IBM Software Group

Automation for the Enterprise

Enabling Business Continuity with automated availability and process management solutions from IBM Tivoli

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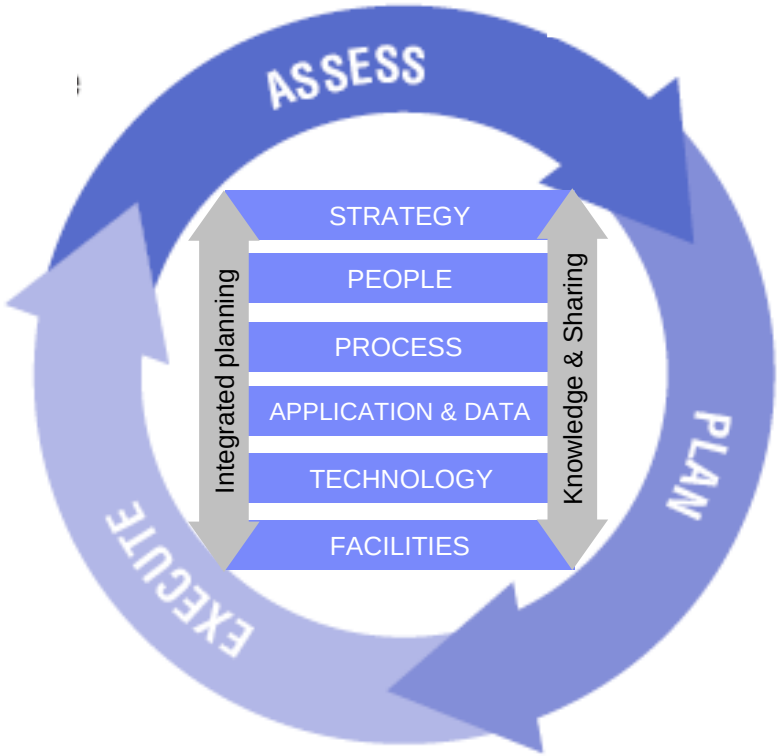
Tivoli software

Agenda

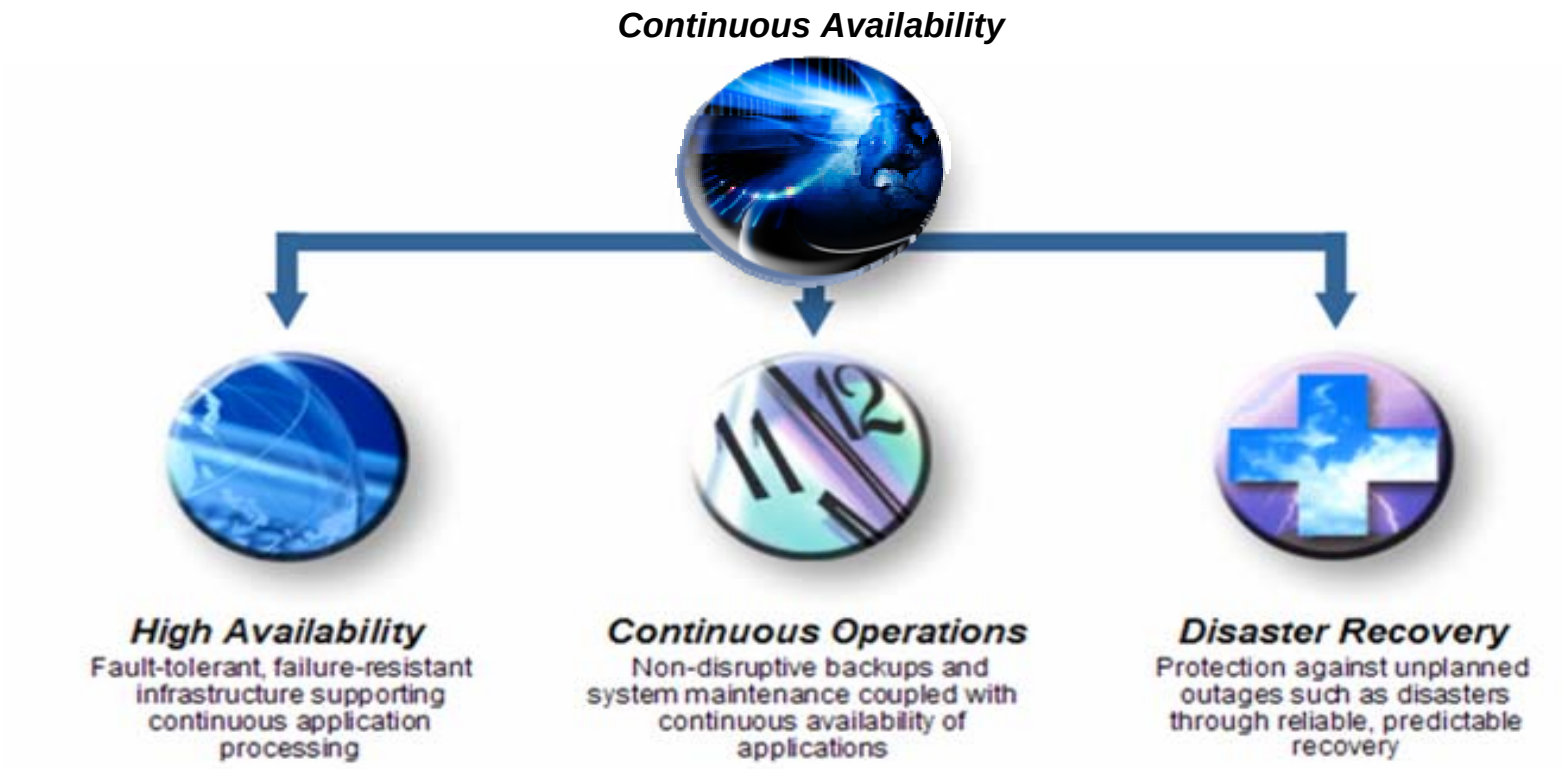
- Business Continuity and the desire for Continuous Availability
- Common Issues & Challenges
- Helping you sleep better at night
  - HA/DR solutions from IBM Tivoli System Automation
  - Integration with IBM Geographically Dispersed Parallel Sysplex™ (GDPS™)
  - Introducing IBM Tivoli Business Continuity Process Manager
- Question & Answer

Let us begin by defining Business Continuity…

Extending from Disaster Recovery, the ability of an organization to ensure the continuous delivery of business services in the face of both planned and unplanned events



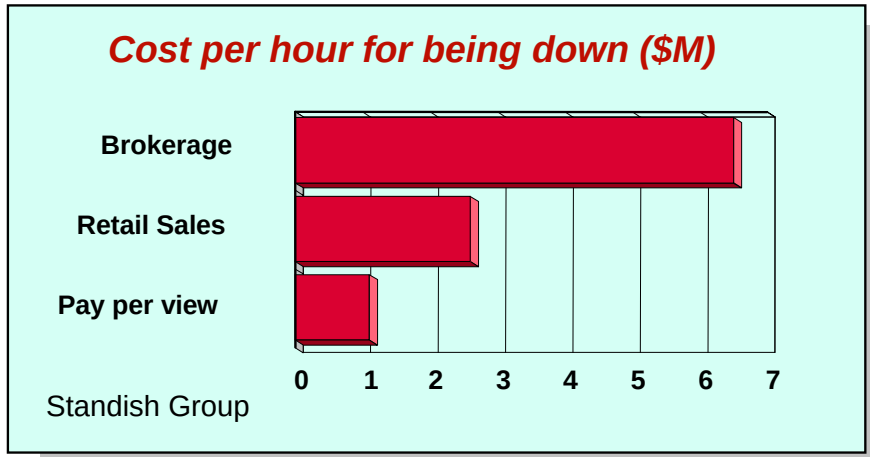
From an IT perspective, business continuity is the *continous availability* of business services that are supported by IT



The risk of service disruption is significant and organizations face difficult challenges associated with ensuring IT service continuity

Business Risks

- **Loss** of business
- **Loss** of customers – the competition is just a mouse click away
- **Loss** of credibility, brand image and stock value
- **Penalties** associated with lack of compliance



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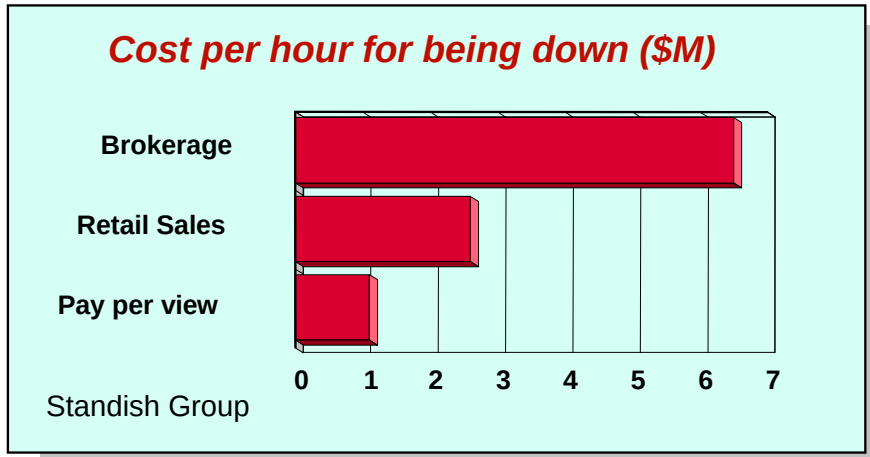


Issues & challenges keeping IT up at night

- Business continuity requires more than ensuring the availability of the technology, applications and data
- Recovery plans often aligned by technology not business priorities
- Business plans quickly become obsolete
- Testing business continuity is complicated and rarely performed

Many business continuity strategies and plans do not effectively incorporate the people, process and facility elements

Challenge

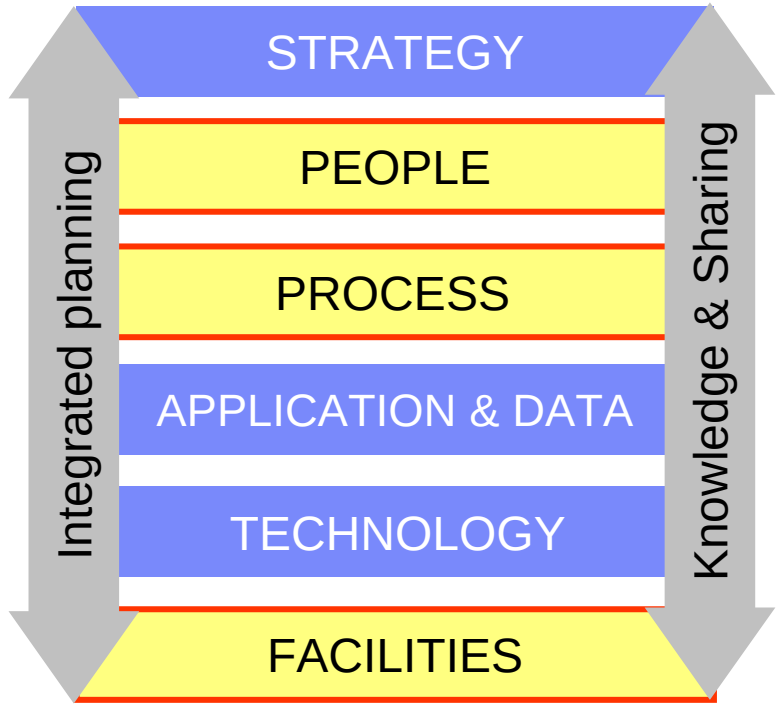
- Technology can not solve Business Continuity alone

Solution

- Extend business continuity strategy and processes to ensure that it incorporates people, process and facilities

Key Requirements

- Understand, document and incorporate:
  - the people requirements to run the business
  - the processes required to run the business
  - the facilities required to run the business



In addition, recovery plans are often aligned by technology and not business priorities

Challenge

- Recovery plans are often aligned by technology and not business priorities

Solution

- Manage continuity from an IT business service scope

Key Requirements

- Understanding the dependencies and business impact of service disruptions
- Prioritization of business services and recovery plans
- Ensure capabilities are cross platform not per platform

Compounding these problem is the fact that business continuity plans are not static and can quickly become obsolete

Challenge

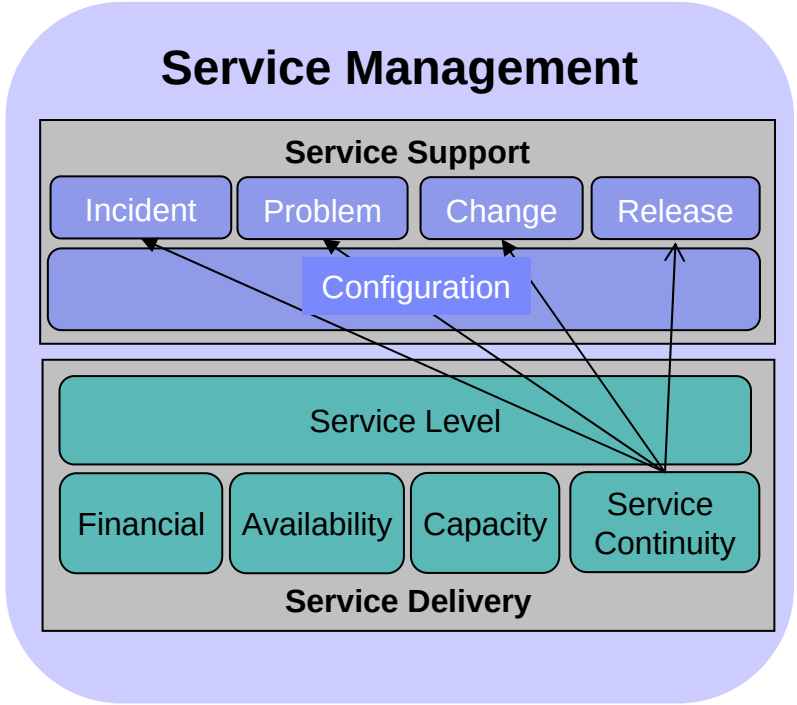
- Traditional business continuity plans quickly become obsolete in ever-changing IT environment

Solution

- Integrate IT Service continuity management with other IT processes based on leading practice process models

Key Requirements

- Integration with change and release management, in order to help keep the plan current
- Integration with incident and problem management (Service Desk)



And finally testing a business continuity plan is often complicated and rarely performed

Challenge

- Testing is difficult and rarely done
- Meaningful testing with minimum disruptions to production environment

Solution

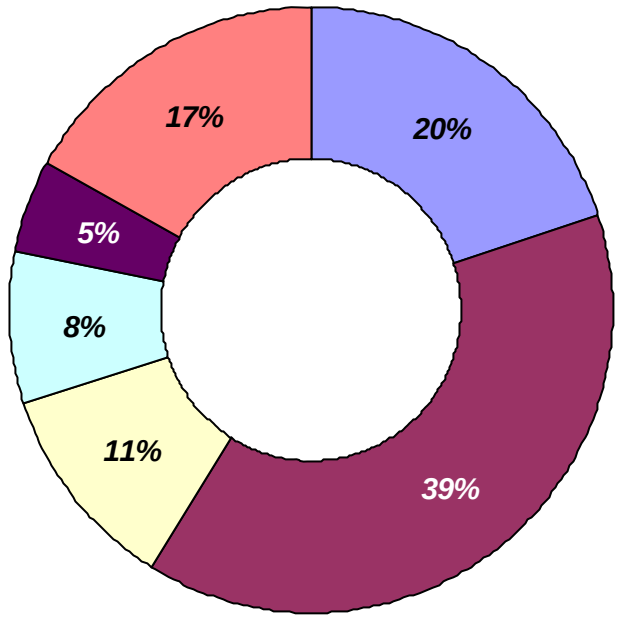
- Simulate recovery processes without actually executing it

Key Requirements

- Ability to execute a comprehensive test with minimal disruption to the business
- Assess results and provide ongoing plan feedback and improvements
- Assuring regulatory compliance

"How often do you update and actively test your business continuity and disaster recovery plan?"

(181 executives surveyed)



Economist Intelligence Unit, IBM, KPMG 2007

So what should an ideal business continuity solution look like?

- **Processes must incorporate the people and process elements**
  - People
  - Process
  - Facilities
- **Provide the ability to manage recovery from 'business impact' perspective**
  - Understanding the dependencies and business impact of service disruptions
  - Prioritization of business services and recovery plans
  - Ensure capabilities are cross platform not per platform
- **Tight Integration with other key IT processes**
  - Change and release management
  - Incident and problem management
- **Provide the ability to simulate and test recovery processes**
  - Ability to execute a comprehensive test with minimal disruption to the business
  - Assess results and provide ongoing plan feedback and improvements
  - Assure regulatory compliance

Agenda

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- Common Issues & Challenges
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The recently announced *Tivoli Service Management Center for System z* is an integrated solution portfolio built on the principals of IBM Service Management

IBM Tivoli Service Management Center for System z

Best Practices and Services

- **Process Management**
- **Service Management Platform**
- **Operational Management**

Optimized Infrastructure

Incident & Problem Management	*Change & Release Management*	*Business Continuity Management*	*Business Service Management*
Discovery & Relationship Mapping	*Federated Configuration Archive*	*Process Automation Engine*	
Monitoring	*Operations & Production Control*	*Financial Management*	*Security*

VISABILITY

See Your Business Services & Processes

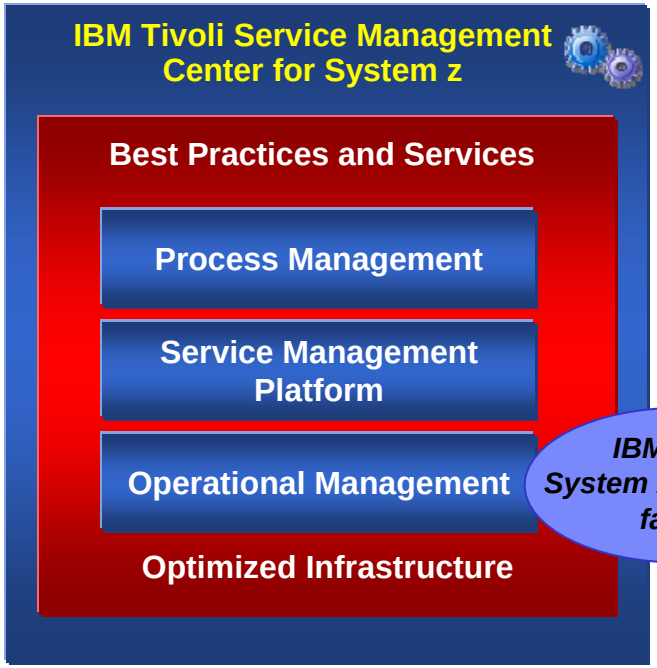
CONTROL

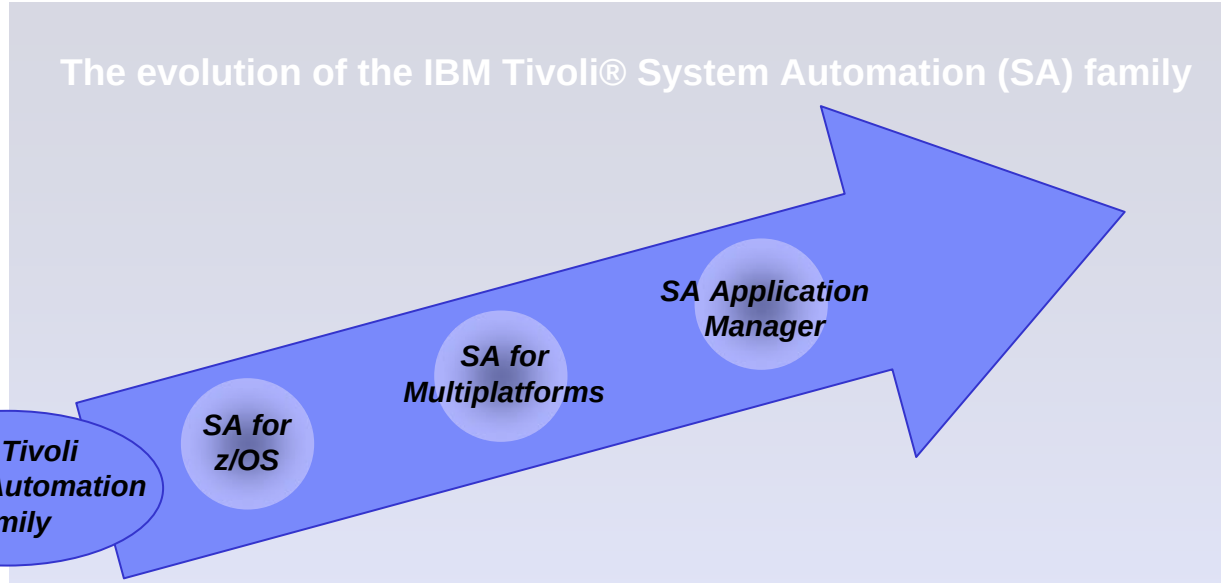
Manage Your Risk & Compliance

AUTOMATION

Build Agility into Your Operations

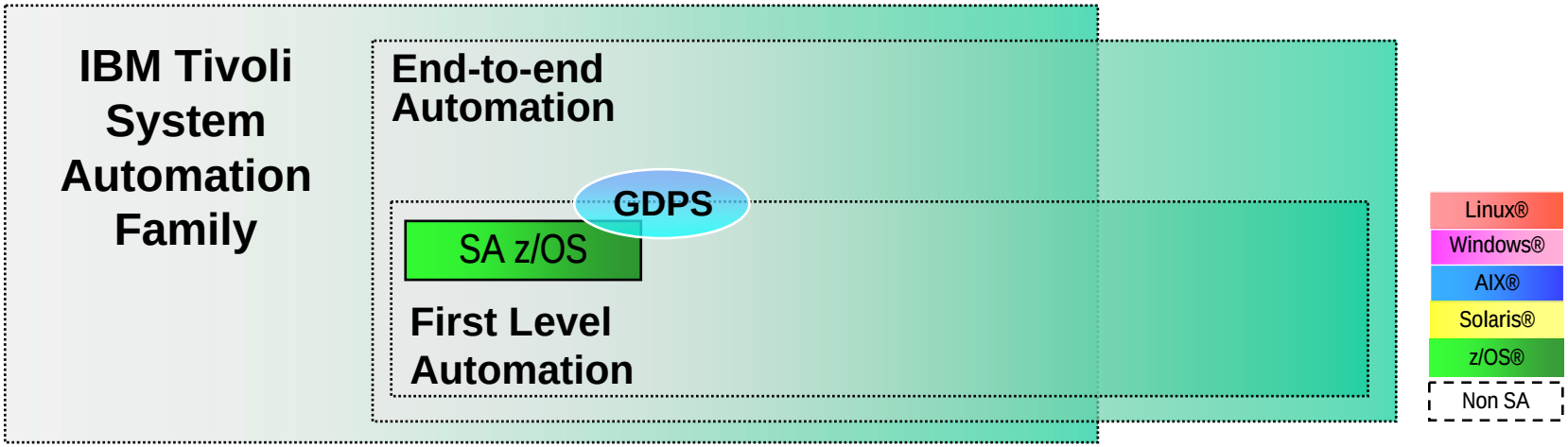
IBM Tivoli System Automation family is an integral operational management component that deliver automated HA/DR solutions for the enterprise





- Reduces the frequency and duration of service disruptions with advanced policy-based automation
- Enables the high availability and recovery of critical applications and middleware running on a range of hardware and operating systems
- Provides valuable operational capabilities including a a single point of control for managing heterogeneous high availability solutions that can span Linux®, AIX®, Windows®, Solaris® and IBM z/OS®.

The SA family helps enable the availability and recovery of key applications and middleware that span range of hardware and operating systems



SA z/OS provides application high availability and advanced z/OS and sysplex management and is the base product for GDPS®

GDPS – IBM Geographically Dispersed Parallel Sysplex™ (GDPS™) provides the resource sharing, workload balancing and continuous availability benefits of a multi-site, IBM Parallel Sysplex® environment - significantly enhancing the capability of an enterprise to recover from disasters and other failures.

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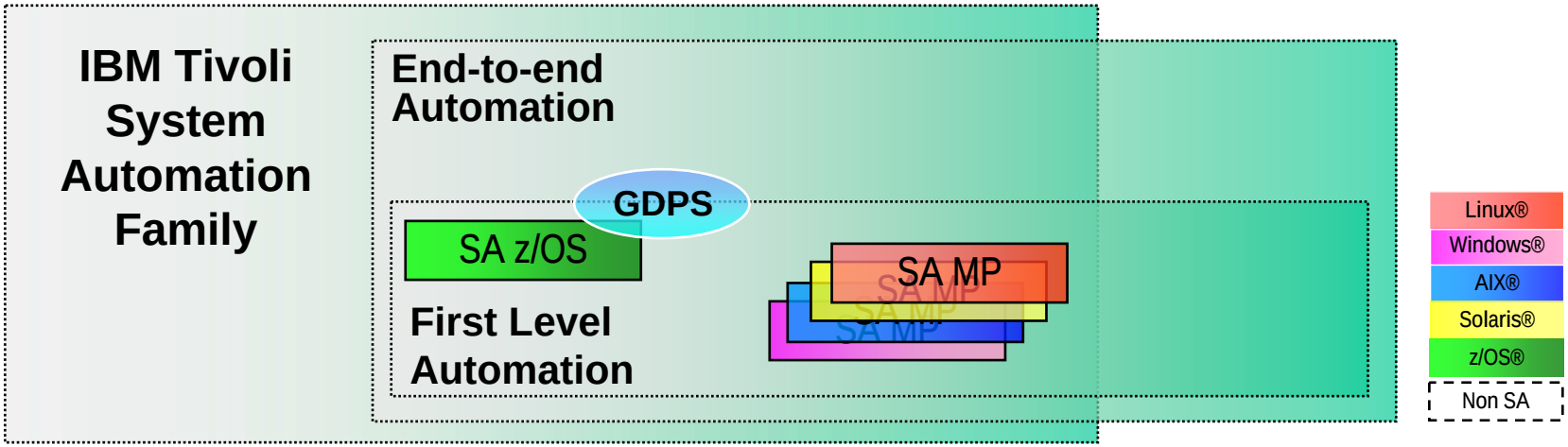

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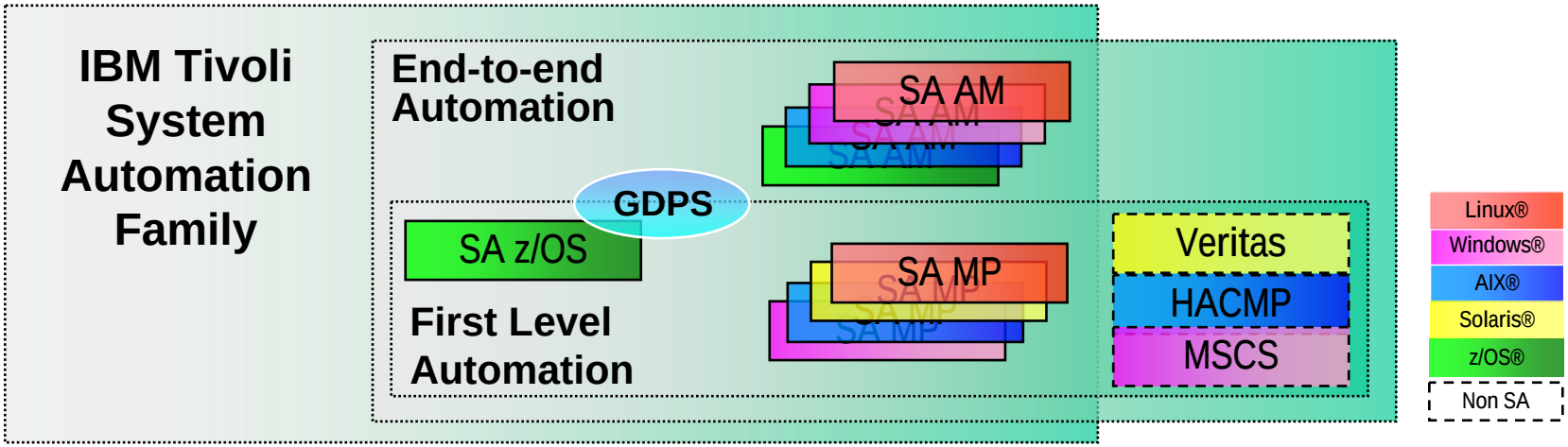

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SA Application Manager provides a single point of control to manage high-availability operations and cross-cluster resource dependencies across any combination of System z, Linux, AIX, Windows and Solaris platforms. Adapters available for MSCS, HACMP and Veritas

MSCS: Microsoft® Server Cluster, Veritas® : Veritas Cluster Server, HACMP: High Availability Cluster Multi-Processing

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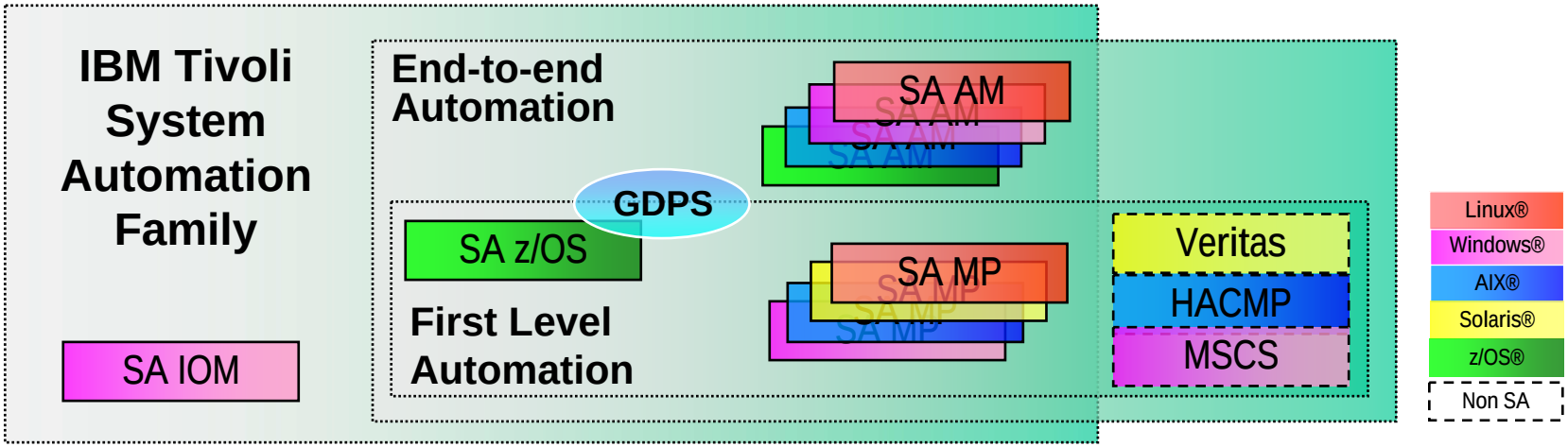

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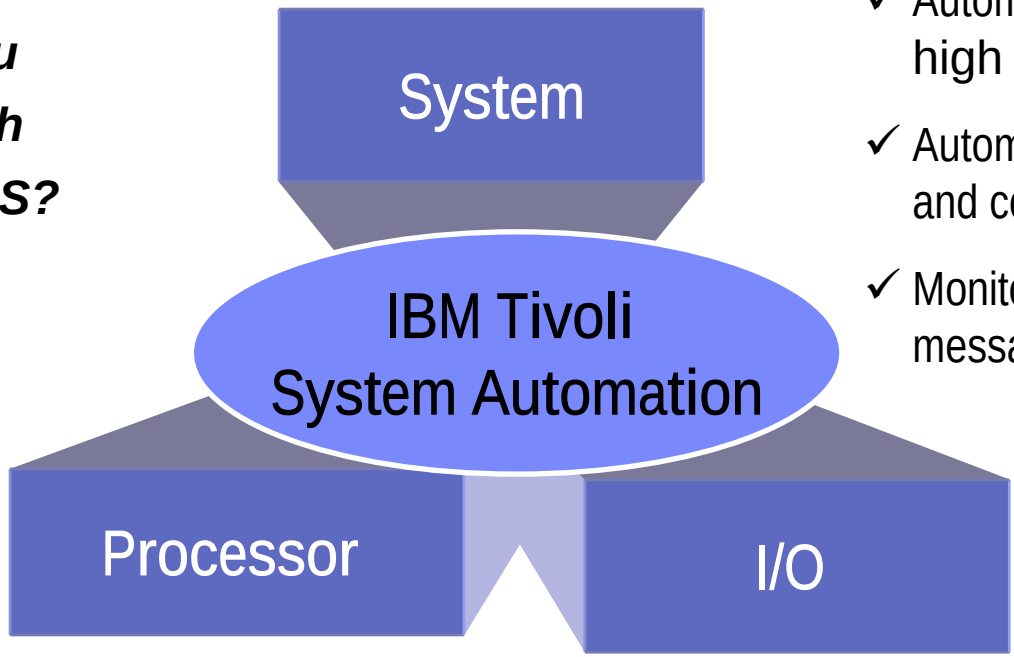
SA for Integrated Operations Management provides Automated alert, escalation, and outboard automation for secure remote access to systems

MSCS: Microsoft® Server Cluster, Veritas® : Veritas Cluster Server, HACMP: High Availability Cluster Multi-Processing

The flagship offering in this portfolio is IBM Tivoli System Automation for z/OS – the premier high availability and automation solution for z/OS

What can you automate with IBM SA for z/OS?

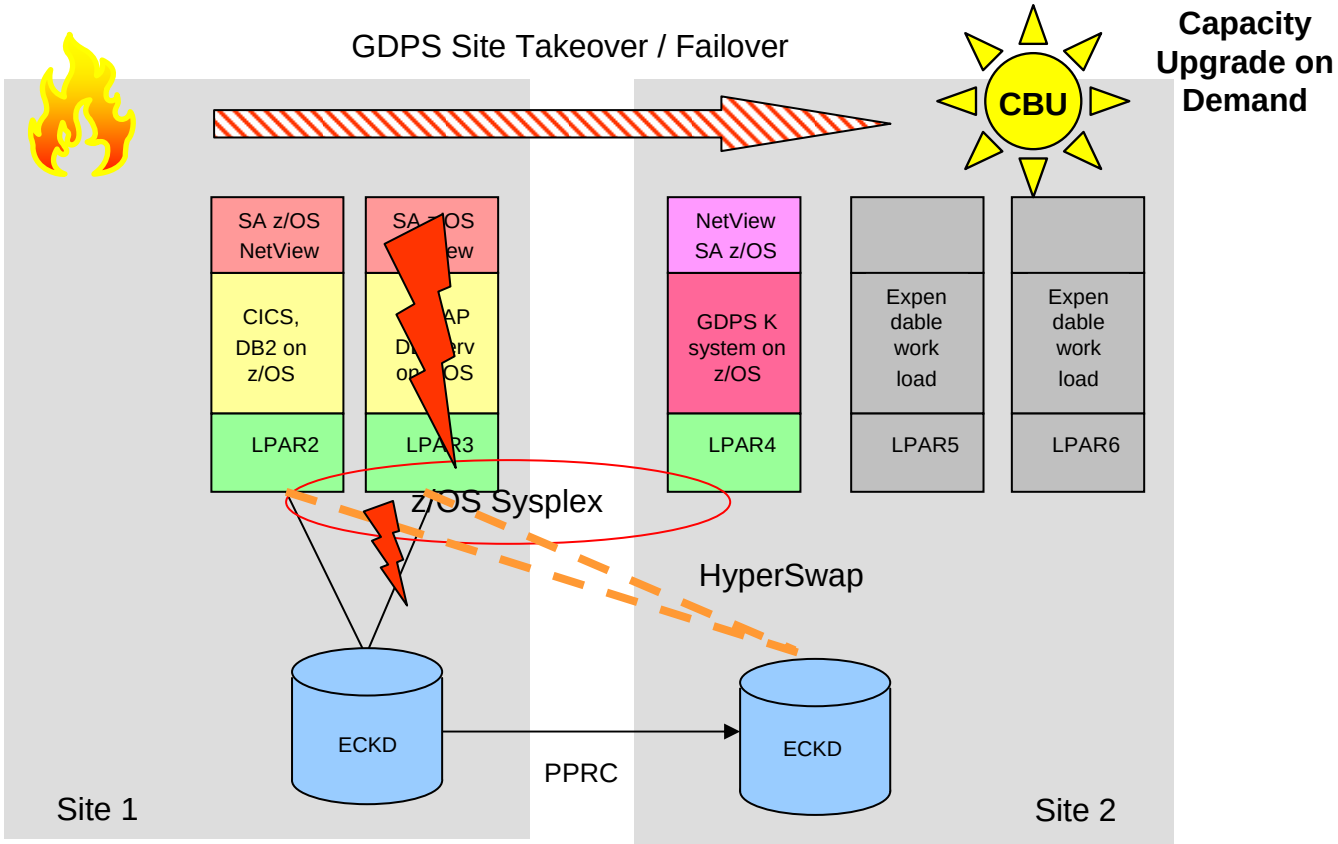


- ✓ Automate applications for high availability
- ✓ Automate many repetitive and complex tasks
- ✓ Monitor processes, messages, and alerts

- ✓ Initialize, configure, recover, and shut down servers
- ✓ External monitoring and automation from a Single Point of Control

- ✓ Change I/O configuration on the fly
- ✓ Safe through system-integrated switching
- ✓ Manage ESCON & FICON Directors

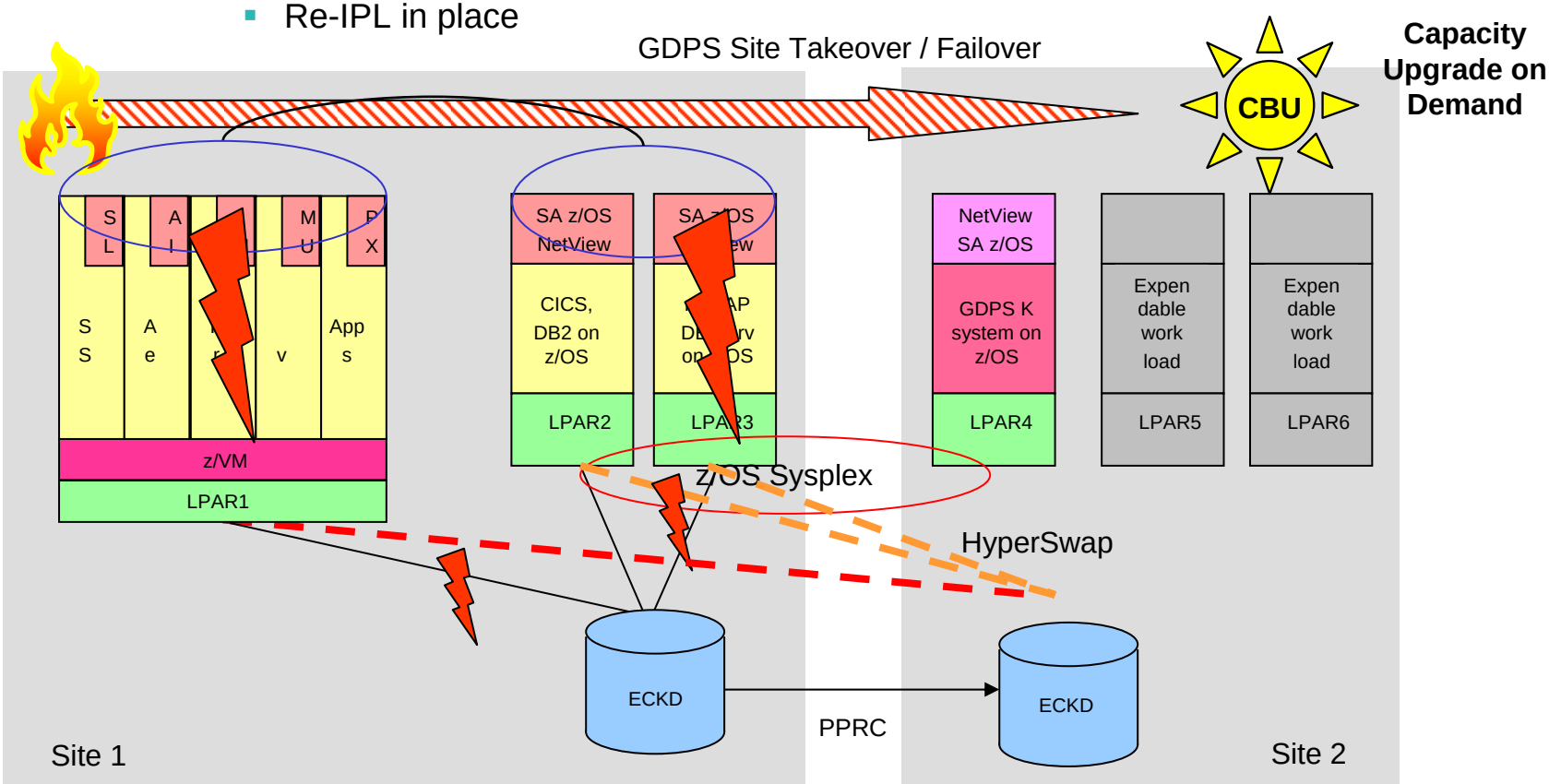
GDPS, an IBM Global Services offering leverages Tivoli SA for z/OS to significantly enhance the capability of an enterprise to recover from disasters and other failures.



The xDR component of the System Automation for Multiplatforms extends GDPS capabilities

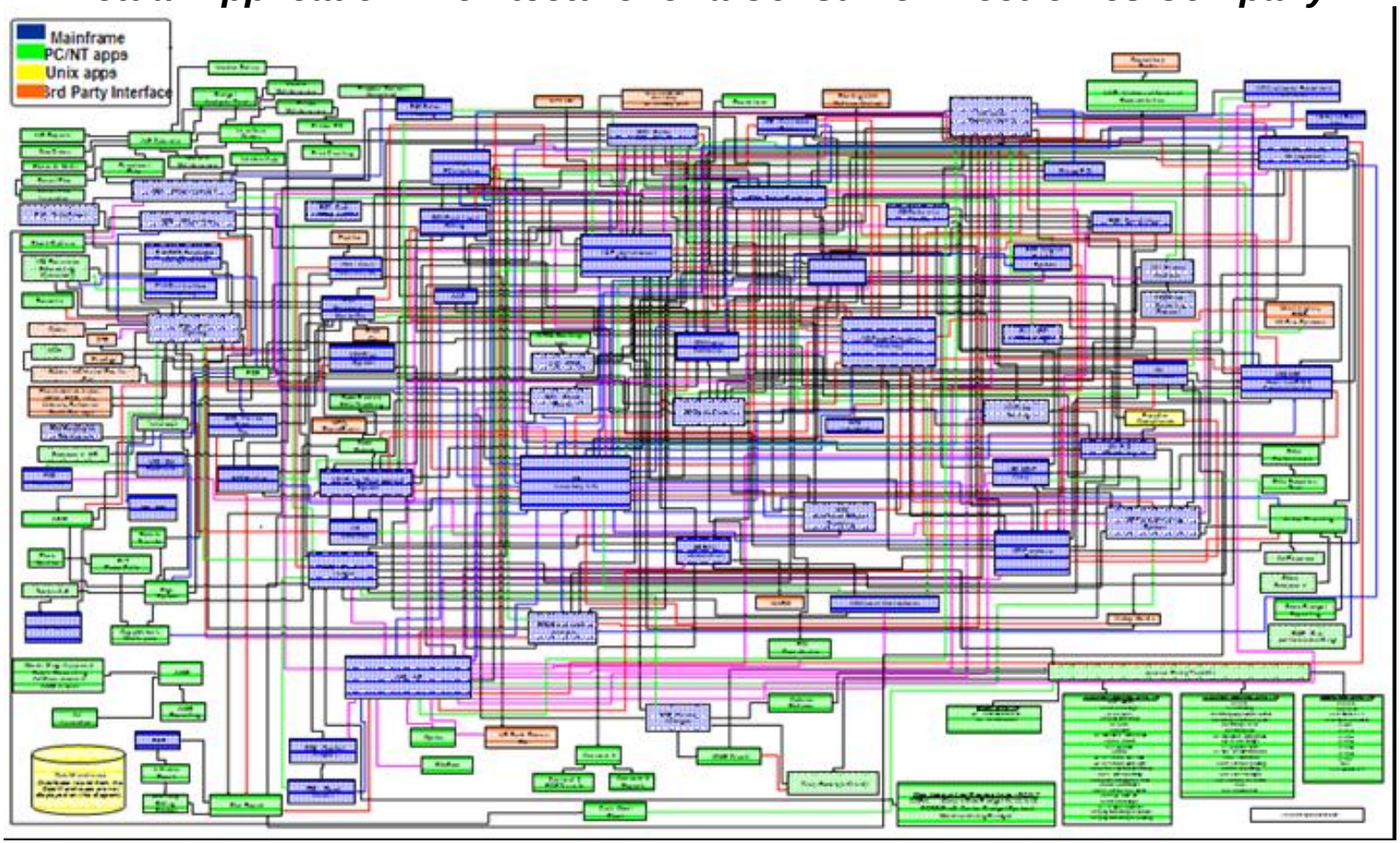
GDPS/PPRC Multi Platform Resiliency for System z (xDR) extends GDPS to support not only z/OS but also Linux on System z

- Disk error detection
- Heartbeat for sanity checks
- Re-IPL in place
- Coordinated Site Takeover
- Coordinated HyperSwap

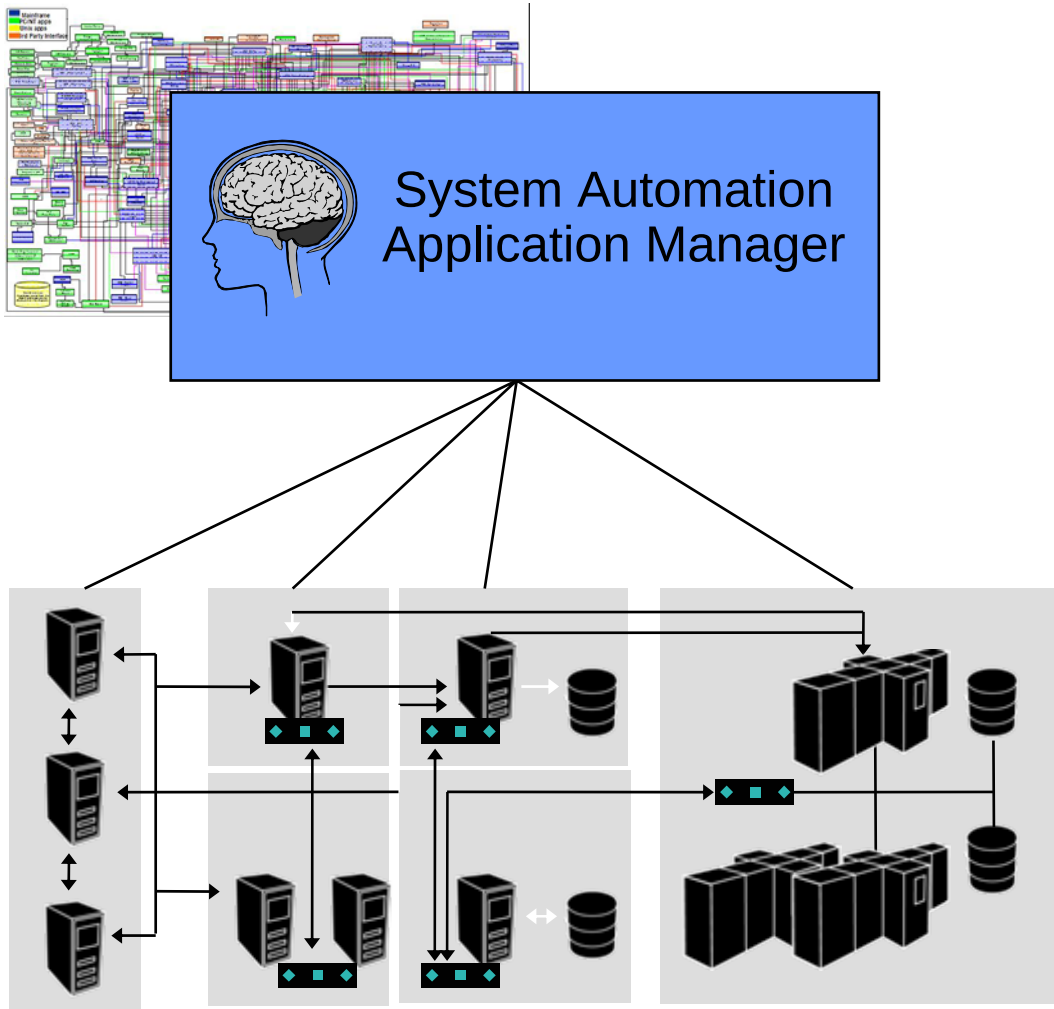


In addition to site recovery, end to end automation is critical for managing the availability of complex application architectures

Actual Application Architecture for a Consumer Electronics Company



IBM Tivoli System Automation Manager (SA AM) helps manage this complexity - providing a single point of control to manage high-availability operations and cross-cluster resource dependencies

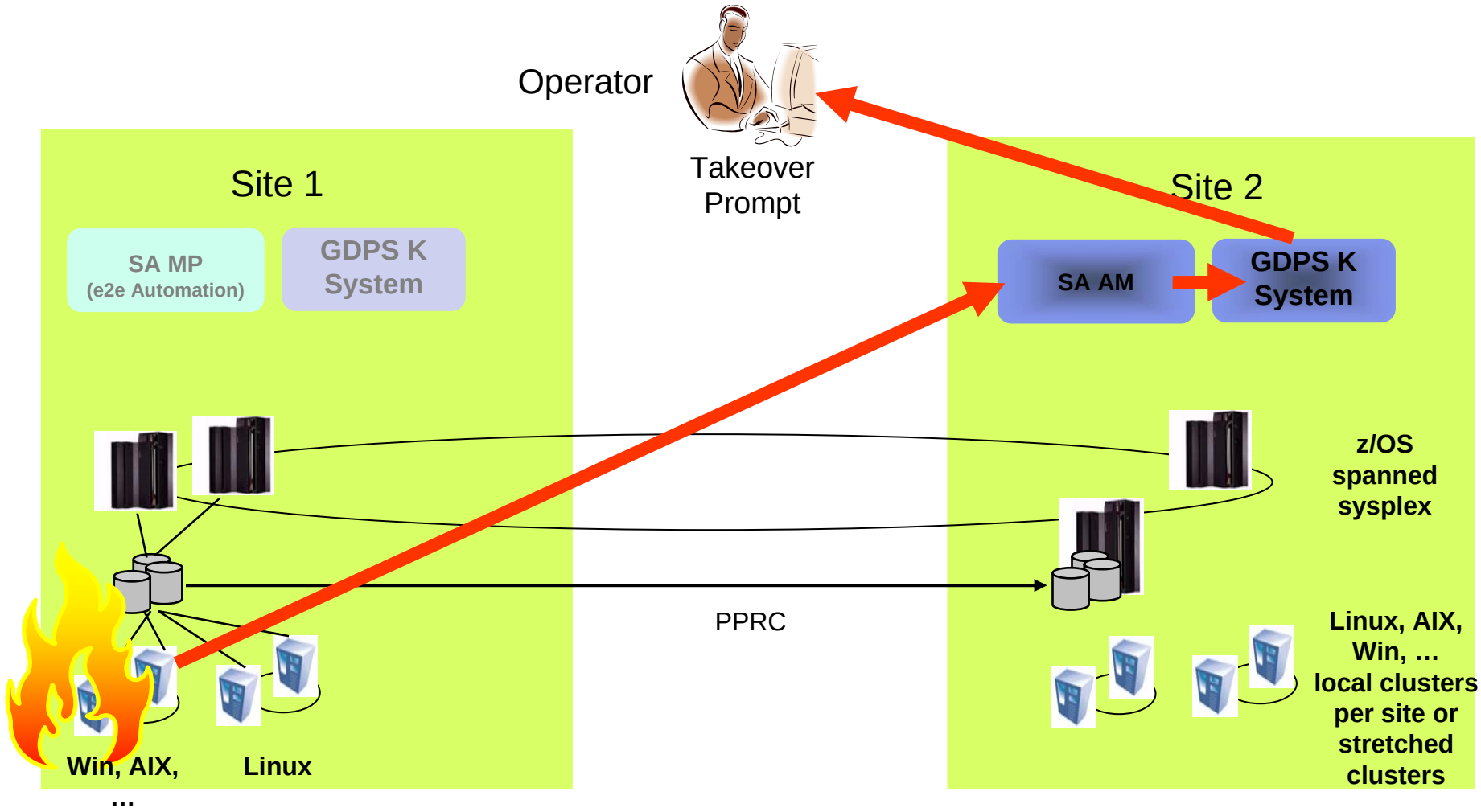


- High availability and disaster recovery for composite applications
- Single web-based console for management of complex IT infrastructure, end-to-end
  - Cross cluster
  - Cross platform
- (Optional Feature) Disaster Recovery with bridge to GDPS

SA AM integration with GDPS

Scenario: Rolling Disaster w/Unplanned Site Takeover

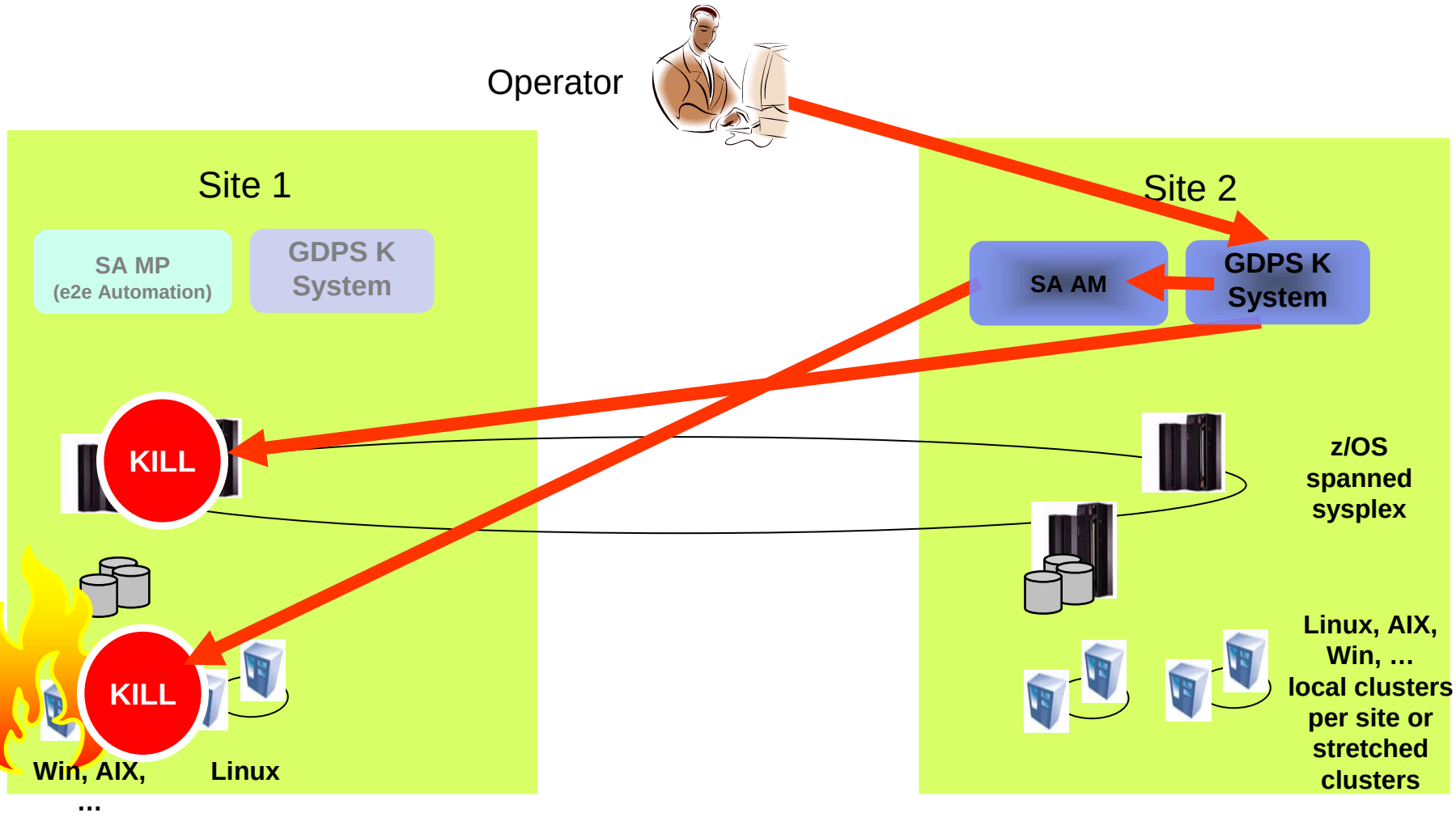
- A Potential Disaster is Detected



SA AM integration with GDPS

Scenario: Rolling Disaster w/ Unplanned Site Takeover

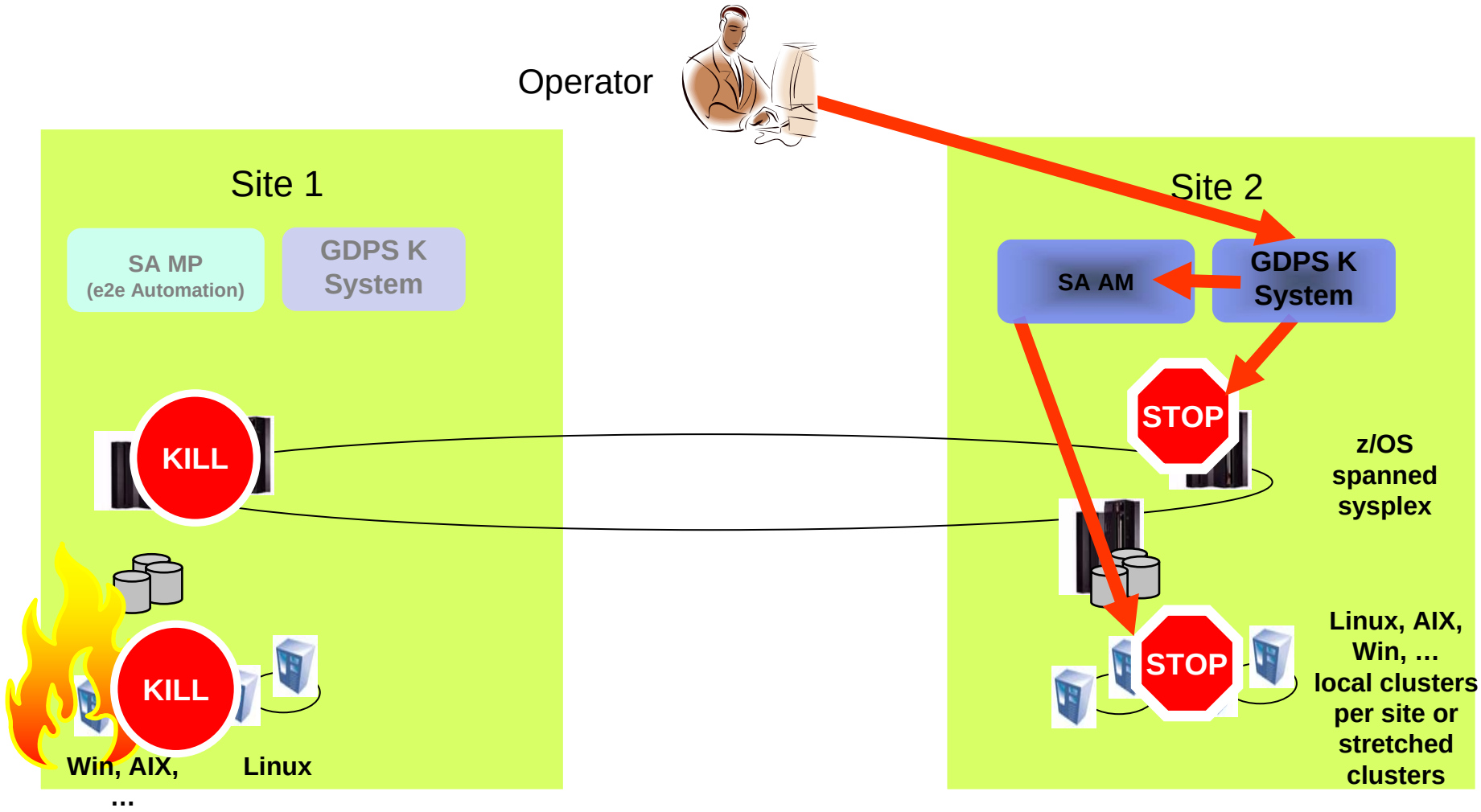
- A Potential Disaster is Detected
- Decision for a Site Takeover Made



SA AM integration with GDPS

Scenario: Rolling Disaster w/ Unplanned Site Takeover

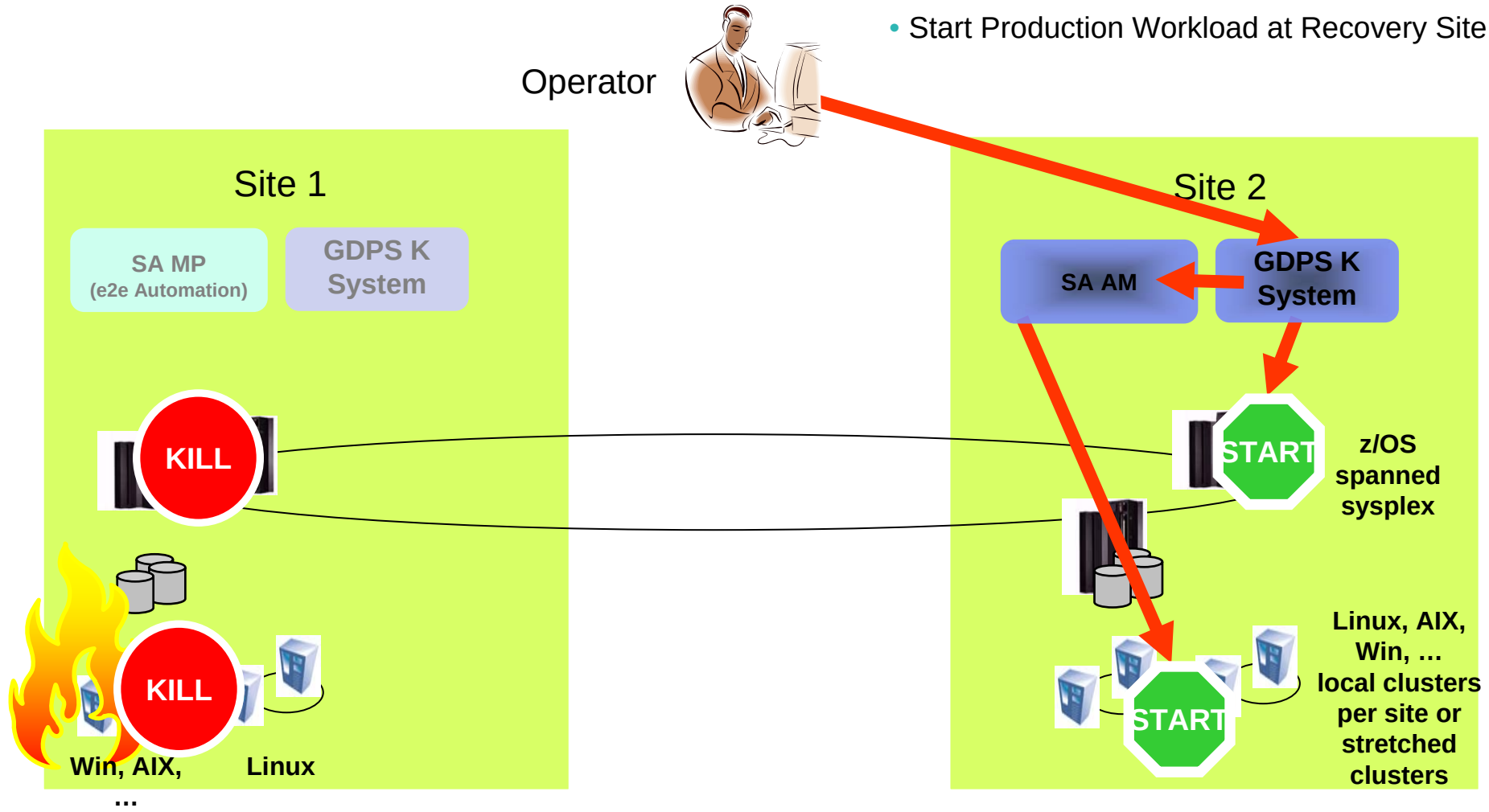
- A Potential Disaster is Detected
- Decision for a Site Takeover Made
- Stop Discretionary Workload at Recovery Site



SA AM integration with GDPS

Scenario: Rolling Disaster w/ Unplanned Site Takeover

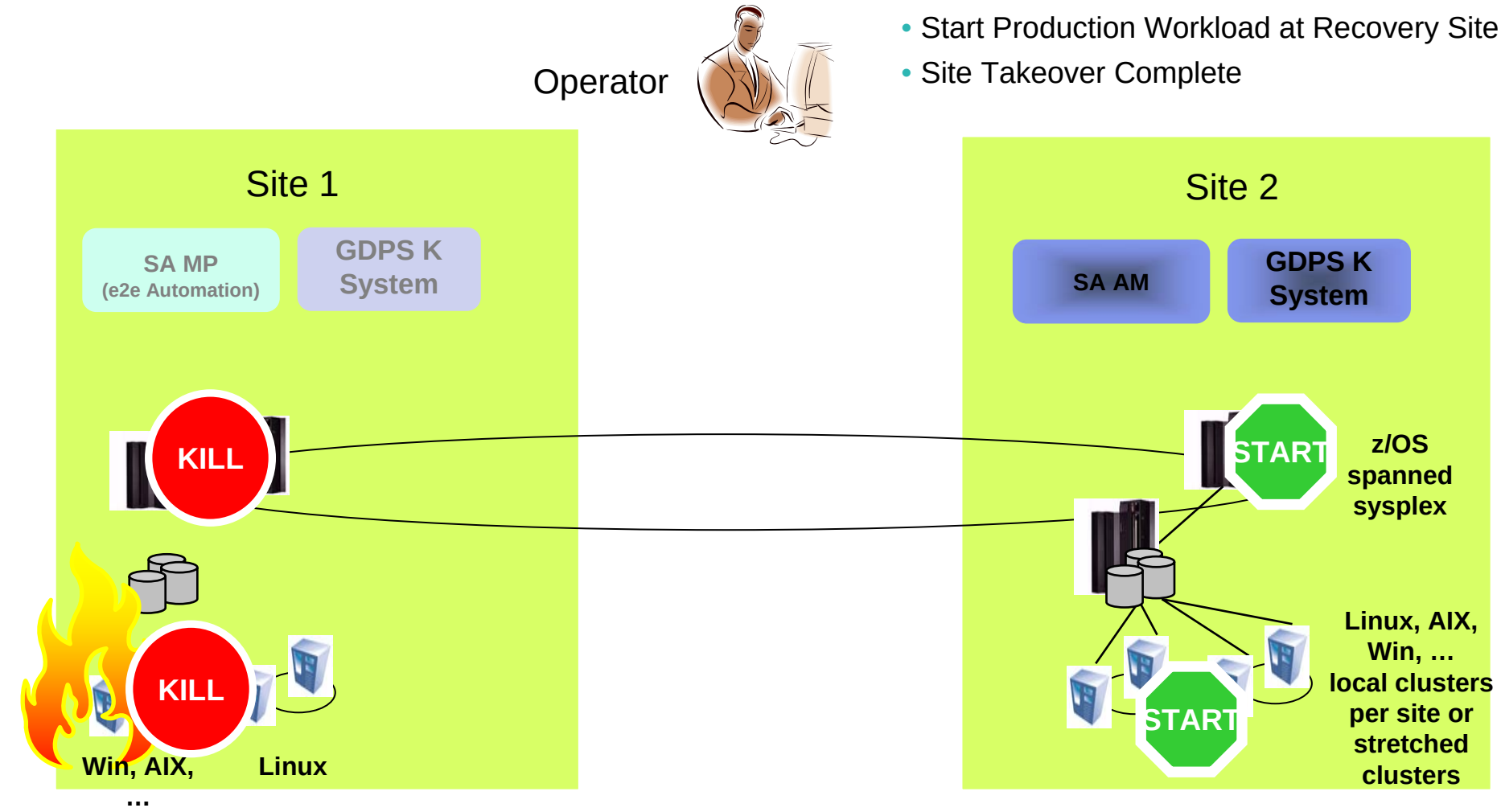
- A Potential Disaster is Detected
- Decision for a Site Takeover Made
- Stop Discretionary Workload at Recovery Site
- Start Production Workload at Recovery Site



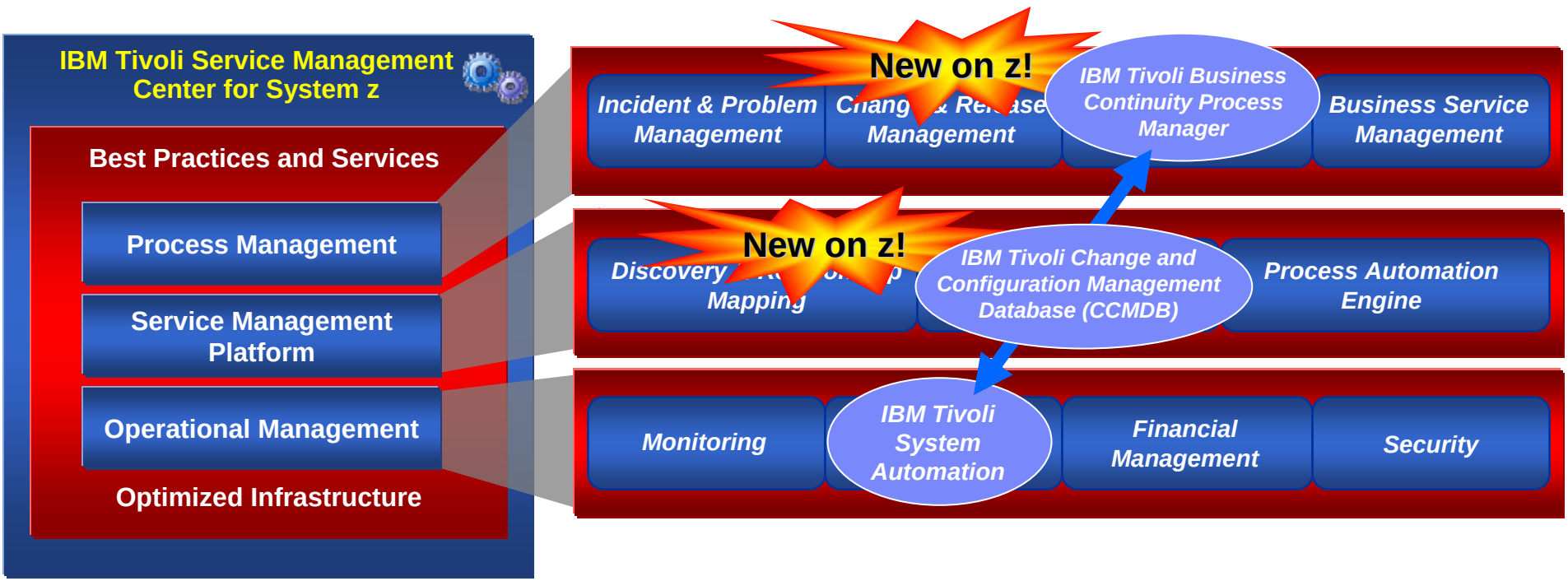
SA AM integration with GDPS

Scenario: Rolling Disaster w/ Unplanned Site Takeover

- A Potential Disaster is Detected
- Decision for a Site Takeover Made
- Stop Discretionary Workload at Recovery Site
- Start Production Workload at Recovery Site
- Site Takeover Complete



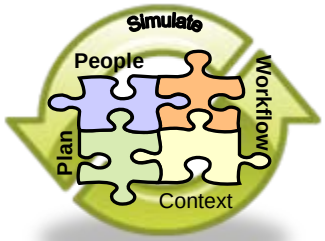
IBM Tivoli Business Continuity Process Manager (BCPM) works with the IBM Tivoli SA family and CCMDB to deliver a holistic business continuity solution



IBM Tivoli BCPM helps clients address common challenges:

- Leverages leading service management processes
- Incorporate the people and process elements
- Enables the manage recovery from a 'business impact' perspective
- Eases the simulation and testing of recovery processes

What is the IBM Tivoli Business Continuity Process Manager?



Tivoli Business Continuity Process Manager is a newly announced offering from IBM that provides configurable processes to plan, test and execute IT service continuity.

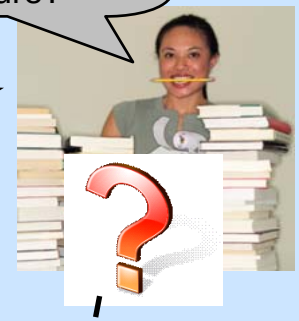
Enables a comprehensive business continuity solution that integrates the management of people and process with the underlying technology solutions:

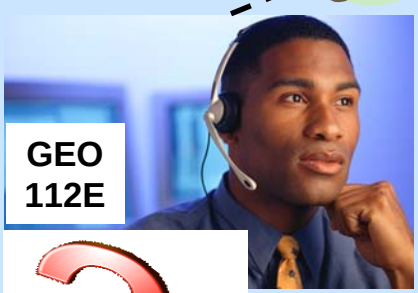
- Helps reduce the possibility of human error in recovery efforts for systems and applications.
- Improves alignment of employee work efforts with prioritized recovery tasks.
- Improves productivity through efficient, effective, and tested recovery plans for key business systems and applications.
- Reduces the impact of an outage by automating the execution of recovery tasks according to the requirements of specific business systems and applications.
- Provides automated process flow that is aligned to industry best practices and ITIL®

Manual Crisis Management is a risk

What do we need to do?
Who needs to be informed?
How can we recover?

What is the most appropriate recovery procedure?





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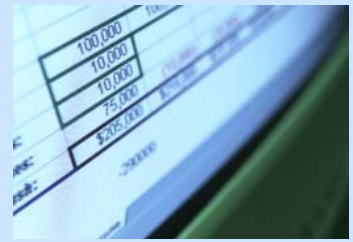
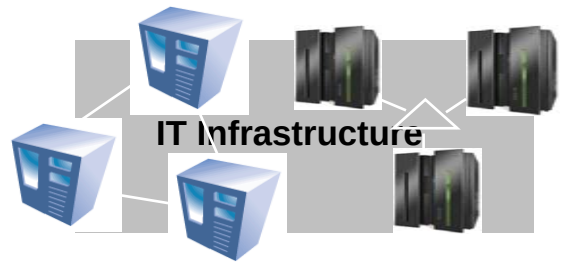
Who needs to approve?

What infrastructure is affected?

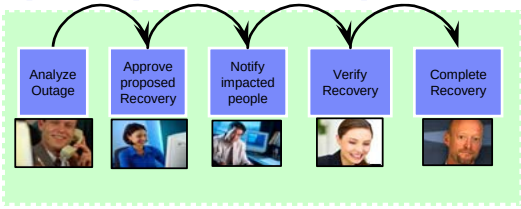


NetView

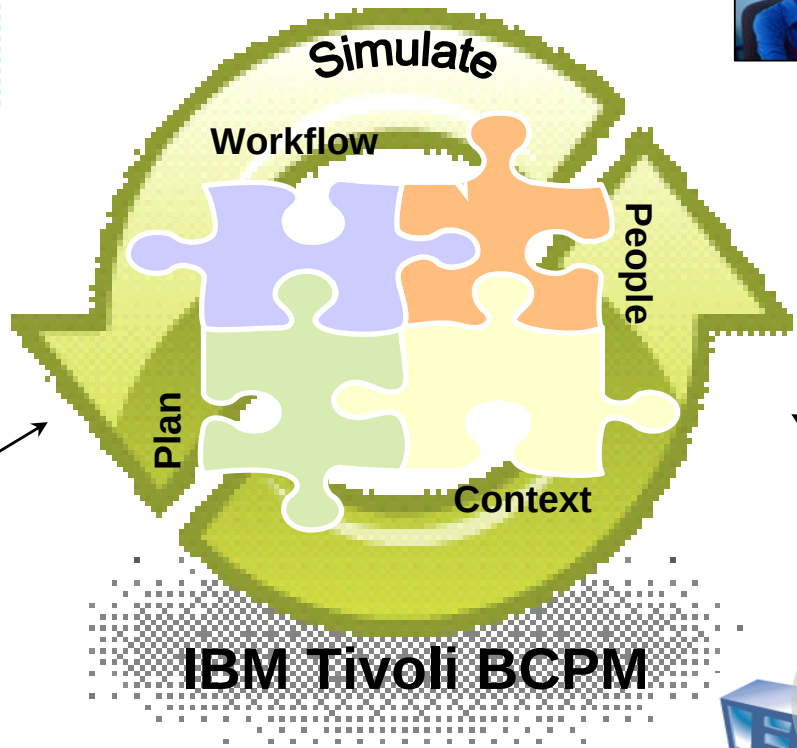
SAIOM



BCPM ensures that your recovery strategy incorporates the people and process elements along with the infrastructure

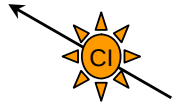


Disaster Recovery Workflow



adapts...

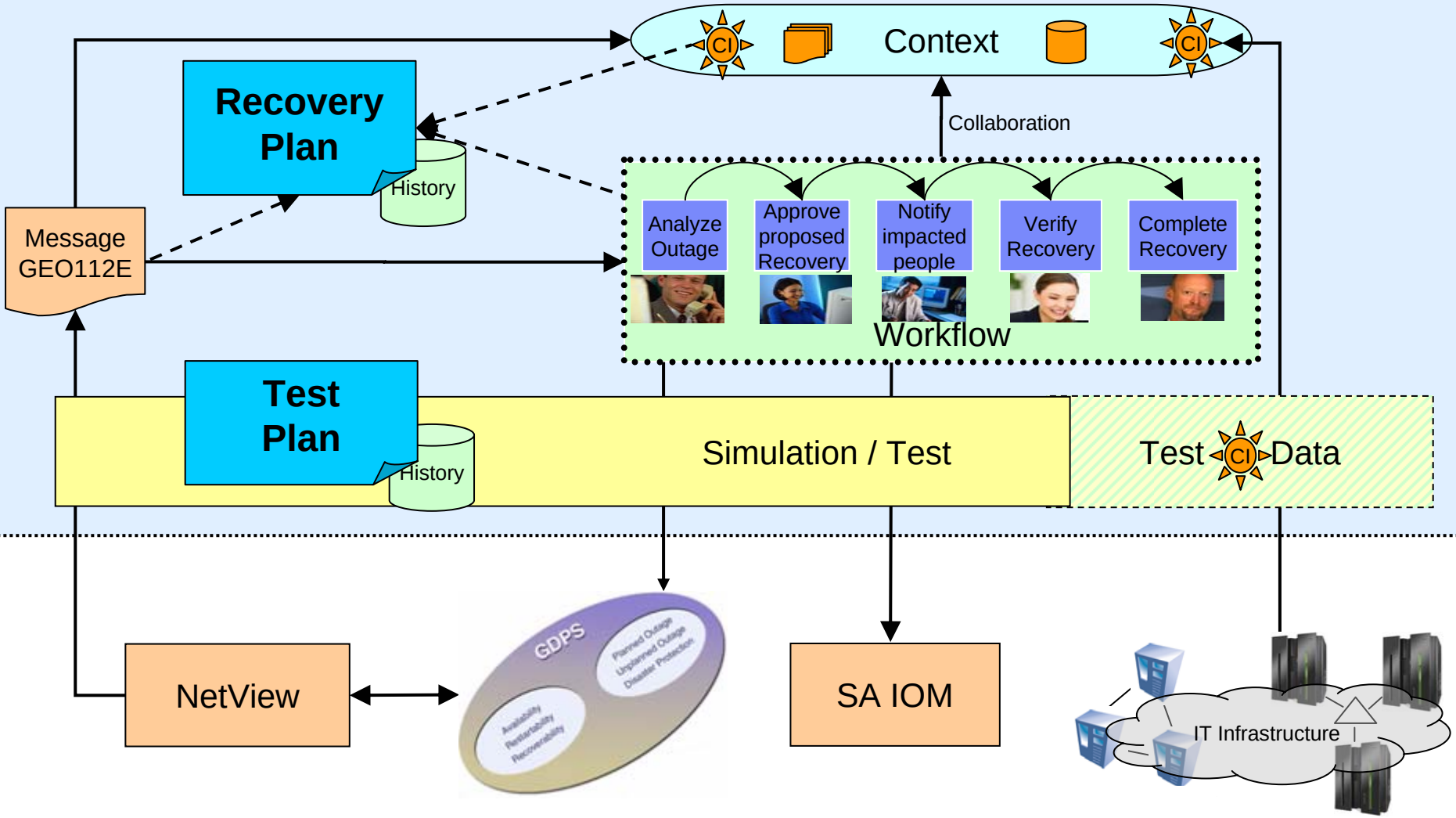
Recovery Plan



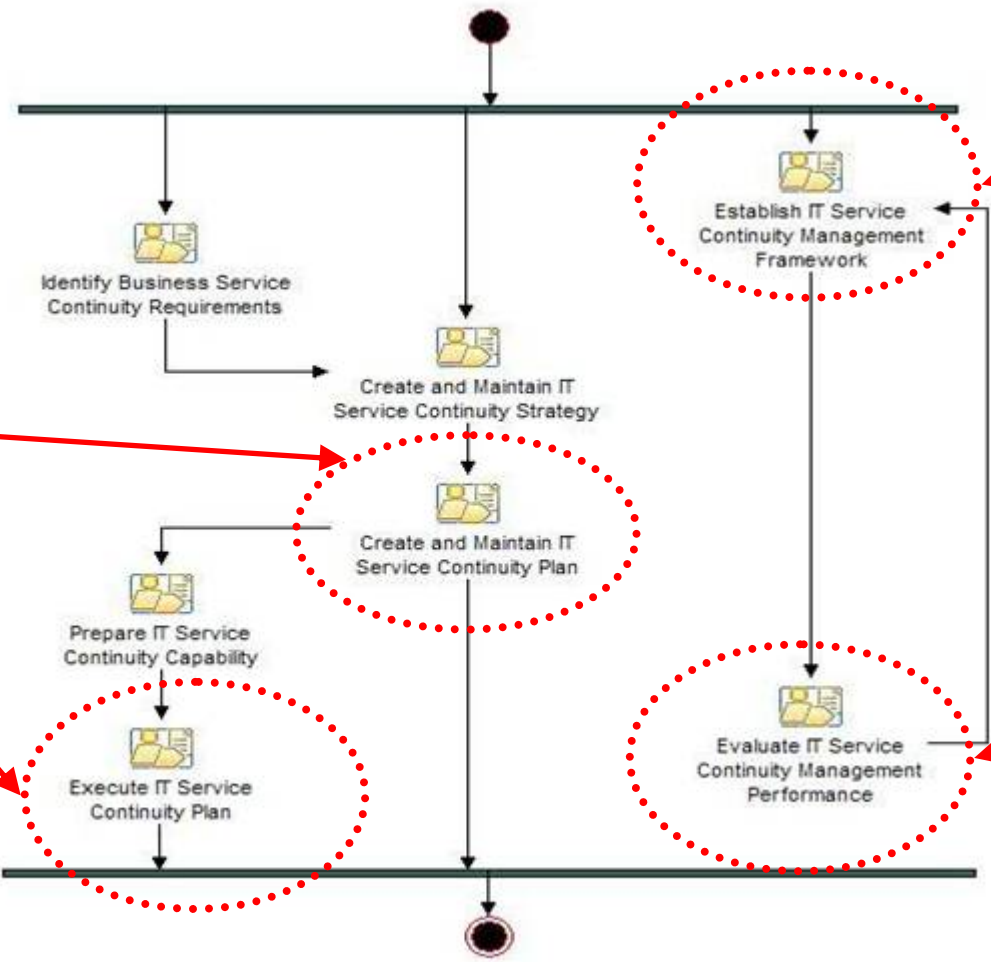
Planner

Infrastructure

BCPM can help you mitigate that risk by providing a repeatable, current and tested plan for recovery



BCPM processes are mapped to the Service Continuity Management process description in ITUP



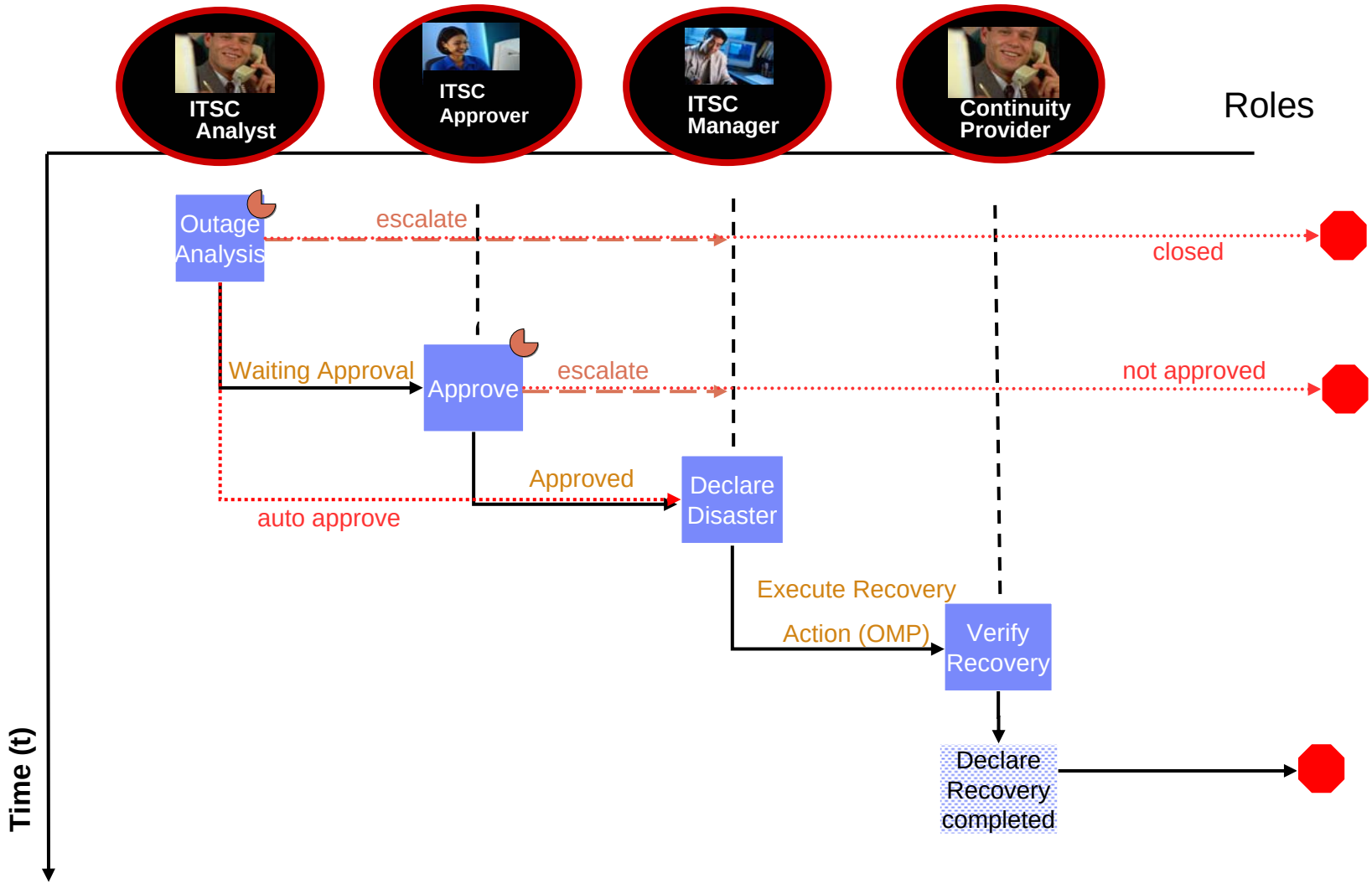
Integration and Extensibility

Recovery Plan

Execution

Simulation Reports KPI's

And provides execution and mapping to the ITUP roles

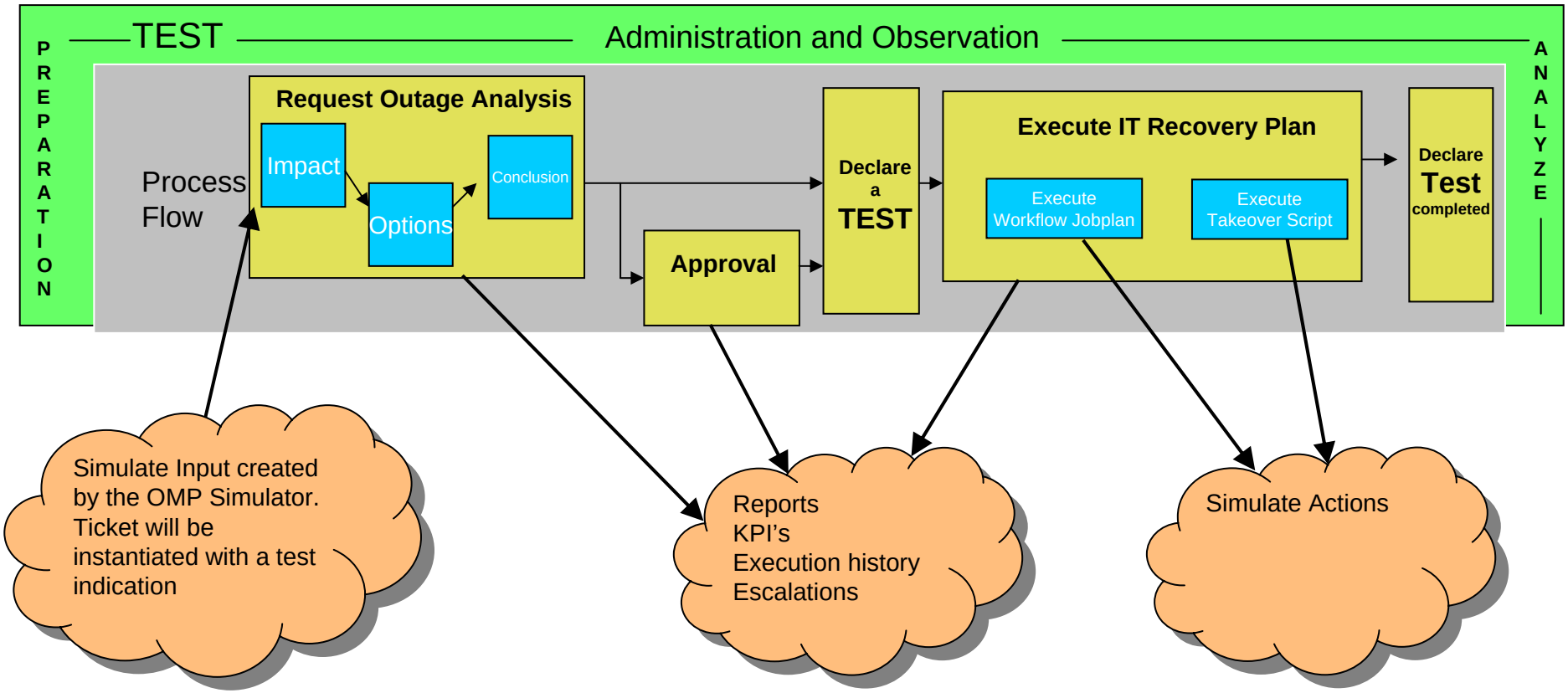


BCPM also provides measurement and reporting to ensure that continuity is managed from business impact perspective

SAMPLE REPORTS

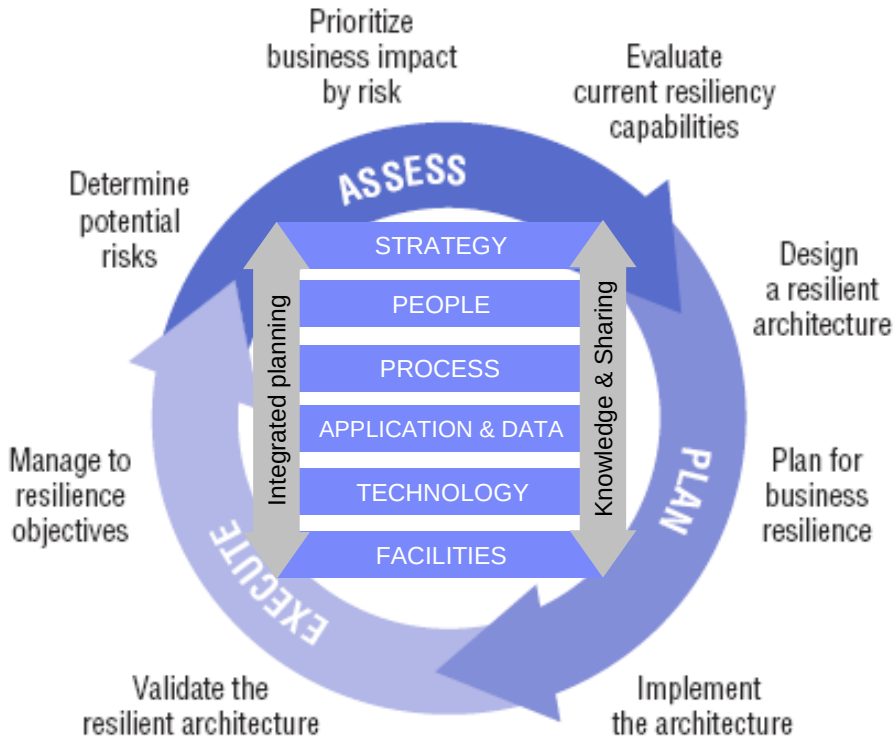
- **Availability and Recovery Reports**
  - ***Resource Availability and Recovery***
    Report a resource's up- and downtimes, unexpected outages and corresponding recovery times.
  - ***Top Resources with the Highest number of Unexpected Outages***
    Report the top resources that had the highest number of unexpected outages in a selected domain.
- **Startup and Shutdown Reports**
  - ***Resource Startup and Shutdown***
    Report the cumulative startup and shutdown times for a resource including its dependencies.
  - ***Top Resources with the Longest Startup and Shutdown Times***
    Report the top resources with the longest startup and shutdown times in a selected domain.

And eases testing continuity plans through simulations, fire drills, and reporting

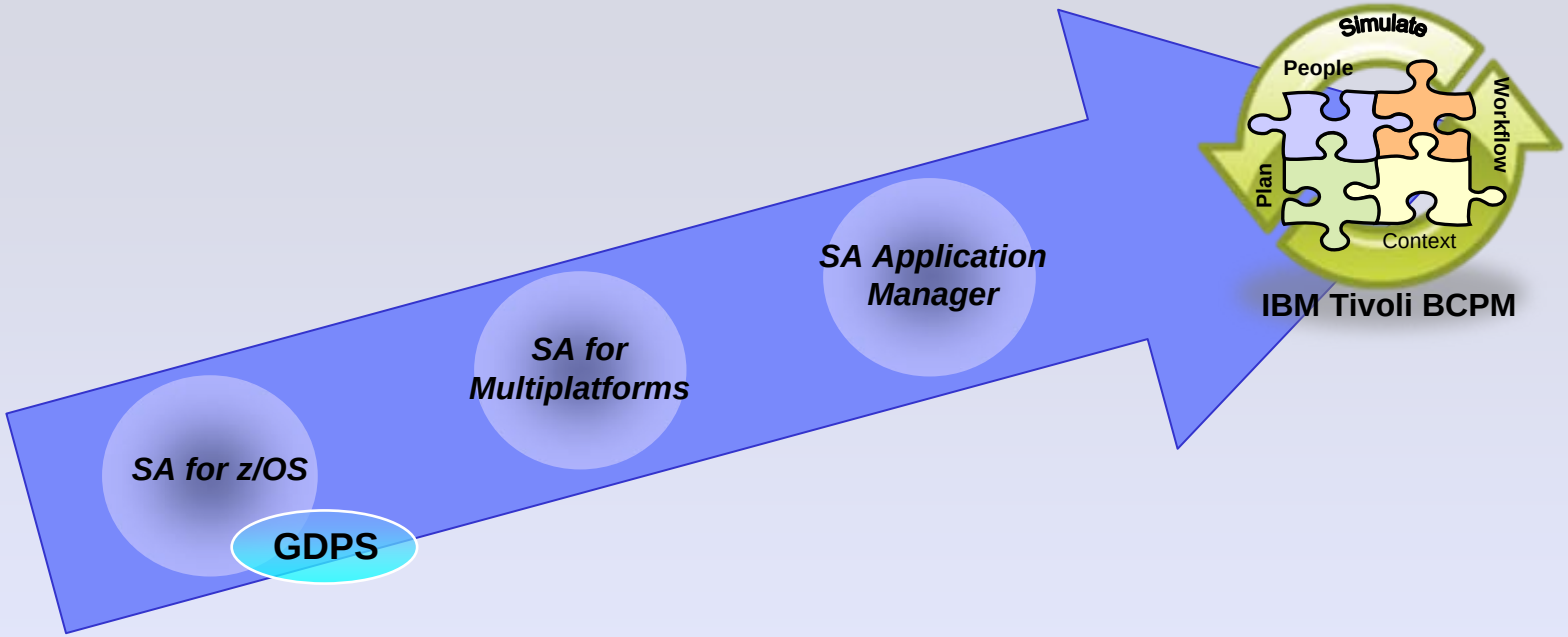


IBM Tivoli Business Continuity Process Manager provides a means for a closed loop approach that incorporates best practices to ensure a repeatable, current and tested plan for recovering IT business services

- **Assess** resiliency capabilities - in light of an ever-changing IT environment
  - Integration with CMDB, change and release management
  - Determine and prioritize risk and business impact
- **Plan** for business resilience
  - Define the Recovery Scope
  - Define Recovery Time and Recovery Point Objectives
- **Execute** your continuity plan
  - Test plan and simulate incidents
  - Manage incidents cross-platform and execute appropriate plan
  - Asses reports from testing or real incidents to determine if SLAs and objectives are met



The IBM Tivoli Business Continuity Process Manager is the next evolution of the System Automation family



IBM Tivoli Business Continuity Process Manager works in concert with the Tivoli System Automation family and GDPS to extend beyond traditional HA/DR to help you ensure the continuous delivery of business services in the face of both planned and unplanned events

Questions

Need More Information?

Please contact::

Butch Rambish
brambsih@us.ibm.com

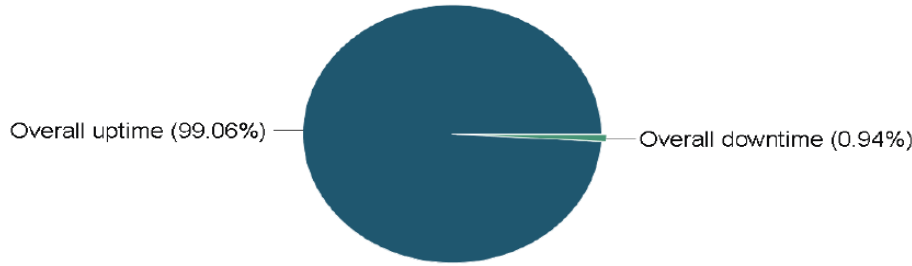
BACKUP

Report: Availability Overview

Availability and Recovery of a selected resource Report

Domain name:	FriendlyE2E
Resource Name	Friendly Computer Shop/ResourceGroup
Time Interval:	Mar 31, 2008 12:00 AM - Mar 31, 2008 11:59 PM

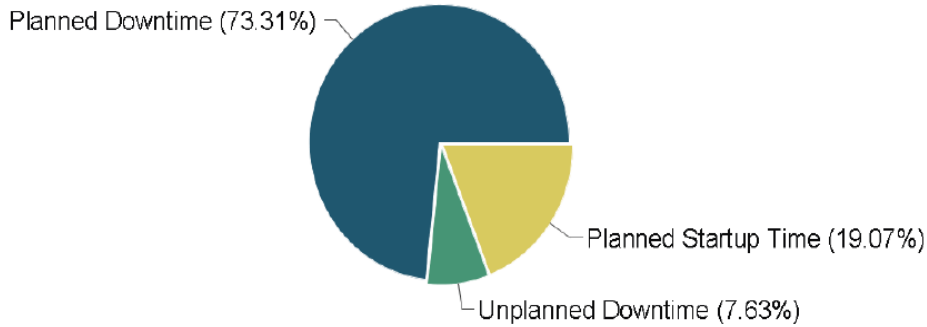
Availability Overview



Summary

Overall uptime:		23h 52min 15sec
Includes		
	Planned Uptime:	23h 52min 15sec
	Unplanned Uptime:	Unknown
Overall downtime:		13min 33sec
Includes		
	Planned downtime:	9min 56sec
	Unplanned downtime:	1min 2sec
	Planned starttime:	2min 35sec

Downtime analysis



Report: Availability Overview

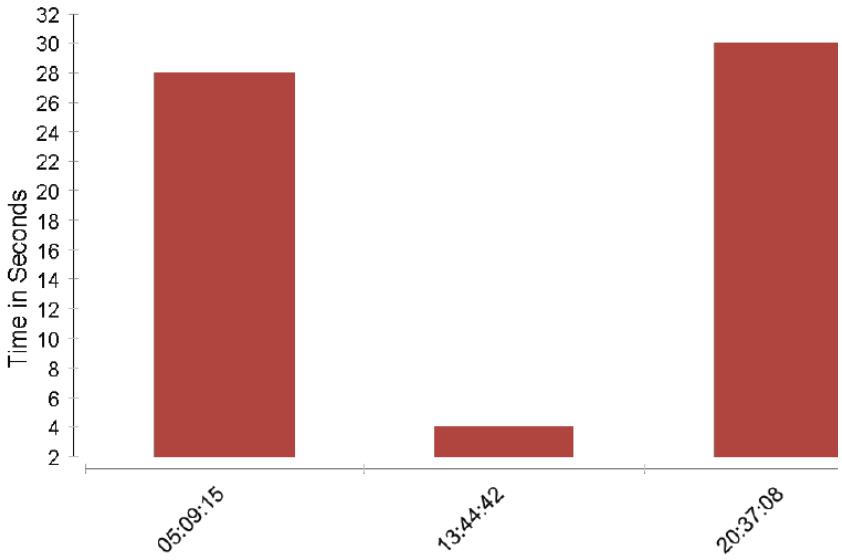
Unexpected outages and corresponding recovery times

Resource Friendly Computer Shop/ResourceGroup, incidents during time span:	3
Average Meantime To Repair (Average MTTR)	21sec
Average Meantime Between Failures (Average MTBF):	7h 43min 40sec
Average Meantime Between System Incidents (Average MTBSI):	7h 43min 56sec

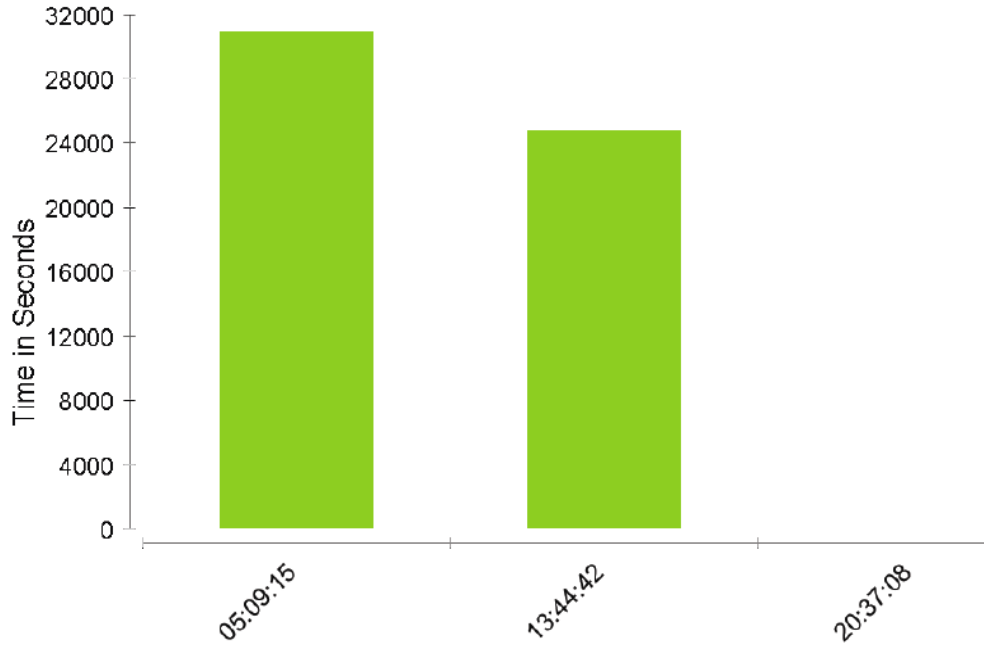
Time incident occured	MTTR	MTBF	MTBSI
Mar 31, 2008 5:09 AM	28sec	8h 34min 59sec	8h 35min 27sec
Mar 31, 2008 1:44 PM	4sec	6h 52min 22sec	6h 52min 26sec
Mar 31, 2008 8:37 PM	30sec	Unknown	Unknown

Report: Availability Overview

Graphical overview on MTTR



Graphical overview on MTBF



Report: Unexpected Outages

Highest number of unexpected outages report

Domain name: FECluster

Time Interval: Mar 2, 2008 12:00 AM - Apr 1, 2008 11:59 PM

Active policy at report generation: Policy 1 **Active since:** Apr 1, 2008 5:56 PM

Resource selection limited to: IBM.Application

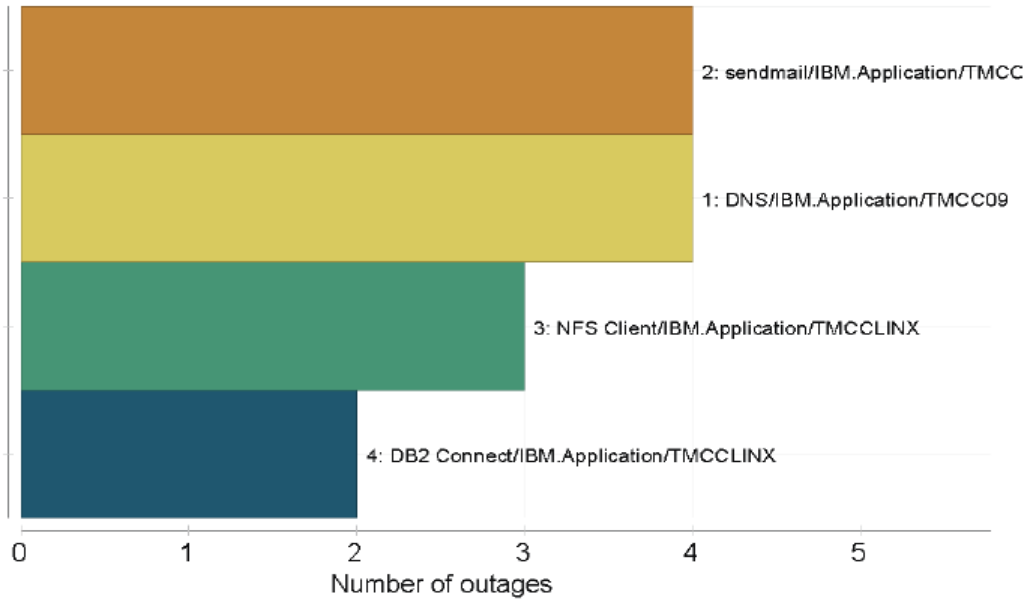
Resources with highest number of unexpected outages - Tabluar overview

	Resource (Name/Class/Node)	Number of outages
1	DNS/IBM.Application/TMCC09	4
2	sendmail/IBM.Application/TMCCLINX2	4

	Resource (Name/Class/Node)	Number of outages
3	NFS Client/IBM.Application/TMCCLINX	3
4	DB2 Connect/IBM.Application/TMCCLINX	2

Report: Unexpected Outages

Toplist of resources with the highest number of unexpected outages



Resources with highest number of unexpected outages - Tabluar overview

	Resource (Name/Class/Node)	Number of outages
1	DNS/IBM.Application/TMCC09	4
2	sendmail/IBM.Application/TMCCLINX2	4
3	NFS Client/IBM.Application/TMCCLINX	3
4	DB2 Connect/IBM.Application/TMCCLINX	2

Report: Longest Startup / Shutdown

Tivoli

IBM

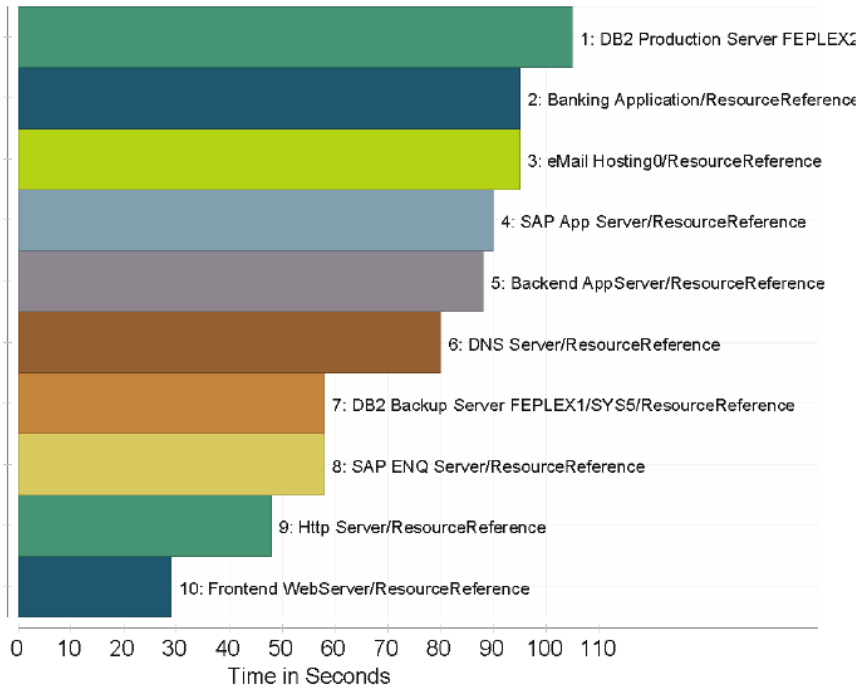
Longest Startup and Shutdown Times Report

Domain name:	FriendlyE2E		
Time Interval:	Mar 2, 2008 12:00 AM - Apr 1, 2008 11:59 PM		
Active policy at report generation:	Policy 1	**Active since:**	Apr 1, 2008 5:53 PM
Resource selection limited to:	ResourceReference		
Number of displayed resources:	10		

Report: Longest Startup / Shutdown

Startup times

Resources with the longest average startup times



Resources with the longest startup times - overview

	Resource (Name/ Class/Node)	Minimum	Maximum	Average	Number of startups
1	DB2 Production Server FEPLEX2/ SYS1/ ResourceReference	1min 39sec	1min 53sec	1min 45sec	5
2	Banking Application/ ResourceReference	1min 24sec	1min 43sec	1min 35sec	9
3	eMail Hosting0/ ResourceReference	1min 27sec	1min 43sec	1min 35sec	7
4	SAP App Server/ ResourceReference	1min 24sec	1min 38sec	1min 30sec	8
5	Backend AppServer/ ResourceReference	1min 21sec	1min 40sec	1min 28sec	9
6	DNS Server/ ResourceReference	1min 13sec	1min 27sec	1min 20sec	4
7	DB2 Backup Server FEPLEX1/SYS5/ ResourceReference	58sec	58sec	58sec	1
8	SAP ENQ Server/ ResourceReference	51sec	1min 5sec	58sec	5
9	Http Server/ ResourceReference	45sec	54sec	48sec	3
10	Frontend WebServer /ResourceReference	27sec	32sec	29sec	3

Report: Startup / Shutdown for Resource Group

Startup and Shutdown Times for a selected resource Report

Domain name: FriendlyE2E

Resource Name DB2 Production Server FEPLEX2/SYS1

Time Interval: Mar 2, 2008 12:00 AM - Apr 1, 2008 11:59 PM

Active policy at report generation: Policy 1 **Active since:** Apr 1, 2008 5:55 PM

Displayed graph depth: All

Summary

Cumulative startup time (including dependencies)		**Group startup time**		**Observed startup time**	
Minimum	3min 2sec	Minimum	3min 2sec	Minimum	43sec
Maximum	3min 28sec	Maximum	3min 28sec	Maximum	43sec
Average	3min 20sec	Average	3min 20sec	Average	43sec

Cumulative shutdown time (including dependencies)		**Group shutdown time**		**Observed shutdown time**	
Minimum	3min 53sec	Minimum	3min 53sec	Minimum	1min 29sec
Maximum	4min 47sec	Maximum	4min 47sec	Maximum	1min 47sec
Average	4min 20sec	Average	4min 20sec	Average	1min 38sec

Report: Startup / Shutdown for Resource Group

BACK

	Cumulative startup time (including dependencies)			Startup time			
Resource Name	Minimum	Maximum	Average	Minimum	Maximum	Average	Number of startups
DB2 Production Server FEPLEX2/SYS1	3min 2sec	3min 28sec	3min 20sec	3min 2sec	3min 28sec	3min 20sec	Not applicable
FEPLEX2: DB2/APG/ SYS1	3min 2sec	3min 28sec	3min 20sec	1min 30sec	1min 49sec	1min 43sec	Not applicable
FEPLEX2: Z_OS_BASE /APG/SYS1	1min 32sec	1min 39sec	1min 37sec	1min 32sec	1min 39sec	1min 37sec	Not applicable
FEPLEX2: DB2MSTR/ APL/SYS1	1min 30sec	1min 49sec	1min 43sec	1min 30sec	1min 49sec	1min 43sec	6
FEPLEX2: DBM1/APL/ SYS1	44sec	1min 3sec	51sec	44sec	1min 3sec	51sec	5
FEPLEX2: DIST/APL/ SYS1	1min 1sec	1min 20sec	1min 12sec	1min 1sec	1min 20sec	1min 12sec	3
FEPLEX2: IRLM/APL/ SYS1	1min 30sec	1min 46sec	1min 35sec	1min 30sec	1min 46sec	1min 35sec	5
FEPLEX2: SPAS/APL/ SYS1	55sec	1min 14sec	1min 5sec	55sec	1min 14sec	1min 5sec	8
FEPLEX2: JES/APL/ SYS1	27sec	45sec	36sec	27sec	45sec	36sec	7
FEPLEX2: LLA/APL/ SYS1	40sec	44sec	42sec	40sec	44sec	42sec	2