# Cloud Week Notes

## Day 1

## B Osoro – intro

Strategy for Cisco – CCA-MCP for SP, Metapod, CECS and Cisco Cloud Consumption Services

Cisco still believes that networking is important to the cloud – someone called Yvette is focussing on exposing networking smarts through the stack.

Some meeting on Nov 16th is supposed to make a decision on CIS and what is happening and working there.

There is 4 x 9s sla on Metapod. That is a strong selling point we are told.

Shipped is likely to be bundled with Metapod in next 4 – 6 months – although this was not exactly stated emphatically - so this could change.

PaaS – Apprenda on pricebook, Pivotal CF will also be on the PB in December we were told

And that was that – the Cisco cloud strategy really and no CIS in there at all !! at least not really – just a very localised offering – see next section on S.P with Deutche Telecom Germany.

## 2nd Session for S.P.

‘CCA-MCP is going to be the leading architecture for enterprise clouds in partner or SP i.e. Cisco Powered

‘Cisco Digitization Software’ was mentioned – note to look this up – I did but could not find anything

#### Main Cloud Pillars for Cisco

vMS, CCA-MCP, Cloud Collaboration Apps and CIS are the **4 main pillars** on the slide (and yet CIS has a bit of a question mark over it!!)

**vMS is a validated architecture** – OOB services up and working quickly – options for SP vMS

* Includes Cloud VPN - secure broadband
* Cloud MPLS - secure MPLS
* Cloud iWAN – some over internet some over MPLS

**CCA – Microsoft** framework – tested for services like DR, Backup, Private cloud aaS, for SP – Out Of Box i.e.CVD.

**Collaboration in SP** – HCS for enterprise space – Spark for SP

**CIS** – will go live with DT in 2 days – ie mid November – Openstack platform - it has 5-6 alpha customers initially

Will be some more info on CIS in next couple of weeks- some meeting take place – but does not look like it will be what was announced at DevNet SJ

### Cisco Powered.

**Cloud Demand** is compensation for ams for selling cloud, mostly Cisco Powered – FY15 has added 3 new providers and 5 new services every month. Lots of Cisco powered are joining

SAP HANAaS, HSS ( security), ISV GTM ( applications to partner clouds), DRaaS, DaaS ( desktop), ICF-Provider to partner cloud API ( about 70 partners 3 only in EMEA ( DD, Island, BT, actually 4 also Netcloud in Switzerland)

All living on VMDC

CCA-CMP is the principal strategy for BDaaS (Big Data).

They say that they are looking to provide a unified API to allow customers to consume these Cisco Powered services – this is what Cisco has to provide – I did not get much confidence in the answer but the idea has been thought of, that is their general direction.

**Measuring Cloud attach rate – but not use rate.**

350 customers of IFCb with CECS - - thought is customers are buying but not using, so really not sure what are the multi cloud attach rates

There is something called DCV – ‘Solutions master’ – Cloud and Hybrid IT Curriculum – looks PSS focussed.

## Metapod Session

Scott Sanchez

Some books

* The New Kingmakers
* The Pheonix Project

**Metapod**

It is a Hybrid DIY platform – Cisco installs and manages and monitors all components, customer is administrator, and consumer of OS services

Security DIY – customer secures their own data and environment

Who are Presidio ? <https://cisco.jiveon.com/groups/presidio>

### Management Choices EMEAR across Cisco Cloud portfolios

**Customer managed** – CECS, UCS-Openstack

**Partner managed** – CCA MCP, Cisco Powered, DTaaS (D Telecom CIS, the only instance of CIS)

**Cisco managed** – Cisco Metapod

### Portfolio comparisons

**CECS** – Muti Tenant (**no)**, Hosted private model (working on), on prem (**yes)** not designed to be multi tenant i.e multi company platform for SP

**Metapod** – Multi tenant (no), hosted (planned but not yet), hosted on prem (yes) – the Metapod is all one company subdivided into projects or tenants – it is not designed to be multi-tenant from a multi customer point of view, like CECS.

**CCA-MCP** Multi tenant (yes), hosted private single tenant IaaS (yes), Hosted multi tenant (yes), on prem private IaaS (no)

**Cisco powered** – Multi tenant (yes), Hosted private single tenant (yes), Hosted private multi tenant yes, on prem private IaaS (no)

***No productised solution yet for multi tenant Metapod – can engineer but not Out Of Box***

***\*\* No on prem multi-tenant solution currently – this is something the Metapod team are working on.***

## Cloud Compensation

$1.6bn FY15, expected to be even more this year

For every $ of cloud sold counts as a booking.

2 rates of compensation – 1 for VMDC and a premium tier including ACI and ICF

vMS – the first service is Cloud VPN has been added

**There are 3 types of services and 3 types of compensation**

1. Cisco Powered, 2. SaaS and 3. FCM/XaaS flexible consumption – these are very large deals and accounts, and have Cisco AS

All of these are compensated

* Cloud Demand bookings are Cisco Powered
* SaaS are Committed contract value
* FCM is paid as an annual compensation

<https://tools.cisco.com/WWChannels/LOCATR/openBasicSearch.do> Cisco Partner Locator

## Market Trends in Cloud Services

**Example - AWS Big Data**

All data is stored in S3 to save money – you take the data out of S3 for Hadoop Map Reduce run, putting it into EMR – elastic map reduce - (which is expensive) and then put it back to S3 – the cheaper storage.

With Cisco Metapod you can keep the data online all the time – saving any delay for availabilityto run map reduce - with really no extra cost.

**Containers –** big trend

Orchestrating containers **–** big moves in this space

[www.eightypercent.net/post/layers-in-the-stack.html](http://www.eightypercent.net/post/layers-in-the-stack.html)

Ansible runs and orchestrates based on Immutable containers i.e. you don’t modify them you just rewrite them also Terraform and Saltstack are like this

CoreOS or **stripped OS,** uses Docker – see review of MS example of stripped down OS Windows Server Nano <http://www.wired.com/2015/04/super-slim-windows-microsoft-eyes-future-cloud-computing/>

**Open container** brings together Rocket and Docker and other container models – standardization – or a move towards it as containers become more heavily adopted <https://www.opencontainers.org/>

**Orchestration layer for containers** – Products like Mesos, Consul and Kubernetes – schedulers to instantiate containers for applications and manage their properties.

When containers come up you do not know what port or IP it is using, Consul goes some way to make this predictive – Terraform can update and orchestrate in situ for example.

Registry for containers – Google and Amazon have theirs in addition to Dockers own. Need for persistence –

**Mantl** –Cisco PaaS for containers - Matt Johnson UK representative – Mantl is going to have Calico, Mesos etc, Calico has now been officially changed to Contiv

Quote Adrian Cockfroft – ‘people don’t want to pay for middleware but they are willing to pay for services’ - see his blog. http://perfcap.blogspot.com/2011/08/i-come-to-use-clouds-not-to-build-them.html

### Orchestration of services

Project – shipped

**ChatOps** – Slack, Atlassian hip chat, have open APIs can easily add into dev environment – chat bots can provision services based on commands in chat !!

Hubot was a project that started chat ops.

Spark API is not open – Marcello has reverse engineered the API and published as RESTful

[vallard@cisco.com](mailto:vallard@cisco.com) - great contact for devops conversation

### PaaS

Pivotal uses Spring application infrastructure that helps customers build their apps

PaaS as a service seems to be a good option for customers – standardise, focus on code only, speed to build,

‘The value of Cisco to PaaS is the promise of a Rock Solid IaaS underpinning the PaaS layer.’ This quote came from Pivotal when talking to Cisco Metapod team.

Metapod is that value – the PaaS’s of the world find themselves engaged in IaaS stability issues

Pivotal will be put on the price book soon – December timeframe..

Metapod is becoming RedHat under the hood. Rock Solid IaaS is not enough – response is that most of the customers we have are those that have struggled with Open Stack

## Serverless architectures

Bare metal, VMs and Containers all depend on an operating system. Serverless architectures are all about having no Operating System.

Look at Parse and Firebase – look at <http://thenewstack.io/amazon-web-services-isnt-winning-problems-poses/>

No Operating System, no fuss, patching, updating, maintenance – no load balancing

Not PaaS layer – you get canned microservices

AWS Lamda can run like this - AWS Lambda lets you run code without provisioning or managing servers. You pay only for the compute time you consume - there is no charge when your code is not running. https://aws.amazon.com/lambda/

https://aws.amazon.com/blogs/compute/microservices-without-the-servers/ ( amazon) use lamda to verify the source – goes into kineses stream service, another lamda service, select datasource https://aws.amazon.com/blogs/compute/the-squirrelbin-architecture-a-serverless-microservice-using-aws-lambda/

**Invisible web** – darknet – how do transactions get completed if this is not above board?

Peer to peer data center to data centre infrastructure –

DC – container managing contract – DC – smart contracts

Apeal to dev

Cust pay for services

Serverless architectures

smart contracts

## Adoption and Competitive Overview

Jenn Allen

**Competition**

HP – cloud broker – not as good as ‘Gravitant’

HP is laying off 30K people – gross margins under 5%

HP managed private Cloud – Converged 700x for cloud plus Cloud system 9.0

CSA is the HP portal – gives the customer view and management and chargeback across all clouds, on prem, Eucalyptus, not complete – take a look at this online.

# Day 2

## Metapod and Openstack Update Steve Watkins

‘**Project Mercury’** - https://cisco.jiveon.com/docs/DOC-619355 Mercury is a Cisco OpenStack platform built on top of an underlying OpenStack Distribution like Red Hat to build a carrier grade platform integrated with Cisco HW & SW.

The Goal of Mercury is to provide a reliable, highly available & easily upgradeable OpenStack platform for **SP deployment**

Cross communication often limits the adoption of new projects, Openstack is Complex.

Openstack core projects are considered the priority – the incubating projects are a wait and see.

* **Mirantis** always installs their own so involves services
* **Ubuntu** is making their distribution more installable
* **Redha**t has many proprietary elements to differentiate itself but again installation is complex due to these
* **HP Helion** has Ironic bare metal in their distribution which is a differentiator

**Cisco Value add on OS**

Cloud VPN ( NFV) ( With Cisco vMS, SP now (will be announcing an enterprise version of this), Spark ( collab in Openstack), Cloud DVR Videoscape – (Cisco has transcode solution, compute from OpenStack is a good fit for this).

(vMS definition - Cisco's Virtual Managed Services solution shifts the deployment of managed services away from the manual configuration of the latest network devices to the creation of a software abstraction to represent the service definition. Through the advanced service orchestration capabilities of the Cisco Network Services Orchestrator (NSO) software, an abstract service design is instantiated atop the latest infrastructure. This approach allows the service designer intent to be realized through the use of service models to automate the creation and customization of their end user service offerings.) see <http://www.cisco.com/c/en/us/td/docs/solutions/Service_Provider/vMS/1-02/DG/vMS_DG/vMS_DG_1.html>

Project mercury is therefore Openstack stack for Service Providers without the operations – like Metapod is for enterprise.

**Question - VTS?** – Cisco has designed many plug ins for Neutron – the VTS plug in is on a different track to the other hardware ones. Answer – yes this is because different groups are working on different stuff!

*There will be SP and enterprise offerings of both Metapod and vMS ( NFV platform)*

## Metapod

Metacloud mentality – take out all the things in the project that are not needed and solid, Metapod supports Neutron, Cinder, nova, Glance, Keystone, Horizon, Heat.

Cloud Foundry PaaS – December 2015 will announce the partnerships – needs Neutron in Openstack for this to happen due to the way that CF is built to consume networks – No ceilometer yet but that is likely to come in, as is Swift storage in the not too distant future.

Openstack APIs – they have v2 and v3 – we support v2 as these have been around a long time. V3 is too new – affected by things like upgrades and stability

Customers are responsible for data encryption and protection – we have no access this.

We are waiting for a security statement that applies to patriot act – concerning access to the data

After the Metapod has been removed from the hardware – at the end of contract, customer gets root access back into their equipment

Support is 4 x 9s i.e. 99.99% uptime - standard vs Advanced options – check these out – I had heard all support was the advanced option now.

2901 – used for vpn access, some customers will not accept this – but this is required for Cisco Management

### Some roadmap discussion

* Identity integrates into LDAP, what about IPAM? – all internal at the moment – could maybe be integrated with Infoblox for e.g. but not aware of anyone that has done this yet.
* Need to add a middle group between Member and Admin – this an issue right now – will be high priority – i.e. and admin can see all projects – no RBAC capability to separate
* Metapod Mini – roadmap item – could have virtual ASR or CSR – will be cheaper than the Metapod with ASR

### Scale of Metapod

3 control nodes manage up to 500 slave nodes – very scalable compared to other offerings available

VMware – customer e.g had 17 control nodes for 100 slave nodes.

### Licensing and bundling

Storage license is for managed Ceph – it’s a trust model for this.

UK working on Cisco Capital offering also for the control nodes of Metapod and to consume these and the whole as a monthly payment rather than paying per annum.

Cost – you pay per socket – that is it – does not matter whether the VMs are turned on

Customer Trials – speak to Michael Doherty

### Price sample

Example – $260K with Metapod plus 30 Sockets plus 120 TB

## Neutron

Scale 4m dyn nat entries, 16k static, 4k vrfs - all on the ASRs

Uses ML2 plug in – Linux bridge – is the hypervisor Neutron implementation

**Note** – the stack is different to that used with VTS/VTF

Why should this matter? Perhaps around standards – for security and compliance within the customer from the point of view of qualification

ACI integration? – no details regarding the use of plugins – makes these solutions look very independent and tactical

9Ks are managed by Neutron also to provide VLANs and trunking mainly – these are managed by Cisco – customer does not have to deal with these so no manual configuration for the networking from the customer point of view

### Multi- tenant

Keystone version we use does not have multi tenancy – ie an admin can see all projects

***Members cannot CRUD Neutron networks***

Auto-scaling now requires a heat template – ceilometer would automate it – this is in the queue, no timeline yet for this.

**Upgrades**

These happen when there is a vulnerability found or issue requiring code workaround or new feature set

Customer contacted – timelines, live migrations etc are all managed by Cisco.

This is why Cisco acquired Piston Cloud – for people to scale their operations.

**Competition**

HP and IBM have their own solutions vs Metapod now.

**Roadmap**

Compliance roadmap – PCI first goal and SOC2 (American) – FY16

Patriot Act issue - US Gov could take control of the Metapod to seize their data – we would not be able to tell the customer this was happening.

### GUI User interface

Admin can set quota on CPU/Mem/storage

Images – can be private (for a given tenant) or public

Key pairs are defined on a project basis

Resources are defined from a central pool – affinity rules are command line only

Scale – can scale up, but not down - unless the instance has the same size disk. If disk is different this is not allowed

In the Scale up, a snapshot is created and the instance is then recreated from the original volume with larger size

Solidfire recommended for Ceph storage installations due to its performance capabilities

Scality? – no, nothing yet, all Ceph for now – though nothing to stop customer adding their own storage for consumption

HEAT API is used for both HOT and Cloud Formation template calls, it recognises both to save the customer from rewriting their API template calls they had for AWS

EC2 API allows customers to use their scripts that are written to EC2 API in Amazon – note Matt says though that this is a little out of date compared to the API used by Amazon now – so be careful in your discussions with customers.

Openstack uses RAW image – we also use QCOW. These are the usual or defaults

Can also use VMDK( VMware), VDi (Virtual Box) etc

## Role Play

How does your platform comply with with SOC and PCI these are important standards for our company and our industry?

We would feel better if we can use an on site solution – although AWS do say that they comply - AWS is currently SOC for their internal processes and PCI for the Data Center

**Note**

Don’t fall into the trap of **AWS or Metapod** – it is both together – so for geographical spread the customer can use Amazon, for certain workloads, and on Prem Metapod for more cost effective and controlled workloads

Keystore is encrypted, for access to instances,

### Why get off public cloud?

* Cost – Openstack is expensive to run – Metapod is designed to make this predictable and opex based, the cost of Amazon is also high, this is due to the service you pay for rather than any engineer time.
* Business considerations - Security and governance and compliance
* Data intensive apps – moving the data into the cloud or from the cloud once it is there
* Noisy neighbours

Openstack offers an open platform that can be viewed as more strategic as it is open

**Customer curved ball** – we have PaaS we don’t care about the platform we are using

Response – Metapod – is not about the platform as such – it is about the consumption model of the APIs – price, flat orchestration vs VMware for e.g however Metapod value add is also about the rock solid Openstack capability for IT and DevOps and for the PaaS layer above to consume

## Amazon session

(Metapod Suitable for both mode 1 and 2) – enterprise grade h/w, L2/L3 enterprise design, AWS is commodity, best effort, noisy neighbours,

### Azure

Azure is really catching up with Amazon!

They have cloud vswitch for network virtualization, App designer, which is like Stack Designer from Cisco

Dell - are building a MS version of a managed service on premise

MS are making mind share with developers – e.g. ING are going with this. The view of Steve was that the lines are blurring between mode 1 and mode 2 on MS

Look for news on MS in the developer community

Docker is ported to Windows now for e.g. need a toolkit for this work.

**AWS Cloudformation** – in Metapod the Cloudformation API sits in front of the actual Heat orchestrator – behind Heat is still the orchestration mechanism.

### Autoscaling

AWS has Cloud Watch and Elastic Load Balancing (ELB) – Metapod does not have a mechanism for this – autoscaling can be done in Heat – but no trigger to initiate it.

Cisco partners with AVI networks – a SaaS to monitor and trigger, AVI polls through the Control layer APIs – e.g. ZenOss – AVI polls and load balances

This is something that could be delivered by AS and as part of the Metapod service. Mention this and contact Steve if a customer is asking for it.

AVI would consume Neutron and Nova APIs for integration in this scenario

**AWS Container services** – EC2 container services – Cisco Mantl – not yet for sale – would sit on top of Metapod in 4-6 months

**AWS DB and analytics** – Metapod will be partnering company called **Tesora** http://www.tesora.com/ – who will integrate the Trove database – a relational DB – resold but not part of the Metapod sale – not on GPL

Trove offers a management layer on top of multiple database products

Metapod has partnered with a company called **Cloudwick** – they are a tech and Big D consultancy – they will build any of the Big Data applications on Metapod

Cloud Foundry also has a Big Data consultancy business – so being gold partner will help here. CF also going onto Metapod in December

**Competitive with VMware** - The API to VMware is tree like and layered – and uses SOAP vs REST ( check the latest) same issue with CECS by the way

Openstack is much flatter and so easier to orchestrate through the API

Cloud foundry is open source they use containers called Warden – Cisco also is doing Mantl

### Labs

HOT written in yaml, Cloud Formation written JSON

Metapod labs

Add graphite then select dashboard to the url

[**https://dashboard-trial4.client.metacloud.net/**dashboard/](https://dashboard-trial4.client.metacloud.net/dashboard/)

# Day 3

## Apps

[Vallard@cisco.com](mailto:Vallard@cisco.com)

SMAC acronym – also known as the 3rd platform – take a look at this <http://www.computerworld.com/article/2475696/it-transformation/smac-and-the-evolution-of-it.html>

**Importance of analytics** – need to know and measure what is being developed – e.g Windows 10 with spyware built in

How to get from IT now to the cloud world? This is the problem facing customers

Cross the valley of despair – IT – how does it get to the new world – ramp up – dev skills, all that – mode 1 for losers – mode 2 for cool dudes

Quote from ‘Steve Balmer’ - its all about the developers!

Metapod is our platform for developers

Moving from the old Waterfall methodology, where 50% complete = 100% not unusable

In the past the ‘testers’ were low down the food chain, IT was the dominant force

Now – very important – so key to getting the code to production, IT is moving down, Cloud has changed all that.

Vallard used to be a developer – said the reason he left was because he had no idea whether his code would be used – or what value it had – this is now changing – the new world provides the feedback immediately through CI/CD

Some more books on the subject

* Taiichi Ohno 1988 Lean manufacturing
* The machine that changed the world

Books explain origins and how to complete the pipeline for code delivery

Code is now developed in agile teams – scrums – sprint to get to prod or completion, its all about getting something out – usable, very very quickly – leading to change and innovation on scale and pace never seen before.

Working in teams means less likely to be distracted or to help focus and get to completion – all is visible

**Mean viable product** – MVP – the least amount of effort for producing something that can be of use – this is a new world – feedback seems to suggest that there is no one way to do this – but it is a change of culture

<http://12factor.net> this is how to write a cloud app- its attributes

**Top languages right now**

Javascript, Java, Ruby, PHP, Python (falling) maybe due to Go, - html is falling fast. CSS is ramping very quickly (style sheets) , perl dropping, Go – unlike Python does not have any dependencies – on modules libraries etc. ie you do not need to install anything

JSON is surely overtaking xml – e.g UCS or whatever – very complicated schema or syntax – json is so much simpler

{

‘Something’ = ‘something’

}

IaaS and PaaS are the speak now – API is the economy of the future e.g William Hill

Why Ruby so popular?? Puppet and Chef use Ruby – Ruby according to Vallard is easy to do things very fast

However Ruby is a single thread based language so scale is sometimes an issue – is an opinionated language – the structure is agreed on so developers know how to build to the framework so that others can use – there is an expectancy on the build framework

Gitlab is an open source version of Github – you do not have to pay – you actually download the environment onto your machine

## Docker

Originally made money from having a private repository

Now a growing Set of tools

**Docker machine** allows you to run commands on multiple docker hosts

**Docker Swarm** – allows you to coordinate commands

**Docker Compose** – bring up containers that are related to each other – aggregates them for commands together – expresses application intent (

Plus **engine and registry**

<https://github.com/vallard/CiscoCloudDayLab1/tree/master/02-GitAndRegistries> is the git lab

# Why infrastructure?

Good question - it runs the h/w that runs the s/w that runs the code!!

Beware Shipped – it is opinionated – it will try to set up your dev environment locally on your machine how it wants to