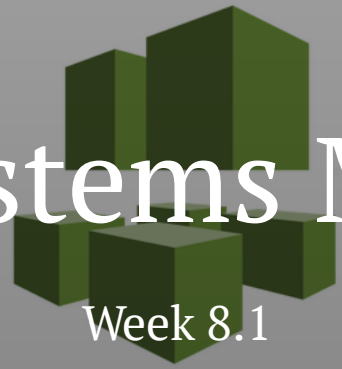
AWS Systems Manager



Week 8.1

AWS Systems Manager

What you will Learn

- Describe details about AWS Systems Manager.
- Highlight the features of AWS Systems Manager.

AWS Systems Manager

- AWS Systems Manager is a collection of capabilities to help you manage your applications and infrastructure for AWS and on-premises resources.
- Systems Manager is designed to be highly automation-focused, which enables the configuration and management of systems that run on-premises or in AWS.
- It helps with:
  - Improving visibility and control in the cloud, on-premises, and at the edge.
  - Shortening the time to detect and resolve operational issues.
  - Maintaining instance compliance against your patch, configuration, and custom policies.
  - Automating configuration and ongoing management of your applications and resources.

AWS Systems Manager Features

Systems Manager groups feature into the following categories:

- Change management.
  - Automation
  - Change Manager
  - Maintenance Windows
- Operations management.
  - Incident Manager
  - Explorer
  - OpsCenter
  - CloudWatch dashboards

AWS Systems Manager Features

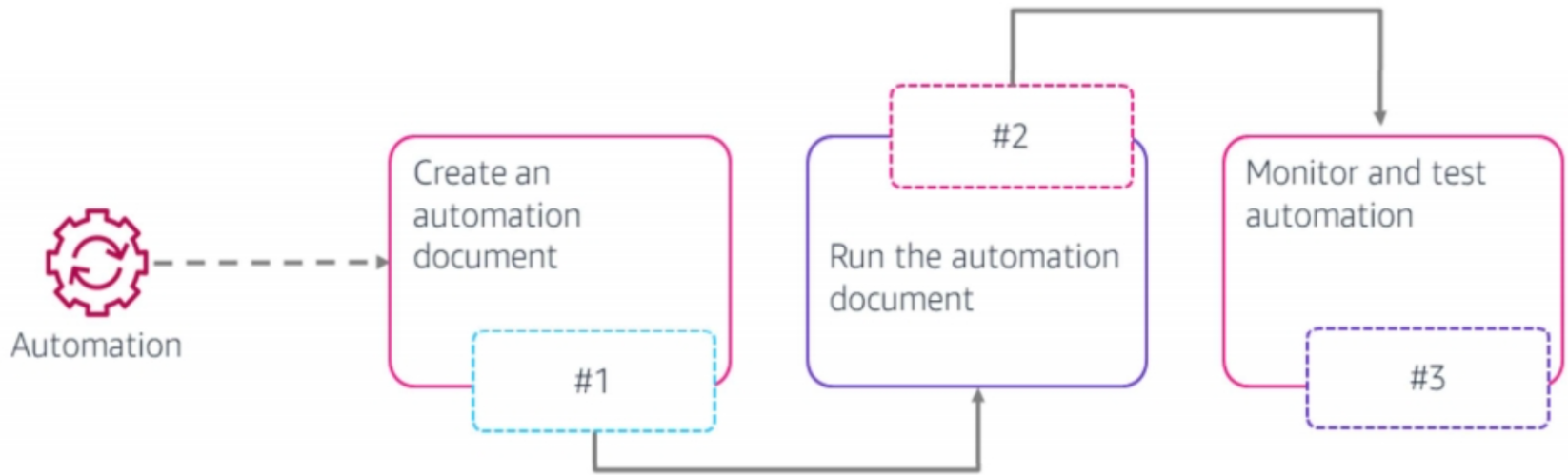
Systems Manager groups feature into the following categories:

- Application management.
  - Application Manager
  - AppConfig
  - Parameter Store
- Node management.
  - Run command
  - Session Manager
  - Patch Manager
  - State Manager
  - Inventory
- We would discuss some of these features in the next slides.

AWS Systems Manager Feature: Automation

Automation

Safely automate common and repetitive IT operations and management tasks across AWS resources.



AWS Systems Manager Feature: Automation

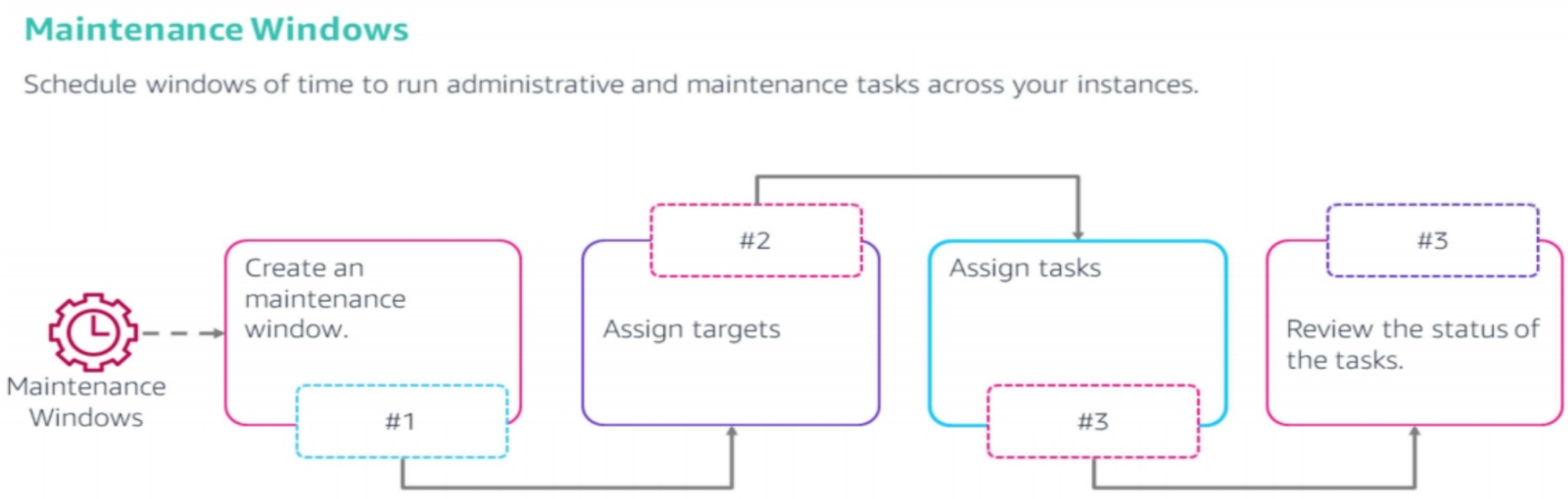
- The Automation feature in Systems Manager enables you to define common IT tasks as a collection of steps in an AWS Systems Manager document (SSM document).
- The Automation feature can then run all the document steps on an entire collection of AWS resources.
- For example, you could define automation as remediating unreachable instances or patch instances.
- Custom automation can also be authored in JavaScript Object Notation (JSON).
- Amazon CloudWatch Events can also be configured to trigger Systems Manager automation.

AWS Systems Manager Feature: Automation

A suggested approach to developing and testing a Systems Manager automation is to:

- Create an automation document — or use an existing automation template — that includes sequential steps and parameters that the Systems Manager runs.
- Run the automation by using Systems Manager, which can:
  - Launch an instance
  - Take a snapshot
  - Tag instances
  - Delete old images
  - Terminate an instance
- Monitor the automation workflow after the automation finishes, and confirm that the expected results were achieved. For example, you could launch a test instance from an AMI that was updated by a Systems Manager automation to verify that it has the expected characteristics.

AWS Systems Manager Feature: Maintenace Windows



- The Systems Manager Maintenance Windows feature enables a user to schedule regular tasks — such as patching — to run automatically.
- A user can set limits for simultaneous task runs and allowable error rates.

AWS Systems Manager Feature: Maintenace Windows

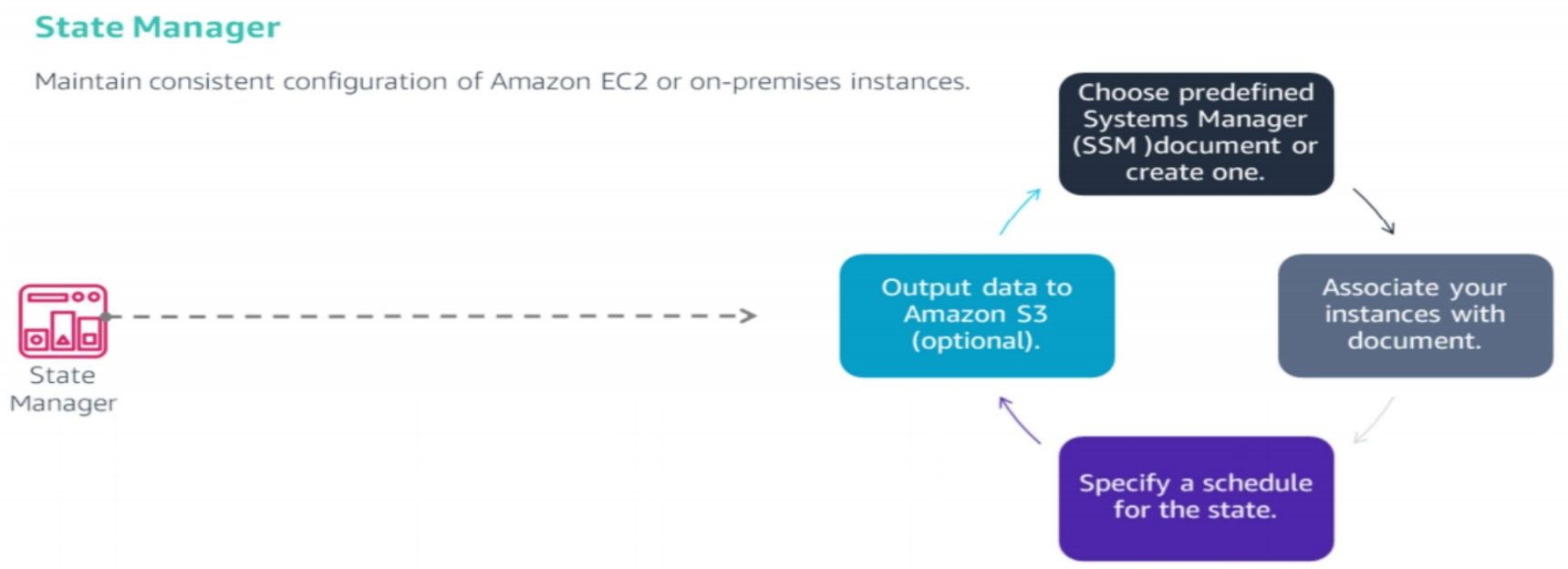
The steps to implement a Maintenance Window are:

- Create a Maintenance Window.
- Assign targets.
- Assign tasks to be run on those targets. Types of tasks that can run include:
  - Commands run by Systems Manager Run Command
  - Systems Manager Automation workflows
  - AWS Step Functions workflows
  - AWS Lambda functions
- Review the status of the tasks after the tasks are completed.

AWS Systems Manager Feature: Parameter Store

- Instead of storing sensitive data in configuration files or hardcoding them into source code, you can use the Systems Manager Parameter Store to store these parameters.
- Parameter Store provides secure, hierarchical storage for configuration data and secret management.
- You can store data such as passwords, database strings, Amazon EC2 instance IDs and Amazon Machine Image (AMI) IDs, and license codes as parameter values.
- Values can be stored as plain text or encrypted with AWS KMS.
- You can then reference values by using the unique name you specified when you created the parameter.

AWS Systems Manager Feature: State Manager



- AWS Systems Manager State Manager is a secure and scalable configuration management service that automates the process of keeping your EC2 and hybrid infrastructure in a state that you define.

AWS Systems Manager Feature: State Manager

- A managed node is any machine configured for Systems Manager.
- Systems Manager supports Amazon EC2 instances, edge devices, and on-premises servers or virtual machines (VMs), including VMs in other cloud environments.
- You can use State Manager to guarantee that your managed nodes are bootstrapped with specific software at startup, joined to a Windows domain, or patched with specific software updates.
- First, create an AWS Systems Manager (SSM) document or identify an existing one that defines the actions that Systems Manager will perform on your managed nodes.
- Next, associate your managed nodes with the SSM document. When you create the association, you define the schedule for how often to apply the configured state.
- Finally, you can choose to write the output of the commands to an Amazon S3 bucket when you create an association.

AWS Systems Manager Feature: Run Command

- Use Run Command to remotely and securely manage the configuration of your managed nodes at scale.
- It provides a simple way to run predefined commands against managed nodes.
- It simplifies making on-demand changes such as updating applications or running Linux shell scripts and Windows PowerShell commands on a target set of dozens or hundreds of managed nodes.
- A command that is run by Run Command reduces management overhead because a user can manage nodes without setting up bastion hosts or managing Secure Shell (SSH) keys and certificates.
- Through integration with AWS IAM, you can apply granular permissions to control the actions that users can perform on instances.
- All actions that are taken with Systems Manager can also be recorded by AWS CloudTrail, which enables a user to audit changes throughout their environment.

AWS Systems Manager Feature: Session Manager

- The Session Manager feature in Systems Manager enables a user to manage edge devices and EC2 instances through an interactive browser-based shell in the AWS Management Console.
- Session Manager provides secure and auditable instance management without the need to open inbound ports in the security groups, maintain bastion hosts, or manage Secure Shell (SSH) keys.
- It also makes it straightforward to comply with corporate policies that require controlled access to instances, strict security practices, and auditable logs that contain instance access details.
- These benefits can be gained while still providing access to EC2 instances to end-users.

AWS Systems Manager Feature: Patch Manager

- Use Patch Manager to automate the process of patching your managed nodes with both security-related and other types of updates.
- You can use Patch Manager to apply patches for both operating systems and applications.
- This capability allows you to scan managed nodes for missing patches and apply missing patches to large groups of managed nodes using tags.
- Patch Manager uses patch baselines, which can include rules for auto-approving patches within days of their release, and a list of approved and rejected patches.
- You can install security patches regularly by scheduling patching to run as a Systems Manager maintenance window task, or you can patch your managed nodes on demand at any time.

AWS Systems Manager Feature: Patch Manager

To use the Systems Manager Patch Manager to automate patching:

- Create a patch baseline, which contains rules that automatically approve or reject patches.
- Define a maintenance window, and group instances together for patching.
- Apply patches in the maintenance window, and reboot every instance in the patch group.
- Review the results and the details of patch compliance.

AWS Systems Manager Feature: Inventory

- The Systems Manager Inventory feature can collect inventory information about your managed nodes and the software installed on them, such as; application data, network configurations, files, updates, system properties and more.
- It provides a comprehensive understanding of the system configurations and installed applications across multiple nodes, without the need to log in to each node individually.
- The gathered data supports managing application assets, tracking licenses, monitoring file integrity, discovering applications that were not installed by a traditional installer, and more.

Key Takeaways

- Systems Manager enables you to safely automate common and repetitive IT operations and management tasks across AWS and on-premise resources.
- Systems Manager provides a suite of features that help automate operational tasks across AWS and on-premises resources.
- Patch Manager and Maintenance Window features could be used to apply operating system patches based on a predefined schedule.