

Обзор продуктовой линейки и новинок **Aruba** **Networks**

Технический консультант Насипов Елжан



Год основания: 2002, IPO: 2007

В портфеле HPE с июня 2015

Более \$2.4 млрд. выручки в год от ранрейта

“Biggest Small Company”

Тесное взаимодействие с заказчиками

“Customer First, Customer Last”

Более 50 тыс. инженеров

@ Airheads Community



“Заказчикам во всем мире следует рассматривать Aruba для проектов проводного и беспроводного доступа.”

Стратегия сетевых технологий HPE



DC Networking

HPE FlexFabric

HPE Altoline (OEM)

Arista Networks (OEM)



Campus

Aruba Wireless

Aruba Switching

Aruba ClearPass

Aruba Meridian

Aruba Routing

Новая Архитектура

Центры Обработки Данных
(ЦОД)

Кампусы и филиалы

Средний и малый бизнес
(СМБ)

Altoline

Сети ЦОД
масштаба облака

FlexFabric

Традиционные сети
ЦОД предприятий

Arista Networks

Программно-
определяемые,
облачные ЦОД

Aruba

Mobile-first –
кампусные сети для
предприятий,
филиалов и удаленных
офисов

OfficeConnect

Проводные и
беспроводные сети
для СМБ

СОВРЕМЕННАЯ ФИЛОСОФИЯ ДИЗАЙНА: НАСЛЕДИЕ И ВИДЕНИЕ ARUBA



РОЖДЕННАЯ В ЭРУ
MOBILE-CLOUD
И IOT



SOFTWARE-DEFINED,
API-FIRST



ОТКРЫТОСТЬ,
МУЛЬТИВЕНДОРНОСТЬ



ОБЕСПЕЧЕНИЕ
БЕЗОПАСНОСТИ

АВТОМАТИЗИРОВАННАЯ ИНТЕЛЛЕКТУАЛЬНАЯ СЕТЬ ПОЛНОСТЬЮ ИНТЕГРИРОВАННАЯ АРХИТЕКТУРА

Быстрое обнаружение,
диагностика и разрешение

Просто автоматизировать,
управлять и интегрировать

Высокая
надежность сети

Мгновенное
понимание
происходящего

Доступ

Ядро



Aruba 8400



Policy
Management



User and Entity
Behavioral Analytics



Cloud
Networking



Network
Management



Location
Analytics



Network
Controls



Location-
Based
Services

ИННОВАЦИИ МЕНЯЮТ ПРАВИЛА ИГРЫ

МОДЕРНИЗАЦИЯ ЯДРА И РАСПРЕДЕЛЕНИЯ КАМПУСНОЙ СЕТИ

Aruba 8400 с ArubaOS-CX



ArubaOS-CX: ОС нового поколения на основе open source и API

Сетевая аналитика
(Network Analytics Engine)

Программируемость для простоты
автоматизации и интеграции

Производительность до 19.2 Тб/с с
высокоскоростными интерфейсами высокой
плотности и доступность операторского класса

Портфель коммутаторов ARUBA для кампусной сети

Ядро

Распределение

Доступ



Aruba 3810



Aruba 5400R



Aruba 8400



Aruba 2930F



Aruba 2930M



Aruba 2540



Aruba 2530

Get started in minutes with ArubaOS-Switch

Highly intuitive for the Cisco versed
Common syntax in many CLI Commands
Contextual Help
No need for re-certification

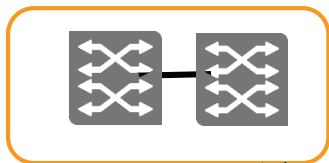
```
Switch(config)# interface help
Usage: [no] interface < [ethernet] PORT-LIST [...] | loopback <num> >

Description: Enter the Interface Configuration Level, or execute one
command for that level. Without optional parameters
specified, the 'interface' command changes the context to
the Interface Configuration Context Level for execution of
configuration changes to the port or ports in the PORT-LIST
or with loopback keyword it will change context to loopback
```

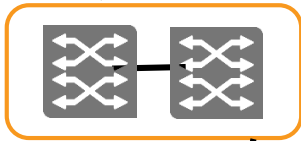
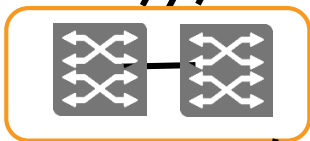
ArubaOS-Switch	Cisco
enable	enable
configure	configure terminal
show flash	show flash
show version	show version
show run	show run
show config	show start
show history	show history
show logging	show logging
show ip route	show ip route
show ip	show ip interface brief
show interface brief	show interfaces status
erase start	erase start
show config <filename>	more flash:/<filename>
reload	reload
write memory	write memory
show tech	show tech-support
show	show
no	no
end	end
exit	exit
erase	erase
copy	copy
hostname	hostname
logging	logging
router rip	router rip
router ospf	router ospf
ip route	ip route
access-list	access-list
redistribute	redistribute

Stacking: Virtual Switching Framework (VSF)

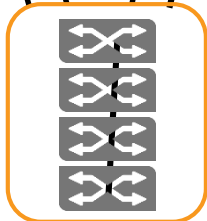
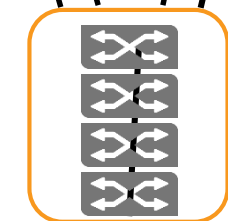
5400R with VSF



5400R with VSF



2930F with VSF



Simplify network operations

Scalable performance

Increases resiliency

Available on Aruba 5400R and 2930F

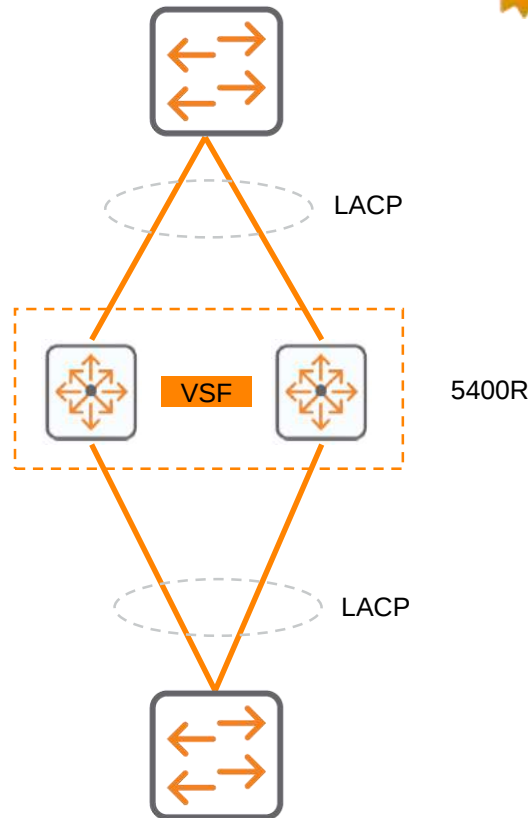
- Aruba 5400R
Up to 2 members
Chain topology
- Aruba 2930F
Up to 4 members
Chain and Ring topologies

Fast Software Upgrade

Available on 5400R VSF stack with 16.03

- Minimizes downtime during upgrade on a 5400R VSF stack by upgrading the chassis sequentially while still allowing traffic to flow through other chassis
- Minimal downtime (few seconds) during upgrade positions 5400R for high availability use cases in the Campus
- Same functionality as the feature called “Incompatible Software Upgrade” on FlexNetwork (Comware) IRF

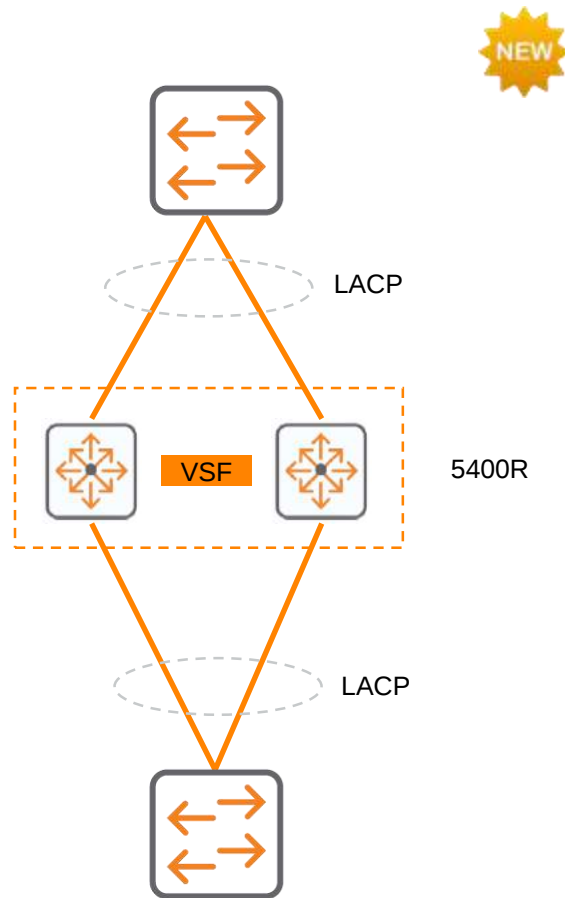
** when connected in a VSF configuration with upstream and downstream LAGs



Fast Software Upgrade (contd.)

Available on 5400R VSF stack with 16.03

- Works by doing a sequenced reboot of the chassis
- When the sequenced reboot command is issued:
 - The Standby chassis brings down its ports and upgrades
 - Traffic from downstream and upstream devices should still continue to flow through the other chassis (Master) since LACP is configured
 - After one chassis comes up after upgrade and assumes the role of the Master, the other chassis goes for an upgrade resulting in minimal traffic loss when compared to a normal upgrade
- Downtime is restricted to few seconds when compared to > 2 minutes for the normal upgrade



IRF/VSS/VSF Comparison

	HPE FlexNetwork IRF	Cisco VSS	HPE Aruba VSF
Devices Supported	10500 7500 5510HI 5130HI 5130EI 5120SI	6800 6500 4500	5400R 2930F
Stack Member Capacity	9 - (5510HI 5130HI, 5130EI) (4 – 5120SI) 4 - (7500, 10500)	2	2 – 5400R 4 – 2930F
Multi Active Detection (MAD) Dual-Active Detection (Cisco)	LACP BFD ARP - Select Models IPv6 ND - Select Models	PAgP (Cisco proprietary LAG protocol)	OOBM and LLDP – 5400R LLDP and VLAN – 2930F
Architecture	9 devices - chain or ring 4 devices – chain or ring 2 devices - chain only - if chassis	2 device pair	2 device chain – 5400R 4 device chain or ring – 2930F

IRF/VSS/VSF Comparison

	HPE FlexNetwork IRF	Cisco VSS	HPE Aruba VSF
IRF Link Capacity	7500 = 8 x 10 Gbps / 8 x 40 Gbps 5510HI = 4 x 10 Gbps / 2 x 40Gbps ¹ 5130EI/HI = 4 x 10 Gbps 5120 SI = 4 x 1 Gbps	8 x 40 Gbps / 8 x 10 Gbps	8 x 40 Gbps / 8 x 10 Gbps – 5400R 4 x 10 Gbps / 8 x 1 Gbps – 2930F*
Configuration	Each member must have same firmware version before forming stack	Each member must have same firmware version before forming stack	Each member must have same firmware version before forming stack

¹ Requires JH155A, HPE 5510 QSFP+ 2-port Module

* AOS-Switch 16.03 required



5406R

5412R

- 6 and 12- slot compact chassis
- Smart Rate for 802.11ac Wave 2
- Wire speed 40 GbE
- Redundant management and power
- 96 10 GbE ports, 288 1 GbE ports
- 288 ports full PoE+ capable
- Full L3 features
- SDN OpenFlow 1.3
- Limited Lifetime Warranty 2.0

SMB & Branch Core



7503

7506

7506V

7510

- 2, 3, 6 and 10-slot chassis
- 40 GbE (up to 40 ports)
- 84 10 GbE ports, 480 1 GbE ports
- High-density PoE+
- Full L3 features & IPv6/MPLS
- IRF technology
- Complete L2 and extensive Routing features, IPv6, and MPLS

Enterprise access



10504

10508

10508V

10512

- 4, 8 and 12-slot chassis
- 40GbE (up to 96 ports)
- 100GbE (up to 24 ports)
- Scalability with 576 10 GbE or 1 GbE ports
- 4 chassis IRF technology
- Advanced L2, full L3 features & IPv6/MPLS functionality
- 11Tbps switching capacity

Campus Core

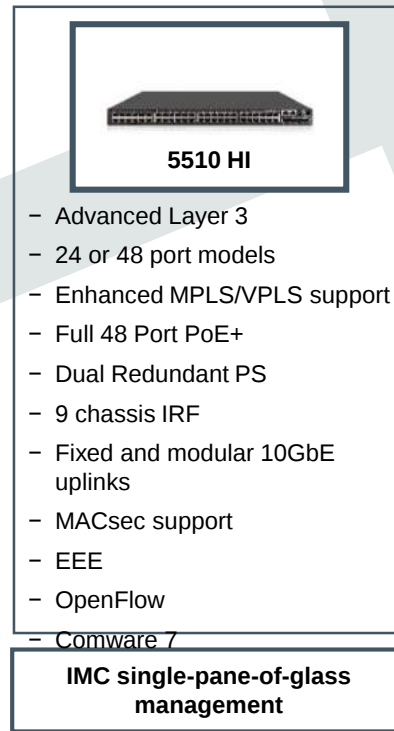
HPE FlexNetwork fixed port switch portfolio



- Basic Layer 3 with static & RIP routing
- 24 or 48 port models
- PoE+ models
- 4 fixed 10GbE uplinks
- Redundant power
- EEE
- 9-chassis IRF
- OpenFlow
- Comware 7



- Basic Layer 3 with Static & RIP Routing
- 24 or 48 port models
- Full 48 Port PoE+
- Dual Redundant PS
- Fixed and modular 10GbE uplinks
- 9-chassis IRF
- MACsec support
- EEE
- OpenFlow
- Comware 7



Enterprise switching for the campus & branch

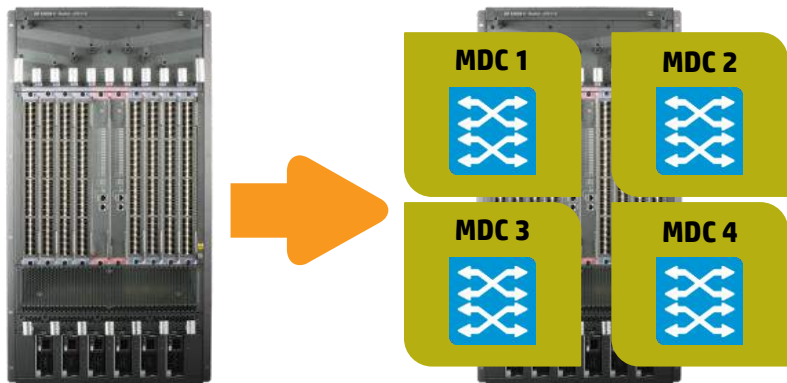
HP Intelligent Resilient Fabric (IRF)

Simple, resilient & versatile pay-as-you-grow business model



- IRF is an innovative HP switch virtualization technology
- Up to nine physical Comware 7 switches may be grouped into an IRF Fabric (domain)
- IRF Fabric appears as one virtual switch and is managed as a single network device using one IP address
- IRF Fabrics are created using standard 10/40GbE ports
- Members of IRF Fabric may reside in the same network layer, or in two different layers
- All members of IRF Fabric are in active/active mode

Multitenant Device Context for network virtualization



Features

- Up to 4 virtual logical switches
- Each with the same properties as a real switch
- Each with separate control planes, data planes, and forwarding capabilities

Benefits

- Increase network security, including clear network traffic separation
- Reduces network hardware deployments
- Simplifies network deployments
- Helps reduce CapEx and OpEX

802.11ac
Wave 2

Точки
доступа

802.11ac
Wave 1



- Unified AP

Hewlett Packard
Enterprise



330 Series
Highest Density
Dual uplink w/ **Smart
Rate**, 2.5Gbps



320 Series
High Performance
Dual uplink, 2.5 Gbps



310 Series
High Performance
1.7 Gbps



300 Series
Medium Density
Single uplink, 1.7Gbps



220 Series
High Density/Perf.
Dual uplink, 1.7 Gbps



210 Series
Mid-range, 1.7 Gbps



200 Series
Moderate density, ~1.2 Gbps



207
Moderate density, ~1.3 Gbps



303H
3 ports
802.11ac
Wave 2



203H
2 ports
802.11ac



205H
4 ports
802.11ac



AP-103H
4 ports
802.11n

Для гостиниц



RAP-109
2 ports



RAP-3
3 ports



203R
11ac
3 ports

Для удаленных
сайтов



360 Series
Enterprise-grade 11ac

270 Series
Enterprise-grade 11ac

Контроллеры WLAN



7200 Series
Mobility Controllers
Campus



7000 Series
Mobility Controller
Branch



Virtual Mobility
Master



Virtual Mobility
Controller

Выбор решения 802.11ac

	Модель	Исполнение	Производительность	Плотность	Применение
	Серия 103/200/305	Для помещений	Средняя	Низкая/Средняя (30/50 активных)	Ретейл
	Серия 210/310	Для помещений	Высокая	Средняя (75 активных)	Офисы
	Серия 220	Для помещений	Высокая	Высокая (125+ активных)	Лекционные залы Конференц-залы Склады
	Серия 320/330	Для помещений	Очень высокая	Очень высокая (150+ активных)	Лекционные залы Конференц-залы
	Серия 270	Уличное	Высокая	Высокая (125+ активных)	Вне помещений

Контроллеры мобильного доступа обеспечивают функциональность

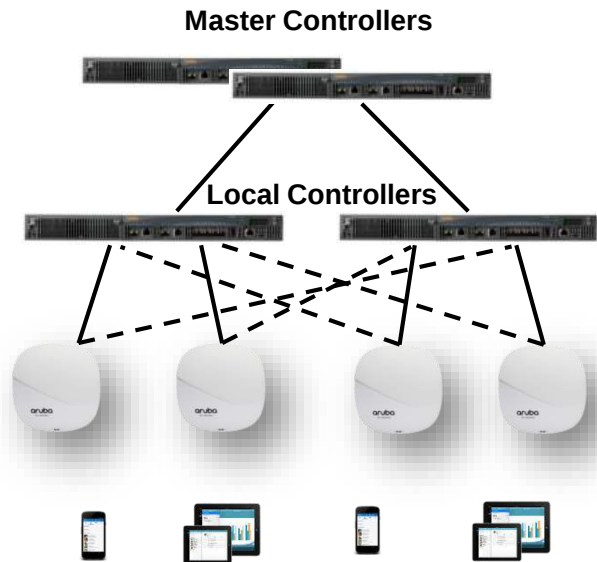
- **Маршрутизатора**
- **Межсетевой экрана**
- **VPN-концентратора**
- **Единая точка реализации политик**
- **Wireless IPS**
- **Система контроля интерференций**
- **ALG Gateway для UCC**

НОВАЯ АРХИТЕКТУРА УЧИТЫВАЮЩАЯ ПОТРЕБНОСТИ В ВИРТУАЛИЗАЦИИ

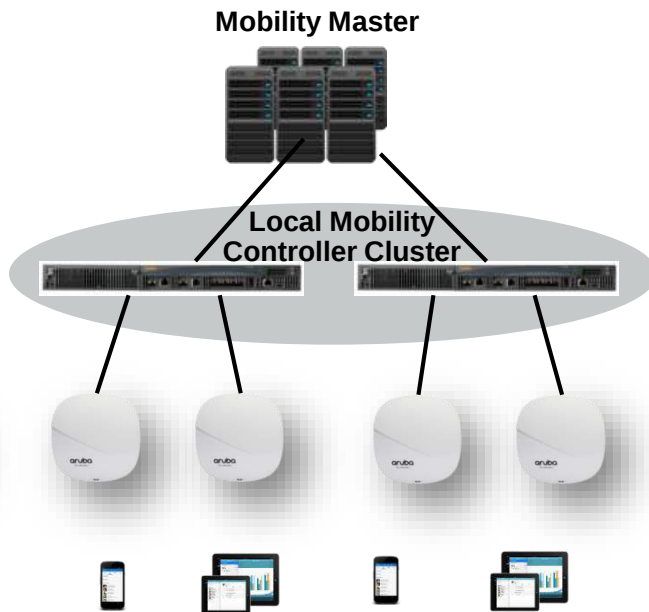


Эволюция моделей внедрения

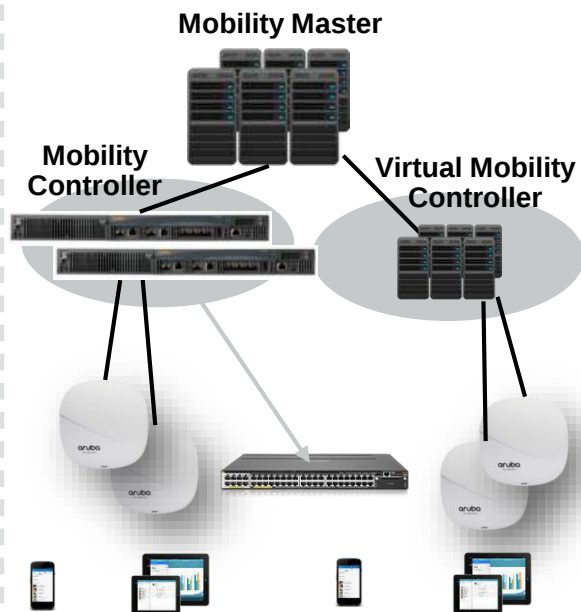
6.x



8.0



8.x



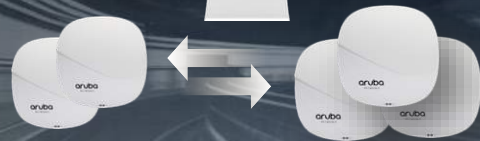
БЕСПРЕЦЕДЕНТНАЯ НАДЕЖНОСТЬ



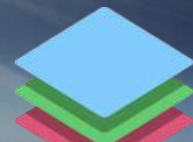
Незаметный Failover с
сохранением сессий и
балансировка нагрузки
пользователей с
кластеризацией



Предотвращение, а не
исправление ошибок с
Aruba Clarity



Обновление системы
ArubaOS и функционала
**без прерывания
обслуживания**



АВТОМАТИЗАЦИЯ И РАСШИРЯЕМОСТЬ



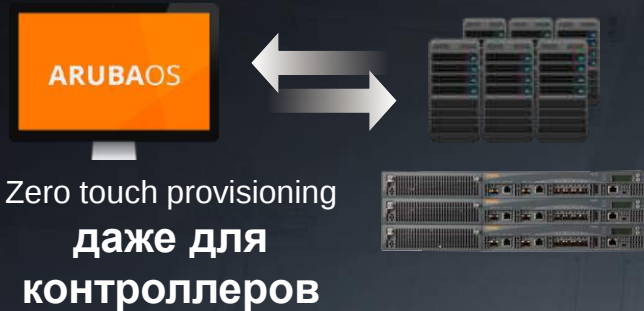
AirMatch для
автоматизации
работы даже high
density WLAN

Задание **СВОИХ**
приложений
для обнаружения и
применения политик

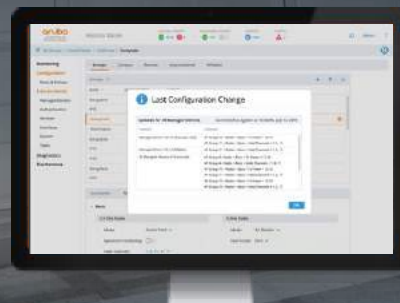


API для
обменом
контекстом и
конфигурацией

УПРОЩЕНИЕ ИСПОЛЬЗОВАНИЯ



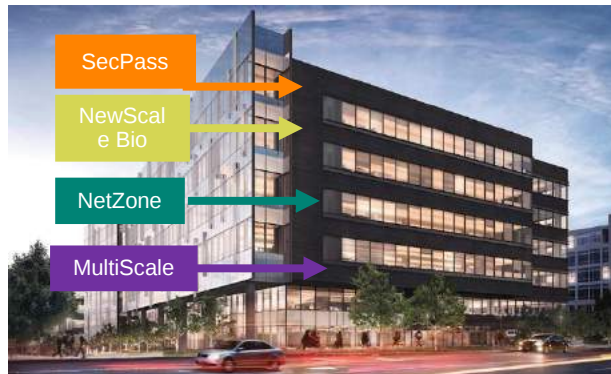
MultiZone для
работы одной точки
одновременно с
несколькими
контроллерами



Совершенно **новый**
пользовательский
интерфейс и
улучшение
конфигурирования

MultiZone случаи применения

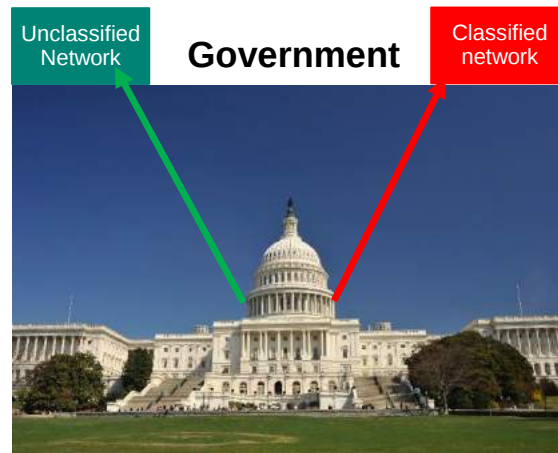
Office Building



Shopping Mall



Government



Airport



Multizone AP

Multizone WebUI Configuration

GeneralAdminAirwaveCPSECCertificatesSNMPLoggingProfilesMore

All Profiles

⊖

AP

+

AM Filter

+

AP Authorization

+

AP Ethernet Link

AP LACP LMS map information

+

AP LLDP

+

AP LLDP-MED Network Policy

⊖

AP multizone

acme-mz

acme-test

AP multizone profile: acme-mz

ZONE	IP	NUM_VAPS	NUM_NODES
1	10.70.213.11	2	1

Data zone controller IP:

+

Enable/disable multizone:☒

Как работает HPE Aruba Instant



Контроллер в точке доступа: Virtual controller

Instant

← → ↻ <https://instant.arubanetworks.com:4343/#home>

System RF Security Maintenance | More | Help Logout

aruba **IAP135-CC:45:54** Virtual Controller

1 Network		1 Access Point		1 Client			
Name	Clients	Name	Clients	Name	IP Address	ESSID	Access Point
kindle	1	d8:c7:c8:cc:45:54 *	1	iPad	192.168.32.131	kindle	d8:c7:c8:cc:45:54

IAP135-CC:45:54 Monitoring IDS AirGroup Configuration 0 Alerts

Info

Name: IAP135-CC:45:54
Country code: NL
Virtual Controller IP: 192.168.33.3
VC DNS: 0.0.0.0
Management: Local
Master: 192.168.32.129
Uplink type: Ethernet
Uplink status: Up

RF Dashboard

Signal Speed Utilization Noise Errors

All clients All access points

Usage Trends

Clients

Throughput (bps)

12:05 12:10

Out In

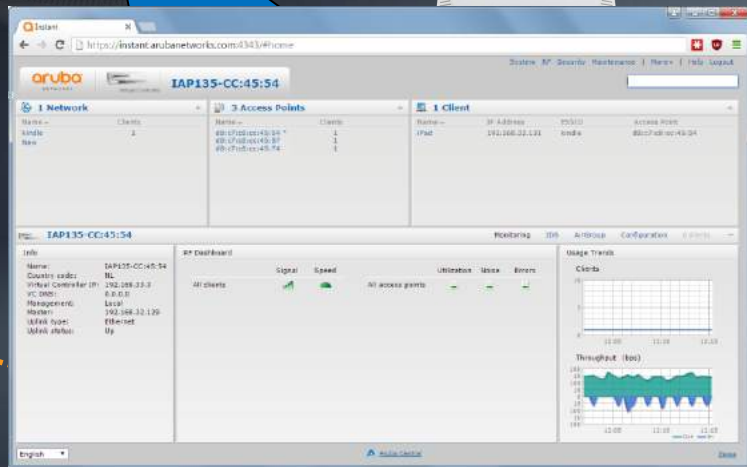
English

Aruba Central

Pause

Как работает HPE Aruba Instant

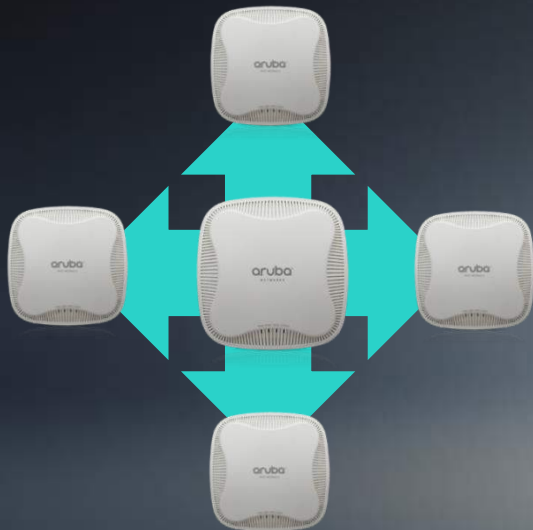
Автоматическая кластеризация: Virtual cluster



Автоматическая отказоустойчивость

Гибкость архитектуры с HPE Aruba Instant

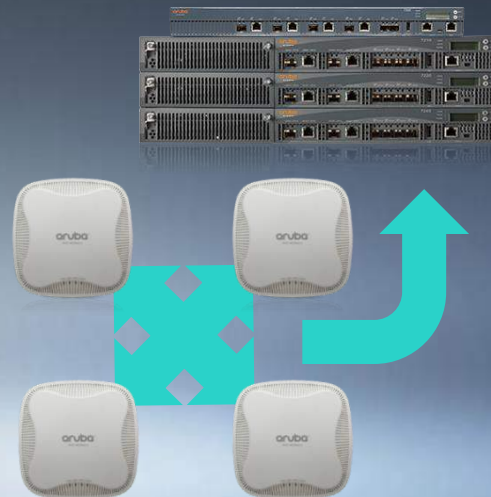
— Aruba Instant
(Кластер)



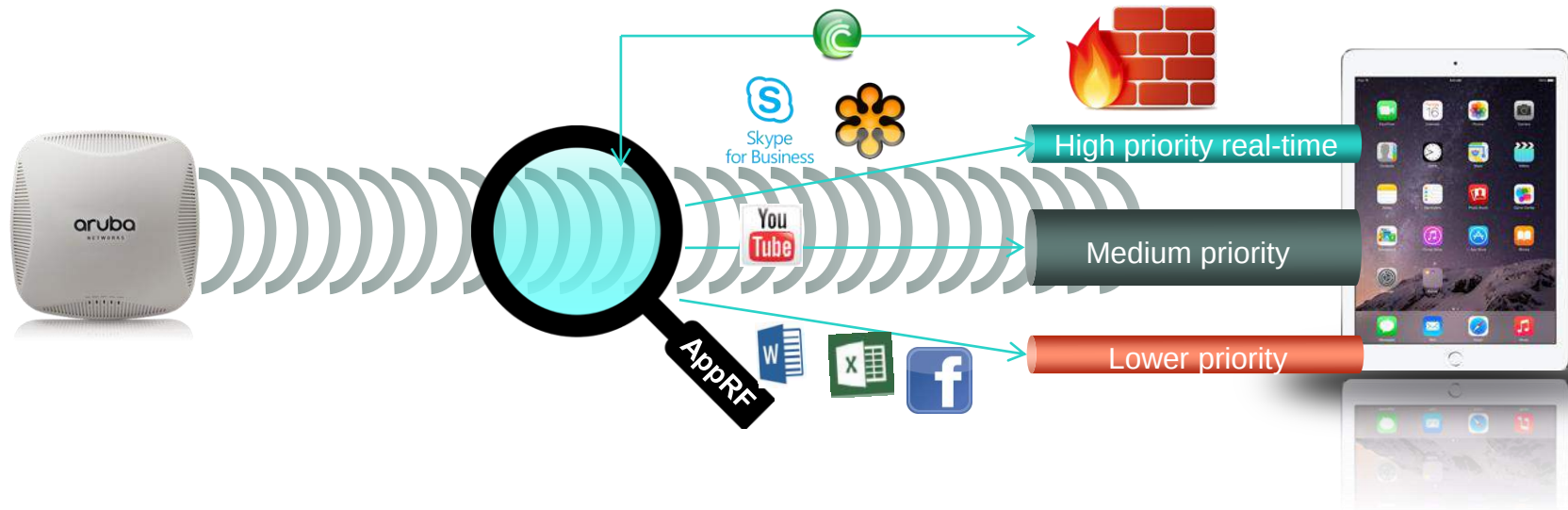
— Системы
управления Aruba



— Контроллеры Aruba

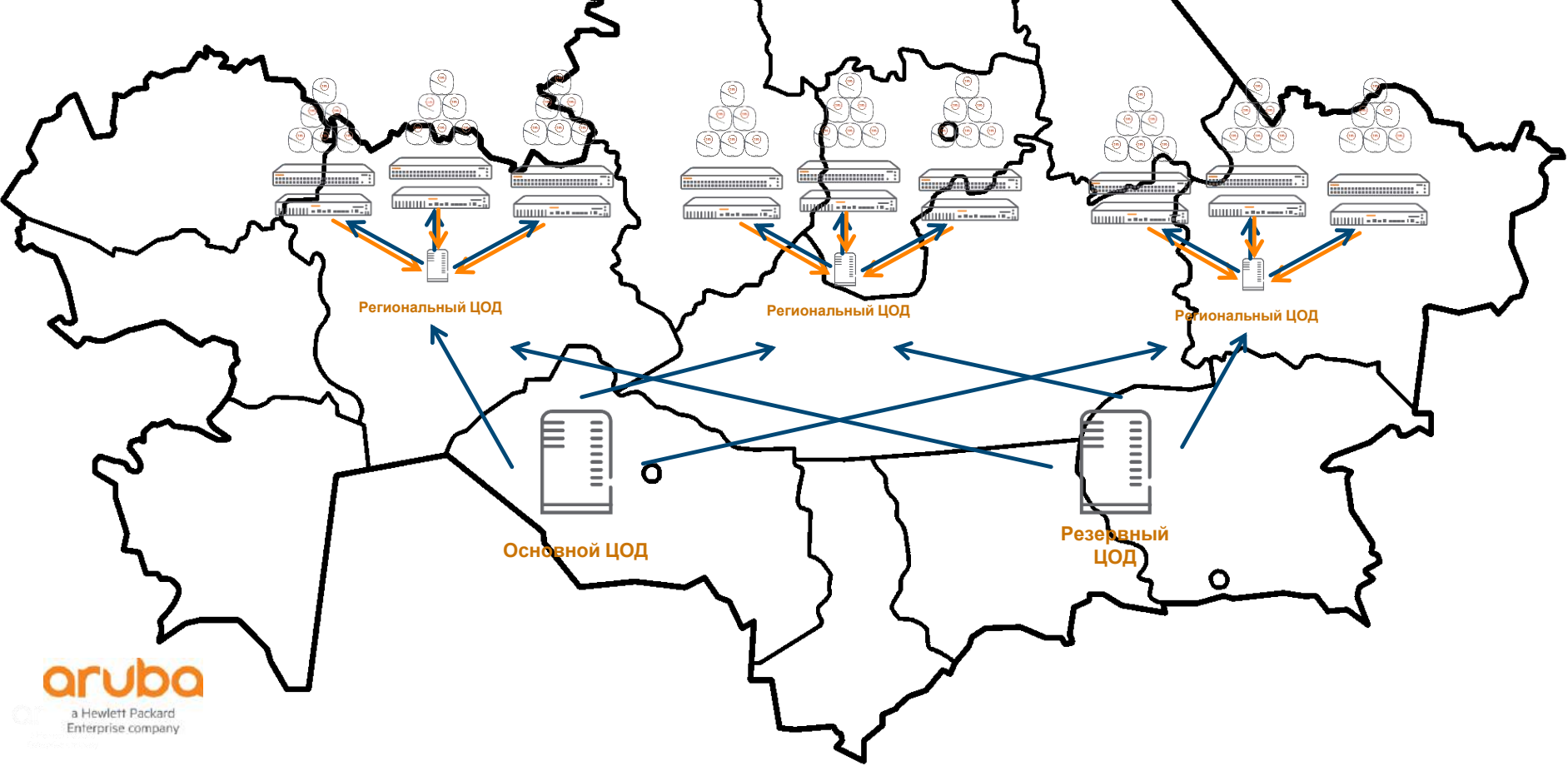


Интеллектуальное управление трафиком с AppRF™



Автоматическое определение трафика и определение приоритетности трафика для каждого пользователя и устройства

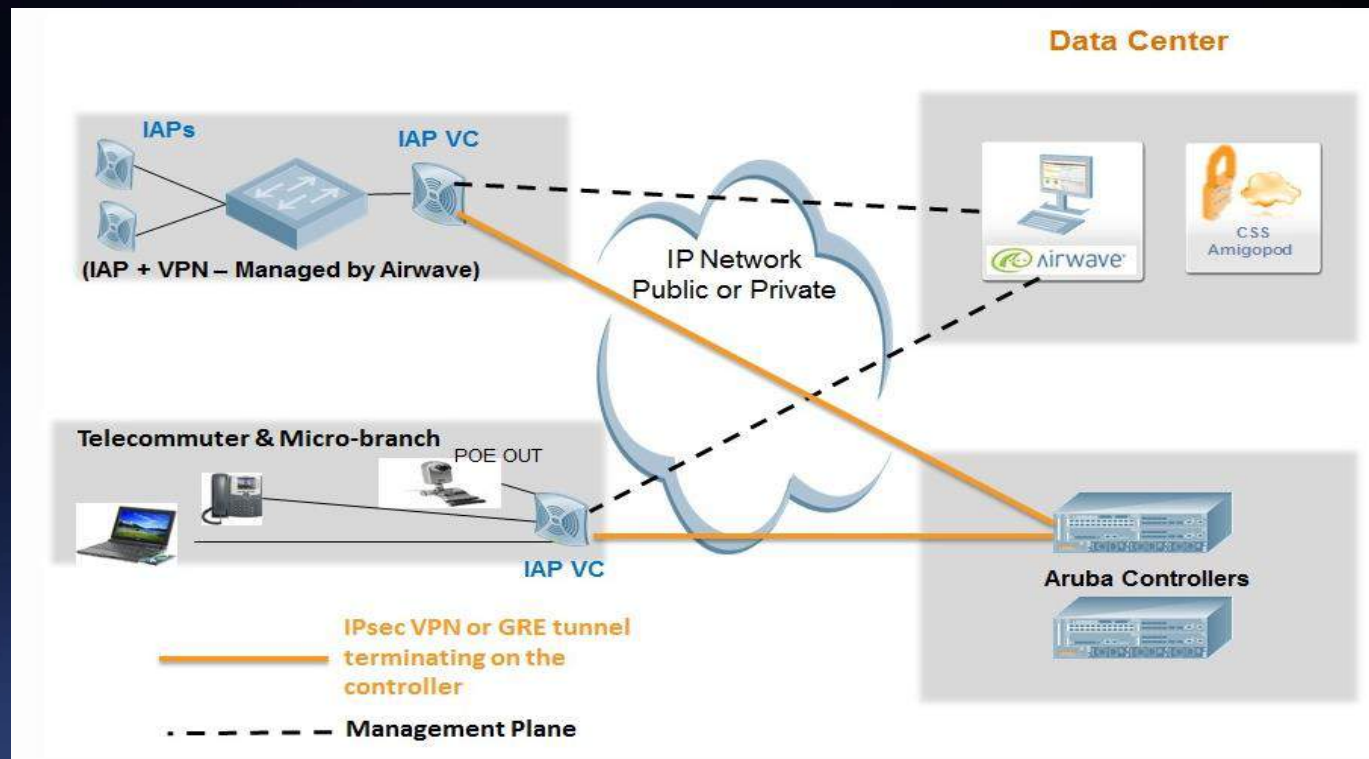
Задача: Объединить распределённую филиальную сеть по всему Казахстану



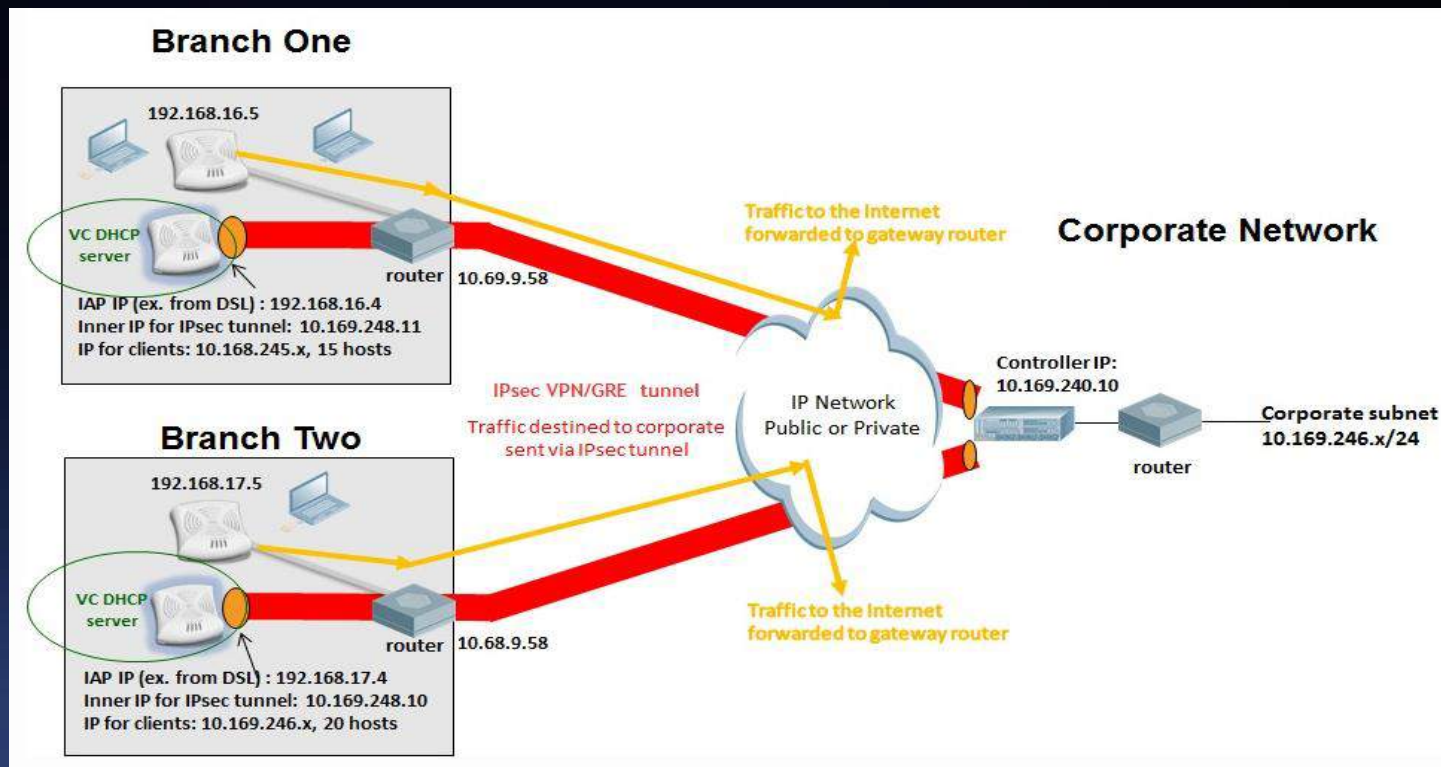
aruba

a Hewlett Packard
Enterprise company

Aruba Controller + AirWave = Защищённое соединение, централизованное управление удаленных офисов.



Корпоративный трафик отправляется в Дата Центр через IPSec туннель. Трафик гостевой сети пересылается в Интернет.



ClearPass - Платформа управления доступом к сети



КТО?



ЧТО?



КОГДА?



ГДЕ?



КАК?

УПРАВЛЕНИЕ ДОСТУПОМ В
СЕТЬ



WIRELESS



WIRED



VPN

ДЛЯ ЛЮБЫХ СЕТЕЙ

ИДЕНТИФИКАЦИЯ И
УПРАВЛЕНИЕ УСТРОЙСТВАМИ



iOS/MAC OS X



ANDROID



WINDOWS

БЫСТРОЕ
РАЗВЕРТЫВАНИЕ

ИНТЕГРАЦИЯ С MDM-МАН



УПРАВЛЕНИЕ
ПРИЛОЖЕНИЯМИ

Аппаратное и
виртуальное устройство

ClearPass Guest - Access Features

Guest Registration

Guest Self-Registration

Please register to access the network.

Visitor Registration

* Your Name:

Please enter your full name.

* Email Address:

Please enter your email address. This will become your username to log into the network.

* Gender

Guest Registration

Please complete the form below to gain access to the network.

Visitor Registration

* Sponsor's Name:

Name of the person sponsoring this visitor account.

* Sponsor's Email:

Email of the person sponsoring this visitor account.

* Your Name:

Please enter your full name.

* Email Address:



Self-registration

- Customizable, automated workflows
- Notification via SMS, email, badge printer
- One time registration

Sponsored Guest Access

- Reception sponsor interface
- Email sponsor approval workflow
- Enable any employee to instantly sponsor

Pre-registration

- Bulk import from file eg. Excel, text
- Generate visitor badges or notify via branded email templates

3rd Party Integration

- XML API's for integration with existing applications

ClearPass OnBoard module



Адаптивное применение политик по устройствам

Корпоративный ноутбук

Authentication → EAP-TLS
SSID → CORP-SECURE



Принесенный планшет

Authentication → EAP-TLS
SSID → CORP-SECURE



Network Device Visibility – Profiler

Aruba Networks ClearPass Policy Manager

Support | Help | Logout
mkelllogg (Read-only Administrator)

Endpoint Profiler

[Change View](#)

10747 Total Devices **5684(53%)** Smartdevices **2962(27%)** Computers **2101(20%)** Unmanaged Devices

Device Category

- Embedded (17)
- Game Console (5)
- SmartDevice (5684)
- Printer (3)

1/4

Device Family

- Sony Ericsson (1)
- Apple (3476)
- Nokia (8)
- Samsung (4)

Windows Symbian
Android BlackBerry
Sony Ericsson Apple
Nokia Samsung

Device Name

- Apple iOS Device (849)
- Apple iPod (61)
- Apple iPhone (1467)
- Apple iPad (1099)

Apple iOS Device
Apple iPod
Apple iPhone
Apple iPad

[Change Selection](#)

#	MAC Address	Hostname	Device Category	Device OS Family	Status
1.	00e529ad647		SmartDevice	Apple	Unknown
2.	002436cb1cf7	sirnesa	SmartDevice	Apple	Unknown
3.	002436d72d6f	chives	SmartDevice	Apple	Unknown
4.	00254b11cfec	rana.pod	SmartDevice	Apple	Unknown

aruba NETWORKS an HP company

БЕЗОПАСНОЕ ПОДКЛЮЧЕНИЕ КАЖДОГО КЛИЕНТА



Customer Device Visibility – Access Tracker

Aruba Networks ClearPass Policy Manager

Monitoring » Live Monitoring » Access Tracker

Access Tracker Nov 12, 2014 08:11:57 PST

Auto Refresh

[All Requests] clearpass.arubademo.net (10.79.254.112) Last 1 day before Today Edit

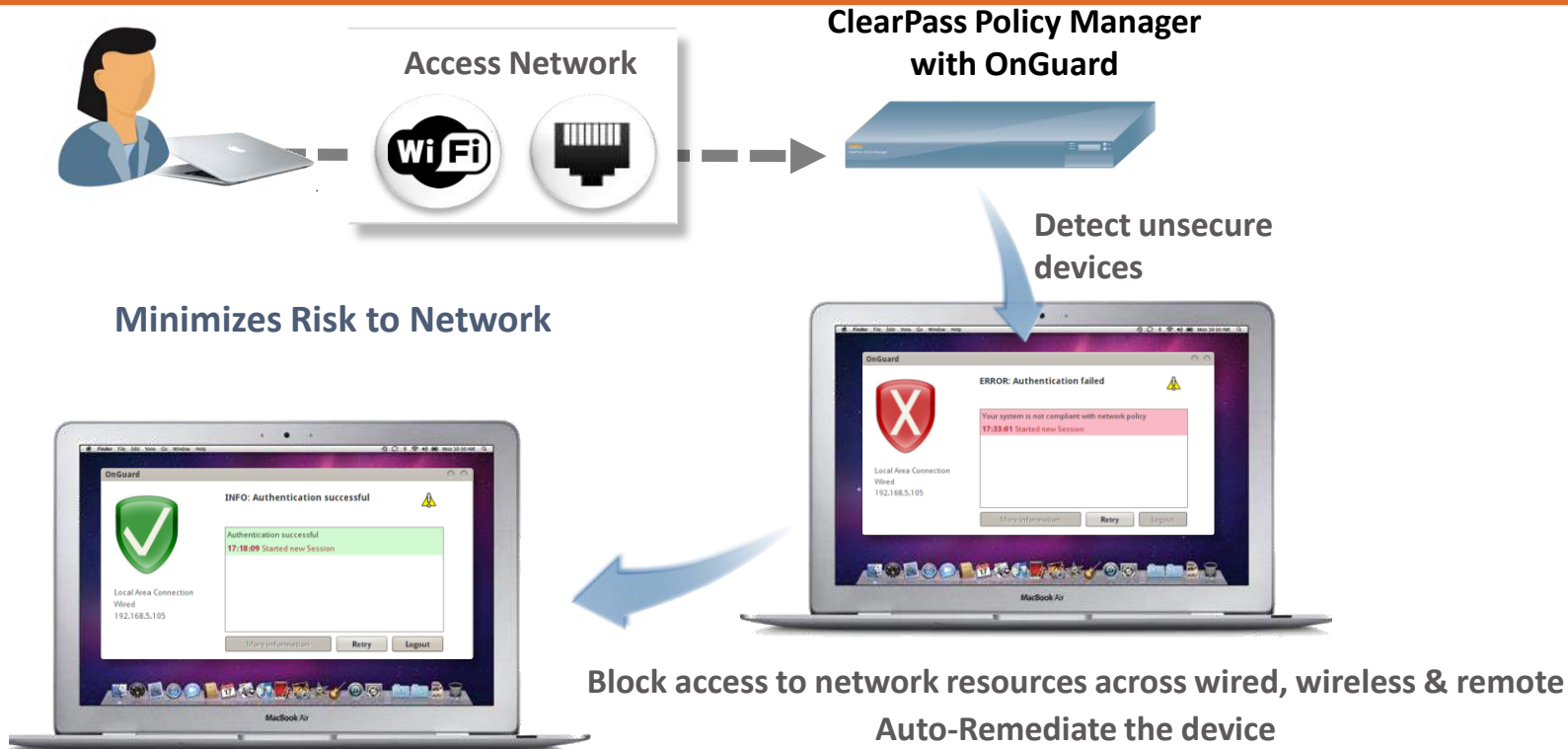
Filter: Service contains ethersphere Go Clear Filter Show 10 records

#	Server	Source	Username	Service	Login Status	Request Timestamp
1.	10.79.254.112	RADIUS	12345678911	Ethersphere-Aruba-Po	TIMEOUT	2014/11/12 08:03:53
2.	10.79.254.112	RADIUS	zjennings	Ethersphere-Aruba-Po	ACCEPT	2014/11/12 08:00:50
3.	10.79.254.112	RADIUS	tomij	Ethersphere-Aruba-Po	ACCEPT	2014/11/12 07:50:53
4.	10.79.254.112	RADIUS	al	Ethersphere-Aruba-Po	ACCEPT	2014/11/12 07:50:50
5.	10.79.254.112	RADIUS	tomij	Ethersphere-Aruba-Po	TIMEOUT	2014/11/12 07:50:49
6.	10.79.254.112	RADIUS	spezhery	Ethersphere-Aruba-Po	ACCEPT	2014/11/12 07:22:31
7.	10.79.254.112	RADIUS	spezhery	Ethersphere-Aruba-Po	TIMEOUT	2014/11/12 07:22:08
8.	10.79.254.112	RADIUS	12345678911	Ethersphere-Aruba-Po	TIMEOUT	2014/11/12 07:14:11
9.	10.79.254.112	RADIUS	12345678911	Ethersphere-Aruba-Po	TIMEOUT	2014/11/12 07:12:46
10.	10.79.254.112	RADIUS	12345678911	Ethersphere-Aruba-Po	TIMEOUT	2014/11/12 07:10:15

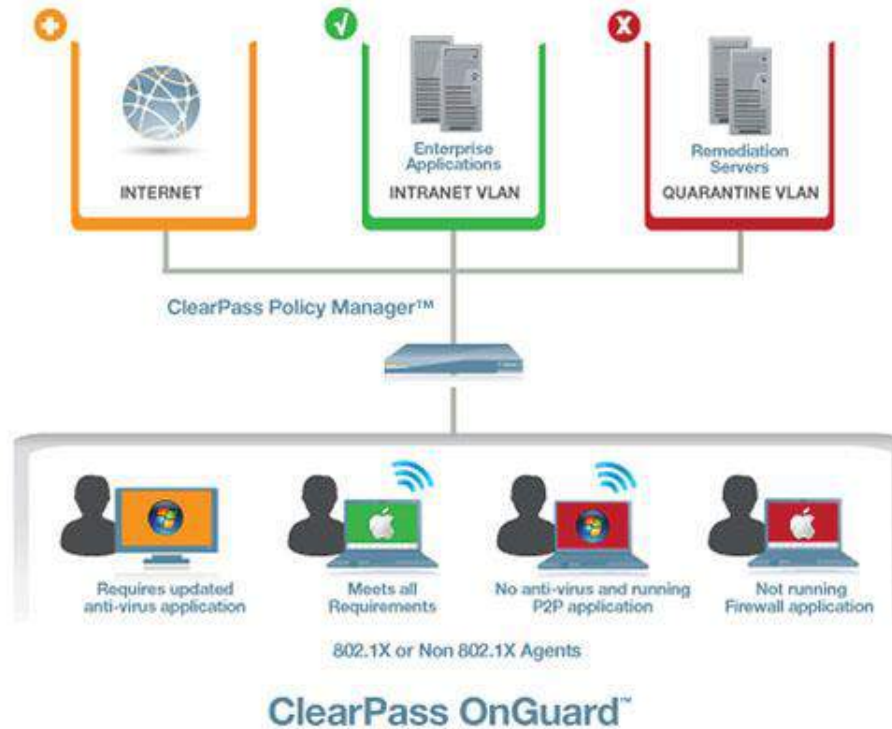
Showing 1-10 of more than 10 records

aruba NETWORKS an HP company

OnGuard - Control Compromised Devices



OnGuard – how it works



Система управления. Mobile-First Networks

Aruba AirWave



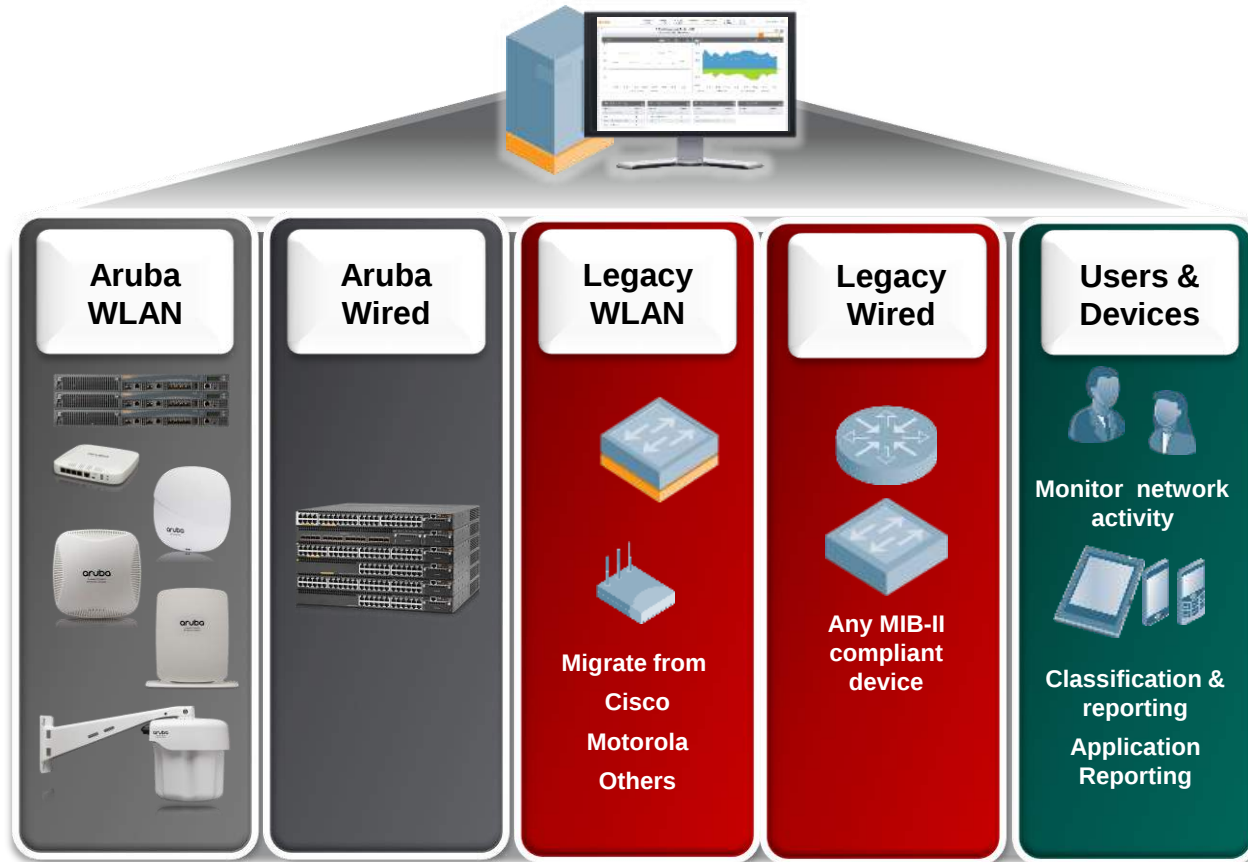
Multivendor
wired + wireless
network management

Aruba Central



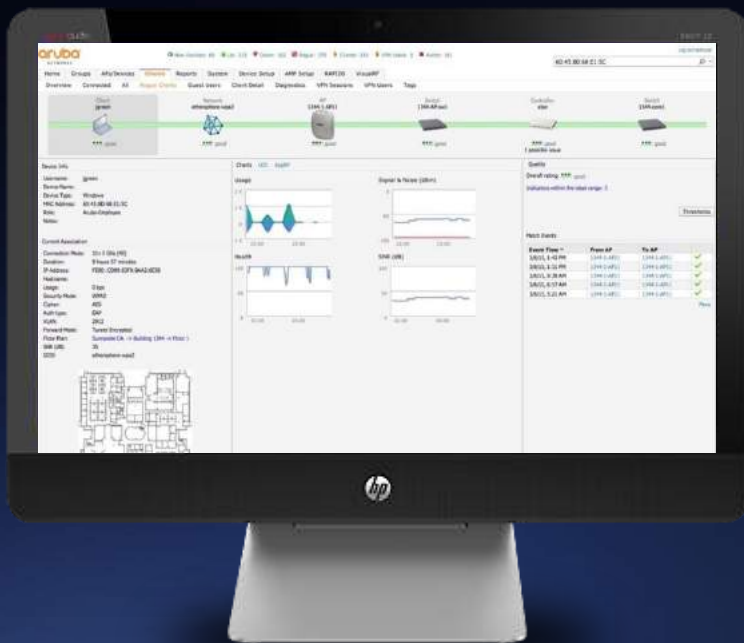
Cloud platform
for network management
+ services

AirWave Manages It All



Aruba AirWave

Видимость мульти-вендорной инфраструктуры



Наглядность соединения
между клиентом и сетью

Визуализация
радиопокрытия

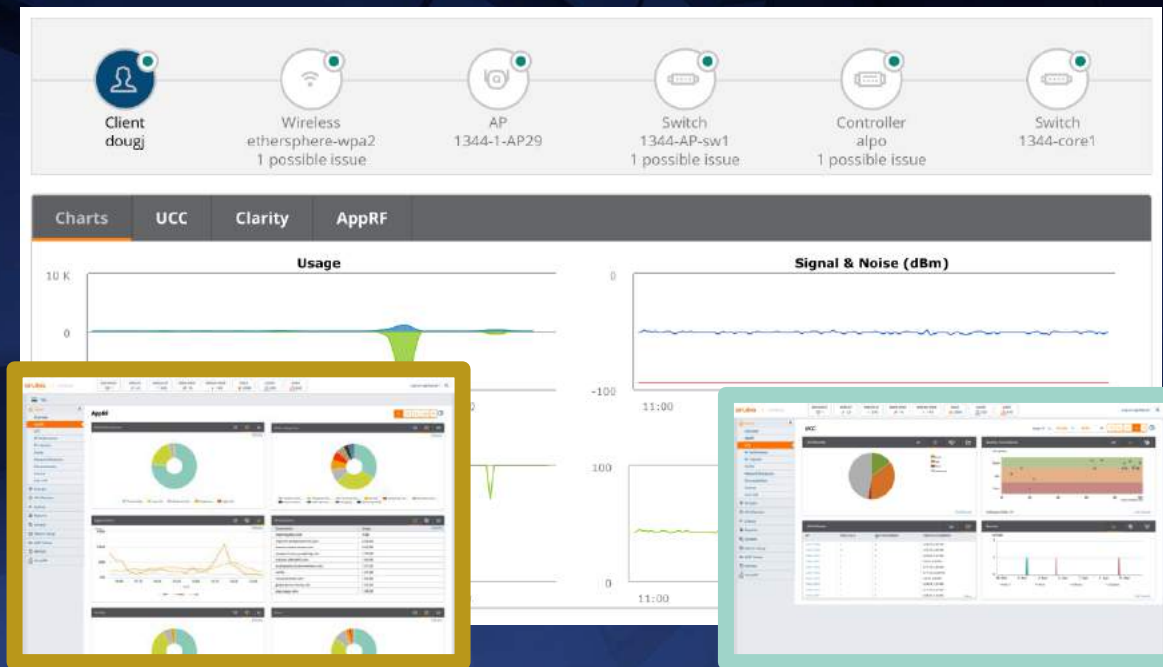
Историческая отчетность

Автоматизированное
управление конфигурацией

Онлайн-мониторинг:
RADIUS,
DHCP, DNS, критических
сервисов

Прогноз проблем с
подключением Wi-Fi до
того, как они произойдут

Упрощение сетевых операций связь с AirWave



App & Web Analytics

UCC Performance

Полное понимание работы сети

- Производительность радио среды, покрытие, статистика использования и состояния клиентов
- Пользователи, клиенты, проводные и беспроводные устройства, приложения и сетевые сервисы

Упреждающие оповещения

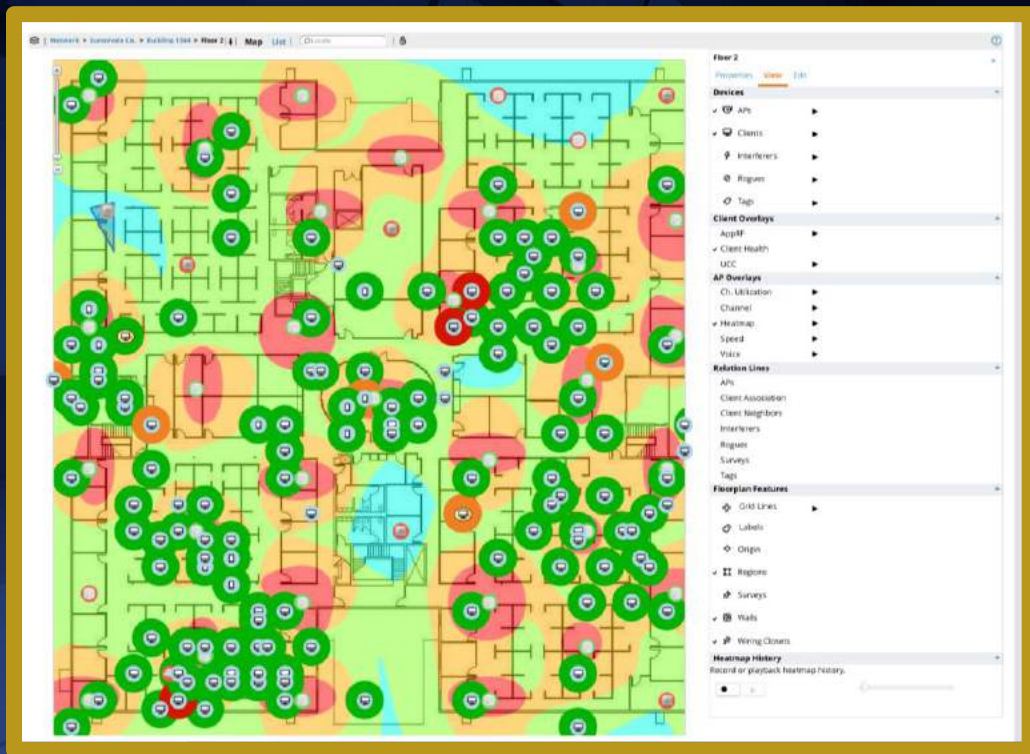
- В реальном времени, настраиваемые
- Выявление «узких мест» до возникновения проблем

Отчеты

- Сетевые тренды, безопасность, соответствие политикам
- Настраиваемые и преднастроенные

Быстрый поиск и устранение неисправностей

Планирование и визуализация покрытия сети с AirWave



- Карта сети:
клиенты, устройства, «чужие» точки доступа, помехи (включая помехи не от Wi-Fi)
- Контекстные данные:
AppRF, Client Health, UCC, голос, каналы и их использование, скорость, «горячие зоны» и пр.
- Отслеживание местоположения
- Зона покрытия: история и воспроизведение записи
- Планирование сети

IGC: Notes and Multi-Edit

Telnet server: ☐ Enabled ☒ Disabled

LED display:

MAS integra

NTP server:

Extended SS

NOTE

Telnet Server is disabled per security policy.

Delete Close

Edit name

Name	IP Address	Current Configuration	New Settings
IAP-Master1	10.70.13.87	IAP-Master1	Name1-VC
IAP-Master2	10.70.48.130	IAP-Master2	Name2-VC

Switch Config

The screenshot displays the Aruba Switch Configuration web interface. On the left is a navigation sidebar with a 'Groups' section containing links for List, Monitor, Basic, Switch Config (highlighted), and Firmware. Below this are links for APs/Devices, Clients, Reports, System, Device Setup, AMP Setup, RAPIDS, and VisualRF. The main content area is titled 'Group: Aruba Switch' and contains a tree view of configuration categories: Security & Authentication, Interfaces, Layer 2 Features (expanded), STP (expanded), Global Config (expanded), MSTP (expanded), Global Config (expanded), Interface Config, Rapid-PVST+, VLAN, VoIP, Layer 3 Features, Quality of Service, Multicast Features, System Features, and Monitoring & Diagnostics. The 'MSTP' section is active, showing a 'Note: This profile depends on the switch having a minimum version of 7.2.0.0'. Below the note is the 'Editing: MSTP Global Configuration' section, which includes a 'Settings' table with fields for Forward Delay (4-30), Hello Time (1-10), Maximum Age (6-40), Max Hops (6-40), Region Name, and Revision (0-65535). The 'MSTP Instances' section is empty. At the bottom right, there is an 'Add' button labeled 'New MSTP Instance' and a 'Save' button.

Group: Aruba Switch

Security & Authentication

Interfaces

Layer 2 Features

GVRP

LLDP/CDP

Port Security

Switchport

STP

Global Config

MSTP

Global Config

Interface Config

Rapid-PVST+

VLAN

VoIP

Layer 3 Features

Quality of Service

Multicast Features

System Features

Monitoring & Diagnostics

Note: This profile depends on the switch having a minimum version of 7.2.0.0

Editing: MSTP Global Configuration

Settings

Forward Delay (4-30):	15
Hello Time (1-10):	2
Maximum Age (6-40):	20
Max Hops (6-40):	20
Region Name:	Enter a Value
Revision (0-65535):	0

MSTP Instances

Add New MSTP Instance

Save

Run CLI Command(s) at Intervals

The screenshot displays the Aruba CLI configuration interface. On the left, a sidebar lists various command categories: show aaa authentication-server radius statistics, show dot1x counters, show auth-tracebuf, show debug, Airgroup (show airgroupservice, show airgroup servers), AP Details (show ap active, show ap association, show ap bss-table, show ap database long, show ap debug counters, show ap essid, show ap blacklist-clients), User Details (show user-table, show ap arm client-match history), Controller Details (show cpuload, show port status, show ap license-usage, show wlan status, show ip interface brief, show acl hits), UCC Details (show ucc call-info cdrs, show ucc call-info cdrs detail, show ucc client-info, show ucc statistics counter call global, show ucc statistics counter call client, show ucc statistics counter cac), and a search bar. The 'show ap active' command is selected and highlighted in blue.

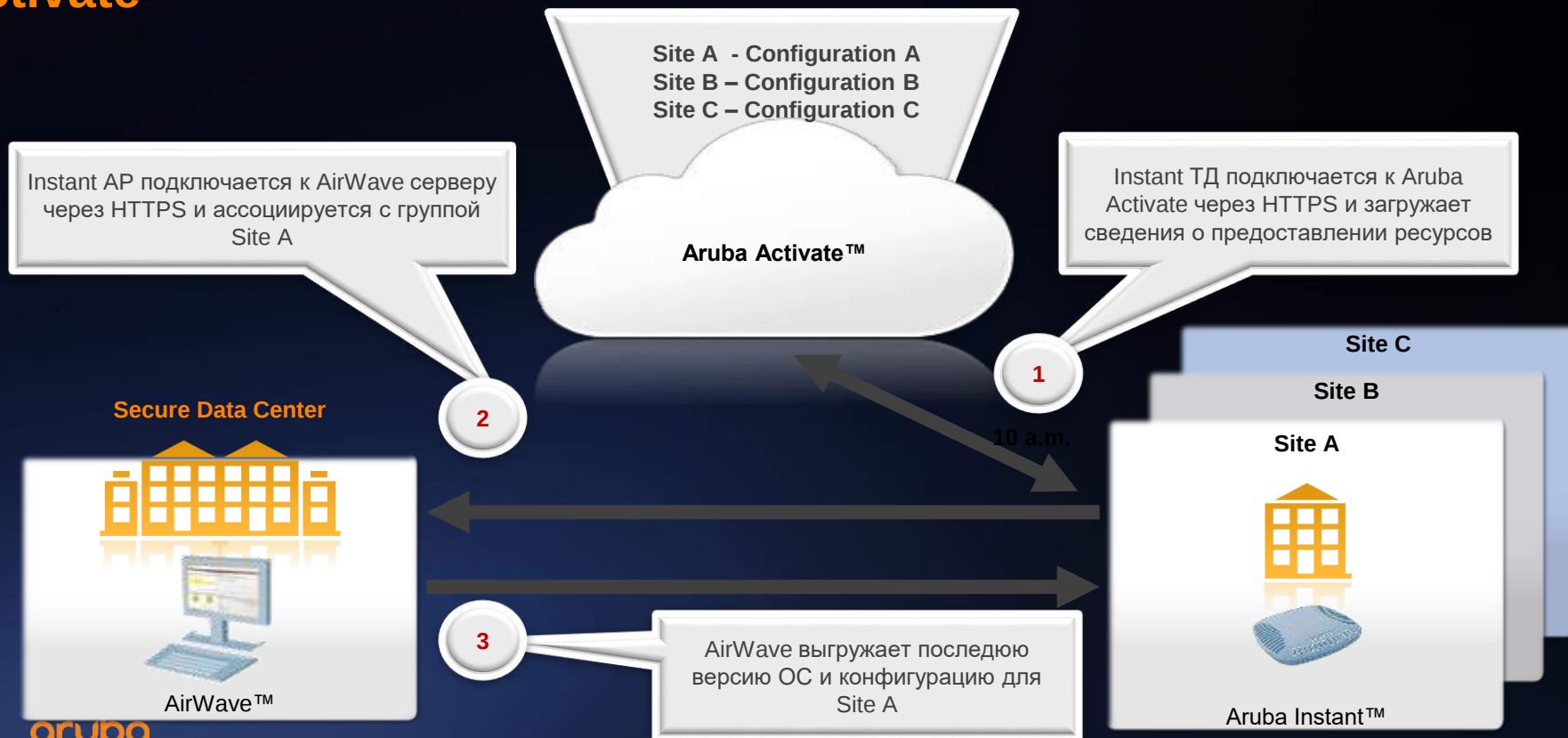
On the right, the configuration for the selected command is shown. It includes a 'Run' button, an 'Auto Run' checkbox (checked), a 'Clear' button, an 'Add Comment' button, and an 'Export' button. Below these buttons, the scheduling is configured: 'Run every 15 sec' and 'For 15 min.'. A help icon (?) is visible in the top right corner.

The output of the 'show ap active' command is displayed below the configuration. It shows the device name 'Aruba7210_Sanya' and the command 'show ap active'. The output is a table with columns: 'ess', '11g Clients', '11g Ch/EIRP/MaxEIRP', '11a Clients', and '11a Ch/EIRP'. The table lists various access points and their associated metrics.

ess	11g Clients	11g Ch/EIRP/MaxEIRP	11a Clients	11a Ch/EIRP
180.21	0	AP:HT:11/18/21.5	0	AP:VHT:149+
180.37	0	AM	0	AM
180.18	0	AP:HT:6/15/21.5	0	AP:VHT:149+
180.34	0	AP:HT:6/15/21.5	0	AP:VHT:161-
180.23	0	AP:HT:11/18/21.5	0	AP:VHT:44+/
180.27	0	AP:HT:6/15/21.5	0	AP:VHT:44+/
180.17	0	AM	0	AM
180.33	0	AP:HT:11/15/21.5	0	AP:VHT:48-/
180.49	0	AP:HT:1/15/21.5	0	AP:VHT:44+/
180.22	0	AP:HT:1/15/21.5	0	AP:VHT:48-/
180.26	0	AM	0	AM

Using IKE version 2;
; B = Battery Boost On; C = Cellular;

Конфигурирование удаленных офисов при помощи Aruba Activate



Решение Aruba Mobile Engagement



Aruba Beacons
Bluetooth Low Energy (BLE)
на батареях



Точки доступа и сенсоры
с интегрированными
маячками

(или сети от разных вендоров
с сенсорами Aruba)



Aruba Meridian
AppMaker



Платформа Aruba Meridian
С мобильными приложениями
и управлением маячками
Aruba Beacons

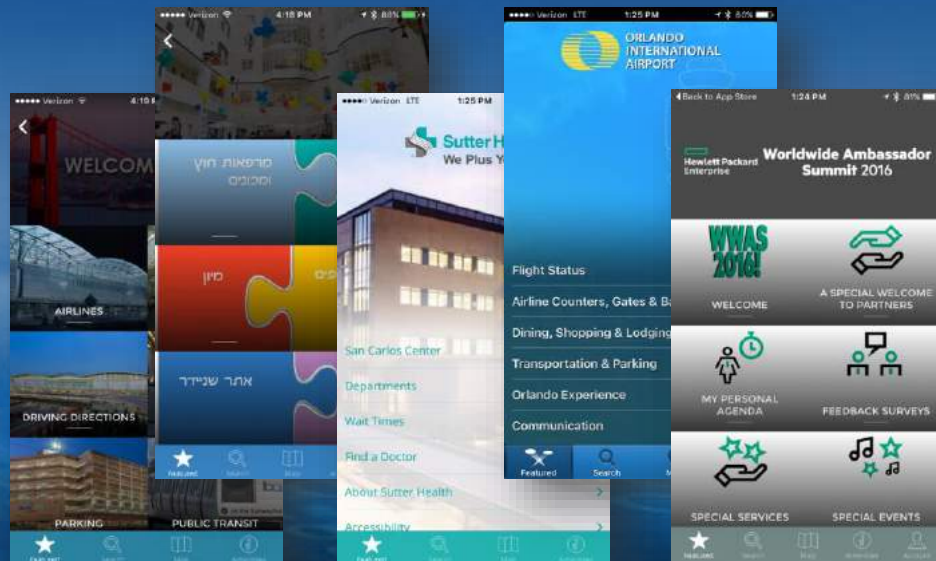
Meridian AppMaker

Создаем свое
приложение для
любого объекта

Подписка на облачный сервис

Не требуется опыта разработки
приложений

Можно всегда внести изменения



iOS и Android.

Семейство Aruba Beacon

Варианты применения внутри
и вне помещений

Корпоративного класса,
Совместимо с iBeacon

Передача только одного
сигнала, нет пользовательских
данных



Работа батареи до 4 лет или
питание от USB

Точность выше, чем у
Wi-Fi (3-5 м)

Низкие задержки уведомлений
(3-5 сек)

Слежение за ресурсами (Asset Tracking)

Meridian AppMaker

Быстрый
поиск
объекта или
их группы

Визуализаци
я на карте
объектов
слежения



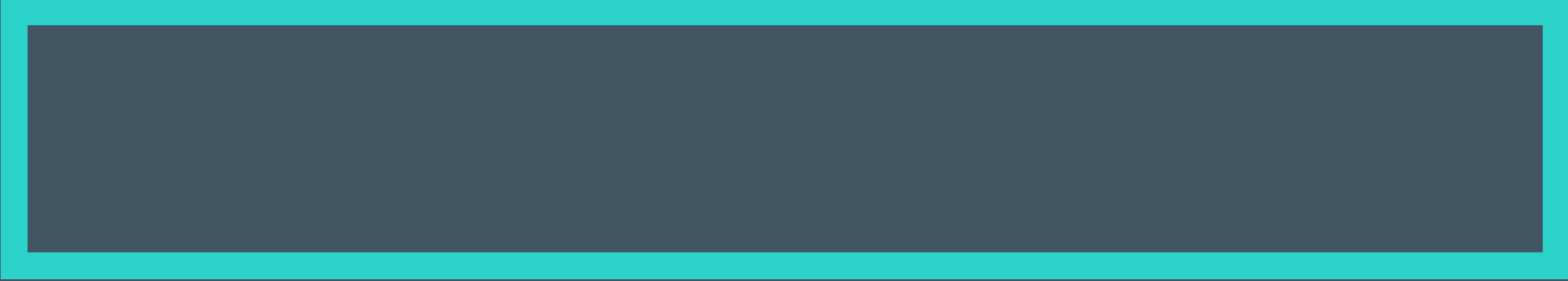
Легко внедряется сотрудниками или
специалистами

Карты подходящего масштаба

Работает на смартфонах



ANDROID



Introducing HPE OfficeConnect OC20 Wireless Solution

OfficeConnect OC20

Plug-and-play Wi-Fi for small business



Overview

- Right sized for small business – 2x2 dual radio 802.11ac Wave1
- Clustering of up to 8 Access Points – ideal for a small business
- Fast ultra-simple set-up via mobile app
- Remote monitoring of network from anywhere

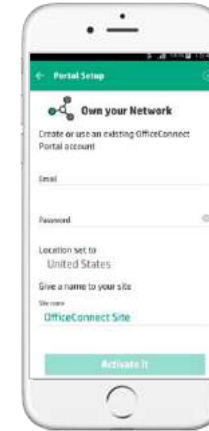
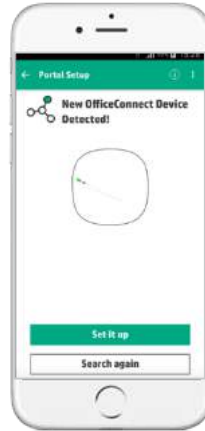
Benefits

- Create secure employee and guest Wi-Fi networks in minutes
- Easy guests access using Facebook Wi-Fi log-in
- Reliable connectivity to support business critical applications
- Keep business and customer traffic separate and secure
- Set guidelines to protect your business from on-line threats
- Engage and encourage customers to stay longer with guest Wi-Fi

OfficeConnect OC20 Set-up



OfficeConnect



1. MOBILE APP

Intuitive interface for configuration and monitoring of the wireless network

2. AP DISCOVERY

App automatically scans the wireless environment to find un-configured AP(s)

3. EASY SETUP

Simple 2-step initial setup to create a secure wireless network, an optional guest network, and protect accesses to the AP

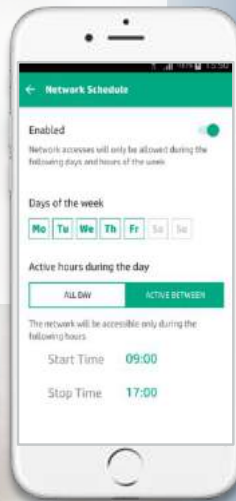
Guest Wi-Fi network set-up

Guest network name & select authentication

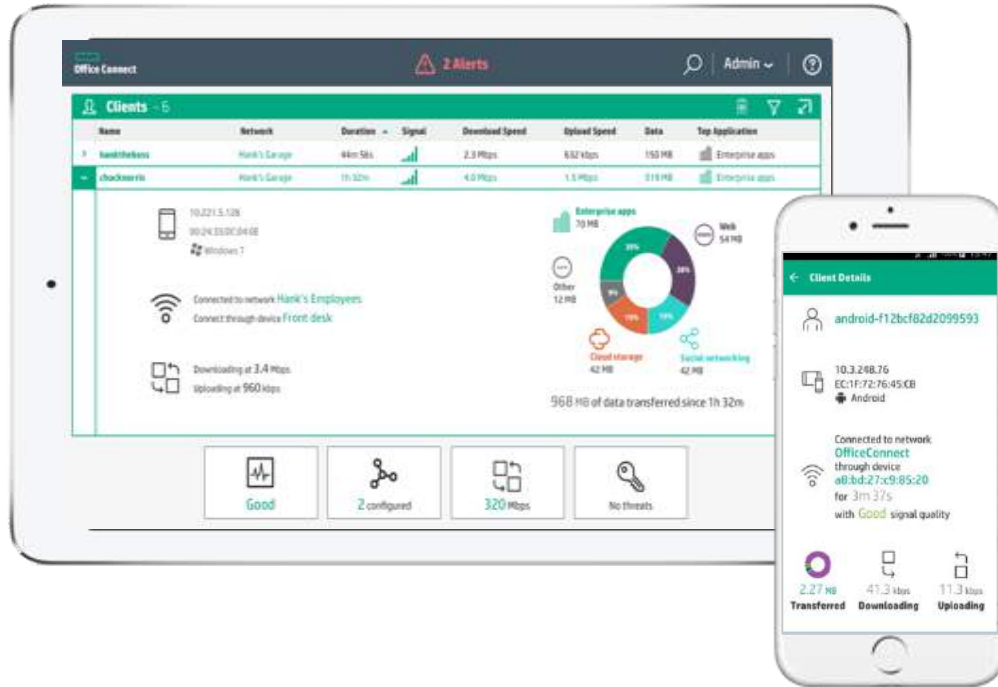
- Open guest network
- Simple password sign in
- Facebook Wi-Fi
- Branded experience with business Logo

Create guest schedule

- Days of the week and times of day



Adaptive user interface



Uses adaptive interface for different form factors delivering an enriched user experience

Clustering



Connect first AP

Ready

Mobile application discovers first AP

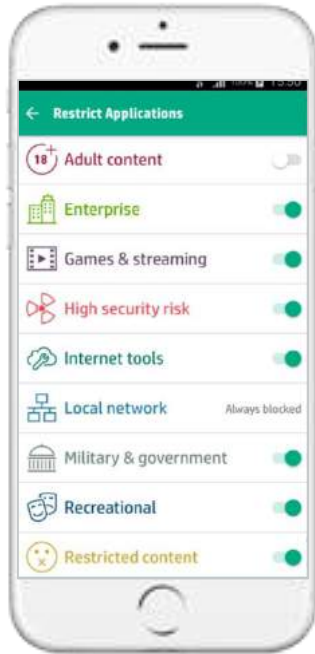
Set..

New access points retrieve configuration from first AP and form cluster of up to 8 APs

Go..

No configuration required

Protect the business with application filtering



Integrated website filtering

- Set guidelines for employee and guest access
- Block access to malicious websites, adult content, etc.
- Provide comprehensive protection against online threats.

Ongoing management



Health Dashboard

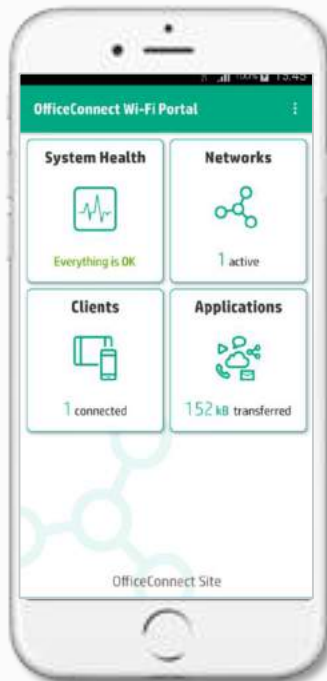
Provides visibility into network

- Alerts
- Network & web traffic
- # Users
- AP status & signal strength
- Basic switch status



Clients

- Set guidelines for web traffic
- Monitor web traffic



Networks

See active networks

- Employee
- Guest network



App Visibility

- Set guidelines for web traffic
- Monitor web traffic

User Experience Workflow



- Quick Card (How to power up, App info)
- AP
- Mounting kit

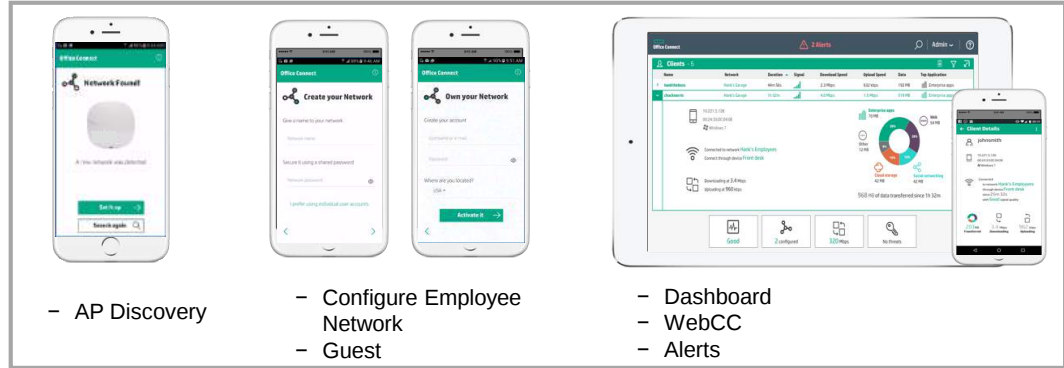


SET UP



- Connect AP to PoE, Power adapter
- Download and launch App

Configuration



- AP Discovery

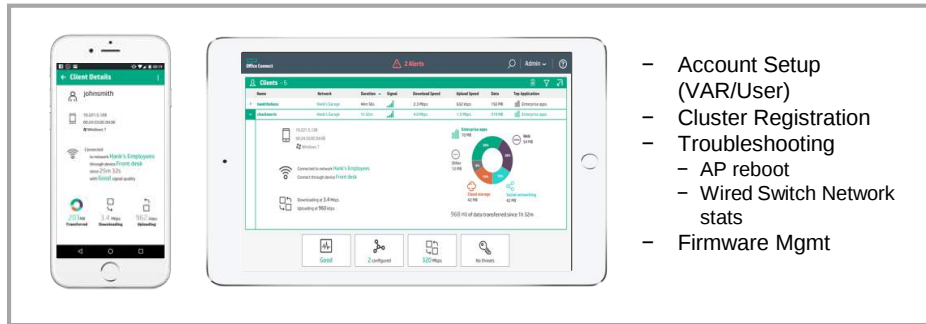
- Configure Employee Network
- Guest

- Dashboard
- WebCC
- Alerts



Ongoing

Remote Monitoring



- Account Setup (VAR/User)
- Cluster Registration
- Troubleshooting
 - AP reboot
 - Wired Switch Network stats
- Firmware Mgmt



- App Visibility (WebCC)
 - Monitor Traffic/Web URLs
 - Setup filter on Web URLs
- Wireless Network Usage
 - AP status
 - AP Usage
 - # of clients
 - Signal strength
- Wired Switch Network stats
 - Basic switch status

OfficeConnect 10 Gigabit Solutions for Small Businesses



1420 Switch
GbE with 10GbE uplinks model

- ✓ **Unmanaged**
- ✓ Plug-and-Play
- ✓ Connect to a 10G server



1850 Switch
GbE with 10GbE uplink models
+ 10G Aggregator

- ✓ **Smart Web Managed**
- ✓ Configurable – Basic Features
- ✓ Build 10G network around aggregator switch



1950s Switch
GbE with 10GbE uplinks models
+ 10G Aggregator

- ✓ **Smart Web Managed**
- ✓ Configurable – Rich Features
- ✓ Build 10G network around aggregator switch

[illegible]