Cloud Computing Reference Architecture(CCRA)-IBM

Unit objectives

After completing this unit, you should be able to:

- Learn the concept of IBM CCRA and its roles
- Gain an insight into cloud service model
- Gain knowledge on adoption pattern
- Understand the concept of IBM Cloud Computing Reference Architecture (CCRA 3.0)

IBM CCRA

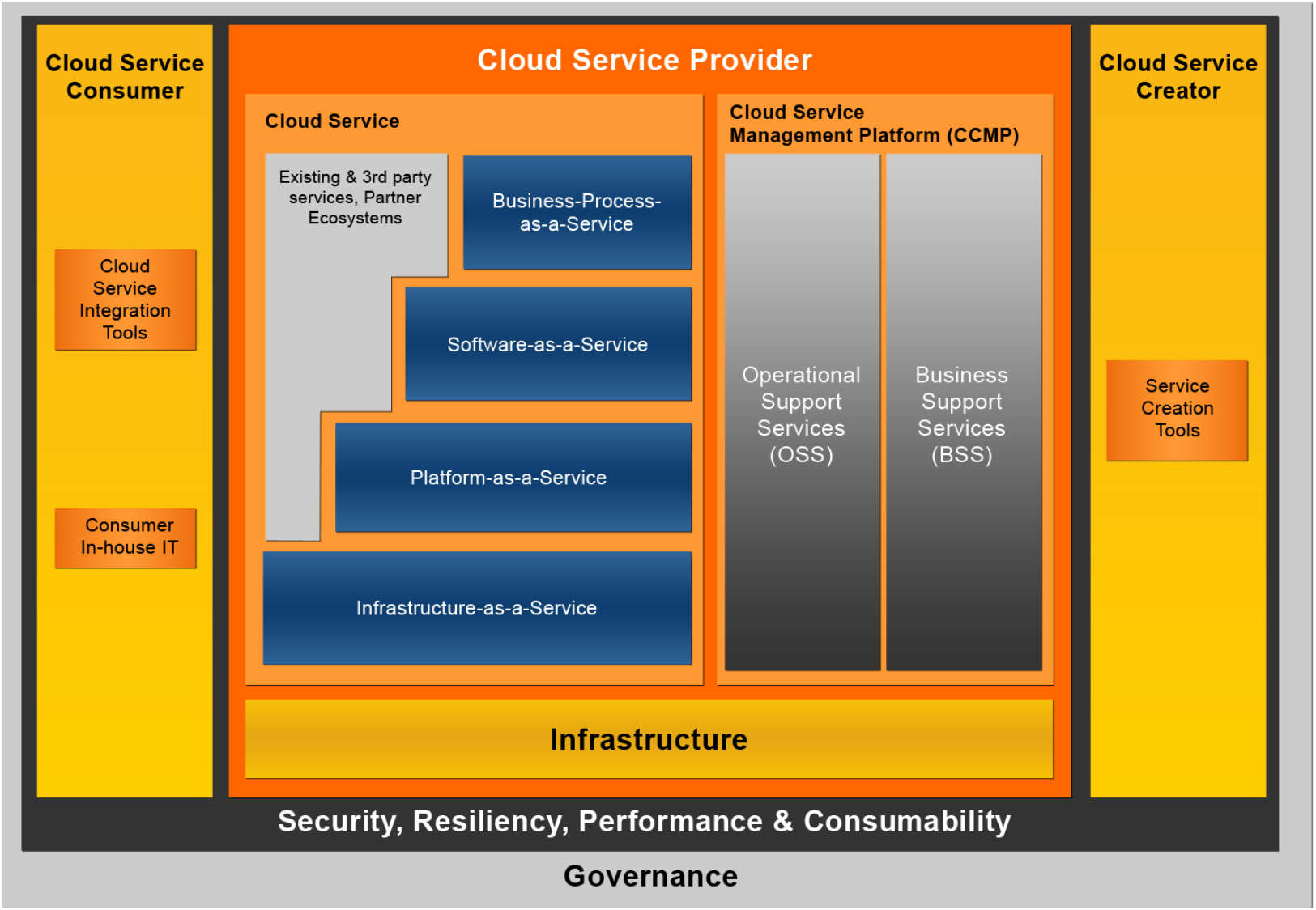

Figure: IBM CCRA

IBM CCRA roles

- The IBM Cloud Computing Reference Architecture (IBM CCRA) defines three main roles:
  - Cloud service creator.
  - Cloud service consumer.
  - Cloud service provider.

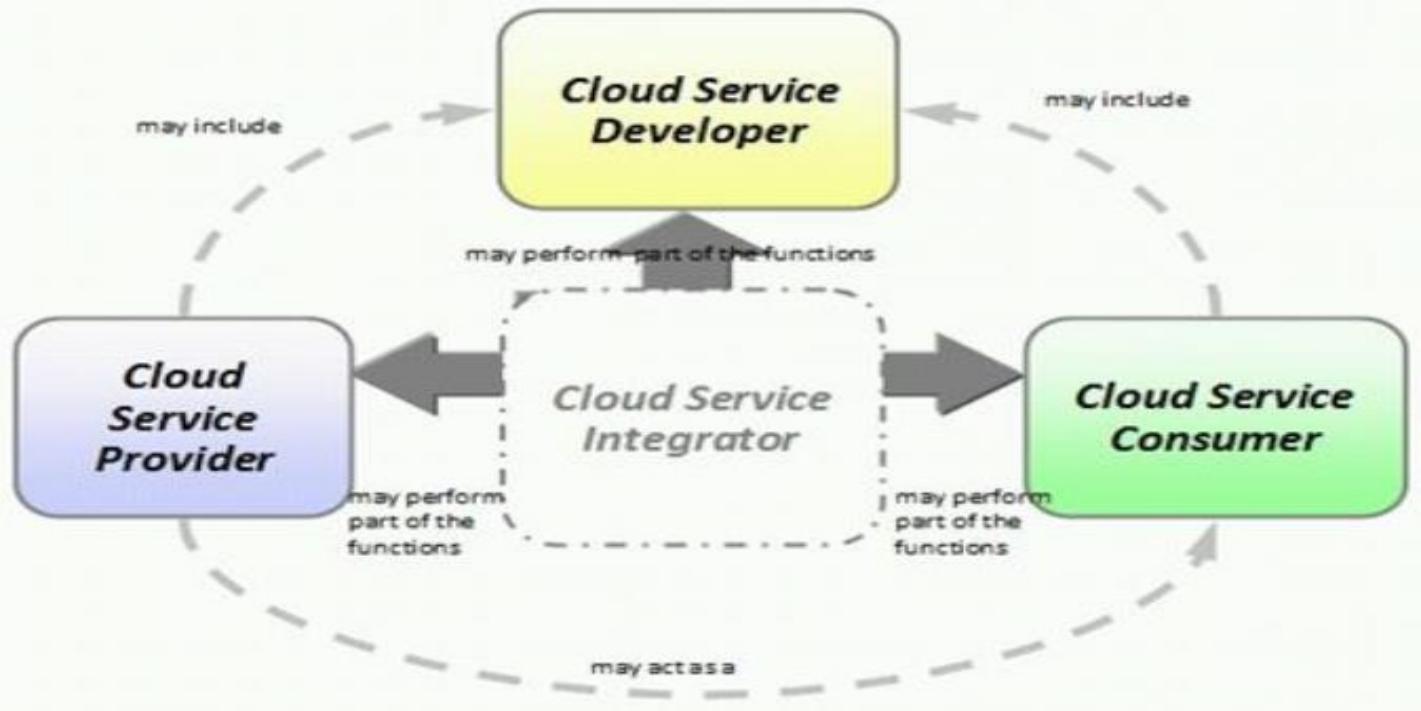

Figure: Service oriented cloud computing

Source:
https://www.google.com/url?sa=i&source=images&cd=&ved=2ahUKEwiN8Lm_2crjAhXMR30KHSQJBekQjRx6BAgBEAU&url=%2Furl%3Fsa%3Di%26source%3Dimages%26cd%3D%26ved%3D%26url%3Dhttps%253A%252F%252Fwww.opengroup.org%252Fsoa%252Fsource-book%252Fsocci%252Fp8.htm%26psig%3DAOvVaw3gFoi4t-UdbIJt6jnS4LKI%26ust%3D1563959127554912&psig=AOvVaw3gFoi4t-UdbIJt6jnS4LKI&ust=1563959127554912

Cloud service consumer

- Tools for integration of services in the cloud:
  - Consumer In-house IT.

- A cloud consumer (Organization A) interacts with a cloud service from a cloud provider (that owns Cloud A). Within the Organization A, the cloud service consumer is used to access the cloud service.

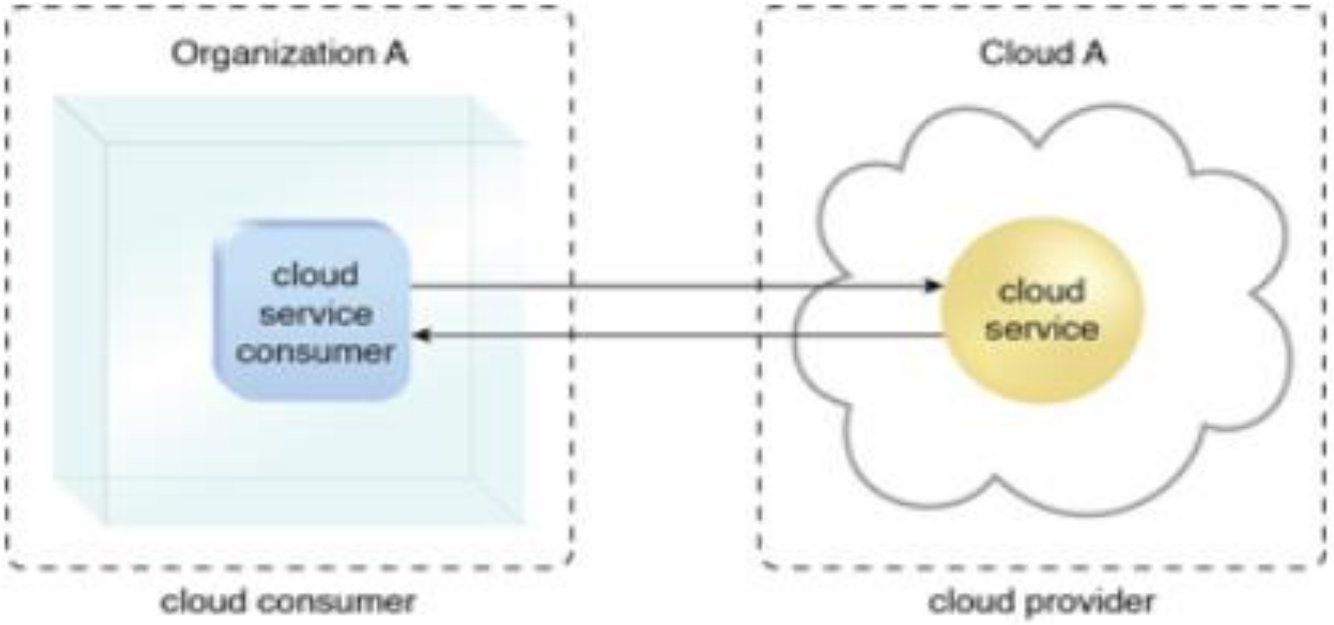

Figure: Cloud consumer and cloud provider interact with cloud service

Source: https://www.google.com/url?sa=i&source=images&cd=&ved=2ahUKEwiN8Lm_

Cloud service provider

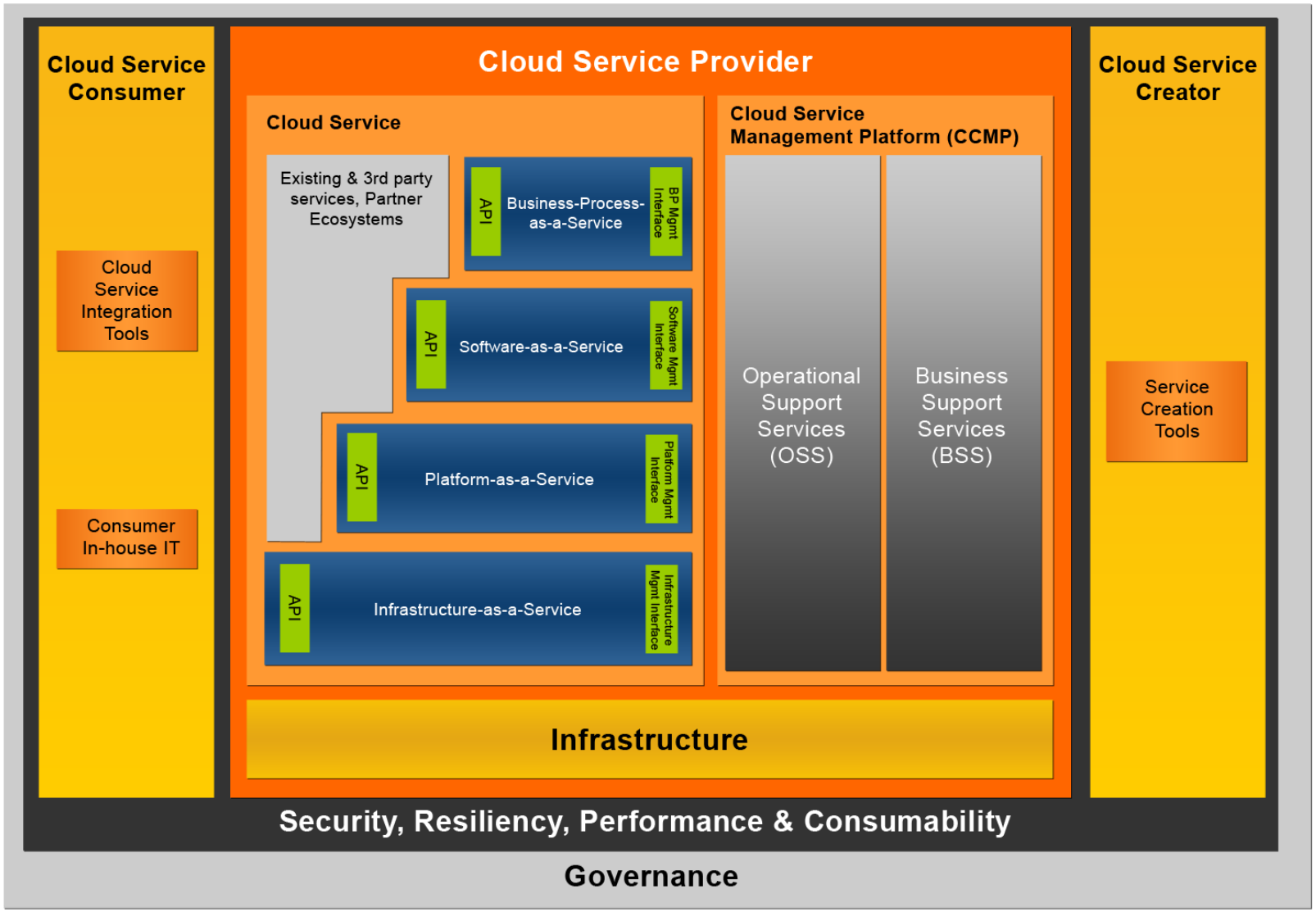

Figure: Cloud service provider

Cloud services

- Cloud service models.

- Cloud service creation and ecosystem aspects.

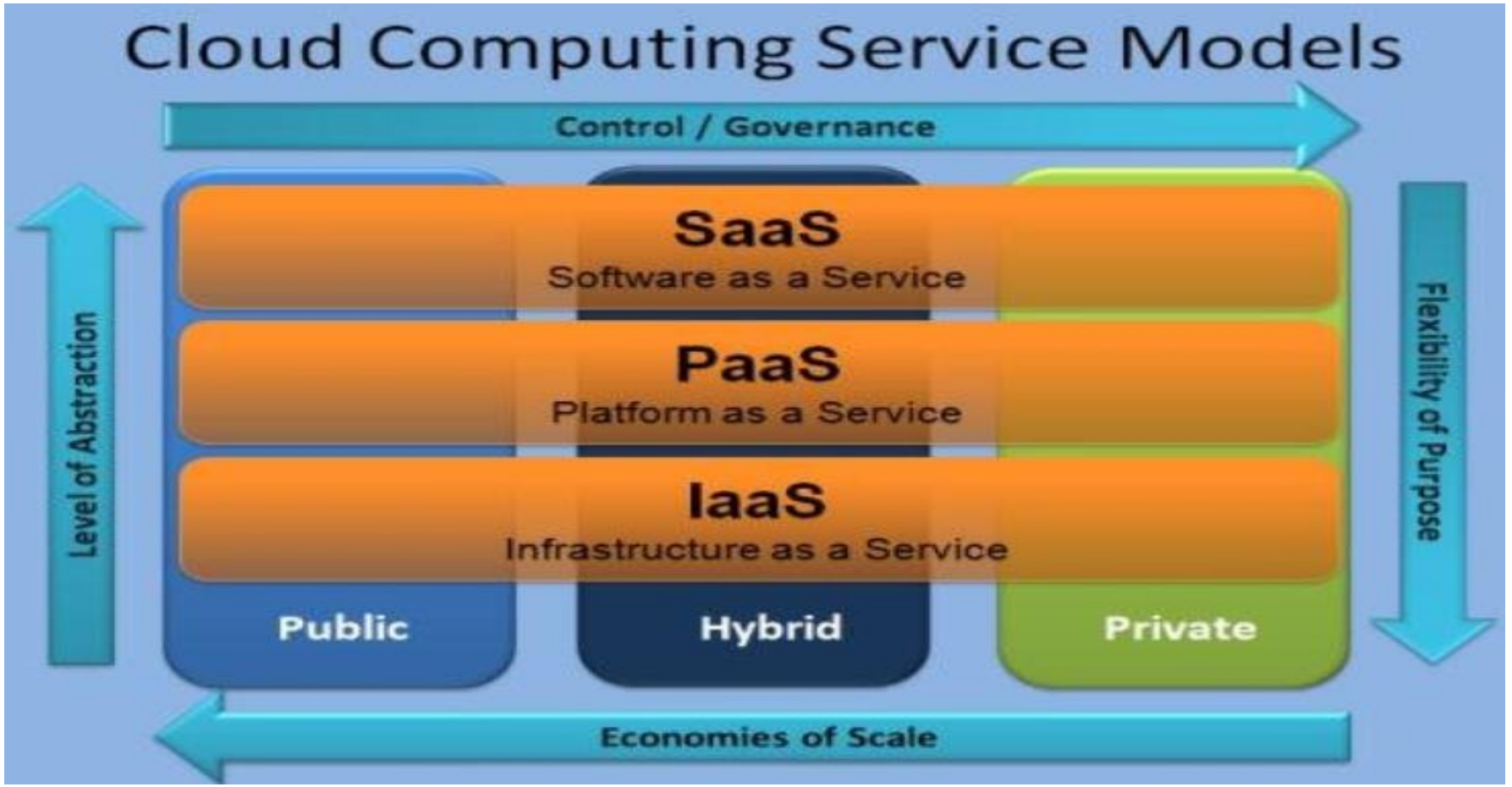

Figure: Cloud computing service models

Source: https://www.researchgate.net/figure/Service-models-for-cloud-computing_fig1_320563162

Infrastructure

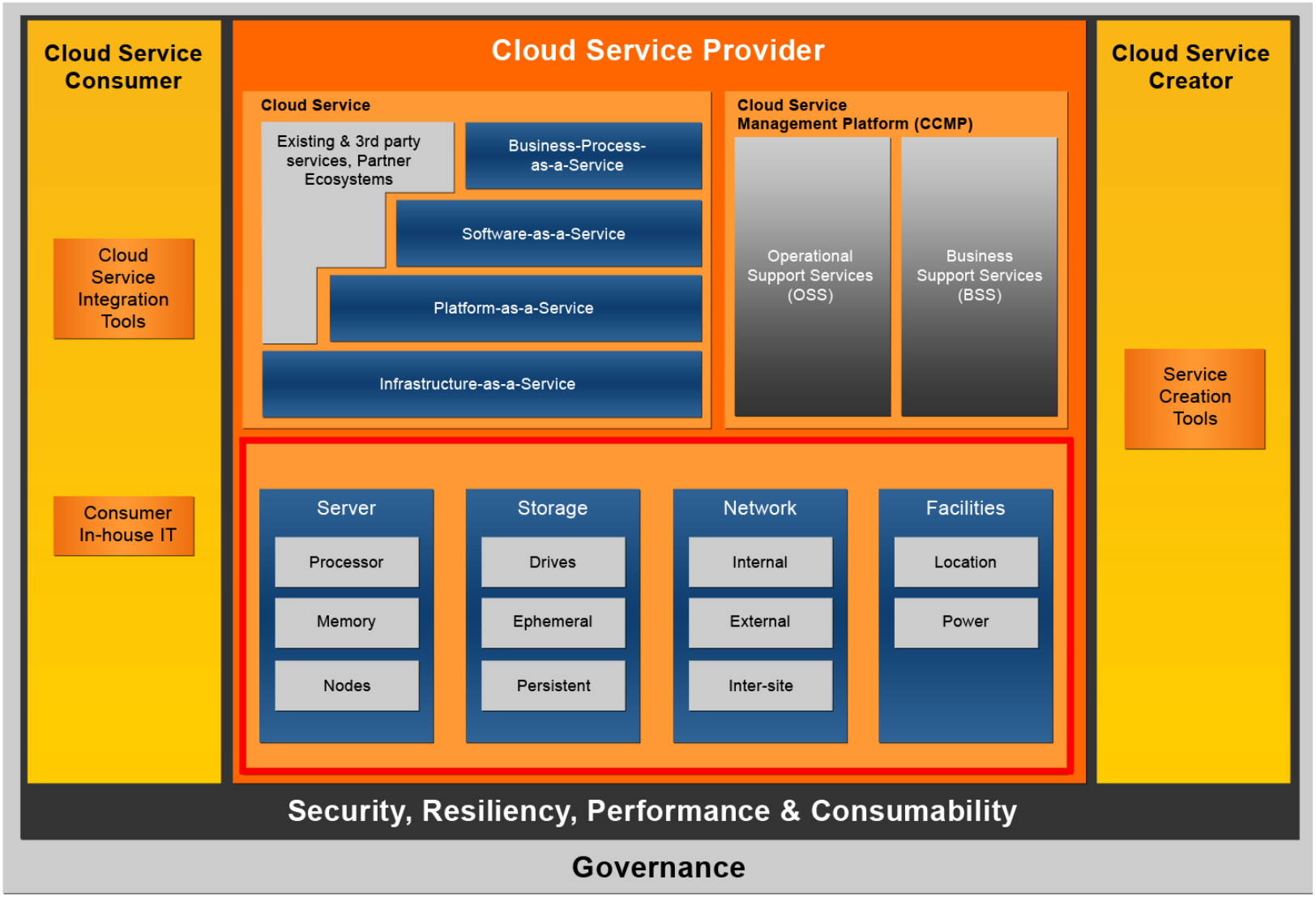

Figure: Cloud service provider infrastructure

Common Cloud Management Platform (CCMP)

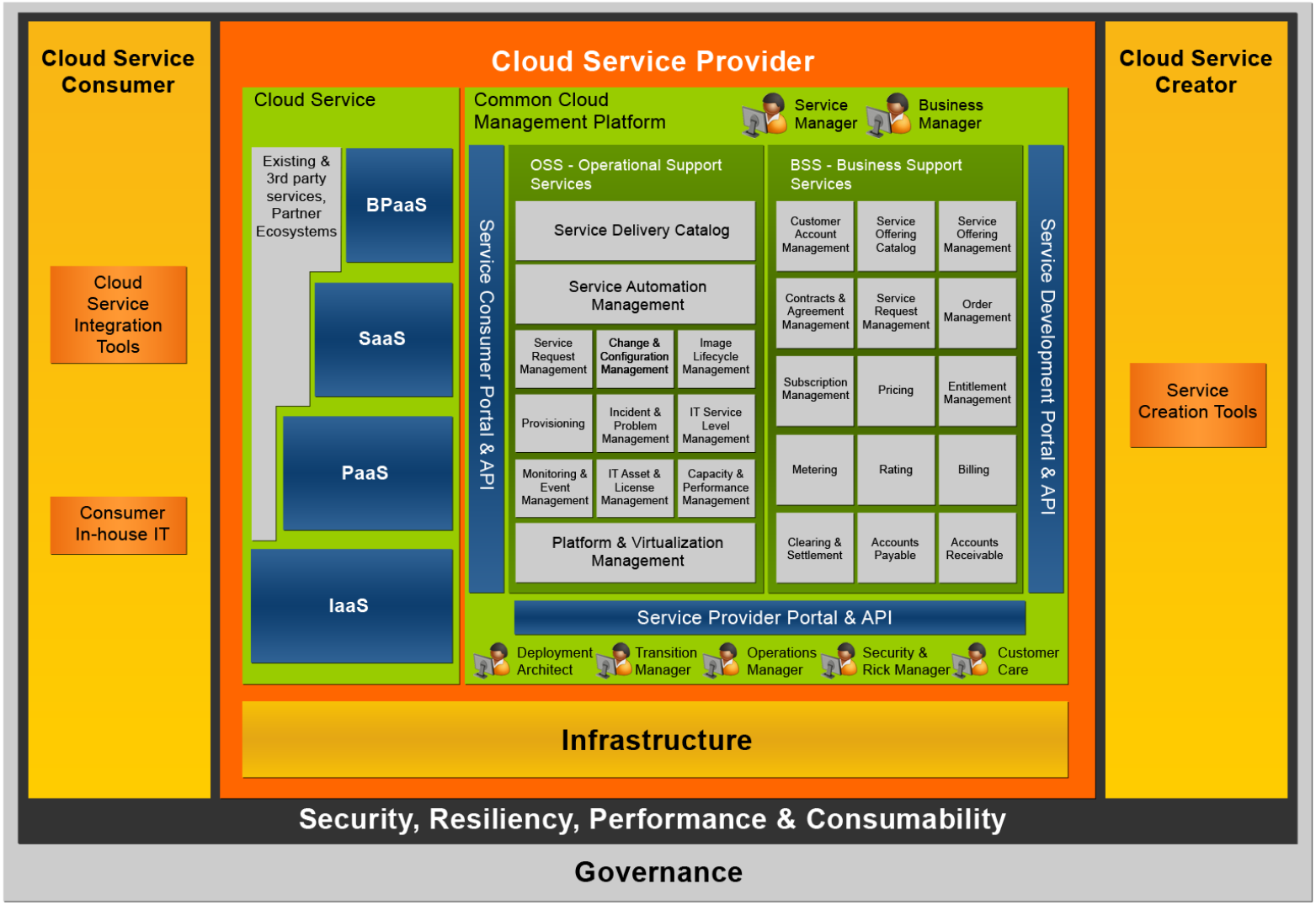

Figure: Common cloud management platform

CCMP supports any level of virtualization

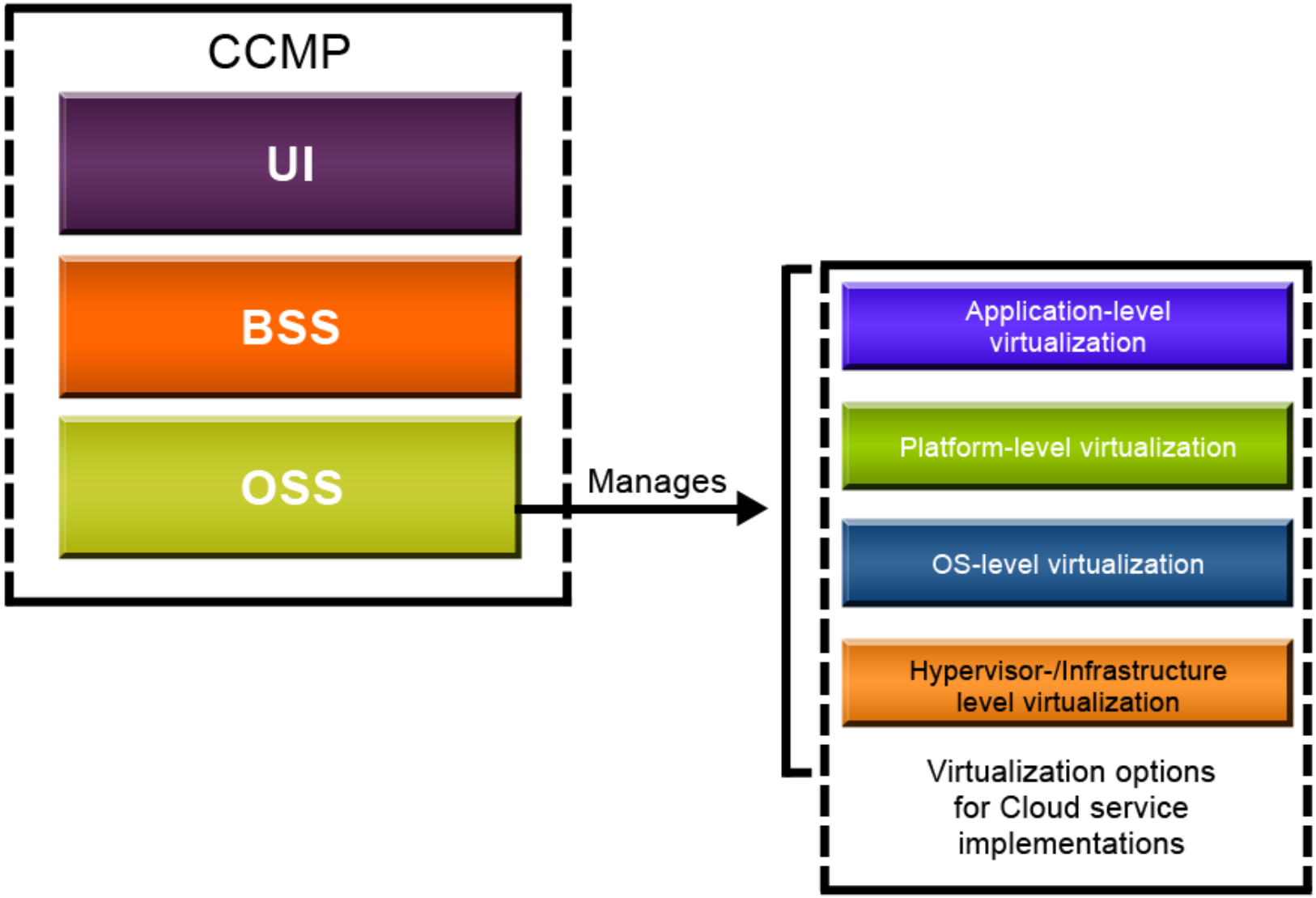

Figure: CCMP supports any level of virtualization

Business Support Services (BSS)

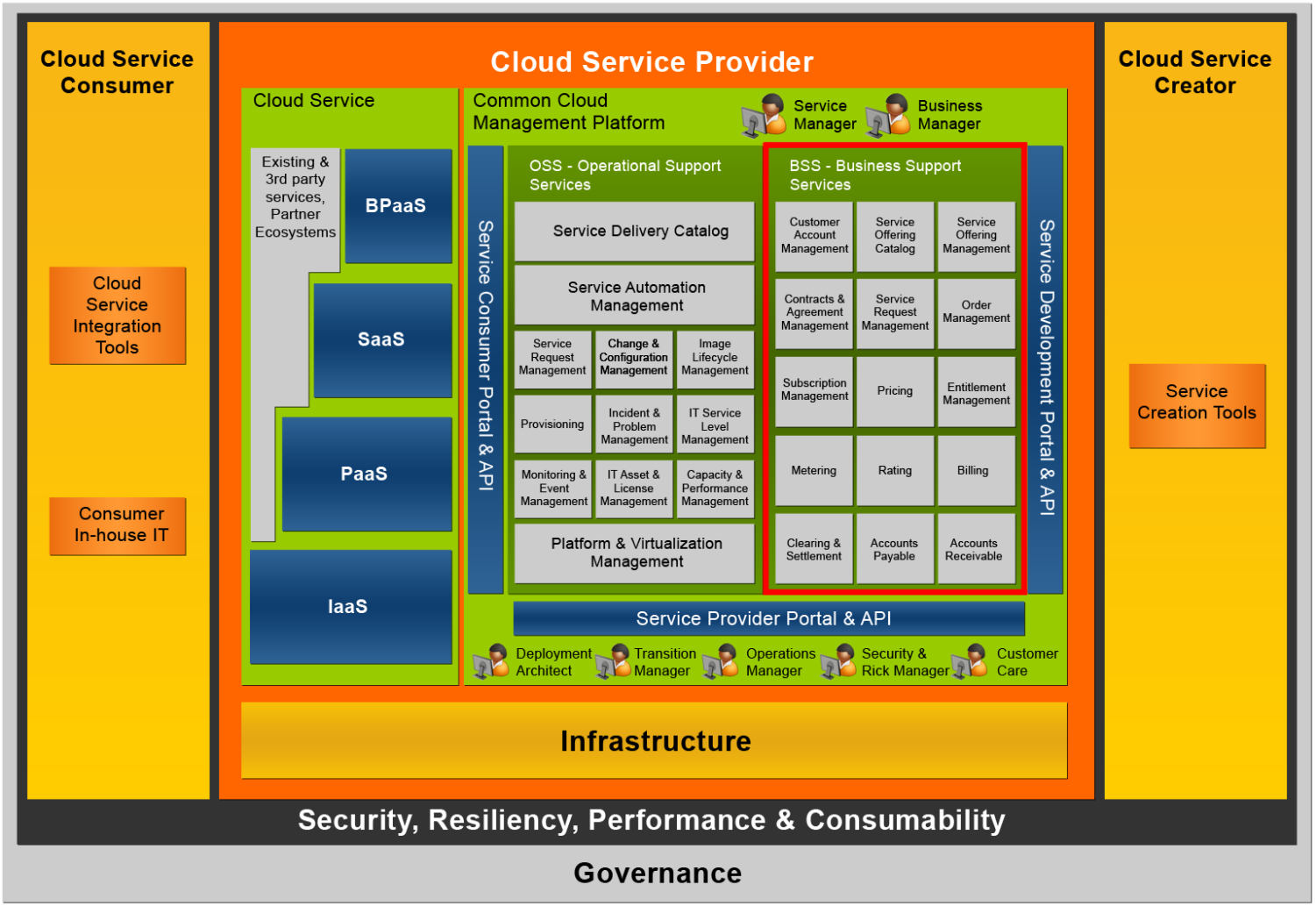

Figure: Business support services

Operational Support Services (OSS)

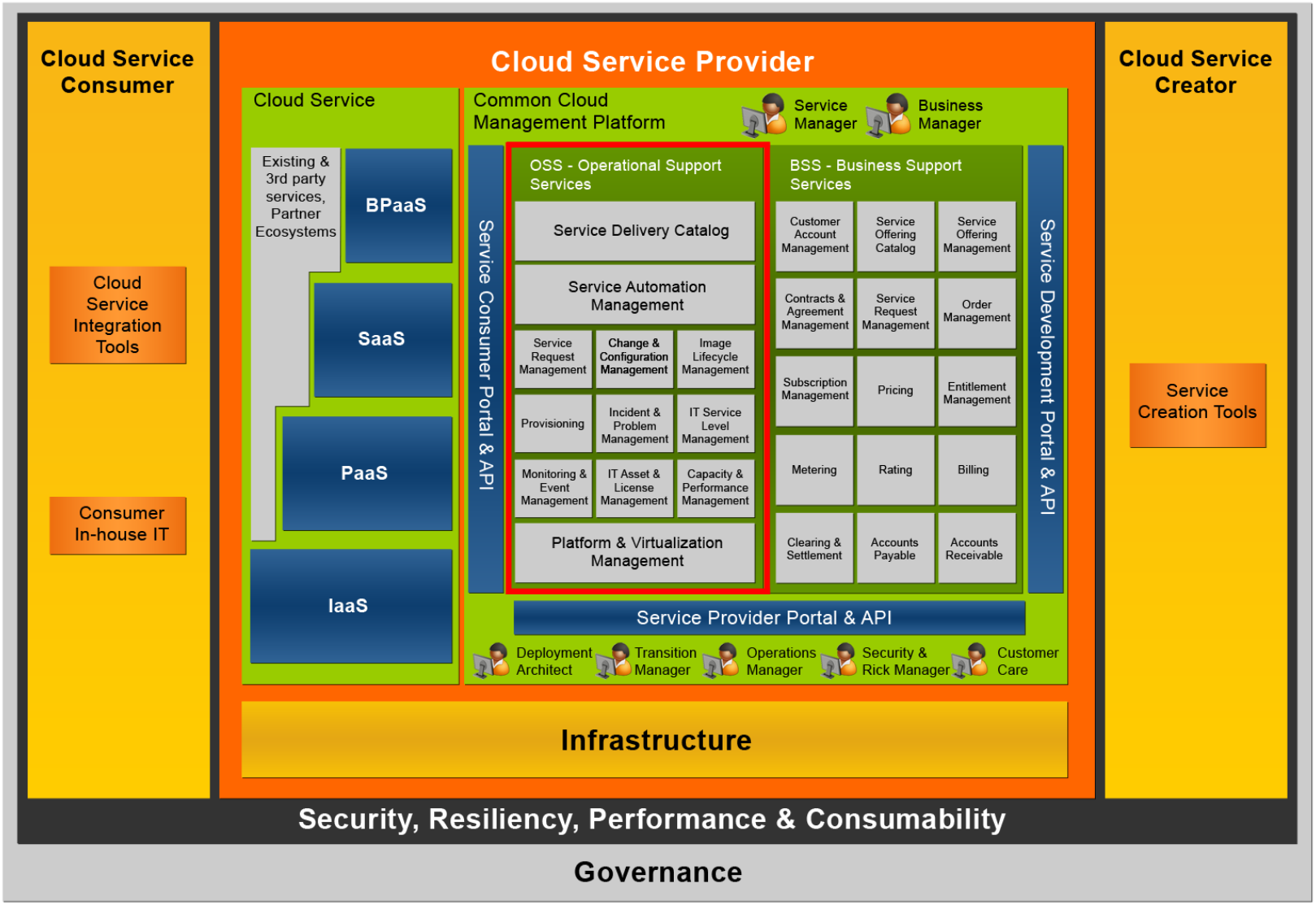

Figure: Operational support services

Security, resilience, performance and consumption

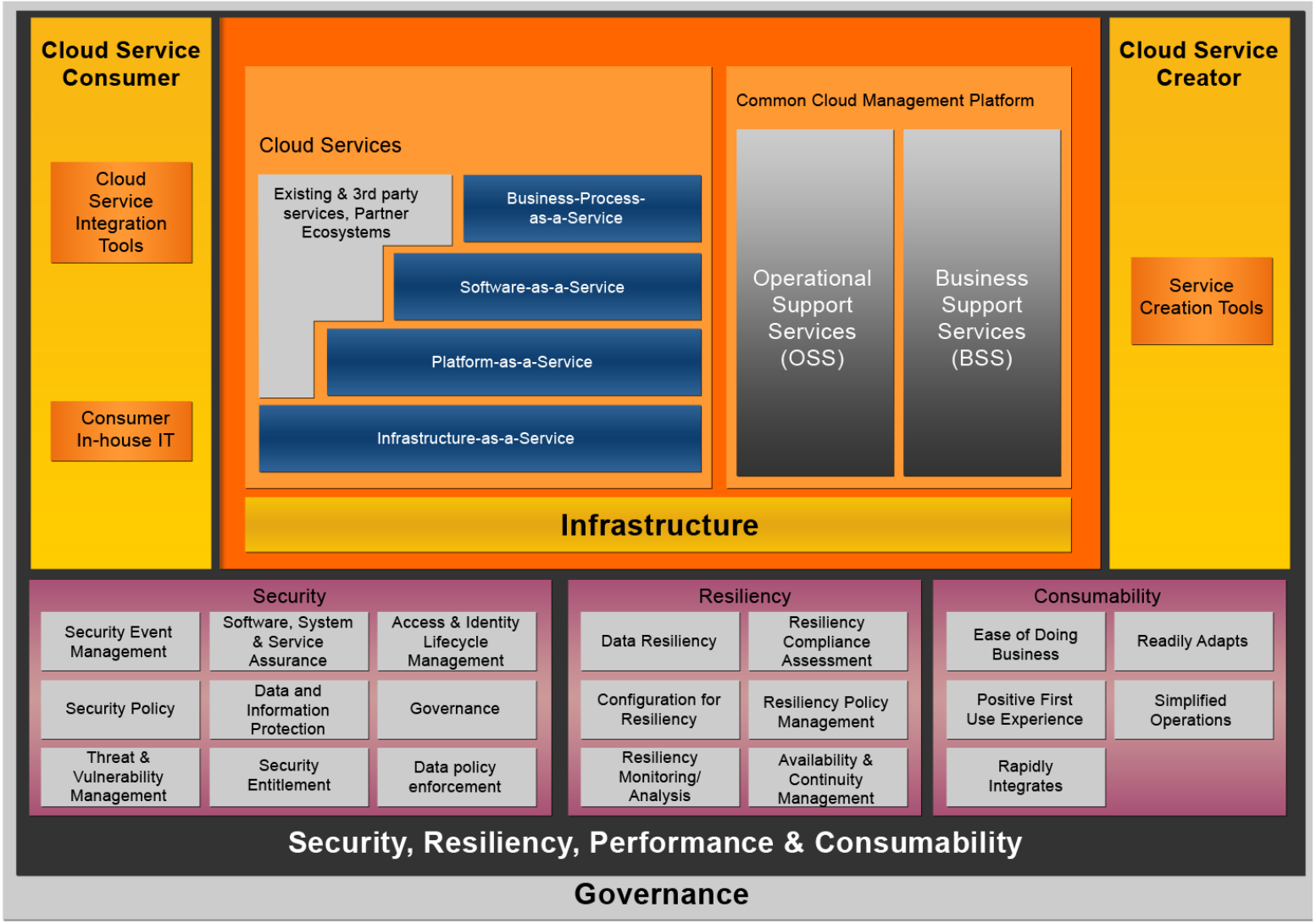

Figure: Security, resilience, performance and consumption

Cloud service creator: Service development tools

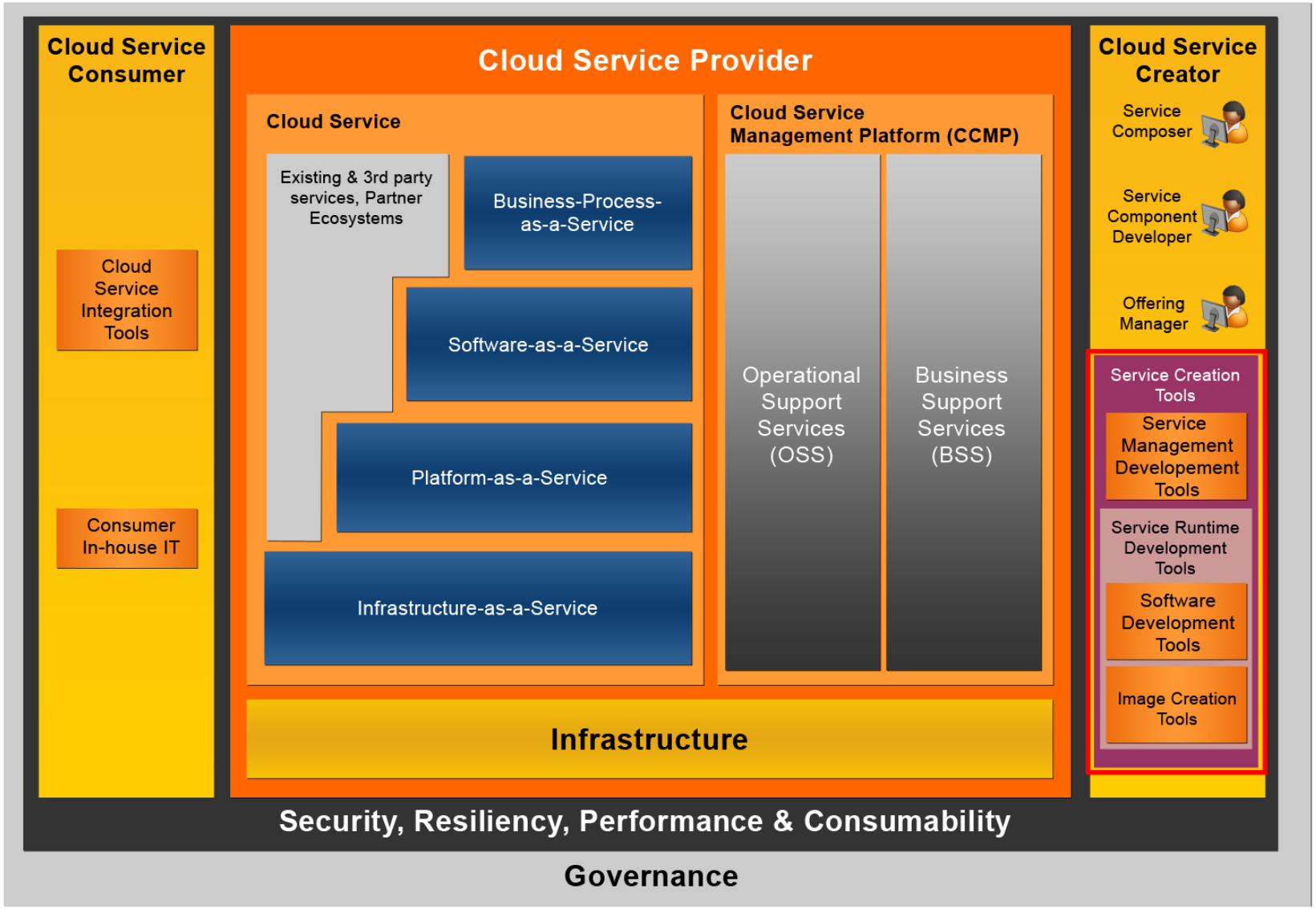

Figure: Cloud service creator

IBM CCRA versions or CCRA evolution

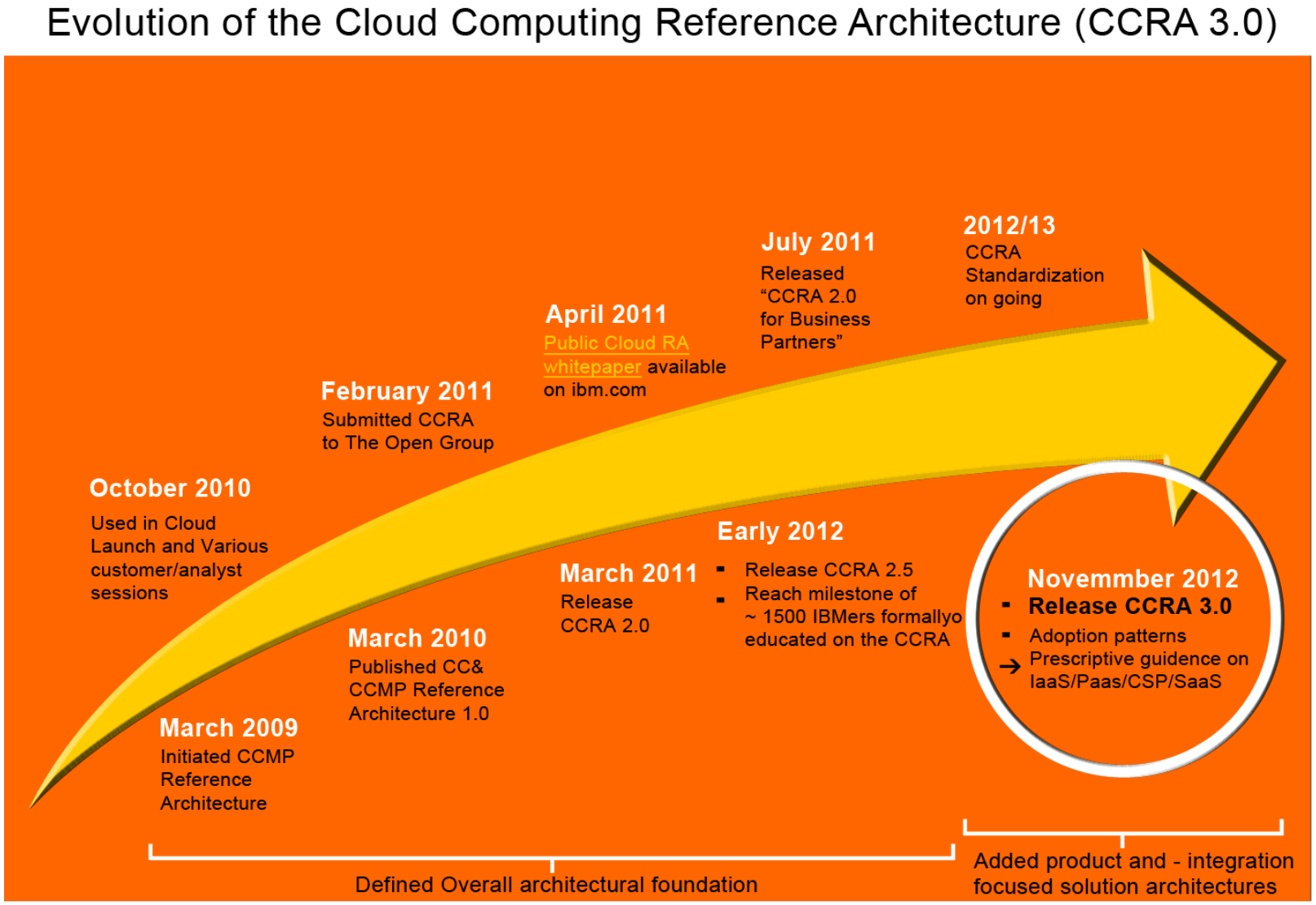

Figure: Evolution of CCRA 3.0

Adoption patterns

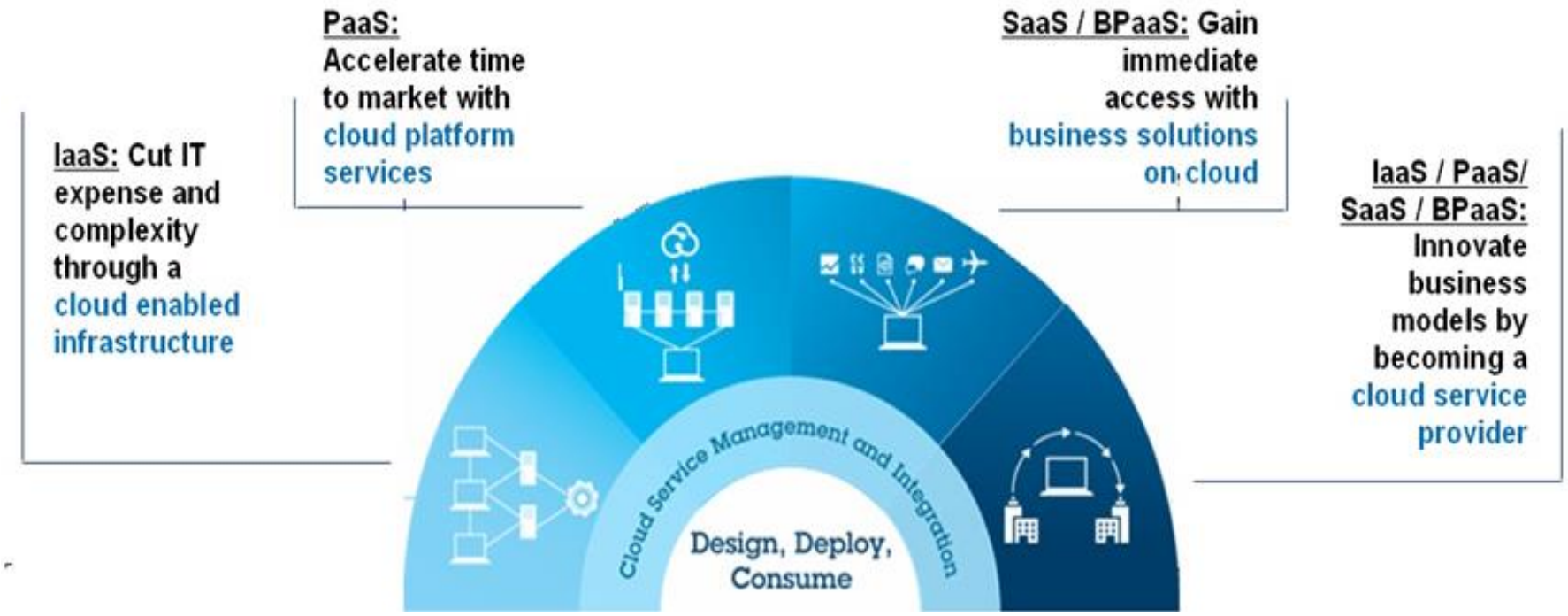

Figure: Adoption patterns

Adoption pattern in CCRA 3.0

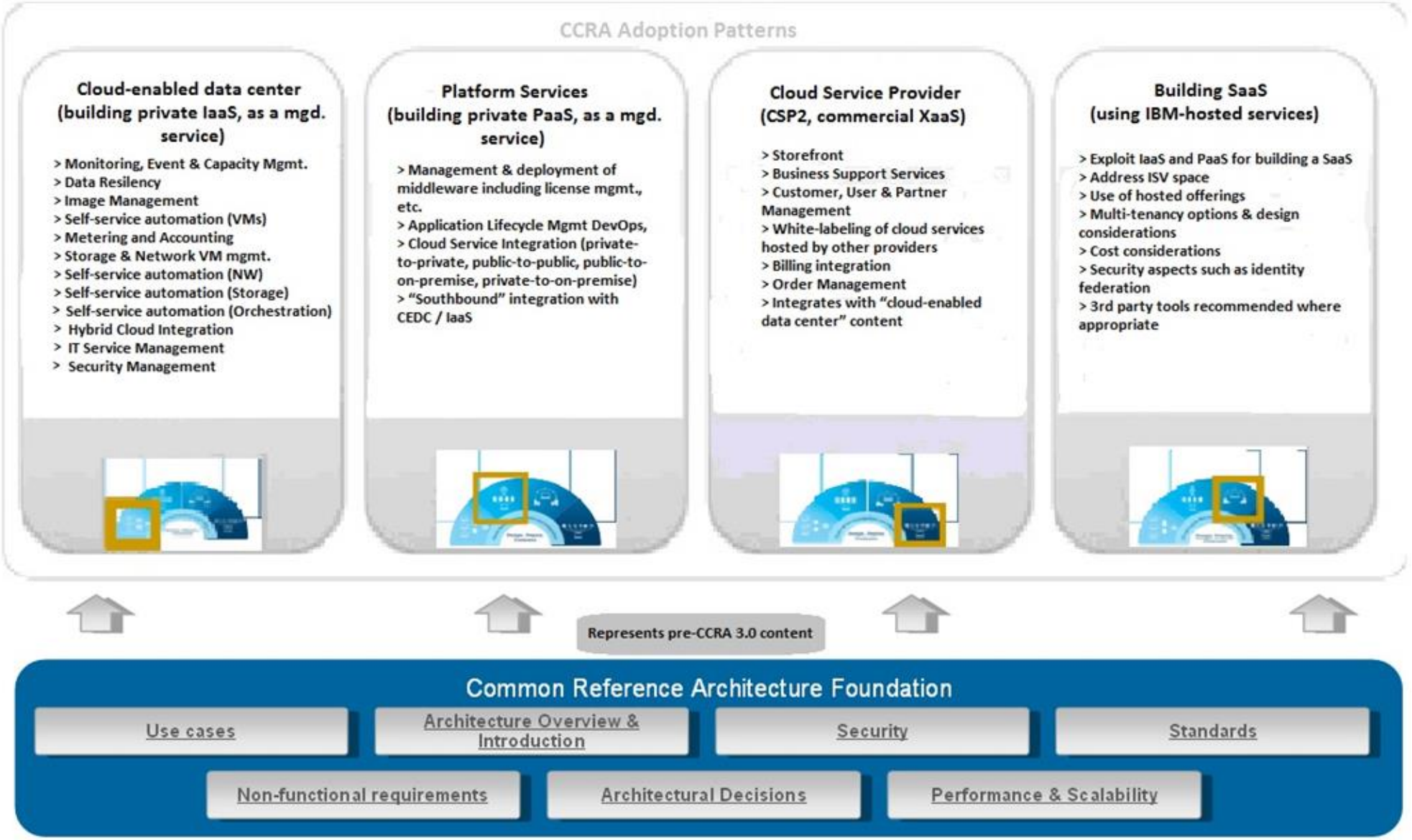

Figure: Adoption pattern in CCRA 3.0

Examples of cloud services

- SaaS services:
  - Email and office productivity.
  - Billing.
  - Customer Relationship Management (CRM).
  - Collaboration.
  - Content management.
  - Document management.
  - Financials.
  - Human resources.
  - Sales.
  - Social networks.
  - Enterprise Resource Planning (ERP).
- PaaS services:
  - Business intelligence.
  - Database.
  - Development and testing.
  - Integration.
  - Application deployment.
- IaaS Services:
  - Backup and recovery.
  - Compute.
  - Content Delivery Networks (CDNs).
  - Services Management.
  - Storage.

Checkpoint (1 of 2)

Multiple choice questions

1. _____exposes a set of business and operational management focused services like BSS & OSS.
   a) Hybrid cloud management platform
   b) Cloud management tool
   c) Common cloud management platform
   d) None of these above
2. IBM CCRA stands for _____ .
   a) Cloud Computing Reference Architecture
   b) Certified Credit Research Analyst
   c) Commercial Credit Reference Agency
   d) All the above
3. _____ allows the practitioners to focus on delivering a solution to the customer with what they need to consider based on the adoption pattern.
   a) Solution based view
   b) Academic view
   c) Perspective view
   d) All the above

Checkpoint solutions (1 of 2)

Multiple choice questions:

1. _____exposes a set of business and operational management focused services like BSS & OSS.
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Checkpoint (2 of 2)

Fill in the blanks:

1. The functionality of cloud services integration tools is especially relevant in the context of _____.
2. _____is the adoption pattern where the organization adopting cloud computing is seeking to reduce the cost and complexities relating to their IT services.
3. _____is generic across all cloud service types and can be configured to behave appropriately in the context of the managed cloud services.
4. _____allows for the architects to see the broader picture of a cloud implementation with all aspects of the architecture in place.

True or False:

1. Software is required to implement service specifications in the cloud for IaaS. True/False
2. ERP applications that range from call center applications to sales force automation. True/False
3. Service provider portal supports cloud service creators in creating new cloud services. True/False

Checkpoint solutions (2 of 2)

Fill in the blanks:

1. The functionality of cloud services integration tools is especially relevant in the context of **hybrid clouds**.
2. **Cloud enabled data center** is the adoption pattern where the organization adopting cloud computing is seeking to reduce the cost and complexities relating to their IT services.
3. **Business support service** is generic across all cloud service types and can be configured to behave appropriately in the context of the managed cloud services.
4. **Academic view** allows for the architects to see the broader picture of a cloud implementation with all aspects of the architecture in place.

True or False:

1. Software is required to implement service specifications in the cloud for IaaS. **True**
2. ERP applications that range from call center applications to sales force automation. **False**
3. Service provider portal supports cloud service creators in creating new cloud services. **False**

Question bank

Two mark questions:

1. Define cloud service consumer.
2. Define cloud service provider.
3. Define cloud service creator.
4. What is common cloud management platform?

Four mark questions:

1. Describe business support services.
2. Describe operational support services.
3. Illustrate NIST - CCRA.
4. Describe adoption patterns.

Eight mark questions:

1. Explain cloud service model.
2. Explain CCRA 3.0 version.

Unit summary

Having completed this unit, you should be able to:

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- Gain an insight into cloud service model
- Gain knowledge on adoption pattern
- Understand the concept of IBM Cloud Computing Reference Architecture (CCRA 3.0)