



COMPUTERWORLD

SNIA<sup>®</sup>

**SNW**

April 12-15, 2010 | Rosen Shingle Creek Resort | Orlando, Florida

SNIA<sup>7</sup>



**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida


# Backup to the Future



Hugo Patterson, Ph.D.  
Chief Technology Officer  
Backup Recovery Systems, EMC

SNW Spring, Orlando  
April 2010

SNIA<sup>7</sup>

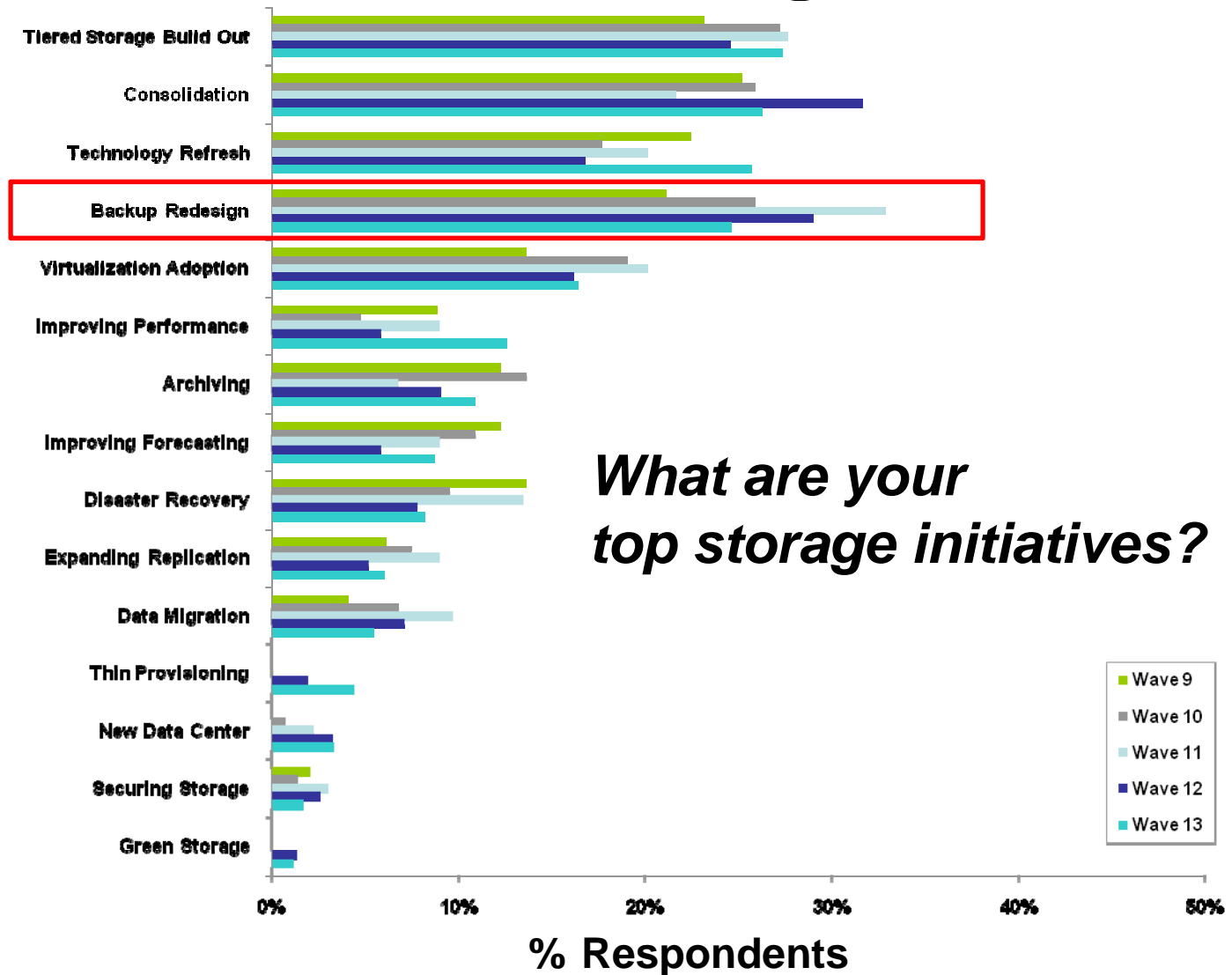


**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

# Backup Redesign is Hot






Why?

**Dedupe changes everything**

SNIA<sup>7</sup>

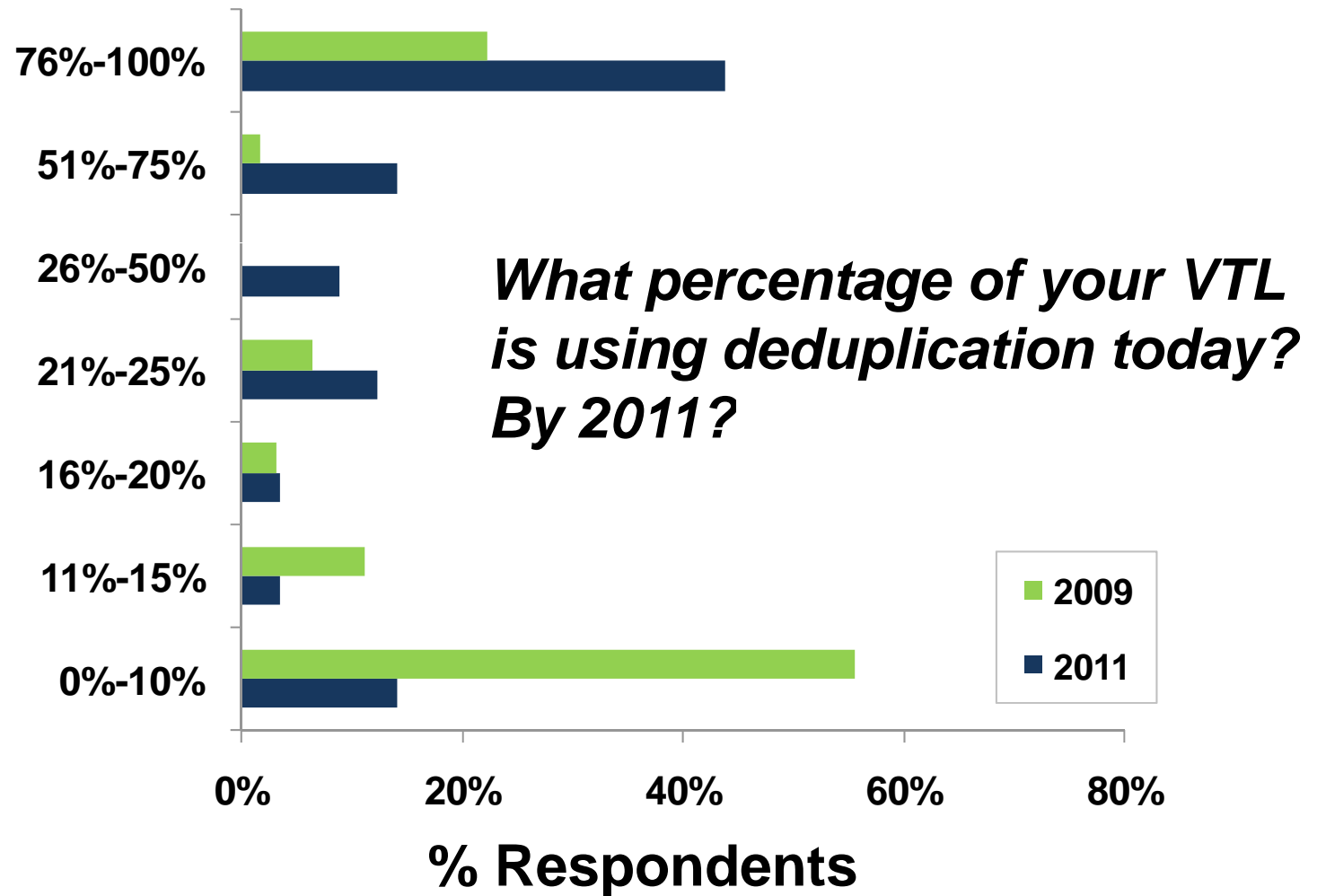




**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

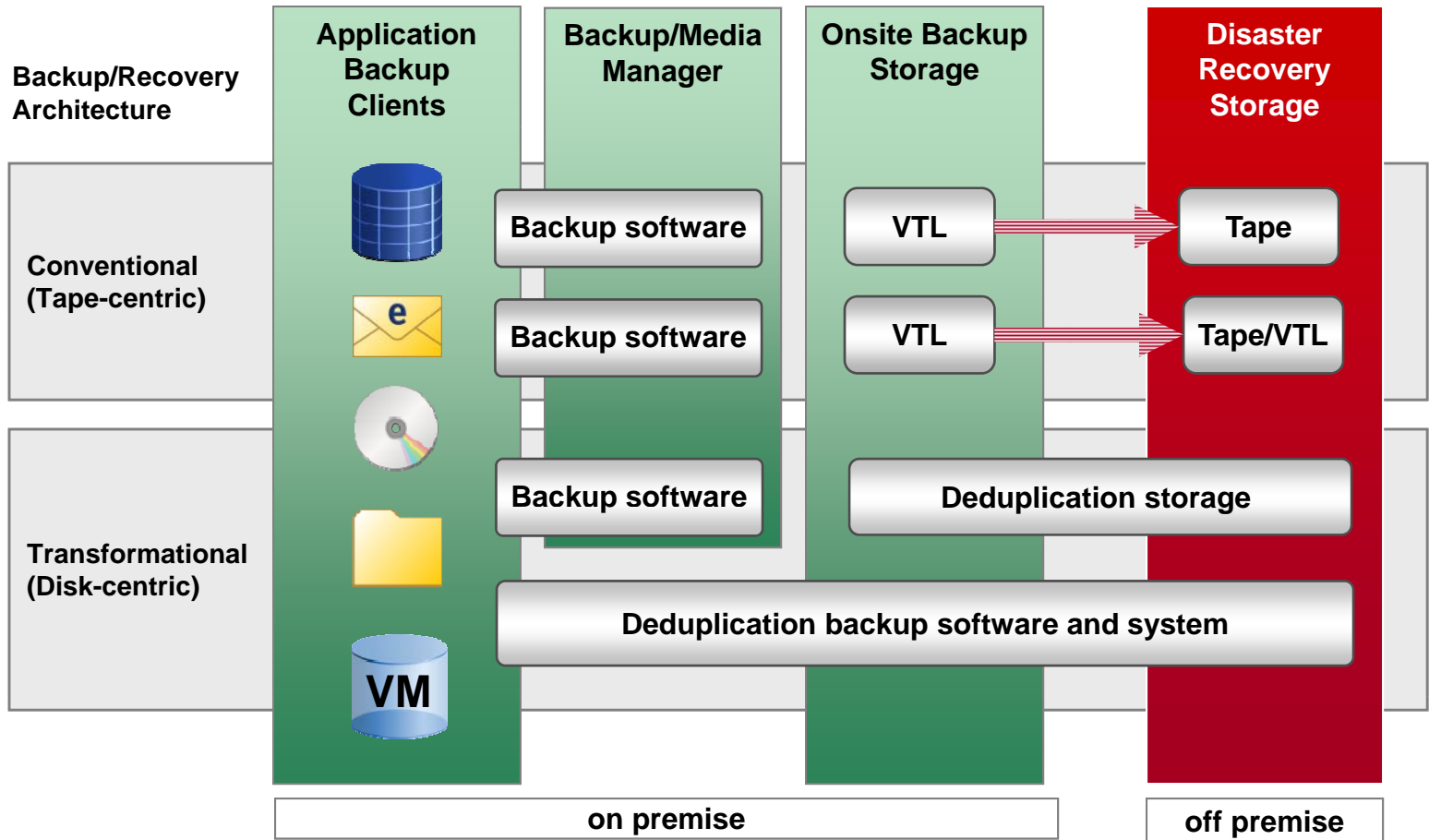
# Shift to Dedupe




  

  
 COMPUTERWORLD

April 12-15, 2010  
 Rosen Shingle Creek Resort  
 Orlando, Florida

# Backup/Recovery Architectures In Transition from Tape to Disk



SNIA<sup>7</sup>

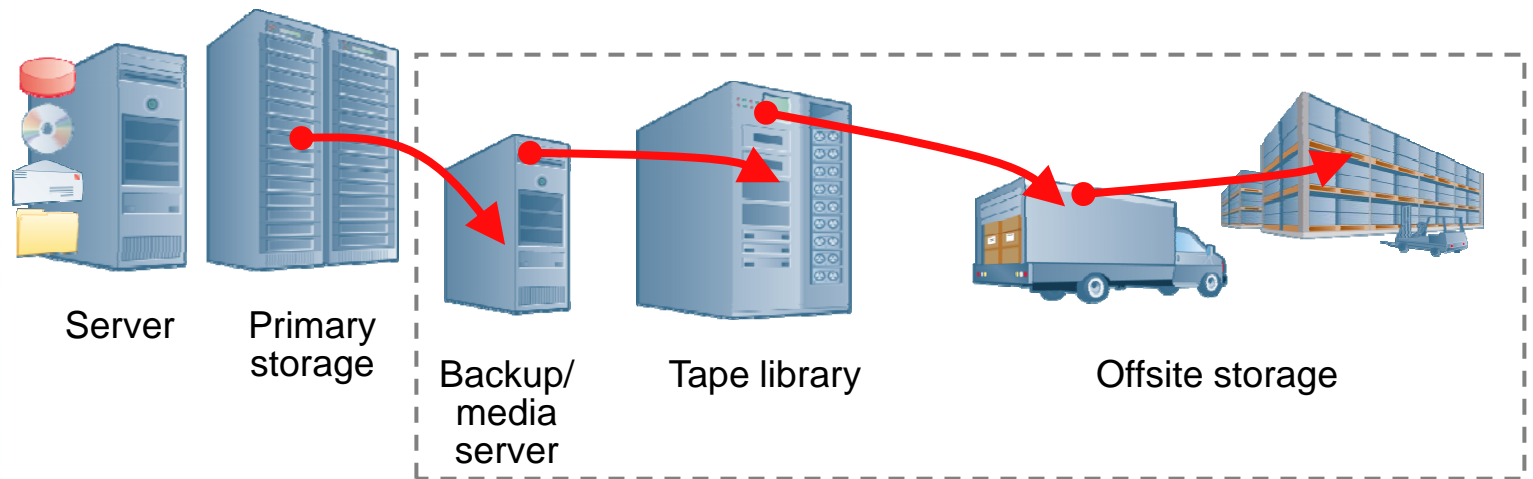


**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

# Classic Tape



- Tape stores redundant copy
- Tape manually moved off site for DR
- Older tapes for time travel
- Tape was cheap; got the job done

SNIA<sup>7</sup>



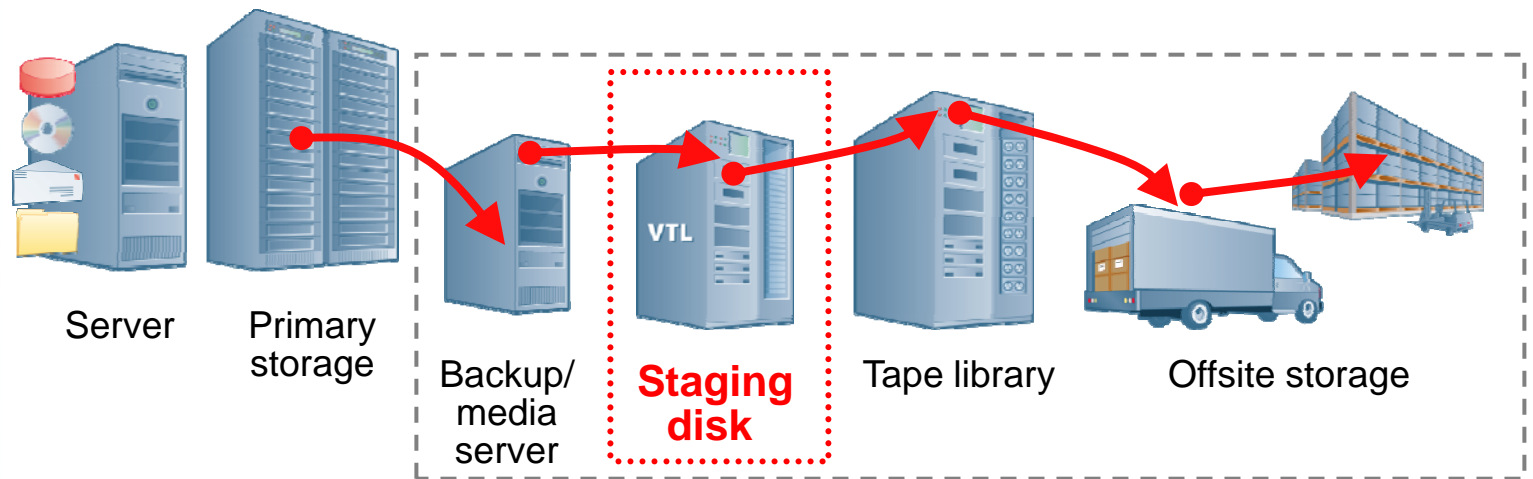
**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

# Add Staging Disk

## Still Tape Centric



- Disk improves backup success rate
- Speed matching buffer
- Critical restores may come from disk
- Tape for DR and time travel



SNIA<sup>7</sup>



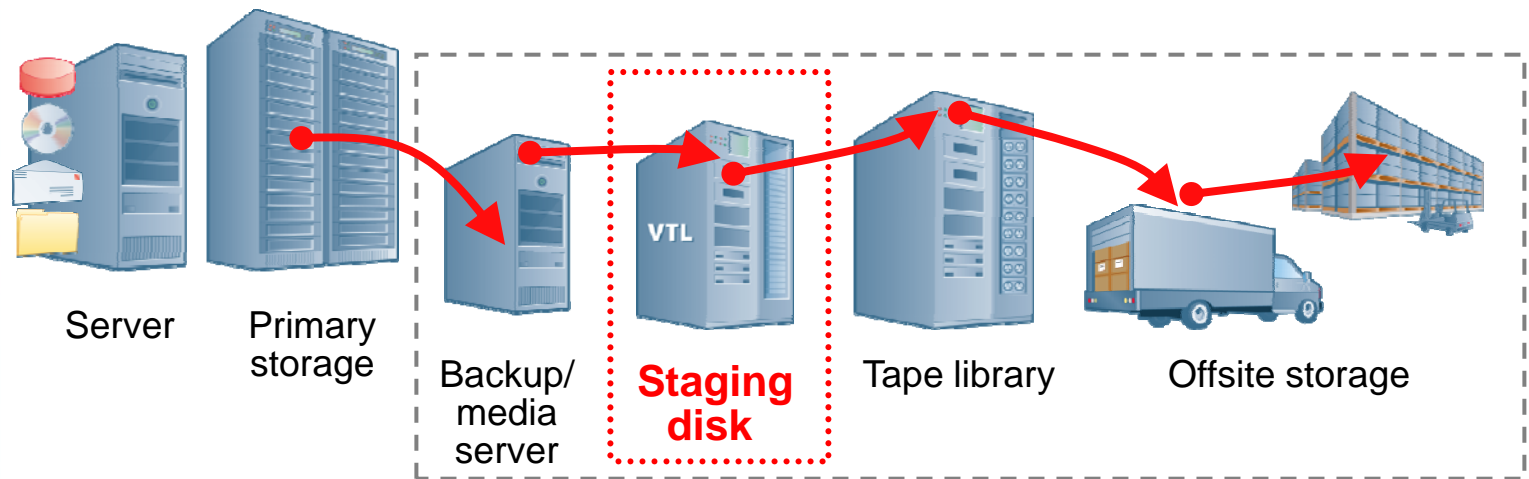
**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida


# Add Staging Disk

## Still Tape Centric



- Key features:
  - Minimal change to processes
  - Performance
  - Automatic copy to tape
    - It's really about the tape

SNIA<sup>7</sup>



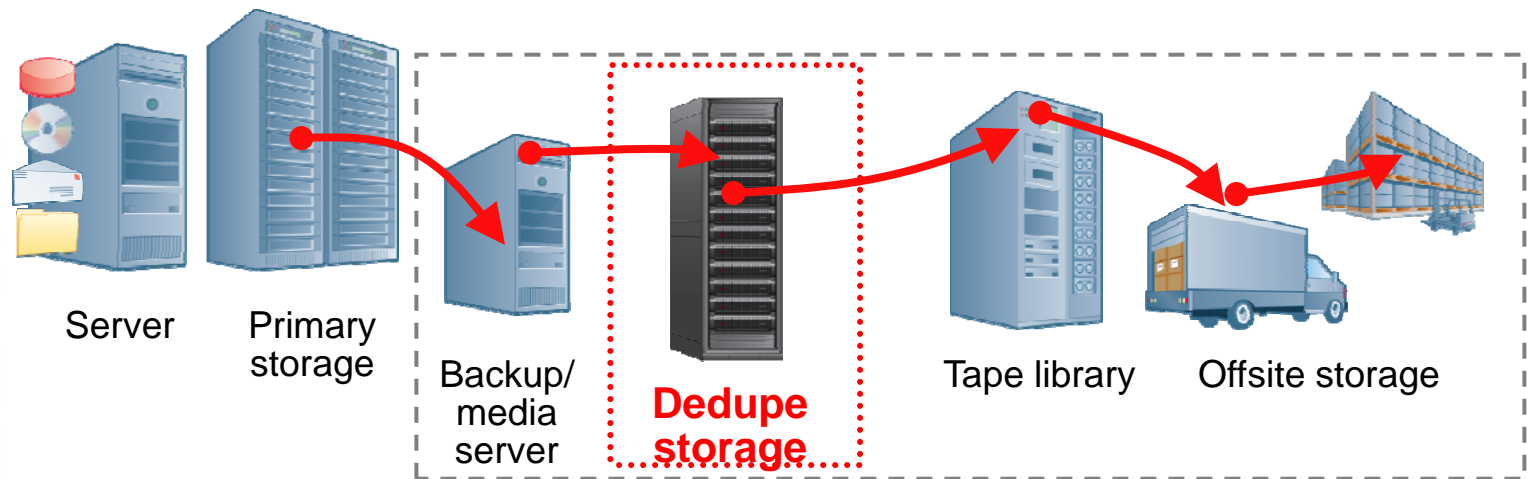
**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida


# Add Deduplication Disk

Tape-Centric, but Less Tape



- Keep all operational copies local
- All operational restores from disk
  - Avoid recalling tapes from offsite
- DR still manual with tape

SNIA<sup>7</sup>



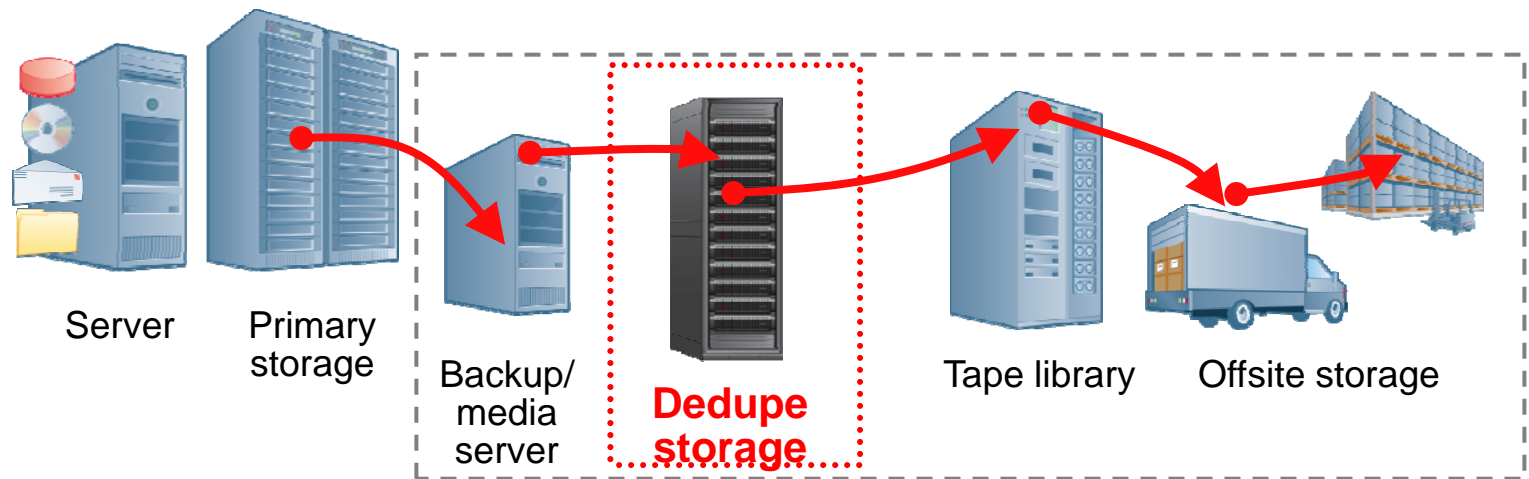
**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

# Add Deduplication Disk

Tape-Centric, but Less Tape



- Key features:
  - Dedupe effectiveness to reduce cost
  - Inline dedupe to reduce cost
  - Data protection (extra copies are gone)

SNIA<sup>7</sup>



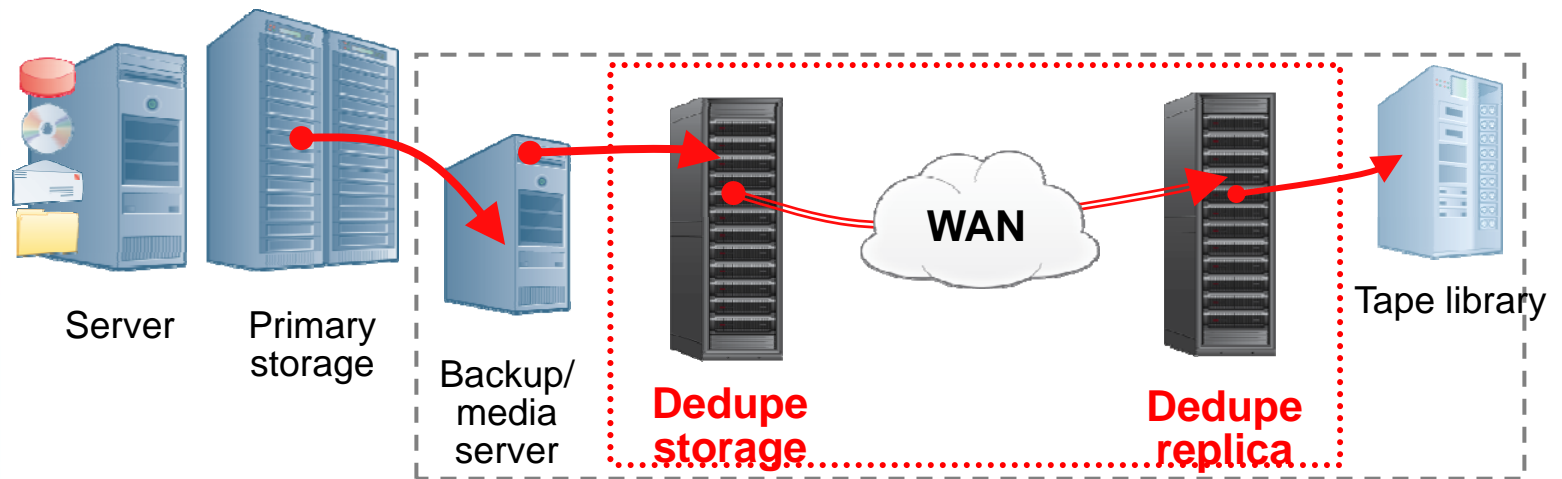
**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida


# Add Dedupe Replication

## Disk-Centric, but Classic Architecture



- DR copies offsite sooner and automatically
- Tape optional for archive
  - Some companies choose no tape

SNIA<sup>7</sup>



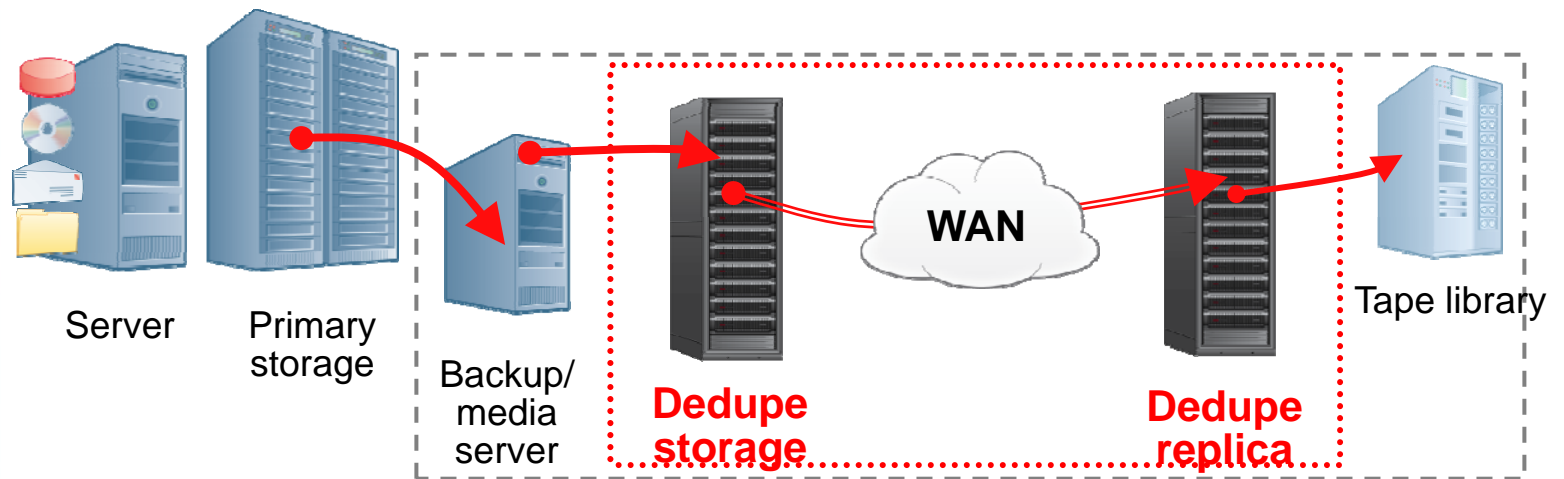
**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

# Add Dedupe Replication

## Disk-Centric, but Classic Architecture



- Key features:
  - Time till data is offsite
    - Can't replicate till data is deduped
  - Replication robustness
  - WAN efficiency

SNIA<sup>7</sup>



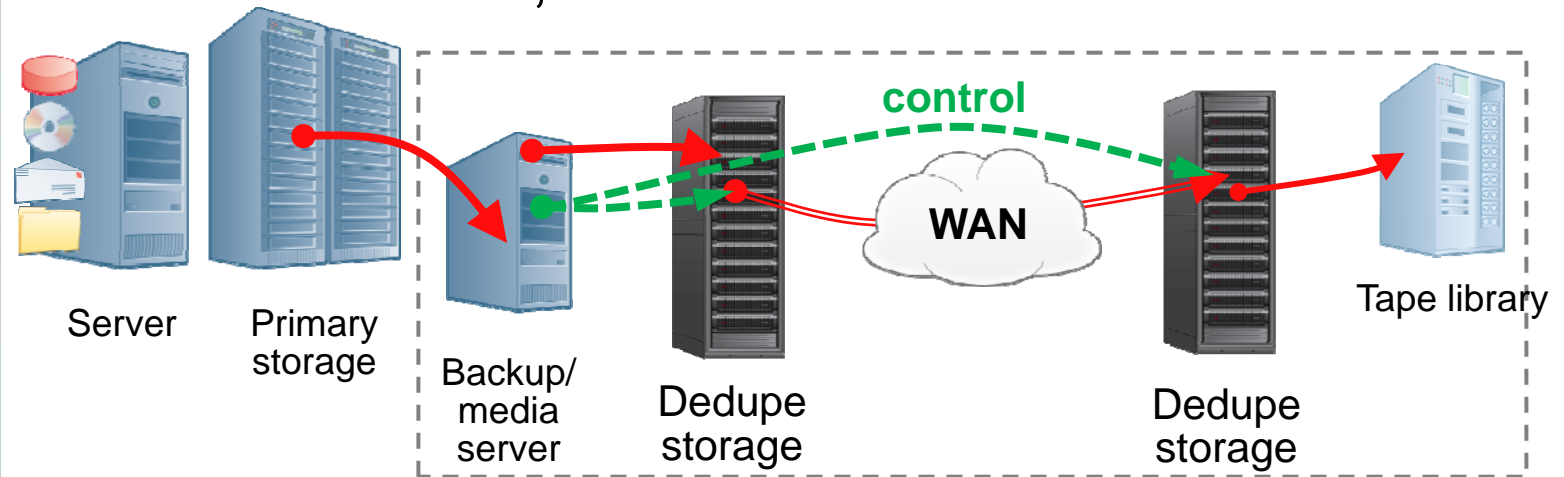
**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

# Integrate Replication with Backup Software

Disk-Centric, but still Classic Architecture



- Replicate deduped data, but
- Backup software drives replication
  - Catalogs replica backups separately
  - Manages retention individually
  - Single pane of glass

SNIA<sup>7</sup>



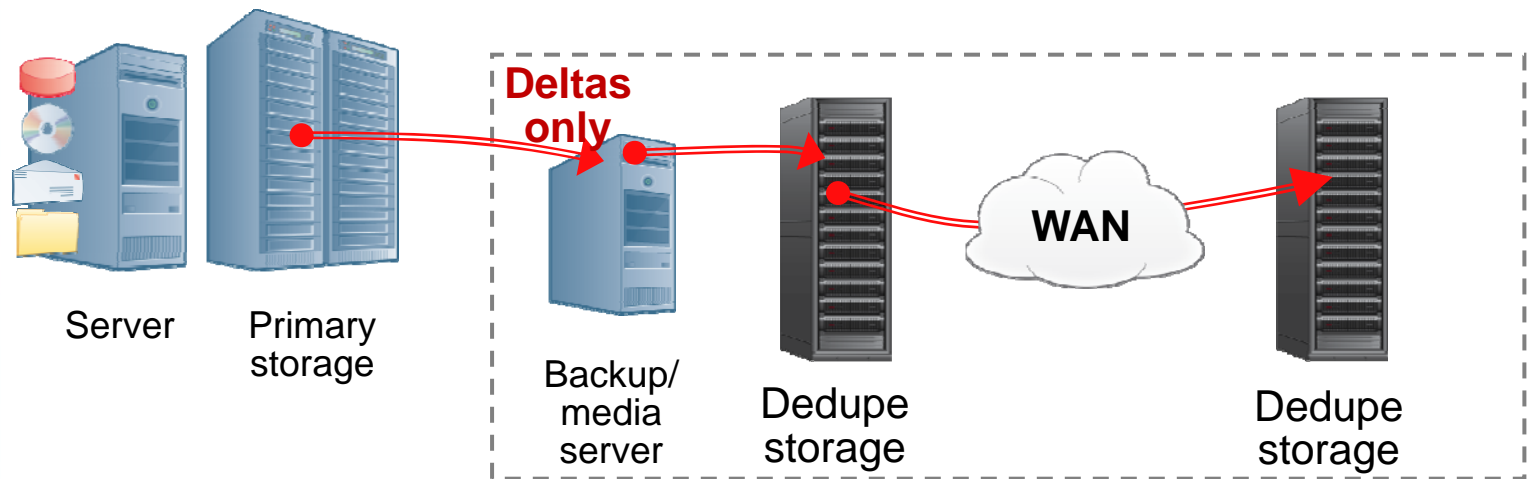
**SNW**

COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

# Virtual Full Backups

## Disk-Centric Redesign



- Leverage random access capabilities
  - Send deltas only
  - Efficiency of a replication protocol
- Stop doing regular full backup
- Huge win in virtual server environments

SNIA<sup>7</sup>

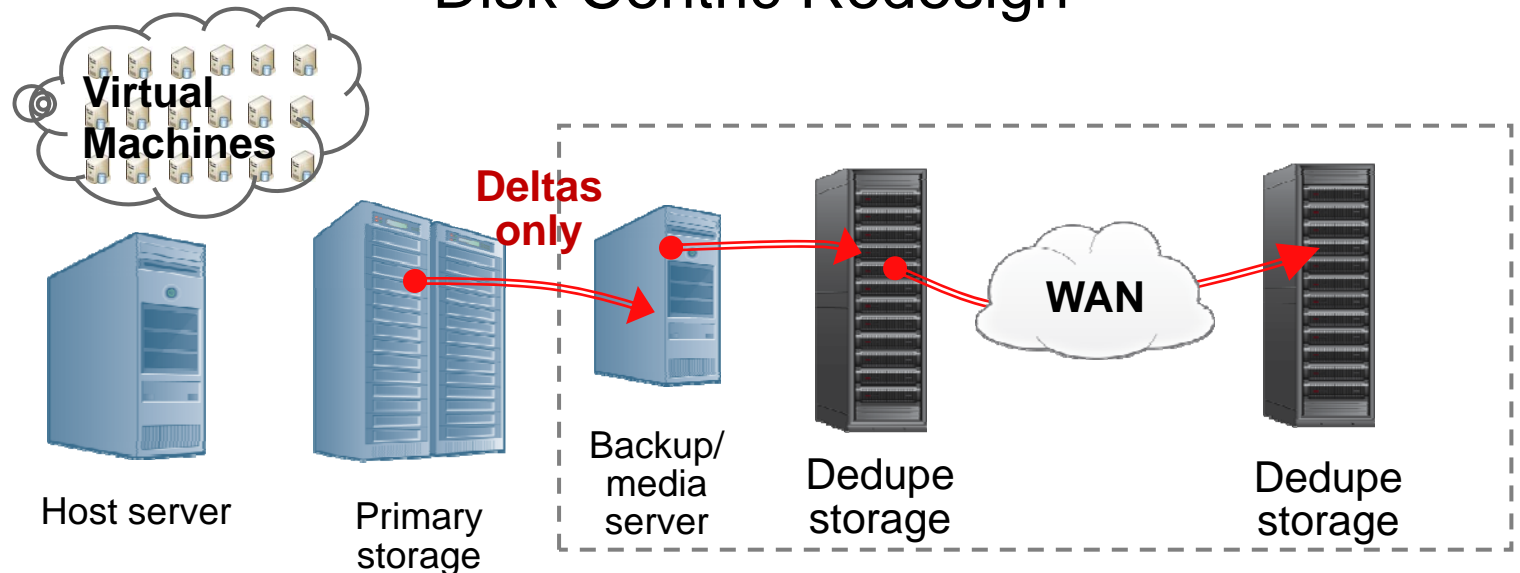


**SNW**  
COMPUTERWORLD

April 12-15, 2010  
Rosen Shingle  
Creek Resort  
Orlando, Florida

# VM Image-based Backup

## Disk-Centric Redesign



- Copy changed blocks only
- Retain virtual disk snapshots
- Use full image for DR, migration, etc.
- Crack open image for granular restore





# Journey to Disk-Centric Data Protection

- Disk first just augmented the classic tape-centric architecture
- Deduplication storage presents an opportunity to rethink backup
  - Use disk as disk
- Deduplication storage appliances
  - Help a classic architecture
  - Are perfect transition to disk-centric
  - Consider current and future requirements
- Look at disk-centric backup packages for the greatest leverage