Cloud services and orchestration

Upon completion of this module, you should be able to:

- Explain cloud services and its functions
- Explain cloud service catalog and portal
- Explain cloud interfaces
- Explain cloud service lifecycle
- Describe cloud automations and its functions
- Describe service orchestration

Cloud services

This lesson covers the following topics:

- Cloud services and its functions
- Service catalog and its elements
- Service ordering
- Cloud interfaces
- Cloud portal
- Cloud service lifecycle

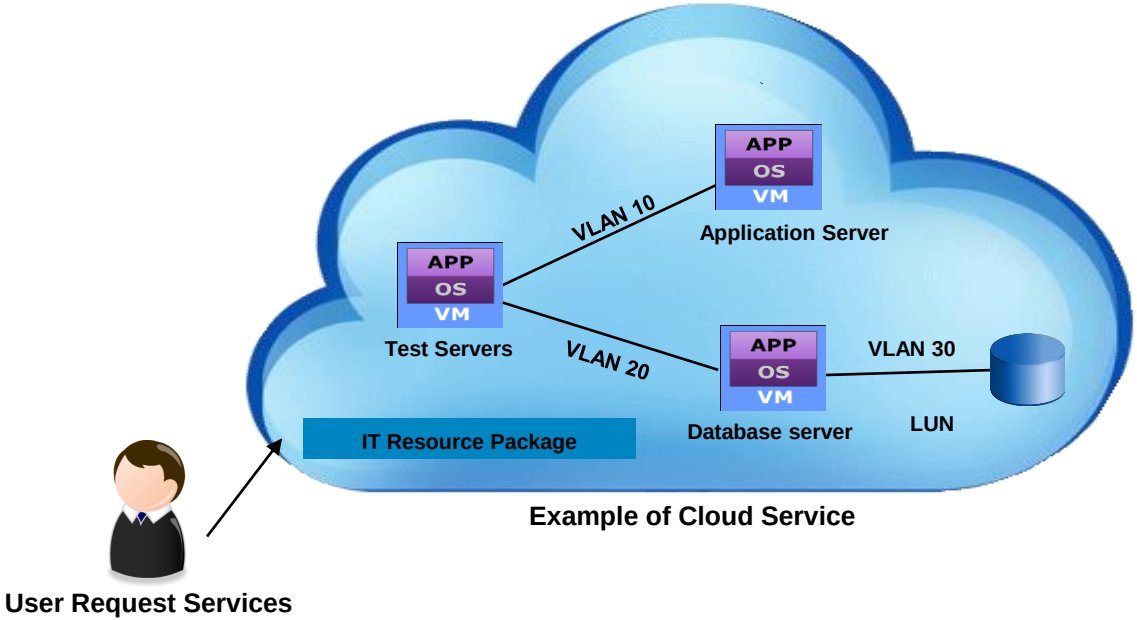
Introduction video: Transforming IT into cloud service provider

To access the video, please click the below link

https://edutube.emc.com/Player.aspx?vno=x2vado2wR+qK3TlKOOtFQg==&autoplay=true&t=0h0m0s

Cloud service - Introduction

Cloud services are pack of IT resources made available to the cloud consumer by the cloud service provider.



Example of Cloud Service

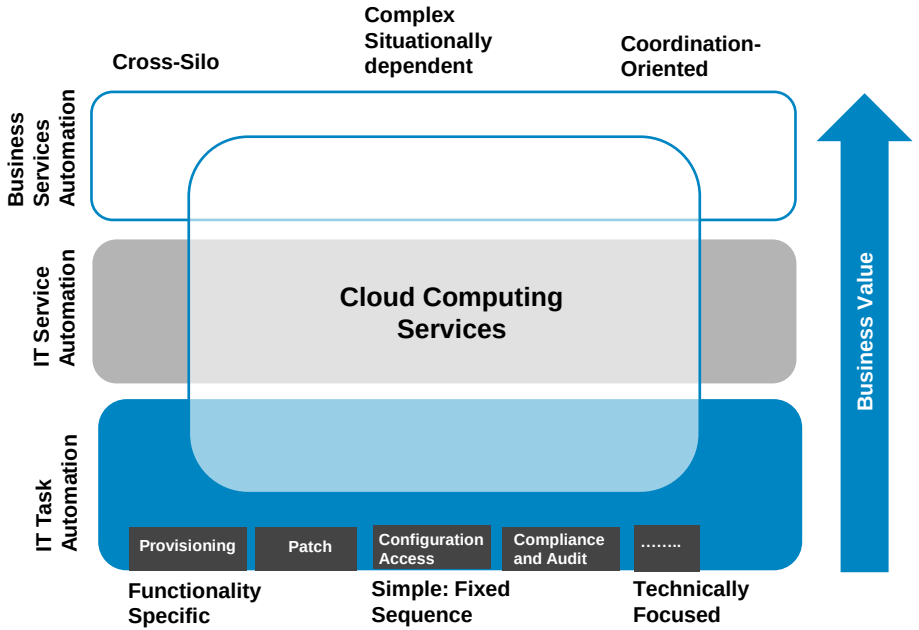
Example:
In IaaS, a service provider supplies the virtual servers, Virtual LAN, and storage for deploying test environment

Cloud service - Introduction (Cont'd)

Cloud computing deployment should begin with service definition

Steps targeted to achieve business outcomes

- Identify IT services that you offer or procure
- Document the internal processes
- Map the workloads to the associated cloud services



Source: Gartner - Aug 2017

Key functions of cloud service component

- Enables defining services in a service catalog
- Enable on-demand self-service provisioning of services
- Presents cloud interfaces to consume services

Cloud Services

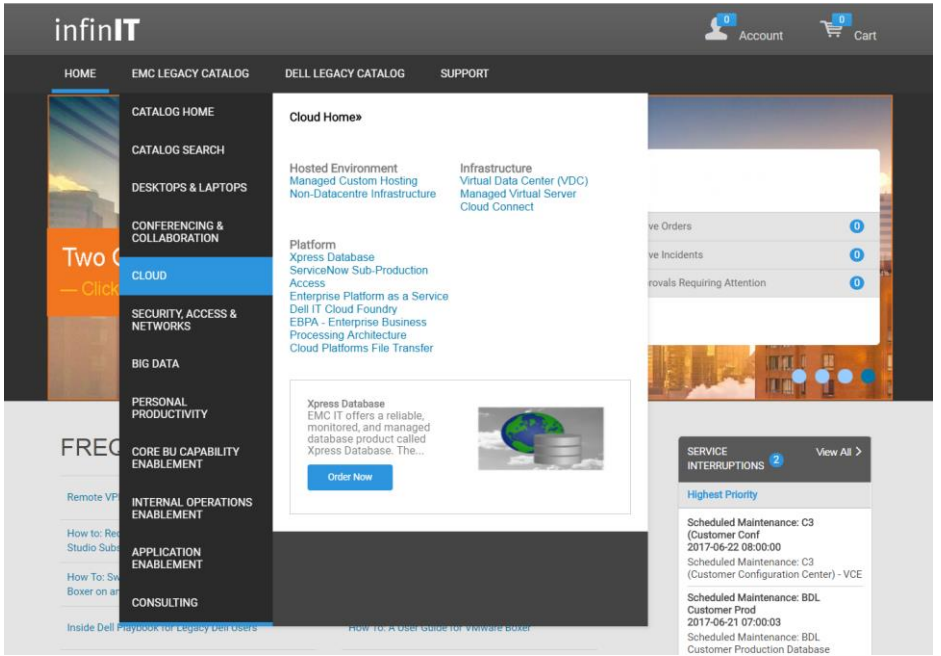
Service catalog

Menu of services that lists services, attributes of services, service level commitments, terms and conditions for service provisioning, and prices of services.

Service providers define services in a catalog

For example:

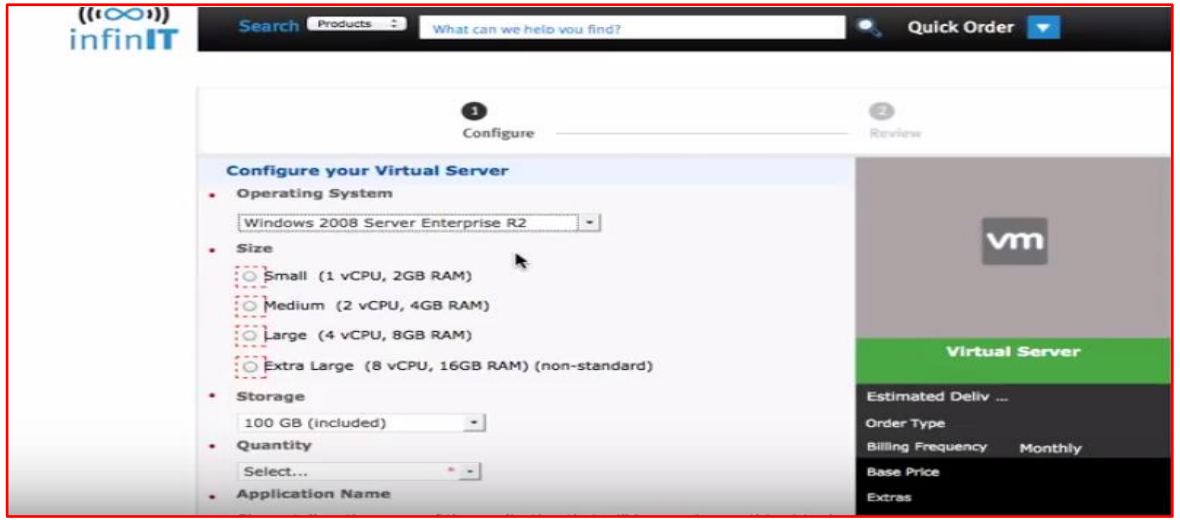
VM, and Storage



Example: DELL EMC Cloud Service Catalog

Service ordering

Choose a Service from a Service Catalog → Select suitable attributes of the service → Agree to Contract Terms and Submit the Form



Example : Web Form for Ordering VM

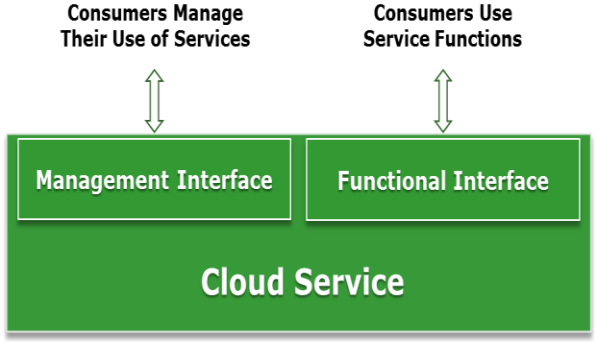
Service catalog - demo video

To access the video, please click the below link

https://edutube.emc.com/Player.aspx?vno=huo+MObUdvYllp5jPJLWsQ==&autoplay=true&t=0h0m0s

Cloud service interfaces

- Enable computing activities and administration of rented service instance
- Types of cloud Interface
  1. Management
  2. Functional
- Cloud services are accessed using web services which are primarily based on:
  1. REST
  2. SOAP

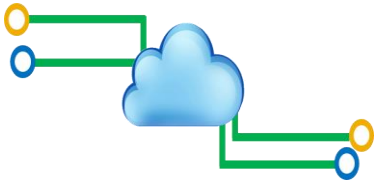


Source: NIST SP 500-291

	IaaS Functions	PaaS Functions	SaaS Functions
Management	• Start, stop, and configure VMs • Add storage volumes of specific size	• Add, configure, and delete database • Modify infrastructure resources that are available to applications and database	• Add new users • Change user roles and permissions
Functional	• Specifics of hardware, such as processors, memory, network adapters, and storage volumes	• Integrated development environment (IDE) that consists of programming interface, libraries, and tools • Development environment offering software development kit (SDK)	• Graphical user interface (GUI) of a business application

Cloud portal

A web portal that presents service catalog and cloud interfaces, enabling consumers to order and manage cloud services



Created using Portal software

- Hosted on one or more portal servers
- Enable providers to design and publish cloud portals
- User may use URL of cloud to log on

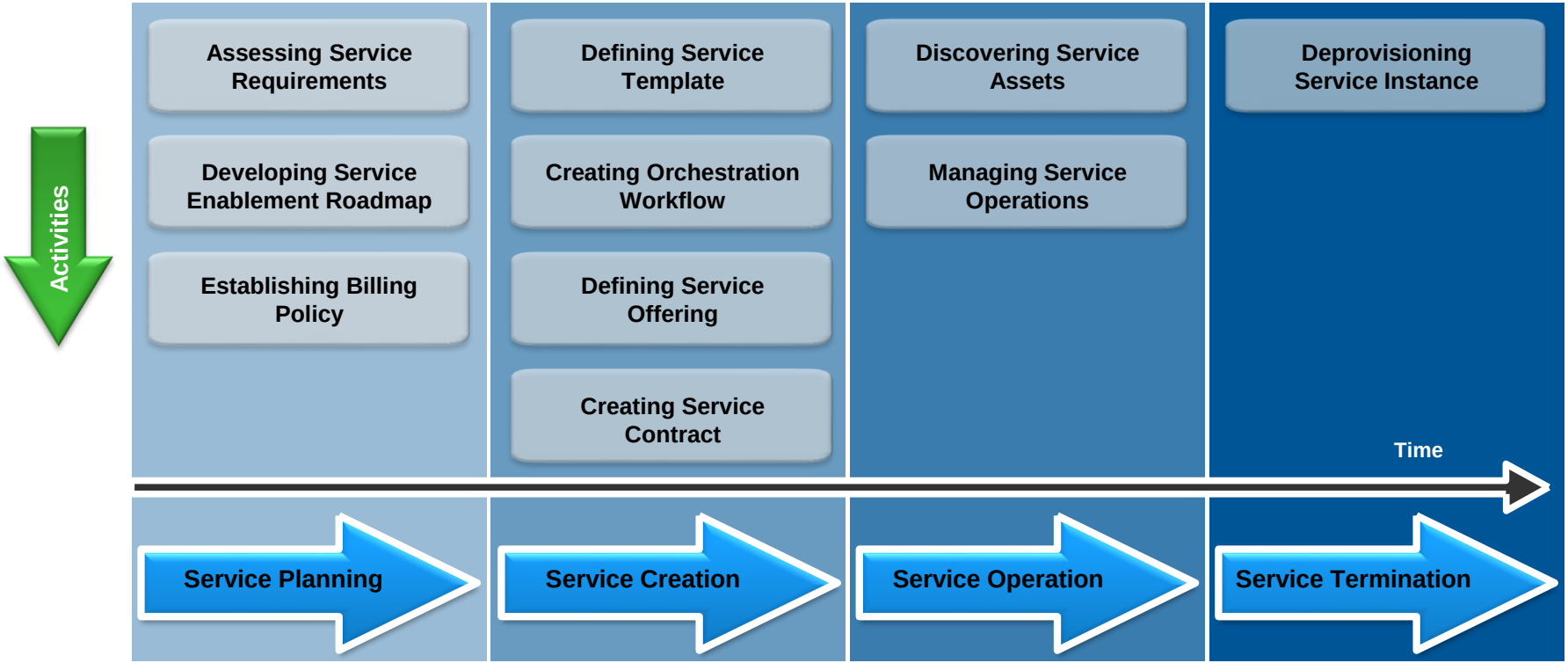
Cloud portal has two key functions

- Presentation
- Interaction with orchestration layer

Common elements of the Cloud portal

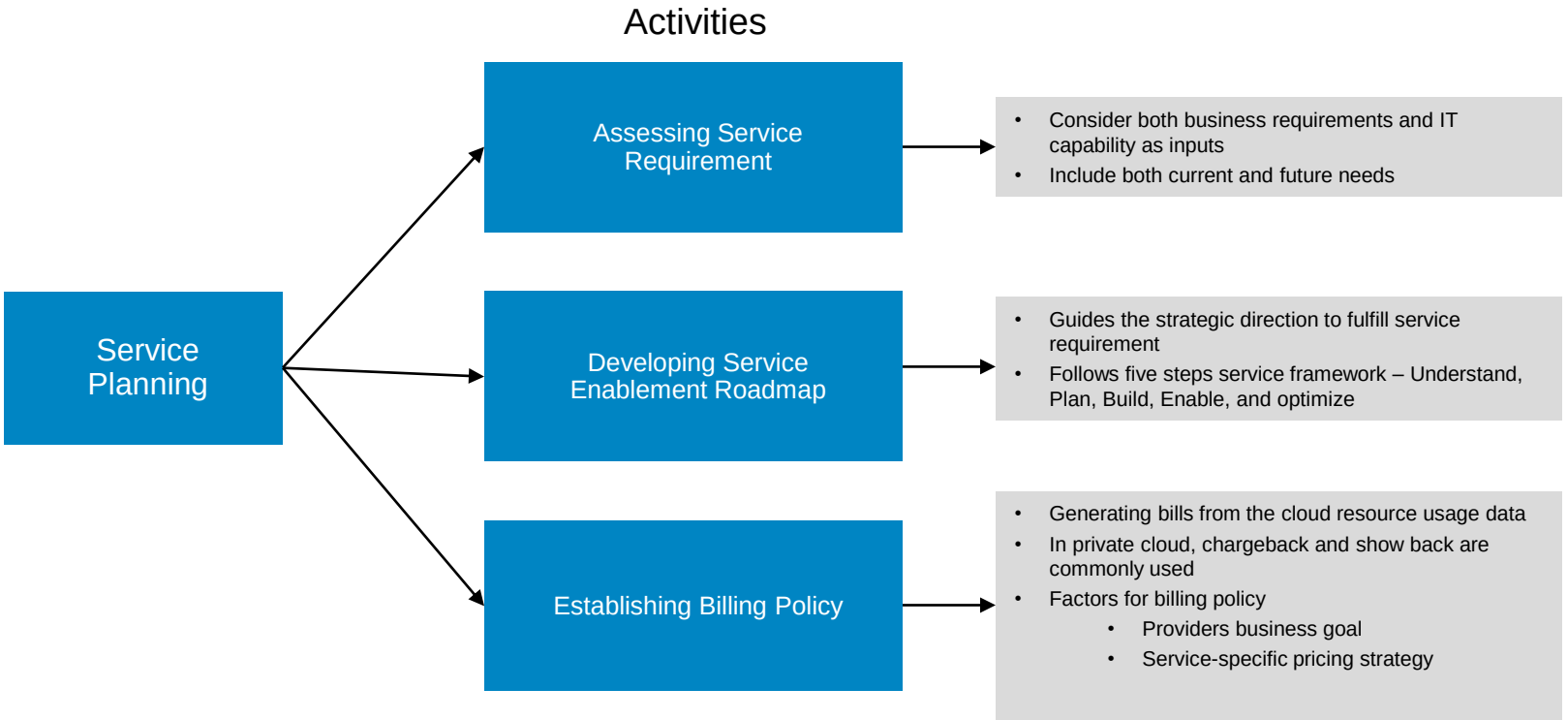
- Service catalog
- Management Interface
- Link to functional interface

Cloud service lifecycle



Phase 1: Service planning

It Involves making business case decisions for cloud service offering portfolio



Phase 2: Service creation

It involves defining services in the service catalog and creating workflows for the service orchestration

Common activities during service creation:

Defining Service Template

- Resources are allocated, configured, and integrated as per service template to create an instance of a service
- Provides standard to create predictable service instances
- Defined in service catalog

Creating Orchestration Template

- Workflow for service orchestration are created based on service template specification
- Workflows enable automated allocation, configuration, and integration of resources

Phase 2: Service creation (Cont'd)

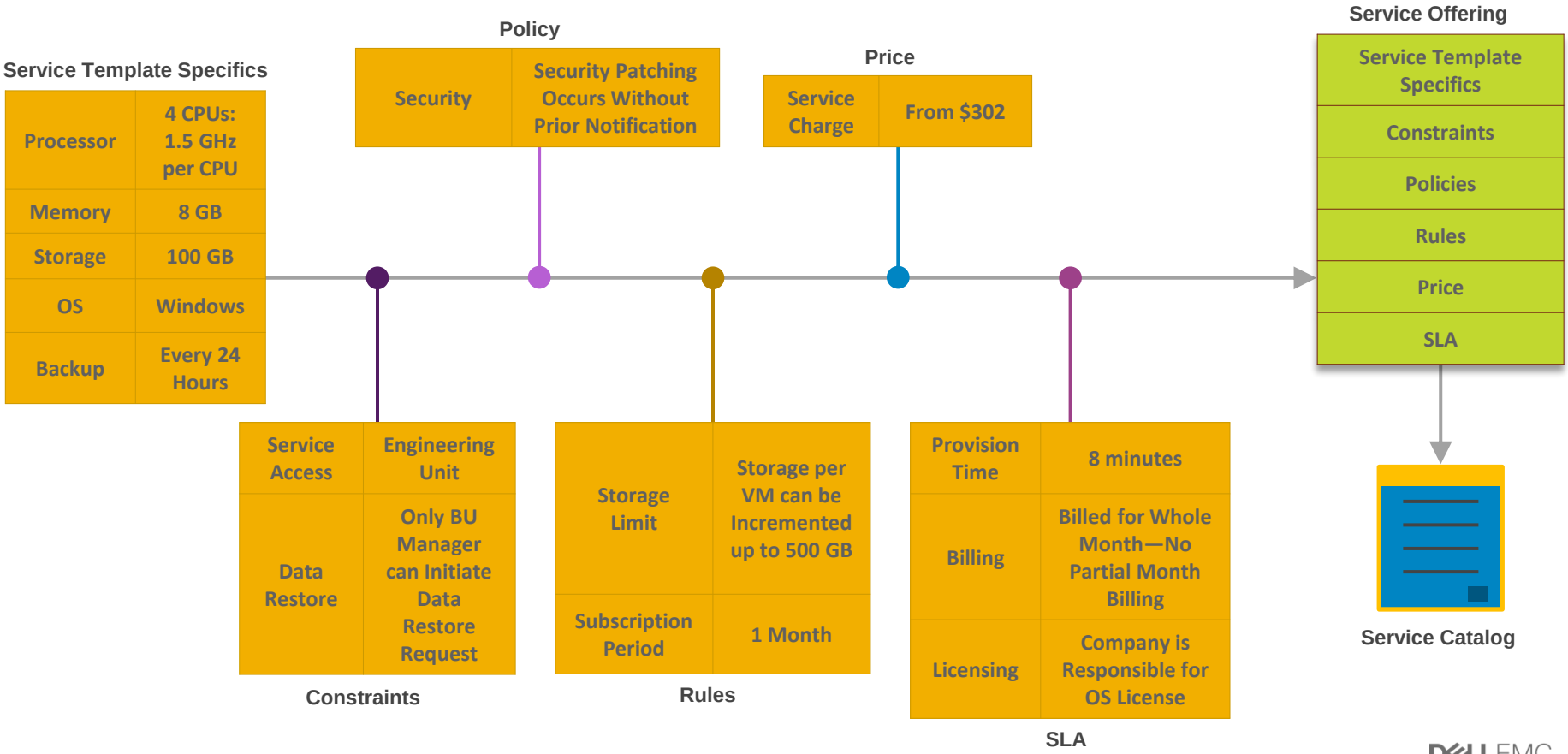
Defining Service Offering

- An entry in the service catalog that describes a service template combined with constraints, policies, rules, price, and SLA
- SLA – A contract between the cloud service provider and the cloud consumer that defines the service levels

Creating Service Contract

- Agreement between the service provider and consumer
- Service contract describes terms and conditions for using a service
- Must be established with the provider while ordering a service

Service offering: Examples



Phase 3: Service operation

It involves ongoing management operations to maintain cloud infrastructure and deployed services

Common activities during service operation:

Discovering Service Assets

- Discovery provides visibility into each service asset
- Discovery enables monitoring cloud infrastructure resources centrally
- Discovery is performed using specialized tool
- Discovery tool commonly interacts with service assets through APIs

Managing Service Operations

- Involves service-related operations across cloud infrastructure
- Ensures and restores service levels while continuously optimizing management operations
- Key management operations are monitoring and reporting, provisioning, and troubleshooting
- Automating service operations as much as possible is a key goal

Phase 4: Service termination

Service termination deals with the end of the relationship between the cloud service provider and cloud service consumer.

Service Provider

- Service providers no longer offer a service
- Common reasons to terminate:
  - Business circumstances
  - Disaster at premise
  - Violation of contract or SLA
  - Resource upgradation - Hardware or software

Consumer

- Terminated easily and quickly through the cloud portal
- Common reasons for terminate
  - Business circumstances
  - Service requirements are temporary
  - Performance not acceptable to the customer

Service automation

This lesson covers the following topics:

- What is the service automation?
- Challenges of traditional service management
- Benefits of service automation
- Scope of the service automation

Service automation: Demo

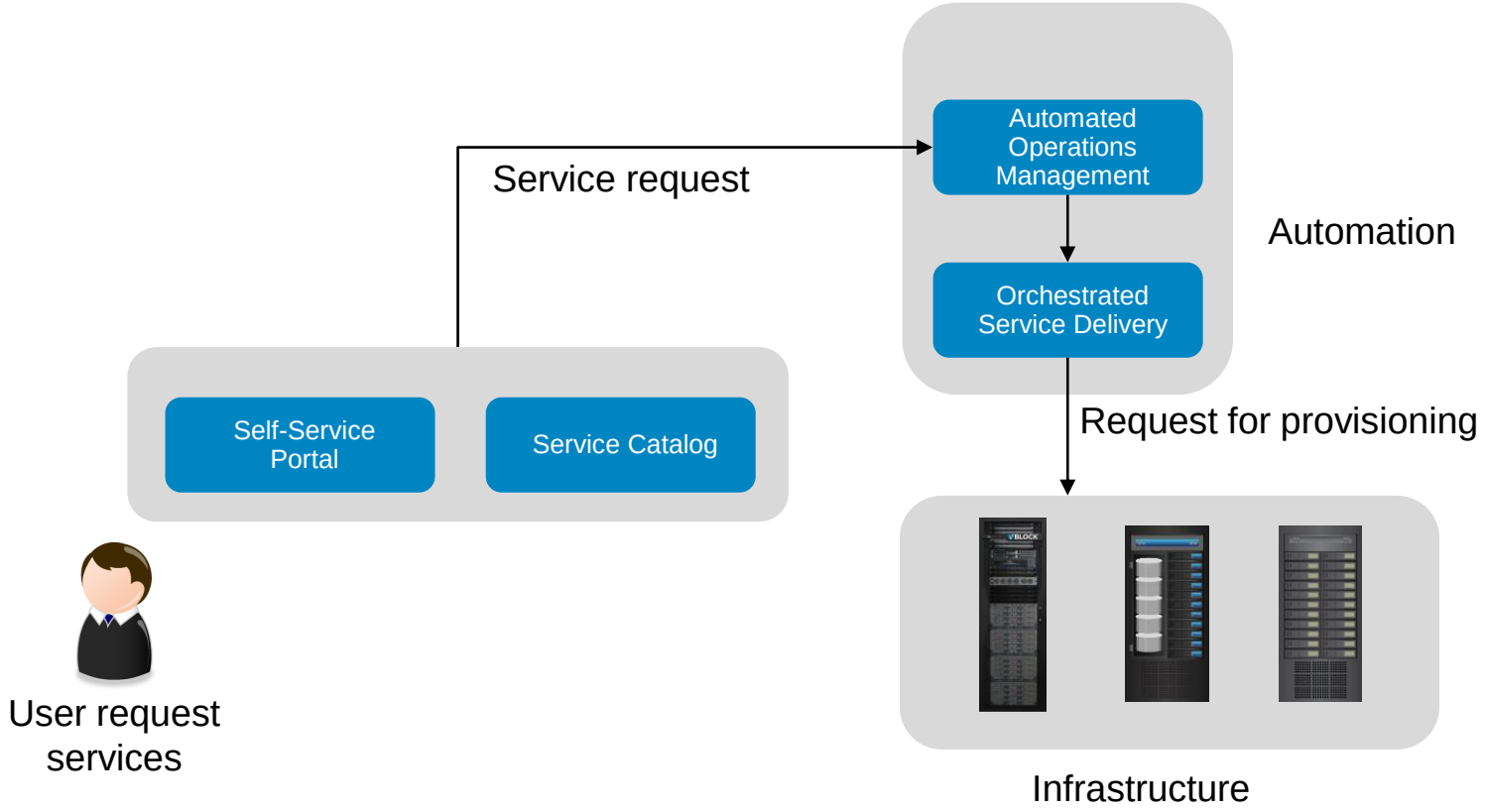
To access the video, please click the below link

https://edutube.emc.com/Player.aspx?vno=Y0XURCZdEEM+GiEknKHq/g==&autoplay=true&t=0h0m0s

Challenges of traditional service management

- Does not offer necessary services in required time frame
- Asset specific management
- Complex for large and multivendor environment
- Management processes are implemented separately from service design
- Capex is high for resource management
- May not support service-oriented infrastructure

What is service automation?



Automation of operations management

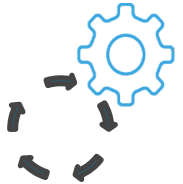
Key automated operations management processes are:

Monitoring

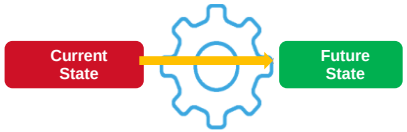
Availability Management

Configuration Management

Incident Management



Change Management

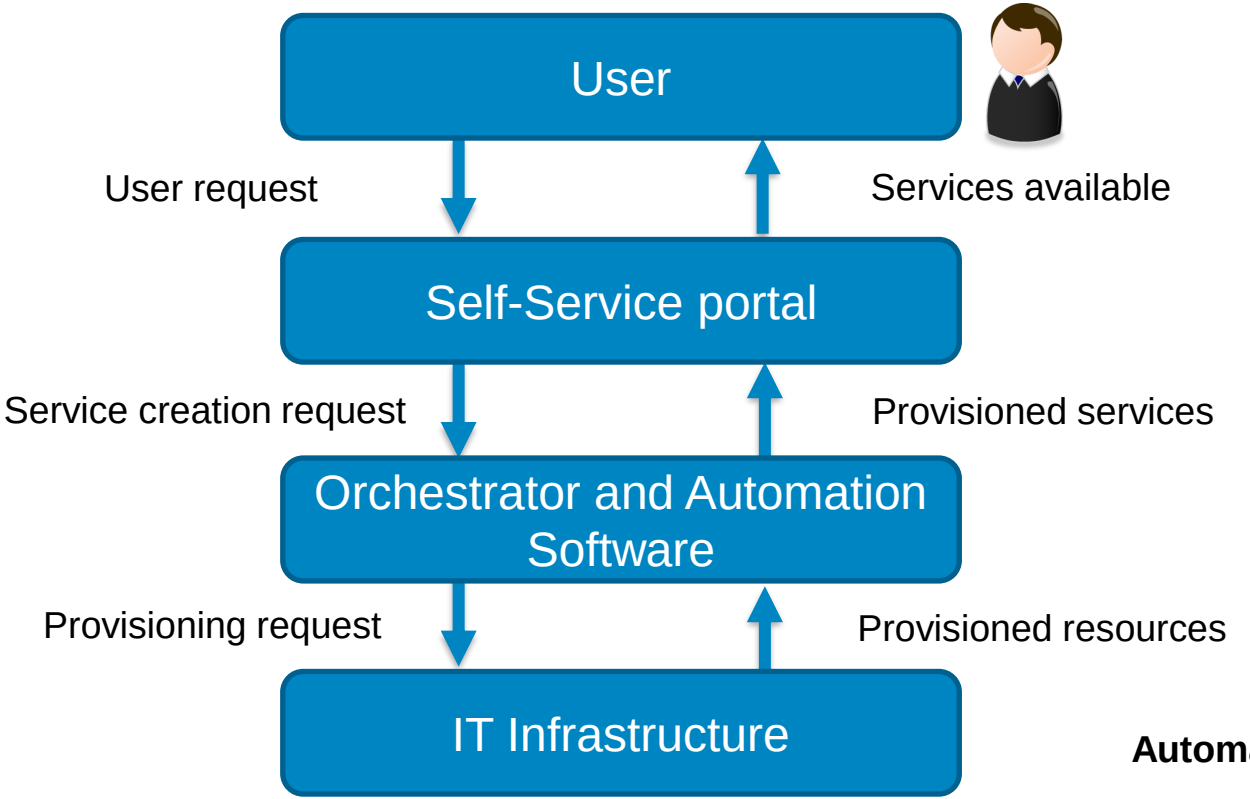


Problem Management

Performance Management

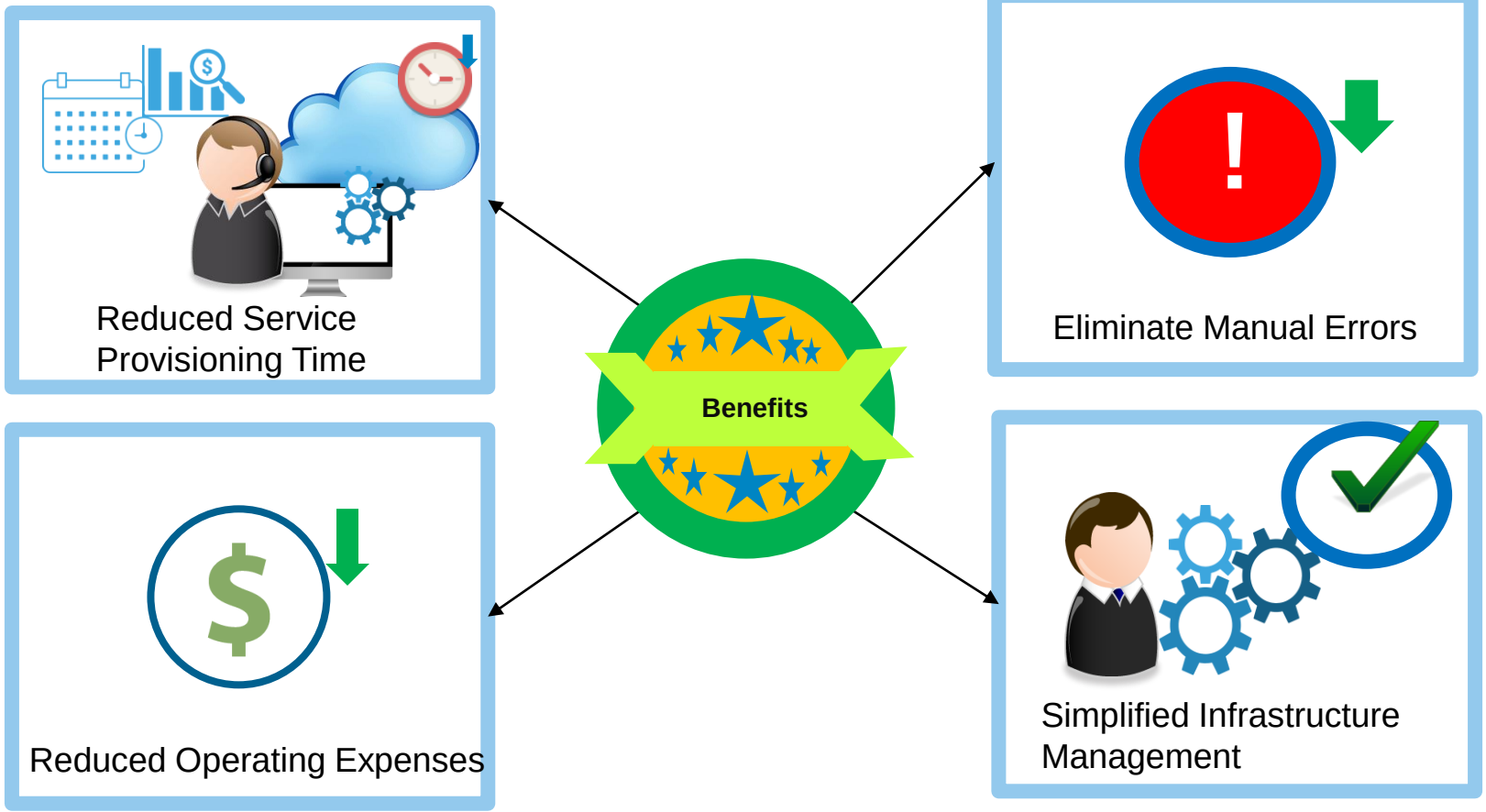
Security Management

Orchestration of service delivery



Example:
Automating the password request

Service automation: Key benefits



Orchestration

This lesson covers the following topics:

- Orchestration Software or Orchestrator
- System Integration using Orchestration software
- Application Programming Interface
- Workflow Modeling
- Orchestration use cases

Why service orchestration?

Business across the world are adopting the cloud orchestration to speed up their infrastructure deployment and provisioning

30%

Already implemented cloud orchestration

51%

Planning to use it within next 12 months

Cloud orchestration market is expected to reach

14$

Billion dollars in 2021

Orchestrator


Orchestration

Enables automated arrangement, coordination, and management of various system or component functions in a cloud infrastructure to provide and manage cloud services.

Programmatically integrates and sequences various system functions into automated workflow

Provides a library of predefined workflows and an interface to create user-defined workflows

Connection of multiple system or component functions into a workflow to provide and manage services

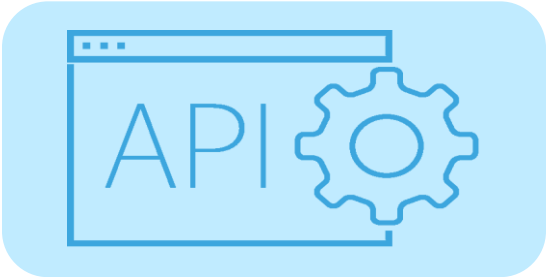
Orchestrator enables defining workflows to logically integrate system functions

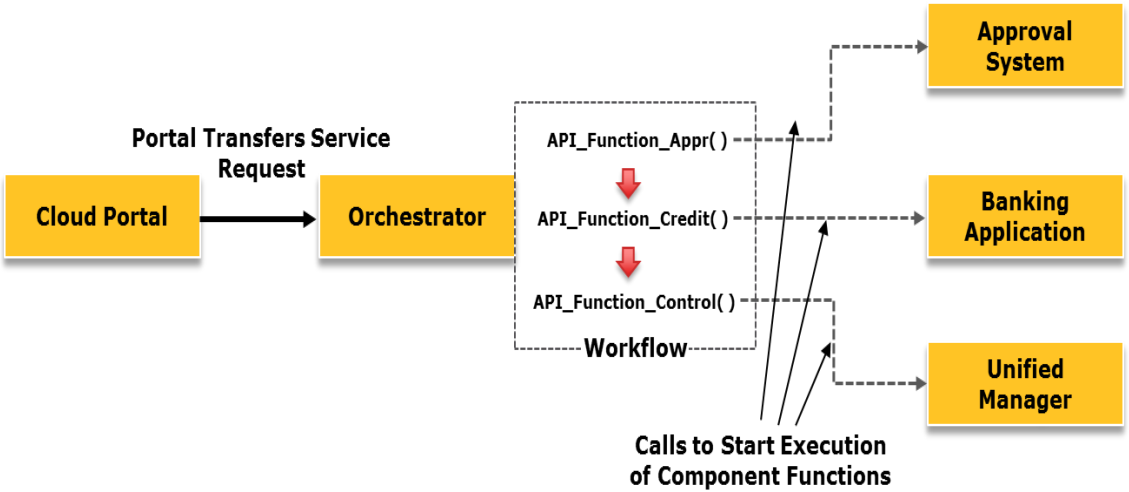
Example

A deployment of an application in the cloud environment might include automated provisioning and configuration of the multiple servers, storage, databases, and networking

Application programming interface(API)

A Source-code-based specification intended to be used by software components as an interface to communicate with each other.



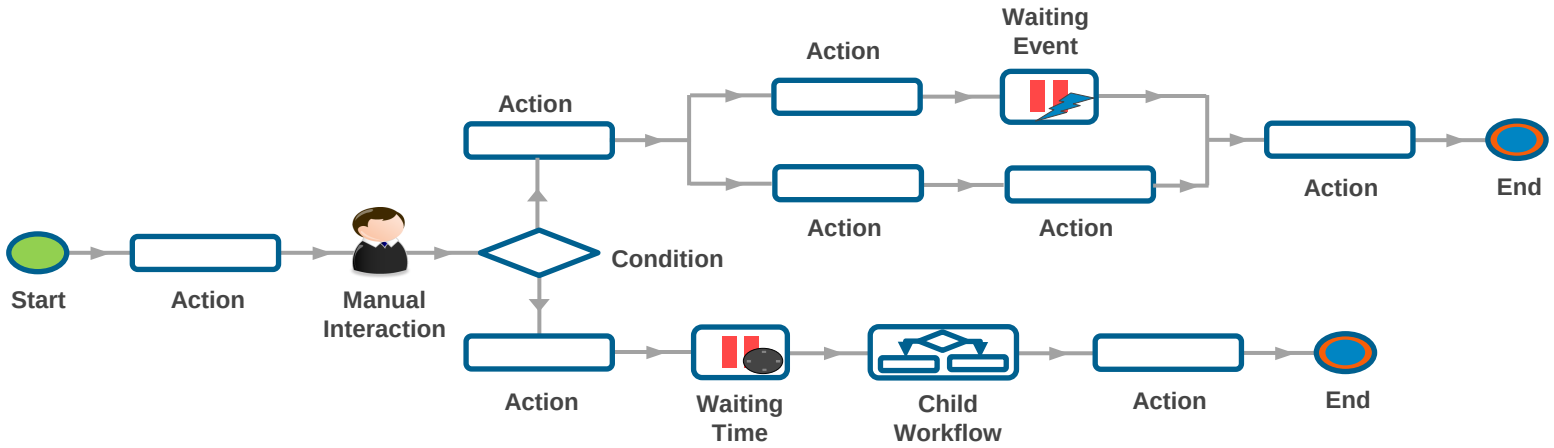


Example: Credit Card Transaction

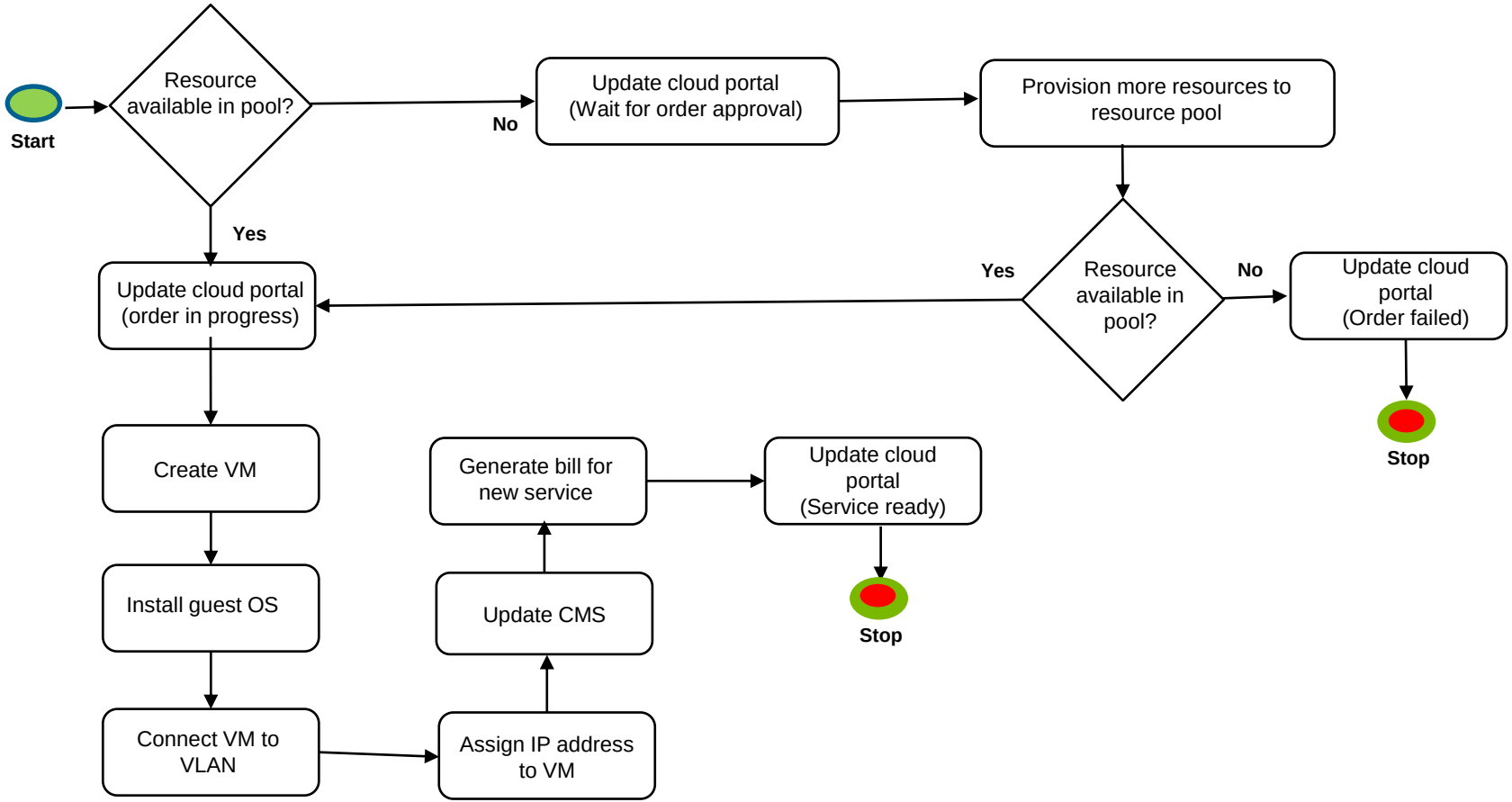
Orchestrator uses the API send the request to an approval system that validates the service request to start execution of component function.

Workflow modeling

- Orchestrators commonly provide interfaces to model workflows
- Common elements in workflows are: Start, Action, Manual interaction, Condition, Waiting time, Waiting event, Child workflow, End.



Orchestration use case: Provisioning virtual machine



Concepts in practice

- VMware vRealize Orchestrator
- VMware vRealize Automation

Concepts in practice

vRealize Orchestrator

- A drag-and-drop workflow software that simplifies the automation of complex IT tasks.
- Enables cloud administrators to:
  - Use predefined workflows from built-in library
  - Create customized workflows by linking actions together
- Can execute hundreds or thousands of workflows concurrently
- Can be installed as a virtual appliance or on a Windows, Linux, or Mac OS.

vRealize Automation

- An automation software that empowers IT to accelerate the provisioning and delivery of IT services.
- Integrates with VMware vCloud suite components to adapt and extend service delivery and operational management
- Enables IT team to remove process inefficiencies through the use of end-to-end automation that helps IT better serve DevOps teams
- Key benefits are: agility, extensibility, control choice for developers and complete life cycle management.

Customer success story: VMware vRealize Automation

To access the video, please click the below link

https://edutube.emc.com/Player.aspx?vno=eXEQEaymLQ/auOdudSlNSQ==&autoplay=true&t=0h0m0s

Summary

Key points covered in this module:

- Cloud services and its functions
- Cloud services catalog and portal
- Cloud interfaces
- Cloud service lifecycle
- Cloud automations and its functions
- Service orchestration