



Cisco ICFP Architecture

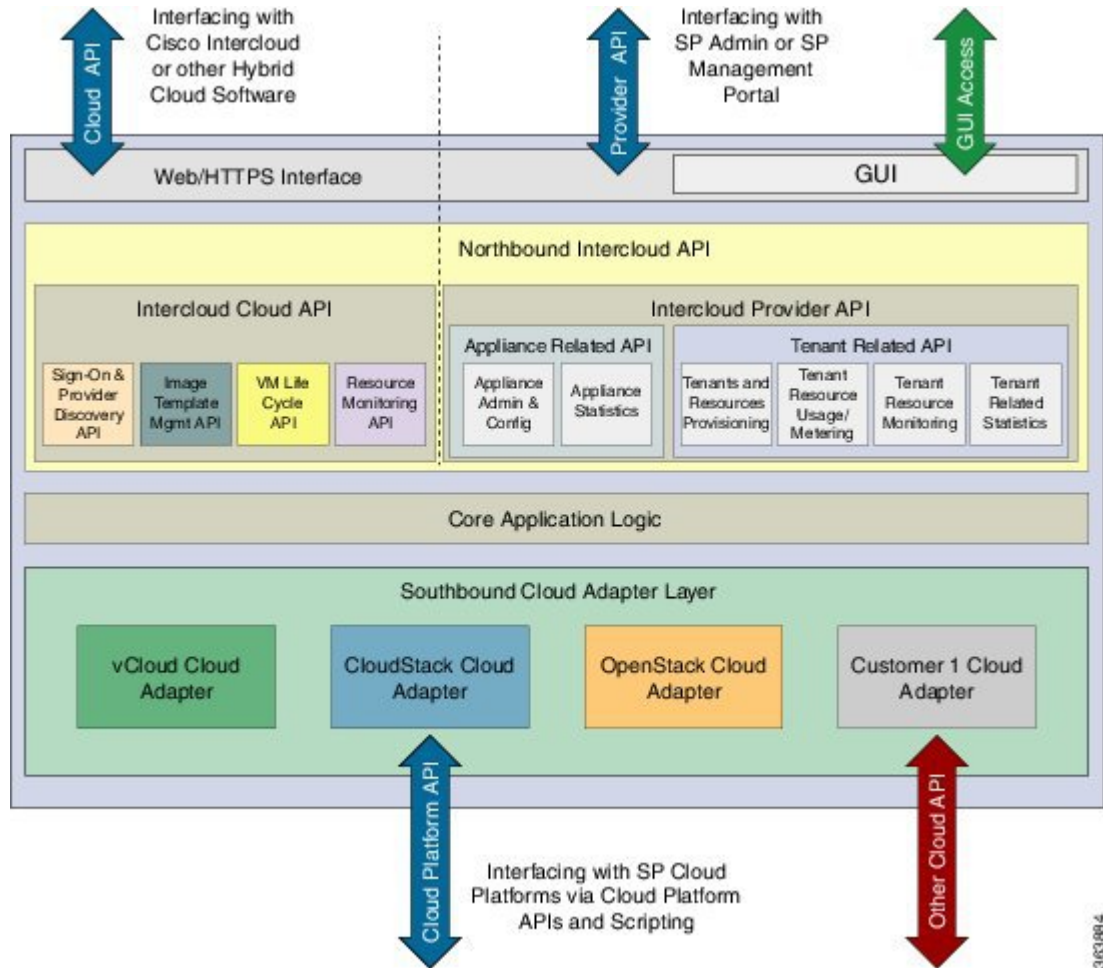
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Architecture Overview

Cisco ICFP, which is a virtual appliance that is deployed on the service provider cloud data center, enables service provider customers to access cloud resources using Cisco Intercloud Fabric APIs. The virtual appliance provides a virtual network interface that enables a customer's Cisco Intercloud Fabric to reach the Cisco ICFP appliance instance from public networks.

The following figure shows the Cisco ICFP virtual appliance architecture.

Figure 1: Cisco ICFP Virtual Appliance Architecture



The Cisco ICFP architecture includes four major interfacing modules:

Module	Description
Northbound Cisco Intercloud Cloud API	Implements the Cisco Intercloud cloud API, which is consumed by cloud API translations on the customer private cloud for workload-provisioning purposes.
Northbound Cisco Intercloud Provider API	Implements two sets of APIs that enable the service provider to: <ul style="list-style-type: none"> • Configure the virtual appliance. • Provision tenants and resources assigned to the tenant. • Monitor tenant operations. • Retrieve statistics for tenants and the virtual appliance.

Module	Description
Core Application Logic	Implements the main application logic of Cisco ICFP, such as tenant configuration in Cisco ICFP and resource usage metering.
Southbound Cloud Adapter Layer	Implements the various cloud platform-interfacing adapters, each of which is responsible for interfacing with a specific cloud platform, such as Cisco Intercloud Services – V.

Northbound Cisco Intercloud Cloud APIs

The northbound Cisco Intercloud Fabric module uses Representational State Transfer (REST) APIs that are consumed by Cisco Intercloud Fabric in the customer private cloud for provisioning workloads and managing workload images and templates.

Northbound Cisco Intercloud Provider APIs

A service provider administrator uses the northbound Cisco Intercloud provider APIs to configure and manage the Cisco ICFP virtual appliance. These APIs belong to the following categories:

- Cloud instance management APIs
- Database management APIs
- Logging APIs
- Syslog configuration APIs
- System information API
- Tenant management APIs

For details on these APIs, see [Service Provider APIs](#).

Many APIs can be used with other troubleshooting tools to build diagnostic suites that a service provider administrator can use to debug appliance- and tenant-related problems.

The following tables summarize the available APIs.

Table 1: Cloud Instance Management APIs

Category	HTTP Method	Request URL	Request Header / Body	Response Body	Comments
Cloud Instance Management	POST	/capi/v1/cloudinstances	API session key, cloud instance	Cloud instance ID	Creates a new cloud instance.
	PUT	/capi/v1/cloudinstances/ <i>cloudId</i>	API session key, cloud instance ID	Cloud instance ID	Updates an existing cloud instance.
	GET	/capi/v1/cloudinstances/ <i>cloudId</i>	API session key, cloud instance ID, cloud credentials	Cloud record	Gets a cloud record.
	GET	/capi/v1/cloudinstances	API session key	Cloud record	Gets all cloud records in the database.
	DELETE	/capi/v1/cloudinstances/ <i>cloudId</i>	API session key, cloud instance ID	Cloud record	Deletes a cloud instance.

Table 2: Database Management APIs

Category	HTTP Method	Request URL	Request Header / Body	Response Body	Comments
Database Management	POST	/capi/v1/dbbackup	API session key, database backup name	Database backup ID	Creates a database backup.
	GET	/capi/v1/dbbackup/ <i>backupId</i>	API session key	Database backup status	Gets a database backup status.
	POST	/capi/v1/dbrestore	API session key, database backup ID	Restores a database from a backup	Restores a database backup.
	GET	/capi/v1/dbrestore/ <i>restoreId</i>	API session key	Database restoration status.	Gets a database restoration status.

Table 3: Logging APIs

Category	HTTP Method	Request URL	Request Header / Body	Response Body	Comments
Logging	GET	/capi/v1/logs/current	API session key	Zipped file of current logs	Downloads the current logs in a zipped file.
	GET	/capi/v1/logs/all	API session key	Zipped file of all logs	Downloads all logs in a zipped file.

Table 4: Syslog Configuration APIs

Category	HTTP Method	Request URL	Request Header / Body	Response Body	Comments
Syslog Configuration	POST	/capi/v1/syslogconfig	API session key, log level, remote syslog server	Syslog server configuration	Configures syslog in Cisco ICFP.
	GET	/capi/v1/syslogconfig	API session key	Syslog server configuration	Retrieves the syslog configuration from Cisco ICFP.

Table 5: System Information API

Category	HTTP Method	Request URL	Request Header / Body	Response Body	Comments
System Information	GET	/capi/v1/systeminfo	API session key	Information about Cisco ICFP	Retrieves information about Cisco ICFP system nodes.

Table 6: Tenant Management APIs

Category	HTTP Method	Request URL	Request Header / Body	Response Body	Comments
Tenant Management	POST	/capi/v1/tenants	API session key, tenant record (such as name and resource limits)	Tenant ID	Provisions a new tenant.
	PUT	/capi/v1/tenants/ <i>tenantId</i>	API session key, tenant ID	Tenant ID	Updates an existing tenant record.
	GET	/capi/v1/tenants/ <i>tenantId</i>	Tenant ID	Tenant record and associated servers	Gets a tenant's details and all associated servers.
	GET	/capi/v1/tenants/ <i>tenantId</i> /servers	API session key, tenant ID	Tenant record	Gets the details of a tenant.
	GET	/capi/v1/tenants	API session key	Tenant record	Gets all tenant records in the database.
	DELETE	/capi/v1/tenants/ <i>tenantId</i>	API session key, tenant ID	Tenant record	Deletes a tenant.
	DELETE	/capi/v1/tenants/ <i>tenantId</i> /purge	API session key, tenant ID	Tenant record	Deletes a tenant and all of its resources from the database.
	GET	/capi/v1/servers/ <i>serverId</i>	API session key, server ID	Server record	Gets a server record.

Core Application Logic Module

The core application logic module handles the following functions:

Function	Description
Intercloud cloud API back-end processing	The back end of Intercloud cloud API processing. Based on the cloud platform type that is configured for the tenant, this function calls the appropriate cloud adapter function for fulfilling cloud orchestration requests that are issued by Cisco Intercloud Fabric.
Cloud instance and tenant provisioning	Creates and manages cloud platform instance records and tenant records.

Function	Description
Tenant resource usage limit enforcing	Enforces the usage limit based on tenant-specific resource usage limits, such as the number of VMs, that the provider administrator has configured for a tenant.
Tenant resource usage metering	Collects resource usage rates for usage-metering applications, based on cloud resource allocation and provisioning requests and responses.
Tenant resource monitoring	Issues cloud platform API requests for resource-monitoring purposes. The service provider can use the relevant northbound APIs to retrieve the resource-monitoring status on demand.

Southbound Cloud Adapter Layer

The southbound cloud adapter layer implements cloud adapters that communicate with cloud platforms to provision workloads and orchestrate cloud infrastructures. The Cisco ICFP cloud adapter layer defines the APIs that are to be implemented by the cloud platforms.

Cisco ICFP supports built-in cloud adapters that facilitate integration with the following cloud platforms in the service provider's environment:

- VMware vCloud Director
- Cisco Intercloud Services – V
- CloudStack
- OpenStack

Service providers who use these cloud platforms can use the built-in cloud adapters. Service providers who use other cloud platforms must build platform-specific adapters for Cisco ICFP to work with the targeted cloud platforms. Service providers can use Cisco's Custom Cloud Adapter Integration framework to simplify and facilitate cloud adapter development for their customers.

Cloud adapters must issue one or more API requests to the targeted cloud platforms and expect an asynchronous event when they receive corresponding API responses from the cloud platforms.

The following figure shows the logical flow of the Cisco ICFP cloud adapter infrastructure when it is shared between built-in and custom adapters.

Figure 2: Cisco ICFP Cloud Adapter Integration

