Billing for Apache CloudStack
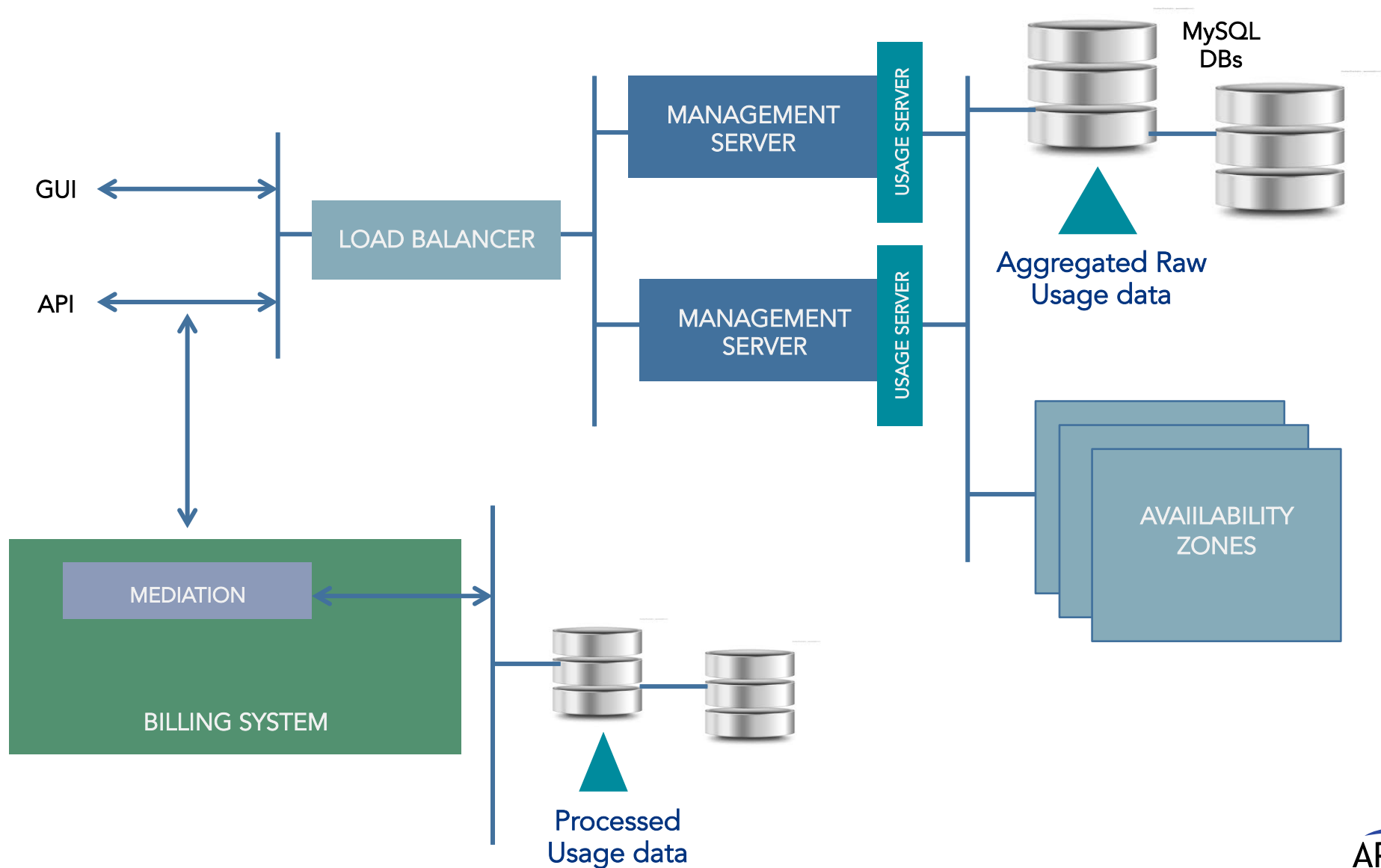
Apache CloudStack & Apalia

- Involved with CloudStack since 2010

- Dozens of CloudStack implementations mostly across Europe

- Accelerite CloudPlatform partner

- Company behind Amysta Billing software

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Apache CloudStack and Billing System
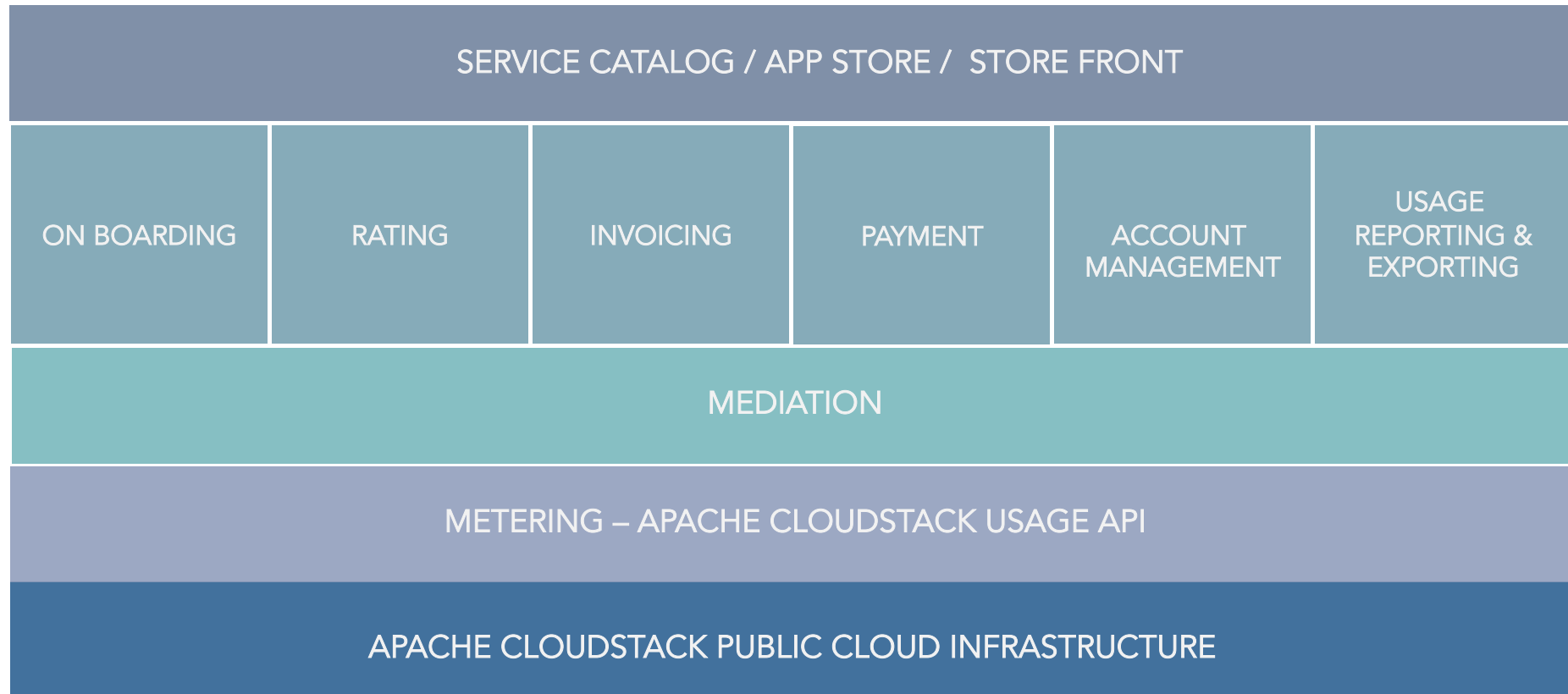
Apache CloudStack usage

USAGE TYPE

Type ID	Type Name
1	RUNNING_VM
2	ALLOCATED_VM
3	IP_ADDRESS
4	NETWORK_BYTES_SENT
5	NETWORK_BYTES_RECEIVED
6	VOLUME
7	TEMPLATE
8	ISO
9	SNAPSHOT
10	SECURITY GROUP USAGE
11	LOAD_BALANCER_POLICY
12	PORT_FORWARDING_RULE
13	NETWORK_OFFERING
14	VPN_USERS
21	VM DISK USAGE (I/O READ)
22	VM DISK USAGE (I/O Write)
23	VM DISK USAGE (Bytes Read)
24	VM DISK USAGE (Bytes Write)
25	VM SNAPSHOT STORAGE USAGE

USAGE SERVER

- Provide aggregated usage records

- Run from 1 min to 1440 min – 1day (default)

- Take data from the events log in cloud DB

- Create summary usage records in cloud usage DB
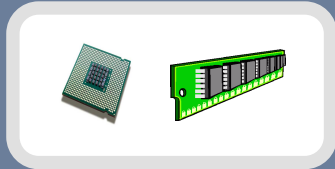
- Access usage records using listUsageRecords API

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Cloud Service Providers Billing main components

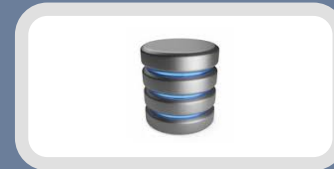| SERVICE CATALOG / APP STORE / STORE FRONT					
ON BOARDING	RATING	INVOICING	PAYMENT	ACCOUNT MANAGEMENT	USAGE REPORTING & EXPORTING
MEDIATION					
METERING – APACHE CLOUDSTACK USAGE API					
APACHE CLOUDSTACK PUBLIC CLOUD INFRASTRUCTURE					

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Metering

COMPUTE

Stopped & Running VMs
Bare-metal servers

NETWORK

IP addresses,
Bytes In & Out
VPN, Firewall, Load Balancer…
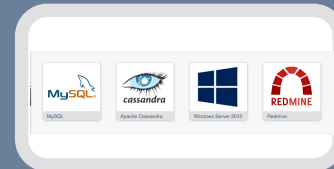
STORAGE

Root disks, Data disks
Tiered storage, IOPS
Snapshots usage
Templates
ISO

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On-Boarding

TO CONSIDER:

- User screening or fully automated?

- Pre-payment and post-payment

- Reseller enrollment

- Fraud management

- Trial management

Usage-based rating

TO CONSIDER:

- Hourly and monthly

- Apache CloudStack domain hierarchy support

Invoicing

Running VM	Quantity	Unit Price	Cost
Copper - 1CPU @ 2.4GHz - 512MB RAM	1344 h	GBP 2.2000	GBP 2,955.91
Silver - 1CPU @ 2.4Ghz - 4 GB RAM	2312 h	GBP 0.6000	GBP 1,386.97
Bronze - 1CPU @ 2.4Ghz - 2 GB RAM	1047 h	GBP 0.4900	GBP 512.62
			GBP 4,855.50

Stopped VM	Quantity	Unit Price	Cost
Bronze - 1CPU @ 2.4Ghz - 2 GB RAM	672 h	GBP 0.2500	GBP 167.93
Silver - 1CPU @ 2.4Ghz - 4 GB RAM	375 h	GBP 0.2000	GBP 74.97
			GBP 242.90

Storage	Quantity	Unit Price	Cost
Small Disk SATA, 5 GB	3359 GB.h	GBP 2.1000	GBP 7,053.88
Large Disk SATA, 100 GB	238967 GB.h	GBP 0.0069	GBP 1,648.87
Root Volume	14184 GB.h	GBP 0.0038	GBP 53.90
Medium Disk SATA, 20 GB	79156 GB.h	GBP 0.0036	GBP 284.97
			GBP 9,041.60

Network	Quantity	Unit Price	Cost
Bytes sent	0.01 GB	GBP 2.2000	GBP 0.02
Bytes received	0.01 GB	GBP 0.6000	GBP 0.01
IP Address	3738 h	GBP 0.0012	GBP 4.49
DefaultIsolatedNetworkOfferingWithSourceNatService	5374 h	GBP 0.0010	GBP 5.38
Port Forwarding Rule	370 h	GBP 0.0000	GBP 0.00
			GBP 9.88

Subscriptions	One-time fee	Monthly fee	Cost
BU1-EndUser-DailyBackup		GBP 12.00	GBP 12.00
DDoS Service		GBP 500.00	GBP 500.00

TO CONSIDER:

- Multi-currency support
- VAT management
- Discount
- Credit
- Invoice distribution
- Invoice history

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Payment

My account

ID	-	Status	**Active**
Company	Business Unit 1	Payment method	Post-paid
Name	bu1user1		Credit card expiry date: 12/2020

Last invoice

Net amount	GBP 15,061.18
Month	03/2017
Discount	GBP 1,673.46

Last payment

Amount	GBP 15,061.18
Date	01/04/2017
Reference	ahts54k5

Current position

Month to date amount	GBP 7,053.63
Discount rate to apply	10.00 %
Balance	GBP 0.00

Account statement   Invoices   Credit card payments   Account details   Taxes   Budget   Payment method

25 ▾   🔍 Filter

Payment date ⓘ ⌄	Amount ⓘ ↕	Status ⓘ ↕	Reference ⓘ ↕
04/01/2017	GBP 15,061.18	Succeeded	ahts54k5
03/01/2017	GBP 13,458.47	Succeeded	mksqq05v
02/06/2017	GBP 14,587.98	Succeeded	98bg9wx1

TO CONSIDER:

- PCI/DSS certification

- Payment gateway integration

- Transaction logging

- Chargebacks

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Users & resellers Management

TO CONSIDER:

- Account management
- Reseller white labeling automation
- Credit card update
- Wire management for large amounts (reseller)

Usage Reporting, Exporting

Running VM consumption

Description	Consumption	Unit price	Amount
Bronze - 1CPU @ 2.4Ghz - 2 GB RAM (mediawiki01)	484.11 h	0.49	GBP 237.21
Bronze - 1CPU @ 2.4Ghz - 2 GB RAM (Test-PV-media)	484.11 h	0.49	GBP 237.21
Copper - 1CPU @ 2.4GHz - 512MB RAM (fb)	484.11 h	2.2	GBP 1,065.04
Copper - 1CPU @ 2.4GHz - 512MB RAM (rhel-45-qa)	484.11 h	2.2	GBP 1,065.04
Silver - 1CPU @ 2.4Ghz - 4 GB RAM (Demo-vm01)	484.11 h	0.6	GBP 290.47
Silver - 1CPU @ 2.4Ghz - 4 GB RAM (mediawiki04)	484.11 h	0.6	GBP 290.47
Silver - 1CPU @ 2.4Ghz - 4 GB RAM (SecuredWiki-BU1)	484.11 h	0.6	GBP 290.47
Total			**GBP 3,475.90**

TO CONSIDER:

- Usage analytics per account, project, domain…

- PDF, CSV export, monthly, daily

- Export automation via API

- ERP/CRM integration

Store Front

TO CONSIDER:

- App Builder aligned with CloudStack service offering and domains

- Multi-tiers apps support

- App life cycle management

- Cost estimate

- One-click and SLA selection

- Combine usage based apps and subscription services

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Example of Billing system for Apache CloudStack

End-customers	Resellers	CSP

amysta

On-boarding
End-customers
Resellers on-boarding

Store Front
App catalog
Dashboard
Subscriptions

Iaas integration
CloudStack integration

Invoicing
Credit
Discount
Multi-Currencies
Tax management

Payment
Pay as you go
Prepaid

Usage-based services

apachecloudstack
open source cloud computing

Subscriptions Services

CSP's Public IaaS

APALIA

Contacts

Apalia – Switzerland
Rue de Genève, 18
1225 CHENE-BOURG
☎ +41-22-519-07-53

Apalia - Ile de France
Tour Chante Coq
5 Rue Chante Coq
92800 PUTEAUX LA DEFENSE
☎ +33-1-70-82-12-50

Apalia - Rhône Alpes
Parc des Glaisins
14 Rue du Pré-Paillard
74940 ANNECY LE VIEUX
☎ +33-4-50-01-59-73

www.apalia.net
info@apalia.net

Twitter: @Apalia
@AmystaBilling

US contact number: +1 415-670-9174

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