



Introduction to Change Management

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Discussion Topics

- Why change management and its significance
- Types of changes in production environment
- Change management policies/procedures
- Change Management Controls
- Commonly adopted Change Management tools/packages
- Impact of weak Change Management Control
- Integrity Management
- Change Management Best Practices

Why Change Management and its significance?

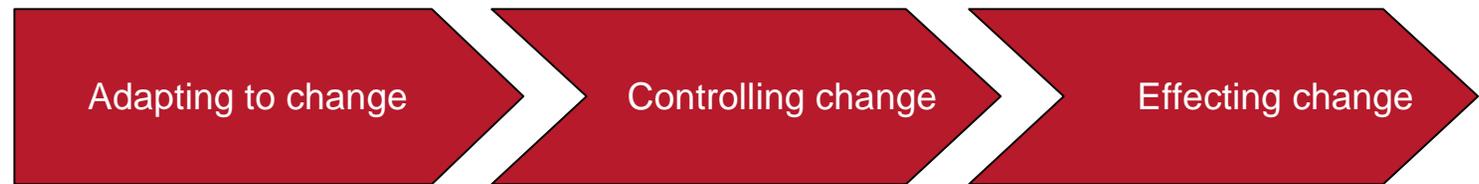
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Why Change Management and its significance?

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- Change management – it is significant because it helps an organization by efficiently
 - Adapting to change
 - Controlling change
 - Effecting change



Types of Changes

Changes in Production Environment

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- OS changes (Host)
- Network changes (hardware/Software)
- Application changes (database)
- Physical access changes
- Logical access changes

Types of Changes

OS changes (Host)

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- **Applying OS patches**
 - OS vendor recommendation
 - Opening/closing OS services
- **Re-imaging**
 - As a backup plan when an OS update didn't go as planned
 - As part of major/minor/emergency application changes

Types of Changes

Network Changes

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- **Software changes**
 - Deploying network equipment's OS
 - Patching network equipment's OS
- **Configuration Changes**
 - Updating firewall, router, switches etc configuration
- **Hardware changes**
 - Adding/removing of network equipments

Types of Changes

Application Changes

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- **Company specific application change**

- Major, minor, and emergency changes

- **Database changes**

- Schema changes
 - Database upgrades (version upgrade)

Types of Changes

Physical Access Change

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- **High level physical access to datacenter**

- Deter an authorized personnel from gaining root level access through a system consol
- In an event where a terminated employee's logical access is still active
- In an event when a temporary physical access to production systems is not deactivated

Types of Changes

Logical Access Change

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- **OS Access Change** - privileged access to Production/mission critical server
- **Application Access Change** - Privileged access to Production/mission critical application
- **Network Access Change** - Privileged access to network equipment

Change management policies/ procedures

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• What is Change Management policy/ procedure

- It is the process of planning, organizing, controlling, executing and monitoring changes that affect the delivery of IT services.
- It encompasses additions, modifications and deletions to that environment
 - Types of changes: systems, network, processes, and environmental facilities.

Change management policies/ procedures

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- **Change Management process goals**

- It ensures that standardized methods and procedures are used for efficient and prompt handling of all Changes,
- It minimizes the impact of Change-related incidents upon service quality, and consequently to improve the day-to-day operations of the organization.

Change management policies/ procedures

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- **Change Management policies/ procedures benefits**

- Better align IT services to business requirements
- Increase visibility and communication of Changes to both business and service-support staff
- Improve risk assessment
- Better assess the cost of proposed changes before they are incurred
- Reduce adverse impact of changes on the quality of services and on Service Level Agreements

Change management policies/ procedures

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Prioritizing changes

- Amount of downtime to a system or a service
- Amount of lead time required by the change
- Type of service
- Severity of the situation requiring the change

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Categories of changes

- Routine maintenance changes – Low
 - No projected downtime of production systems
 - Approved by a unit manager
 - Applied during the standard scheduled maintenance window
 - Example: updating ACL lists in a router

Change management policies/ procedures

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- **Planned changes – Medium**

- Will result in any interruption of service
- Require prior notification of changes to appropriate constituencies
 - Example: upgrading memory

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- **Emergency changes – High**
 - Service may interrupt if the change is not made immediately
 - Be approved by management prior to implementation (verbal is accepted)
 - Have appropriate notification to constituencies before production implementation
 - Example: A server has been compromised and needs to be shut down and reconfigured to restore the security

Change management policies/ procedures

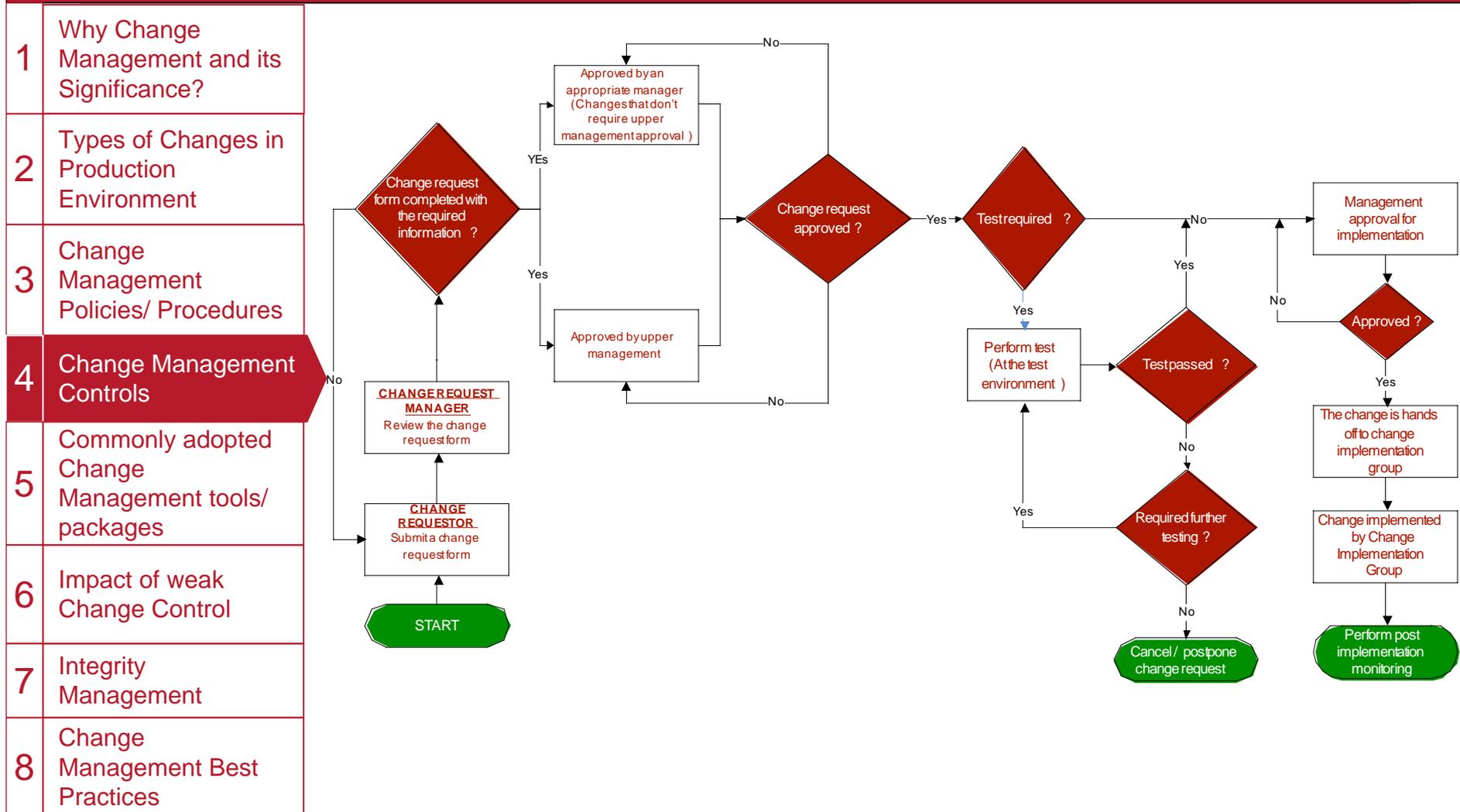
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- **System recovery – Urgent**

- The system/service is already down
- Production support staff respond to resolve the problem
 - Example: database or application has crashed.

Change Management Controls

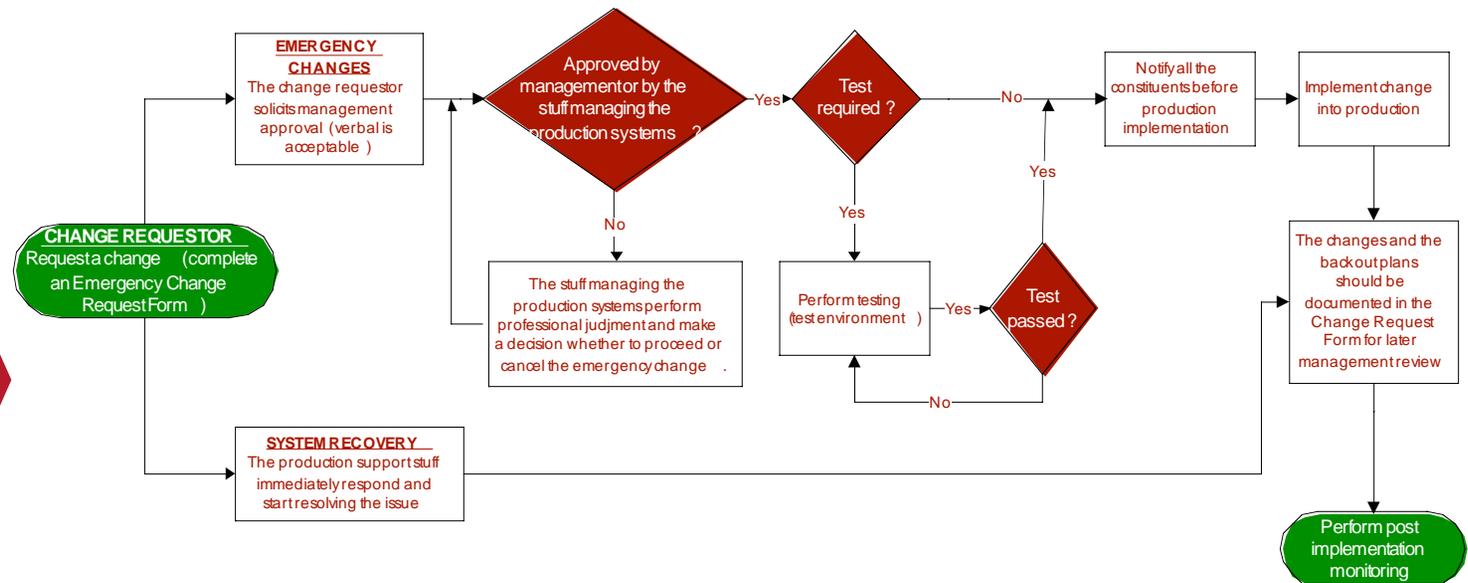
Planned/routing maintenance changes procedure and controls



Change Management Controls

Emergency/System Recovery change procedure and controls

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Commonly adopted

Change management tools/ packages

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Impact of weak Change controls

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- Potential for **system outages**
- Prone to **unplanned, unauthorized and undocumented changes**
- Unauthorized and undocumented changes
 - Causes an explained additional problems or outages
 - Causes an unplanned changes as a problem is troublesome to resolve due to the prior undocumented changes

Change Management Control – Impact of weak Change controls

1	Why Change Management and its Significance?	<ul style="list-style-type: none"> • Prone to system attack – cause denial of services • Miss use of resource <ul style="list-style-type: none"> – Unplanned work – impose monetary lose • Causes legal implication <ul style="list-style-type: none"> – Due to the exposure of sensitive customer data – Due to system unavailability to customers • Losing a customer/ business
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Integrity Management – Preventing, Detecting and responding to changes in production systems.

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• Prevention

– Restrict logical access

- Firewall, IDS, OS, and Application levels

– Restrict physical access

- Restrict physical access that houses critical systems to ONLY authorized employees
- Perform periodic physical access reviews

Integrity Management – Preventing, Detecting and responding to changes in production systems.

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• Detection

- Monitor metadata and look for a change
 - Create, store, and monitor a baseline metadata values
 - Metadata values: modification time, file size, and cryptographic checksum
- Integrity Management Software
 - Reads files or directories to monitor
 - critical network configuration, data files, customer database files, documents and spreadsheets.
 - Takes action when a violation (change) occurs

Integrity Management – Preventing, Detecting and responding to changes in production systems.

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• Recovery

- Maintain a backup copy of the production data
- Identify changes based on the Integrity Management Software report
- Determine whether a change is authorized or not
- Restore a file if the change is deemed unauthorized or malicious

Change Management Best Practices

1	Why Change Management and its Significance?	<ul style="list-style-type: none">• Change Management Policy, Procedure, and standards• Change Result Management• Change Request Management• Deployment Management• Monitor application and networks• Approval Process
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- **Change Management Policy, Procedure, and standards**

- integrated with and communicated to IT and management
- Roles and responsibilities
 - Define and designate qualified personnel's roles
 - Segregation of duties (SOD)
 - Communicate to the organization
 - Enforce throughout the change management process

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- **Result Management**

- Put a process in place to capture periodic Key Performance Indicators about the entire Change Management Process
 - Process bottlenecks, successful techniques etc
- Use the KPIs (by management) to make adjustments to the change management procedure and practices

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- **Change Request Management**

- Business and IT management perform rigorous a change request review
- Manage the change request throughout the change management life cycle.

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• Change Request Analysis

– Business Analysis

- The likelihood of success
- Significance to business
- Resources required and Business justification

– Technical Analysis

- System dependencies
- Technical requirement
- Project estimate

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- **Change Request Reporting**

- Make the change requests visible to the management
- Retain status of the change request when it is analyzed, prioritized, tested, and deployed

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• Project Management

- ‘High’ Category Changes - A team of business managers reviews change requests and prioritizes them based on business needs.
- ‘Low/Medium’ Category Changes - A team of IT personnel reviews change requests and prioritize them based on business needs.
- Managing and allocating resources for Urgent and Low/Medium change requests.

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- **Deployment Management**

- Logical environment (separate)
- Development, Test/QA, and Production
- Deployment process
 - High category changes
 - Low/Medium category changes
 - Emergency changes
- Technology leverage
 - To provide auditability and versioning throughout the deployment process

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- **Monitor application and networks**
 - Integrity checks – using automated monitoring tools
- **Approval Process**
 - Appropriate approval should be obtain between the different phases of change management process.
 - Management approval should be documented



Introduction to Change Management

Q & A