Performing Backups on Highly Available Applications Within an MC/ServiceGuard Cluster

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Presented by

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Planning and Architecture of MC/ServiceGuard

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Planning and Architecture of MC/ServiceGuard

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Agenda

- Introduction
- Overview of HA Backups and Restores
- Methodology of backing up / restoring highly available applications
- How to implement this strategy

- Discussion

Overview of Backups and Restores

3 Types of Backups

- OmniBack scripting
- Software or OS mirror splitting
  - MirrorDisk/UX
- Enterprise Storage Backup solutions
  - i.e. HP Business Continuance Volumes

OmniBack scripting

- Uses Pre- and Post-exec scripts
- Controls the HA application within MC/SG cluster
- Able to configure highly specific scripts to control the cluster
- Will focus in-depth later

OmniBack scripting

- Includes Hot Backup Plug-ins
  - Low Probability of corruption, but still possible
  - More expensive than scripting
  - Higher Availability than scripting

OmniBack scripting

- Pros
  - Inexpensive to develop and maintain
  - Highly specific control of the application and cluster
- Cons
  - Cold backups (most likely)
  - Can be difficult to develop and maintain
  - Many contingencies to plan for…can make for a fragile system

Software/OS Mirror Splitting

- Pros
  - Allows for continuous availability
  - Least amount of configuration necessary
  - Best snapshot of an application
- Cons
  - Large amount of storage space required
  - Very CPU and Disk resource intensive during mirror synchronization
  - Miss ongoing transaction activity

Enterprise Storage Backup Solutions

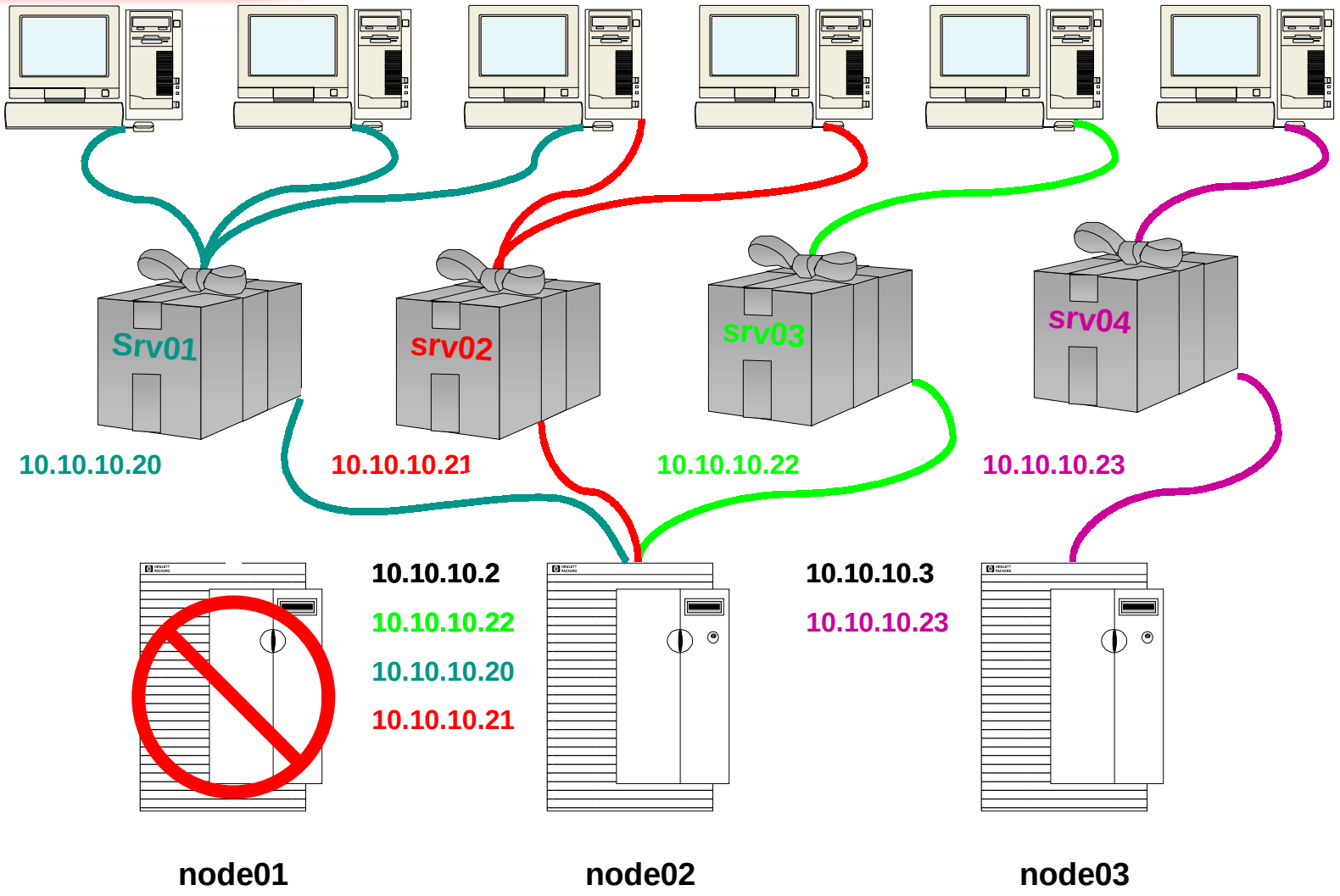
- Pros
  - Allows for continuous availability
  - Low CPU and Disk loads
  - Fast synchronization between primary and backup copy
  - Easy configuration
- Cons
  - COST!

The “High Availability” Mindset

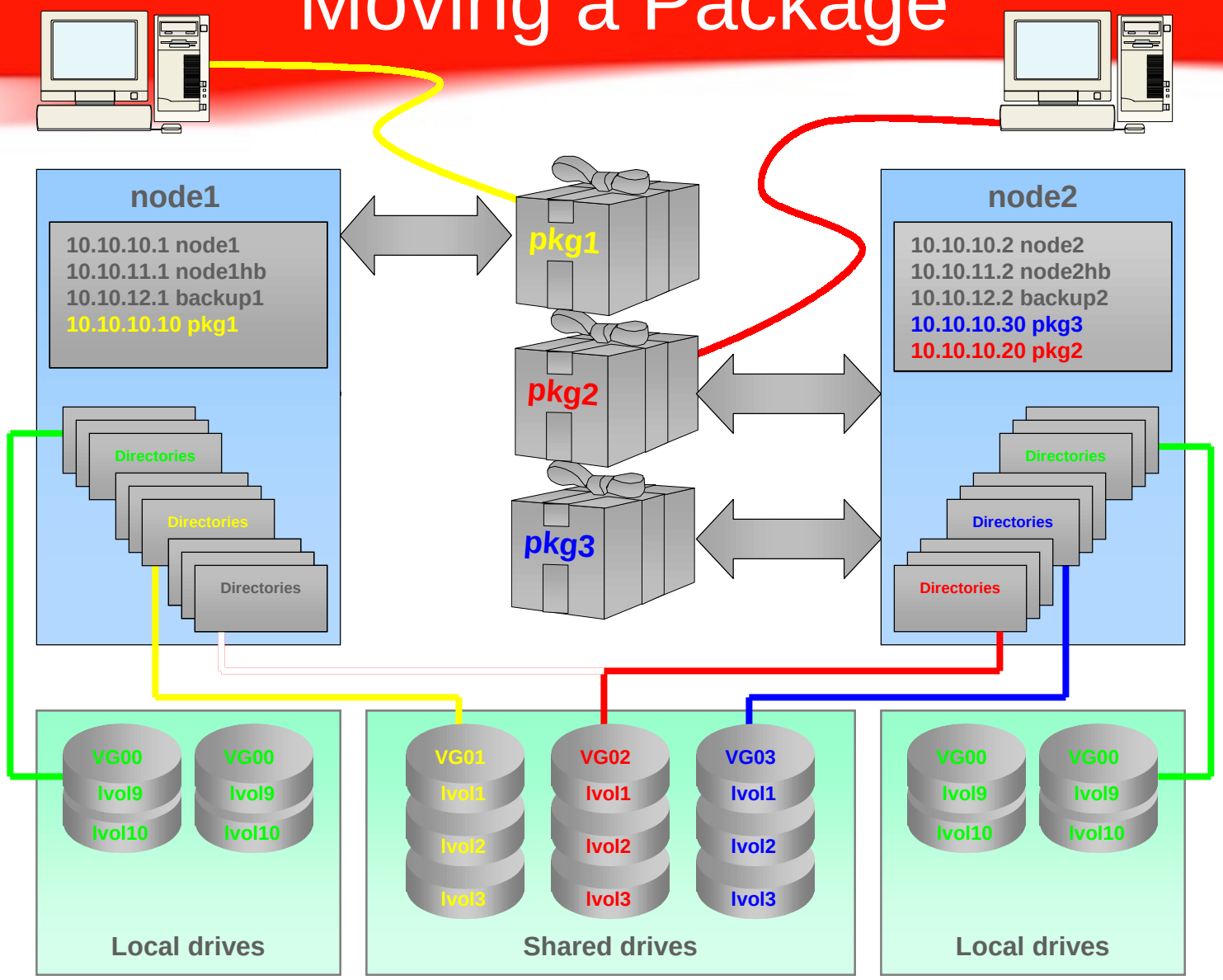
- Always thinking of what can go wrong
- Designing the most simple and elegant solution
- Providing multiple layers of redundancy
- Maintaining focus on availability, not technology

HA is a methodology, not a technology!

How Packages Keep People Working



Moving a Package

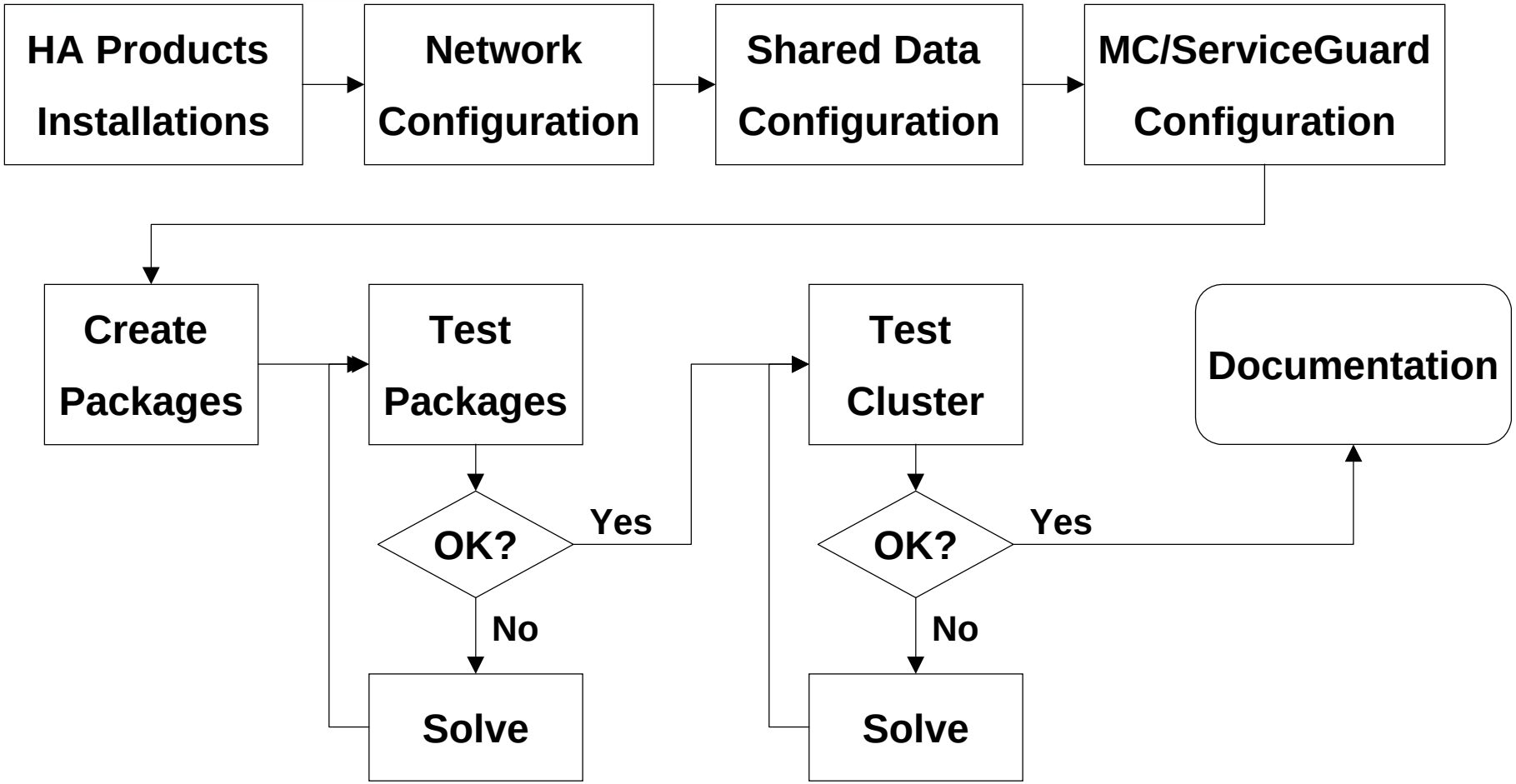


Methodology for Implementing MC/ServiceGuard

Methodology Overview

- Training for the system architects & implementers
- Assessment of applications and hardware
- Planning: create initial documentation and project plan
- Pre-implementation: Getting H/W, O/S and applications ready.
- Implementation: Create cluster and packages
- Testing & certification
- Training for administrators
- Training for operators
- Documentation!

Implementation Process



Factors to Increase Chances of Success

- Planning, Planning, Planning!
- Training in the selected technologies
- “Crash & Burn” Environment
- Simple design, proper hardware and software, correct implementation, rigorous testing
- Documentation - “As Built” and Current
- Maintenance of technologies and skills

Methodology of backing up / restoring highly available applications

Methodology

- Location of the package
- Movement of the package
- Tracking the package
- Backup/restore of the package

Location

- Location of the package does not matter
- Tracks the package via IP address and Package Name

OmniBack Tracking

- OmniBack needs a disk agent on each server of the cluster
- “Import” the name of the Package and IP addresses
- Assign filesystem or Oracle/database plug-in backups
- Set Specification.

Back Up/Restore of the Package

- Using the IP/Hostname, must specify mounted filesystems of the package
- Run the Pre-Exec/Post Exec scripts

Implementation

Checks for availability

- Is it pingable?
- Is it under maintenance?
- Can we log into the services?

Pre-Exec

- Is the package on this server?
  - Locate by checking processes
- Is it under maintenance mode?
  - Custom script that looks for a marker file
- Can a login be established?
  - Start a SQL session

Pre-exec <con't>

- Place the database under maintenance
  - Prevents failover while backup occurs
  - Cluster is still up, but monitoring is disabled.
- Connect to the Database and issue shutdown commands
  - Graceful, then "abort"
- Start cold back up

Post-exec

- Start the Database
- Check the Database
- Remove Maintenance Flag
  - Restarts monitoring of the database

Restore

- Restores to the IP/Package Name regardless of location
- Place database under maintenance
- Follow normal database restore procedures

Review

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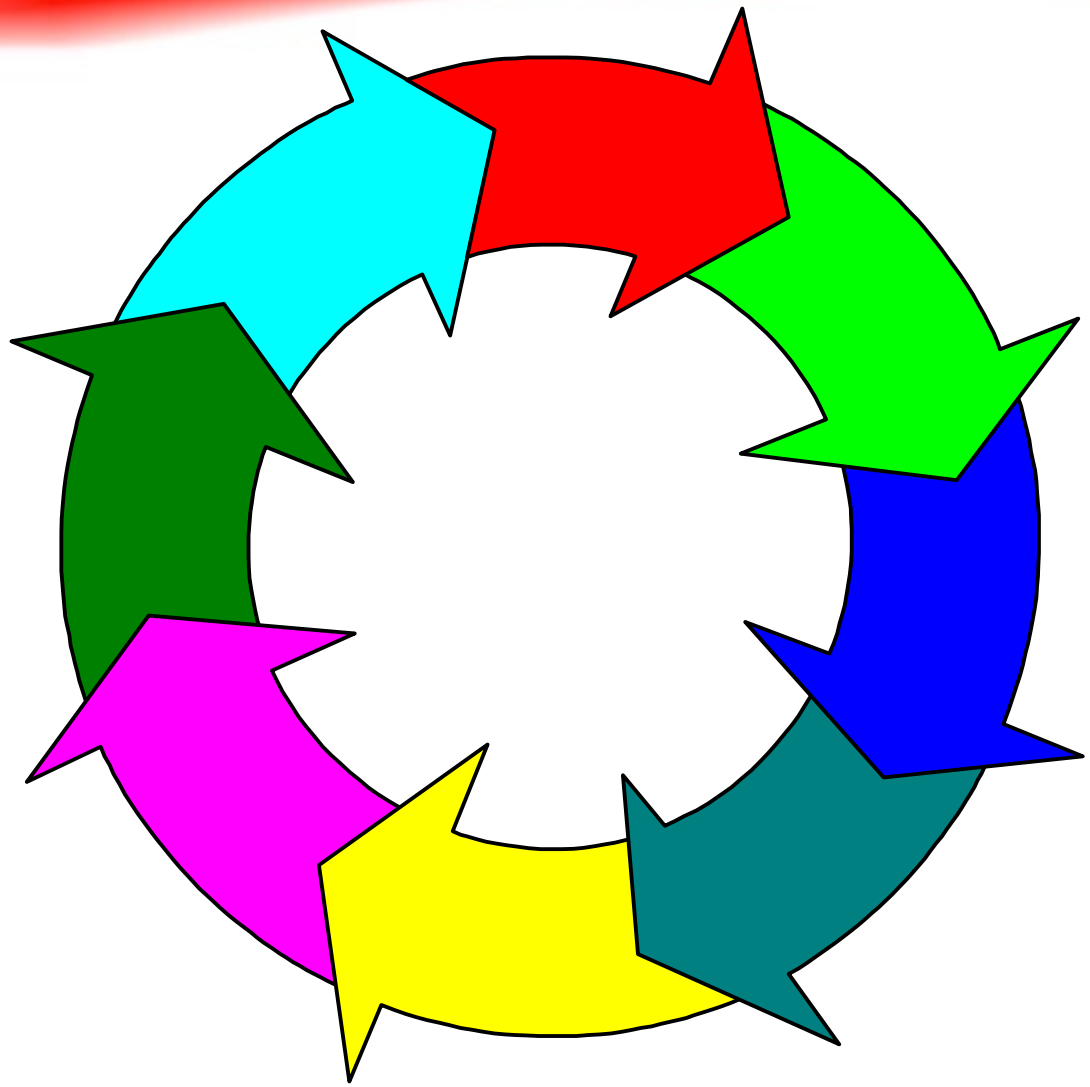
Discussion



References

- HP Certified Solutions Institute's High Availability Solution Plan
- HP Online: www.hp.com
- HP Sys Admin Mailing List: www.dutchworks.nl
- Previous HP and Logical customer presentations
- Numerous customer installations
- Working with other great consultants