

AIRWAVE & GLASS

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Network Services & Switching

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AirWave 10

Introduction

On-Premises Management



What?

New software build that lets us streamline code, add performance, clustering.

Target Audience



Who's it For?

Large existing customers **early on.**

Customers running 2 or more AMP appliances.

Deployment

As of now, the plan is to deploy in two ways,

- On-Premises
- Cloud

On-Premises: It is in-house solution where either a single node or cluster deployment could be implemented. Single node supports up to 4K devices whereas cluster could support up to 25K devices

Cloud: The first solution is market which allows devices to be fully deployed and managed over cloud implementation, similar as of Aruba Central

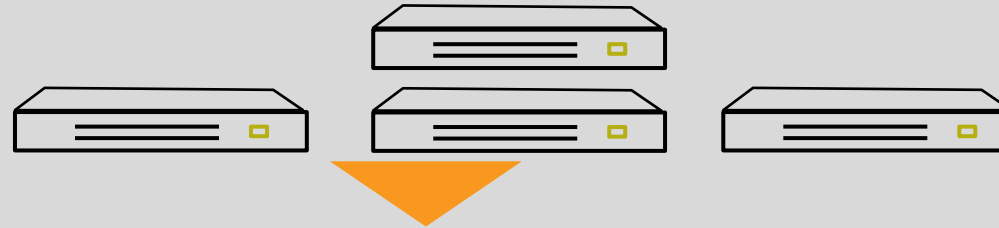
On-Premises Deployment Architecture

- Single server supports 4K devices
- Cluster supports 25K devices



Corporate Network

Physical or VM AW 10 Cluster



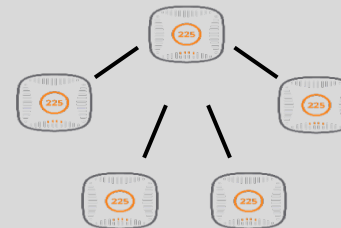
Supported Infrastructure



Aruba Controllers / Campus APs



Aruba Switches

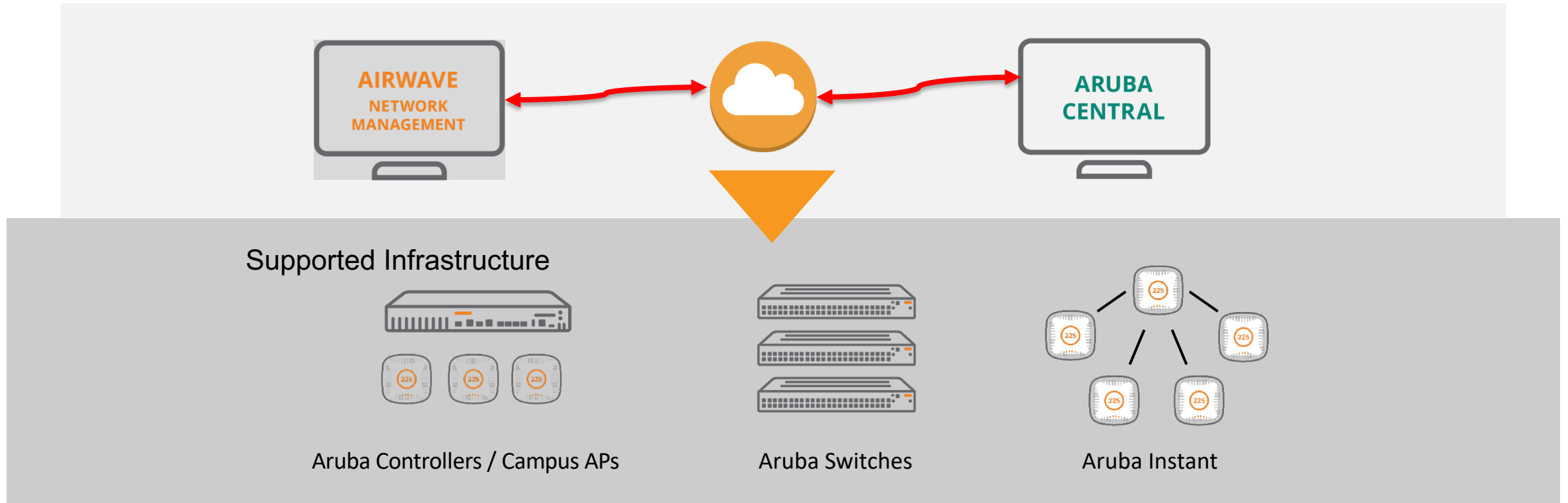


Aruba Instant



RADIUS/TACACS Servers
Syslog Servers
SNMP Trap Receivers

Cloud Deployment Architecture

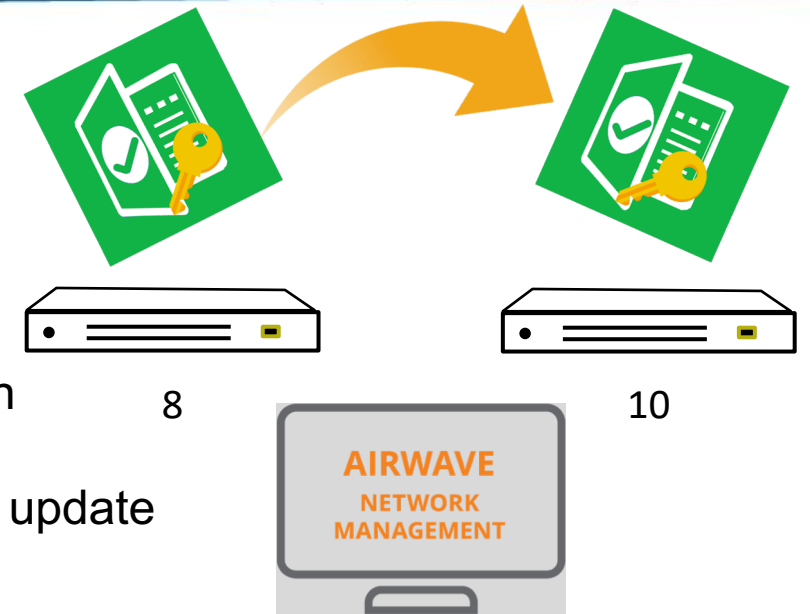


Fundamentals

- The hardware sizing guide for on-premises deployment is remodelled for Airwave 10
- AirWave 10 will have all the features that of 8, Mobility Master (WMS), ALE and Glass (Roadmap)
- Initial release support would be for Aruba wired and wireless only
- The ISO would not be provided to Customer
- Customers with multi-vendor devices should maintain both 8 and 10 initially

Licensing and Migration

- AirWave 8 license would be migrated to 10
- A new support portal would be launched for this license conversion
- Migration of database AirWave 8 to 10 is reliable, waiting for more update



AirWave 8

What's New in AirWave 8?

- Device Monitoring/Management
- Code Enhancements (NGINX, HTML5, RabbitMQ)
- Database Modifications (Postgres 9.4, Redis)

Device Monitoring and Management

Controllers – Managing Local configuration

Aruba

SNMP Version:

2c

Offload WMS Database:

☐ Yes ☒ No

Aruba GUI Config:

☒ Yes ☐ No

Manage local configuration on controllers:

This option enables/disables the management of local configuration including audit, push and import operations

☒ Yes ☐ No

Ignore Rogues Discovered by Remote APs:

☐ Yes ☒ No

Delete Certificates On Controller:

☐ Yes ☒ No

Archive Controller/Switch Backups:

☒ Yes ☐ No

Group: Albert

Aruba AP Groups



AP Overrides

WLANS



Profiles



Security



Local Config



Network



Controller

VLANs



Ports/Interfaces



IP



Management



General



Administration



SNMP



Logging

Clock

Advanced



Redundancy



Advanced Services



Device Monitoring and Management

Switching – Group Template and Baseline Configuration

Aruba/HPE OfficeConnect Switch Config

Push full template configuration and reboot the switch:

This is valid only for Switches with FW version less than 16.05

Factory-default only ▼

Force Switch Reboot:

This is valid for switches with FW version 16.05 and above. If option is set to 'Yes' and if the configuration requires reboot to be effective, switch will be rebooted after configuration is pushed. However, if option is set to 'No' and if the configuration requires reboot to be effective, no configuration is pushed to the switch.

☐ Yes ☒ No

Aruba Switch Config File Transfer Protocol:

☐ TFTP ☒ SFTP

Switch Configuration to Audit With:

When 'Baseline Configuration' is selected, Factory devices are audited with 'Group Template' and Non-factory devices are audited with 'Baseline Configuration'

Baseline Configuration ▼

Device Monitoring and Management

Device Configuration (Chennai-5400-1)
















 This Device is in monitor-only-with-firmware-upgrades mode.

Group	Albert	Folder	Top
IP Address	10.29.160.8	Type	Aruba 5412Rzl2
Status	Up (OK)		
Configuration	Mismatched		

Audit

View SSH Command Log

Config Backups

						Compare	Back Up Now
Name	Timestamp	Baseline	Version	Comments	Action		
Current Running Configur...	7/29/2018, 2:14:41 PM		KB.16.05.0007BB1	Latest Configuration from...	  		
Config_Backup_7_29_201...	7/23/2018, 1:21:57 AM		KB.16.05.0007BB1	Archived at 7/29/2018 5:1...	  		
Config_Backup_7_17_201...	7/16/2018, 1:21:28 AM		KB.16.05.0007BB1	Archived at 7/17/2018 4:2...	  		
Config_Backup_6_30_201...	6/29/2018, 1:21:52 AM		KB.16.05.0007BB1	Archived at 6/30/2018 4:2...	  		
Config_Backup_6_27_201...	6/25/2018, 1:21:28 AM	✓	KB.16.05.0007BB1	Archived at 6/27/2018 4:2...	  		

Device Monitoring and Management

Config Job

1 Config Command

2 Select Device

3 Schedule

4 Confirm

Job Name *

Job Description

Device Type *

☐ Aruba Controllers

☐ Aruba Switches

☐ Comware Switches

Config Snippet *

Next

Code Enhancements

NGINX over Apache

- Light-weight resource utilization
- Load Balancing between threads allocated
- Response time during load

Code Enhancements

HTML5 over Flash

- Open-source and User-Friendly
- 58% Faster than Flash in Linux
- Access of HTML5 in Mobiles/iPAD - Best Output/Content
- Stability of Flash in Linux

Code Enhancements

RabbitMQ over AirBus

- RabbitMQ is an open source message broker software
- AMQP – Advanced Message Queuing Protocol and plug in architecture
- Uses high reliable python scripting in queuing incoming and outgoing messages
- Gateways for AMQP and HTTP protocols

Database Modifications

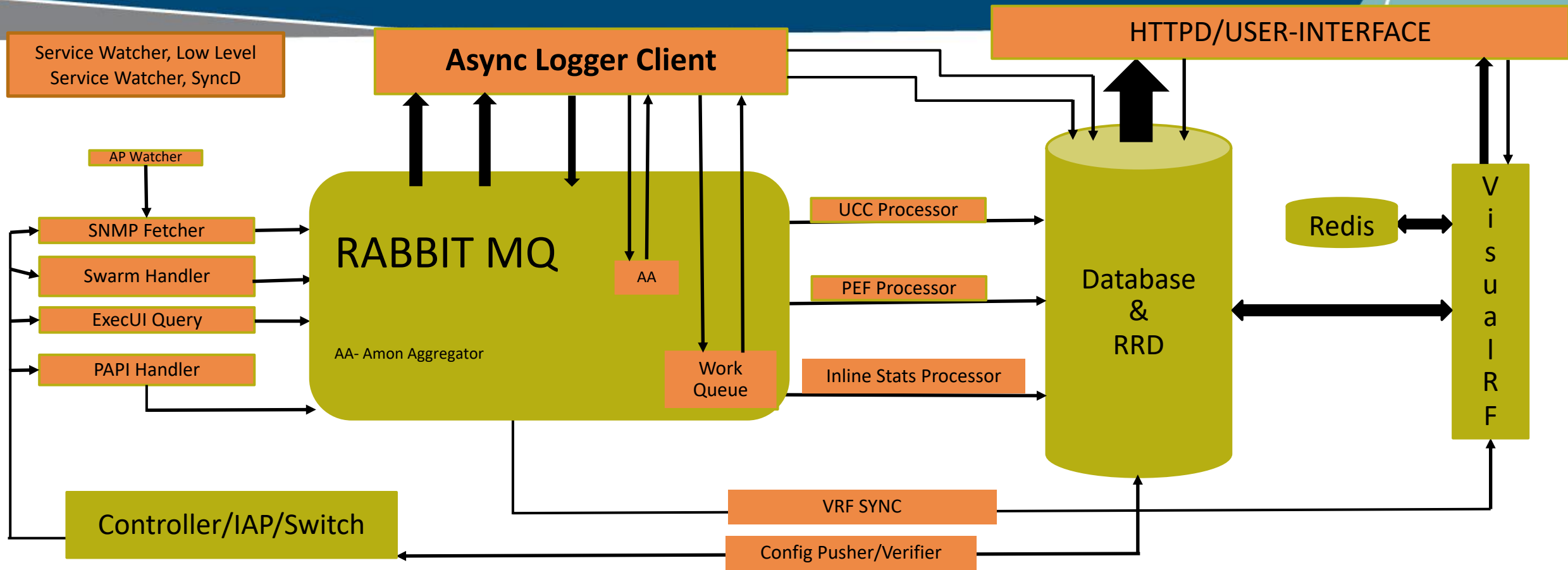
Postgres

- Postgres is upgraded from 9.2 to 9.4

Redis

- Redis is an open-source in-memory remote database
- It runs in virtual memory
- Uses small structure for high durability

Architecture



Performance & Troubleshooting

- The CLI access has been limited from 8.2
- Performance and Troubleshooting could be still be done with UI

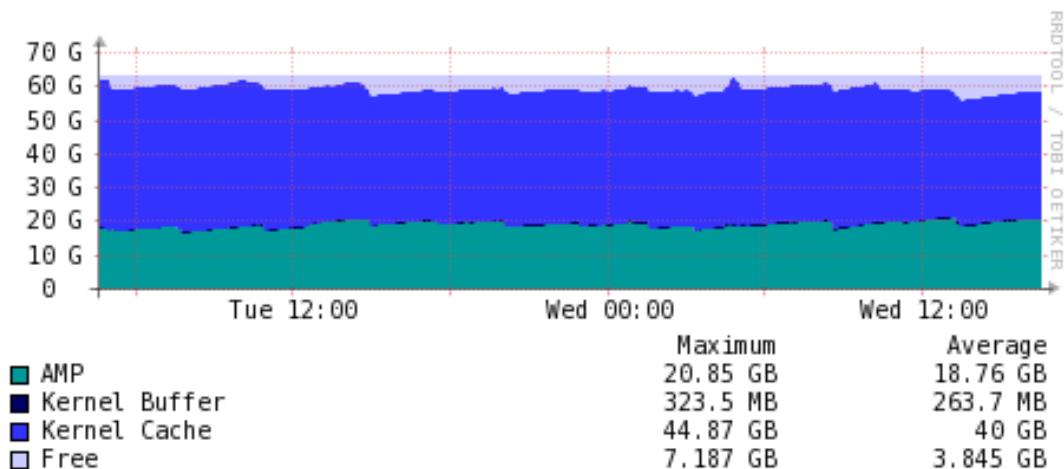
System -> Backups

System -> Status

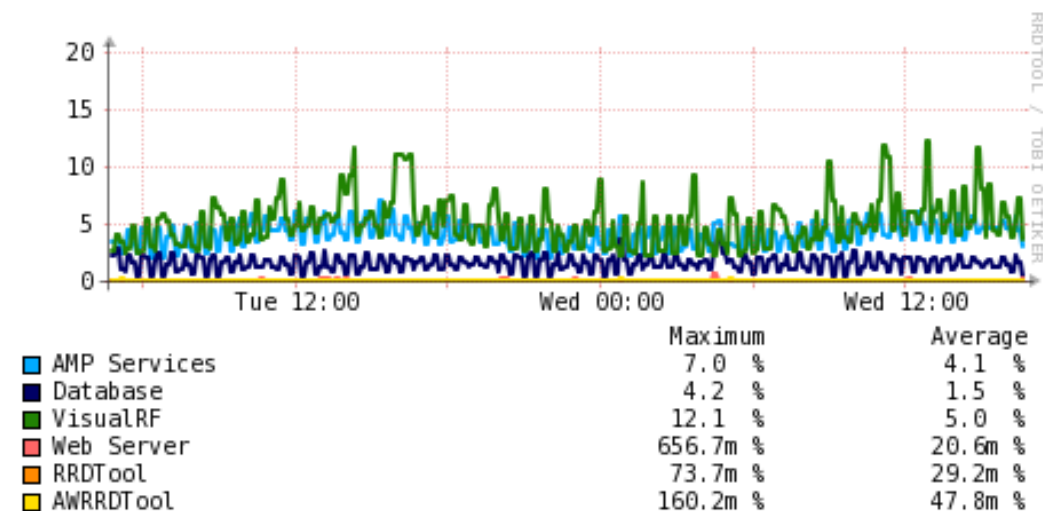
System -> Performance

Performance & Troubleshooting

Memory usage over the last day

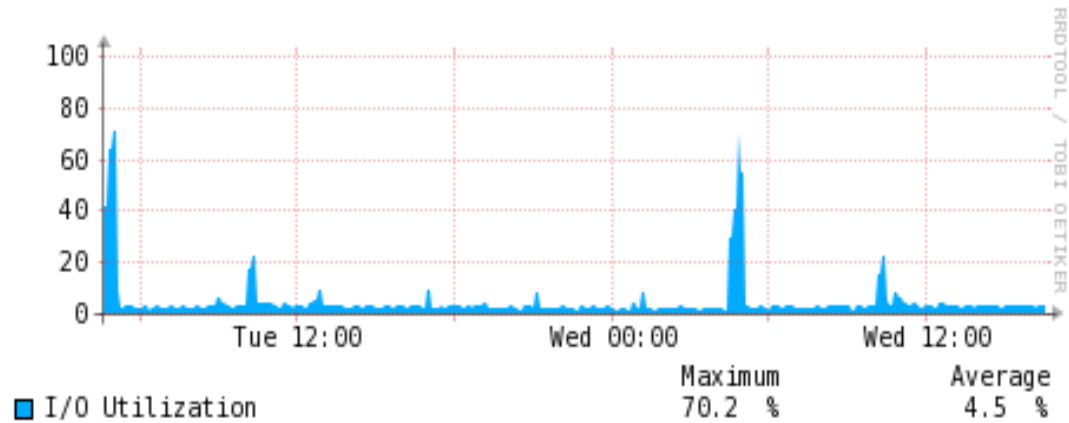


CPU Utilization by Worker over the last day

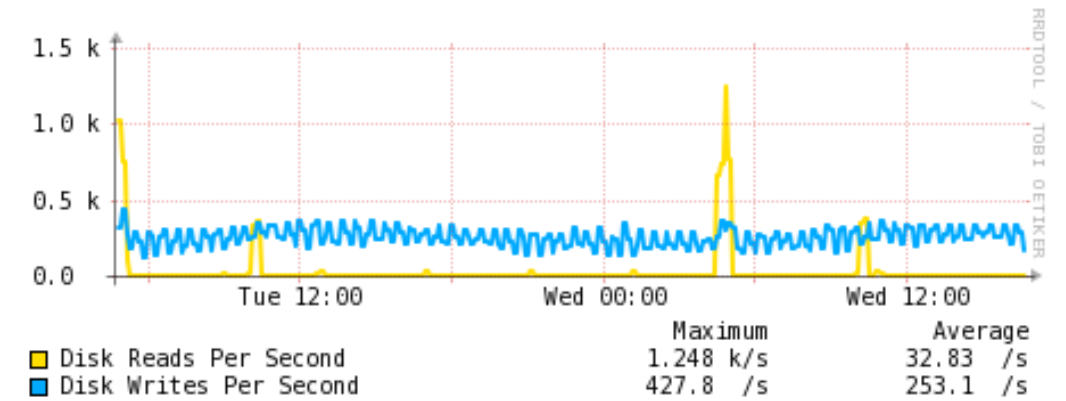


Performance & Troubleshooting

Disk utilization over the last day

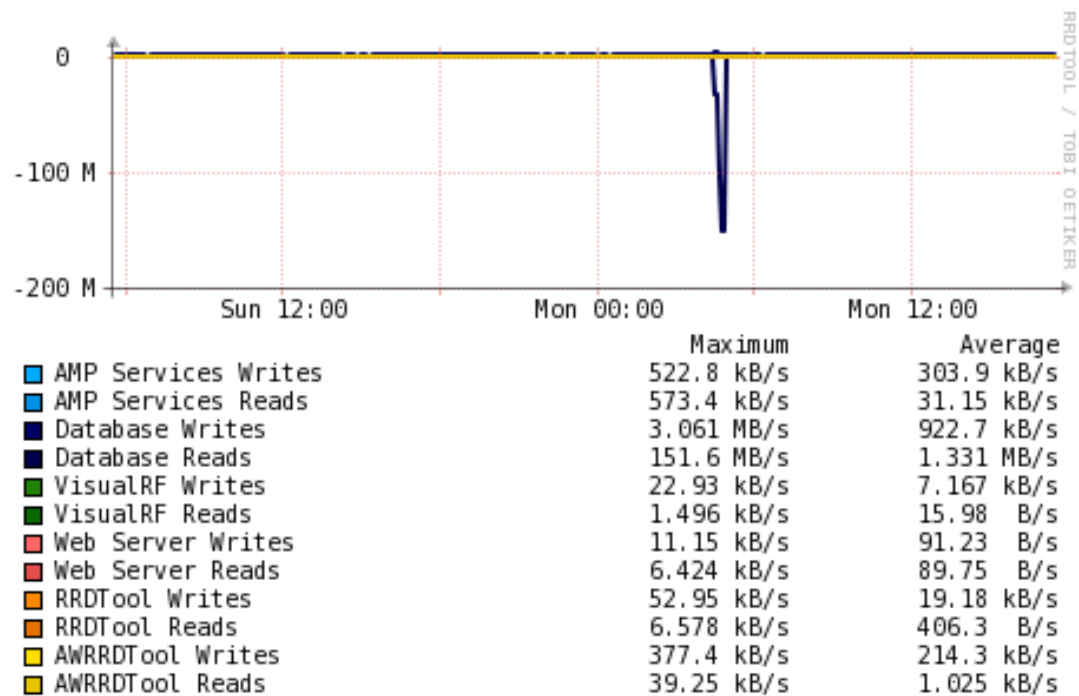


Disk IOPs over the last day



Performance & Troubleshooting

Application I/O by Worker over the last day

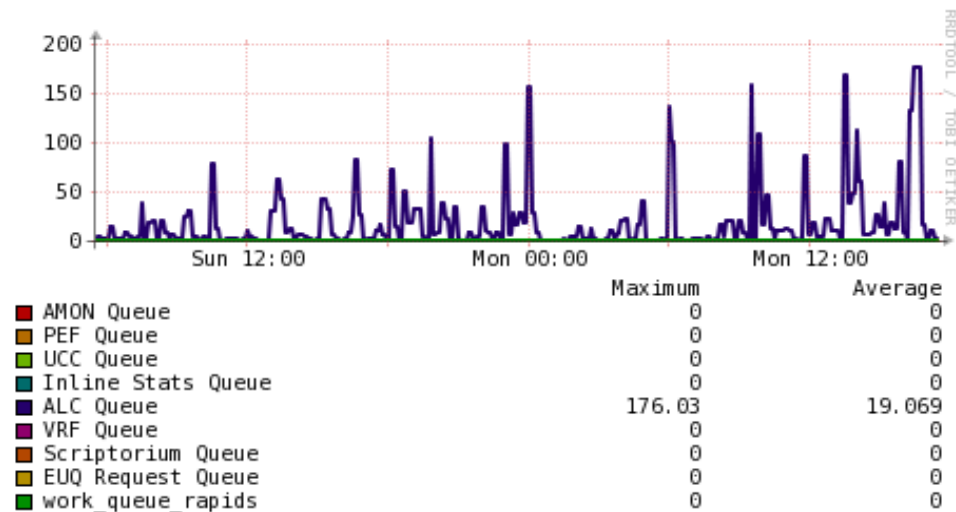


Top 5 Tables (by row count)

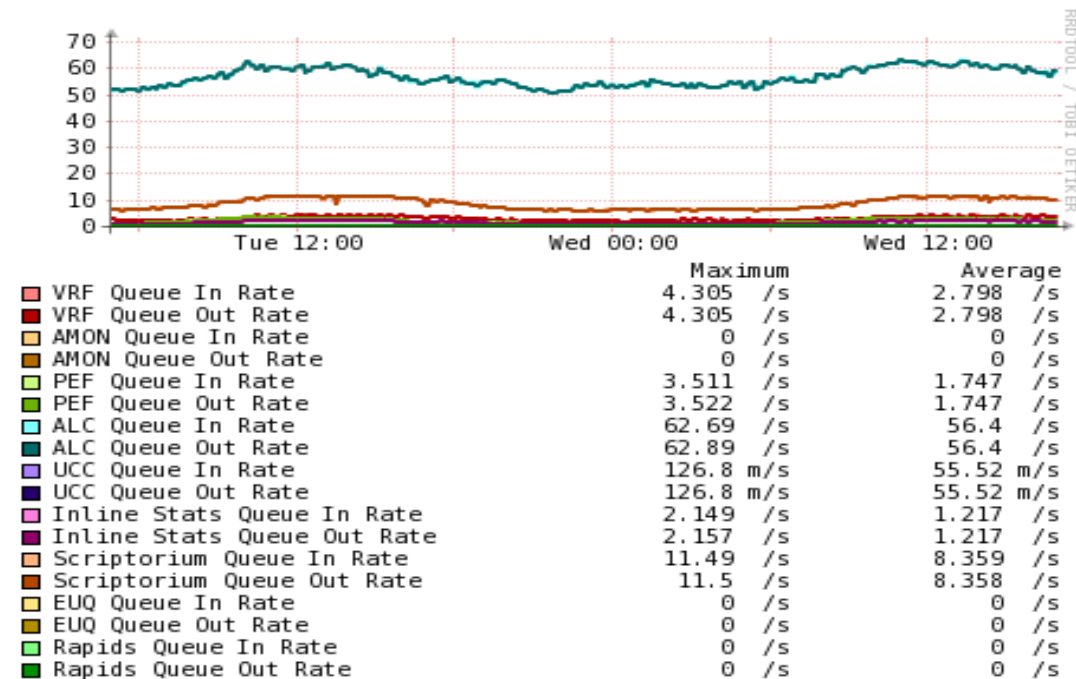
TABLE	ROW COUNT	SIZE	% OF DB
aggregate_session	12059505	1713 MB	2.0%
pickled_ap_cpu	9316304	1269 MB	1.4%
pickled_ap_memory	4554971	481 MB	0.5%
device_event	4423060	30 GB	35.4%
pef_summary_application_30_mins	3960829	315 MB	0.4%

Performance & Troubleshooting

RabbitMQ Queue Depth over the last day

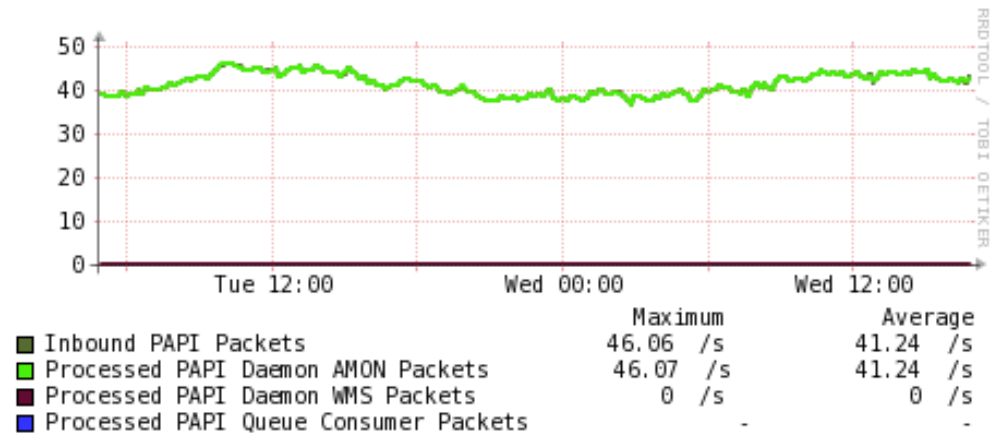


RabbitMQ Queue In Rate over the last day

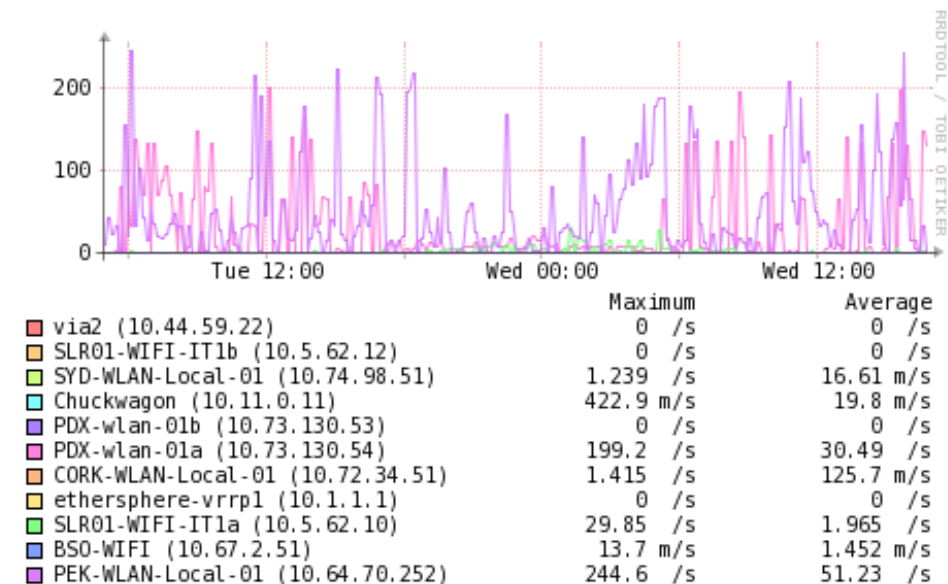


Performance & Troubleshooting

AMON Packet Arrival / Processing Rate over the last day



Average PAPI Packet Loss over the last day



Performance & Troubleshooting

VisualRF Statistics

<https://<AMP IP>/visualrf/statistics.xml>

Output:

```
<memory type="heap" max="3959488k" committed="3959488k" used="2347483k"/>
<service started="true" failed="false" uptime="7d:19h:27m:32s" request_time_ms="29" queue="0" queue-
completed="6740" internal="0" internal-completed="106"/>
<thread name="Message" blocked-count="1" status="TIMED_WAITING">
<service started="true" failed="false" uptime="7d:19h:27m:47s" request_time_ms="0" queue="0" queue
completed="0" internal="0" internal-completed="606944" internal-hp="0" internal-hp-
completed="922568" additional="message-bus messages count [vrf 606743 vrf_sync 922568 channel_util 0
rtls 201]"/>
<thread name="Grid Builder" blocked-count="67" status="TIMED_WAITING">
```

Glass

Why Glass?

- Glass is the fastest single point of access to monitor both wireless and wired infrastructure
- It could be used in two ways,

Single Node Cluster

- A single node monitors up to 30000 and 50000 devices with controller AMON and SNMP data respectively
- Cluster monitors up to 60000 and 100000 devices with controller AMON and SNMP data respectively

Why Fastest?

- Glass uses 4 major open source tools yet the best futuristic in the market,

Kubernetes
Grafana
Elastic-Search DB
Kibana

- API protocol is used in accessing the data in and out.

Kubernetes || Elastic-Search DB || Kibana || Grafana || API

Kubernetes: It breaks up an application into logical units called as 'PODS' placed in containers for easy management

Elastic-Search DB: It is used to perform and combine many types of searches — structured, unstructured, geo, metric — any way an application want. It is a flat DB which makes queries faster.

Kibana: It provides visualization capabilities on top of the content indexed on an Elasticsearch cluster and logs it

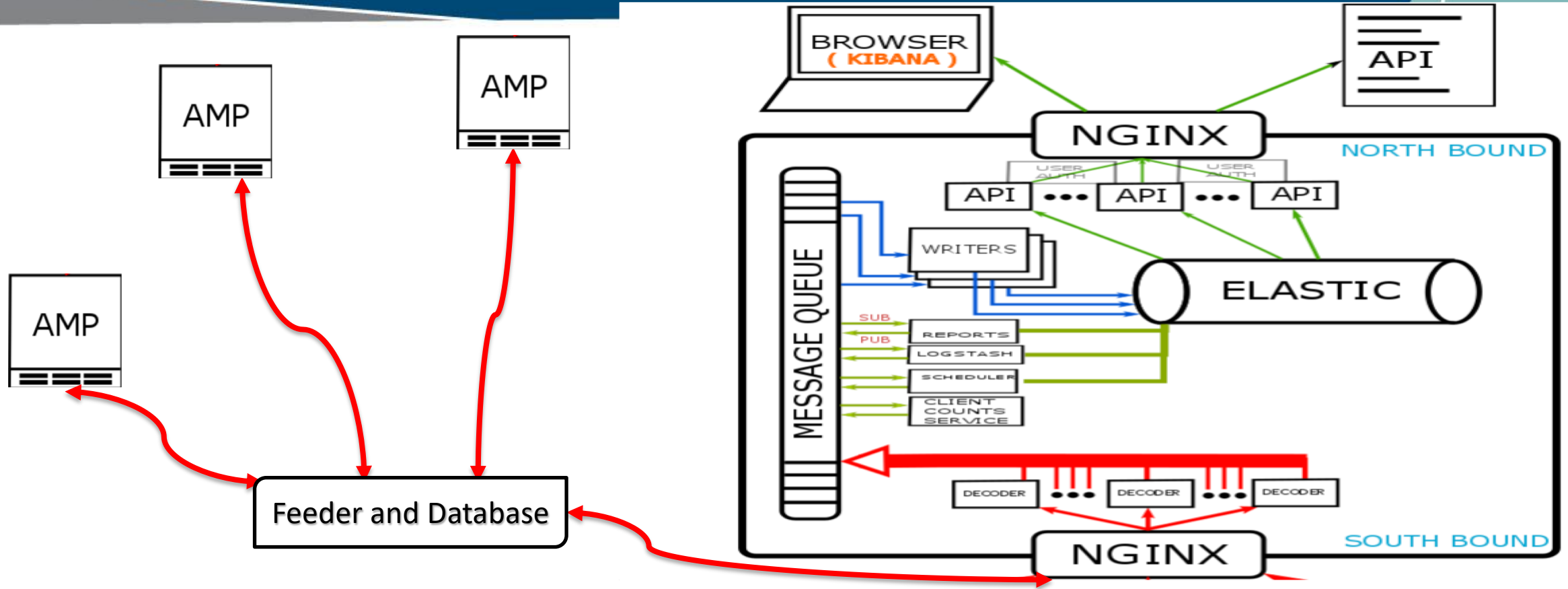
Grafana: It makes it easy to customize the display properties so that the perfect Dashboard could be created

API: It is a software intermediary that allows two applications to talk to each other.

Northbound interface allows a particular component of a network to communicate with a higher-level component.

Southbound interface allows a particular network component to communicate with a lower-level component.

Architecture



Single Node vs Cluster

- A Single node should be installed in 1 TB hard drive, 16 Cores of CPU (2*8) and 96 GB of Memory
- Single Node/Cluster, the appliance should have a fully qualified domain name
- A cluster should be minimum of 3, it could not be created with 2 nodes
- Kubernetes distributes pods across 3 nodes to provide high availability in case of failure, at least 2 nodes should be up for cluster running
- Kubernetes dashboard, Grafana monitoring and Kibana logging can be accessed from Master node only

Install/Upgrade and Single Node/Cluster Setup

Installation:

- Hardware box comes up with Glass 1.2 installed in it and takes to setup page on power on
- In case of VM, use the OVA to deploy Core OS
- Login to the server using the default admin username and password (admin/admin)
- At the command prompt, execute the command # **sudoglass-install**
- After the installation completes, execute the command # **glass-setup** to configure network

Install/Upgrade and Single Node/Cluster Setup

Single Node and Cluster:

- The second step in **# glass-setup** is to set as single node or cluster
- In case of multi node cluster, virtual IP should be configured with Master and Master-HA nodes
- Future cluster setup could be done by executing **# cluster-setup** command from one of the nodes CLI. This node becomes Master Node and other 2 nodes become Master HA Nodes

Install/Upgrade and Single Node/Cluster Setup

Upgrade:

- Upgrade could be done from UI and CLI.
- UI, the option would pop-up for upgrade



Install/Upgrade and Single Node/Cluster Setup

Upgrade:

Login to the single or master node with the admin username and password

- At the command prompt, execute the command # **glass-upgrade**

```
admin@abc ~ $ glass-upgrade
1. Core OS upgrade
2. Kubernetes Upgrade
q. Quit
Enter option: █
```

- Run the CoreOS and then Kubernetes upgrade followed by it
- Running either upgrade on cluster Master node will push to all Glass in cluster
- A reboot is necessary after both the upgrades respectively

QUESTIONS?

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THANK YOU!