IBM Software Group, Tivoli Software

REGULATORY PRESSURES
IT FAILURE
TRANSIT STRIKE
PANDEMIC
FLASH FLOOD

Business Continuity Management with SMCz

Presenter:
  − **Tami Garneau, WW Product Manager, System Automation Products**
    tgarneau@us.ibm.com
Experts for Q&A:
  − **Norbert Lenz – Lead Architect for Tivoli Business Continuity Process Manager**
  − **Thomas Lumpp – Lead Architect for System Automation**

Agenda

Protect the Business – Key Market Drivers for Change

- **Business Continuity Opportunities with IT Automation**

How IBM Tivoli can Help

- System Automation Solutions

- GDPS (Geographically Dispersed Parallel Sysplex) & Distributed DR

- "New" Business Continuity Process Manager

IBM's Leadership

The World is Riskier than it used to be ...

- **Changing environment**
  - Expanding risk exposures
  - Increased global and regional interdependencies
  - Supply chain disruption

- **Heightened impact of business disruption**
  - Greater financial implications of downtime
  - Brand vulnerabilities
  - Data integrity requirements

- **More complex regulations**
  - Changing industry and regulatory standards
  - Geographic dispersal requirements
  - Varying regulations per country

Financial Times
Disaster recovery: The crucial thing is to be prepared[1]

USA Today
Theft of personal data more than triples this year[2]

The Economic Times
Data backup, recovery becoming critical to all[3]

1 Jane Croft, "Disaster recovery: The crucial thing is to be prepared," *Financial Times*, May 8, 2007, http://us.ft.com/ftgateway/superpage.ft?news_id=fto050820071017005239

2 Byron Acohido, "Theft of personal data more than triples this year," *USA Today*, December 9, 2007, http://www.usatoday.com/tech/news/computersecurity/infotheft/2007-12-09-data-theft_n.htm

3 Harsimran Singh, "Data backup, recovery becoming critical to all," *Economic Times*, November 23, 2007, http://economictimes.indiatimes.com/Infotech/Software/Data_backup_recovery_becoming_critical_to_all/articleshow/2563298.cms
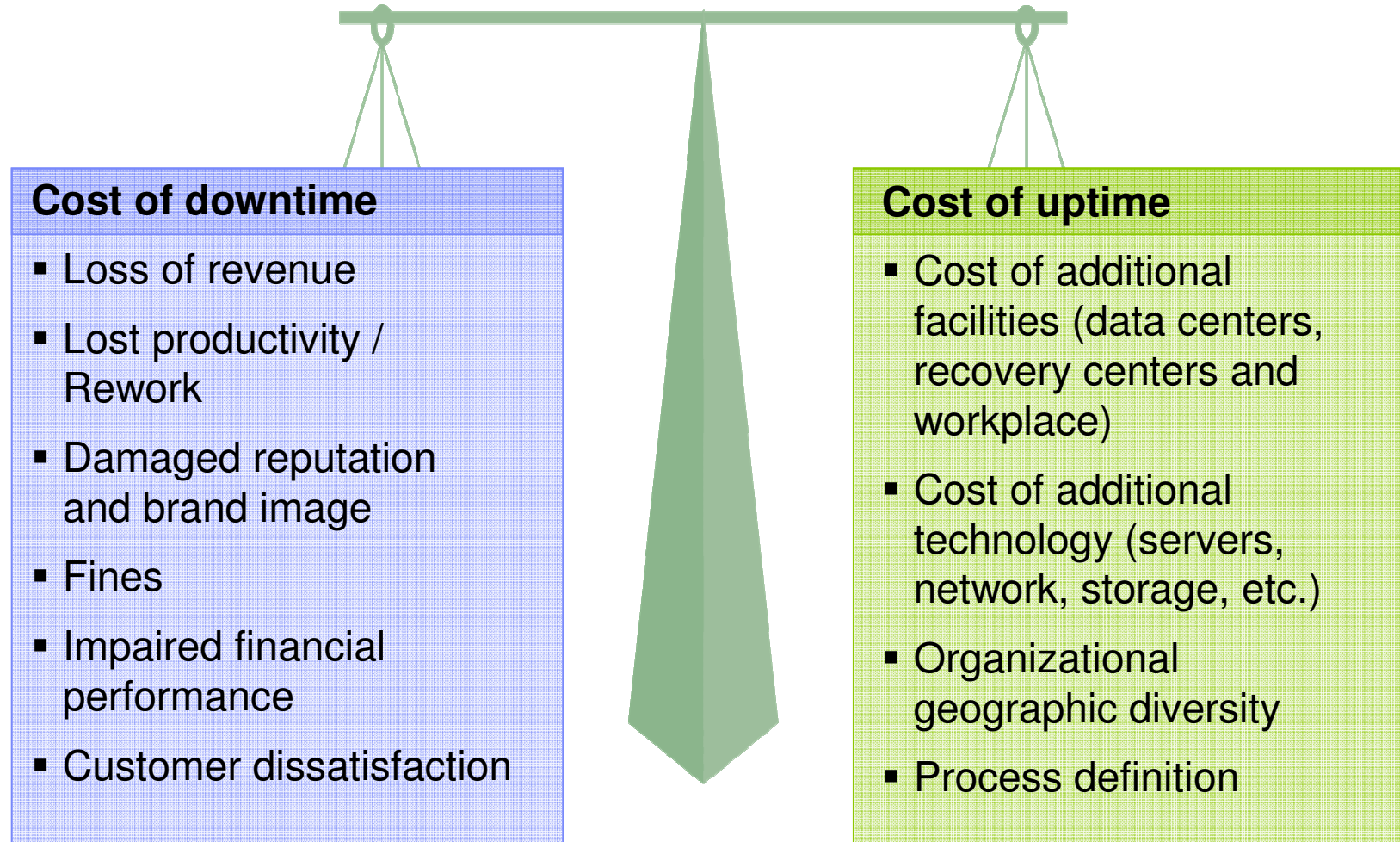
Areas of Focus to Mitigate Risks

- **Need for High Availability**
  - Provide for continuous application processing in the event of an unplanned outage, such as server failure.

- **Need to Ensure Continued Availability**
  - Accommodate Planned Outages with minimal to no impact to the business

- **Need to Recover from Disasters**
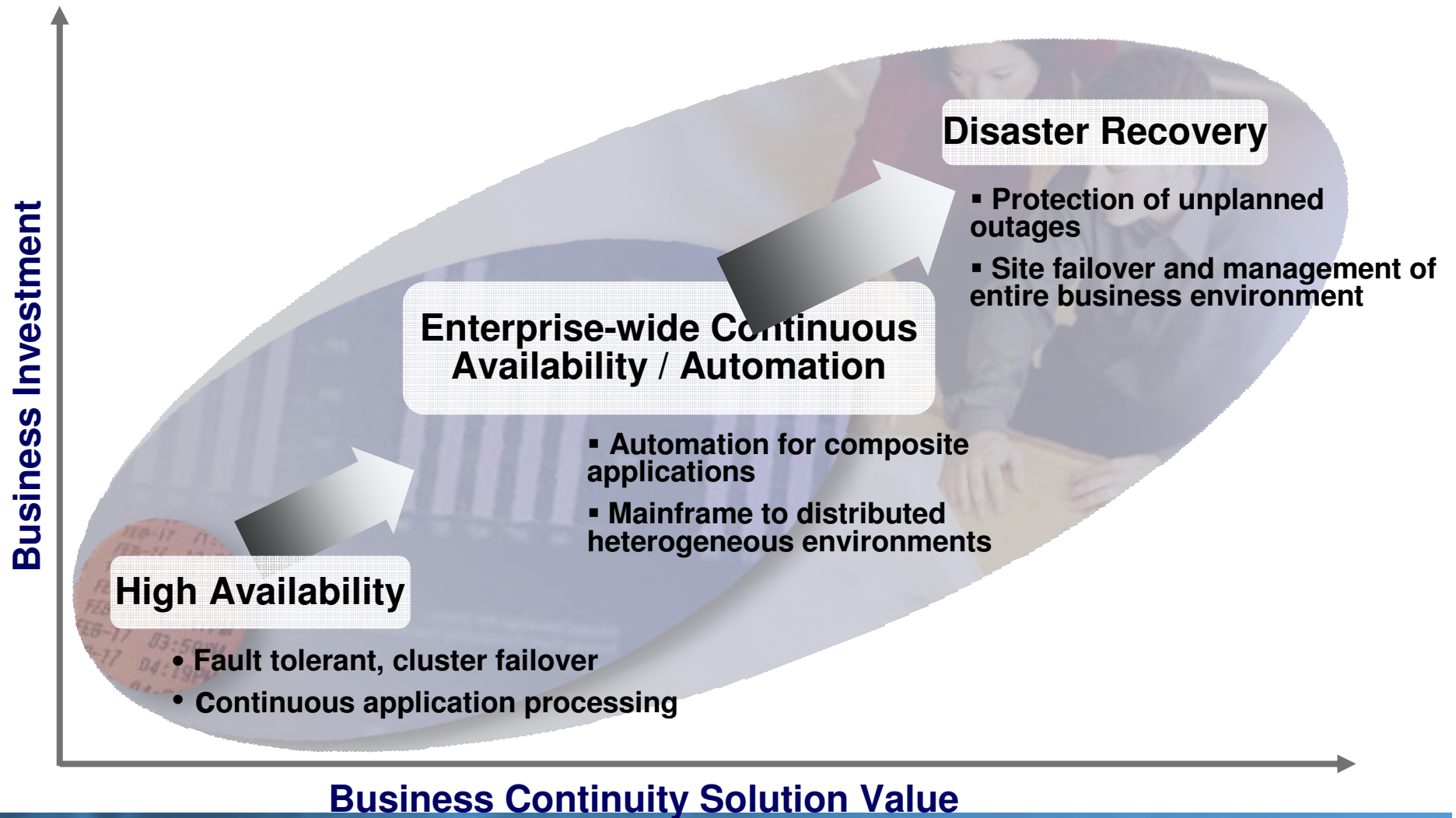 - Ranging from nature, to deliberate attacks, to human error

- Recovery times must be repeatable and reliable

- Large scalability

- Testing must be affordable and nearly continuous

The Balance Between Cost of Downtime versus Cost of Uptime becomes Critical

Cost of downtime

- Loss of revenue
- Lost productivity / Rework
- Damaged reputation and brand image
- Fines
- Impaired financial performance
- Customer dissatisfaction

Cost of uptime

- Cost of additional facilities (data centers, recovery centers and workplace)
- Cost of additional technology (servers, network, storage, etc.)
- Organizational geographic diversity
- Process definition

Best Practice is to Maximize Coverage at the Lowest Cost
Leverage HA and DR Solutions

Business Investment (vertical axis)

Disaster Recovery

- Protection of unplanned outages
- Site failover and management of entire business environment

Enterprise-wide Continuous Availability / Automation

- Automation for composite applications
- Mainframe to distributed heterogeneous environments

High Availability

- Fault tolerant, cluster failover
- Continuous application processing

Business Continuity Solution Value

Disaster Recovery / Crisis Management of Today

- **Communication problems**
  - Automated escalation

- **Deviations from process**
  - Reporting and Approval tracking for audits and process refinements

- **Minimal fire drills are preformed**
  - Testing is critical especially with continual changes being done in a datacenter

- **Crisis & context information not available readily**
  - Enterprise-wide Insight

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How IBM Tivoli can Help

- **System Automation Solutions**

- **GDPS (Geographically Dispersed Parallel Sysplex) & Distributed DR**

- **"New" Business Continuity Process Manager**
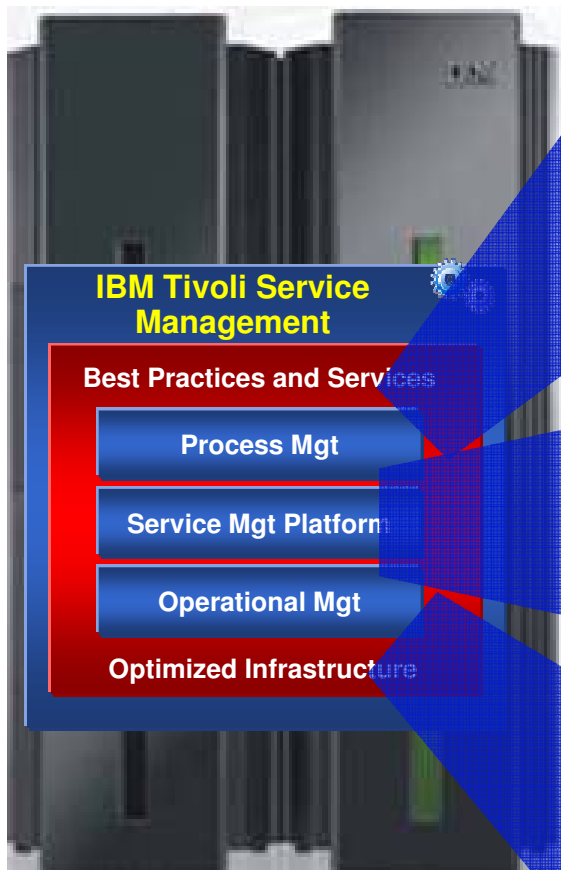
IBM's Leadership

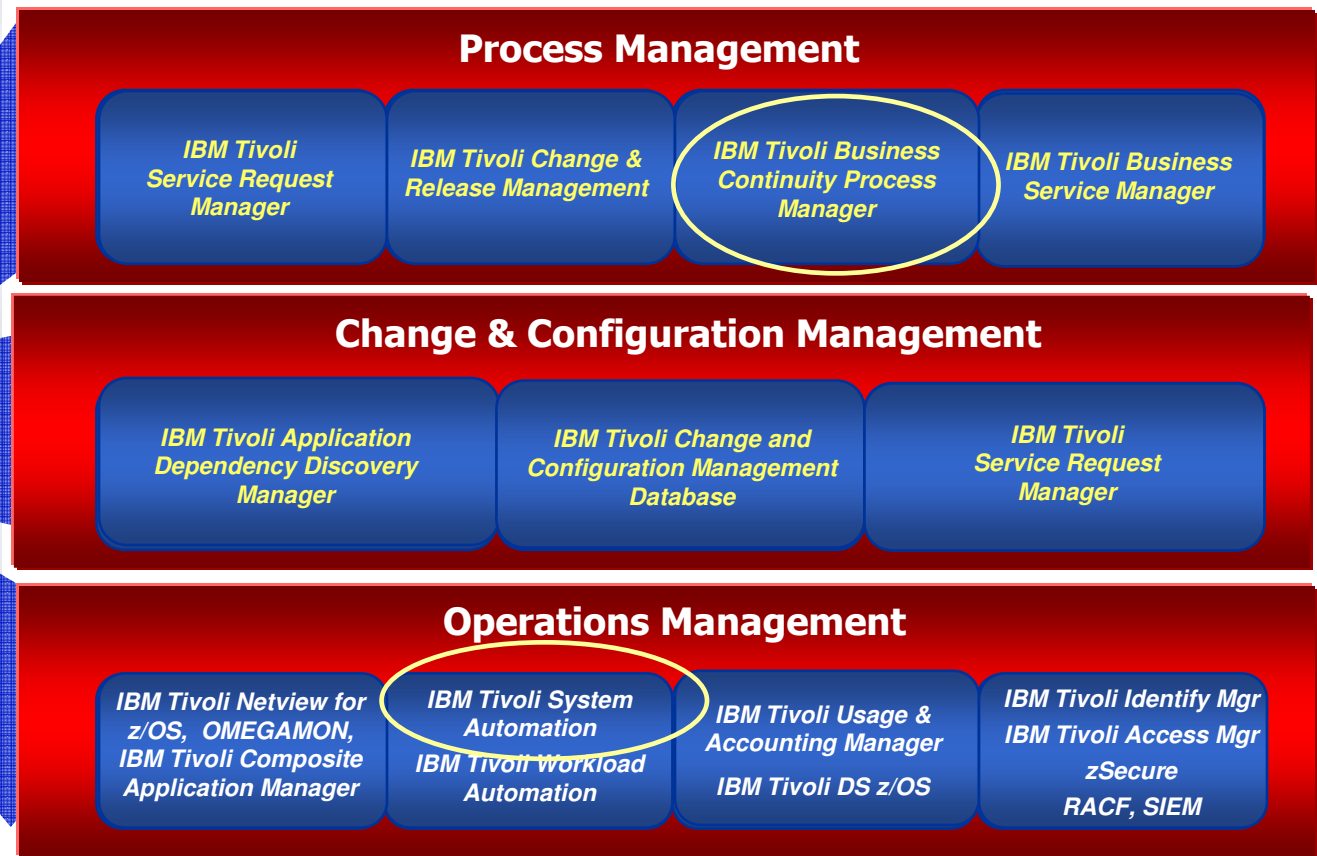# IBM Tivoli's Business Continuity Strategy
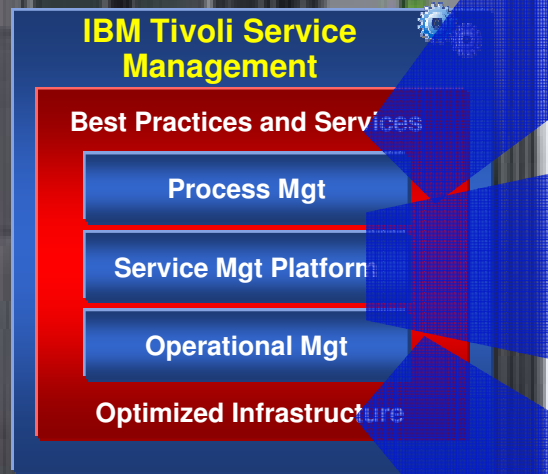
Delivers HA and DR to the business

Business Investment →

GDPS
Providing world class protection for 10 years

| Availability Restartability Recoverability | Planned Outage Unplanned Outage Disaster Protection |

• **System Automation Integrated Operations Management**

Alert Escalation

• **Business Continuity Process Manager**

Disaster Recovery

▪ **Protection of unplanned outages**

▪ **Site failover and management of entire business environment**

• **System Automation Integrated Operations Management**

Alert Escalation

• **System Automaton Application Manger**

Enterprise-wide Continuous Availability / Automation

▪ **Automation for composite applications**

▪ **Mainframe to distributed heterogeneous environments**

• **System Automation Integrated Operations Management**

Alert Escalation

• **System Automaton for z/OS**

• **System Automation for Mutiplatforms**

High Availability

• **Fault tolerant, cluster failover**
• **Continuous application processing**

Business Continuity Solution Value →

Tivoli®

IBM Tivoli Service Management
Integrated solutions to manage your enterprise end-to-end

IBM Tivoli Service Management Center for System z

IBM **Tivoli.** **Service Management Center for System z**

IBM Tivoli Service Management

Best Practices and Services

- Process Mgt
- Service Mgt Platform
- Operational Mgt

Optimized Infrastructure

IBM System z

Process Management

| IBM Tivoli Service Request Manager | IBM Tivoli Change & Release Management | IBM Tivoli Business Continuity Process Manager | IBM Tivoli Business Service Manager |

Change & Configuration Management

| IBM Tivoli Application Dependency Discovery Manager | IBM Tivoli Change and Configuration Management Database | IBM Tivoli Service Request Manager |

Operations Management

| IBM Tivoli Netview for z/OS, OMEGAMON, IBM Tivoli Composite Application Manager | IBM Tivoli System Automation / IBM Tivoli Workload Automation | IBM Tivoli Usage & Accounting Manager / IBM Tivoli DS z/OS | IBM Tivoli Identify Mgr / IBM Tivoli Access Mgr zSecure RACF, SIEM |

IBM Tivoli Solutions for Tier 1 High Availability

- ✓ **Out-of-the box Policies**
- ✓ **Reduced Operations Cost due to cross-platform coverage**
- ✓ **Best of Breed Technologies for HA and Automation**

IBM Tivoli Service Management

Best Practices and Services

- Process Mgt
- Service Mgt Platform
- Operational Mgt

Optimized Infrastructure

SA for Multiplatforms | **SA for z/OS**

- ▪ **Automated Operation and High Availability (clustering)**
- ▪ **Disaster recovery building blocks**
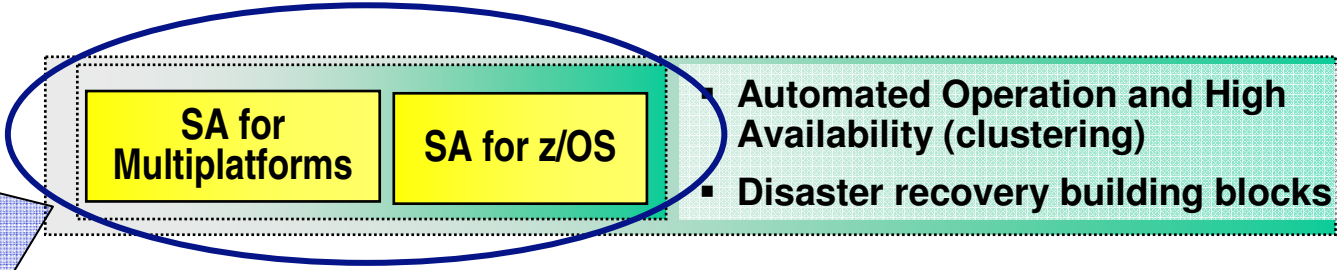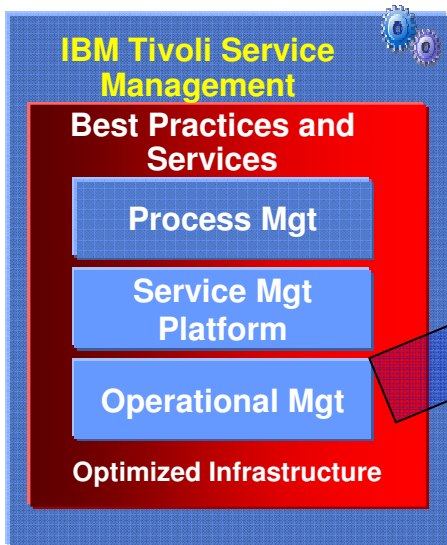
- • **Operating System Platforms Supported:**
  - • **AIX on Power**
  - • **Linux on x86, Power, System z and I**
  - • **Windows on x86**
  - • **Solaris on SPARC Systems**

- • **Additional HW platforms supported with x86 and SPAC systems**

IBM System i & p (Power) | **IBM System x** | **IBM System z** | **Storage**

Tivoli®

IBM Tivoli Solutions for Enterprise-wide Automation

✓ **Automation end to end, across leading Tier 1 HA/clustering solutions**

- **Power HA for AIX (HACMP)**
- **Microsoft Cluster Server**
- **Veritas Cluster Server**

✓ **Escalation Automation**

IBM Tivoli Service Management

Best Practices and Services

- **Process Mgt**
- **Service Mgt Platform**
- **Operational Mgt**

Optimized Infrastructure

SA Application Manager   **SA IOM**

- **Composite application operations and automation**
- **Alert Escalation Management**

Heterogeneous HA Mgmt.   Health Monitoring   Configuration Mgmt.   Discovery Mapping   Alert Escalation

SA for Multiplatforms   **SA for z/OS**

- **Automated Operation and High Availability (clustering)**
- **Disaster recovery building blocks**

Tivoli®

IBM Tivoli Solution to Drive Business Continuity

Business Continuity Process Manager

- Helps testing and managing for disasters
- Integrates with GDPS and CCMDB

IBM Tivoli Service Management

Best Practices and Services

- Process Mgt
- Service Mgt Platform
- Operational Mgt

Optimized Infrastructure

✓ **Automate IT and YOUR Business Processes**

Analyze Outage	Approve proposed Recovery	Notify impacted people	Verify Recovery	Complete Recovery

SA Application Manager **SA IOM**

- Composite application operations and automation
- Alert Escalation Management

Heterogeneous HA Mgmt.	Health Monitoring	Configuration Mgmt.	Discovery Mapping	Alert Escalation

SA for Multiplatforms **SA for z/OS**

- Automated Operation and High Availability (clustering)
- Disaster recovery building blocks

Tivoli®

What are Latest Features for System Automation

- **Extended Platform Support:**
  - Native Sun Solaris
  - VMware

- **Graphical Policy Editor:**
  - Ease of use for Policy creation and editing
  - Works with existing XML based Policies
  - Policy Checker
  - Based on Integrated Solutions Console (ISC)

- **Integration with IBM Geographically Dispersed Parallel Sysplex:**
  - SA MP allows Linux on System z to exploit HyperSwap/PPRC and extended for Distributed Application failover

- **New Reporting Capabilities:**
  - Resource Availability and Recovery
  - Top Resources with the Highest number of Unexpected Outages
  - Resource Startup and Shutdown
  - Top Resources with the Longest Startup and Shutdown Times

"Adopting SA AM increases operations staff productivity by consolidating to a single operations and automation team employing this one tool to manage heterogeneous clusters, without needing detailed knowledge of either the applications or their associated cluster platforms."

- *Ian Bramley, Managing Director Software Strategies*

mySAP High Availability by Tivoli System Automation
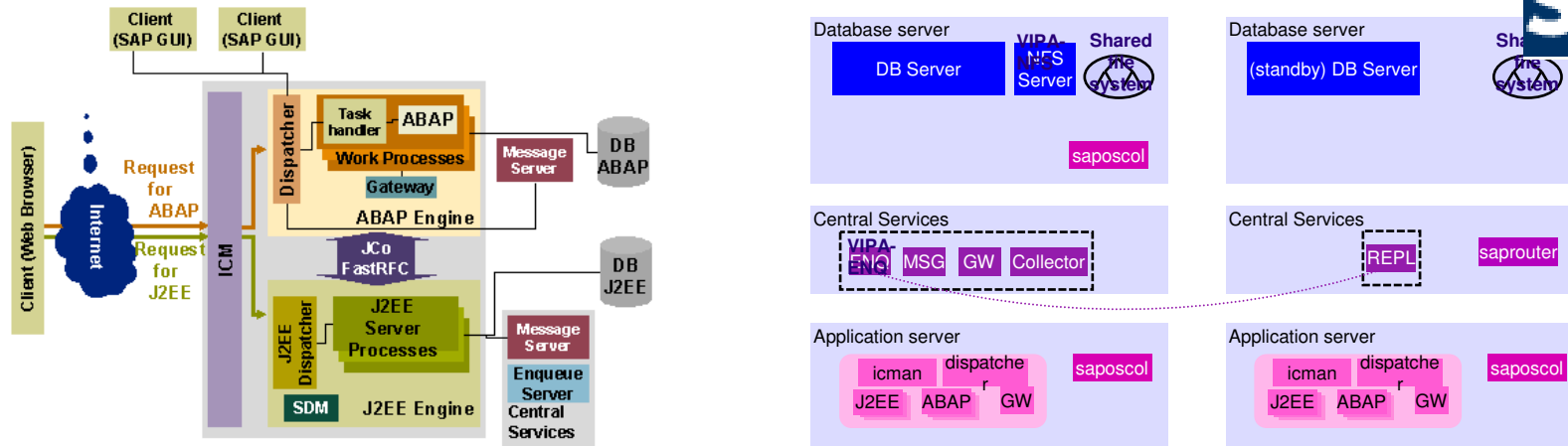
SAP system is complex

SAP operation is complex

Use SA to handle complexity and achieve High Availability

- Policy-based, "out of the box" support, with powerful grouping and relationships – no coding required
- TSA provides continuous availability for critical mySAP components by:
  - Start, stop, restart, failover, and monitoring
  - Supporting new mySAP replication server to
    - Enhance performance
    - Avoid single point of failure and data loss
    - Reducing planned outages (e.g. enable rolling 'kernel' upgrade)

Policy Automation Ensures Desired Business State

- Deutscher Ring AG is a major private insurance firm headquartered in Hamburg, Germany

- Plans to migrate SAP software landscape to System P AIX with DB2

- In the near future, Deutscher Ring plans to extend its deployment of IBM Tivoli System Automation (Tivoli SA) – currently implemented in the mainframe environment – to cover its AIX environment also.

- Based on a "desired state" and goals defined by an administrator, Tivoli SA monitors system operations and automatically corrects deviations from the predefined state, helping to ensure high system availability.

Says Werner Rave, Manager of IT Architecture Department at Deutscher Ring,
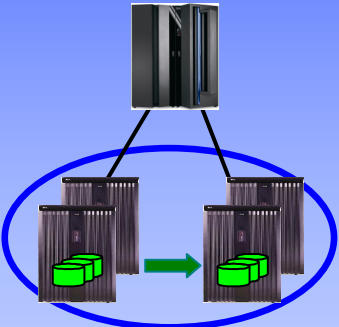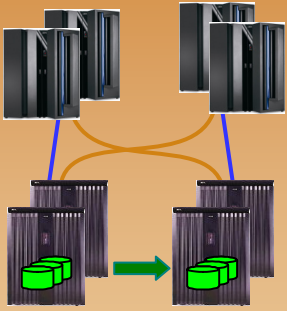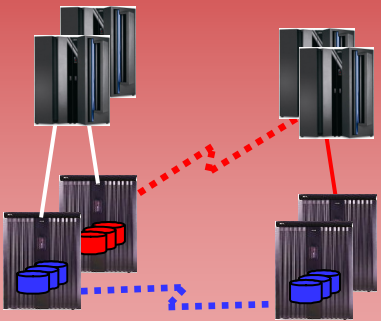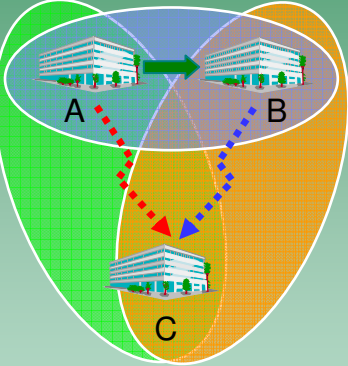
"There are still significant links between our SAP software systems and systems running on our mainframes, and managing the interfaces is very important. We plan to deploy Tivoli SA to manage all business-critical systems with a single set of tools, which will enable us to offer better service with the same IT administration team."

SAP

http://www-01.ibm.com/software/success/cssdb.nsf/CS/STRD-7AHENU?OpenDocument&Site=default&cty=en_us

IBM Geographically Dispersed Parallel Sysplex
-> What customers are doing today for site failover?

Continuous Availability of Data within a Data Center	Continuous Availability / Disaster Recovery within a Metropolitan Region	Disaster Recovery at Extended Distance	Continuous Availability Regionally and Disaster Recovery Extended Distance
Single Data Center Applications remain active Continuous access to data in the event of a storage subsystem outage	**Two Data Centers** Systems remain active Multi-site workloads can withstand site and/or storage failures	**Two Data Centers** Rapid Systems Disaster Recovery with "seconds" of Data Loss Disaster recovery for out of region interruptions	**Three Data Centers** High availability for site disasters Disaster recovery for regional disasters
GDPS/HyperSwap Mgr **RPO=0 & RTO=0**	**GDPS/PPRC** **RPO=0 & RTO<1 hr**	**GDPS/GM & GDPS/XRC** **RPO secs & RTO <1 hr**	**GDPS/MGM & GDPS/MzGM**

RPO – Recovery Point Objective

RTO – Recovery Time Objective

GDPS extended for Distributed Disaster Recovery

- SA AM / SA MP ➔ Manages Applications
  - "Resources" are kept high available (without knowledge of sites)
  - End-to-End scope, cross cluster dependencies, resource grouping to arbitrary abstraction level

- GDPS ➔ Manages Systems
  - IT Infrastructure is dispersed across sites
  - System z scope for servers
  - System z and open systems scope for data replication

- System Automation Application Manager for Distributed Disaster Recovery
  - Integration with GDPS
  - Coordinated automation tasks (Site Maintenance, Site Failover etc.)
    - Single point of control for site switching
  - Alerting of serious outages (Cluster faults, Application faults)
    - Could be the beginning of a rolling disaster detected first on open systems, can lead to GDPS takeover prompt

  - First release will support metro mirror distance, global mirror distance will be later

Be Prepared with the IBM Tivoli Business Continuity Process Manager

- **Build a Repository of Recovery Plans**
  - Accelerate the Automated Recovery
  - No chaos when tracking next-steps in Crisis

- **Managed deviation from process**
  - Approval tracking

- **Crisis & context information on-hand for Priority Recovery steps**
  - Enterprise-wide Insight

- **Enable fire drills**
  - Testing is critical
  - **Test, Test, Test your Disaster Recovery Processes**

"ITBCPM for System z Linux V7.1 is a powerful BC process manager optimized to leverage SMCz automated service management, exploiting and extending the System z platform's unrivalled native DR/BC capabilities wider across the enterprise."

- *Ian Bramley, Managing Director Software Strategies*

BCPM Flash Demo: http://www-01.ibm.com/software/tivoli/library/demos/bcpm.html

Continuous Lifecycle for Process Improvements
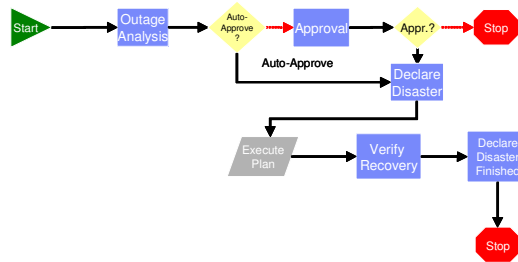
Disaster Recovery Workflow

adapts...

History
Recovery Plan

Planner

Simulate

Workflow

People

Plan

Context

IBM Tivoli BCPM

Analyst

Approver

Manager

CI

Infrastructure
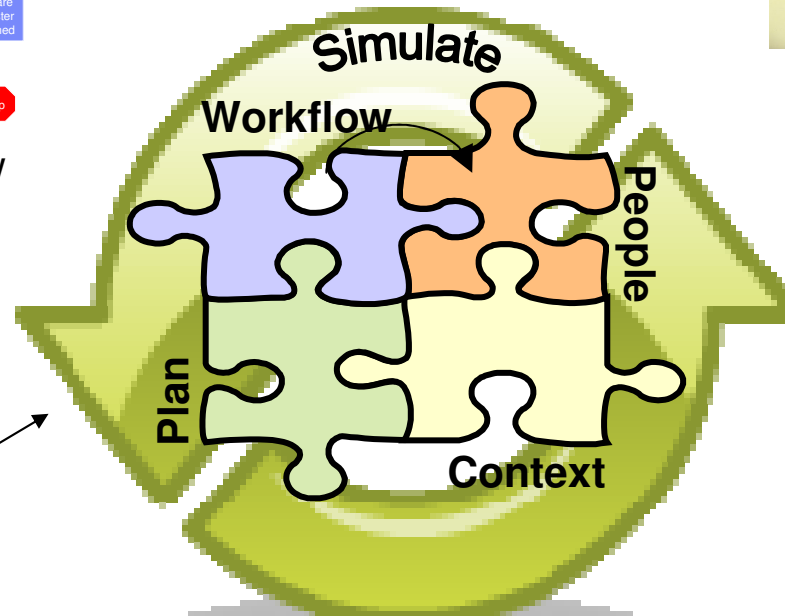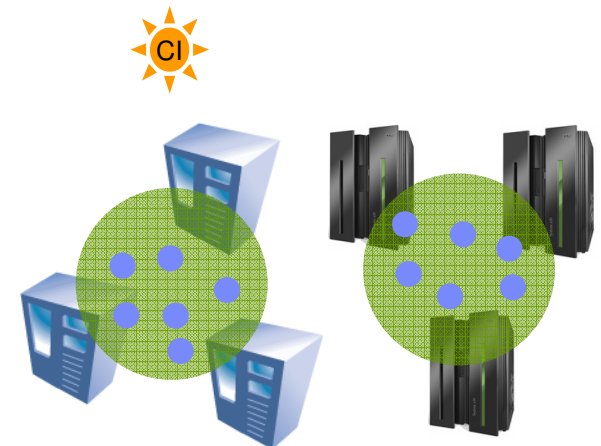
Crisis management - based on CCMDB / BCPM

Client Initiatives

AOK Die Gesundheitskasse.

TD Bank Financial Group

GAD IT für Banken

Enterprise Business Continuity & Disaster Recovery

techem
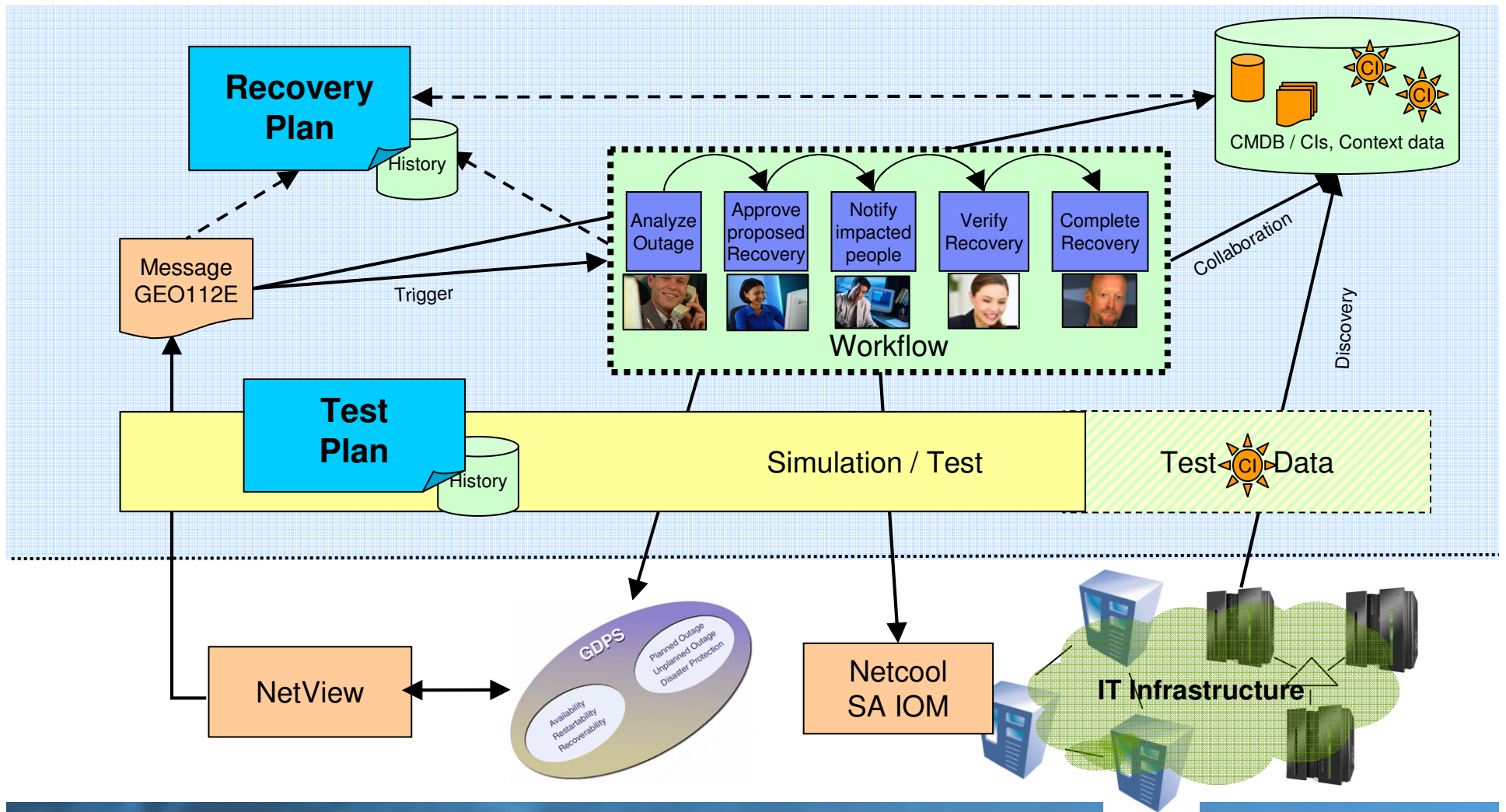
Enterprise Application Automation

High Availability

Postbank

BRZ

(AW) **Weber Automotive**

Promotes the HA Weber Automotive needs from its production systems, the company chose to deploy SA MP to manage the SAP application clusters and uses policy-based self-healing technologies to analyze and fix most problems automatically – whether they occur in the application, operating system, or middleware layer.

- *"With Tivoli SA, we are able to maintain very high availability for our SAP software environment, ensuring that systems remain online and accessible to users at all times."*
  - Günter Dürringer, Head of IT at Weber Automotive

- No loss of committed data (RPO = 0)
- Ability to recover catastrophic logical site failures involving multiple components   (RTO < 2 hours)
- Minimized risk of losing revenue through downtime
- Prepared for both planned maintenance outages and unplanned system failures
- Single System Automation solution to manage complex heterogeneous environments and composite applications
- Provides real-time banking which improves customer service levels

Leveraging Linux on System z by new xDR capability with SA for Multiplatforms integrating with GDPS (and leveraging Hyperswap) with z/OS environment as part of the DR solution.

- No loss of committed data (RPO=0)
- Continuous data availability for z/OS and Linux hosted by z/VM
- Supporting site maintenance without application outage
- Coordinated disaster recovery for heterogeneous System z applications (RTO < 30 minutes)

Tivoli®

What Makes the Tivoli Business Continuity / Automation Solutions Unique?

Wide Platform Support

- z/OS and Linux on System z

- Linux, AIX, Windows and Solaris

- HACMP (adapter)

- Windows MSCS (adapter)

- Native Sun (adapter with Veritas Cluster Server)

Automation Capabilities

- Processor and I/O Management and Automation

- Uniquely Sysplex Aware

- Foundation for GDPS

- Integration of IT and Business Processes

- Built-in Integration
  - Monitoring
  - Scheduling
  - Business Service Management

- Easy/effective policy automation
  - No programming
  - Intelligent relationships
  - Manage by desired state, not by message

Agenda

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- **Business Continuity Opportunities with IT Automation**

How IBM Tivoli can Help

- **System Automation Solutions**

- **GDPS (Geographically Dispersed Parallel Sysplex) & Distributed DR**

- **"New" Business Continuity Process Manager**

IBM's Leadership

IBM can Help you Achieve End-to-End Business Resilience by Offering Tailored Solutions Leveraging Any Entry Point

End-to-end Business Resilience:

- IBM can help evaluate, plan, and mitigate the business impact of various types of risks

- IBM can help you support regulator compliance through a robust continuity program.

- IBM can help ensure data is protected, available, and accessible as needed by the business

- IBM can help you achieve availability objectives by reducing frequency and duration of infrastructure applications and data outages

- IBM can help you recover from and responding to disruptive events

Why IBM? Tivoli System Automation as Building Blocks for Broader BC/DR Enterprise Strategy

Broad experience

- ✓ More than 40 years of business continuity and disaster recovery experience
- ✓ More than a decade of successful customer crisis management experience
- ✓ More than 10,000 disaster recovery clients, ~500 customers on GDPS
- ✓ More than 3,400 information protection clients with over 24 petabytes of data under management

Broad solution capabilities

- ✓ Global resiliency centers designed for multivendor environments, with more than 200 hardware and software vendors supported. including HP, Sun Microsystems, Cisco and our own IBM products
- ✓ Business process and technology expertise to help you design and implement the right solution for your business

Industry-specific, globally available expertise

- ✓ More than 150 global resiliency centers in 55 countries
- ✓ Knowledge of local, regional and global regulations
- ✓ More than 1,600 professionals dedicated to business continuity

Credibility you can bank on

- ✓ Track record of recovering 100 percent of clients that have declared a disaster
- ✓ External validation by analysts that have reported favorably on the breadth of IBM offerings and geographic coverage

Leverage Tivoli System Automation and BCPM

Manage your overall Business Continuity Plans

- IBM Tivoli Business Continuity Process Manager
- Leverage SMCz as your hub for BC
- Test and Report to reduce Business Risks
- Best in Class WW Service offerings

Site Failover Solution with GDPS – mainframe and distributed

- Data and Application Site Failover for System z (Linux and z/OS) with extended reach for distributed platforms
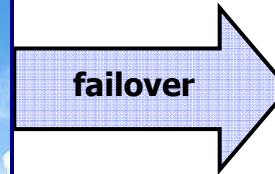
failover

Enterprise wide Application Automation and Cluster/Sysplex Failover

- Tivoli System Automation Application Manager
- **Tivoli System Automation for z/OS**
- Tivoli System Automation for Multiplatforms
- Tivoli System Automation Integrated Operations Management

Tivoli®

Thank You!

Backup

External Links System Automation and Business Continuity

BCPM Flash Demo: http://www-01.ibm.com/software/tivoli/library/demos/bcpm.html

New V7.1

Home Page: http://www-01.ibm.com/software/tivoli/products/business-continuity-process-mgr/

- **Redbook:** http://www.redbooks.ibm.com/redpieces/abstracts/sg247677.html?Open

System Automation for z/OS

- **Home page**: http://www-01.ibm.com/software/tivoli/products/system-automation-zos/index.html

System Automation for Multiplatforms

- **Home page**: www.ibm.com/software/tivoli/products/sys-auto-multi

- **Data sheet**: http://www.ibm.com/common/ssi/fcgi-bin/ssialias?infotype=pm&subtype=sp&appname=SWGE_TI_PA_USEN&htmlfid=TID10427USEN&attachment=TID10427USEN.PDF

System Automation Application Manager

- **Home page**:

- **Data sheet**

- Webcast: "High Availability and end-to-end automation of z/OS, Windows, Linux and AIX applications using SAMP": http://www-306.ibm.com/software/sysmgmt/products/support/TE/techex_B270725M36839O06.html

- **Redbook::** End-to-end Automation with IBM Tivoli System Automation for Multiplatforms

  http://www.redbooks.ibm.com/abstracts/sg247117.html?Open

- All SA MP STE webcasts:

   http://www-950.ibm.com/search/SupportSearchWeb/SupportSearch?action=search&pageCode=SBSXP&brand=tivoli&sortBy=3&pageNumber=1&searchTerms=tste_webcast&products=&addSearchTerms=SAMP&submit.x=8&submit.y=10

Questions to Consider:

- Do You need to recover Your business rather than Your platform technology?
- Do You need flexibility on desired RTO, RPO quality of service?
- Are You able to test/simulate disasters (significant outages) with a reasonable test coverage and minimal impact to the active production?
- Is auditing the efficiency of the DR plan important to You?
- Are You required to benchmark or rehearse business recovery and document compliance to regulations?
- Would You like to increase Your ITIL conformity by implementing a business continuity process?
- Do You need to automatically notify management to approve the recovery plan?
- Do You want to enforce execution of Your recovery process like it was planned and tested?
- Do You need a coordinated, automated shutdown of workload and automated start on backup site?
- Would You like to ensure successful recovery by managing cross cluster dependencies?
- Do You need a single point of control for GDPS site switching?
- Would You benefit if GDPS could detect a rolling disaster earlier as it is notified about serious application outages on distributed systems?

Techem AG – Energy Services

Client requirements

- Support a 400% increase in new SAP system resource requirements and migration to the Linux® operating system

- Virtualize storage systems for improved performance and management

Solution

- Implemented a reliable, scalable SAP platform built with IBM System p5 570 servers and IBM TotalStorage® hardware

- Engaged IBM Global Technology Services to upgrade to an easy-to-manage environment supported by IBM Tivoli® and IBM SAN Volume Controller software

- SAP and Oracle 10G database made highly available with **Tivoli System Automation for Multiplatforms**

Benefits

- Supported the increase of capacity by more than 100 percent to support upgraded SAP systems

- Minimized storage management requirements by automating and centralizing storage hardware

- Automated archival and recovery processes

Industry: Energy & Utilities
Profile: A leading European service provider for recording, distributing and billing data relating to energy and water consumption.

Size: 1000–4999
Category: SMB

"The SVA and IBM team did an extraordinary job on the SAP migration project."
— IT department manager – technical services, Techem AG – Energy Services

Weber Automotive drives its SAP software with Linux on POWER

Weber Automotive GmbH, based in Markdorf, Germany, manufactures drive components and fiber reinforced plastic parts for the automotive industry.

To promote the high availability that Weber Automotive needs from its production systems, the company also chose to deploy IBM Tivoli System Automation for Multiplatforms (Tivoli SA). The software manages the SAP application clusters and uses policy-based self-healing technologies to analyze and fix most problems automatically – whether they occur in the application, operating system, or middleware layer.

"Tivoli SA comes with a plug'n play automation module for SAP applications, so it can deal with the majority of problems that occur in SAP software environments with minimal customization," says Günter Dürringer, Head of IT at Weber Automotive. "By understanding the relationships between application components, Tivoli SA finds and resolves issues quickly, and minimizes the need for IT staff to intervene."

He adds: "With Tivoli SA, we are able to maintain very high availability for our SAP software environment, ensuring that systems remain online and accessible to users at all times."

http://w3-01.ibm.com/sales/ssi/cgi-bin/ssialias?infotype=RF&subtype=CS&htmlfid=STRD-77UJYQ&appname=crmd

Deutsche Postbank
Meeting Service Level Expectations

Challenge

Postbank needed a system infrastructure, one that would provide the availability and stability needed for near 24x7 operations and improve their real-time banking service to customers. Their SAP Banking accounting application and the systems which feed postings into the account application needed to provide continuous availability.

Solution

GDPS was deployed to ensure high availability and disaster recovery between two sites. Additionally, Postbank deployed a distributed system that feeds postings to the SAP application requiring a HA solution for the distributed environment.

- IBM Tivoli System Automation, IBM Tivoli Netview
- IBM Tivoli Storage Manager
- IBM Total Storage Enterprise Storage Servers(ESS)
- IBM pSeries 595 servers with AIX
- IBM zSeries 990 servers with z/OS
- IBM DB2, IBM WebSphere MQ & Message Broker

Business Benefits

- Minimized risk of losing revenue through downtime
- Prepared for both planned maintenance outages and unplanned system failures
- Single System Automation solution to manage complex heterogeneous environments and composite applications
- Provides real-time banking which improves customer service levels

Customer Value

"Postbank is a leading German Bank and we service over 14 million customers which requires our solutions to be available 24x7. Deploying the IBM System Automation for Multiplatforms has helped ensure the high availability for the solution on our distributed platforms. The management console also provides a single interface for keeping the systems available across the multiple IT environments."

- Armin M. Warda, IT Architect at Postbank

Bonn, Germany

GDPS/PPRC – active / active (CF in 3rd site)
- HyperSwap Experience

Campus (3 logical sites)
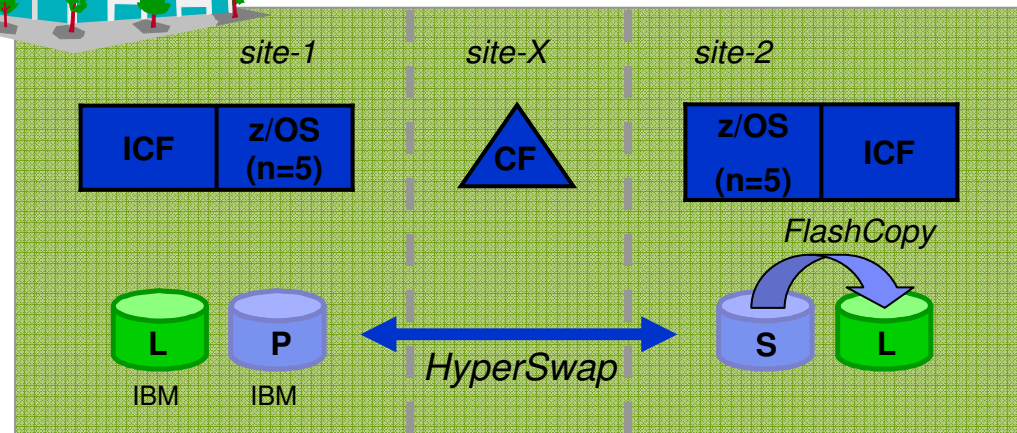
| site-1 | site-X | site-2 |

| ICF | z/OS (n=5) | | CF | | z/OS (n=5) | ICF |

FlashCopy

L P
IBM IBM

← **HyperSwap** →

S L

Business Requirements

- No loss of committed data (RPO = 0)

- Ability to recover catastrophic logical site failures involving multiple components (RTO < 2 hours)

- Support of site maintenance without application outage

- Creating a FlashCopy from consistent secondary PPRC volumes twice the day (freeze < 4 seconds and FlashCopy initialization and PPRC Resync < 15 minutes)

10-way Parallel Sysplex (CICS, SAP/DB2)
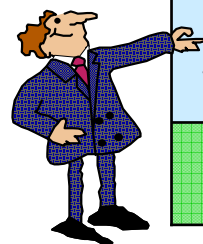
PPRC Volume Pairs	Planned HS RESYNC	Unplanned HS
2,210	28 sec[1]	12 sec[1]

[1] User Impact Time (seconds)

GDPS/PPRC Multiplatform Resilience for System z (aka xDR) – active / active
- HyperSwap Experience

BRZ
Vienna, Austria

5 km

CF — **CF Duplexing** — CF

| z/VM Linux | z/OS | ... | z/OS | | z/OS | ... | z/OS | z/VM Linux |

z/VM Cluster

10-way Parallel Sysplex (CICS, WebSphere, DB2)

z/VM Cluster

Business Requirements
- No loss of committed data (RPO=0)
- Continuous data availability for z/OS and Linux hosted by z/VM
- Supporting site maintenance without application outage
- Coordinated disaster recovery for heterogeneous System z applications (RTO < 30 minutes)

HyperSwap

P

HDS

S
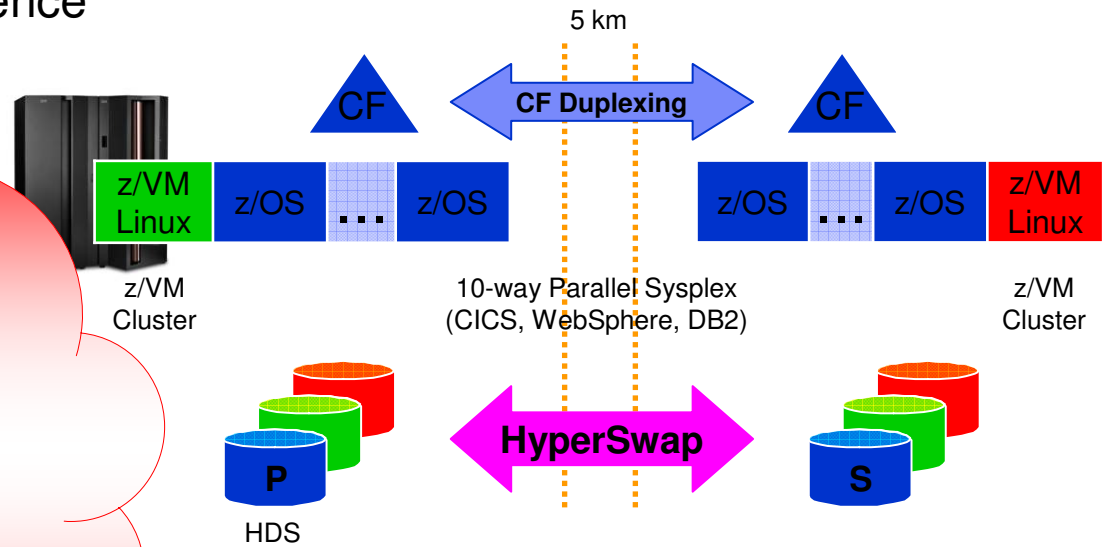
z/OS PPRC Volume Pairs	PPRC Pairs per z/VM Cluster	Planned HS RESYNCH UIT	Planned HS SUSPEND UIT	Unplanned HyperSwap UIT
1,200	20	40 sec	8 sec	4 sec

UIT = User Impact Time (seconds)
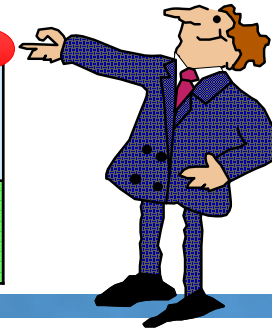
TD Bank Financial Group
Substantially improved recovery increases data integrity and system resiliency

Value Drivers
To speed its business processes, ensure the highest levels of data integrity and security, and increase its IT system resiliency, TDBFG needed to significantly improve its recovery time objective, and needed to achieve a recovery point objective of zero data loss during a system outage,

Solution
IBM Global Services - Integrated Technology Services, helped TDBFG implement a geographically dispersed parallel sysplex (GDPS) solution that provides the capability to manage the client's remote storage systems, perform real-time data backups of the production environment and recover from failure via a single point of control.

Value Realization
- Automated recovery procedures for both planned and unplanned server outages, providing TDBFG with near-continuous availability of its mainframe server applications.
- Improved RTO from 48 hours to 2.5 hours of an event affecting its primary site.
- Synchronous backups ensure that no data is lost during a system failure.

TD Bank Financial Group

Global financial group decreases its system recovery time from more than 48 hours to just 2.5 hours and ensures that no data will be lost during a system outage.

SA AM and SA MP Operations Console and Policy Editor