Intercloud Infrastructure/Services Provisioning
(General use case)

Multi-layer Cloud Service Models (CSM)

Cloud Services Model Layers
Layer 1 - Physical platform (PC hardware, network, and network infrastructure)
Layer 2 - Cloud virtualisation layer (e.g. represented by VMware, Xen or KVM as virtualisation platforms)
Layer 3 - Cloud virtual resource composition and orchestration layer that is represented by the Cloud Management Software (such as OpenNebula, OpenStack, or others)
Layer 4 - IaaS provided as infrastructure or used for hosting cloud platforms or applications
Layer 5 - PaaS provided as a service or used as a platform for hosting cloud applications
Layer 6 - SaaS (or cloud applications) as a top cloud layer that represents cloud applications
Layer 7 - User client or application

CIM is compatible with the NIST Cloud Computing Reference Architecture (CCRA, NIST SP 800-282)

Abstract Model for Infrastructure Services Provisioning

Virtual Infrastructure Composition and Management (VICM) Layer

VICM includes the following layers and components
- Logical Abstraction Layer and the V/V/W Adaptation Layer facing correspondingly lower P/V and upper Application Layer
- VICM middleware - defined by CSA and implemented as GEMBus as extended ESB platform for multi-domain applications
- VI Composition Service supporting GMMF
- VI Control and Management plane supporting S/W/flow

Main actors involved in provisioning process
- Physical Infrastructure Provider (PIP)
- Can also be a Cloud Resource provider
- Virtual Infrastructure Provider (VIP)
- Virtual Infrastructure Operator (VIO)
- Optionally inter-V/V network connectivity for VIO can be provided by Virtual Network Infrastructure Provider (VNP)

Legend
- Physical Resource
- Virtual Resource
- Logical Resource
- Network Domain
- Network Infrastructure

Related links
- Cloud Computing Reference Architecture
- NIST SP 500-202 Cloud Computing Related.pdf

Basic Use Cases for Intercloud Interoperability and Integration
Use Case 1: Enterprise IT infrastructure migration to cloud and its evolution
- Integration of the cloud based components and legacy infrastructure
- Evolution from general cloud infrastructure services to specialised proprietary cloud platform services

Use Case 2: Large project-oriented scientific infrastructures including dedicated transport network infrastructure that need to be provisioned on-demand

Use Case 3: IT infrastructure disaster recovery that should include both data and supporting infrastructure backup and recovery on possibly new cloud/platform

Contributing Projects
- GÉANT 3R Task 3 – Composable services (GEMBus) - http://www.giante.net

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