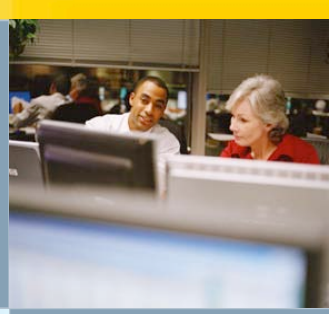
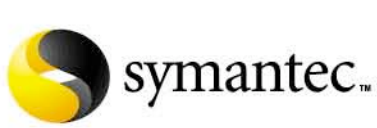


High Availability: From luxury to necessity in 10 years

Eric Hennessey

Group Technical Product Manager

Availability Clustering Solutions



Agenda

- Introduction
- The Dark Ages: Life before HA
- The Age of Enlightenment: Server-centric HA
- The Industrial Revolution: Improvements in storage technology
- The Information Age: Application-centric HA
- Futurama: Comprehensive data center automation

Introduction

- Life was once pretty simple…we had an application that ran on a server. When that server (or application) broke, we'd fix it.
- As the business increasingly depended on an application, its downtime became more disruptive to the business.
- Basic HA solutions were introduced to respond quickly to outages.
- These solutions improved with technology over time.
- Faced with increasing demands for service availability, regulatory compliance and the complexity of today's applications and computing environments, even modern HA technologies will soon not be sufficient to meet our customer's demands.

The Dark Ages: Life before HA

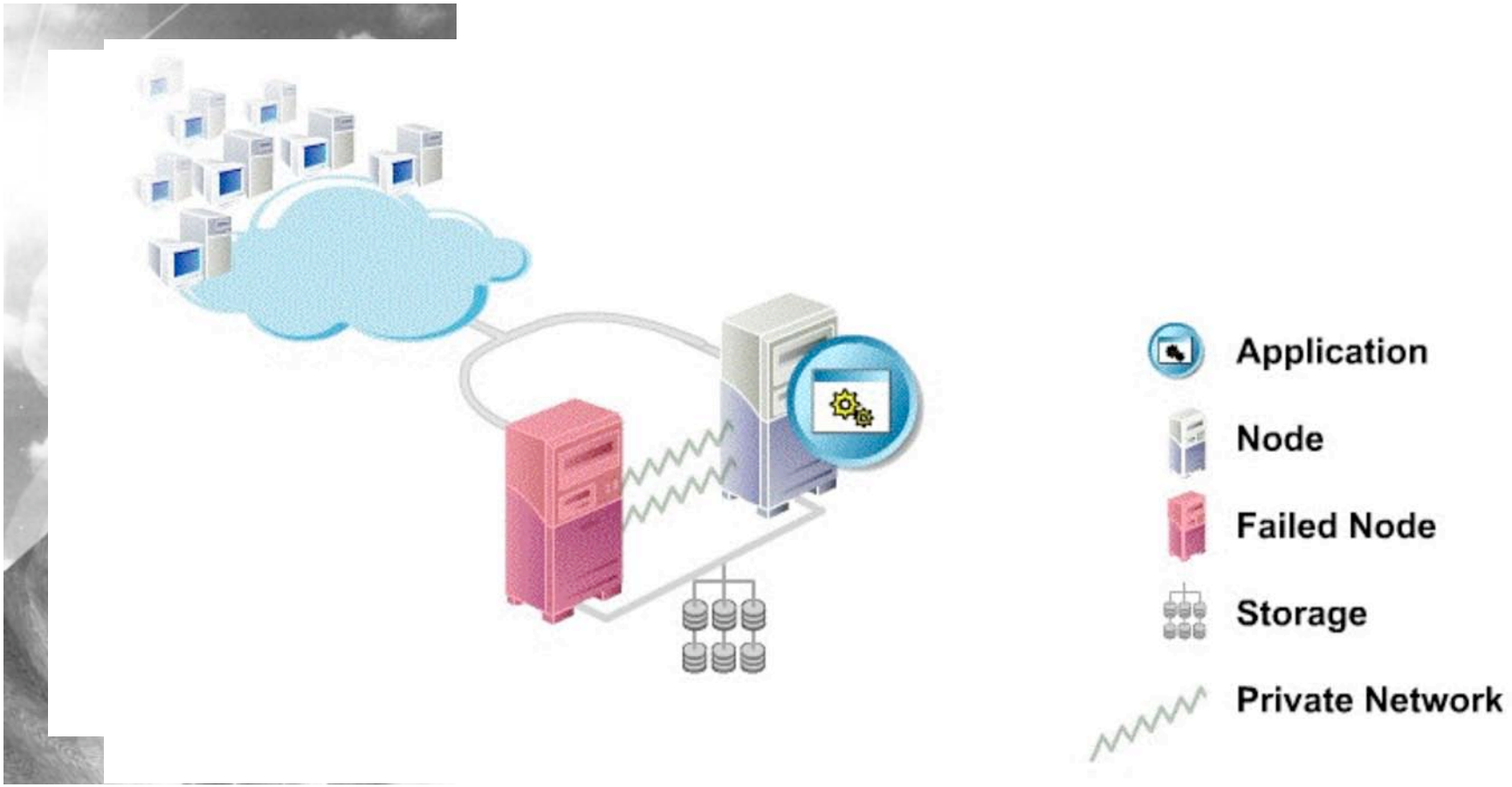
Application

Server

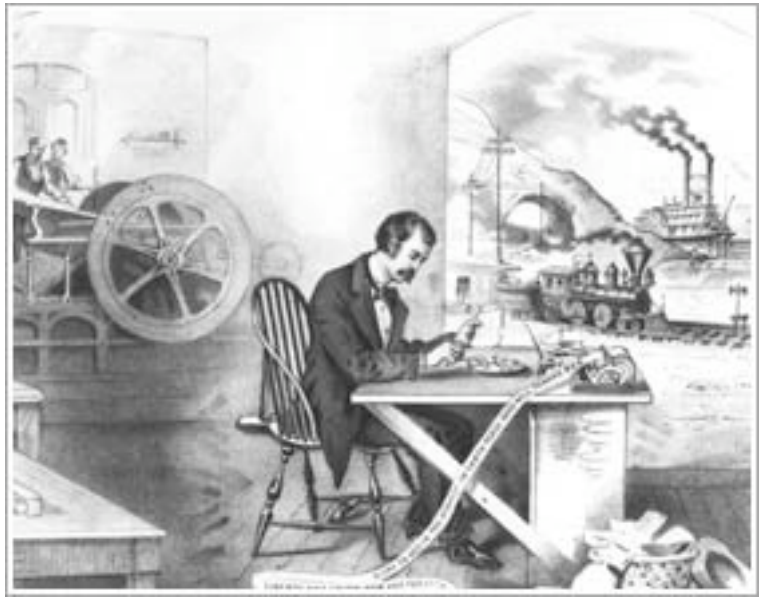
Storage

Loss of any component = loss of application availability = you are the most popular person till fixed

The Age of Enlightenment: Server-centric HA

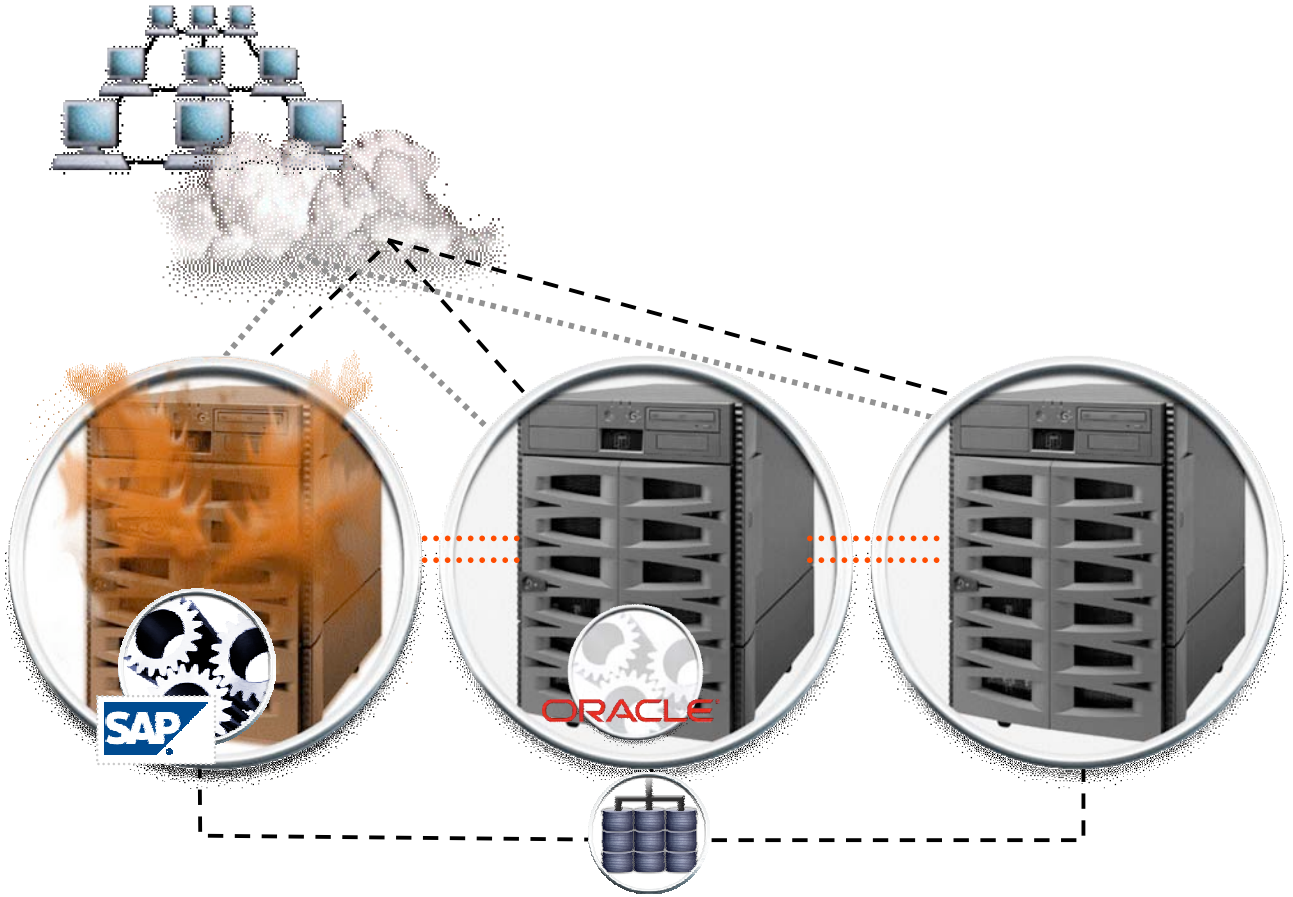


The Industrial Revolution: Improvements in Storage Technology

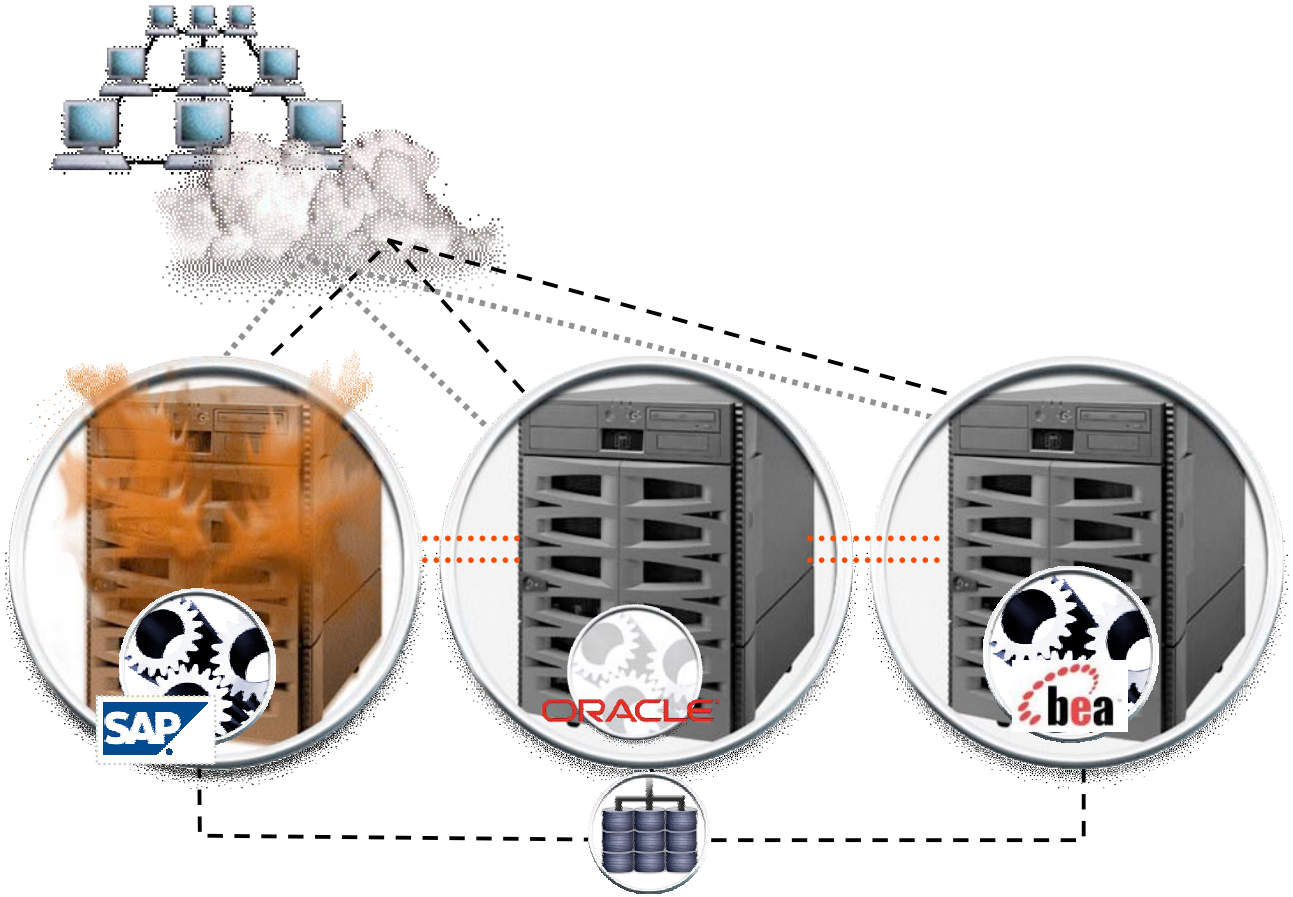


- Fibre Channel technology introduced in mid ’90s
- Industry adoption of standards leads to improvements in the technology
- Storage becomes ubiquitous
- Virtually every server in the data center could have a path to the same storage
- Constraints of SCSI became a thing of the past

Modern clusters: N + 1 architecture

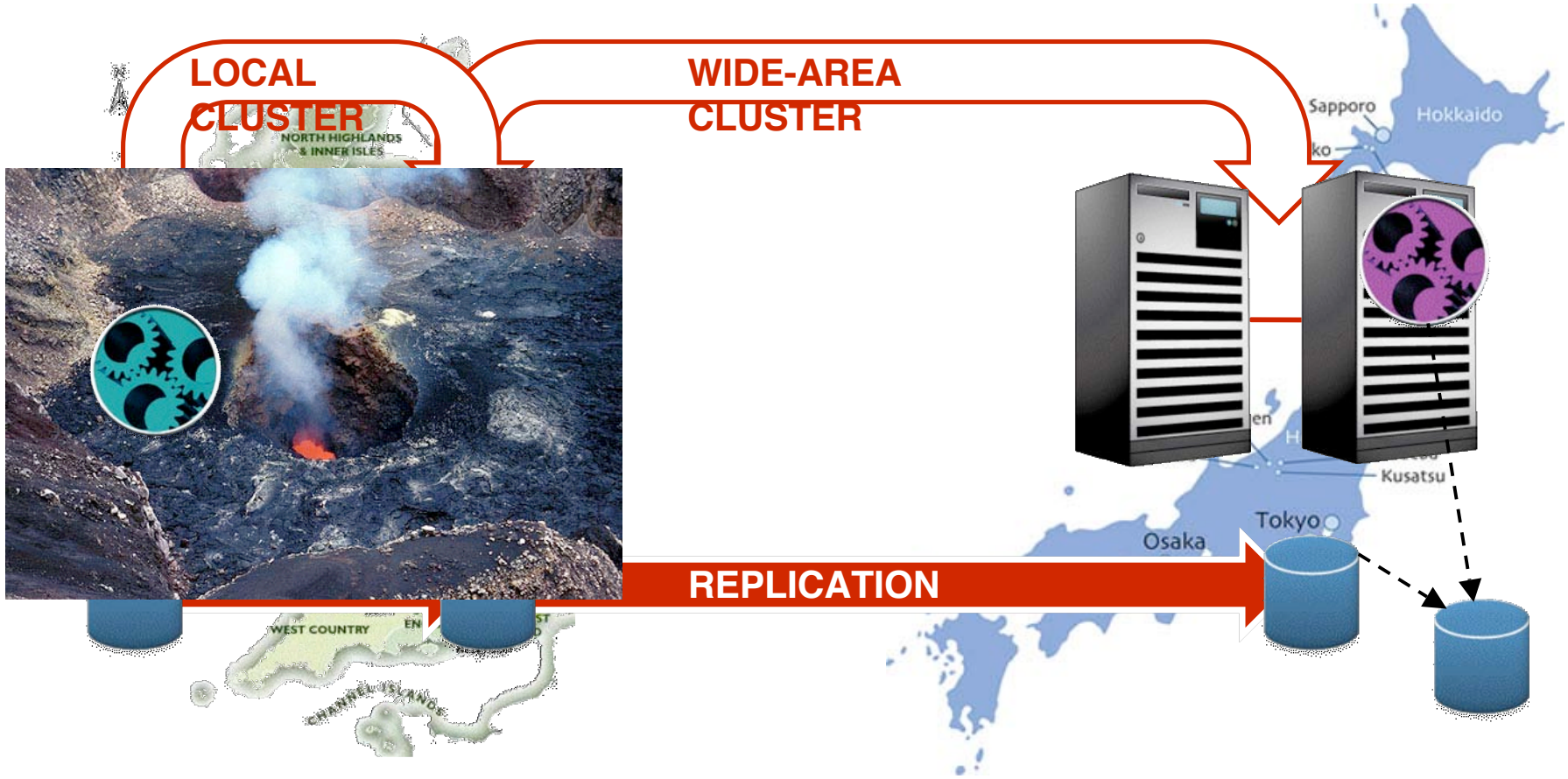


Modern clusters: N – to – N architecture



DR Automation

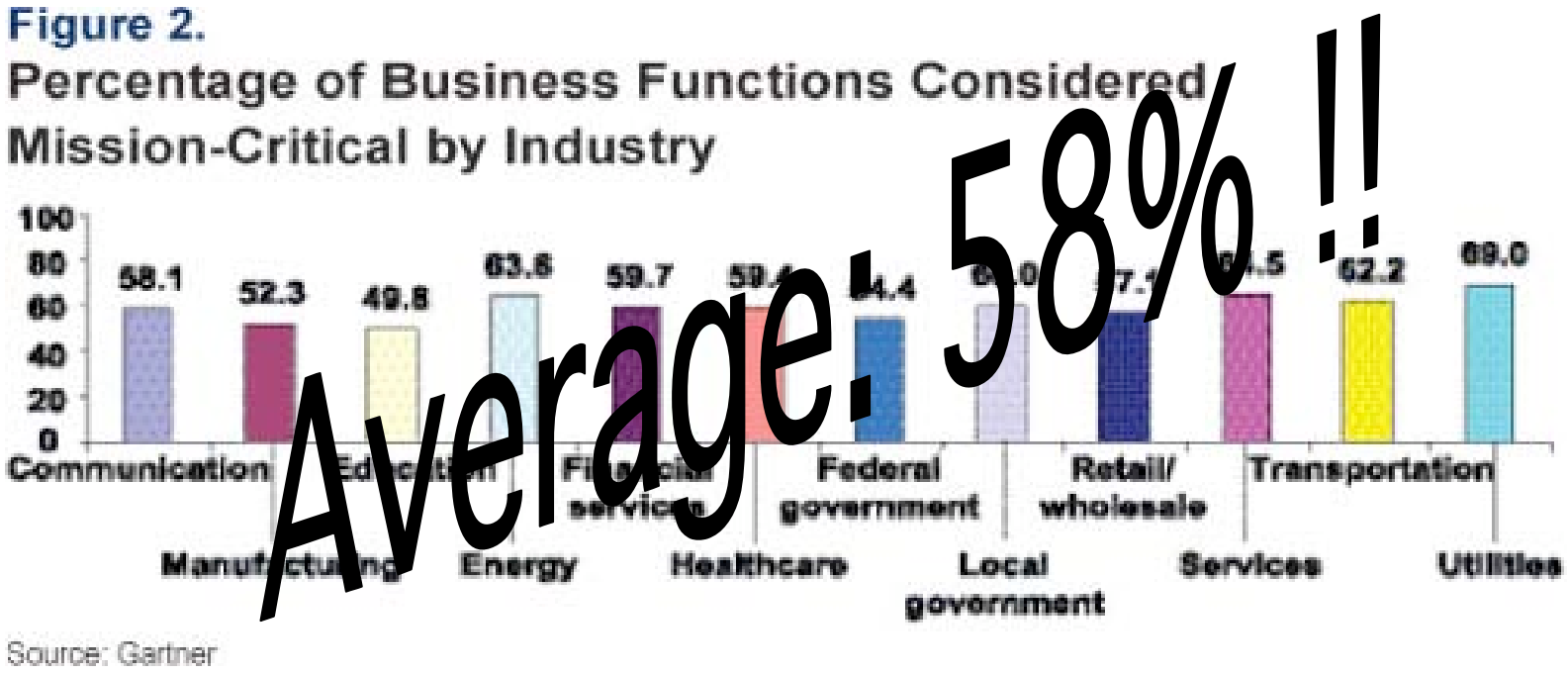
Production Site **DR Site**



The Information Age: Application-centric HA

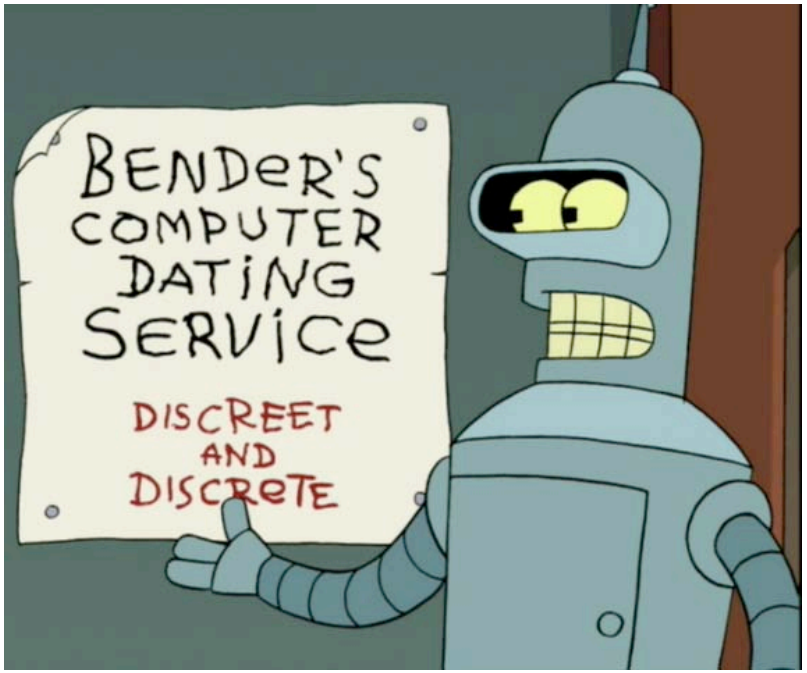
- Wide spread adoption of SAN & NAS technologies in the data center
  - We're able to do more, *but*…
  - As a result, our customers are *demanding* more
- Where IT solutions were once there to support the business, the IT solutions increasingly have *become* the business
  - Servers proliferate
  - Server utilization decreases
  - Application complexity increases
- Where once we'd jump through hoops (and spend lotsa money!) to make a few services HA, now nearly *everything* has to be HA!
  - Few automated solutions are developed and deployed with the intent that they have 75% uptime

Percentage of functions considered Mission-Critical



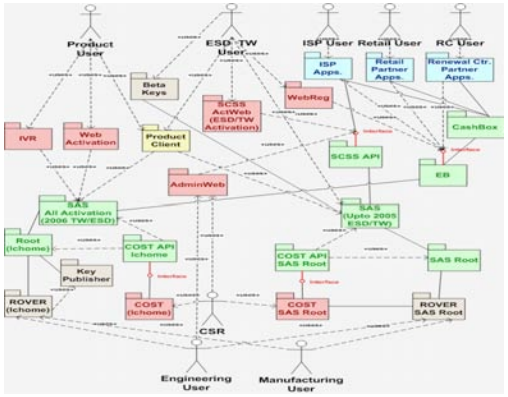
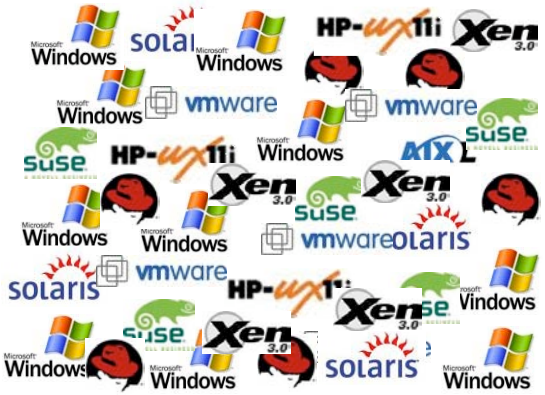
Source: Gartner

Futurama: Comprehensive data center automation



- Local and wide-area high availability can be achieved as a matter of routine through effective data center and applications management
  - Configuration Management
    - Server configuration
    - Application configuration
    - Dependency mapping
  - Server Provisioning Management
    - Standardize server builds
  - Application Placement and Run time Management
    - Manage application start, stop and failover

Server / Application Management Today: Complex!

APP COMPLEXITY INCREASING	+	SERVER & VIRTUAL SERVER PROLIFERATION	+	LIMITED STAFF & BUDGET
				
Client/Svr → Multi-tier → SOA		Scale-out Windows & Linux		IT talent scarce
More business critical apps		Scale-up UNIX + partitions		IT budgets tight
SLA's continue to increase		Virtual server proliferation		Demands keep increasing

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Biggest Challenges in Server/Application Management

Visibility	What is running in my data center? Who's making changes? Am I in compliance? How do I track utilization & align with the business?
Automation	How can I automate mundane tasks? How do I maintain standards? How can I pool servers & decouple apps?
Availability	How do I reduce planned & unplanned downtime? How do I meet my DR requirements? How do I track & deliver against SLAs?

Configuration Management

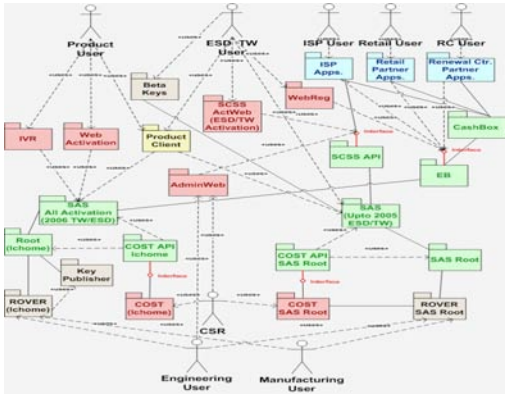
DETAILED DISCOVERY

All applications

All running processes

Detailed hardware info

DEPENDENCY MAPPING

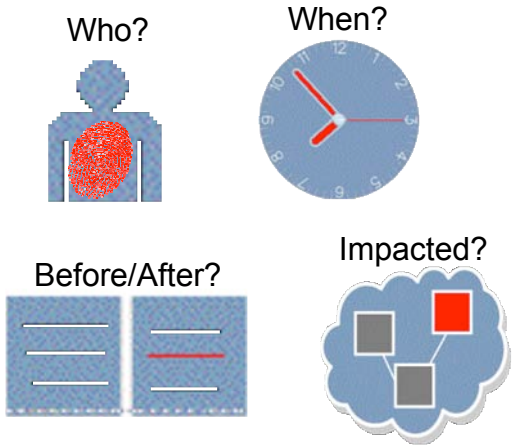


App to app dependencies

App to server dependencies

App to file dependencies

CHANGE TRACKING



Real-time (industry unique)

Configs, files, directories

Server & app comparisons

Configuration Management: Why do it?

IMPROVE AVAILABILITY, PERFORMANCE

Track server, application drift that results in downtime
Conduct change impact analysis to prevent problems

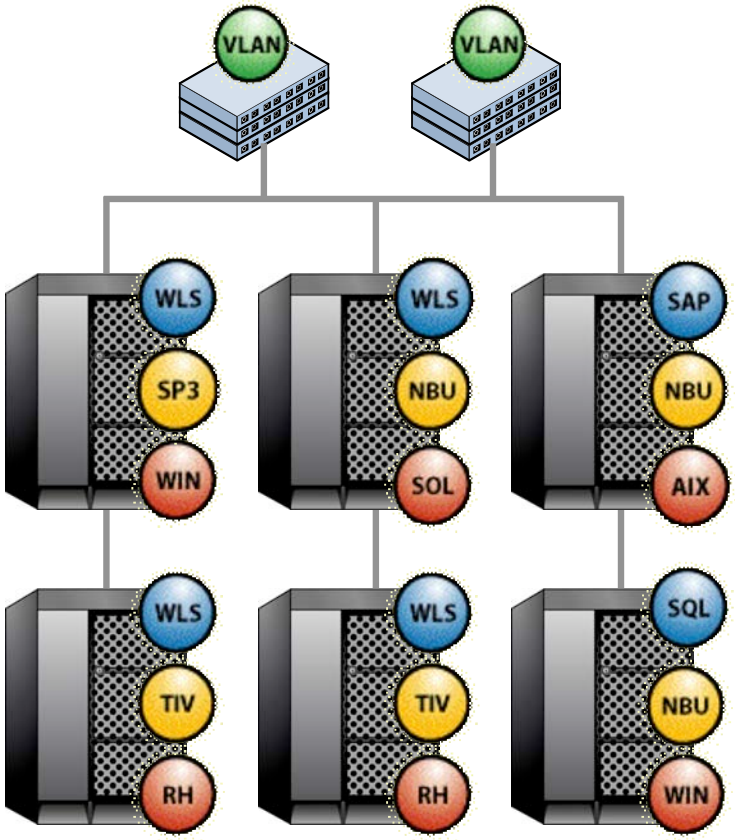
FIX PROBLEMS FASTER

Provide real time analysis of what changed in environment

COMPREHENSIVE CONFIGURATION INVENTORY

What servers, software, OS, Apps… are in my Data Center?

Server Provisioning



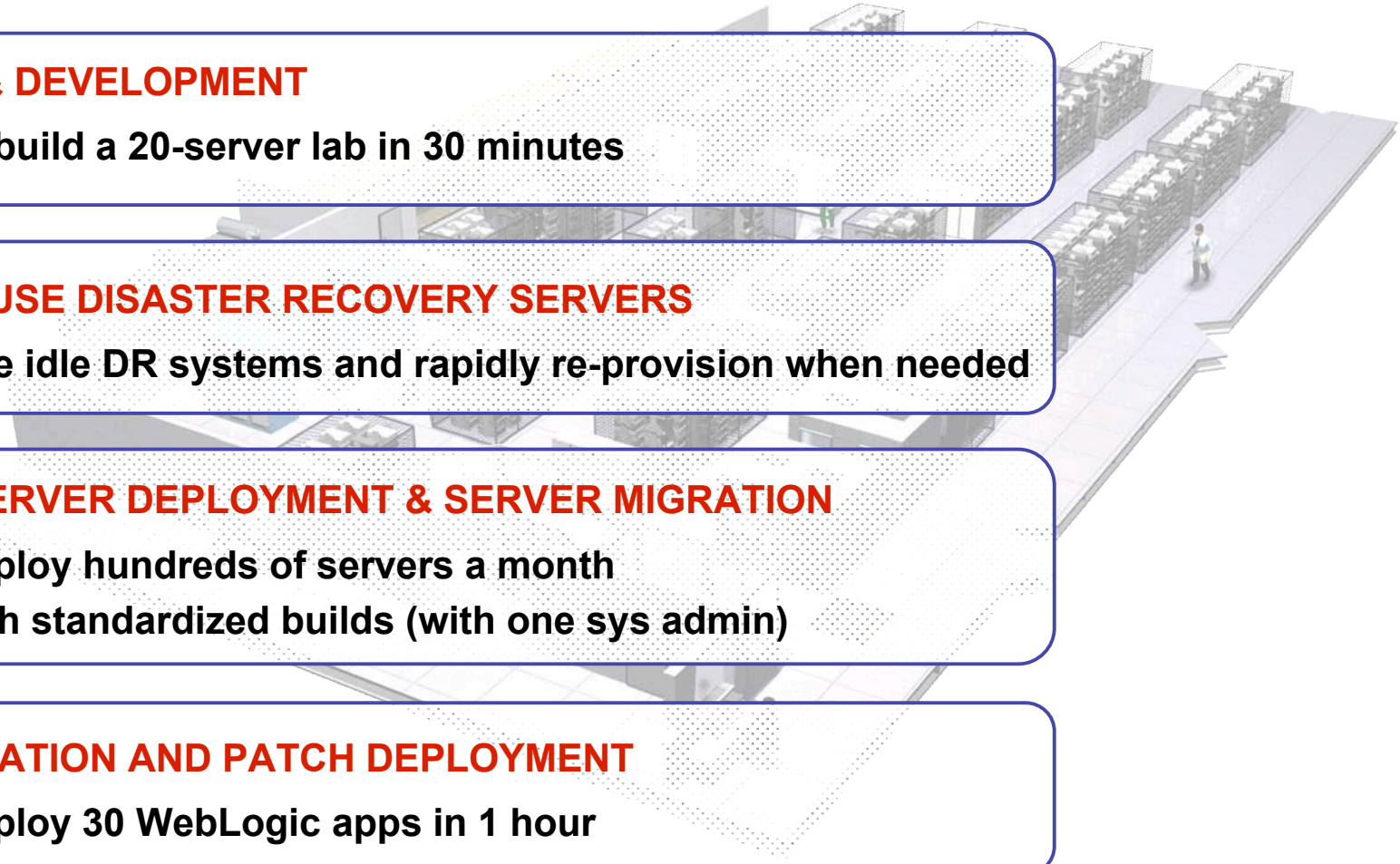
CONTROL NETWORK

INSTALL APPLICATIONS

INSTALL OS & PERSONALIZE IMAGE

DISCOVER

Server Provisioning: Why do it?



TEST & DEVELOPMENT

Rebuild a 20-server lab in 30 minutes

DUAL-USE DISASTER RECOVERY SERVERS

Use idle DR systems and rapidly re-provision when needed

NEW SERVER DEPLOYMENT & SERVER MIGRATION

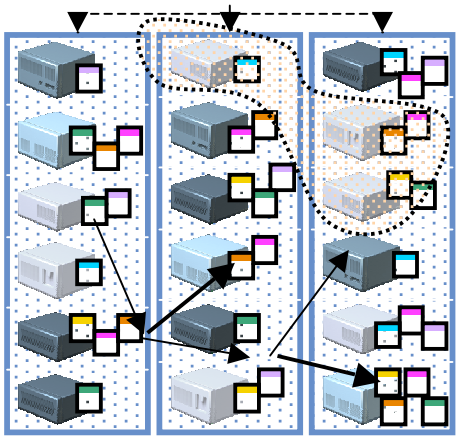
Deploy hundreds of servers a month
with standardized builds (with one sys admin)

APPLICATION AND PATCH DEPLOYMENT

Deploy 30 WebLogic apps in 1 hour

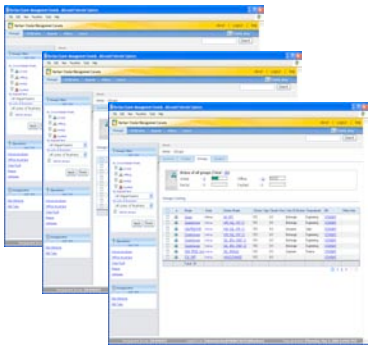
Application Management

APPLICATION RUN-TIME CONTROL



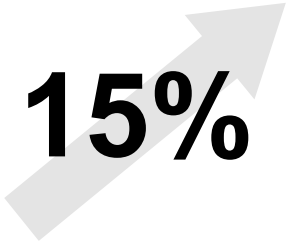
- ✓Start, Stop, & Move Apps
- ✓Manual / Schedule / Failure
- ✓Priority / Dep'dcy / Resource

CENTRALIZED VISIBILITY & MANAGEMENT



- ✓Real-time View of Apps /Svrs
- ✓Simple Web-based Console
- ✓Granular RBA & Security

DATA CENTER ASSET OPTIMIZATION



- ✓Server Consolidation
- ✓Track & Enforce Utilization
- ✓Execute Changes

Application Management: Why do it?

Manage large numbers of applications

Increase operator/admin capability

Manage Multi Tier Applications

Manage complex N-Tier apps as a single unit

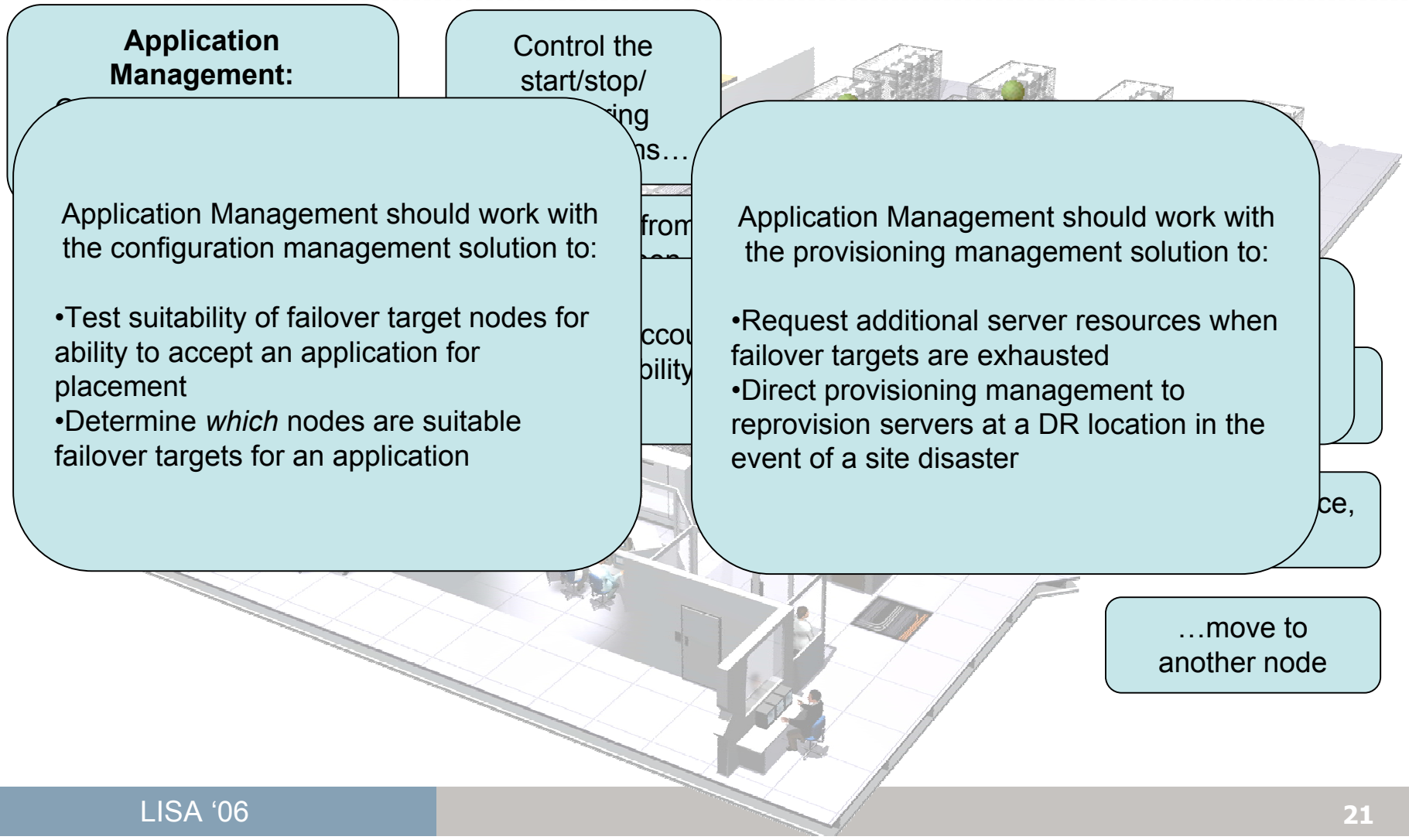
Priority-based Disaster Recovery

Utilize servers hosting lower priority applications when needed

Capacity management

Optimize application distribution based on utilization information

Tying it all together



Summary

- High Availability solutions have evolved considerably from earlier technologies
- Disaster Recovery (wide-area HA) has become an integral component of local HA
- Increased complexity of applications and data center environment coupled with business requirements forces us to re-examine our approach to availability
- A structured, disciplined approach to data center management should result in high availability as a matter of course, not as the exception

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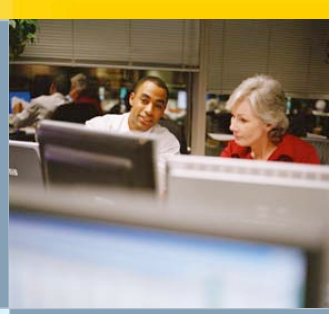

Questions, answers & discussion