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Licensing 101

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Agenda

- ❑ Types of Licenses
- ❑ ArubaOS and Controller
- ❑ Instant, Switches
- ❑ AirWave
- ❑ ClearPass
- ❑ Central

许可证的类型

1. Permanent Licenses—永久许可

- 此类型的许可证在特定的Aruba移动控制器或云服务上永久启用所需的软件模块。
- 只能通过销售订单流程获得永久许可证。
- 永久软件许可证密钥将通过电子邮件发送。
- 此类型的许可证可为Aruba Controller、Airwave或ClearPass提供所需软件或功能。

2. Subscription license—订阅许可

- 此类型的许可证在特定的Aruba移动控制器或云服务上永久启用所需的软件模块。
- 只能通过销售订单流程获得永久许可证。
- 永久软件许可证密钥将通过电子邮件发送给您。
- 此类型的许可证可为Aruba Controller、Central、UXI或ClearPass提供所需软件或安全功能或云管理的1、3或5年服务。

3. Evaluation license—测试许可

- 此类型的许可证允许您在90天内测试特定控制器上的软件模块的不受限制的功能（旧版以三个30天为增量，新版是一个90天订阅许可）。
- 过期的测试许可证将保留在许可证数据库中，直到使用删除所有许可证密钥的Write Erase All命令重置控制器。（订阅测试许可可随时删除）
- 过期的测试许可证不会影响控制器的正常运行。它保存在许可证数据库中，以防止滥用。
- 在控制器上应用许可证密钥时，设备系统时钟的异常篡改(将系统时钟调回2小时或更长时间)会导致软件许可模块及其支持的功能被禁用。这可能会影响网络服务。
- 目前有AOS、ClearPass、ALE、Airwave测试许可。
- Central注册新用户自带10设备90天测试许可。

许可证的类型

集中许可证 (Centralized License) : 可以将这些许可证类型分配给许可池，并由一组托管设备中的任何设备使用。

例如: AP, ACR, PEF, RF Protect, VMC, MM and WebCC

特定于控制器的许可证 (Controller-Specific License) : 非共享许可证是使用控制器序列号生成的，并且只能由为其生成许可证的单个控制器使用。它也称为盒式许可证 (Box License)。

例如: PEFV

AOS8 Licensing

Aruba OS and Controller



ArubaOS AP-based Licenses:

Bundle许可
LIC-ENT

- LIC-AP — 网络中的AP数量, 必须配置。
- LIC-PEF — 适用于Wired/WLAN的 PEF 功能。按AP许可。
- LIC-RFP — 适用于WIPS、Spectrum Analysis、Multizone等功能。按AP许可。
- LIC-AW — 适用于Airwave, 以管理网络设备数量计算。

永久许可

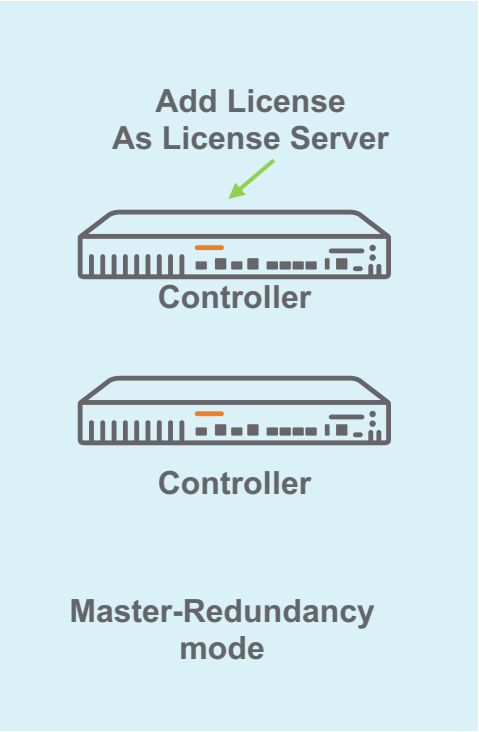
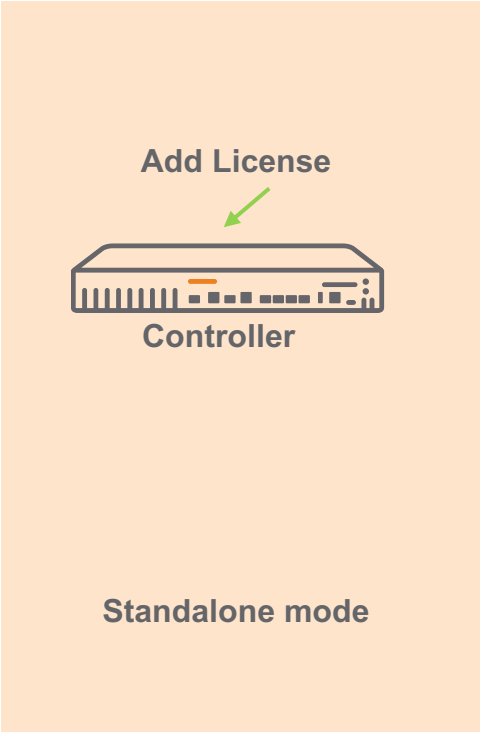
Aruba OS and Controller



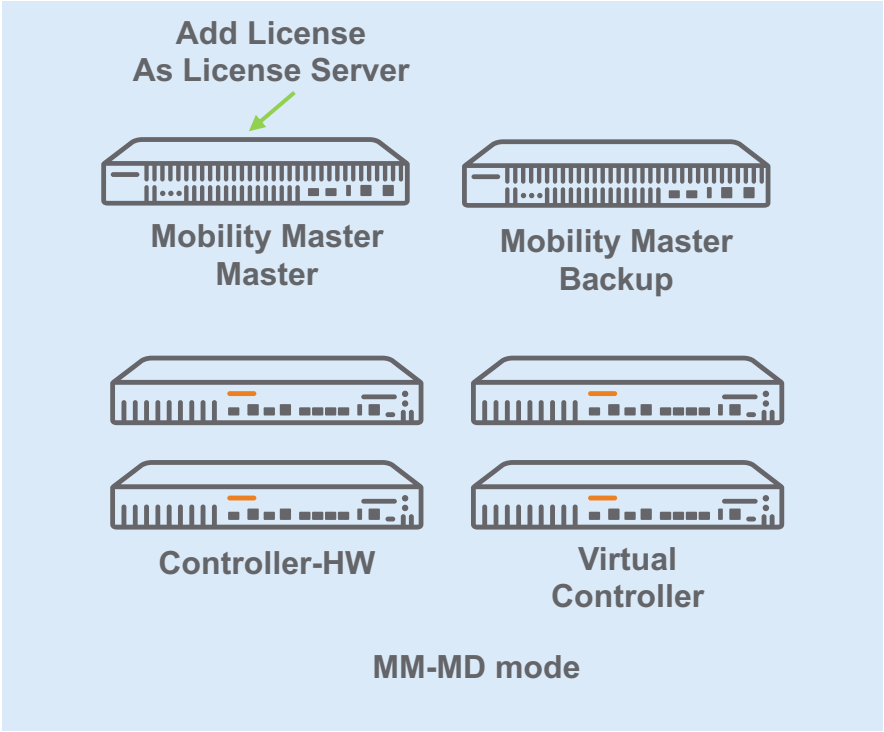
ArubaOS AP-based Licenses:

- **Web CC** — Web内容分类, 适用于Wired/WLAN的 PEF 功能。按AP、使用年限 (1/3/5/7/10) 订阅许可。
- **LIC-ACR** — Advanced Cryptography (ACR) , 为控制器带来了军用级别的 Suite B加密技术。按活动终端计算(Client session)。
- **LIC-xxxx-PEFV** — 适用于VIA的PEF; 按控制器型号许可。永久许可。
- **LIC-VIA** — 使VIA客户端能够通过VPN隧道访问网络的许可证。许可证安装在VPN终止的MM或独立控制器上。按活动终端计算。

不同架构下的许可添加

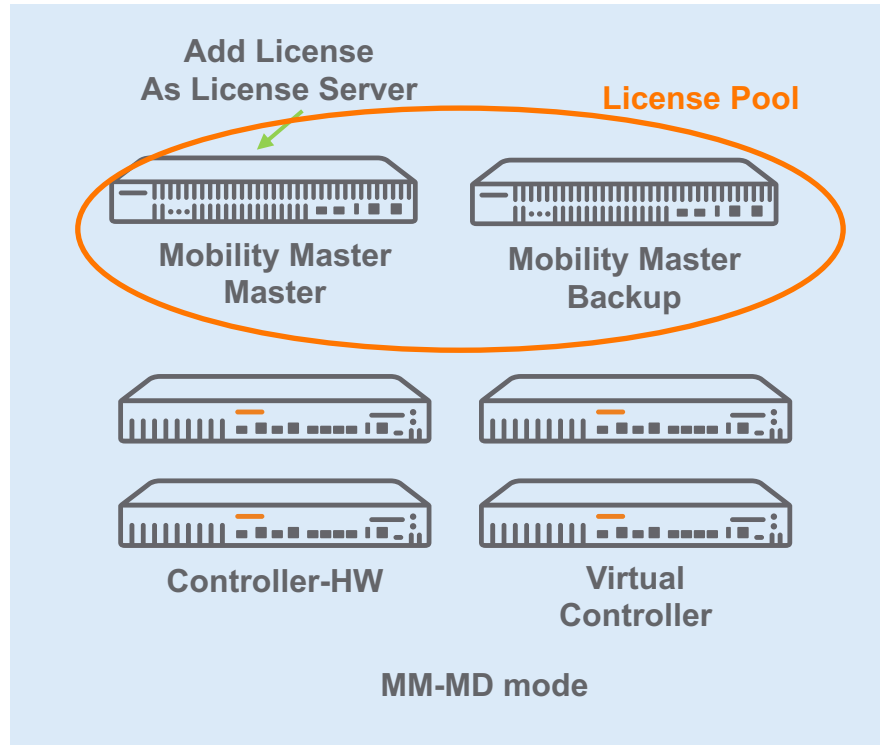


Centralized License



Centralized License

AOS8 MM-MD mode



Centralized License

- MM-MD架构必须配MM许可
- MM分硬件平台和软件平台
- MM受管设备都消耗License (AP+Controller)

Mobility Conductor Models and Capacities

Aruba Mobility Conductor Virtual Appliance	MCR-VA-50	MCR-VA-500	MCR-VA-1K	MCR-VA-5K	MCR-VA-10K
Number of Devices	50	500	1,000	5,000	10,000
Number of Clients	500	5,000	10,000	50,000	100,000
Number of Controllers	5	50	100	500	1,000

Aruba Mobility Conductor Hardware Appliance	MCR-HW-1K	MCR-HW-5K	MCR-HW-10K
Number of Devices	1,000	5,000	10,000
Number of Clients	10,000	50,000	100,000
Number of Controllers	100	500	1,000

Aruba Virtual Mobility Controller (VMC)			
SKUs	MC-VA-50	MC-VA-250	MC-VA-1K
AP Count	50 APs	250 APs	1000 APs
Number of Users	4k	8k	24k

License Server 故障切换

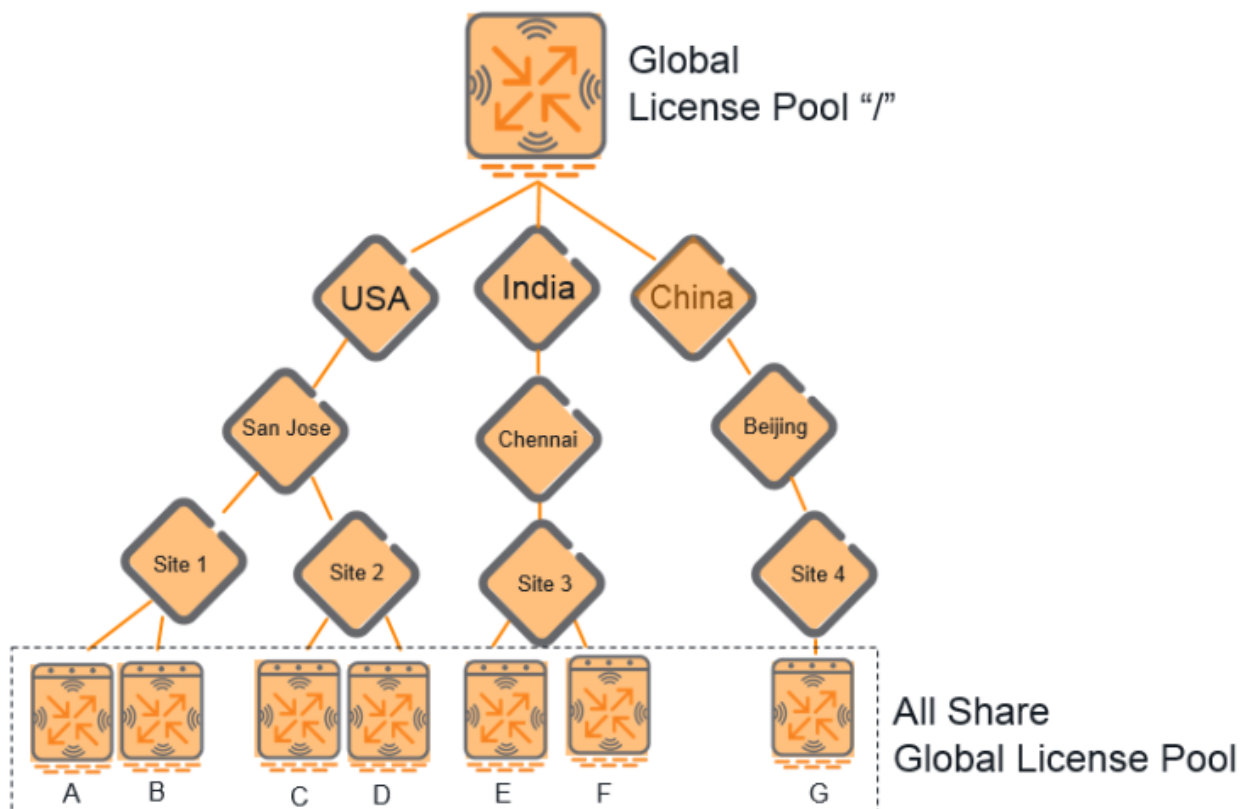
Primary VMM	Backup VMM	故障切换
Operating	Operating	主要和备份MM可以共享一组许可证。
Failed	Operating	Backup Mobility Master将保留共享许可证限制。 如果主MM不可用，并且Backup MM在主MM可用之前重新启动，则MD将许可证保留30天。
Failed/ reboot	Failed/ reboot	受管控制器将保留Mobility Master发送给他们的许可证，限制30天。 如果MD在30天后无法访问MM，它将删除收到的所有共享许可证。 在MM无法访问的30天后，现有AP在重新启动之前将一直正常工作。 由于许可证不足，尝试连接MD的新AP将不会处于活动状态。

Licensing Pool

- ❑ 允许配置自定义许可池。
- ❑ MD在MM上共享来自全局池的所有可共享许可证。

举例:

1. MM上安装了100个共享许可证。(例如AP许可证)
2. 现在，MD可以从MM的全球许可证池“/”获得所有许可。
3. 假设美国使用25个AP许可证，印度使用35个AP许可证，中国使用15个AP许可证。
4. 全局池中剩余的许可证为25个。



US	25
India	35
China	15
Total:	75

Instant AP , Switch

Instant AP , Switches



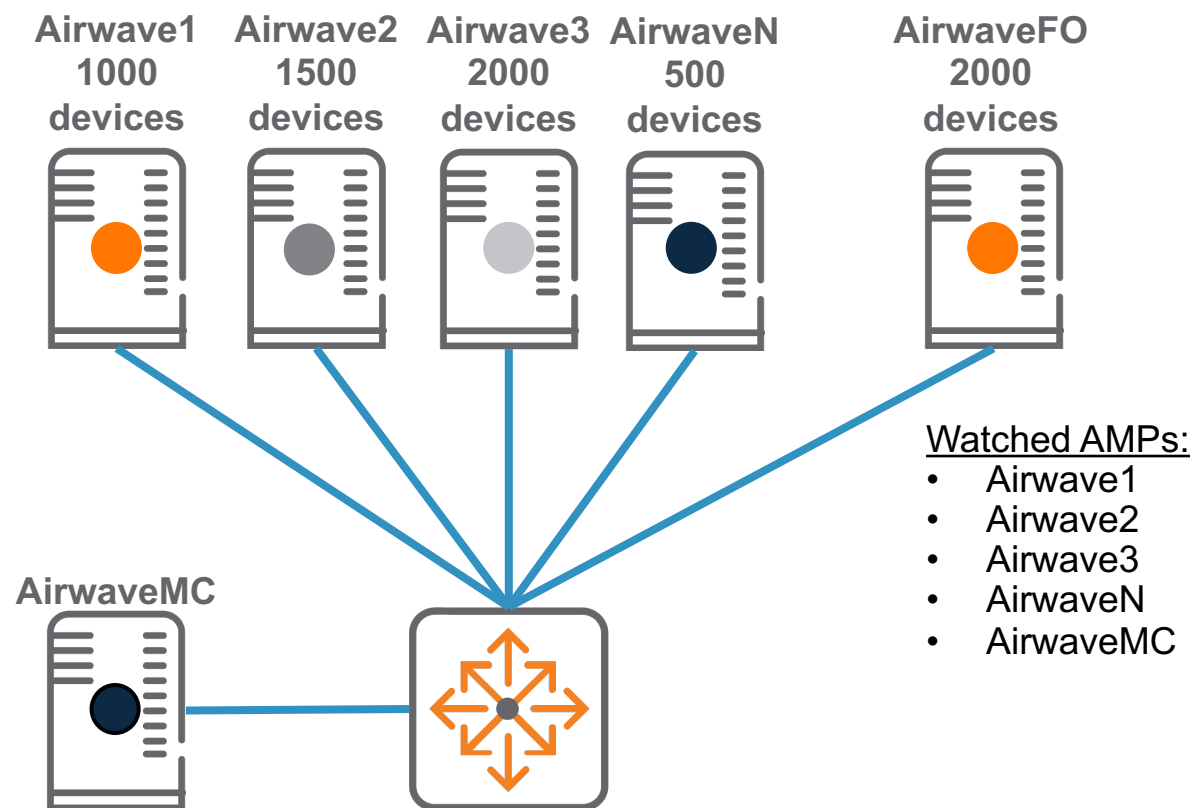
No licenses are required!

Airwave Licensing

AirWave



- ☐ **LIC-AW:** 许可基于多供应商网络设备的总数
 - Access Points
 - Controllers
 - Switches
- ☐ **AW-xx-FR:** 故障转移许可证 (Failover licenses) , 提供冗余
- ☐ **AW-MASTER (Airwave Glass替代, 免费)** : 拥有多台Airwave服务器的客户, 可以购买主控制台并将其安装在单独的服务器上, 以提供整个网络的集中视图。



ClearPass Licensing

ClearPass 6.7 Licensing

Subscription Or Perpetual	OnGuard (Endpoint Health/Posture)	Onboard (BYOD/CA)	- Sold as 100, 500, 1K, 2500, 5K, 10K - Perpetual and 1/3/5* year Subscription based offerings
Subscription Or Perpetual	Access (802.1X, MAC-Auth, Guest, TACACS+, OnConnect, Endpoint Profiling & Security Exchange)		- Sold as 100, 500, 1K, 2500, 5K, 10K - Perpetual and 1/3/5 year Subscription based offerings
Perpetual	VM Appliance / Hardware Appliances		- Sold as Small, Medium, Large Sizes (HW) - Perpetual VM license

* OnGuard will no longer be offered as a 5 year subscription

ClearPass 6.8 Licensing

Entry & Access Upgrade Licenses

Perpetual	Access Upgrade TACACS+, Security Exchange, and Endpoint Profiling	• Sold as 100, 500, 1K, 2500, 5K, 10K, 25K, 50K, 100K • Perpetual offerings
Perpetual	Entry 802.1X, MAC-Auth, Web Based User Registration and Authentication, MFA, OnConnect, System APIs	• Sold as 100, 500, 1K, 2500, 5K, 10K, 25K, 50K, 100K • Perpetual offerings
Perpetual	Virtual Appliance / Hardware Appliances	• Sold as Small (C1000), Medium (C2000) & Large Sizes (C3000) Hardware Appliances • Perpetual Virtual Appliance (Cx000V)

比较 Access/Entry

Subscription Or Perpetual	Access 802.1X, MAC-Auth, Web Based User Registration and Authentication, MFA, TACACS+, OnConnect, System APIs, Security Exchange, and Endpoint Profiling	Perpetual	Access Upgrade TACACS+, Security Exchange, and Endpoint Profiling
		Perpetual	Entry 802.1X, MAC-Auth, Web Based User Registration and Authentication, MFA, OnConnect, System APIs
Perpetual	Virtual Appliance / Hardware Appliances	Perpetual	Virtual Appliance / Hardware Appliances

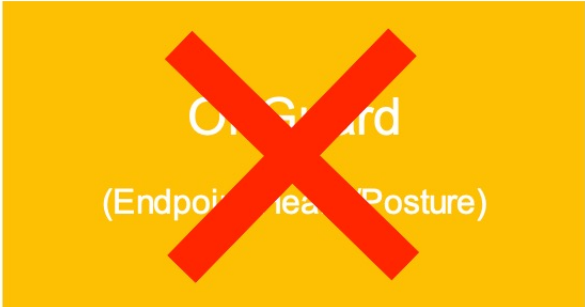
附加Licenses?

–Onboard

- Available for both Entry or Access licenses.

–OnGuard

- Requires Access licenses.

Subscription Or Perpetual		Onboard (BYOD/CA)
Perpetual	Entry 802.1X, MAC-Auth, Web Based User Registration and Authentication, MFA, OnConnect, System APIs	
Perpetual	Virtual Appliance / Hardware Appliances	

CPPM 6.9 and later

- ❑ 版本6.9中没有许可证更改
- ❑ ClearPass License 分永久和订阅2种
- ❑ [参考 : Scaling & Ordering Guide](#)

Select ClearPass Access License type

NOTE: Perpetual licenses require service selection.

- ☒ Perpetual License
- ☐ 1 Year Subscription License
- ☐ 3 Year Subscription License
- ☐ 5 Year Subscription License

Total number of concurrent endpoints for ClearPass Access

0	
0	100 endpoints [JZ400AAE \$3,726]
0	500 endpoints [JZ401AAE \$13,839]
0	1,000 endpoints [JZ402AAE \$22,355]
0	2,500 endpoints [JZ403AAE \$47,903]
0	5,000 endpoints [JZ404AAE \$74,516]
0	10,000 endpoints [JZ405AAE \$117,097]
0	25,000 endpoints [JZ406AAE \$239,516]
0	50,000 endpoints [JZ407AAE \$425,806]
0	100,000 endpoints [JZ408AAE \$745,161]

License并发计算

Method	Session Begins	Session Ends
802.1X	RADIUS Accounting START	RADIUS Accounting STOP
MAC-Auth	RADIUS Accounting START	RADIUS Accounting STOP
Guest (anonymous, self-reg, social, etc)	RADIUS Accounting START	RADIUS Accounting STOP
VPN	RADIUS Accounting START	RADIUS Accounting STOP
TACACS	TACACS Accounting START	TACACS Accounting STOP
OnConnect	MAC Learned (mac-notify or switch link-up)	MAC Removed/Aged (mac-notify or switch link-down)

在并发模型下，在网络上进行身份验证/授权的用户/设备在“活动”会话期间消耗访问许可证。
如果无法识别会话结束(例如，没有Accounting)，许可证将从使用后的 24 小时内从池中删除。

NOTE: Interim-accounting (more chatty) is **NOT** required to determine start/stop

Central Licensing

2.5.4

New Aruba Central Software Licenses

Simple, consistent framework for all areas of networking

CENTRAL FOUNDATION LICENSE		Primary enterprise features and functionality for campus, branch, remote, and data center networks		
CENTRAL ADVANCED LICENSE		Adds enhanced security, analytics and premium network features		
Single license per device	Consistent structure for Wi-Fi, Switching, and SD-Branch	Common license structure for cloud and on-prem	24x7 technical support and software updates	1-, 3-, 5-, 7- and 10-year options



Wireless APs: Feature Details

As of Central Spring Release (March 2021)

AP FOUNDATION LICENSE					
Management	Onboarding	Provisioning	Orchestration	AI & Analytics	24x7 TAC
• Configuration • Monitoring, Reporting, Troubleshooting (MRT) • Topology • Live Packet Capture • AppRF • VisualRF • ARM and ClientMatch		• UXI integration • CPDI-based client profiling • NBAPI (1K calls/day) • Presence Analytics • WebCC firewall rules • Cloud Guest onboarding • AI Insights (Connectivity, Device, Client, RF, and Tunnel Insights)		• AI Search • Spectrum/Air Monitor • RAPIDS • Contact Tracing • Software support: APs & Central • AirGroup (IAP-based) • UCC (heuristics-based media prioritization only)	
AP ADVANCED LICENSE (ENHANCED AI)					
Advanced Segmentation	Advanced Analytics	Advanced Orchestration	Enhanced Security	UCC Visibility and Reporting	Advanced support
• All Foundation features		AIOps • Adv AI Insights (e.g. Tx power, coverage holes, outdoor impacts) • Air Slice (expanded apps)		• Streaming APIs • UCC (Visibility and traffic prioritization) • Optional: Pro Premier support	

Switching Licenses: Feature Details

As of Central Spring Release (March 2021)

SWITCH FOUNDATION LICENSES



Management



Onboarding



Provisioning



Orchestration



AI & Analytics



24x7 TAC

- Configuration
- Template Configuration
- UI Config Access Protocols
- Monitoring, reporting, troubleshooting (MRT)
- Topology
- PoE

- VSF management
- ZTP
- Device Profiles (e.g. AP, phone)
- UXI integration (wired client)
- Device Validation
- Port Security
- Dynamic Segmentation

- (UBT/PBT)
- AI Insights (wired insights: anomaly detection like port flaps, port errors, and POE issues)
- AI Search
- MultiEditor (CX switches only)

SWITCH ADVANCED LICENSES

*Switch Advanced Licenses are not available at this time.

SD-Branch Gateways: Feature Details

As of Central Spring Release (March 2021)

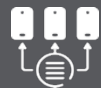
GATEWAY FOUNDATION LICENSE



Management



Onboarding



Provisioning



Orchestration



AI & Analytics



24x7 TAC

- UI and Template Group Configs
- Config Audit
- WAN Health/Summary Dashboards
- Topology View
- Application Visibility
- Alerts & Events
- Stateful Firewall
- IPSec and Client VPN
- Static and Dynamic Routing (BGP, OSPF, RIPv2)
- SD-WAN Route and Tunnel Orchestration
- Cloud Connectivity (AWS, Azure)
- Orchestrated SASE integration
- Dynamic Path Steering
- Link Redundancy
- 4 WAN Links + 1 LTE Link
- Application-based policies
- High Availability
- Web content filtering
- Role Based Access Policy
- Full SD-LAN Control
- AI Search, AI Insights, AI Assist
- Northbound APIs

GATEWAY ADVANCED LICENSE



SaaS Optimization



Advanced Orchestration

- All Foundation features
- SaaS Express
- Streaming API



Enhanced Security

Security Add-on License (can apply to Foundation or Advanced)

- IDS/IPS
- Anti-Malware
- Security Dashboard

Simplifying the Licensing Process

Now: Foundation and Subscription Licenses

Unify

Term

Single license

STEP 1:
SELECT DEVICE



License Type

- ☒ Foundation Licenses
- ☐ Advanced Licenses

1 year

Subscription Licenses

☐ Automatically add subscription licenses to match the number of corresponding c

0

Aruba Central Campus Gateway Ctr Foundation 1 year E-S

0

Aruba Central AP Foundation 1 year E-STU [Q9Y58AAE

0

Aruba Central 25xx/4100i/6000/6100/8-12p Switch Foun
[Q9Y68AAE \$213]

0

Aruba Central 62xx/29xx Switch Foundation 1 year E-STL

0

Aruba Central 63xx/38xx Switch Foundation 1 year E-STL

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Aruba Central 64xx/54xx Switch Foundation 1 year E-STL

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Aruba Central 8xxx Switch Foundation 1 year E-STU [R

STEP 3:
PICK LICENSE TERM

1 Year

3 Year

5 Year

7 Year

10 Year



https://help.central.arubanetworks.com/latest/documentation/online_help/content/nms/subscriptions/overview-licensing.htm

其他产品

❑ **ClearPass Device Insight** — 提供整个网络的全方位可见性，提供所有连接设备的上下文信息。按年/设备数订阅许可。

❑ **User Experience Insight (UXI)** — 用户体验传感器，远程监控有线无线性能并排除故障。按年/设备数订阅许可。

❑ **NetEdit** — ArubaCX交换机编排工具，包括搜索、编辑、校验(包括一致性检查)、部署和审计等功能。按年/设备数订阅许可，25节点以内免费。

❖ 有VSF或VSX堆叠的交换机需要为每台交换机单独提供许可证

❑ **Aruba Fabric Composer (AFC)** — 数据中心编排工具，按年订阅。



下一步

- ❑ 如何创建测试许可 (AOS/ClearPass/Airwave)

<https://lms.arubanetworks.com/orders/create>

- ❑ 如何激活许可 (AOS/ClearPass/Airwave)

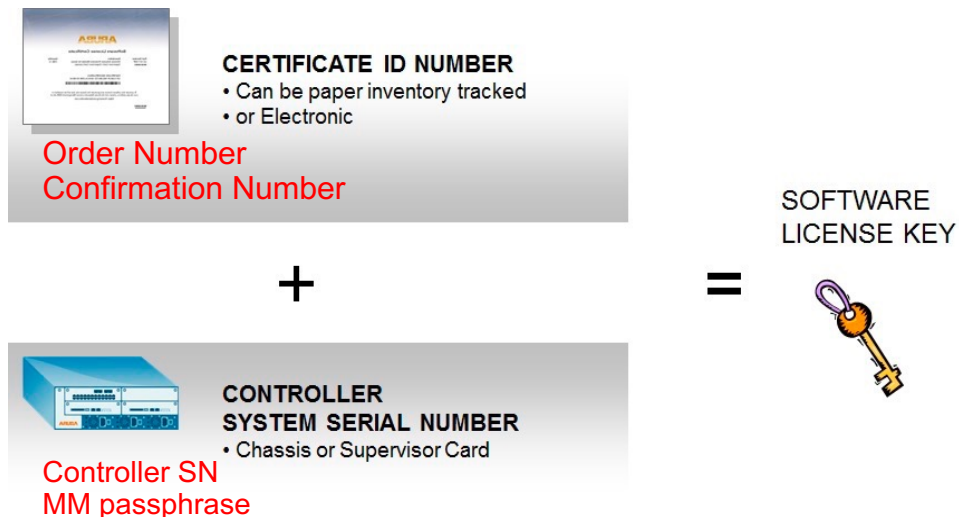
<https://lms.arubanetworks.com/licenses/activate>

- ❑ 许可迁移 (AOS/Airwave)

<https://lms.arubanetworks.com/licenses/transfer/device>

- ❑ 许可转换 (ClearPass)

<https://lms.arubanetworks.com/licenses/conversioncp>





Thank You