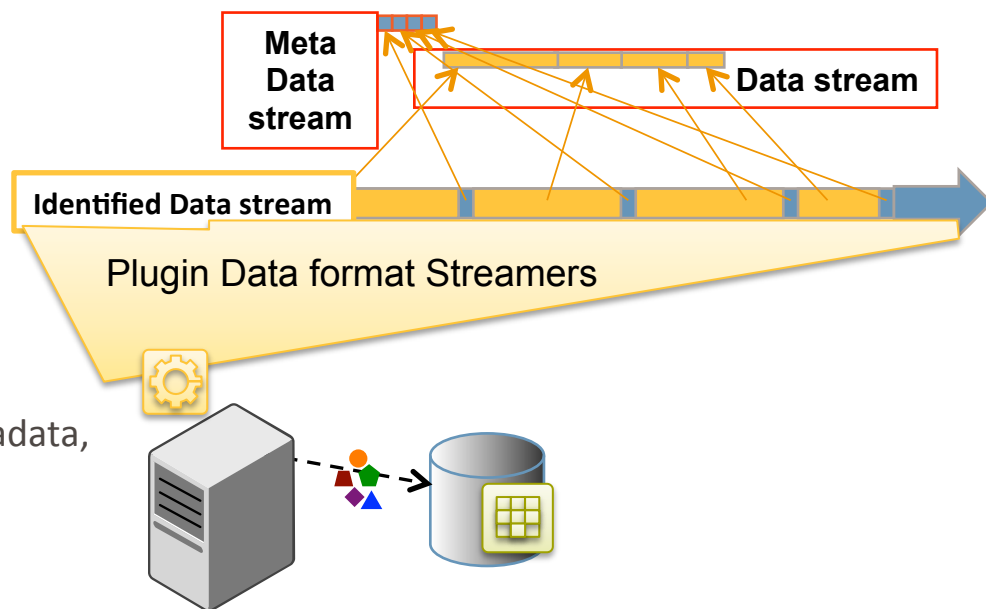
- VMware and Hyper-V
- NDMP

- Competing Solutions

- Block Based Algorithms
- Variable Block Based Algorithms

- Data format Streamers

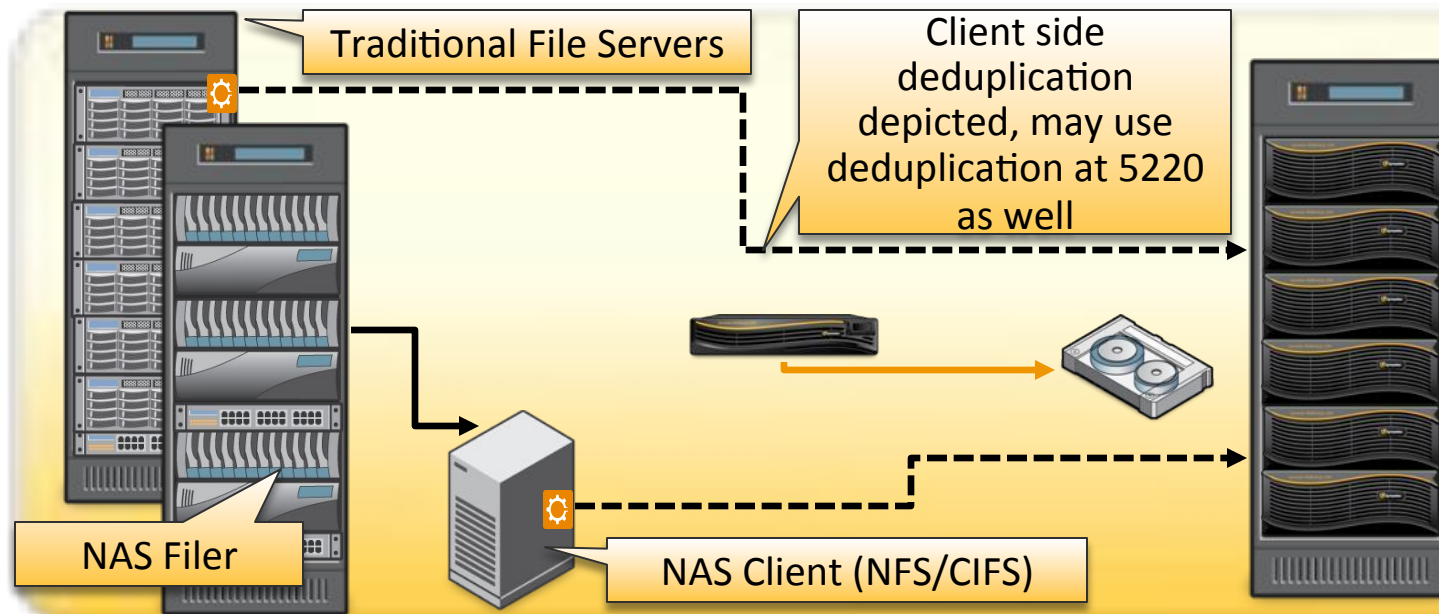
- Align dedupe engine with data type
- Open data stream and extract data & metadata, augment deduplicate data rate
 - VMware VMDK
 - Hyper-V VHD
 - NDMP (NetApp and EMC)
 - NetBackup tar
 - Windows VSS
 - Oracle



- Better and Predicable Deduplication Rates
- Better Performance

NetBackup Appliances - Solution Design

Protecting Traditional File Servers and NAS



Leveraging Optimized Synthetics, Accelerator & Client Side Deduplication

- Highly recommended for any file server
- Works for any NAS solution through a NAS Client (NFS/CIFS)
- After the initial full, never run full backup again
- Lowest impact on clients, network and media server
- Deduplication may be done at source or NetBackup 5220
- **Only from Symantec!**

NetBackup Appliances

Solutions for VMware Environments

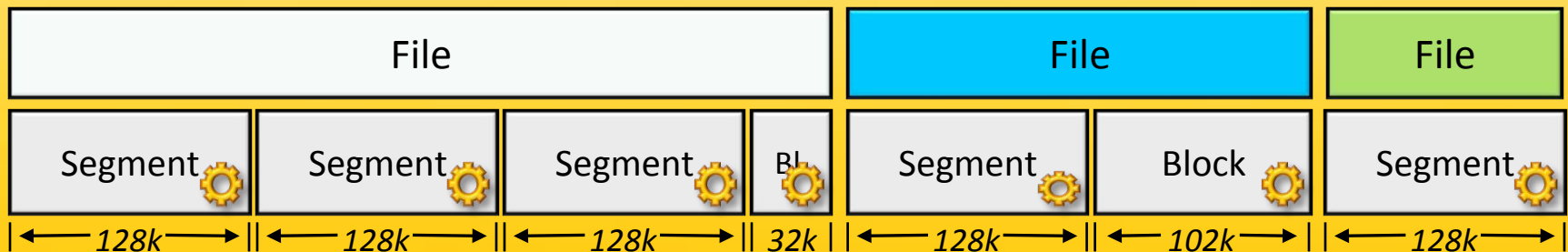
NetBackup Appliances - Solutions for VMware

VMware Snapshot Deduplication Stream Handler

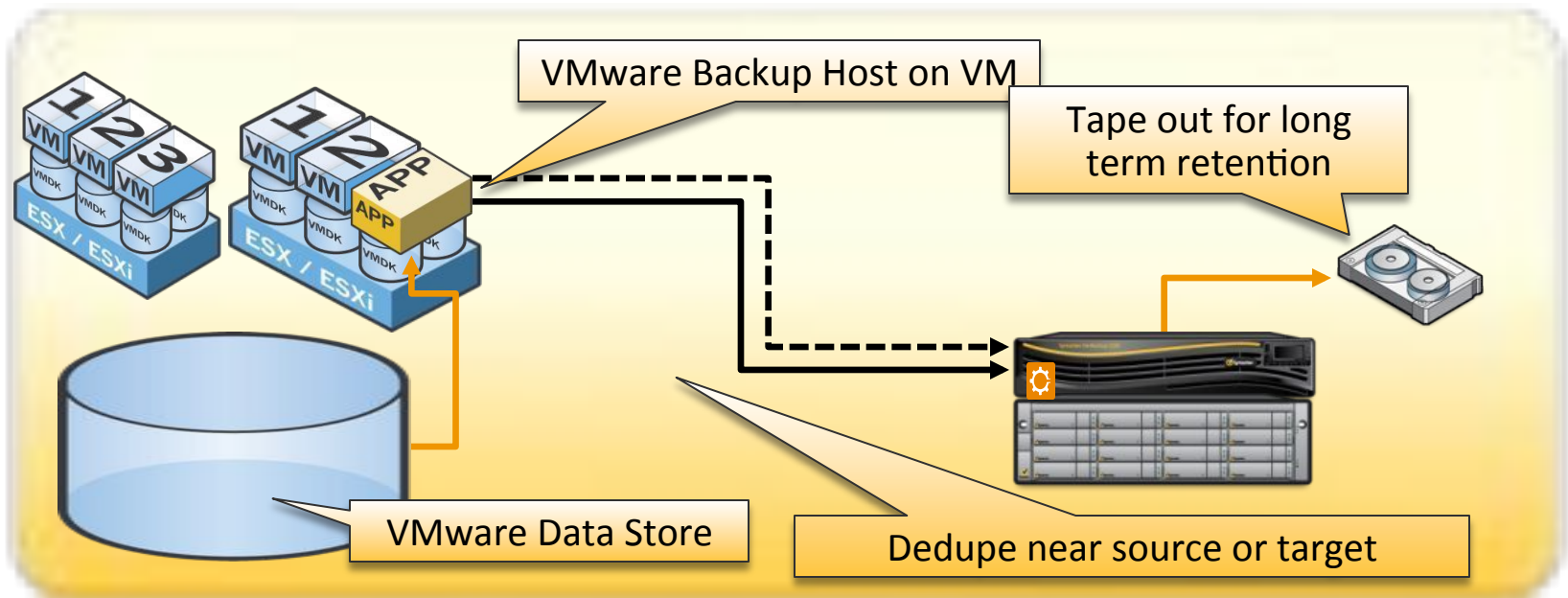
- Intelligent VMDK Stream Handler
- Deduplication Blocks Aligned to File Extent Boundaries
- Data Changes Result in Fewer Unique Blocks
- Data is Normalized to a File Stream
- **Significant Deduplication Efficiency Across VM Snapshots and Physical Servers**

VMDK Frozen Image

Intelligent Streamer Orders Snapshot into a logical File Stream and catalogs the mapping for granular recovery



NetBackup Appliances - Solutions for VMware Hotadd Transport

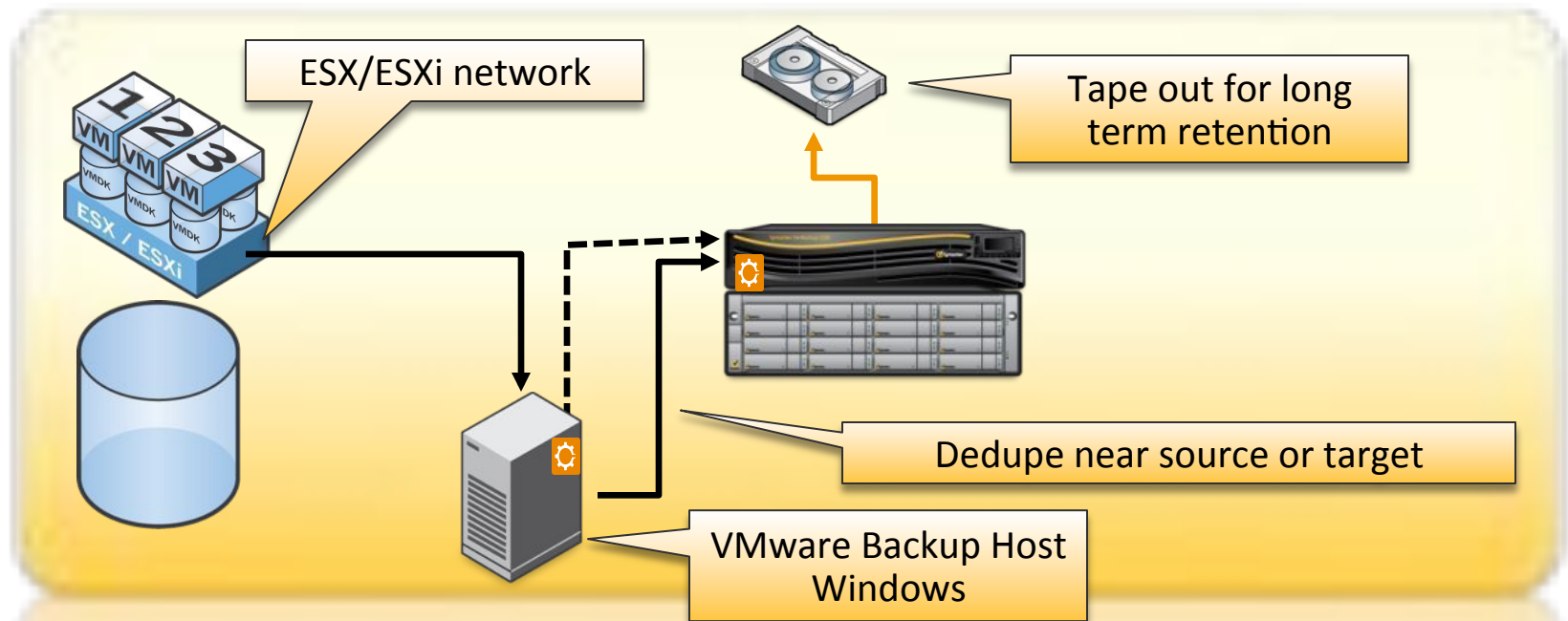


Small footprint solution – Single appliance

- Works for SAN, iSCSI and NFS data stores
- The VMware backup host VM can protect VMs on all visible datastores
- For source dedupe processing is on **one** ESX host while protecting VMs on **all** ESX hosts
- Flexibility of multiple VMware backup hosts for scale-out processing
- Up-to 99% bandwidth savings

NetBackup Appliances - Solutions for VMware

VMware Network Block Device (NBD) Transport

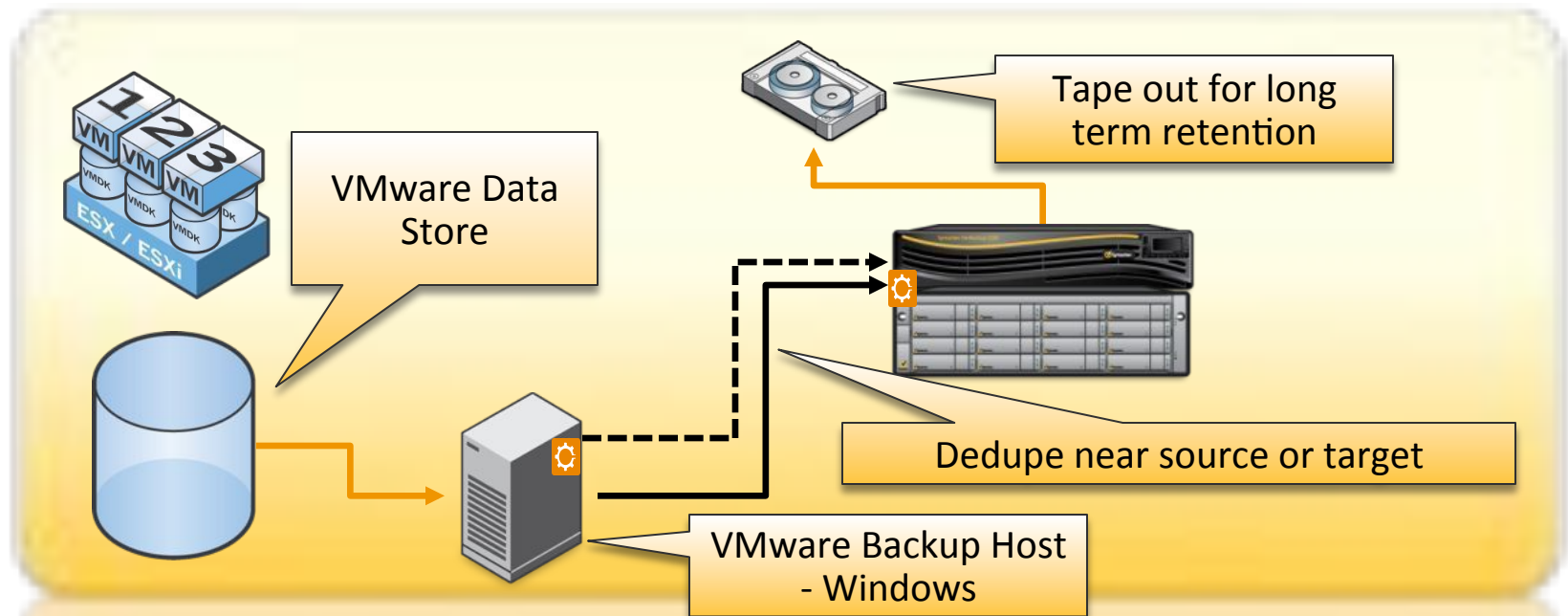


Use ESX/ESXi networks for backups

- Works for all kind of data stores (widely used for NFS data stores and DAS environments)
- The VMware Backup host can be a VM or physical host (physical host is illustrated)
- Encryption backup streams at VMware backup host for additional security

NetBackup Appliances - Solutions for VMware

VMware SAN Transport

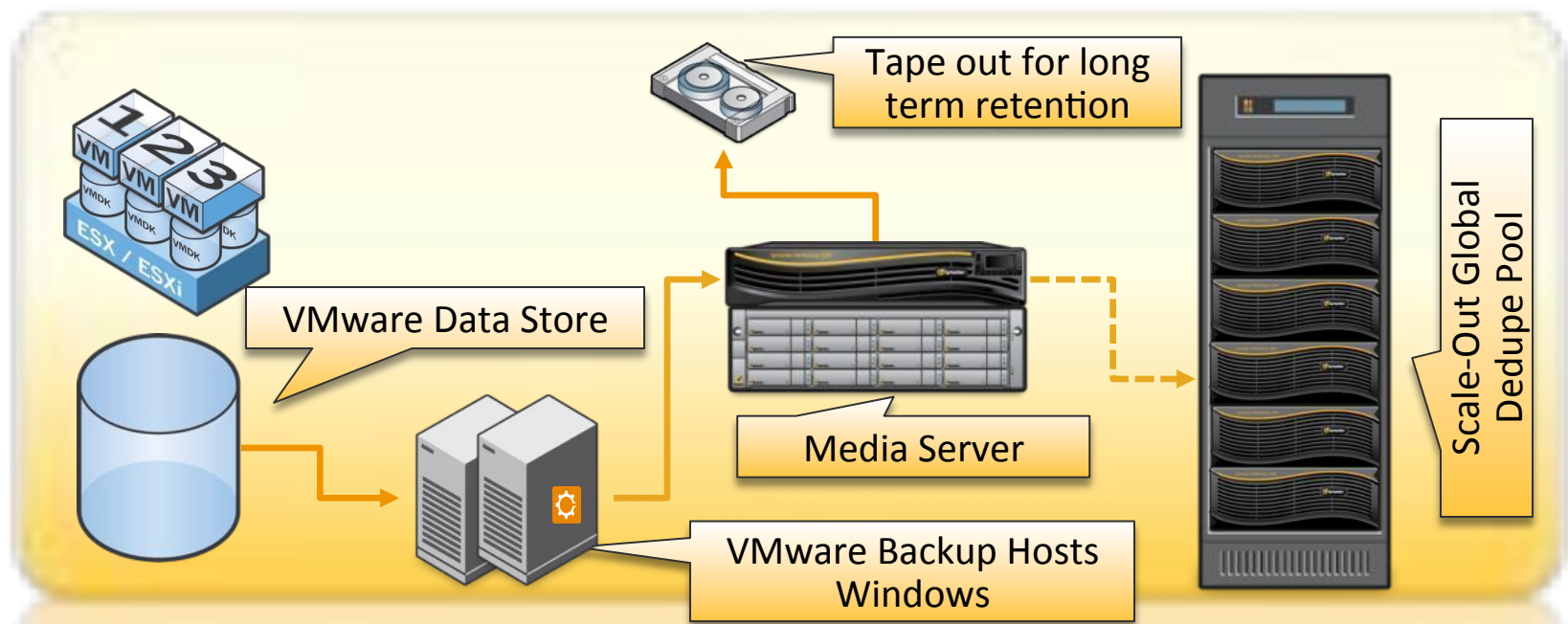


100% offhost backups for all VMs

- Recommended for SAN/iSCSI based VMFS datastores
- VMware Backup Host is setup on a physical Windows based system
- High speed transport and deduplication handled by physical system or appliance
- Encryption backup streams at VMware backup host for additional security

NetBackup Appliances - Solutions for VMware

VMware SAN Transport with SAN Client

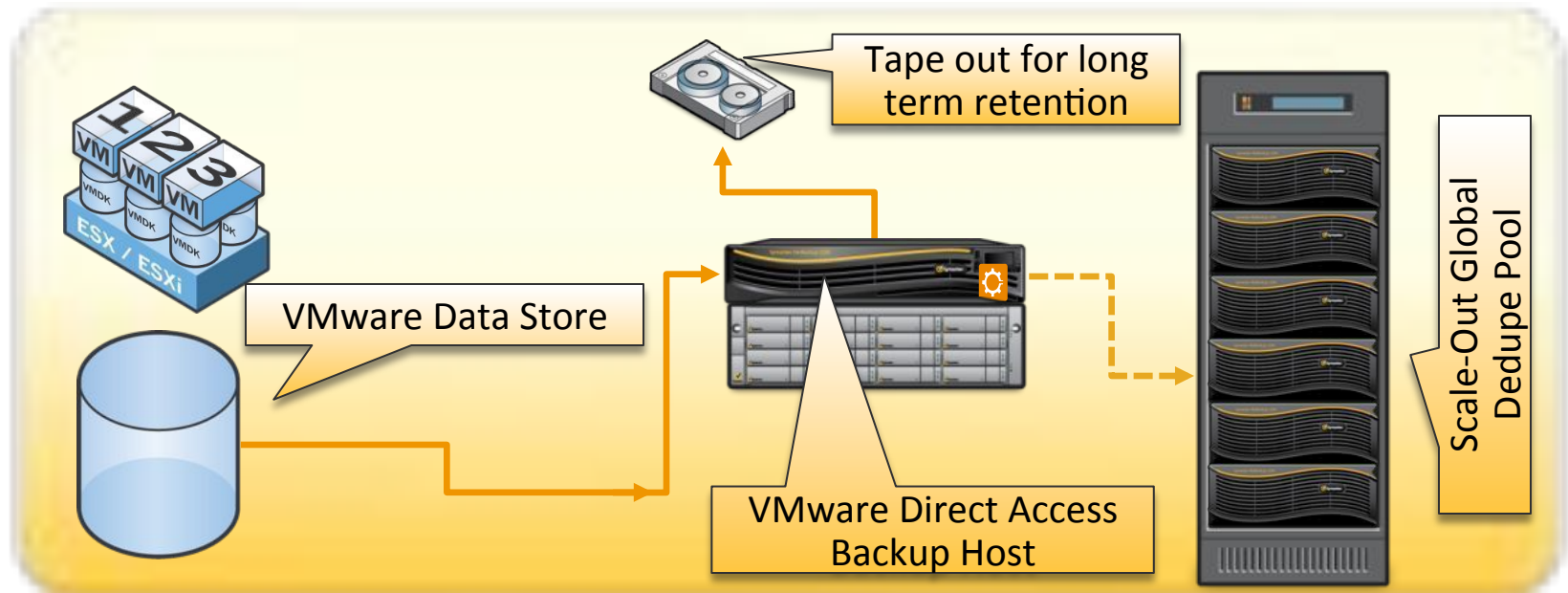


End-to-end SAN Transport for VM backups - 100% off-host backups for all VMs

- VMware Backup Hosts is physical Windows based system with SAN Client
- Fibre Channel transport from datastores to NetBackup Appliances
- NetBackup 5220 is Fibre Transport media server
- NetBackup 5020 Appliances for scale-out global deduplication pool
- The scale-out at three dimensions: VMware Backup Hosts, NetBackup 5220 and NetBackup 5020

NetBackup Appliances - Solutions for VMware

Off-Host & FC Data transfer with Single Appliance! **Symantec UNIQUE!**



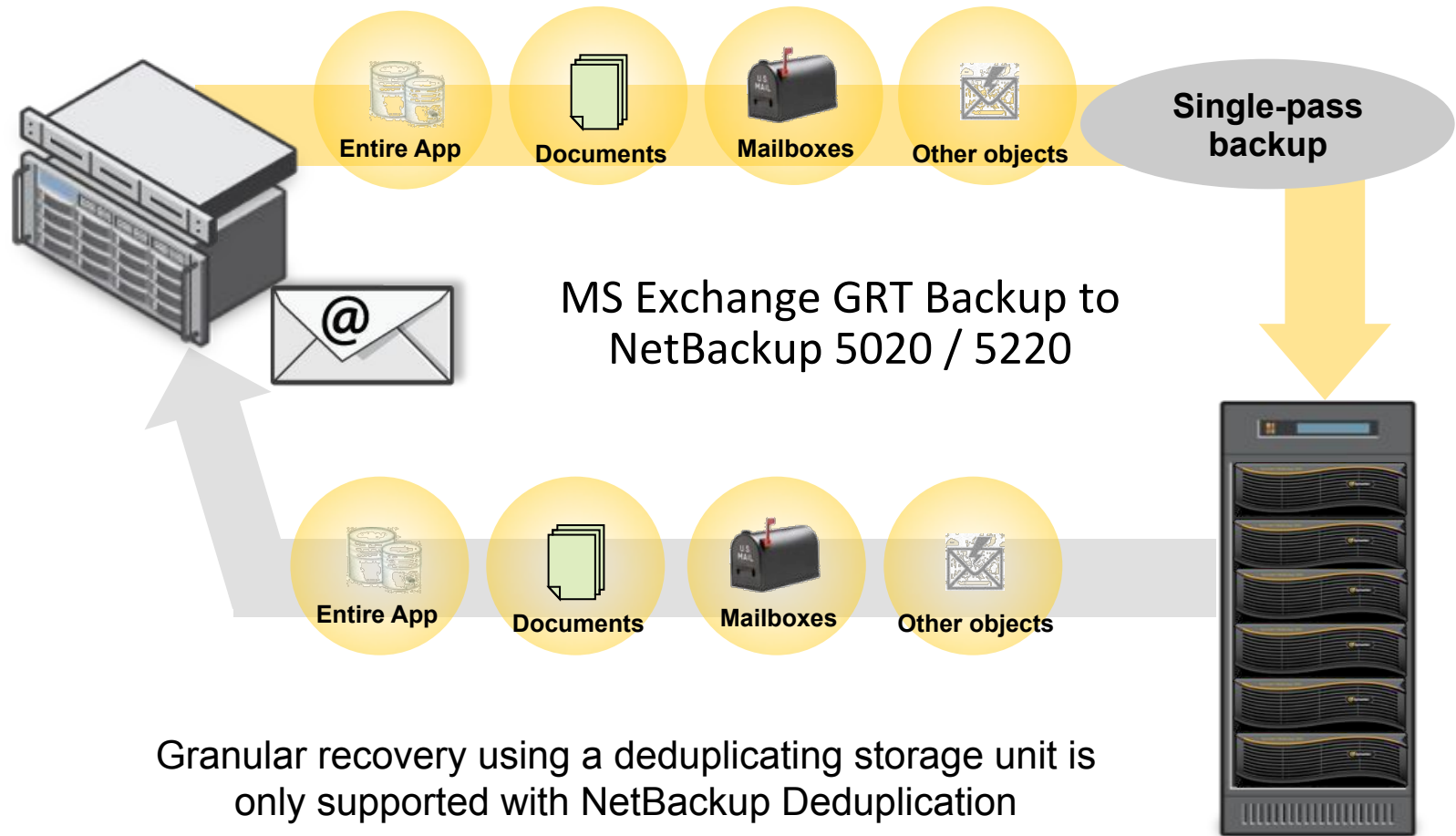
Direct vSphere Backup - VMware backup host built into NetBackup 5220

100% off-host backups for all VMs with Single Appliance

- N2.5 Appliance software integrates VMware Access Host with NetBackup 5220 - previously only on Windows
- Eliminate Windows backup host – consolidate/reduce hardware requirements!
 - All transport methods supported ([SAN](#), nbd, nbdssl, hot-add)
- Feature parity with NBU 7.5.0.1
 - CBT / BLIB incrementals, FullVM and Single File restores
 - Media Server Load Balancing including between Appliances and Windows Access Hosts
 - Application backup support for MS SQL, Exchange, and SharePoint

NetBackup Appliances - Granular Recovery Technology

Exclusive to NetBackup Deduplication Storage



Remote Office, Branch Office & DR Bunkers

Current Solutions, Pain Points and Sample Architectures

NetBackup Appliances

Remote Office, Branch Office - Use Case Current Solutions and Pain Points

- **Tape Based**
 - A backup server and small tape library
 - Shipping tapes offsite for DR
 - Integration challenges
 - Managed by non-IT staff or less skilled backup staff under guidance from central site
- **Disk Based**
 - A backup server and dedupe-disk storage
 - Replication to central site
 - Integration challenges
 - Managed by non-IT staff or less skilled backup staff under guidance from central site
- **Backups over WAN**
 - Source deduplication and backups over WAN
 - Link unavailability = Increased risk (RPO goes down)
 - Slow rehydrated restores (Poor RTO)

NetBackup Appliances

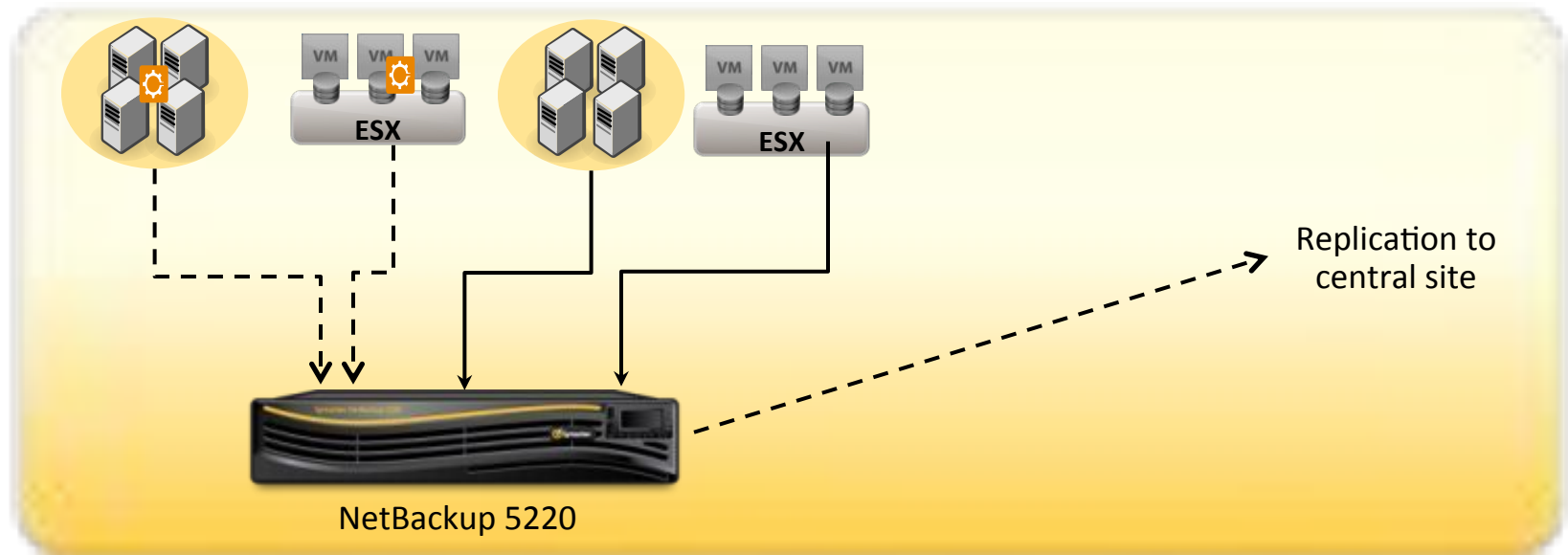
Remote Office, Branch Office & DR Bunkers

Qualifying Questions

- Understand the ROBO environment
 - How many ROBO locations are there?
 - How much data in ROBO locations?
- Sense the pain points
 - How do you protect ROBO locations?
 - What are the current challenges?

NetBackup Appliances

Remote/Branch Office Data Protection Made Easy



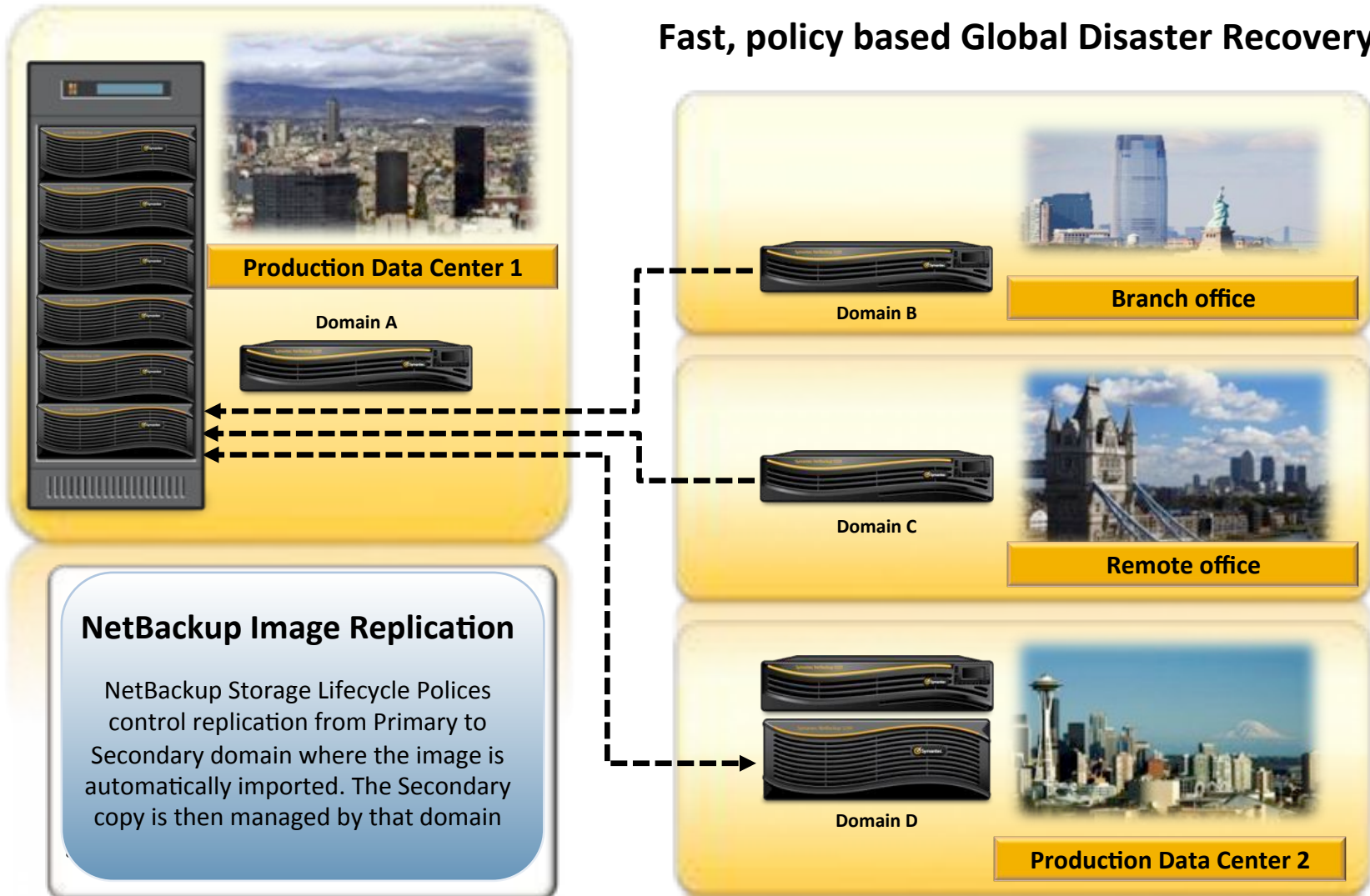
NetBackup 5220 Backup Appliance Solution:

- Ideal backup-in-a-box for remote office/branch office
- Built-in deduplication, local restores
- Replicate only unique data to central site via optimized duplication
- Manage as an independent domain (managed by AIR) or as remote media server (managed by SLPs)
- Complete protection (physical and virtual) powered by Symantec V-Ray
- Cloud Gateway

NetBackup Appliances

Remote Offices and Automatic Image Replication

Fast, policy based Global Disaster Recovery



NetBackup Image Replication

NetBackup Storage Lifecycle Policies control replication from Primary to Secondary domain where the image is automatically imported. The Secondary copy is then managed by that domain



Thank you

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