Five Keys to Better Backup: Customer Panel Shares Lessons Learned

Bill Hobbib, ExaGrid Systems
Jeff Winckler, Hunter Industries
Jorge Cepeda, Memorial Care
Jonathan DeMersseman, Thomas & King
Agenda

Typical Issues in Backup
Five Keys for Better Backup
Product Capabilities
Customer Case Studies
Q & A
Typical Issues Driving Need for Better Backup

- Tape Library Maintenance Costs, Time
- Long Backup Windows
- Offsite Disaster Recovery
- Tape Drive Failing
- Virtualization
- Data Center Consolidation

Better Backup
Evolution of Backup

Tape Backup
- Slow performance resulting in longer backup windows
- 20-30% failure rate for backups and restores
- IT staff pressured by slow or failed restores

Standard Disk
- Fast and reliable backups and restores
- Expensive for longer retention periods
  - Only good for staging one or two copies
- Not viable for offsite retention

Disk-based Backup with Deduplication
- Fast and reliable disk-based backups and restores
- Compression and deduplication allows for long retention
- Only changed bytes traverse WAN to offsite
ExaGrid at a Glance

✔ **Company:**
  Offices across North America and Europe
  Rapid growth over 7-year history; 8 consecutive growth quarters

✔ **Customers:**
  1,500+ systems installed globally
  More than 120 customer success stories at ExaGrid.com

✔ **Product:**
  Fastest, most scalable disk backup with deduplication
  Best price/performance in the industry

✔ **Strategic Partners:**
  Symantec, CA, Vizioncore, Compellent, & VMware

✔ **Industry Recognition:**
  Named “Cool Vendor in Data Protection” by Gartner
Five Keys to Better Backup

1. Deduplicate with appliance to solve problems of tape
2. Write direct to disk & post-process for fastest backups
3. Keep full copy of most recent backup for fastest restores
4. Replicate to offsite disk for better disaster recovery
5. Scale with full servers to maintain backup window
1. Deduplicate with appliance to solve problems of tape

**Example:** 5TB of data, 12 full backups. 2% change rate

**Standard Disk**

<table>
<thead>
<tr>
<th>5TB</th>
<th>5TB</th>
<th>5TB</th>
<th>5TB</th>
<th>5TB</th>
<th>5TB</th>
<th>5TB</th>
<th>5TB</th>
</tr>
</thead>
<tbody>
<tr>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
</tr>
<tr>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
</tr>
<tr>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
</tr>
<tr>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
<td>5TB</td>
</tr>
</tbody>
</table>

**TOTAL = 60TB**

**ExaGrid with Deduplication**

- 2X Compression on last backup
- Byte-level deduplication for previous backups

<table>
<thead>
<tr>
<th>2.5TB Last Backup</th>
</tr>
</thead>
<tbody>
<tr>
<td>100GB Deltas</td>
</tr>
<tr>
<td>(2% change rate)</td>
</tr>
</tbody>
</table>

**TOTAL = 3.6TB**
2. Write direct to disk & post-process for fastest backups

30-90% Faster Than Tape

- Backup directly to disk
- Unique landing zone architecture
- Post-process compression and byte-level data deduplication
- No in-line processes to slow backups
- Shortest possible backup window
3. Keep full copy of most recent backup for fastest restores

**Latest backup stored in complete form**
- 90% of restores from latest backup
- Ready for instant restore—in as fast as minutes
- Fast offsite tape copy

**Efficient restore of earlier versions**
- Byte-level changes quickly merged to latest backup
- Seamless to backup application
- Can restore from any historical version
4. Replicate to offsite disk for better disaster recovery

On-site and Off-site Tape Replacement

Example: 1TB Backup
- 500GB (last backup)
- 500GB - 20GB
- 500GB - 20GB

Updated to Last Backup

Rebuilds most recent backup for "Instant DR"
Multi-site Data Center Disk Backup Topology

Multi-site Architecture

- 50:1 WAN efficiency across all sites
- Management from single UI
- Cross-site protection between sites
- Consolidated DR copies of backup
  - Reduces costs
5. Scale with full servers to maintain backup window

Increased capacity, performance with each ExaGrid node

- Scales from 830GB/hr to over 4.9TB/hr with six deduplication engines
- Ingestion, capacity, deduplication, and replication scale linearly

<table>
<thead>
<tr>
<th>ExaGrid “GRID” Architecture</th>
<th>Backup Times Stable</th>
<th>Backup Window</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10TB</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,660GB/hr</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>15TB</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,490GB/hr</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>20TB</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,320GB/hr</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>25TB</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,150GB/hr</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>30TB</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4,980GB/hr</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Jeff Winckler
Network Administrator
Hunter Industries
Hunter Industries: Background and Problems

Background
- Leading manufacturer of irrigation equipment for landscape and golf industries, based in San Marcos, California
- 30 employees make up IT group, consisting of Network Services, Development, Help Desk and AS400 team

Problems
- Backups took too long:
  - 10-18 hours a day; window was 8 hours;
  - Notes® backups took 42 hours with tape
- Network slow due to constant traffic
- Tape problems: too many tapes, restores would fail frequently
- Existing library was dying a slow death resulting in many failures
- Staff spent ~15 hrs/wk on tape management and weren’t keeping up
- Considered several deduplication appliances to address problems
Hunter Industries Environment

- Email Servers
- Database Servers
- File Servers
- Application Servers
- SAN Storage
- NAS Storage
- DAS Storage
- Gigabit Ethernet
- Backup Server (Existing Backup Server)
- Primary Site ExaGrid
- Tape Library
- Offsite Tapes
- Remote Office
- MAN/WAN

© 2009 ExaGrid Systems, Inc.
Hunter Industries: Solution, Results

**Solution**
- 1 ExaGrid system at HQ
- Full backups performed from 80 physical and/or virtual servers
- CommVault Galaxy Backup Software
- Tape library for disk-to-disk-to-tape archive

**Results**
- Backup times reduced 66% to 6 hours
- Better management of retention policies
- Near-instantaneous restores
- Less tapes result in lower archiving expense
Lessons Learned – Hunter Industries

- Deduping is awesome
- Post-process deduping gives fastest backups
- Very intuitive management interface
- Backup speeds to the ExaGrid are very quick on a Gigabit backbone
- ExaGrid support technicians are very helpful
- SQL Tlogs, if backed up more than once a day, are best if not backed up to Exagrid as it kills the deduping speeds
Jorge Cepeda
Network Engineer
Memorial Care
Memorial Care: Background and Problems

Background

- Not-for-profit health system with 6 hospitals in Los Angeles and Orange County, California
- IT department made up of 4 campuses with each having its own IT group in charge of local issues as well as an enterprise group exist for handling Wide Area Applications and Network responsibilities.

Problems

- Backups took too long:
  - 150 servers containing business data; total backup window ~24 hours
- Problems with tape
  - 200-300 tapes consumed/week
  - Major issues restoring data from tape – broken, unreliable
- Exchange server too large to vault
  - IT staff spent a week to restore from tape after server crash
- Limited number of physical drives to run backups
- Server bottleneck
Memorial Care: Solution, Results

Solution
- ExaGrid systems at 3 locations
  - 3 at HQ in Long Beach, 2 in Torrance and 1 in Fountain Valley
- Full backups performed from 364 physical/virtual servers
- Symantec NetBackup Application

Results
- Backup times reduced 50%; windows reduced to 12 hours
- Ease of restores
- Replication between two systems lets us act as our own DR center
- Multistreams are now possible
  - 12 backup streams at once before; with ExaGrid, now running 200
- Fit with Green initiative
  - Rack size, 120V power, and incremental scalability saved buying racks of equipment with more power/cooling
- Better management of retention policies
Lessons Learned – Memorial Care

- Avoid the use of Tape or Virtual tapes
- Multistreaming is possible
- Differentials could be avoided by running fulls everyday where permitted.
- Ease of use
- Excellent replication technology
- Once in place no need to manage on a daily basis
- Vaulting to tape from ExaGrid is possible
- Post-process deduplication technology is excellent for backup windows as it doesn’t cut into the backup window
- Post-process deduplication technology enables us to perform restores very quickly, even on largest files
- Failures are close to none pertaining to media errors
- Installation is as easy as turning on the appliance
- Excellent Technical Support
Jonathan DeMersseman
Manager, Infrastructure Services
Thomas & King
Thomas & King: Background and Problems

**Background**
- 8th largest restaurant franchise in the US with 7500 employees and 89 Applebee’s and 6 Carino’s Italian restaurants
- IT group comprised of 9 employees in the areas of infrastructure, application development, restaurant systems and administration

**Problems**
- Backups took too long:
  - 26-30 hours a day
  - Backups split into 4 primary jobs, including incrementals for file server, business data, SQL DB, and nightly full backup of Exchange
- Unreliable backups – no confidence in tapes for restores
- Productivity issues: spending a full week’s time managing tape
- Considered storage solution (data snapshots on SAN) and disk with dedupe appliances
Thomas & King Environment

SAN Storage

- Exchange
- SQL Server
- Business Data
- Virtual Machine Backups

- Email Servers
- Database Servers
- File Servers
- Application Servers

Backup Server

Symantec BackupExec
Vizioncore vRanger Pro

Primary Site ExaGrid
Off-site data center

Switch
Gigabit Ethernet
Tape Library

Optional Second Site ExaGrid

Remote Office
Remote Office

MAN/WAN
Thomas & King: Solution, Results

Solution

- 1 ExaGrid system at data center, with architecture to add replica at corporate HQ
- Full backups performed from 5 physical and 38 virtual servers
- ExaGrid System backup up to tape once a month for archives
- Symantec Backup Exec and Vizioncore vRanger Pro Backup Applications

Results

- Backup times reduced 50% to about 12 hours
- More reliable backups – full backups completed every night
- Faster restores – completed in just seconds
- Reduced reliance on tape – only backup to tape once per month
- Greatly reduced time spent managing tape
- VMware images back up directly from vRanger Pro – resulting in 3 full VM backups now reduced by over 6:1
Lessons Learned – Thomas & King

- Having SQL dumps backed up directly to ExaGrid takes pressure off infrastructure staff and allows IT staff to work in their areas of specialization
  - Database manager can restore SQL data if needed making it more efficient
- Realized high efficiency in our SQL backups
  - 15 weeks now take up the space of 1 backup
- Support is very strong – know most of the techs by name
- Great for VMware backups
- ExaGrid is very nimble as organization – upgrade to architecture
- Makes tape elimination a real possibility
- Wide vendor partnerships make vendor changes very possible
- Revolutionary early-to-market provider who continues actively developing and advancing product
Bill Hobbib
Vice President, Marketing
ExaGrid Systems
Summary: Five Keys to Better Backup

1. Deduplicate with appliance to solve problems of tape
2. Write direct to disk & post-process for fastest backups
3. Keep full copy of most recent backup for fastest restores
4. Replicate to offsite disk for better disaster recovery
5. Scale with full servers to maintain backup window
Next Step: Dedupe Feasibility Assessment

**Purpose:**
Optimize your environment to best meet operational and business goals

**Process:**
30-60 minute review and discussion of current environment, challenges, and issues

**Payoff:**
Best practices, technology suggestions to cover current /future needs, achieve operational benefits
Thank You!

Questions?
Attendee Services

• Provide your feedback! Please complete our survey

• View our calendar of upcoming events

• A recorded version of this seminar will be available at www.eSeminarsLive.com
For more information:
info@exagrid.com
800.868.6985