



# Arming the Cloud Service Provider to Compete

Why a solution for customization, extensibility and differentiation is essential to market growth

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# Introduction

The competitive cloud marketplace is becoming fiercer as the adoption of public cloud increases. Hosters, service providers and telcos are all battling against each other for cloud business creating a thunderstorm of services and solutions, but are they all different? There are differences regarding the scope of the provider, e.g. a hoster vs. a telco. However, across an industry where there is a significant risk of commoditization and, potentially, poor delivery against customer requirements, rolling out a generic cloud is no longer an option.

This paper looks briefly at a popular example of where extensibility, customization and an ecosystem played an important role in one company's success. It then outlines some of the requirements needed to gain market share and stay competitive and shows how a cloud orchestration solution can help. Lastly, a list of available integration solutions is included that demonstrate how easily plugin, integration technology within a cloud orchestration solution is handled.

## Extensibility, Customization and an Ecosystem

Differentiation is at the core of the service provider market as each organization competes against industry giants. To illustrate how important it is to differentiate based on customization, extensibility and an ecosystem, you needn't look further than Apple vs. Nokia.

Nokia was the world's largest vendor of mobile phones from 1998 to 2012. However, over the past five years its market share declined as a result of the growing use of touchscreen smartphones from other vendors—principally the Apple iPhone.

Whereas Apple created, first and foremost, a device that can be summed up as 'cool', they also did something genius. They created a product that could be customized to the end users requirements by making it easy to create apps for it. As a result, they created an ecosystem apps that end users wanted. They extended the use of the iPhone to others and as of October 2013, the App Store has more than 475,000 native apps by Apple and third parties.

Consider the difference in share prices. Apple stock increased 332.47% from the day Apple launched the first iPhone up until today whereas Nokia has dropped 74%. Put another way, if you owned \$100 of stock in both companies on the day Apple launched the iPhone, your Apple stock would now be worth over 13 times your Nokia stock.

Illustrating this point demonstrates the difference between both companies in creating business value, and also of enabling easy integration with third parties. When you do this, you allow customization by the end user, and also create an ecosystem of partners primed to make money themselves, all while increasing revenue for you.

Applied to the cloud service market the same holds true. If you can offer a differentiated cloud service that allows you and your end users to customize it to meet their needs, plus create an eco-system of technologies that integrate, you'll be primed to win the cloud war. Back to Apple vs. Nokia – one has thrived, while the other didn't.

## Service Providers' Problem

Service providers have a problem. Do they deploy a standard cloud management solution, similar to some competitors, that does not include customization or differentiation capabilities? Do they become a 'me-too' offering? To avoid this, do they spend time, money and resource trying to develop a bespoke cloud management solution? The answer to all of these is a resounding no. You, the service provider need to identify a way either to get to market quickly, if you are not already, or to truly play in the market to gain market share. But the need for speed should not mean sacrificing functionality or the ability to future proof the cloud platform. If it does, then the risk of commoditization and not meeting customers' requirements is high. A generic and non-differentiated platform will not help you get ahead in this fiercely competitive market.

Any sure that the cloud solution you deliver is flexible, adaptive and extensible. These three key words enable future growth and also the chance to create your own ecosystem of partners, easily.

While many have tried to build or cobble together a cloud management solution of their own, many of them are starting again, from scratch, because these solutions lack the ability to adapt or extend enough to aid innovation and differentiation.

A final problematic area is the hardship for service providers needing to write code, deliver new services and add functionality, all while keeping the day to day business going.

To avoid commoditization and customer disappointment, service providers need to select a cloud orchestration platform that removes all of this friction. You need a platform that arms you with the solutions needed to win on the cloud battleground.

## A Solution for Customization, Extensibility and Differentiation

At the heart of a successful cloud business is a cloud orchestration solution that supports both an individual business, but also extends to reselling cloud services. It should include capabilities such as:

- Internationalization for service providers and resellers so it is easy for you to on-board customers based on their geography and billing requirements.
- Granular multi-level metering and billing that supports multi-level master billing entities and customers, applies differing rates of billing and pricing structures for different entities. This should include subscription billing capabilities so you can bill according to your business.
- Payment provider plug-ins to interface with payment provider systems to allow different plug-ins to be created for handling merchant transactions.
- Support for complex billing scenarios enabling reseller/distributor type models.

- Universal storage so service providers have full flexibility over storage options and can be storage independent. An added benefit is support for Ceph, a distributed block store, object store and file system designed to provide excellent performance, reliability and scalability.
- An intuitive and customizable user interface so that end users only see relevant information, resources in use and capabilities available which will help to reduce the workload on the IT team. It should also include brandable and whitelabelled context sensitive help to change the languages, descriptions and terminology used; important when you want to differentiate services.
- Chef configuration management tool from Opscode for single click complex application deployment involving multiple servers, networks and resources all from a friendly user interface.
- Self-service provisioning for you to extend and offer to customers.
- Smart filtering so that end users have an uncluttered view of critical information with views available according to business categories, particularly helpful when reselling cloud services.
- Cloud blueprint technology to allow service providers to graphically select all of the elements required to build a standard virtual workload package and save this as a re-usable and re-deployable template.
- Scalability assurance at every layer of the stack and across multiple clusters and locations so service providers never need to worry about scaling the business.

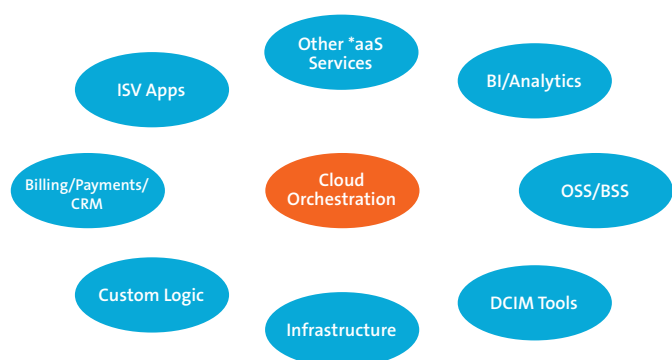
But this is just the start of what a cloud orchestration solution should include. Supporting easy integration with third party technologies so service providers can work with best of breed technologies becomes vital as the competition heats up. You should have easy access to technologies that are right for your individual business allowing significant differentiation opportunities.

## A Cloud Orchestration Solution Enabling Easy Integration

Flexiant Cloud Orchestrator is a fully customizable platform to meet a service provider's unique needs. You can customize the user interface (UI), the billing system and now apply customization based on business logic and additional plugins to enable ecosystem partners. Flexiant has introduced new trigger technology within Flexiant Cloud Orchestrator to allow external systems as well as users to receive notifications or requests when customizable 'trigger' events occur within the platform.

Based on the Flexiant Development Language (FDL) which itself is a layer on top of the popular Lua programming language, short and simple plug-ins can be written to apply logic to cloud management. Service providers can easily establish rules that trigger activity such as notifications that an event has occurred, automate provisioning of resources, apply workflows, etc. Triggers can also be applied to other systems within a service provider's infrastructure so, for example, using a trigger; you can easily write plug-ins on top of the management platform for back-up infrastructure, billing systems, data center infrastructure and customer management or monitoring.

Flexiant Cloud Orchestrator offers service providers the solution to easily modify and extend their platform based on their own needs, increasing the ability to differentiate, and to deliver the services their customers want. The orchestration layer should now integrate with your BI/analytics tools, OSS/BSS, DCIM Tools, infrastructure, billing, payments and CRM systems, ISV apps and other \*aaS services.



Why is it important to arm service providers with easy integration solutions? First, let's look at some use cases:

- **Helpdesk (e.g. Zendesk)** – Happy Service Inc. prides itself on customer support, and wants to ensure every time a job request fails for any reason it automatically opens up a ticket with the customer's details and details of the job failure so they can track it and investigate it thoroughly. Easily integrate with external ticketing systems for automatic fault filing. Create a ticket for failures in Zendesk using its API. Assign it a tag which matches the customer's 'level' key, e.g. gold, silver, bronze.
- **Custom Logic (Boot Order)** – BB Inc. provides preconfigured application template technology for its customers who host with them. As part of this, the service provider has a number of traditional applications that need to ensure servers are booted up in a certain order

to ensure they come online correctly. Add custom logic for servers within a Bento Box to be booted in a certain order for application compatibility by pausing jobs to make them dependent on each other to boot in a certain order.

- **CRM Integration** – Gamma Service Provider has its own in house CRM and billing platform which doesn't have an API. It needs to integrate it into Flexiant Cloud Orchestrator so it can continue to manage its customers via one system. As part of this integration, it wants the CRM system to be updated when customers launch new servers. Manage CRM and billing platforms via one system and update these when customers launch new servers.
- **Load Balancing** – High Traffic Inc. provides a load balancing service to its customers. When new VMs are added to a particular Bento Box and started, it wants the load balancer notified and to add them to the existing pool serving traffic. Equally, if a server is stopped it is automatically removed from the pool. Use Flexiant Cloud Orchestrator for creation and modification of load balancing services based on user actions.
- **Integration Hub** – Flexible Hosting Inc. is an existing user of Zapier, a tool for integrating numerous other services together. It wants to enable Flexiant Cloud Orchestrator to automatically push relevant notifications and updates to Zapier to then be routed to its other existing integrations. Integrate to send a list of all job notifications and relevant data to a web hook for Zapier to be able to parse and manipulate.



- **Dashboard** – Customer Epsilon Inc. wants to use a SaaS based dashboard service to keep track of important information from its servers, including how many it is running, what costs are incurred etc. It wants the ability to get this information out on a near live basis without needing to run a third party service. Create a scheduled trigger that automatically posts to a Duckboard page with the number of servers running, number of customers, customer activations in the last 24 hours, invoices raised in the last 24 hours.

The benefit in each of these instances is that using Flexiant Cloud Orchestrator, a plugin can be created with limited code, in a short period of time. These are just a handful of examples, but there are hundreds of more use cases using Flexiant's Plugin 'Trigger' technology. See 'List of Plugins Available' for some of the plugins currently created by Flexiant.

Keep in mind that service providers can easily use Flexiant's Plugin Trigger technology to create their own customized integrations with other partners. The result is an ecosystem that service providers can tap into easily, but also add their own value on top.

## Conclusion – Your Ultimate Cloud Service Business Potential

Ultimately the pursuit of differentiation should lead to a single exciting possibility for you and your customers. At this point there is little evidence that anyone is taking up the challenge and opportunity to pursue this line of thought and therefore create a step change in the customer benefits derived from the cloud. However, all serious attempts to differentiate do not start or end with questions like "how do I compete with Amazon on storage". They start with questions like:

- Who are my customers?
- What do my customers need to achieve to be successful?
- If armed with the ability to orchestrate infrastructure, platforms and third party solutions, providing me with access to an arsenal of functionality to deliver differentiated cloud services, how would I use this to improve my business model customer processes?

Being armed to design, develop, launch, manage and meter and bill cloud services using a wide range of solution vendors enables you to fundamentally develop game changing solutions for your customers. It allows you to deliver solutions and revenue streams that are highly differentiated, high margin and highly defensible.

When will you engineer cloud services that truly change the business processes and business models of your customers for the better?

Flexiant gives you the toolkit to do this. Flexiant Cloud Orchestrator offers you a solid and mature open platform that supports easy integration with third party technologies. This gives service providers the chance to work with best of breed technologies that are right for their individual business allowing significant differentiation opportunities. As the only management software needed to power a cloud, service providers can now compete against Amazon's ease of use while differentiating in the cloud industry with customizable software that allows them to deploy solutions that are right for their customers. The flexibility, functionality and capabilities of Flexiant Cloud Orchestrator ensures not only the extensibility of the software, but also of your offering.

You have an opportunity to benefit from the Apple model – build a great product that differentiates you and then create an ecosystem for customers to customize the product to their own needs.

## About Flexiant

Flexiant provides cloud orchestration software focused solely to the global service provider market. Flexiant Cloud Orchestrator is a cloud management software suite that arms service providers with a customizable platform to help them turn innovative ideas into revenue generating services quickly and easily. With Flexiant, service providers can generate more revenue and accelerate growth, compete more effectively and lead the market through innovation. Vendor agnostic and supporting multiple hypervisors, Flexiant Cloud Orchestrator offers a customizable platform, a flexible interface, integrated metering and billing, reseller capabilities and application management. Flexiant gives service providers the ability to develop, launch and bill for new cloud services quickly.

Flexiant has been named a Gartner Cool Vendor in Cloud Management, received the Info-Tech Research Group Trendsetter Award and called an industry double threat by 451 Group. Flexiant is now a **Dell certified technology partner**. Customers include **Computerlinks, ISONNET, FailProof Technologies, ITEX** and **NetGroup**. Flexiant is also a key participant in the **FP7 Consortium**. For more information visit [www.flexiant.com](http://www.flexiant.com).



# Flexiant Cloud Orchestrator List of Plugins Available

Name	Provider	Description	Use case
Alerting	Twilio	Automatic SMS messages via Twilio if server starts fail	Enables integrated alerting for failures.
Auto Start		Automatically start newly created servers if server, Bento Box or customer set with a specific key, autoon:yes	Automatically start servers at deployment to save additional steps.
Custom Logic (Boot Order)		Enable servers within a Bento Box to be booted in a certain order for application compatibility by pausing jobs to make them dependent on each other to boot in a certain order	BB Inc. provides preconfigured application template technology for its customers who host with them. As part of this, the service provider has a number of traditional applications that need to ensure servers are booted up in a certain order to ensure they come online correctly.
Custom Logic (Firewall)		Automatically add deny all firewall to server upon create	<p>Secure Hosting Inc. wants to ensure that a default deny all firewall is created and attached to a server every time a server is created to ensure it is kept secure.</p> <p>Dependent on the relevant customer key (denyall) being set, automatically add denyall firewalls to each VM at creation. Create a denyall firewall the first time and adding additional servers to that existing template thereafter.</p>
Custom Logic (Snapshots)		Automatically take snapshots of a server on a recurring basis	<p>Reliable Hosting Inc. wants to automatically take snapshots of servers for certain customers on an automatic basis, keeping a certain amount and then recycling them as required. At any point, the customer needs the ability to use that snapshot like they normally would.</p> <p>Create the ability for scheduled snapshots based on a customer system key (to enable) and a customer key to dictate the schedule and amount kept e.g. one every hour and keep eight at any time. Allow multiple schedules per customer.</p>

Custom Logic (Authentication)		Enable alerts based on failed logins	Secure Hosting Inc. takes security very seriously, and wants to automatically get informed by e-mail if users attempt to login with the wrong authentication details.
Custom Logic (Leases)		Automatically shut down servers and eventually delete if leases are not renewed	Private Cloud Hosting Inc. provides single tenant cloud hosting for its clients. It charges a fixed fee per month to its customers, but to keep resource usage on the platforms down as much as possible the customers require the ability to have leases for its servers, so if a lease isn't renewed the server is automatically shut down, and eventually deleted.
Configuration Management		Creation, modification or notification to configuration management systems	Beta Hosting Customer wants to deploy a new 'Dev Ops' approach to managing its infrastructure. He wants the ability to send custom notifications to his external management system when certain events happen. For example, ensure when new servers are spun up that they are automatically registered and hooked into the external management system for tracking and management.
CRM		Manage CRM and billing platforms via one system and update these when customers launch new servers.	Gamma Service Provider has its own in house CRM and billing platform which doesn't have an API. It needs to integrate it into Flexiant Cloud Orchestrator so it can continue to manage its customers via one system. As part of this integration, it wants the CRM system to be updated when customers launch new servers.

Dashboard	Ducksboard	Display relevant information on an external dashboard as it updates	<p>Customer Epsilon Inc. wants to use a SaaS based dashboard service to keep track of important information from its servers, including how many it is running, what costs are being incurred etc. It wants the ability to get this information out on a near live basis without needing to run a third party service.</p> <p>Create a scheduled trigger that automatically posts to a Duckboard page with the number of servers running, number of customers, customer activations in the last 24 hours, invoices raised in the last 24 hours.</p>
External Database Integration	MySQL Database	Dump Invoices created into external mysql database with custom structure	<p>Add existing relevant invoice data into an external mysql database as invoices are created.</p> <p>Superblocks Service Provider has a proprietary statistics program which they use for reporting and analysis. They want to be able to push data into its database as it is recorded in Flexiant Cloud Orchestrator. For example, invoice creations, new customer signups etc. Its preferred route is by automatically creating new records in an existing MySQL database.</p>
Firewall		Creation, modification and notification of firewall requirements	<p>Secure Hosting Inc. wants to use hardware firewalls for its customers for extra performance and security. It plans to do this by using interworking VLANs and its own hardware firewall. As part of this though, Secure Hosting Inc. wants the ability to send updates to its external firewall based on changes the customer makes in the control panel.</p>

Helpdesk	Zendesk	Automatically create tickets upon job failure	<p>Happy Service Inc. prides itself on customer support, and wants to ensure every time a job request fails for any reason it automatically opens up a ticket with the customer's details and details of the job failure so they can track it and investigate it thoroughly.</p> <p>Create a ticket for failures in Zendesk using its API. Assign it a tag which matches the customers' 'level' key, e.g. gold, silver, bronze.</p>
Instant Messaging Service	Hipchat	Send notifications over XMPP based on criteria	<p>Another Happy Inc. wants to automatically alert its sysadmins to problems with failed jobs via their internal instant messaging system. They want these to be configurable depending on the type of failure and time of day.</p> <p>Send notifications of new customer activations, new server creations and new invoices created to a Hipchat channel.</p>
Integration Hub	Zapier	Send notifications and information to external system for parsing and notification	<p>Flexible Hosting Inc. is an existing user of Zapier, a tool for integrating numerous other services together. It wants to enable Flexiant Cloud Orchestrator to automatically push relevant notifications and updates to Zapier to then be routed to its other existing integrations.</p> <p>Send a list of all job notifications and relevant data to a web hook for Zapier to be able to parse and manipulate.</p>
Leases		Enable automatic shutdown of servers after a stated time period if the time isn't extended (time tracked in a key)	Good for test/dev for internally facing services etc.

Load Balancing		Creation and modification of load balancing services based on user actions	High Traffic Inc. provides a load balancing service to its customers. When new VMs are added to a particular Bento Box and started, it wants the load balancer notified and to add them to the existing pool serving traffic. Equally, if a server is stopped it is automatically removed from the pool.
Load Balancing		Enable automatic addition of services to load balancer	When a server is added to a Bento Box, automatically add it to the load balancer.
Log Management and Analysis	Loggly or Splunk	Automatic independent logging and analysis of important events for audit and stat analysis purposes	Secure Hosting Inc. wants to automatically log offsite any important events that happen within the platform, and wants to ensure it is able to be analyzed easily. It wants to use a SaaS platform for log analysis like Loggly or Splunk.
Mailing List Integration	Mailchimp	Automatic mailing list additions	<p>In the same way as different stages of a marketing funnel get users on to a different e-mail list to be targeted, Niche Hosting Provider Inc. wants to achieve the same result with Flexiant Cloud Orchestrator. Depending on a user performing certain actions (e.g. starting his first server, deploying his 50th server or first Bento Box), Niche Hosting wants to automatically add them to a mailing list to send a custom notification.</p> <p>Whenever a new customer is activated, creates his or her first server or Bento Box, add them to a custom mailchimp mailing list. The mailing list details must be configurable using keys if possible.</p>
Message Queue	RabbitMQ	Add list of processed jobs to a message queue for external systems to parse the data	<p>Large Scale Messaging Inc. wants to integrate Flexiant Cloud Orchestrator into its various other internal platforms. It already uses a Message Queue (RabbitMQ) for this, and wants to set Flexiant Cloud Orchestrator up to automatically publish events to its existing message queue, such as failed jobs.</p> <p>Send a list of all job notifications and their relevant data to a RabbitMQ service (hosted or local) for external systems to use.</p>

Server Monitoring		Automatically add servers to remote monitoring service when started	Demonstrate servers added by a customer which automatically added to the monitoring system for a particular customer when they are started for the first time.
Application Monitoring		Create, modify or alert monitoring services	Acme service provider wants to integrate its existing monitoring solution in to its cloud platform so that all servers are automatically monitored and tracked whenever they are running. Because the environment is dynamic, Acme wants to make sure that servers are added and removed from the monitoring system automatically.
Trials	N/A	Automatic expiry of new user trial accounts and servers after certain time period if credit card not added	Enables trial periods for monthly billing packages.
Workflow		Enable custom workflow integrations for authorization or integration into external systems	Enterprise Hosting Inc. enables enterprises to outsource their hosting requirements, but enable the customers to maintain its existing processes and procedures. As part of this, Enterprise Hosting Inc. wants to roll out self-service, but still maintain the ability to integrate into the customer's existing workflow systems by calling out to them automatically as required.
Billing		Creation or notification of billing or payment/ transactions	Acme Service Provider wants to use Flexiant's existing internal billing platform, but send custom e-mail notifications to its accounts team as payments are processed, or invoices created, for their own records, with exactly the information they need in them, including customer details etc.

Payment Processing		Integration with payment providers easily	Cloud Hosting Inc. from the USA has a reseller in Mongolia, who wants to process payments through a local payment provider. Cloud Hosting Inc. needs an easy way to thus support custom payment providers.
Routing		Integrate external routing systems for modifications (e.g. I2 over I3)	In conjunction with Internetworking VLANs and/or preconfigured appliance Vims, Backbone Provider Inc. wants to enable automatic L2 over L3 overlays which work by automatically sending notifications to the providers OSS/BSS provisioning systems when the customer provisions the relevant service from within the UI.
Task Management		Automatically create tasks for users in task management software based on events	Happy Service Inc. prides itself on customer support, and wants to ensure every time a job request fails for certain serious reasons, it creates a new task in its internal sys admin task tracking system to review it.
Virtual Image Management		Enable automatic publishing/image protection/image retiring for images based on specific criteria	ISV Hosting Inc. wants to make it easier to automatically publish and share images, ensuring permissions are always set correctly when they are published. It wants to ensure that if permissions haven't been set at all, that a default set is imposed when an image is shared with other users.
Voice and SMS Integrations		Enable notifications via voice or SMS based on certain system events including time of day based	Reliable Hosting Inc. wants to enable any errors or job failures in its platform to either send an SMS message or if serious enough to automatically call Reliable Hosting on the phone to notify employees of the issue.