SonicWall SMA v12.1
Configuration for Common Criteria

Version 0.5
June 24, 2020

Table of Contents

Figures and Tables

1 Introduction

1.1 About This Document

This guide provides the information needed to set up SonicWall Secure Mobile Access v12.1 in the Common Criteria evaluated configuration that is Network Device collaborative Protection Profile (NDcPP) v2.1 conformant. This guide also includes additional information mandated by the Supporting Document for Network Devices v2.1. Information contained in this document is designed to supplement SonicWall Secure Mobile Access 12.1 Adminstration Guide and SonicWall Secure Mobile Access 6210/7210 Getting Started Guide.

1.2 Other Related Documents

Table 1: Other Related Documents

Item	Identifier	Short Form
Security Target	SonicWALL SMA 12.1 Security Target v0.7	ST
Protection Profile	collaborative Protection Profile for Network Devices Version 2.1, 24 September 2018 (NDcPP)	NDcPP
Administration Guide	SonicWall Secure Mobile Access 12.1 Administration Guide	ADMIN
Getting Started Guide	SonicWall Secure Mobile Access 6210/7210 Getting Started Guide	START

1.3 About SMA

1.3.1 Target of Evaluation

Developer: SonicWall

Identification: SonicWall Secure Mobile Access (SMA) v12.1

Table 2: Platforms and Devices

Series	Platforms	Build
SonicWall Secure Mobile Access	SMA 6210	12.1.0-05477
	SMA 7210	

Claimed Protection Profile: collaborative Protection Profile for Network Devices v2.1.

1.3.2 Description

The SonicWall Secure Mobile Access (SMA) v12.1 in the evaluated configuration consists of SMA 6210 and SMA 7210 appliances. SMA is an access gateway that enables an organization to provide anytime, anywhere and any device access to any internal application. It consists of a hardware appliance with embedded software components. All SMA appliances are shipped ready for immediate access through a Command Line Interface (CLI) and after basic network configuration through a web-based Appliance Management Console (AMC).

1.3.3 Management Interfaces

The TOE is configured and managed via a web-based Appliance Management Console (AMC) or a local Command Line Interface (CLI). The CLI is accessible from a directly- connected terminal while AMC is accessed remotely via web browser.

To access the AMC login page after the initial network configuration, point your browser to https://<*IP address*>:8443, where <*IP address*> matches the address you defined for the internal network interface. The default internal network interface IP address is 192.168.0.10.

1.3.4 Physical Interfaces

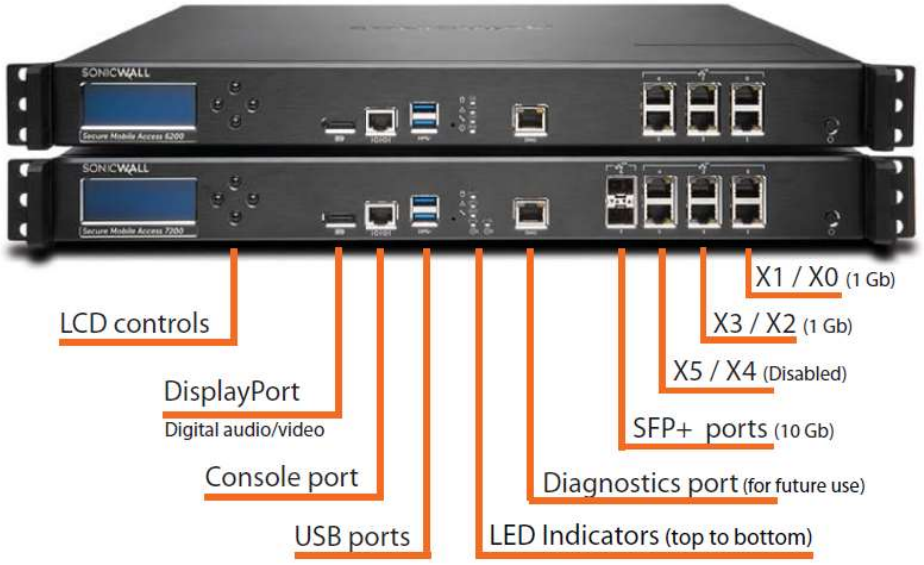


Figure 1: SMA Interfaces

1.4 Assumptions

This section identifies assumptions as specified in the NDcPP.

Table 3: Assumptions

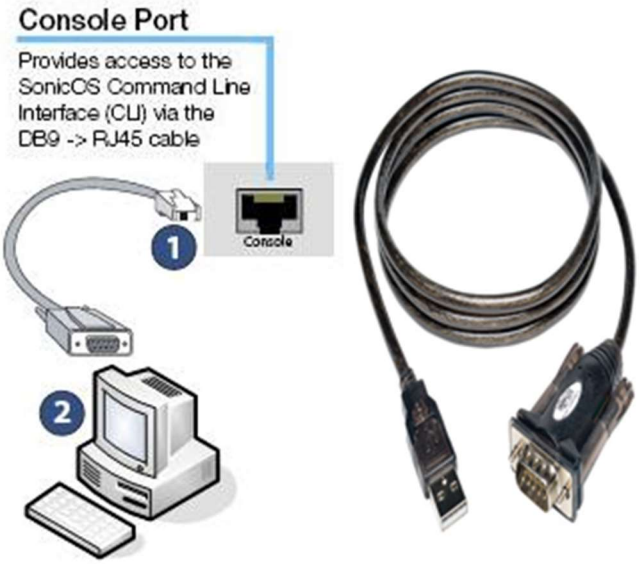
Assumption Name	Assumption Definition
A.PHYSICAL_PROTECTION	The network device is assumed to be physically protected in its operational environment and not subject to physical attacks that compromise the security and/or interfere with the device's physical interconnections and correct operation. This protection is assumed to be sufficient to protect the device and the data it contains. As a result, the cPP will not include any requirements on physical tamper protection or other physical attack mitigations. The cPP will not expect the product to defend against physical access to the device that allows unauthorized entities to extract data, bypass other controls, or otherwise manipulate the device.

Assumption Name	Assumption Definition
A.LIMITED_FUNCTIONALITY	The device is assumed to provide networking functionality as its core function and not provide functionality/ services that could be deemed as general purpose computing. For example the device should not provide computing platform for general purpose applications (unrelated to networking functionality).
A.NO_THRU_TRAFFIC_PROTECTION	A standard/generic network device does not provide any assurance regarding the protection of traffic that traverses it. The intent is for the network device to protect data that originates on or is destined to the device itself, to include administrative data and audit data. Traffic that is traversing the network device, destined for another network entity, is not covered by the ND cPP. It is assumed that this protection will be covered by cPPs for particular types of network devices (e.g., firewall).
A.TRUSTED_ADMINISTRATOR	The Security Administrator(s) for the network device are assumed to be trusted and to act in the best interest of security for the organization. This includes being appropriately trained, following policy, and adhering to guidance documentation. Administrators are trusted to ensure passwords/credentials have sufficient strength and entropy and to lack malicious intent when administering the device. The network device is not expected to be capable of defending against a malicious Administrator that actively works to bypass or compromise the security of the device. For TOEs supporting X.509v3 certificate-based authentication, the Security Administrator(s) are expected to fully validate (e.g. offline verification) any CA certificate (root CA certificate or intermediate CA certificate) loaded into the TOE's trust store (aka 'root store', ' trusted CA Key Store', or similar) as a trust anchor prior to use (e.g. offline verification).
A.REGULAR_UPDATES	The network device firmware and software is assumed to be updated by an administrator on a regular basis in response to the release of product updates due to known vulnerabilities.
A.ADMIN_CREDENTIALS_SECURE	The administrator's credentials (private key) used to access the network device are protected by the platform on which they reside.
A.RESIDUAL_INFORMATION	The Administrator must ensure that there is no unauthorized access possible for sensitive residual information (e.g. cryptographic keys, keying material, PINs, passwords etc.) on networking equipment when the equipment is discarded or removed from its operational environment.

2 Common Criteria Configuration

2.1 Initial access and network configuration

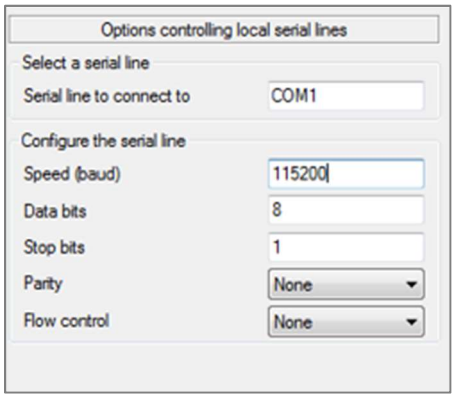
Attach the included null modem cable to the appliance port marked **Console Port** (See Figure 1). Attach the other end of the null modem cable to a serial port of the management workstation computer.



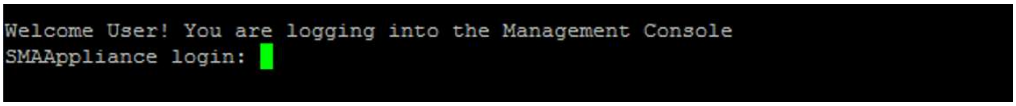
Launch a terminal emulation application that support serial port communications, for example PuTTY or HyperTerminal.

Use these serial line settings:

- 115,200 baud
- 8 data bits
- 1 stop bit
- no parity
- no flow control



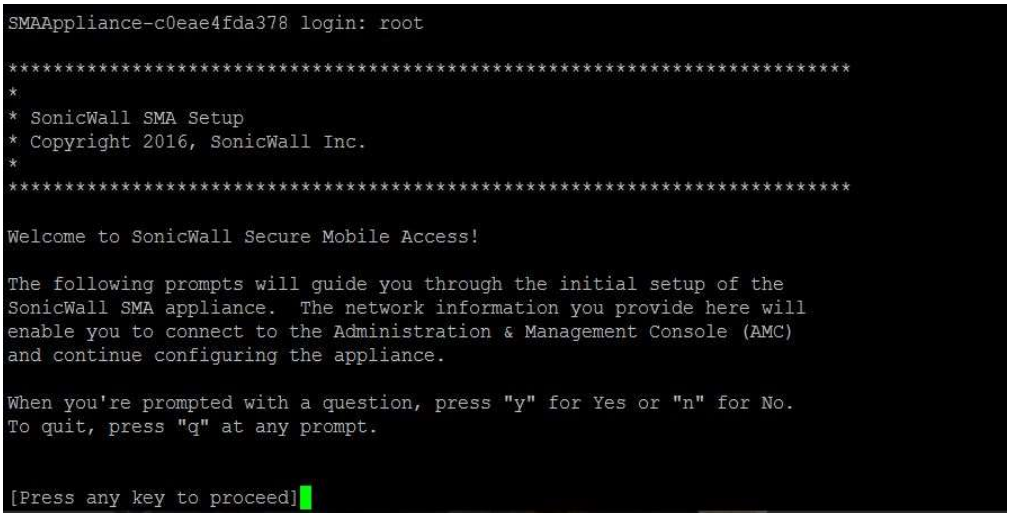
When the serial connection is established, log in to the security appliance for the first time:



- At the **login:** prompt enter the administrator's username. The default Admin username is **root**. Once SMA is fully configured, the root account should be disabled.

- At the **Password**: prompt, enter the root password. If an invalid or mismatched username or password are entered, the CLI prompt will return to **login:** prompt and a "*CLI administrator login denied due to bad credentials*" error message will be logged.

On initial login, SMA appliance will initiate initial configuration prompt as shown below:



Configure the internal network interfaces

Once the interfaces are configured you will see the conformation as below.

```
Internal network interface configured
       IP address: 172.29.0.98
       Subnet mask: 255.255.0.0
       Gateway: 172.29.0.1

Setup complete!

To continue configuring the appliance, connect to https://172.29.0.98:8443.
See the product documentation for more information.

[Press any key to proceed]
```

To terminate CLI session, type `logout`

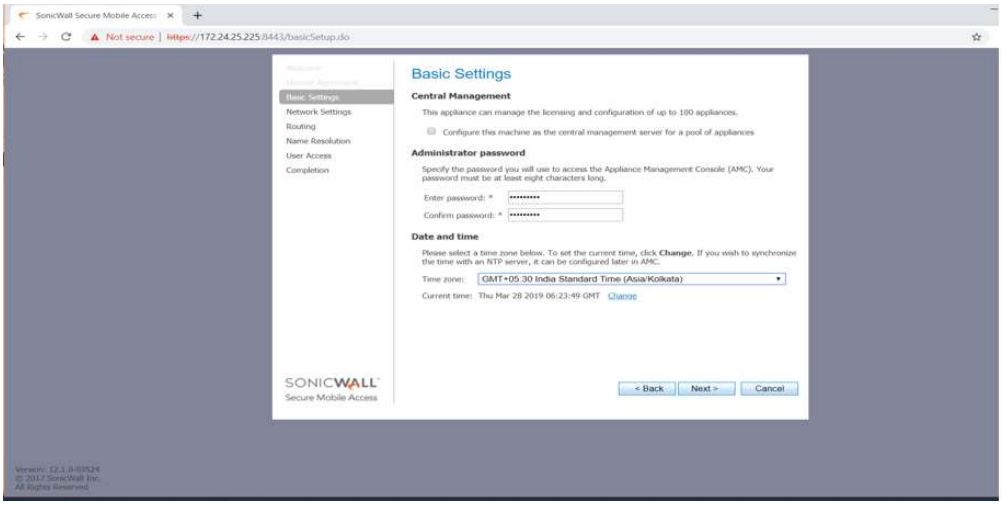
```
admin@SMAAppliance:~$ logout
```

2.2 Setup Wizard

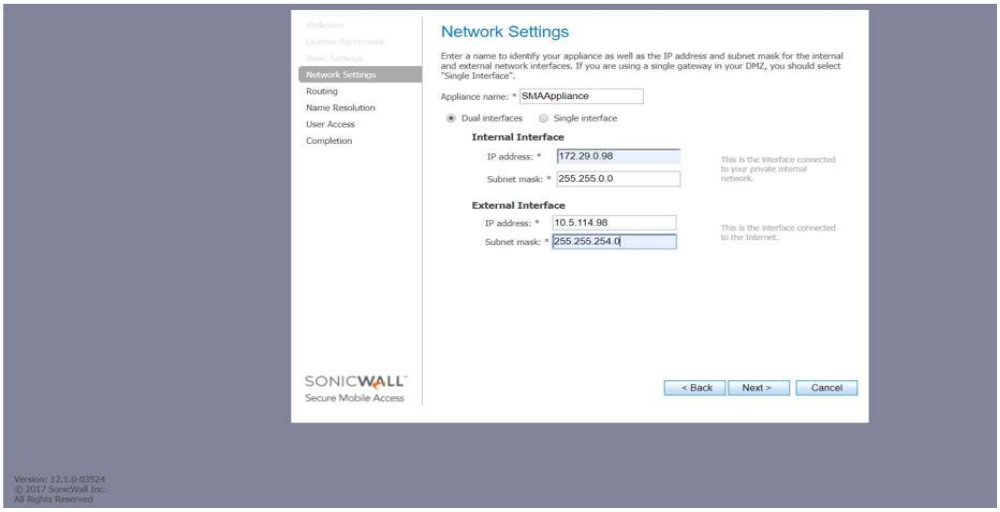
Access SMA via a browser by typing url: “https://*<IP address>*:8443” (where *<IP address>* matches the address configured in the previous section). *Note: The default internal IP address is 192.168.0.10*

Once initially connected, you will interact with a setup wizard to configure the external interfaces and other initial configurations.

In the following **Basic Settings** page specify the admin password and select the time zone:



In the following **Network Settings** page specify the corresponding external IP and Subnet mask for the external IP specified and click next to navigate to next page.



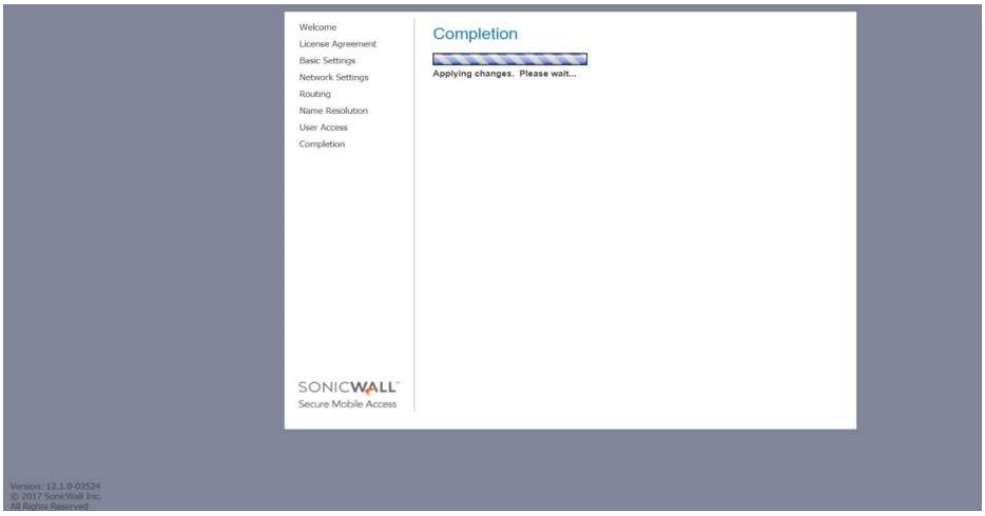
In the following **Routing** page specify the external gateway IP. Internal gateway IP will be pre-filled as it was already configured in the AMC setup tool. Click next to navigate to next page.

In the following **Name Resolution** page, enter Default domain and primary DNS server IP and click on Next.

In the following **User Access** page specify the NAT address and Access policy. This option is not mandatory and can be skipped to be configured later.

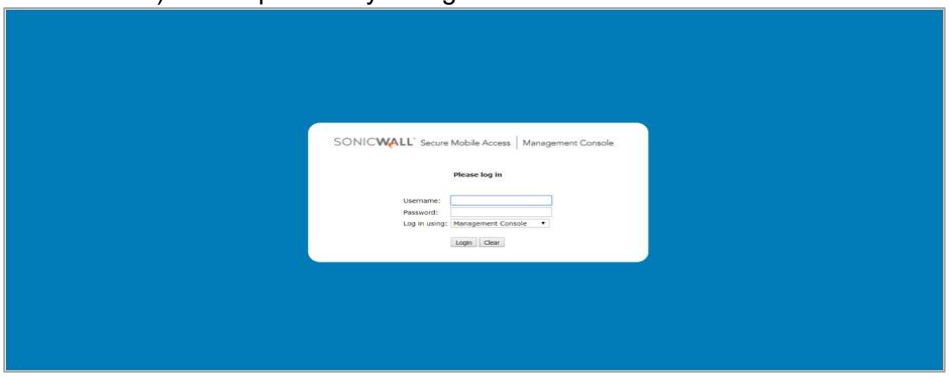
In the following **Completion** page you can review all configured settings. If all the presented information is correct click on Finish or you can go back by clicking Back and change any of the settings.

After clicking the 'Finish' button, the changes will be applied.

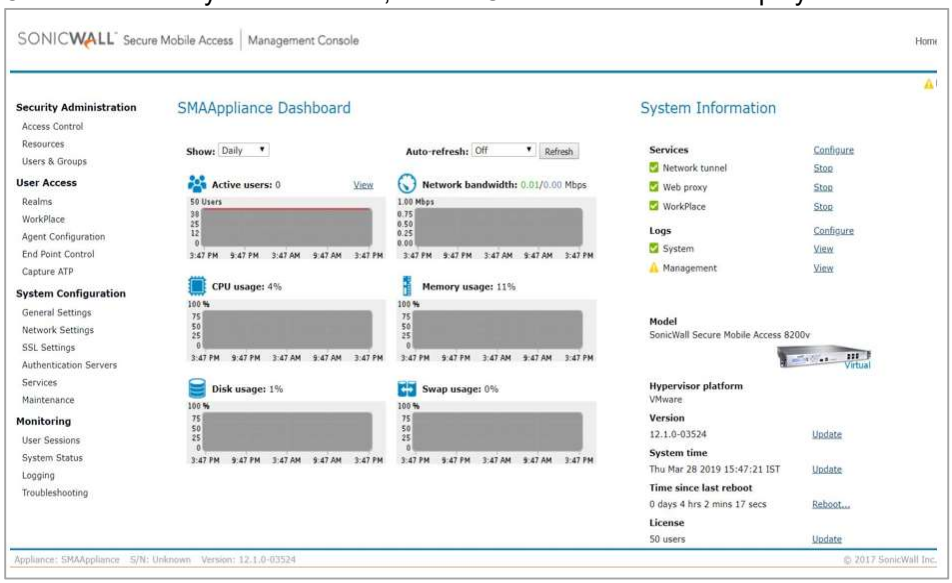


2.3 Accessing Secure Mobile Access Management Console

Connect to Access Management Console (AMC) with a browser by typing url: “https://*<IP address>*:8443” (where *<IP address>* matches the IP address of the internal network interface, by default it is 192.168.0.10). Enter previously configured credentials to authenticate to AMC.



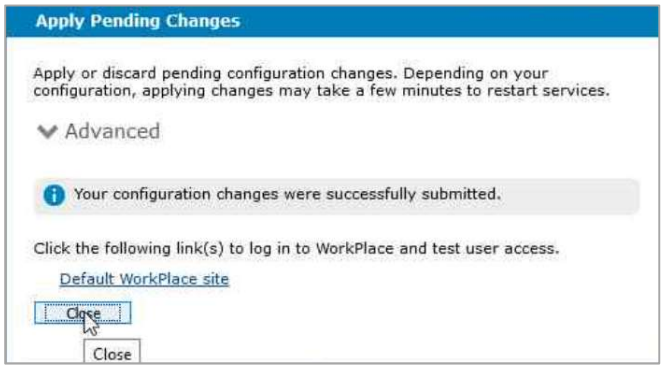
Once successfully authenticated, the AMC dashboard will be displayed.



To terminate AMC session, click ‘Log out’ link in the top right corner.

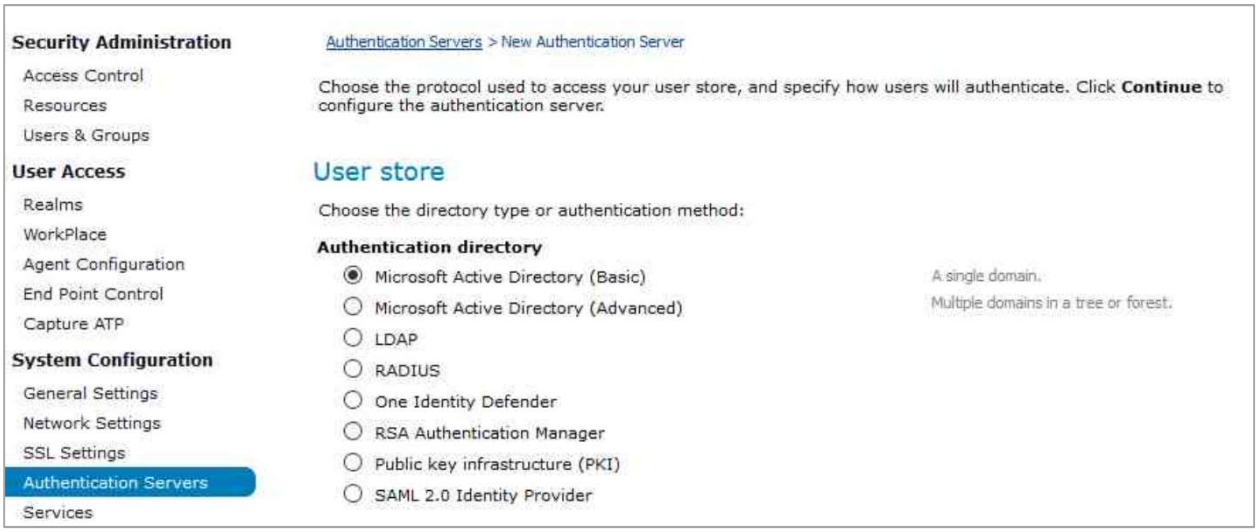
2.4 Evaluated Configuration

Note: Some configuration changes require applying pending changes to take effect.

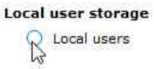


1. **Create a new local authentication server and configure password policy**

   - Login to AMC using administrative credentials
   - Select **`System Configuration → Authentication Servers`**
   - Click **`New`**

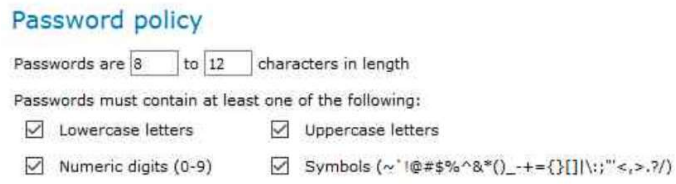


   - Select **`Local users`** under `Local users storage` from the right pane, and leave everything else unchanged



   - Click **`Continue`**
   - Type "local-auth" **`in`** `Name:*` **`field`**

   - Under `Password policy` checkbox **`Lowercase letters, Numeric digits (0-9), Uppercases letters,`** and **`Symbols`** check boxes

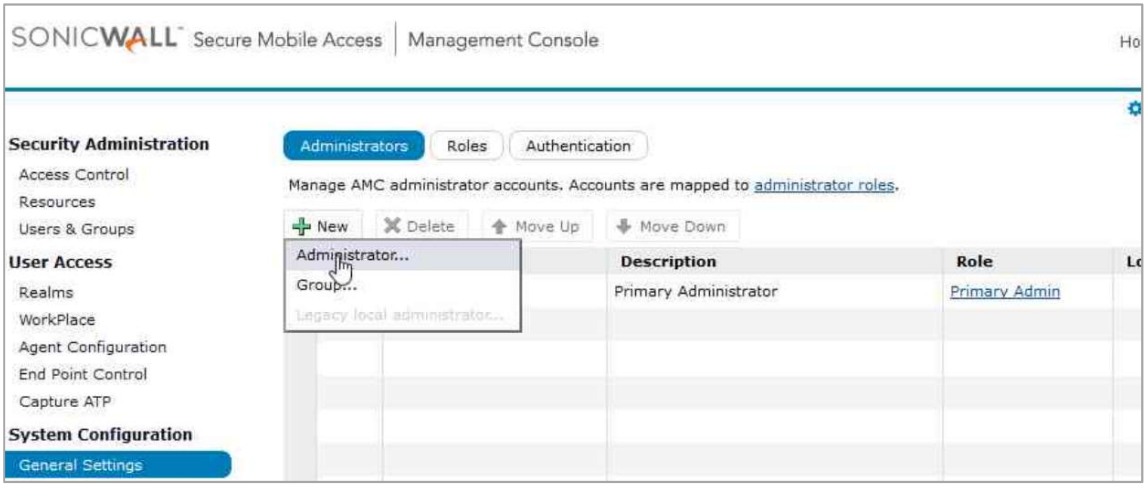


- Click on **`Save`** button
- Navigate to **`System Configuration`** → **`General Settings`**
- Click on **`Authentication`** button
- Select "local-auth" from the `Authentication server:` drop-down menu

- Click on **`Save`** button
- Apply Pending Changes

2. **Create a new local administrator**

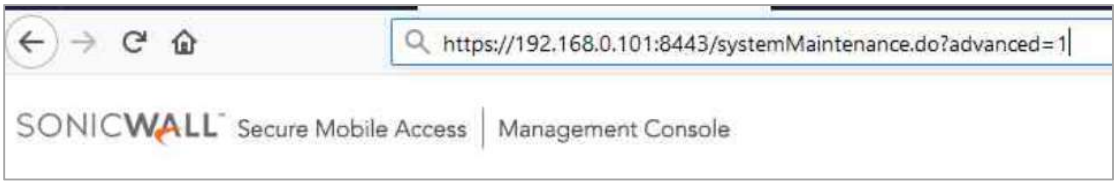
- Select **`System Configuration`** → **`General Settings`**
- Click **`Administrators`**
- Click **`New`** and select `Administrator…`



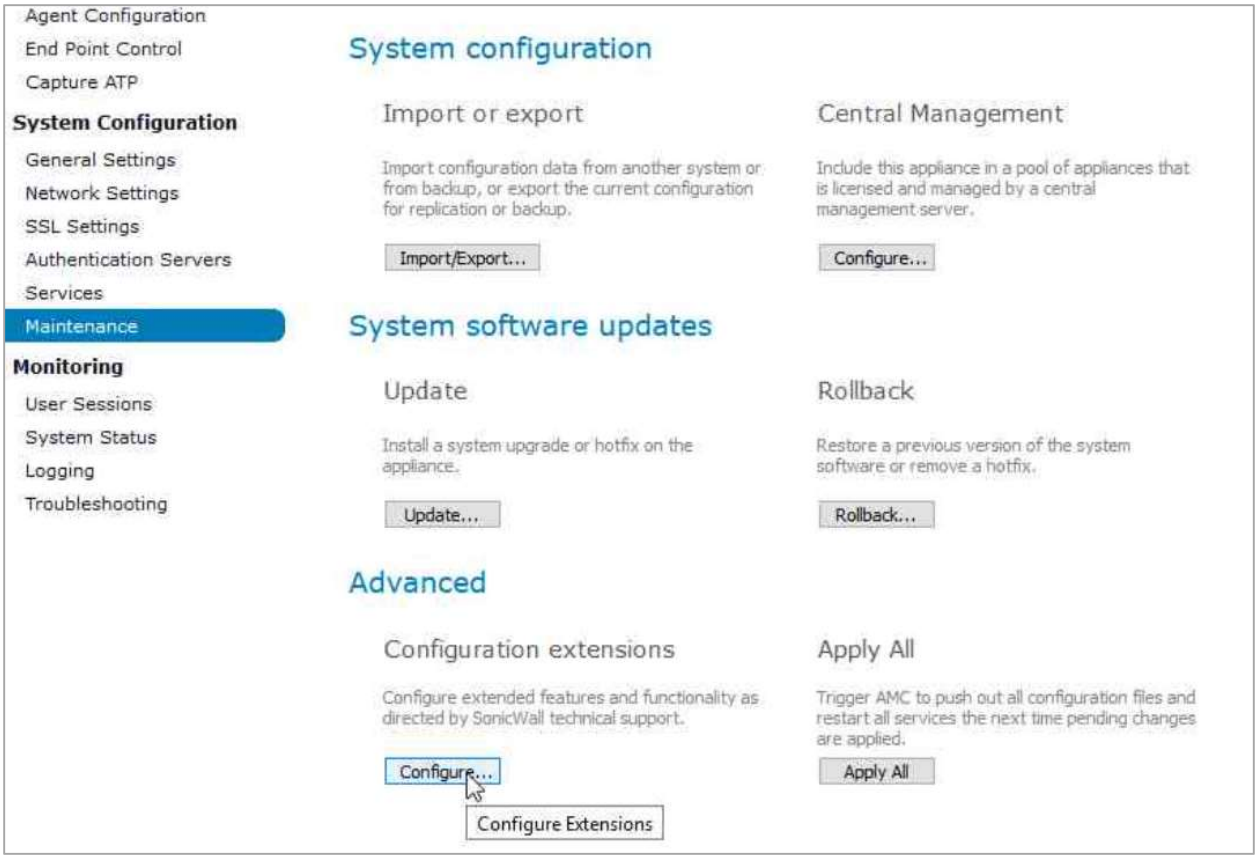
- Populate mandatory fields and click **`Save`**

3. **Configure Admin account user name and password restrictions, lockout**

- Navigate to **`System Configuration`** → **`Maintenance page.`**
- Modify the URL by appending a query parameter **`?advanced=1`** and hit enter.

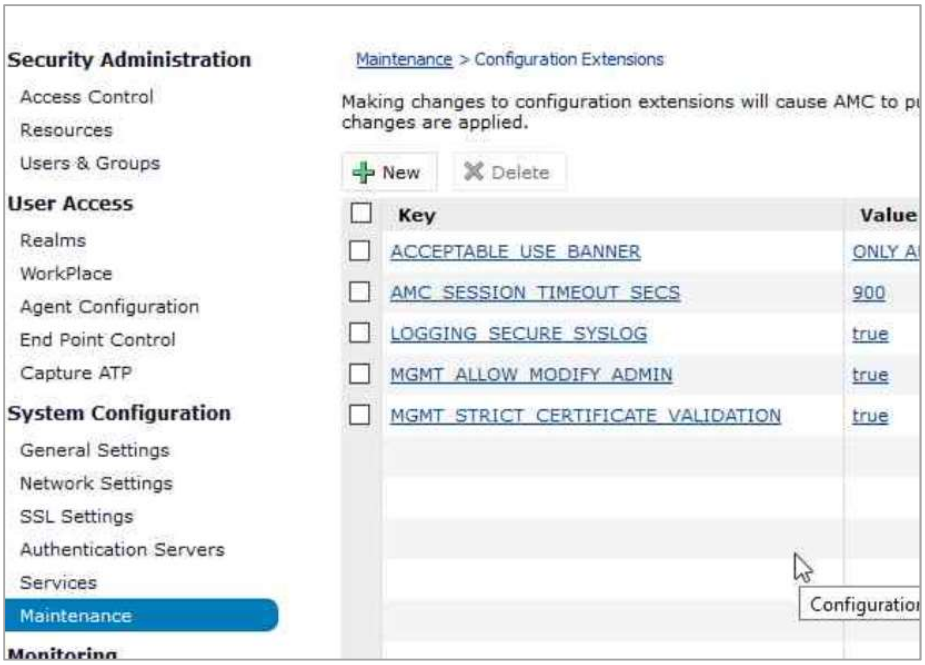


- Click on "**`Configure`**..." button under **`Advanced`** → **`Configuration extension`**



- Click on "**New**" button
- Add a new configuration extension `MGMT_ALLOW_MODIFY_ADMIN` and set its value to `true`
- Add a new configuration extension `DISALLOW_ROOT_ACCESS` and set its value to `true`
- Add a new configuration extension `ADMINISTRATOR_ACCOUNT_LOCKOUT_ATTEMPTS` and set value to the threshold (e.g. set a number of successive unsuccessful authentication attempts to `3`)
- Add a new configuration extension `ADMINISTRATOR_ACCOUNT_LOCKOUT_SECONDS` and set value to the lockout period in seconds (e.g. `180` seconds lockout)

Note: When root access is disabled, only Primary Administrator can access CLI.

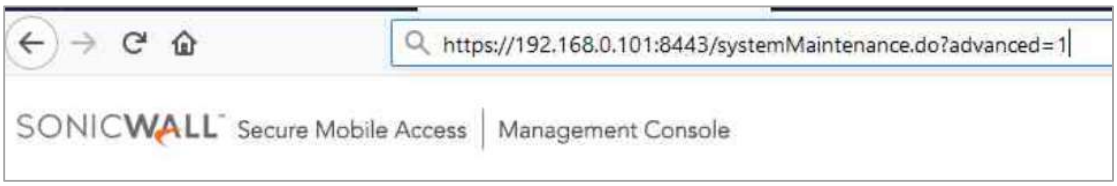


- Click on "**Ok**"
- Click on "**Save**" button
- Navigate to **System Configuration → General Settings**
- Under `Administrators` Click **Edit**

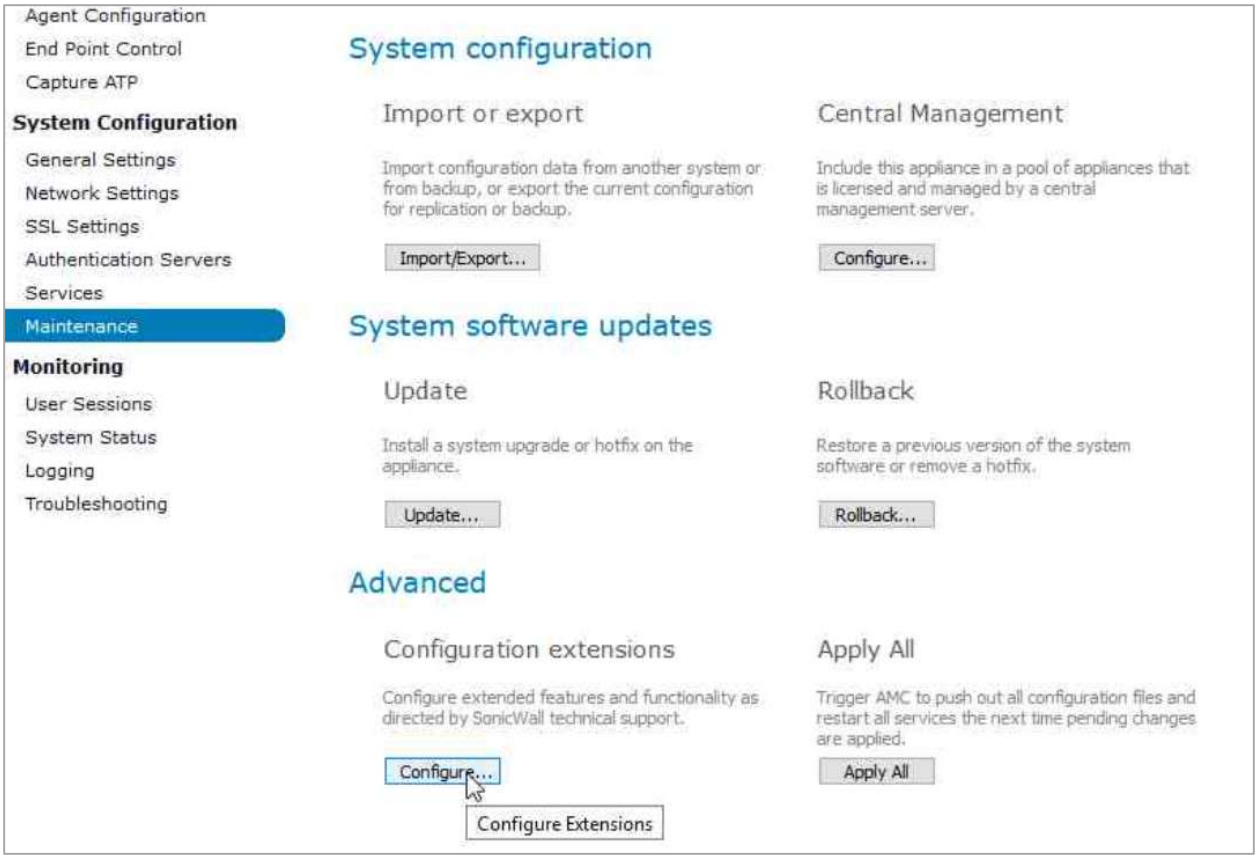
Note: Primary Admin username and password can be used to access CLI. In cases when access to AMC is temporarily disabled, CLI can be used to perform a subset of administrative functions.

- Modify `username` field with a custom username
- Click on "**Save**" button

4. **Configure idle timeout**
   - Navigate to **System Configuration → Maintenance page.**
   - Modify the URL by appending a query parameter **?advanced=1** and hit enter.

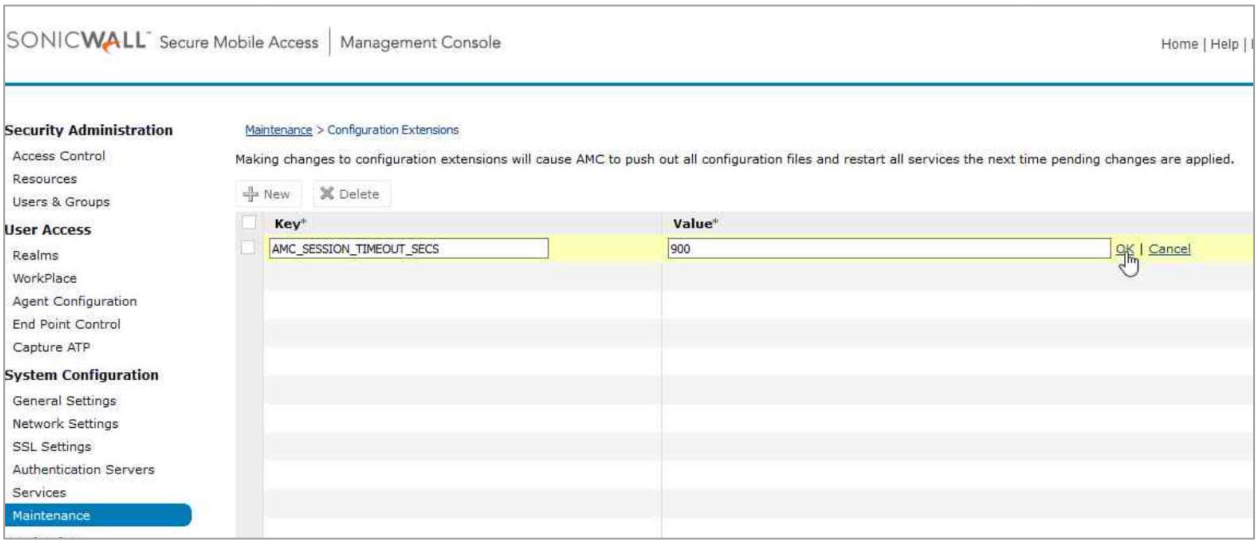


   - Click on "**Configure**..." button under **Advanced → Configuration extension**



- Click on "**`New`**" button
- Add a new parameter **`AMC_SESSION_TIMEOUT_SECS`** and set idle timeout in seconds.

  `Ex: Set Key= AMC_SESSION_TIMEOUT_SECS and value=900`
- Click on "**`Ok`**" link

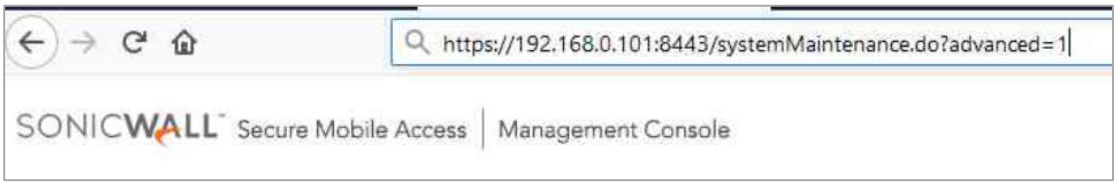


- Click on "**`Save`**" button.

- **`Apply All`** pending changes

5. **Configure Login Banner**

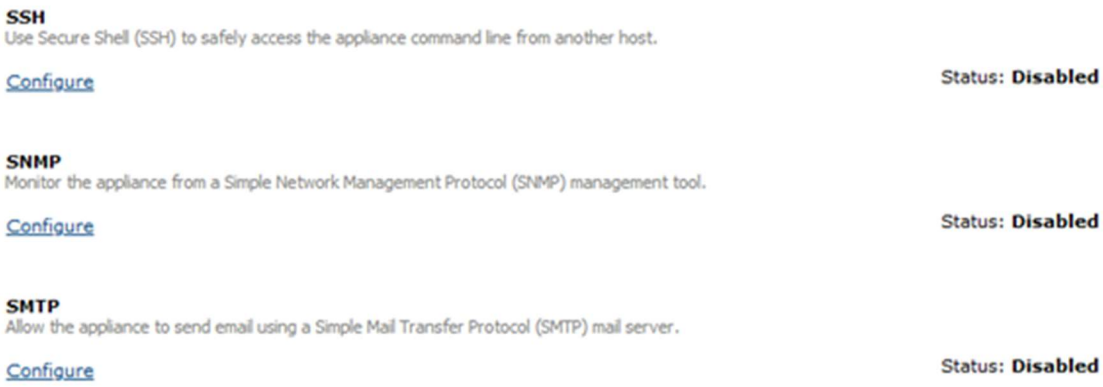
- Navigate to **`System Configuration -> Maintenance page.`**
- Modify the URL by appending a query parameter **`?advanced=1`** and hit enter.



- Click on "**`Configure`**..." button under **`Advanced/Configuration extensions.`**
- Click on "**`New`**" button.
- Add a new parameter "**`ACCEPTABLE_USE_BANNER`**" and set value to the message you wish to display as banner during authentication
  Ex: Set Key= ACCEPTABLE_USE_BANNER and value=Welcome User! You are logging in
- Click on "**`Ok`**" link.
- Click on "**`Save`**" button
- Apply Pending Changes

6. **Disable Services that are not required part of the evaluated configuration**

- Navigate to **`System Configuration`** → **`Services`**
- Check the following services are **disabled** by default, else click **`Configure`** → **`Select`** → **`Disable <service name>`**
  - **`SNMP`**
  - **`SMTP`**
  - **`SSH`**



7. **Enable FIPS mode**

Warning: Enabling FIPS mode will delete existing keys and certificates.

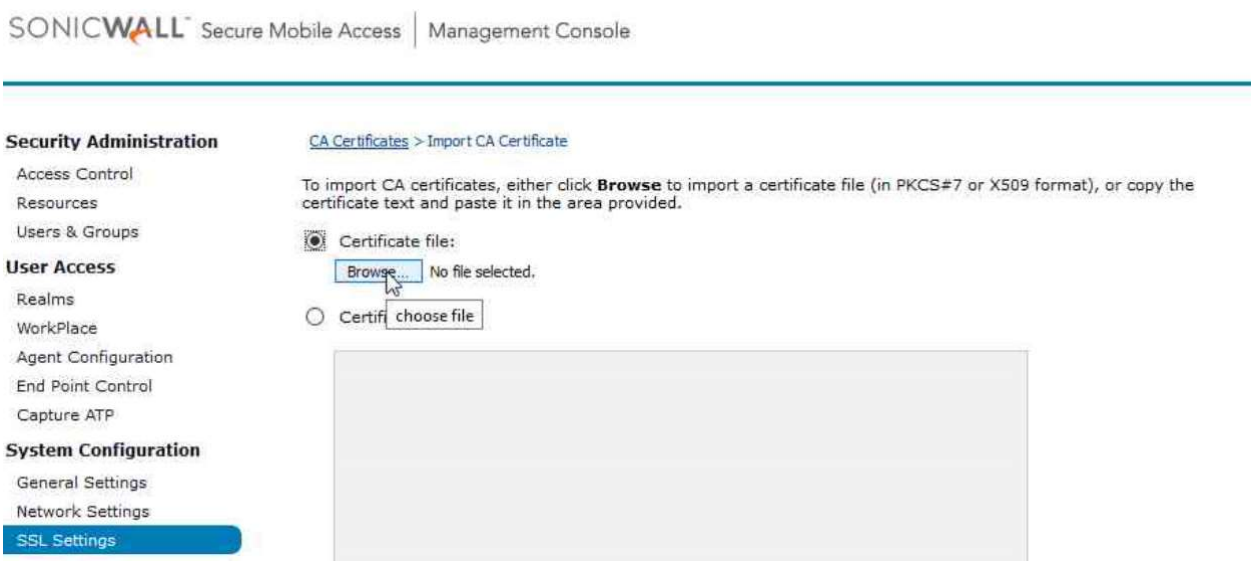
- Navigate to **`System Configuration`** → **`General Settings`**
- Click on "**`Edit`**" link under FIPS security.
- Enable FIPS mode and click on "**`Save`**" button.

- Apply Pending Changes and wait for reboot

8. **Configure trusted Certificate Authorities (CAs)**

Note: If OCSP signing is delegated to a different CA, such CA certificate also must be explicitly trusted and configured as a designated responder.

- Navigate to **`System Configuration`** → **`SSL Settings`**
- Select CA Certificates → **`Edit`**
- Select **`New`**
- Click **`Browse`** under `Import CA Certificate`



- Enable the following for the usage:
  - **`Web Server connections (HTTPS)`**
  - **`OCSP response verification`**

  Note: Other Usage may be applicable depending on the specific deployment.

- Click **`Import`**

Note: SMA comes preloaded with a set of public Certificate Authorities, review and remove them according to your organizational policies. Any certificates issued by any CA on this list would be trusted by SMA.

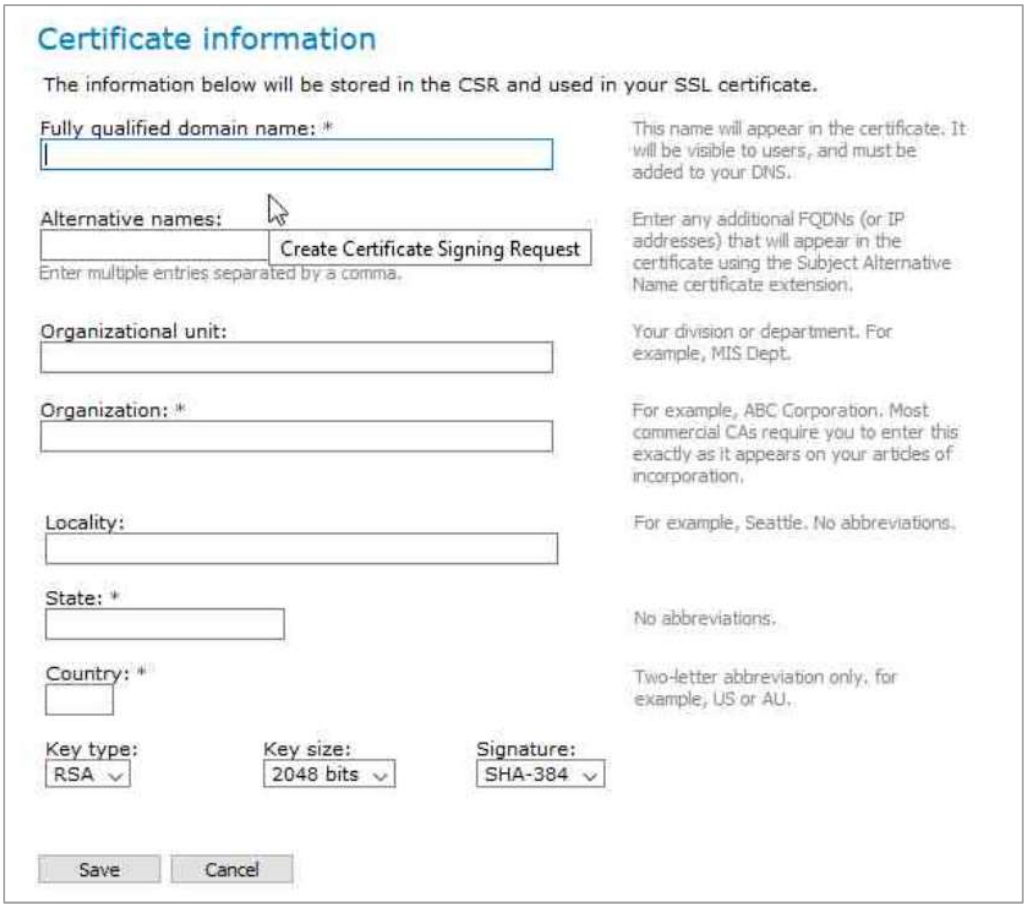
9. **Configure SMA web server certificate**

Note: SMA web certificate must be signed by a trusted Certificate Authority and must not be expired or revoked at the time of loading.

- Navigate to **`System Configuration`** → **`SSL Settings`**
- Next to `SSL Certificates` click **`Edit`** link

- Click **`Certificate Signing Request`**

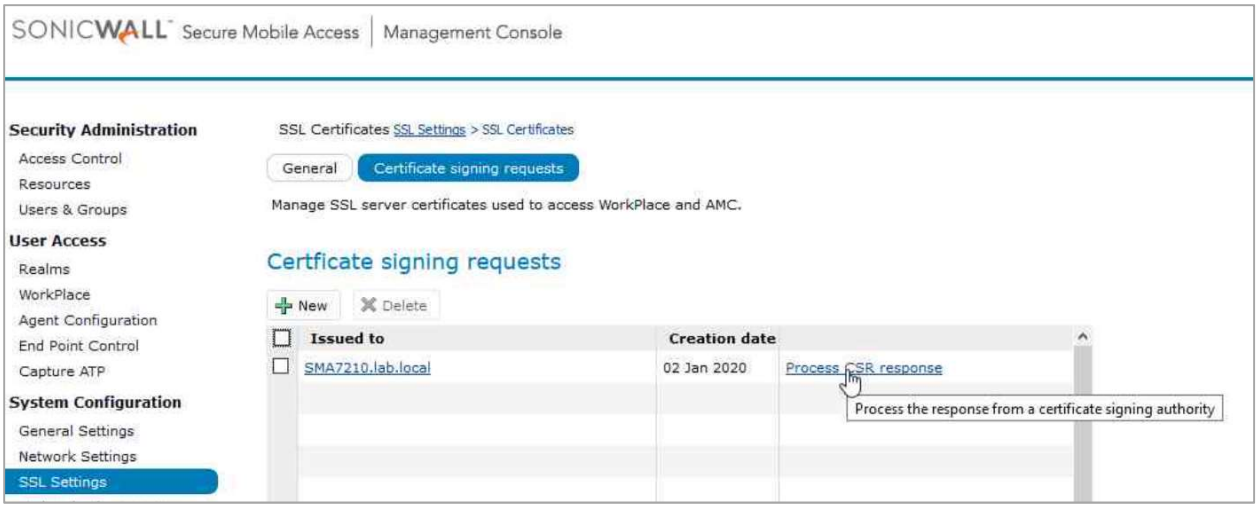
- Click **`New`**
- Populate certificate information field, ensuring that `Alternative names` field that corresponds to SAN extension contains a unique identifier in form of FQDN or IPv4 address.



- Click **`Save`**
- Securely transfer the new certificate request to the trusted Certificate Authority for signing

Note: Certificate Signing request includes ---- BEGIN and ----- END lines and is typically a .csr or .pem binary file.

- Receive signed certificate back from a trusted CA
- Navigate to **`System Configuration`** → **`SSL Settings`**
- Select **`SSL Certificates`** → **`Edit`**
- Click **`Certificate Signing Request`**
- Click **`Process CSR Response`** link next to the newly created CSR



- Securely upload the signed certificate request

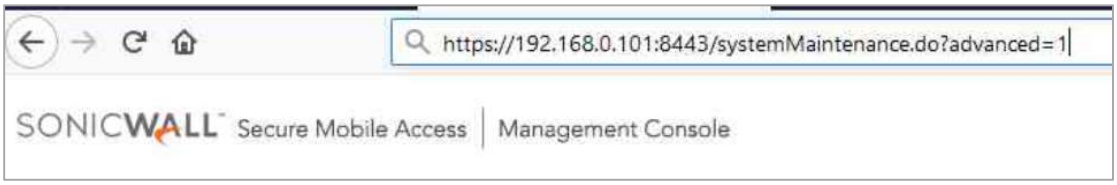
Note: Signed certificate includes ---- BEGIN CERTIFICATE and ----- END CERTIFICATE lines and is typically a .pem binary file.

- Click **`Save`**
- Under **`Certificate usage`** next to **`AMC`** confirm that the new certificate is selected

- Apply Pending Changes

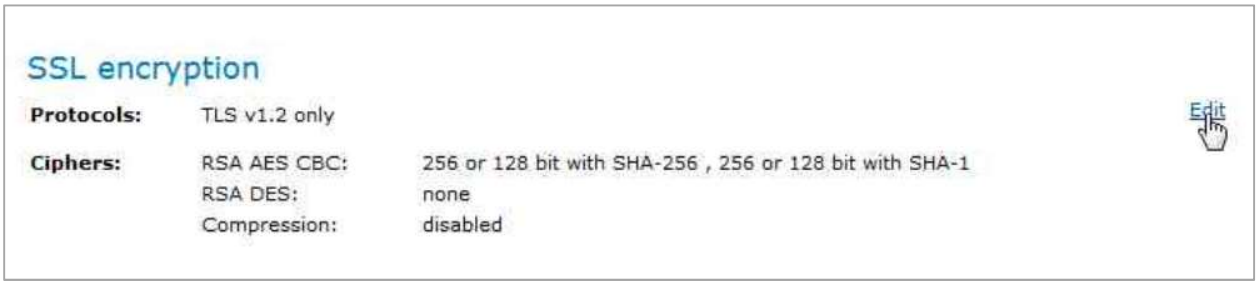
10. **Configure TLS settings**

- Navigate to **`System Configuration -> Maintenance page.`**
- Modify the URL by appending a query parameter **`?advanced=1`** and hit enter.

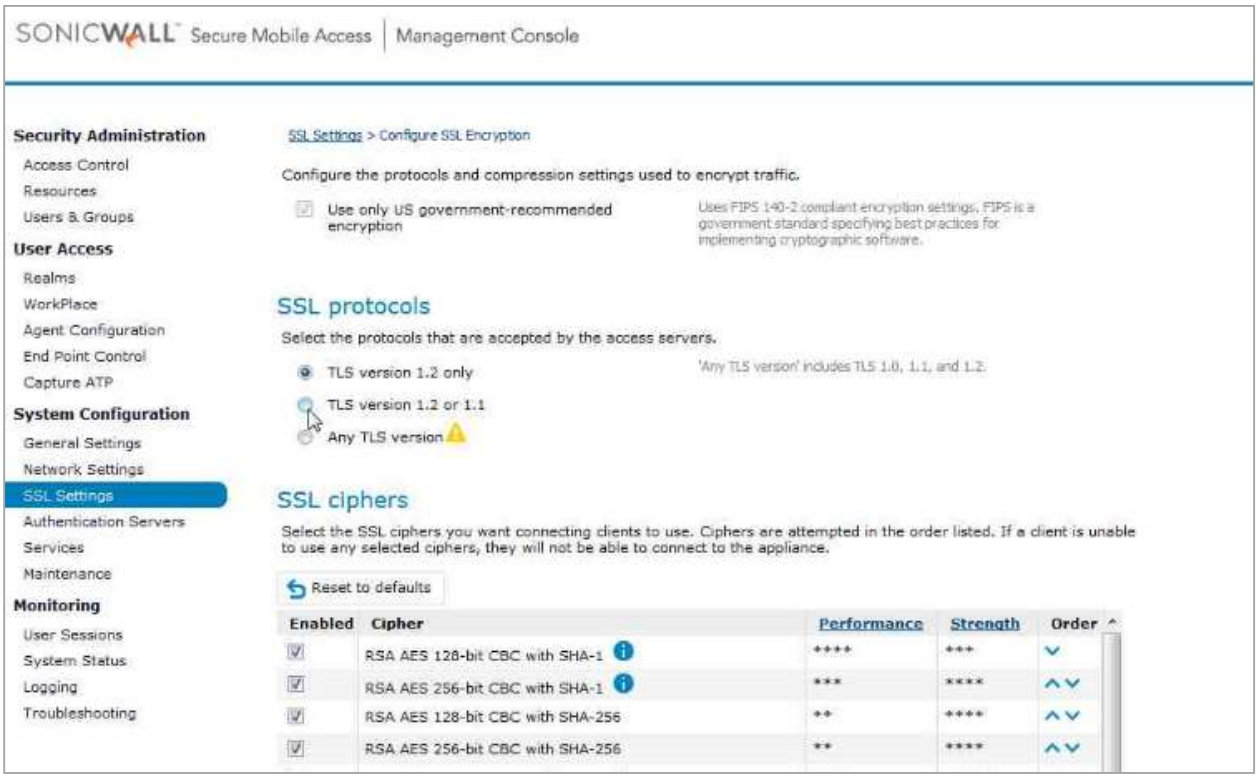


- Click on "**`Configure`**..." button under **`Advanced/Configuration extensions.`**
- Click on "**`New`**" button.
- Add a new parameter **`MGMT_STRICT_CERTIFICATE_VALIDATION`** and set value to "**`true`**"
- Click on "**`Ok`**" link.
- Click on "**`Save`**" button
- Apply Pending Changes

- Navigate to **`System Configuration → SSL Settings`**
- Click on "**`Edit`**" link next to `SSL Encryption`



- Select "**`TLS version 1.2 or 1.1`**" under `SSL protocols`



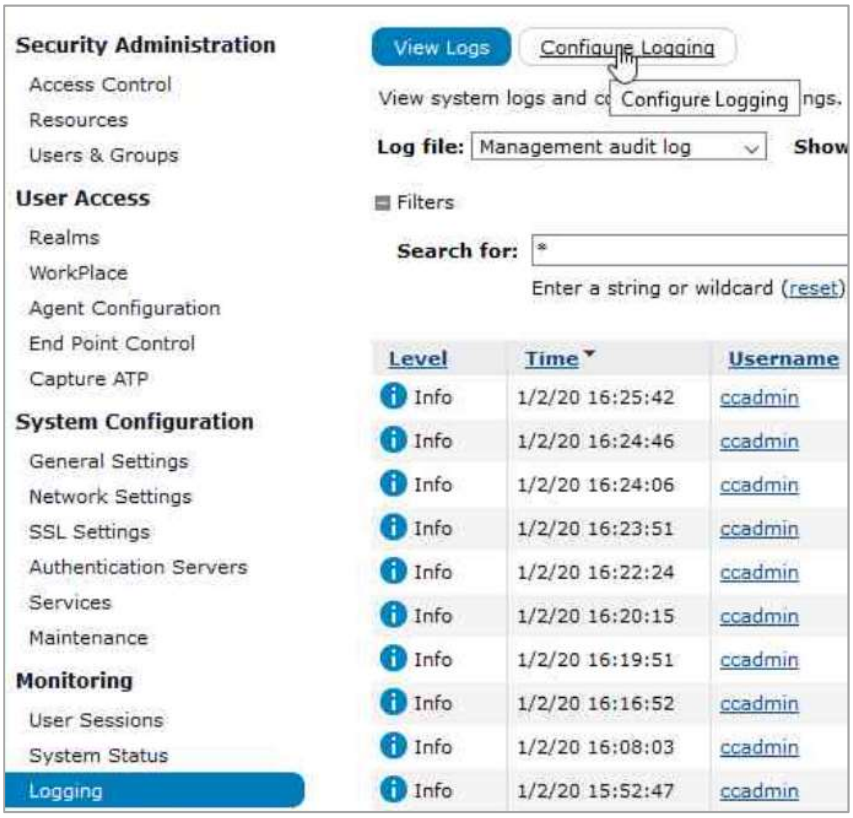
- Select the following TLS ciphers to be used under "**`SSL ciphers`**":

  TLS_RSA_WITH_AES_128_CBC_SHA
  TLS_RSA_WITH_AES_256_CBC_SHA
  TLS_RSA_WITH_AES_128_CBC_SHA256
  TLS_RSA_WITH_AES_256_CBC_ SHA256

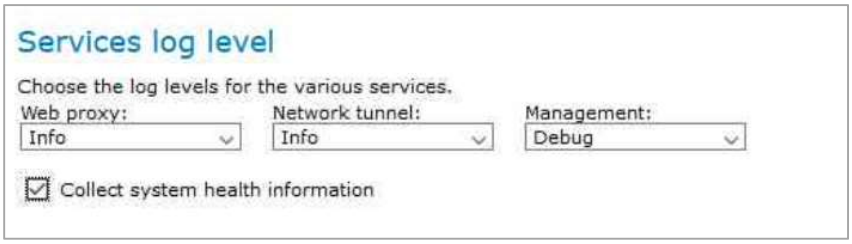
- Click on "**`Save`**" button.
- Apply Pending Changes

11. **Configure audit policy**

- Navigate to **`Monitoring → Logging`**
- Click **`Configure Logging → Services Log Level`**



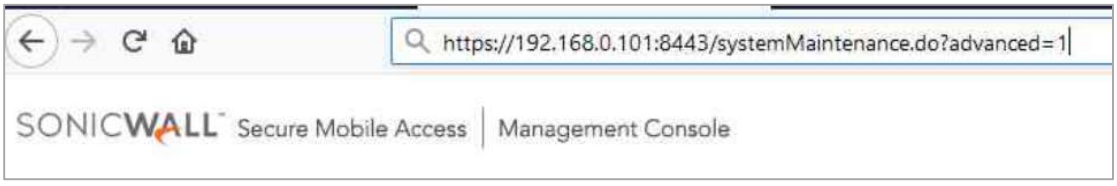
- Under `Service log level` ensure that `Web Proxy` and `Network tunnel` log levels are set to `Info`



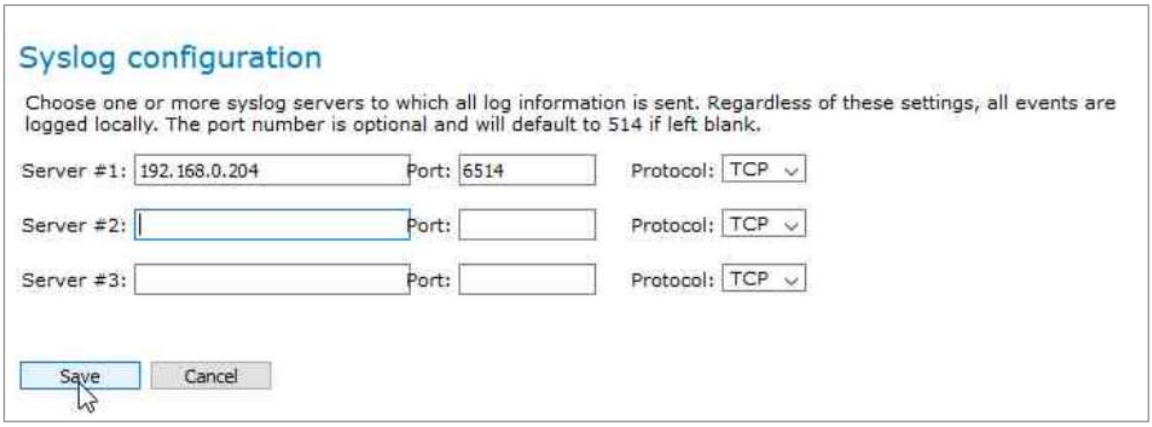
- Under `Service log level` configure `Management` log level to `Debug`
- Click **`Save`**

12. **Configure external audit server (syslog)**

- Navigate to **`System Configuration -> Maintenance page.`**
- Modify the URL by appending a query parameter **`?advanced=1`** and hit enter.



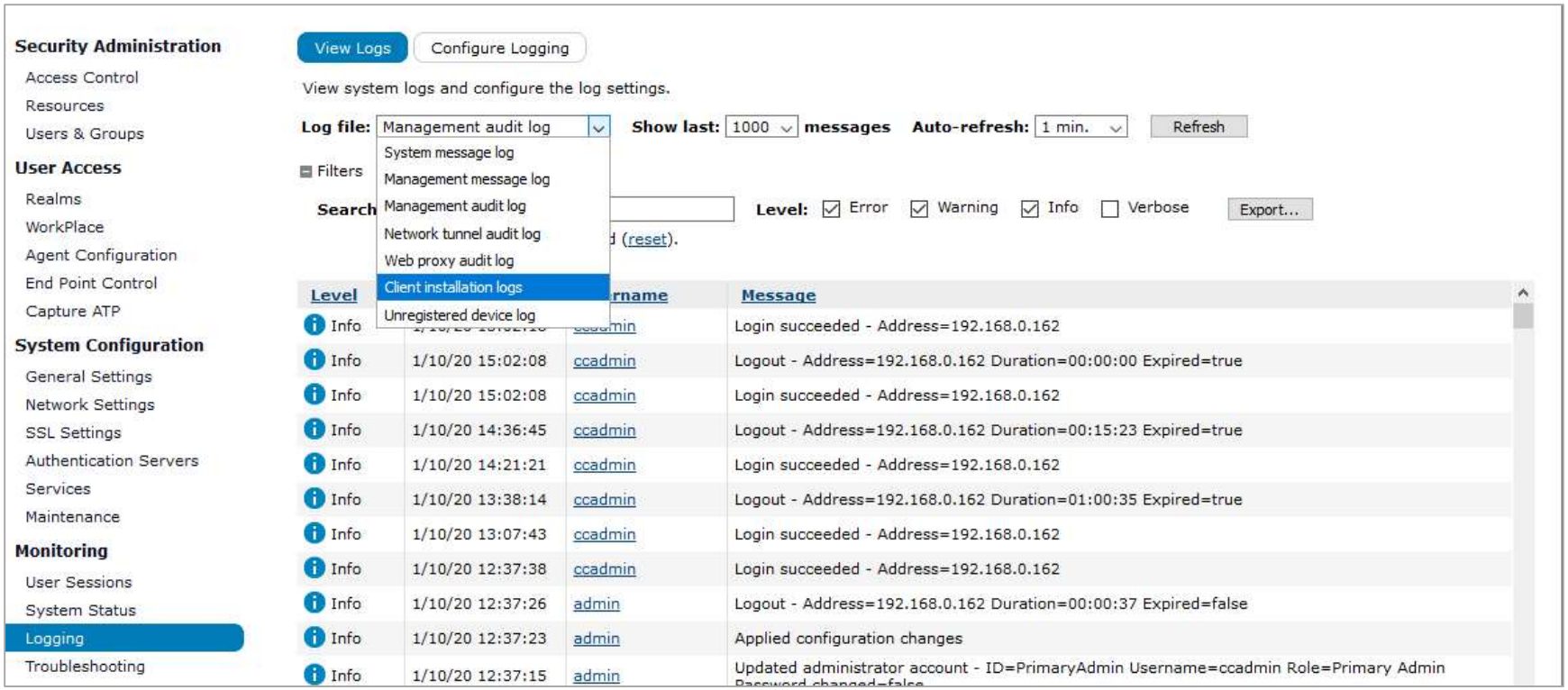
- Click on "**Configure**..." button under **Advanced/Configuration extensions.**
- Click on "**New**" button.
- Add a new parameter **LOGGING_SECURE_SYSLOG** and set value to "**true**"
- Click on "**Ok**" link
- Click **Save**
- Navigate to **Monitoring → Logging**
- Under Syslog Configuration **add IP Address and Port number of a Syslog Server**
- Select Protocol: **TCP**



- Click **Save**
- Apply Pending Changes

3 Auditable Events

To access audit records through AMC, navigate to **`Monitoring → Logging → View Logs`**



Each audit record contains the following information: type of event, date and time of the event, subject identity, and the outcome.

The SMA supports six levels of audit events: Fatal, Error, Warning, Info, Verbose, and Debug. For each audited event, the date and time, the type of event, the subject identity (e.g. IP address or user identity), and the outcome are logged. The audit records may also contain event-specific content.

The following auditable events are in the scope of Common Criteria certification:

Auditable Actions	Audit Records
Start-up and shut down of audit functions	**Start-up:** Aug 6 15:30:50 SMAAppliance boot-process: System has successfully booted. **Shut down:** Info 6/21/19 15:39:19 admin shutdown the system
Change of audit level	Info 8/2/19 12:27:53 admin Updated logging settings - Name=loggingServiceLogLevel Value=info Info 8/2/19 12:35:17 admin Updated logging settings - Name=loggingServiceLogLevel Value=verbose Info 8/2/19 12:27:49 admin Updated logging settings - Name=loggingServiceLogLevel Value=warning Info 8/2/19 12:27:45 admin Updated logging settings - Name=loggingServiceLogLevel Value=error Info 8/2/19 12:27:32 admin Updated logging settings - Name=loggingServiceLogLevel Value=fatal Info 8/2/19 12:27:58 admin Updated logging settings - Name=loggingServiceLogLevel Value=debug
Configure RBAC mode	Info 9/11/19 13:48:17 admin Added administrator account - Username= user1 Role= Super Admin

Auditable Actions	Audit Records
Configure password complexity	Info 8/27/19 12:05:17 admin Updated authentication server - ID=AV1565090969028AUI Name=local Password length=12-16 Require lowercase=false Require uppercase=true Require digits=true Require symbols=false
TLS configuration	Info 8/2/19 16:44:01 admin Deleted SSL protocol - Name=TLSv1 Info 8/2/19 16:41:52 admin Added SSL protocol - Name=TLSv1_2 Info 8/2/19 16:45:46 admin Deleted SSL cipher - Name=TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 Info 8/2/19 16:45:46 admin Changed order of SSL cipher - Name=TLS_RSA_WITH_AES_256_GCM_SHA384 From=2 To=0
FIPS mode	Info 6/20/19 13:21:25 admin Updated FIPS settings - Enabled=true Info 6/20/19 13:35:46 admin Updated FIPS settings - Enabled=false
Audit server configuration	Info 8/2/19 16:53:59 admin Updated syslog settings: Server1=10.5.252.101:9999/tcp Server2=None Server3=None

Auditable Actions	Audit Records
X.509 Certificate management **Certificate Authority** (CA) The entity that verifies the contents of the digital certificate and signs it indicating that the certificate is valid and correct is called the Certificate Authority (CA). **Certificate Signing Request** (CSR) An entity that wants a signed certificate or a digital certificate requests one through a CSR.	**Certificate Authority (CA)** Info 8/8/19 09:25:19 admin Added CA certificate - Issued to=ROOTCA Info 8/8/19 09:25:04 admin Deleted CA certificate - Issued to=ROOTCA **Certificate Signing Request (CSR)** Info 6/12/19 15:40:13 admin Added SSL certificate signing request - Issued to=example.sonicwall.com Info 8/8/19 10:20:23 admin Added SSL certificate - Issued to= example.sonicwall.com Error 6/26/27 11:36:48 AMC unable to import CSR reply: Failed signature verification Error 6/26/27 11:35:39 AMC unable to import CSR reply:java.io.IOException: Incomplete BER/DER data
Verifying and applying updates	**Uploading a Valid hotfix file:** Info 6/24/19 10:47:57 admin Installed hotfix pform-hotfix-12.1.0-06163 **Uploading an Invalid hotfix file:** Error 8/2/19 17:36:15 admin Hotfix update failed: Hotfix file integrity check failed.
Configuring system time	Info 6/12/19 12:59:17 admin Set time to Wed Jun 12 12:59:17 IST 2019
Configuring and modifying access banner	Info 8/2/19 17:57:08 admin Added configuration extension - Key=ACCEPTABLE_USE_BANNER Value=Welcome to AMC
Configuring termination of interactive remote session	Info 8/2/19 18:05:18 admin Added configuration extension - Key=AMC_SESSION_TIMEOUT_SECS Value=30

Auditable Actions	Audit Records
Operations related to cryptographic keys or certificates	**Commands to delete TOE's identity (i.e. web) certificate:** Info 8/5/19 09:21:01 admin Added SSL certificate - Issued to=192.168.0.10 Info 8/5/19 09:21:07 admin Updated SSL certificate - Usage=AMC Issued to=192.168.0.10 Info 8/5/19 10:02:36 admin Deleted SSL certificate - Issued to=172.29.0.204 **Commands to delete trusted CA:** Info 8/5/19 10:08:07 admin Deleted CA certificate - Issued to=Unit Testing CA

Auditable Actions	Audit Records
Administrative login	**Successful administrative login:** Info 6/11/19 09:00:14 admin Login succeeded - Address=10.1.101.10 **Unsuccessful administrative login:** Warning 6/11/19 06:26:28 AMC Authentication failed: Username=admin, Address=10.1.101.10 **Unsuccessful login attempt limit is met or exceeded:** Info 7/25/19 14:52:50 admin Added configuration extension - Key=ADMINISTRATOR_ACCOUNT_LOCKOUT_SECONDS Value=180 Info 7/25/19 14:52:50 admin Added configuration extension - Key=ADMINISTRATOR_ACCOUNT_LOCKOUT_ATTEMPTS Value=4 Error 8/5/19 11:58:13 admin Administrator account locked due to 3 successive login failures **Timeout of local administrative session:** Sep 3 15:55:04 SMAAppliance -bash: Timeout, session closed for user(root) Sep 3 15:55:04 SMAAppliance login[4754]: pam_unix(login:session): session closed for user root **Timeout of remote administrative session:** Logout - Address=192.168.56.1 Duration=03:15:57 Expired=true **Administrator logging off:** Info 6/21/19 13:24:57 admin Logout - Address=10.5.22.125 Duration=00:00:26 Expired=false

Auditable Actions	Audit Records
Account management	**Creation of a new user:** Info 6/24/19 19:32:12 admin Added administrator account - Username=user1 **Disabling of user account by administrative action:** Info 8/26/19 12:26:15 admin Updated local user - ID=AV1565098985406CPP Name=user1 Password changed=false Enabled=false **Deletion of existing account:** Info 6/24/19 20:12:34 admin Deleted administrator account - ID=AV1561384932759GQT Username=user1 **Reset of User Password:** Info 8/6/19 19:07:46 admin Updated administrator account - ID=PrimaryAdmin Username=admin Role=Primary Admin Password changed=true
Failure to establish a TLS session	Error 6/24/19 15:41:31 AMC SSL handshake failed: Client requested protocol TLSv1 not enabled or not supported. Error 6/25/19 15:26:35 AMC SSL handshake failed: no cipher suites in common

Auditable Actions	Audit Records
Unsuccessful attempt to validate an X509 certificate	Aug 8 18:56:24 syslog-ng@SMAAppliance syslog.err syslog-ng: Certificate subject does not match configured hostname; subject='/DC=com/DC=sma1000/CN=ROOT', hostname='10.1.111.101', certificate='ROOT'