

Hardening Guide



a Hewlett Packard
Enterprise company

ClearPass

Deployment Guide

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Change Log

Version	Date	Modified By	Comments
2018-01	8/31/18	Dennis Boas	<ul style="list-style-type: none">• Reformatted• Updated for release 6.7.4
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Introduction

This document is intended to assist Aruba customers and partners in securely configuring and deploying Aruba ClearPass. It should be noted that security recommendations often involve tradeoffs; not every recommendation in this document will be appropriate for every situation. In general recommendations in this document represent security best practices and should be followed wherever network security is a priority.

ClearPass Security Overview

ClearPass provides numerous security checks and balances including;

- All management and configuration actions including create, delete and modify operations are recorded in an audit log. The Audit Viewer provides real time searchable access that allows an administrator to review all policy level actions.
- Policy simulations allow all policies to be verified before they are deployed.
- A "Monitor Only" mode allows administrators to deploy the policies without actually enforcing any access control. This enables administrators to fine-tune their policies and resolve policy exceptions before enabling enforcement.
- Once the policies are deployed, ClearPass provides administrators with multiple ways to track authentications and authorizations:
 - Access Tracker is a real-time searchable log that shows which policies are being applied and what actions are being taken. Access Tracker also shows all exceptions and failures.
 - Insight is a reporting, analytics and alerting tool that can be configured to generate historical reports on authenticating users and devices, policies applied, and enforcement action taken. Insight also allows administrators to specify alert thresholds and conditions for policy exceptions or other system level failures. When the conditions and thresholds are satisfied the system sends out Email and SMS text alerts.
- At a system level ClearPass has been hardened in numerous ways:
 - ClearPass runs on a hardened Linux based operating system.
 - All sensitive data directories are protected using AES -128 encryption.
 - CLI access into the operating system is through a restricted shell
 - Only required services are run
 - The appliance is firewalled internally to only allow limited traffic
 - Separate management and data interfaces, with the ability to restrict access to the management interface to authorized end stations.
 - Timely security patches are provided for critical and high-level OS and application level security advisories
- Before every release of ClearPass, system level vulnerability scans are performed using tools such as QualysGuard, and IBM AppScan.

External Security Testing and Accreditation

Aruba invests heavily in independent third-party security testing of its products. While the majority of this testing is relevant to – and required by – government agencies, it has value to all types of users. In some cases, organizations may choose to rely on recognized security testing authorities rather than conducting their own product testing.

Common Criteria

ClearPass was awarded [Common Criteria certification](#) under both the Network Device collaborative Protection Profile (NDcPP) and the Authentication Server Extended Package.

FIPS 140-2

The Federal Information Processing Standard 140-2 is a system for testing and certifying cryptographic modules. As part of this testing, a laboratory accredited by the US and Canadian governments examines design documentation, source code, and development practices, in addition to conducting extensive testing of cryptographic functions. Products that implement FIPS 140-2 validated cryptography are assured to be using cryptography correctly.

<http://csrc.nist.gov/groups/STM/cmvp/standards.html>

When operated in FIPS mode ClearPass Policy Manager, Guest and Onboard are FIPS 140-2 compliant through incorporation of a FIPS-validated module, which provides all cryptography functions for the application. ClearPass incorporates the Aruba Linux Cryptographic Module which implements full and approved cryptographic algorithm support, including Suite B algorithm compliance, for Aruba products. It provides secure key management, data integrity, data at rest encryption, and secure communications.

<http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/140val-all.htm#2577> Suite B cryptograph

Suite B cryptographic support

ClearPass Policy Manager and RADIUS server include Suite B cryptographic support.

Suite B cryptographic algorithms are specified by the National Institute of Standards and Technology (NIST) and are used by NSA's Information Assurance Directorate in solutions approved for protecting National Security Systems (NSS). Suite B includes cryptographic algorithms for encryption, key exchange, digital signature, and hashing.

Algorithm	Function	Specification
Advanced Encryption Standard (AES)	Encryption	FIPS Pub 197
Elliptic Curve Diffie-Hellman (ECDH)	Key Exchange	NIST SP 800-56A
Elliptic Curve Digital Signature Algorithm (ECDSA)	Digital Signature	FIPS Pub 186-4
Secure Hash Algorithm (SHA)	Hashing	FIPS Pub 180-4

Internal Security Testing

Each ClearPass release goes through extensive quality assurance testing. As part of the testing process, several commercial vulnerability scanners are used. These include:

- QualysGuard
- IBM AppScan

Any findings returned by these scanners are examined to determine if they are genuine vulnerabilities or false positives. Actual vulnerabilities will cause a bug to be opened.

In addition to quality assurance testing, an internal group known as Aruba Threat Labs provides advanced vulnerability research against Aruba products. Aruba Threat Labs conducts penetration testing through both black-box and white-box testing, also including source code analysis. From time to time, Aruba Threat Labs also contracts with external third-party penetration testing firms to conduct targeted testing. Aruba Threat Labs maintains a database of common findings reported by popular vulnerability scanning tools. This database is available at <http://www.arubanetworks.com/support-services/security-bulletins/>

Vulnerability Management Process

Aruba publishes a vulnerability response policy at <http://www.arubanetworks.com/support-services/security-bulletins/>. This location also hosts security advisories published by Aruba.

Ports

The following table lists the ports that are used by ClearPass.

	Between		Protocol	Port	Service Description
ClearPass UI	Management Station	ClearPass	TCP	443	HTTPS
Secure Shell	Client	ClearPass	TCP	22	SSH
Guest Portal	Controller	ClearPass	TCP	443 / 80	HTTP not recommended but can be configured
Update service	ClearPass	Update Server	TCP	443	HTTPS
OnGuard Agent	Endpoints	ClearPass	TCP	443	HTTPS
	Endpoints	ClearPass	TCP	6658	OnGuard to CPPM
NAS Devices - AAA Services	NAS Devices	ClearPass	TCP/UDP	1812	RADIUS
	NAS Devices	ClearPass	TCP/UDP	1645	RADIUS
	NAS Devices	ClearPass	TCP/UDP	1813	RADIUS Accounting
	NAS Devices	ClearPass	TCP/UDP	1646	RADIUS Accounting
	ClearPass	NAS Devices	TCP/UDP	3799	RADIUS CoA - RFC3576
	NAS Devices	ClearPass	TCP/UDP	49	TACACS
ClearPass to Active Directory	ClearPass	AD Servers	ICMP echo (8) and echo-reply (0) between CPPM host and Domain Controller used during domain join		
	ClearPass	AD Servers	TCP/UDP	389	LDAP
	ClearPass	AD Servers	TCP/UDP	636	LDAP over SSL
	ClearPass	AD Servers	TCP/UDP	445	NetLogon
	ClearPass	AD Servers	TCP	49152 - 65535	SMBv2 / v3 RPC randomly allocated high TCP ports see SMB Ports Range Note
	ClearPass	AD Servers	TCP	1025 - 5000	SMBv1 RPC randomly allocated low TCP ports see SMB Ports Range Note

	ClearPass	AD Servers	UDP	88	Kerberos Authentication
	ClearPass	AD Servers	TCP	464	Password Change
	ClearPss	AD Servers	TCP	139	AD Auth test from CLI
SNMP	ClearPass	Endpoint	UDP	161	SNMP Read / Write
SNMP	Endpoint	ClearPass	UDP	162	SNMP Traps
WMI	ClearPass	Endpoint	TCP	135	WMI Scan
Cluster	Publisher	Subscriber	TCP	443	HTTPS encrypted using SSL
	Subscriber	Publisher	TCP	443	HTTPS encrypted using SSL
	Publisher	Subscriber	TCP	5432	PostgreSQL for DB replication - encrypted using SSL
	Subscriber	Publisher	TCP	5432	
	Subscriber	Publisher	UDP	123	Time synchronization
ClearPass Misc Services	ClearPass	NTP Servers	UDP	123	NTP
	ClearPass	SMTP Servers	TCP	25	SMTP
	ClearPass	SMTP Servers	TCP	465	SMTP Secure
	ClearPass	DNS Servers	TCP	53	DNS
	Network	ClearPass	UDP	67	DHCP Snooper
	Network	ClearPass	UDP	2055	NetFlow collector
	Network	ClearPass	UDP	6343	sFlow collector
Ingress Event Engine	Network	ClearPass	UDP	514	

Note: Ports required will vary based on features configured.

SMB Port Range Note

SMBv2 and SMBv3 protocols use an increased remote procedure call (RPC) port range for Windows Server 2008 and later. The following AD deployments determine the ports used:

- Active Directory deployments that use only Windows Server 2008 or later use the high port range of 49152 through 65535.
- Active Directory deployment that use Windows Server 2008 or later and earlier versions of Windows Server use both the low port range of 1025 through 5000 and the high port range of 49152 through 65535.
- Active Directory deployment that use only versions earlier than Windows Server 2008 use the low port range of 1025 through 5000.

Locking Down Services

Cryptography

Aruba ClearPass employs cryptography as a part of several services, including HTTPS, SSH, IPsec, and others.

AD over SSL

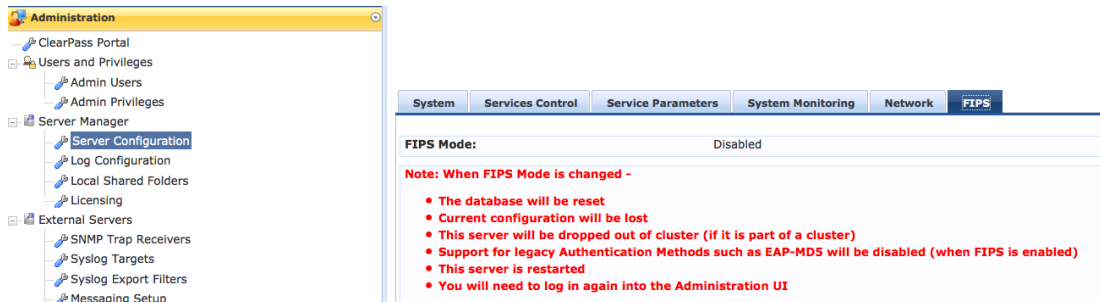
When using Active Directory as an authentication source with connection security “AD over SSL” the following cipher suites are supported;

- TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384_P384
- TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA_P384
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA_P384
- TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA_P256
- TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA_P256
- TLS_DHE_DSS_WITH_AES_256_CBC_SHA256
- TLS_DHE_DSS_WITH_AES_256_CBC_SHA
- TLS_RSA_WITH_AES_256_CBC_SHA256
- TLS_RSA_WITH_AES_256_CBC_SHA

FIPS Mode

In the FIPS mode all cryptographic services provide a minimum strength of 112 bits as mandated by FIPS 140-2. Services which provide less than 112 bits of security (such as RSA-1024, SHA1 for digital signatures, MD5, DES) may not be configured. In non-FIPS mode there are no restrictions on minimum security strength. Algorithms such as DES (56-bits of strength) and MD5 (<64 bits of strength) are permitted to be used, although this is not the default configuration.

Enabling FIPS



- Review the following important points, before enabling FIPS mode in ClearPass Policy Manager:
- The database is reset when FIPS mode is enabled. Ensure that a secure current back up of the ClearPass database exists before enabling FIPS mode.
- Configuration backup files from Policy Manager in non-FIPS mode **cannot** be restored to Policy Manager in FIPS mode.
- Configuration backup files from Policy Manager in FIPS mode **can** be restored to Policy Manager in the non-FIPS mode.
- The server will be removed from the cluster when FIPS mode is enabled.
- All nodes in a cluster must be either in FIPS or non-FIPS mode.
- Legacy authentication methods such as EAP-MD5 and MD5 message digest algorithm are not supported in FIPS mode.
- Certificates that are created with MD5 authentication cannot be imported to the Certificates Trust List (Administration > Certificates > Certificate Trust List).
- The server reboots when FIPS mode is enabled.

OCSP

- **Include Nonce in OCSP request.** If the OCSP server doesn't support the nonce then set this value to FALSE to avoid an EAP-TLS authentication failure. A nonce is a cryptographic value that is used to protect against record and replay attacks
- **Enable Signing for OCSP Requests.** Enables ClearPass to sign the OCSP request with the Radius server certificate. The default value for this parameter is set to FALSE to disable the signing process. Signing verifies the integrity of the data and the identity of the sender.

Main				
Authentication Port	1812, 1645		1812, 1645	
Accounting Port	1813, 1646		1813, 1646	
Maximum Request Time	30 seconds	30	5-120	
Cleanup Time	5 seconds	5	2-10	
Local DB Authentication Source Connection Count	32	32	5-150	
AD/LDAP Authentication Source Connection Count	64	64	5-300	
SQL DB Authentication Source Connection Count	32	32	5-100	
Kerberos Authentication Source Connection Count	64	64	5-300	
EAP-TLS Fragment Size	1024 bytes	1024	512-1500	
Use Inner Identity in Access-Accept Reply	FALSE	FALSE		
Reject if OCSP response does not have Nonce	TRUE	TRUE		
Include Nonce in OCSP request	TRUE	TRUE		
Enable signing for OCSP Request	FALSE	FALSE		
Check the validity of all certificates in the chain against CRLs	TRUE	TRUE		
ECDH Curve	X9.62/SECG cu		X9.62/SECG curve over a 256 bit prime field	
Re-attempt AD login with different Username formats	TRUE	TRUE		
TLS Session Cache Limit	3750 sessions	3750	1000-100000	

OCSP Server Fail-Open to CRL

For EAP-TLS authentication methods, If the OCSP server is not accessible to perform certificate validation, ClearPass provides an option to validate against a CRL instead (fallback)

General	
Name:	[EAP-TLS With OCSP Enabled]
Description:	EAP-TLS with OCSP enabled; recommended for Onboard
Type:	EAP-TLS
Method Details	
Session Resumption:	<input type="checkbox"/> Enable
Session Timeout:	6 hours
Authorization Required:	<input checked="" type="checkbox"/> Enable
Certificate Comparison:	Do not compare
Verify Certificate using OCSP:	Required(CRL fallback)
Override OCSP URL from Client:	<input type="checkbox"/> Enable
OCSP URL:	http://localhost/guest/mdps_ocsp.php

OCSP validation check Intermediate Certificates

To enhance certificate security the RADIUS service parameter, Check the validity of intermediary certificates in the chain using OCSP, can be enabled. Enabling this validates the entire certificate chain. Enabling this feature will put greater load on the system and is not intended for all customer use cases.

System	Services Control	Service Parameters	System Monitoring	Network	FIPS
Number of Errors		150		150	10-1000
Recovery Action		None		None	
Security					
Reject Packet Delay		1 seconds		1	0-5
Maximum Attributes		200 attributes		200	0-512
Process Server-Status Request		FALSE		FALSE	
Main					
Authentication Port		1812, 1645		1812, 1645	
Accounting Port		1813, 1646		1813, 1646	
Maximum Request Time		30 seconds		30	5-120
Cleanup Time		5 seconds		5	2-10
Local DB Authentication Source Connection Count		32		32	5-150
AD/LDAP Authentication Source Connection Count		64		64	5-300
SQL DB Authentication Source Connection Count		32		32	5-100
Kerberos Authentication Source Connection Count		64		64	5-300
EAP-TLS Fragment Size		1024 bytes		1024	512-1500
Use Inner Identity in Access-Accept Reply		FALSE		FALSE	
Reject if OSCP response does not have Nonce		TRUE		TRUE	
Include Nonce in OSCP request		TRUE		TRUE	
Enable signing for OSCP Request		FALSE		FALSE	
Check the validity of all certificates in the chain against CRLs		TRUE		TRUE	
ECDH Curve		X9.62/SECG cur		X9.62/SECG curve over a 256 bit prime field	
Disable TLS 1.2		FALSE		FALSE	
Check the validity of intermediary certificates in the chain using OSCP		FALSE		FALSE	
Maximum Number of AD Authentication Processes		1		1	1-5
TLS Session Cache Limit		3750 sessions		3750	1000-100000

OCSP/CRL Status Messages

The Event Viewer provides a notification when

- The connection to an OCSP server times out
- No response is received from an OCSP server
- CRL has expired
- CRL download fails

NTP Authentication

If Network Time Protocol is not authenticated, an attacker can introduce a rogue NTP server. This rogue server can then be used to send incorrect time information to network devices, which will make log timestamps inaccurate and affect scheduled actions. NTP authentication is used to prevent this tampering by authenticating the time source. ClearPass supports authenticating its network time sources using SHA or SHA1. In FIPS mode, only SHA1 is supported. The authentication leverages the Linux NTP service. In a cluster the publisher is the time source for all subscribers and subscribers do not authenticate the publisher.

Date & Time	Time Zone on Publisher
<input checked="" type="checkbox"/> Synchronize time with NTP server	
Primary Server:	
NTP Server	129.6.15.28
Key ID	
Key Value	
Algorithm	<div> <input checked="" type="checkbox"/> SHA <input type="checkbox"/> SHA1 </div>
Secondary Server :	
NTP Server	
Key ID	
Key Value	
Algorithm	

SMBv2/v3 support

ClearPass supports SMBv2/v3 for PEAPv0/EAP-MSCHAPv2 and Microsoft Active Directory Domain Services. ClearPass will use the highest version available on the controller;

- SMBv3 will be automatically used by default for AD joins and any requests that use PEAPv0/EAP-MSCHAPv2
- If SMBv3 is not enabled, ClearPass will then automatically failover to SMBv2.
- If SMBv2 is also not enabled, ClearPass will then failover to use SMBv1

If higher SMB versions are later enabled on the client, ClearPass will then detect the changes and attempt to use the highest available SMB version automatically

SNMP

The Simple Network Management Protocol is commonly used by network management systems to poll devices for information such as port configuration, status, and interface counters. SNMP versions 1 and 2 provide very little security beyond the community string. If an attacker has network access to a device and can guess the community string, it may lead to disclosure of sensitive information. Aruba strongly recommends the use of SNMPv3, which includes much stronger security through authentication and encryption.

Navigate to Administration > Server Manager > Server Configuration > System Monitor tab to configure the SNMP parameters. This ensures that external Management Information Base (MIB) browsers can browse the system level MIB objects exposed by the Policy Manager appliance. The options in this page vary based on the SNMP version selected.

System	Services Control	Service Parameters	System Monitoring	Network	FIPS
System Location: <input type="text"/>					
System Contact: <input type="text"/>					
Engine Id: 80001F8804303030433239353744424145					
SNMP Configuration:					
Version: <input type="text" value="v3"/>					
Username: <input type="text"/>					
Security Level: <input type="text" value="NOAUTH_NOPRIV"/>					
Authentication Protocol: <input type="text" value="MD5"/>					
Authentication Key: <input type="text"/>					Verify: <input type="text"/>
Privacy Protocol: <input type="text" value="DES"/>					
Privacy Key: <input type="text"/>					Verify: <input type="text"/>

SNMP Traps

SNMP Trap Receivers can be configured to receive traps for critical system events.

Policy Manager sends SNMP traps that expose the following server information:

- System uptime. Conveys information about how long the system is running
- Network interface statistics [up/down]. Provides information if the network interface is up or down
- Process monitoring information. Check for the processes that should be running. Maximum and minimum number of allowed instances. Sends traps if there is a change in value of maximum and minimum numbers
- Disk usage. Check for disk space usage of a partition. The agent can check the amount of available disk space, and make sure it is above a set limit. The value can be in % as well. Sends traps if there is a change in the value

- CPU load information. Check for unreasonable load average values. For example, if 1 minute CPU load average exceeds the configured value [in percentage] then system would send the trap to the configured destination
- Memory usage. Report the memory usage of the system

Free Disk and CPU Load thresholds are configured under the service parameters tab

System	Services Control	Service Parameters	System Monitoring	Network	FIPS
Select Service:	System monitor service ▼				
Parameter Name	Parameter Value	Default Value	Allowed Values		
Free Disk Space Threshold	<input type="text" value="30"/> %	30	1-100		
1 Min CPU load average Threshold	<input type="text" value="3"/> %	3	1-100		
5 Min CPU load average Threshold	<input type="text" value="2"/> %	2	1-100		
15 Min CPU load average Threshold	<input type="text" value="1"/> %	1	1-100		

System Cleanup Options

In order to prevent disk space exhaustion ClearPass includes a Cluster wide parameter “Free Disk Space Threshold Value” that can be used to trigger a disk cleanup. The default value is 30%.

Cluster-Wide Parameters		
General	Cleanup Intervals	Notifications
Standby Publisher	Virtual IP	Mode
Database	Profiler	TACACS
Parameter Name	Parameter Value	Default Value
Policy result cache timeout	<input type="text" value="5"/> minutes	5
Free disk space threshold value	<input type="text" value="30"/> %	30
Free memory threshold value	<input type="text" value="20"/> %	20
Endpoint Context Servers polling interval	<input type="text" value="60"/> minutes	60
Syslog Export Interval	<input type="text" value="120"/> seconds	120
Automatically check for available Software Updates	<input checked="" type="checkbox"/> TRUE	TRUE
Automatically download Posture Signature and Windows Hotfixes Updates	<input type="checkbox"/> FALSE	FALSE
Automatically download Endpoint Profile Fingerprints	<input type="checkbox"/> FALSE	FALSE
Login Banner Text	<input type="text"/>	
Allow Concurrent Admin Login	<input checked="" type="checkbox"/> TRUE	TRUE
Admin Session Idle Timeout	<input type="text" value="30"/> minutes	30
CLI Session Idle Timeout	<input type="text" value="360"/> minutes	360
Console Session Idle Timeout	<input type="text" value="360"/> minutes	360
Disable TLSv1.0 support	<input type="checkbox"/> None	None
Disable TLSv1.1 support	<input type="checkbox"/> None	None

Once an hour ClearPass checks the free disk space, if it's below the threshold an alert is logged and an aggressive cleanup job is run. The job cleans up any records that are older then one day from the following;

- Log database records
- Core files
- System load monitor files
- Application and system log files
- Auto and manual backup files
- Stored reports
- Expired guest accounts
- Audit records

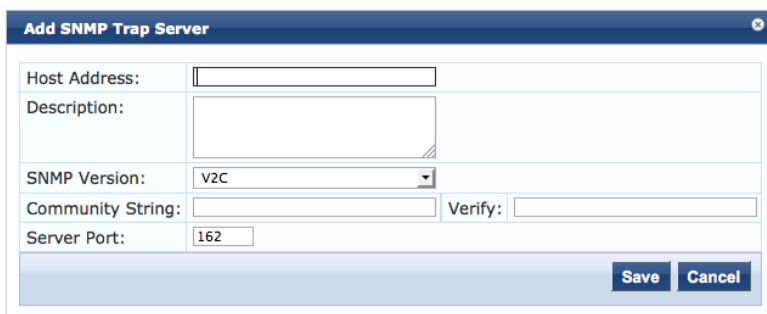
SNMP Private Enterprise MIB

ClearPass includes a Private Enterprise MIB that exposes over 70 OID's. Information and traps include

- Performance counters
 - Authentication counters
 - Authorization counters
 - Request processing time/delays
 - Authorization time/delays
- System statistics
 - Disk statistics (available, total, used)
 - Memory statistics (available, total, used)
 - CPU load averages
- Network traffic counters
 - Application name
 - Application port
 - Total network traffic in bytes
- SNMP Traps
 - Free disk space is lower than the configured threshold
 - Low system memory
 - High CPU utilization
 - License expiration
 - Certificate expiration
 - Cluster node add
 - Cluster node promote
 - Cluster node delete
 - Cluster password change
 - Cluster license utilization

SNMP Trap Receivers

External trap receivers are added at: Administration » External Servers » SNMP Trap Receivers



Add SNMP Trap Server

Host Address:

Description:

SNMP Version:

Community String: Verify:

Server Port:

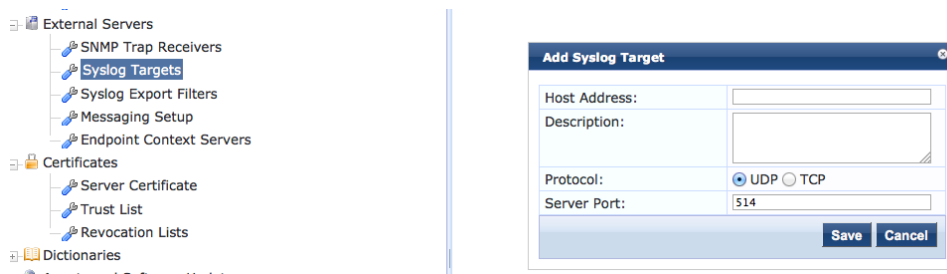
Save **Cancel**

External syslog

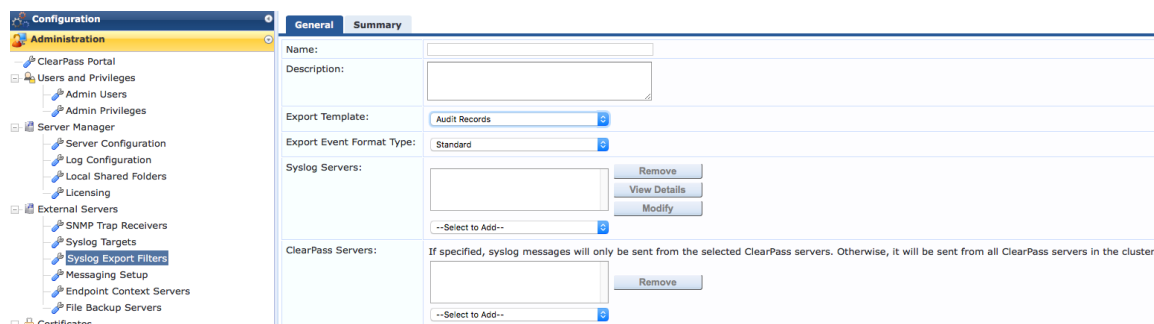
When a system is compromised, one of the first things an attacker will do is to remove evidence of the intrusion from the system logs. For this reason, it is important to send logs to an external system – preferably one with automated log analysis tools that can identify and flag unusual activity. ClearPass supports the syslog standards for log distribution. Log information can be sent to one or more syslog targets (servers).

Syslog Targets and Export Filters are configured under the External Servers Tab

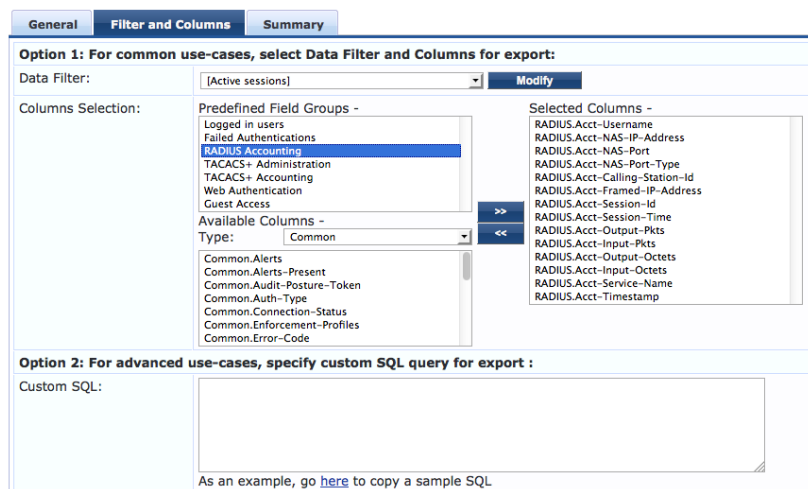
(Administration » External Servers » Syslog Targets)



Policy Manager uses Syslog to export session data from access tracker, audit records from audit viewer, event records from event viewer and Insight logs. Syslog Export Filters are configured to tell Policy Manager where to send the log information, and what information should be included in the logs sent to each Syslog Target. If desired, different information can be sent to each syslog target. The Insight Log filters provide the option to select predefined groups of fields or to select individual fields. The Active Session filter adds the option for customized SQL Queries.



Syslog Export Filters



LEEF and CEF format Syslog

ClearPass supports CEF (Common Event Format) and LEEF (Log Event Extended Format) Syslog formats. The Event Format can be selected from the Syslog Export Filters.

Syslog Export Filters

RADIUS Protocol

ClearPass uses the RADIUS protocol to exchange authentication information with Network Access Devices. The RADIUS protocol provides a weak form of encryption, which uses a static RADIUS shared secret as the basis for the encryption key. To maximize security the RADIUS shared secret should be both long and complex. Since there is no need for this secret to be memorable by a human, the use of a service such as <http://www.random.org/> to generate a truly random string is recommended. To minimize the damage from a compromised shared secret each Network Access Device that communicates with ClearPass should be configured to use a different RADIUS shared secret.

Disabling TLS 1.0 and TLS 1.1 in the Web UI and the RADIUS server

For enhanced security a cluster-wide parameter allows disabling TLSv1.0 and TLSv1.1

General	Cleanup Intervals	Notifications	Standby Publisher	Virtual IP	Mode	Database	Profiler	TACACS
Endpoint Context Servers polling interval				60	minutes	60		
Syslog Export Interval				120	seconds	120		
Automatically check for available Software Updates				TRUE		TRUE		
Automatically download Posture Signature and Windows Hotfixes Updates				FALSE		FALSE		
Automatically download Endpoint Profile Fingerprints				FALSE		FALSE		
Login Banner Text								
Allow Concurrent Admin Login				TRUE		TRUE		
Admin Session Idle Timeout				30	minutes	30		
CLI Session Idle Timeout				360	minutes	360		
Console Session Idle Timeout				360	minutes	360		
Disable TLSv1.0 support				None		None		
Disable TLSv1.1 support				None		None		
Content Security Policy (CSP)				Admin		Disable		
Performance Monitor Rendering Port				All		80		
ICMPv6 Filters				Disable		Disable		
Multi Master Cache Durability				OFF		OFF		
Post-Auth v2				Disable		Disable		

Locking Down Administrative Access

A primary intrusion attack vector used against network devices is the device's administrative console. The ClearPass Admin Web UI and command line interface (CLI) should be made as secure as possible to minimize the chances of a successful compromise.

Management Access Control

Aruba recommends permitting administrative access only from authorized end systems. If the network design permits, it is best practice to separate management and user facing services (data traffic) by creating a dedicated management network and attaching the ClearPass management interface to that network. In this type of deployment, the ClearPass management interface provides Web UI and CLI access for server and cluster administration and configuration. The Management interface also handles internal cluster (Publisher / Subscriber) communication. The Data interface provides point of contact for all user-facing services including authentication and authorization requests using RADIUS, TACACS+ and web authentication. Data Port security is enhanced by restricting the SSH protocol. SSH is not permitted to the Data Port, it is denied by default internal firewall rules.

IPv4		
Management Port	IP Address	192.168.1.204
	Subnet Mask	255.255.255.0
	Default Gateway	192.168.1.1
Data/External Port	IP Address	192.168.10.20
	Subnet Mask	255.255.255.0
	Default Gateway	192.168.10.1

Restrict Concurrent Admin logins

When the Allow Concurrent Admin Logins is set to false and a new user logs in as Admin, earlier sessions using the same credentials that are still active on other cluster appliances will automatically be logged out.

Cluster-Wide Parameters								
General	Cleanup Intervals	Notifications	Standby Publisher	Virtual IP	Mode	Database	Profiler	TACACS
Parameter Name		Parameter Value		Default Value				
Policy result cache timeout		5	minutes	5				
Free disk space threshold value		30	%	30				
Free memory threshold value		20	%	20				
Endpoint Context Servers polling interval		60	minutes	60				
Syslog Export Interval		120	seconds	120				
Automatically check for available Software Updates		TRUE		TRUE				
Automatically download Posture Signature and Windows Hotfixes Updates		FALSE		FALSE				
Automatically download Endpoint Profile Fingerprints		FALSE		FALSE				
Login Banner Text								
Allow Concurrent Admin Login		TRUE		TRUE				
Admin Session Idle Timeout		30	minutes	30				
CLI Session Idle Timeout		360	minutes	360				
Console Session Idle Timeout		360	minutes	360				
Disable TLSv1.0 support		None		None				
Disable TLSv1.1 support		None		None				
Content Security Policy (CSP)		Disable		Disable				

Content Security Policy (CSP) option

When enabled the Content Security Policy (CSP) option helps reduce the cross-site scripting (XSS) risks in browsers by declaring which dynamic resources can be loaded via an HTTP Header. When this parameter is enabled, it can negatively affect any customized HTML code customers might have for skins, captive portals, self-registration workflows, and so on in ClearPass Guest. If the configuration includes customized HTML code that references images, media, scripts, or other resources on servers outside ClearPass, the CSP parameter should not be enabled or a different approach for accessing these resources should be used.

Cluster-Wide Parameters								
General	Cleanup Intervals	Notifications	Standby Publisher	Virtual IP	Mode	Database	Profiler	TACACS
Endpoint Context Servers polling interval				60		minutes		60
Syslog Export Interval				120		seconds		120
Automatically check for available Software Updates				TRUE				TRUE
Automatically download Posture Signature and Windows Hotfixes Updates				FALSE				FALSE
Automatically download Endpoint Profile Fingerprints				FALSE				FALSE
Login Banner Text				<div></div>				
Allow Concurrent Admin Login				TRUE				TRUE
Admin Session Idle Timeout				30		minutes		30
CLI Session Idle Timeout				360		minutes		360
Console Session Idle Timeout				360		minutes		360
Disable TLSv1.0 support				None				None
Disable TLSv1.1 support				None				None
Content Security Policy (CSP)				Disable				Disable
Performance Monitor Rendering Port				80				80
ICMPv6 Filters				Disable				Disable
Multi Master Cache Durability				OFF				OFF

IPsec Tunnel Support

ClearPass supports IPsec tunnels for the management and data interfaces. IPsec provides encrypted tunnels that guarantee the confidentiality of the communications and the identity of the endpoints. This is critical in high security environments or when the communications path crosses a public network.

Create IPsec Tunnel

General

Traffic Selectors

Local Interface:

192.168.1.254 [MGMT]

Remote IP Address:

IPsec Mode:

Tunnel

IKE Version:

1

IKE Phase1 Mode:

Main

Encryption Algorithm:

AES128

Hash Algorithm:

HMAC SHA

Diffie Hellman Group:

Group 5

Authentication Type:

Pre-Shared Key

IKE Shared Secret:

Verify IKE Shared Secret:

IKE Lifetime:

180

minutes

Lifetime:

60

minutes

Enabled:

☒

Traffic selectors can be used to control the IPSec tunnel traffic. Selector options include;

- Encrypt
- Drop
- Bypass

General **Traffic Selectors**

Encrypt Rules

	Protocol	Port	
1.	<input type="radio"/> tcp	any	

Bypass Rules

	Protocol	Port	
1.	<input type="radio"/> udp	any	

Drop Rules

	Protocol	Port
No Rules have been configured		

Type:

Protocol:

Port:

Reset **Save Rule**

Update **Cancel**

Application Access Control

ClearPass provides application level restrictions that can define networks / end systems and allow or deny them access to specific applications. Applications include; Policy Manager, OnGuard, Graphite, Guest Operator and Insight. To configure these restrictions, go to Administration > Server Manager > Server Configuration, click on the server, go to the Network tab and select the option "Application access control". In a cluster, restrictions need to be configured on each node.

Restrict Access

Resource Name:

Access:

Network:

192.168.1.12
192.168.1.20

Note: Enter hostname, IP address or subnet (CIDR) in the Network text box

Create **Cancel**

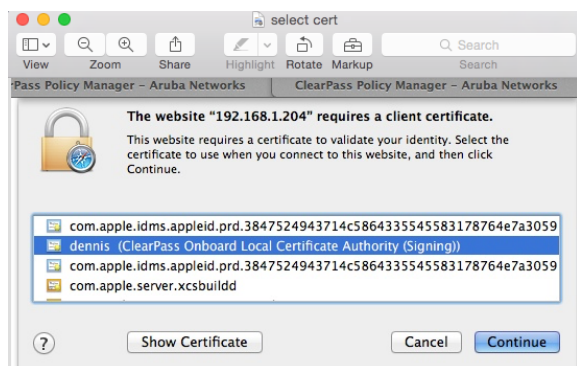
In this example only the defined IP Addresses, 192.168.1.12 and 192.168.1.20, will be able to access ClearPass Policy Manager.

Smart card and Certificate based login

ClearPass supports smart card and TLS certificate-based login for all ClearPass applications; ClearPass Policy Manager, ClearPass Guest, ClearPass Onboard and ClearPass Insight


- Certificate can come from a smart card or certificate store
- Certificate can be mandatory or optional
- Certificate can be in addition to username / password or standalone

When the user attempts to login to the ClearPass application they will be prompted to select a certificate before moving to the login screen



In this example logging in requires both a valid certificate and a valid password

Please login to the network using your username and password.

 **dennis** (ClearPass Onboard Local Certificate Authority (Signing))

Login

Username:


Password:

Log In

Contact a staff member if you are experiencing difficulty logging in.

Restricting Administrator Privileges

Admin users should be assigned privileges appropriate to their job responsibilities. By default, there are seven levels of Administrative privilege.

#	 Name ^	Description
1.	<input type="checkbox"/> API Administrator	An API administrator is only allowed API access to read/write all configuration elements
2.	<input type="checkbox"/> Aruba User Role Download	Privilege level used for Aruba User Role Download API operations
3.	<input type="checkbox"/> Help Desk	A help desk person logs in to troubleshoot problems reported by end users
4.	<input type="checkbox"/> Network Administrator	A network administrator is allowed to configure all the policies in the system
5.	<input type="checkbox"/> Read-only Administrator	A read-only administrator is only allowed to read all configuration elements
6.	<input type="checkbox"/> Receptionist	A receptionist is allowed access to main monitoring screens
7.	<input type="checkbox"/> Super Administrator	A super administrator is allowed read/write access to all configuration elements

For API access the “API Administrator” privilege level should be used. This privilege level allows programmatic access but denies UI logins.

If necessary Admin access can be further restricted by creating Custom privileges. These policies can be tailored to provide fine-grained control of access to ClearPass components and services. Admin privileges can be customized for both Policy Manager and Insight.

Admin Privileges

Filter: Name contains [] Go Clear Filter

#	Name	Description
1.	<input type="checkbox"/> API Administrator	An API administrator is only allowed API access to read/write all configuration elements
2.	<input checked="" type="checkbox"/> Help Desk	A help desk person logs in to troubleshoot problems reported by end users
3.	<input type="checkbox"/> Network Administrator	A network administrator is allowed to configure all the policies in the system

Edit Admin Privileges

General Policy Manager Insight

		Read	Read,Write	Read,Write,Delete
[+] Dashboard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[+] Monitoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
[+] Live Monitoring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access Tracker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Accounting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
OnGuard Activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Analysis & Trending	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
System Monitor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
[+] Profiler and Discovery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Audit Viewer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Event Viewer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data Filters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blacklisted Users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Save Cancel

Password Policy

Authentication with username/password does not provide the strongest form of security, yet it is extremely common. To strengthen administrator access both the Admin account username and password should be changed. Changing the Admin account username means an attacker would have to guess not only the password but also the username, increasing the difficulty of the attack. The account name should not be descriptive or easily guessed. Apply the same strong password policy, mixed case, mixed alphanumeric characters and special characters (only - and _ permitted for username) for both username and password. To provide audit control every Administrator should have their own account and accounts should never be shared between users.

#	User ID	Name	Privilege Level
1.	acv3GF356-dec_12X	Super Admin	Super Administrator

The Cluster (appadmin) password should also be changed to strong value. Go to Administration > Server Manager > Server Configuration and click on the Change Cluster Password link.

Change Cluster Password

This will change Cluster Password for all nodes in the cluster

New Password

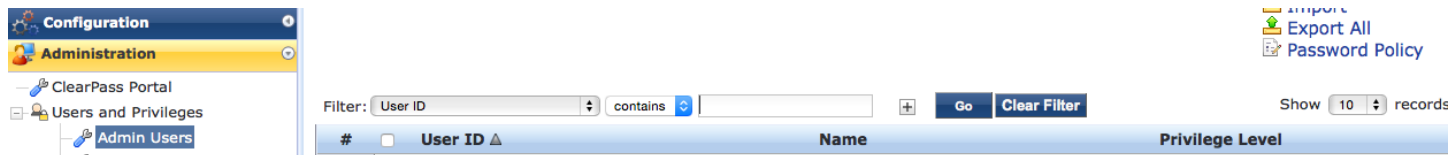
Verify Password

WARNING : WARNING: Changing Cluster Password will change the appadmin password for all nodes in the cluster.

Save Cancel

Password Policy Enforcement

Allows administrators to set enforcement rules for Admin and Local User Account passwords. Separate policies can be set for Admin and Local users.



The policy includes;

- Minimum password length
- Password complexity
- Additional checks
- Password expiration
- History
- Reminder (TACACS+ only)
- Disable settings

The screenshot shows the 'Account Settings' form with the 'Password Policy' tab selected. The form contains several fields: 'Minimum Length' (set to 1), 'Complexity' (set to 'No password complexity requirement'), 'Disallowed Characters' (empty), 'Disallowed Words (CSV)' (empty text area), 'Additional checks' (two checkboxes: 'May not contain User ID or its characters in reversed order' and 'May not contain repeated character four or more times consecutively'), 'Expiry Days' (set to 0), 'History' (set to 'Must be different from previous' with a dropdown for 'passwords (1-99)'), and 'Reminder' (set to 'Display reminder message after' with a dropdown for 'days (1-365)' and a text area for 'Message to be displayed'). Below the form is a 'Note' section with three bullet points: 'Password characters validation will take effect for users created or modified after changes are saved.', 'Reminder setting is applicable for TACACS+ flow only.', and 'Other settings will be applied to all users.'

Accounts can be automatically disabled based on account lifetime and passwords failed attempts or password expiration

- Days exceeded
- Date exceeds
- Failed attempts
- Password not changed for

Account Settings

Password Policy

Disable Accounts

Days Exceed:

days (1-1000)

Date Exceeds:

Password not changed for:

days (1-365)

Failed attempts count:

times (1-100)

Reset failed attempts count:

To reset failed attempts count and enable those users, click: [Reset](#)

Note:

- Disable Account check happens at midnight every day except for Failed attempts count.

Forced Password change on first login can be required for TACACS+

Add Local User

User ID:

Name:

Password:

Verify Password:

Enable User:

☒ (Check to enable local user)

Change Password:

☐ (Check to force change password on next TACACS+ login)

Role:

-- Select --

Attributes

Attribute	Value
1. Click to add...	

AddCancel

Centralized Authentication and Authorization

In an organization with multiple administrators, the use of centralized authentication helps to prevent insider attacks. With centralized authentication, ClearPass does not need multiple local administrative accounts. Instead, administrative users log in with credentials that are authenticated remotely by an Active Directory or LDAP server. The remote server should return both authentication and authorization information. After authenticating the user, attribute information such as group membership or primary security affiliation should be used to assign the correct administrative privilege level.

The following example assigns Super Admin access if the user authenticates successfully and is a member of the Active Directory group CP Admin

(Tips:Role EQUALS [User Authenticated])
AND (Authorization:lab ad:memberOf CONTAINS CP Admins) [TACACS Super Admin]

Enhanced Security for Admin and local user accounts

Store hash for Admin and Local User passwords

Admin and Local User passwords are stored in PBKDF2_SHA1 based password hashes. A global setting is provided to optionally also store the NTLM hash of the password. This is required for MSCHAPv2-based authentications

against the local database. The Guest user password fields in the DB are individually encrypted and the DB itself is stored encrypted (data at reset encryption).

Session timeouts

Session timeouts are enforced to eliminate stale sessions.

Cluster-Wide Parameters								
General	Cleanup Intervals	Notifications	Standby Publisher	Virtual IP	Mode	Database	Profiler	TACACS
Endpoint Context Servers polling interval				60	minutes	60		
Syslog Export Interval				120	seconds	120		
Automatically check for available Software Updates				TRUE		TRUE		
Automatically download Posture Signature and Windows Hotfixes Updates				FALSE		FALSE		
Automatically download Endpoint Profile Fingerprints				FALSE		FALSE		
Login Banner Text				<div></div>				
Allow Concurrent Admin Login				TRUE		TRUE		
Admin Session Idle Timeout				30	minutes	30		
CLI Session Idle Timeout				360	minutes	360		
Console Session Idle Timeout				360	minutes	360		
Disable TLSv1.0 support				None		None		
Disable TLSv1.1 support				None		None		
Content Security Policy (CSP)				Disable		Disable		
Performance Monitor Rendering Port				80		80		
ICMPv6 Filters				Disable		Disable		
Multi Master Cache Durability				OFF		OFF		
Post-Auth v2				Disable		Disable		

Admin Session Timeout

The Cluster-wide Admin Session Timeout Parameter allow Admins to configure the maximum idle time permitted for Admin access. This Admin timeout limit applies to Policy Manger, Guest and Insight. The default is 30 mins

Caution: There are several monitoring screens in the Admin UI (Dashboard, Access Tracker, OnGuard Activity, etc.) with Auto refresh enabled by default. If there is constant activity on these screens the UI session will never time out, so Administrators should be careful leaving the browser open on these screens or they should disable "Auto refresh" wherever applicable.

CLI Session Timeout (SSH)

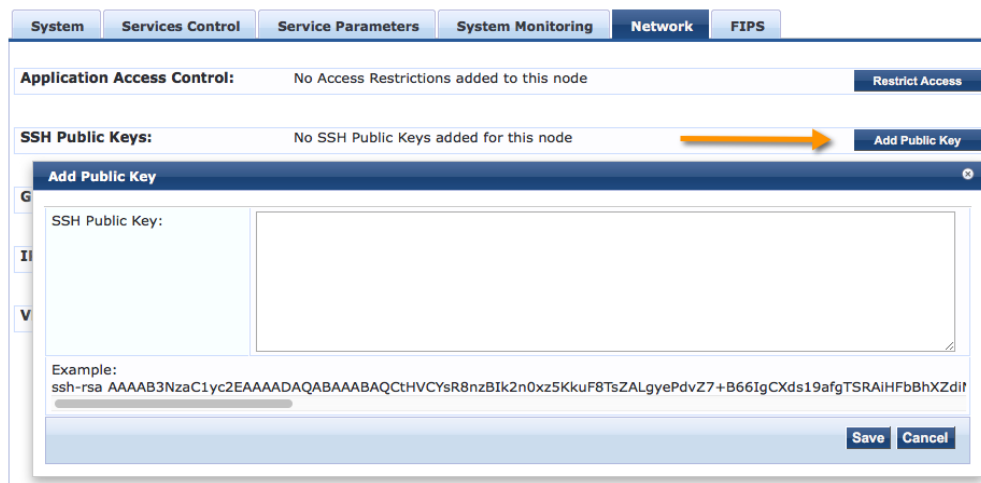
A cluster wide service parameter "CLI Session Idle Timeout" allows administrators to control how long a CLI session may be idle before it is automatically terminated. If this parameter is changed, the changes will take effect when the client opens a new CLI session. Any active CLI sessions will continue to use the old timeout or they have to be disconnected and reconnected for the new changes to take effect.

Console Session Timeout

A cluster wide service parameter "Console Session Idle Timeout" allows administrators to control how long a console session may be idle before it is automatically terminated. Note: Since background processes are not counted as a part of active session, setting low console timeout value may lead to auto logout during system upgrade.

Enable Public Key Authentication

ClearPass supports public key-based SSH logins on a per-appliance basis. The SSH Public Keys option is available at Administration > Server Manager > Server Configuration > Network



The screenshot shows the 'Network' tab in the ClearPass configuration interface. Under the 'SSH Public Keys' section, it states 'No SSH Public Keys added for this node'. An orange arrow points to the 'Add Public Key' button. A modal window titled 'Add Public Key' is open, showing a text area for the SSH Public Key. Below the text area, an example is provided: `ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCTHVCYsR8nzBIk2n0xz5KkuF8TsZALgyePdvZ7+B66IgCXds19afgTSRAIHfBhXZdlf`. The modal also includes 'Save' and 'Cancel' buttons.

Monitoring

Excessive Failed Admin Login Attempts

One of the most common attack vectors is password guessing. The attacker attempts to gain access to Administrator and privileged accounts by first trying the default Admin password then trying the most commonly used passwords and finally using a brute force tool that tries large numbers of potential passwords from an attack dictionary. The indicator of this type of attack is a large number of failed authentications in a short period of time to the same account.

Insight Alert

Compliance and local security policies often require logging and alerting on potential brute force attacks on administrator and privileged accounts. The Insight alert shown below will send an Email and SMS text message when three login failures for the Admin username occur in a one-minute interval. The values should be adjusted to meet local security policy requirements.

Alert Name

excessive failed Admin Logins

Description

Description

Category

TACACS

☐ TACACS Commands

☒ TACACS Failures

Filter

Error Code

NOT_EQUALS

0

TACACS User

EQUALS

Admin

Service

EQUALS

Policy Manager Admin Network Login Service

Trigger

Severity

Critical

Threshold

3

Interval

1

Minutes

Last admin login notification – GUI

Admin GUI shows when the most recent successful login occurred and the number of failed attempts that were made since the most recent successful login. The Messages are displayed on the Dashboard or Home Page of:

- Policy Manager
- Guest
- Onboard
- Insight

Policy Manger

aruba

Dashboard

Alerts

ClearPass Policy Manager

admin (Super Administrator)

Last successful login from 10.5.80.73 at May 16, 2017 11:27:39 PDT

1 failed attempts since last successful login

Guest

aruba

Guest

Start Here

Active Sessions

Create Account

Create Device

Create Multiple

ClearPass Guest

admin (Super Administrator)

Home » Guest

Guest Manager

Last successful login from 10.5.80.73 on Tuesday, 16 May 2017, 11:27 AM

No failed attempts since last successful login

Last admin login notification – CLI

The Console and SSH now show a message with the source and timestamp of the most recent successful login and the number of failed attempts that were made through both SSH and the console since the most recent successful login.

Details of the events are also displayed in the Event Viewer

Filter: Source contains Go Clear Filter

#	Source	Level	Category	Action	Timestamp
21.	Command Line	WARN	Login Failed	Failure	May 09, 2017 04:10:14 UTC
22.	Command Line	WARN	Login Failed	Failure	May 09, 2017 04:03:31 UTC
23.	Command Line	WARN	Login Failed	Failure	May 09, 2017 04:03:31 UTC
24.	Command	<div>System Event Details<div>SourceCommand LineSystem Event Details</div><div>LevelWARN</div><div>CategoryLogin Failed</div><div>ActionFailure</div><div>TimestampMay 09, 2017 03:52:51 UTC</div><div>DescriptionFailed SSH password login attempt using appadmin account. Last login attempt from the remote host 10.240.132.228</div></div>		None	May 09, 2017 04:03:04 UTC
25.	Support			None	May 09, 2017 04:00:30 UTC
26.	Support			None	May 09, 2017 03:58:42 UTC
27.	Command			Failure	May 09, 2017 03:58:40 UTC
28.	Command			None	May 09, 2017 03:58:28 UTC
29.	Command			None	May 09, 2017 03:52:55 UTC
30.	Command			Failure	May 09, 2017 03:52:51 UTC

Showing 21-

Access tracker

ClearPass will log authentication failures to Access Tracker. The Access Tracker entry includes valuable information that can be used for analysis;

- Username
- Date and Time
- Status
- Client IP (typically 127.0.0.1)
- Remote IP

TACACS+ Session Details

Summary	Request	Policies	Alerts
Username:	admin		
Session ID:	T0000000a-03-54297f79		
Time:	Sep 29, 2014 11:49:13 EDT		
Status:	AUTHEN_STATUS_FAIL		
Request Type :	TACACS_AUTHENTICATION		
Message:	-		
Client IP :	127.0.0.1:		
Remote IP:	192.168.1.12		

Showing 1 of 1-10 records

ExportShow LogsClose

Audit trail

An Audit Trail is a sequential record of which users have accessed the Admin UI and what changes they have made to the system. Access Tracker and the Event Viewer record all successful and unsuccessful login attempts. The event detail below shows User dennis successfully logging into the Admin UI in the role of Super Administrator on Sept 30 at 13:04:59 EDT from IP address 192.168.1.12

System Event Details

Source	Admin UI
Level	INFO
Category	Logged in
Action	None
Timestamp	Sep 30, 2014 13:04:59 EDT
Description	User: dennis Role: Super Administrator Authentication Source: Policy Manager Local Admin Users Session ID: d3d4007efbdd45f902305334dac7dd6c Client IP Address: 192.168.1.12

Close

Audit Viewer shows user dennis modified the lab guest access service at 13:09:07

Audit Viewer

Filter: Action contains

Go Clear Filter

Show 10

#	Action	Name	Category	User	Timestamp
1.	MODIFY	lab Guest Access	Radius Enforcement Service	dennis	Sep 30, 2014 13:09:07 EDT

The detailed Audit record includes a complete record of the old data the new data and as shown below the inline differences. In this case user dennis added the local user repository as an authentication source for the lab guest access service.

Audit Row Details

Old Data

New Data

Inline Difference

Authentication

Authentication Sources

1. [Guest User Repository] [Local SQL DB]

2. [Local User Repository] [Local SQL DB]

Modified

Added

Deleted

Moved up

Moved down

Close

Exporting Audit Records

By default, the ClearPass server only retains Audit records for seven days. This value is configurable at Administration » Server Manager » Server Configuration >> cluster wide Parameters

Cluster-Wide Parameters								
General	Cleanup Intervals	Notifications	Standby Publisher	Virtual IP	Mode	Database	Profiler	TACACS
Parameter Name		Parameter Value		Default Value				
Cleanup interval for Session log details in the database		7	days	7				
Cleanup interval for information stored on the disk		7	days	7				
Old Audit Records cleanup interval		7	days	7				
Known endpoints cleanup interval		0	days	0				
Unknown endpoints cleanup interval		0	days	0				
Expired guest accounts cleanup interval		365	days	365				
Profiled Unknown endpoints cleanup interval		0	days	0				
Profiled Known endpoints cleanup option		FALSE		FALSE				
Static IP endpoints cleanup option		FALSE		FALSE				

If a longer audit trail is required audit records can be sent to an external syslog target for security and long-term storage. Administration » External Servers » Syslog Export Filters » Add

Syslog Export Filters

General Summary

Name:

Description:

Export Template:

Export Event Format Type:

Syslog Servers:

--Select to Add--

ClearPass Servers:

If specified, syslog messages will only be sent from the selected ClearPass servers. Otherwise, it will be sent from all ClearPass servers in the cluster.

--Select to Add--

Automated backup recovery

By default, ClearPass does automatic backups at 1:00 am every night.

Cluster-Wide Parameters								
General	Cleanup Intervals	Notifications	Standby Publisher	Virtual IP	Mode	Database	Profiler	TACACS
Parameter Name		Parameter Value		Default Value				
Auto backup configuration options		Config		Config				
Database user "appexternal" password		*****						
Replication Batch Interval		5		seconds		5		
Store Password Hash for MSCHAP authentication		TRUE		TRUE				
Store Local User passwords using reversible encryption		TRUE		TRUE				

The backup files are stored in the local shared folders

Administration » Server Manager » Local Shared Folders

Local Shared Folders

Select folder: Automated Backup files

#	File Name	File Size	Last Modified Time
1.	auto-backup-tips-2014-10-02-01-10-01.tar.gz	3.43 MB	Oct 02, 2014 01:10:04 EDT
2.	auto-backup-tips-2014-10-01-01-10-01.tar.gz	3.43 MB	Oct 01, 2014 01:10:05 EDT

Storing Backups externally

To guarantee business continuity and for disaster recovery it is recommended that backup files are stored on an external server. ClearPass can be configured to automatically push backup files to a remote server

Add File Backup Server

Host:

Description:

Protocol: ☒ SFTP ☐ SCP

Port:

Username:

Password:

Verify Password:

Timeout:

Remote Directory:

ClearPass Servers: If specified, files will only be backed up from the selected ClearPass servers. Otherwise, it will be backed up from all ClearPass servers in the cluster.

--Select to Add--

Locking Down User Access

User Roles and Firewall Policies

Aruba recommends deployment of role-based access controls for all wired and wireless users. Rather than granting one-size-fits-all access to the network once they have authenticated, users are only granted access appropriate for that user's role in the organization. For example, only ClearPass administrators should be assigned roles that permit access to the ClearPass management Interface. Roles are enforced on the Network Access Device so the wireless controller or switch would apply a role to ClearPass administrators that permits access to the ClearPass management interface while all other users would be assigned roles that deny access the management interface.

Remote Assistance

ClearPass includes two remote support interfaces that allow Aruba TAC engineers to access the ClearPass server to help resolve customer issues.

Support Shell

The Support Shell gives TAC engineers CLI root access to the ClearPass server. The customer uses the CLI to generate a one-time use key for the TAC engineer. The key allows the engineer root level access.

Use the `gen-support-key` command to generate the support key for the system.

Syntax

```
system gen-support-key
```

Example

The following example generates the support key for the system:

```
[appadmin]# system gen-support-key
```

```
system gen-support-key
```

```
Support key='01U2FsdGVkX1+/WS9jZKQajERyzXhM8mF6zAKrzxrHvaM='
```

The Aruba support account by default is valid for 24 hours , We recommend administrators deactivate this account as soon as the debugging session is over

Remote Assistance

The Remote Assistance feature enables the ClearPass Policy Manager administrator to allow an Aruba Networks support engineer to remotely log in using ssh to the ClearPass Policy Manager server and also view the Administration UI to debug any issues the customer is facing or to perform pro-active monitoring of the server.

The Remote Assistance account can specify time as one time for 1-24 hours and weekly or monthly re-occurrences.

The Administrator should make sure that accounts / sessions are terminated once the debugging session is done.

GUI and CLI Accounts

ClearPass makes use of a number of specialized accounts

GUI admin user

Administrative user with full access to the CPPM GUI. The GUI Admin user also has full access to the ClearPass API.

CLI appadmin user

User access to CPPM CLI, to run CLI commands and update the values. The appadmin password can be changed from the cluster settings page.

Database appexternal user

READ only access to the "tipsLogDb" database (system events, session logs, RADIUS accounting, alerts, etc), the "insightdb" database (information Insight uses to generate reports), and some tables in the "tipsdb" database

The password should be changed using cluster wide parameters.

Parameter Name	Parameter Value	Default Value
Auto backup configuration options	Config	Config
Database user "appexternal" password	*****	
Replication Batch Interval	5 seconds	5
Store Password Hash for MSCHAP authentication	TRUE	TRUE
Store Local User passwords using reversible encryption	TRUE	TRUE

The database connections are made over TCP port 5432 to CPPM's management port. Remote database connections are allowed on CPPM's data port. Ensure that port 5432 is open when attempting to remotely connect to the CPPM's database.

API apiadmin user

Read and Write access to API's only. The apiadmin password should be changed from Administrator > Users and Privileges > Admin Users.

User ID:	apiadmin
Name:	API Admin
Password:	*****
Verify Password:	*****
Privilege Level	API Administrator

The following accounts are for **ARUBA INTERNAL USE ONLY** and are used for ClearPass troubleshooting.

ArubaSupport

Provides Full shell access to ClearPass CLI. This is strictly for ARUBA INTERNAL purposes. The "system gen-support-key" resets the support password and provides a token from which Aruba TAC can recover the password and login. Running the command again will reset the support password. There is also a periodic cron job that resets this password around midnight everyday. The Remote Assistance feature, which must be triggered by the customer, builds on this to provide remote access capability to TAC.

AppSuperUser

Full access to the postgres db on ClearPass after logging in as ArubaSupport. This is strictly for ARUBA INTERNAL purposes.

AppUser

Read only access to postgresql after logging in as ArubaSupport. This is strictly for ARUBA INTERNAL purposes.

Note: The appuser and appsuperuser accounts are critical internal accounts that do not permit remote logins (ssh or console)

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For More Information

The best source of information on Aruba products, outside of official documentation, is the Airheads Social community. For security-related discussions, please visit the “Security” forum at <http://community.arubanetworks.com/>.