Components and functions

Component Tree	Function Tree	Description
Common component schema Class: Component		

Class: SoftwareComponent
 component_Software
 component_LocalApplication
 component_NetworkApplication
   component_ServerApplication
    component_WEBBasedApplication
    component_Database
    component_Filestore
   component_ClientApplication
    component_WEBbrowser
    component_RemoteCLI
   component_DistributedApplication
 	
Class: SystemSoftwareComponent
 component_SystemSoftware
 component_SystemService
 component_OperatingSystem
 component_Middleware
 component_Firmware
 	
Class: ActorComponent
 component_Actor
 component_User
 component_SystemAdministrator
 component_Developer
 	
Class: HardwareComponent
 component_Hardware
 component_Server
 component_Node
 component_Workstation
 component_MobileDevice
 component_ClusterSystem
 component_BladeSystem
 component_BladeSystemNode
 component_Supercomputer
 component_StorageSystem
 component_NetworkSwitch
 component_NetworkRouter
	Class: CommonSoftwareFunction
	 function_UserManagement
	 function_Authentication
	 function_Authorization
	 function_EventLogging
	 function_InterfaceUser
	   function_InterfaceCLI
	   function_InterfaceGUI
	   function_InterfaceWEB
	 function_InterfaceAPI
	 function_DataProcess
	 function_DataStore
	 function_DataTransfer
	 function_DataBackup
	
	Class: ActorFunction
	 function_ActorBehaviorModel
	 function_ActorCredentialsManagement
	
	Class: CommonHardwareFunction	

Common network schema		
Class: NetworkComponent xxx	Common	
Common middleware schema		
	Class: MiddlewareFunction **function_DistributeEventInformation**	
Cloud Computing schema		
[Fernandez, 2016] Fernandez E. B., Monge R., Hashizume K. Building a security reference architecture for cloud systems //Requirements Engineering. – 2016. – T. 21. – №. 2. – C. 225-249. [NIST] Liu F. et al. NIST cloud computing reference architecture //NIST special publication. – 2011. – T. 500. – №. 2011. – C. 292.		

Class: CloudComponent
  component_CloudComponent
  Class: CloudPlatformComponent
    component_CloudPlatform
    component_CloudPortal
    component_CloudSystem
    component_CloudZone
    (= component_CloudFederation)
    component_Hypervisor
   (= **component_VirtualMachineManager**)
  Class: SupportService
    component_SupportService
    component_BusinessSupportService
    component_OperationaSupportService
    component_NonFunctionalSupportService
  Class: CloudService
    component_CloudService
    component_SaaSService
    component_PaaSService
    component_IaaSService
    component_ContainerService
 	
  Class: CloudApplication
   component_CloudApplication
   component_IaaSApplication
   component_PaaSApplication
   component_SaaSApplication
   component_VirtualMachine
   component_VirtualNetwork
   component_VirtualStorage
   component_VirtualTenant
   component_Container
	Class: CloudPlatformFunction
	  function_OnDemandSelfService
	  function_BroadNetworkAccess
	  function_ResourcePooling
	  function_RapidElasticity
	  function_MeasuredService
	
	Class: CloudServiceFunction
	  function_TenantManagement
	  function_VirtualResourceManagement
	  function_VirtualResourceScaling
	  function_UserBilling
	
	Class: IaaSServiceFunction
	  function_VMtemplateManagement
	  function_VMimageManagement
	  function_VirtualNetworkManagement
	  function_VirtualStorageManagement
	
	Class: HypervisorFunction
	  function_VMlocalUserInterface
	  function_VMremoteUserInterface
	  function_VMmanagement
	  function_VMmigration
	  function_VMsnapshot
	  function_VMcloning
	  function_VMstorageManagement
	  function_VMimport
	  function_VMexport
	  function_VirtualSwitchManagement
	  function_VirtualNetworkAdapterManagement
		The top functions are taken from [NIST].
		
		"The *Portal* is the way to access cloud services." [Fernandez, 2016]
		
		"A *cloud* is composed of cloud services, infrastructure (cluster), and support services." [Fernandez, 2016] (*CloudPlatform* here).
		
		"Cloud physical resources can be located in different zones or clusters. A cluster is a collection of nodes that are located within a close physical proximity. A node is made up of a set of Hardware units (Servers, Storage and Network), virtual machines (VMs), and a virtual machine monitor (VMM)." [Fernandez, 2016] (Cluster is modelled as a common hardware item - see above - "component_ClusterSystem", "component_Server" or "component_BladaSystemNode" as a part of "component_BladeSystem". also Storage and Network - "component_StorageSystem" and "component_NetworkSwitch"). To model cloud federations the "component_CloudZone" ("CloudFederation") is added.
		
		"A VMM creates and manages virtual machines and makes direct access to the hardware on behalf of them." [Fernandez, 2016]. (Also a hypervisor here).
		
		Cloud Builder—the team who sets up the operations of the SP [Fernandez, 2016]
		
		Cloud Application Builder—those who build applications to execute in the SP or use services from the SP. [Fernandez, 2016]

Class: CloudActorComponent
   component_ServiceConsumer
   component_ServiceProvider
   component_CloudAdministrator
   component_CloudZoneAdministrator
   component_CloudAuditor
   component_ServiceBroker
   component_CloudBuilder
   component_CloudApplicationBuilder		

Fog Computing Schema		
Class: FogComponent **component_FogApplication**		
Internet of Things schema		

Class: IoTComponent
   component_IoTApplication
   component_IIoTApplication		