VeridiumID 1.8 Multi-Node Deployment in AWS

You can deploy the following VeridiumID configurations into your AWS account.

- POC (proof of concept) single node of VeridiumID services that is suitable for testing and proof of concept and does not offer high availability or data replication. This configuration is licensed for testing with one device which is a Veridium Authenticator mobile phone app that runs on Android and iOS phones and is required to enroll and authenticate using biometrics.
- A Production deployment consisting of five nodes of VeridiumID services and several supporting nodes that can support many users and their devices, limited only by your license. Your users download and use the Veridium Authenticator app at no charge to enroll and authenticate.

Default Parameters

The URLs might have to change or be explained separately.

Setting Name	Value
VM Specs	Choose **m4.xlarge** or larger AWS instance type.
Username	ec2-user
SSH Key	Choose a keypair provided in your AWS account.
Service URLS:	These are URLs generated by the build derived from your inputs
Websecadmin URL	https://admin.*EnvironmentFriendlyName.EnvironmentBaseDomainName*/websecadmin/ng
Websec URL	https://*EnvironmentFriendlyName.EnvironmentBaseDomainName*/websec/help/
DMZ URL	https://dmz.*EnvironmentFriendlyName.EnvironmentBaseDomainName*/dmzwebsec/help
DemoBank URL	https://demobank.*EnvironmentFriendlyName.EnvironmentBaseDomainName*/OLBDemoServer/web

Shibboleth URL	https://shib.*EnvironmentFriendlyName.EnvironmentBaseDomainName*/idp

Note. ***EnvironmentFriendlyName*** and ***EnviromentBaseDomainName*** are input parameters that the user enters in the Cloud Formation template. You must have a valid SAN certificate for this domain name in Cloud Formation. Use subject alternative names for each service.

Prerequisites

Here are things you need to set up or prepare in advance.

- You need an Amazon Web Services (AWS) account.
- You must be familiar with AWS concepts for creating and managing your VPC (virtual public cloud).
- You access to these services and tools in the AWS environment: EC2, ELB, Route53, S3, SNS, SQS, DynamoDB and VPC full access from the user deploying VeridiumID.
- Existing SSH keypair for accessing the seed machine and VeridiumID VM consoles. Yu can generate the keypair using Amazon EC2 tools.
- If you want to validate user identities as part of the enrollment workflow, you must have an LDAP server. LDAP (or Active Directory) can be deployed in the cloud or on-premises.
- For browser-based administration your administrators need a PC and browser. VeridiumID supports most modern browsers including Chrome, Firefox, Safari, Microsoft Edge, and Opera.
- If you send SMS codes as part of the enrollment workflow, you need an SMS service account such as Twilio.
- To send notifications as part of the enrollment workflows you need an account with Notification Services APNS (Apple Push Notification Service) and FCM (Firebase Cloud Messaging, formerly Google Cloud Messaging.)

Endpoint Names

- VeridiumID uses multiple unique hostnames for different service endpoints. For this example, EnvironmentFriendlyName is ”poc” and EnvironmentBaseDomainName is "example.com” (see *Default Parameters* table for more details):

Websecadmin URL: https://admin.poc.example.com/websecadmin/ng

Websec URL: https://poc.example.com/websec/help

DMZ URL: https://dmz.poc.example.com/dmzwebsec/help

DemoBank URL: https://demobank.poc.example.com/OLBDemoServer/web

Shibboleth URL: https://shib.poc.example.com/idp

Multiple unique hostnames require a SAN certificate containing a subject alternative name for each endpoint.

- Obtain a valid, globally recognized SSL certificate that matches the hostname(s) used by the server. This is referred to as the SSL full chain certificate in this document. Your certificate must be in PEM format and include any intermediate and root certificates in the chain as well as the unencrypted private key in this order (as appropriate for the issued certificate):

  <Unencrypted Private Key>
  <Certificate>
  <Intermediate CA>
  <Root CA>

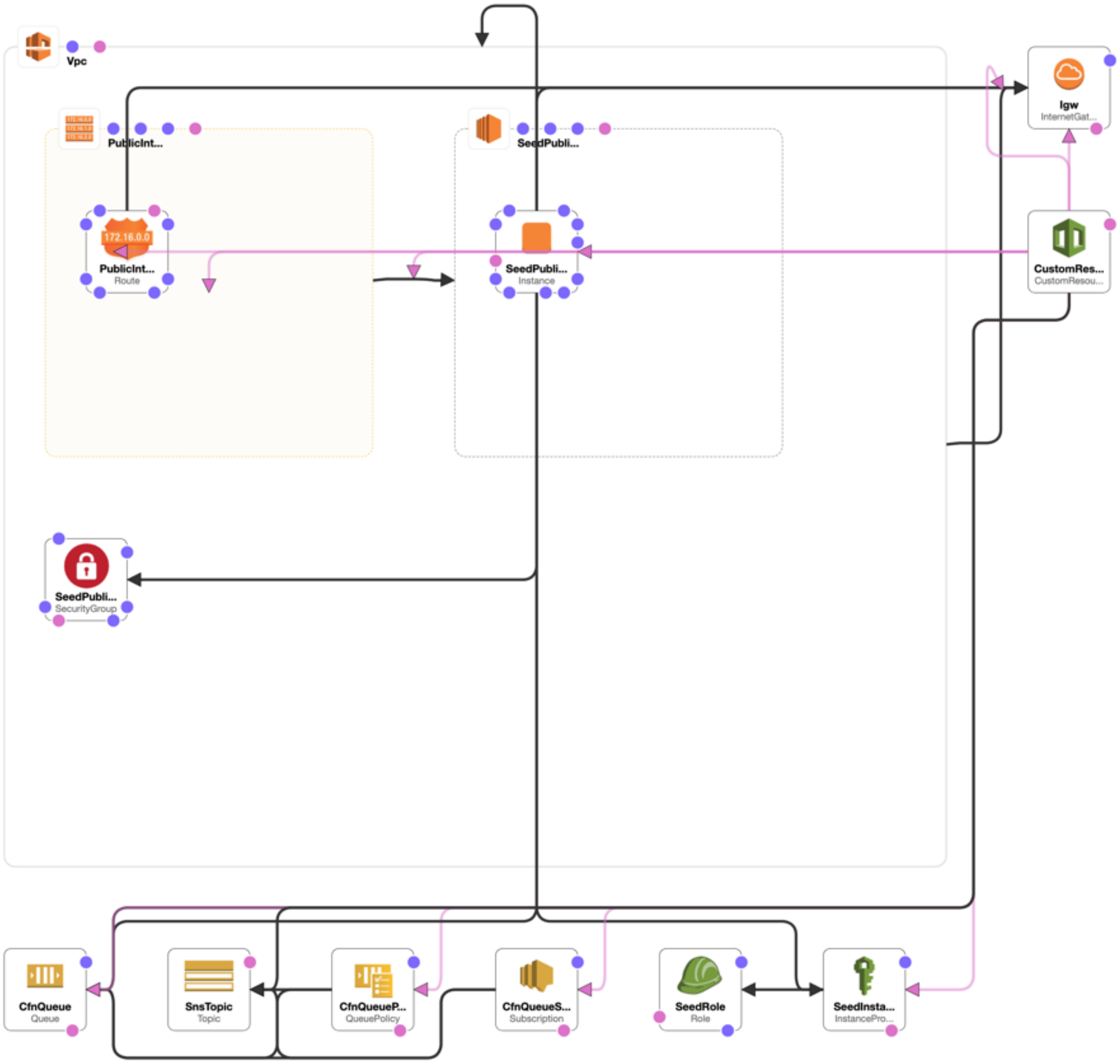
  Note If you choose to use a self-signed certificate, you must ensure that your mobile devices trust the certificate. To do this manually, follow this procedure to Install Self-Signed Certificates on Mobile Devices.

- Obtain licenses from your Veridium sales engineer. As licenses are based on the certificate digest, you must have the certificate before Veridium can generate the licenses.

  Note. The server has limited functionality without a valid license.

VeridiumID Deployment VPC

VeridiumID platform cloud formation topology schema is shown here.



Veridium's deployment strategy uses these cloud formation resources to deploy the entire infrastructure (persistence and application layers).

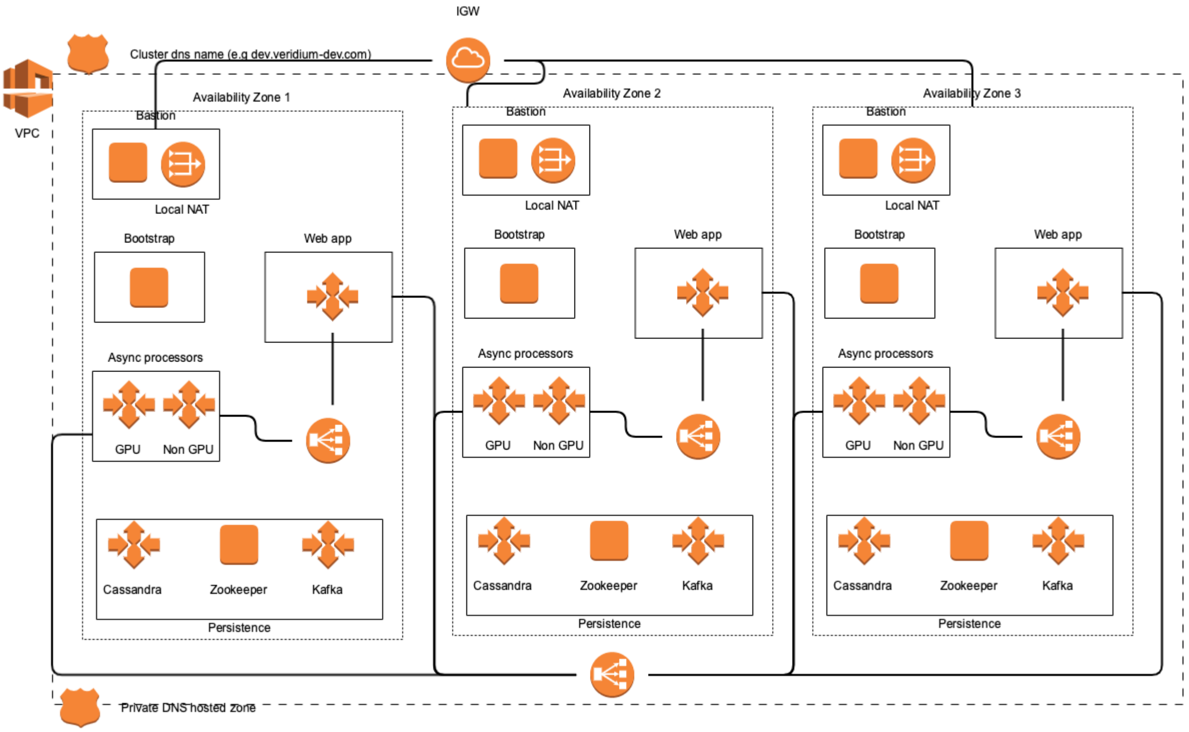
- Terraform provisions cloud resources.
- Ansible configures VeridiumID resources.

This diagram shows the infrastructure design for a three-stack (three VeridiumID servers) deployment (called a Compact deployment in AWS CloudFormation). A single-node deployment has components from one availability zone.

Each availability zone has a persistence layer and an application layer requiring 3 nodes for persistence and 2 nodes for applications. An additional application node provides redundancy. Each availability includes a bastion server and a bootstrap server on t2-small instance machines.

Diagram of a three-stack (Compact) VeridiumID cloud deployment.

It shows three persistence nodes, two application nodes and a redundant application node.



Create a VeridiumID Server Stack

This procedure creates a single-node or multi-node VeridiumID server stack.

Procedure

1. After you subscribe and launch cloudformation stack, the **Create stack** page appears with the template URL already filled. Click **Next**.
2. In the **Specify Stack Details** screen, enter these parameters:

   Stack Name: For example, **prod02**.

   CidrBlockPrefix: For example, **172.63**.

   Deployment Type: Choose from the dropdown:

   - **Single** option deploys the persistence and application layers on the same node.
   - **Compact** deploys the persistence and application layers on different nodes. (3 nodes for persistence and 2 nodes for applications).

   DomainFullChainCertificateS3Uri: Path to the SSL full chain certificate location. The path must be accessible from your AWS account. An example is: **s3://s3BucketName/path/to/fullchain.pem**

   DomainPrivateKeyS3Uri: Path to the SSL full chain certificate private key location. The location must be accessible from your AWS account. An example is: **s3://s3BucketName/path/to/privkey.pem**

   EnvironmentBaseDomainName: The base domain name for which you are providing a certificate.

   EnvironmentFriendlyName: The friendly name of the deployment. The friendly environment name and the base domain name will be concatenated to provide URLs to VeridiumID services.

   EnvironmentSshKey: Name of SSH key used above. It is necessary that the user should keep the key to access the deployed instances using SSH.

   PersistenceDiskSize: Enter a value of 20 (GB) or greater.

ResourceName: The name of the resource used for the deployment. Default: *EnvironmentProvisioning.*

SeedInstanceType: Choose **m4.xlarge** or larger**.**

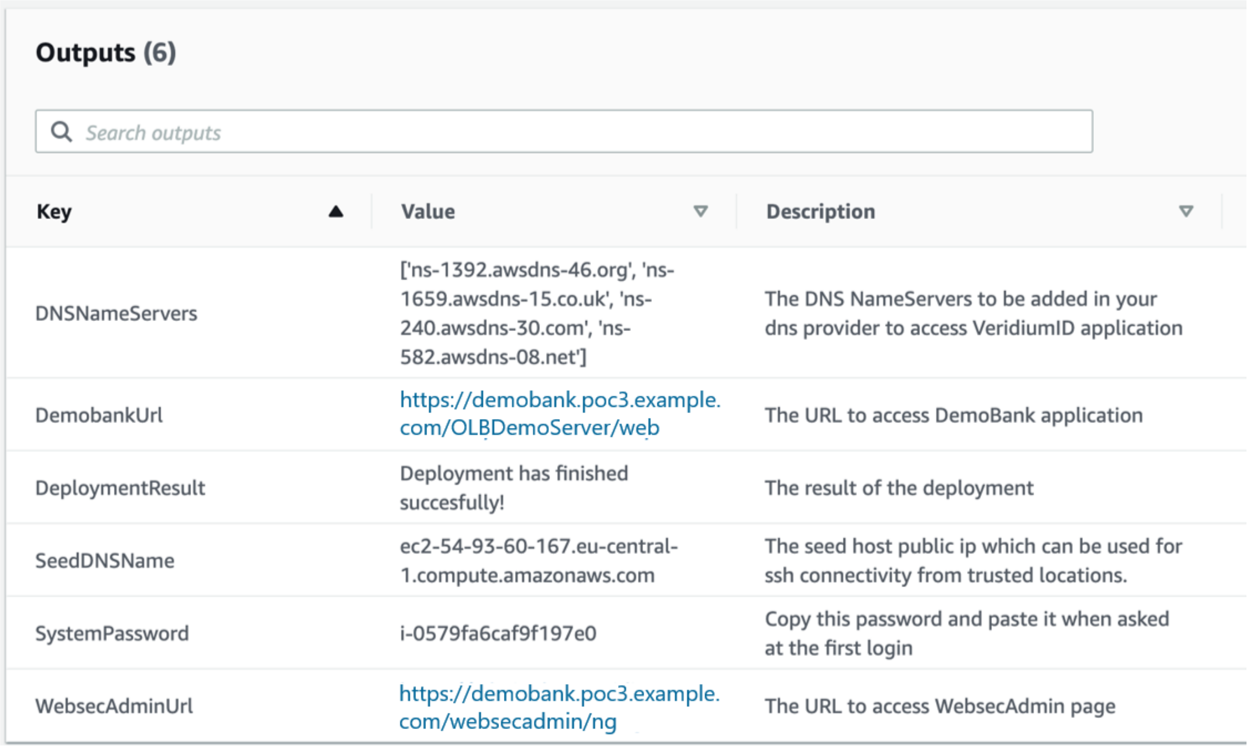
SingleNodeDiskSize: Enter a value of 20 (GB) or greater.

TopicName: For example, **NotificationServiceTopic** Required for custom resource. Determines actions like create environment, destroy environment, or update environment.

TrustedAdminSources: IP Addresses from which admin access is allowed. For example, **xxx.xxx.xxx.xxx/32**.

WebAppDiskSize: Enter a value of 20 (GB) or greater.

6. Click **Next**.
7. The **Configure stack options** page opens. You do not need to set any options. Click **Next**.
8. The review settings and details page open. Review to make sure the settings are correct.
9. Scroll down and click the checkbox for **I acknowledge the AWS CloudFormation might create IAM resources with custom names.** Then click **Create stack**.
10. On the stack details page, click the **Resources** tab and **Events** tab to monitor resource creation progress.
11. When the stack build completes in about 35 minutes. the stack details page shows **Outputs** as in this screen shot.



Outputs (6)

Key	Value	Description
DNSNameServers	['ns-1392.awsdns-46.org', 'ns-1659.awsdns-15.co.uk', 'ns-240.awsdns-30.com', 'ns-582.awsdns-08.net']	The DNS NameServers to be added in your dns provider to access VeridiumID application
DemobankUrl	https://demobank.poc3.example.com/OLBDemoServer/web	The URL to access DemoBank application
DeploymentResult	Deployment has finished succesfully!	The result of the deployment
SeedDNSName	ec2-54-93-60-167.eu-central-1.compute.amazonaws.com	The seed host public ip which can be used for ssh connectivity from trusted locations.
SystemPassword	i-0579fa6caf9f197e0	Copy this password and paste it when asked at the first login
WebsecAdminUrl	https://demobank.poc3.example.com/websecadmin/ng	The URL to access WebsecAdmin page

Add DNS Name Entries to your DNS Provider

Add each of the DNS Name Server entries to your DNS provider.

Procedure

1. On the stack details page, click the **Outputs** tab to view the DNS entries to add to your DNS provider.
2. See your DNS provider documentation for the procedure to add new DNS NS record entries. For example:

Type	**Host**	**Value**
NS Record	poc.example.com	<*First DNS NS*> value
NS Record	poc.example.com	<*Second DNS NS* > value
NS Record	poc.example.com	<*Third DNS NS*> value
NS Record	poc.example.com	<*Fourth DNS NS*> value

Access the Administration Dashboard

This procedure generates an administration certificate you install in your browser to access the administration dashboard.

Before you begin

- On the Stacks details page, click the **Outputs** tab to view the URL to access the Administration Dashboard.

Procedure

1. Access the **WebsecAdminURL** in an anonymous or incognito browser session.
2. When prompted to choose a certificate, click **Cancel**.

   The server displays a screen to generate and download an Administrator certificate. You load the certificate into your browser or key store for authentication purposes.
3. On the Stacks page **Outputs** tab, copy the **SystemPassword** to the clipboard.
4. In the anonymous browser, enter a name for the certificate file.
5. Enter a password to protect the certificate. You enter this password when you load the certificate into your browser.
6. Confirm the password by entering it again. Remember the password.
7. Paste the **SystemPassword** from the clipboard into the **System password** field.
8. Click **Save**. The certificate downloads to your local downloads folder or key store.
9. Close and restart the anonymous or incognito browser.
10. Load the certificate into your browser or key store, entering the password when prompted.
11. Copy and paste the **WebsecAdminURL** value into the browser.
12. Choose the certificate you loaded when prompted.

The server displays the Administration Dashboard.

Dashboard Items of Interest

Note these items in the Administration Dashboard.

Integrations lists the connections with external systems set up in your deployment. Click **Edit** to view the QR code that a Veridium Authenticator app scans to pair with the integration.

Configuration shows objects where you enter or manage parameters the server uses to communicate with external systems.

License shows licenses and any usage limits set up for your deployment.

Reports generates records of system statistics. You can export generated reports to PDF.

Test Server Operation using the BankingDemo

Use these procedures to test enrollment and authentication.

- Download, install, and open the Veridium Authenticator app on your iPhone or Android phone.
- Enroll in the Banking Demo Integration.
- Authenticate to complete a Banking Demo transaction

Download the Veridium Authenticator App to your Phone

Procedure

1. Download and install the Veridium Authenticator app on your Android phone or iPhone from the Apple store or Google Play store.

   Search for **veridiumid** at the download store to find the app.
2. Tap **Install** on your phone and allow access requested by the app.
3. Tap **Open** when prompted.

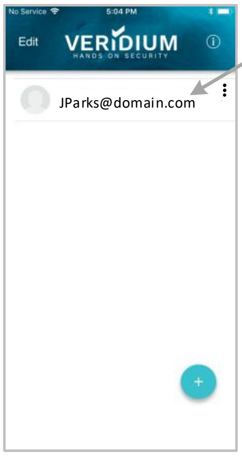
Enroll in the BankingDemo

Use this procedure to test enrollment and authentication.

Procedure

1. In the administration dashboard, click **Integrations.**
2. Click **Edit** in the Banking Demo integration to display its Pairing QR code:
3. Open the Veridium Authenticator app on your phone.
4. Tap **SCAN QR CODE** on the Veridium Authenticator app and scan the pairing QR code displayed in the administration dashboard.
5. Enter any email address when prompted to complete the enrollment.

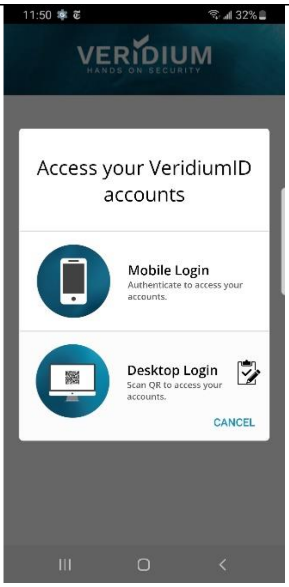
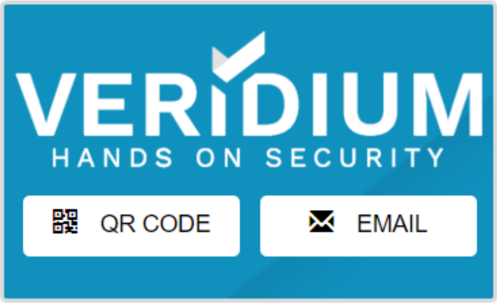
   On successful enrollment, the server adds a profile to your Veridium Authenticator app.



Profile

Authenticate to Complete a Banking Demo Transaction

Follow this procedure to authenticate.

Mobile Banking Demo 1. Tap your profile. The banking demo screen opens. 2. Tap **Mobile Login**. 3. Follow the prompts to Authenticate. On success, the mobile banking app opens on your phone. 4. Press **X** or your phone's Back button to exit the mobile banking app.	 Access your VeridiumID accounts Mobile Login Authenticate to access your accounts. Desktop Login Scan QR to access your accounts. CANCEL
Online Banking Demo Navigate your desktop/laptop browser to the test banking site on your appliance using the **DemoBankURL** from the Output Tab of the stack details page. 1. Click **QR CODE** in the browser. 2. Tap your profile. 3. Tap **Desktop Login**. 4. Scan the QR CODE displayed in the browser. 5. Follow the prompts to Authenticate. On success, the online banking site opens in your browser. 6. Close the browser window to exit the online banking demo..	

Configure Active Directory Binding

Set LDAP values relevant to your VPC environment.

Procedure

1. In the navigation pane, click **Configuration>Services.**
2. Click **LDAP**.
3. Update values for these parameters:

   “**credentialsUsername**": LDAPAcct@poc.local

   "**credentialsPassword**": "*securepassword*"

   "**baseDN**": "**DC=domain,DC=com**" *<determines where you want to start the search for users>* See the *VeridiumID Administration* section 'LDAP and Active Directory Searches' for more information.

   "**URL**": "ldap://10.10.10.10:389",
4. If you use secure LDAP (LDAPS) use these parameters:

   "**URL**”:” ldaps://10.10.10.10:636 “

   “**securityProtocol**": "ssl"
5. Click **Save**.
6. In the navigation pane, click **Configuration>Friend Services Configuration.**
7. Next to Admin Active Directory, click **+ Generate Certificate**.

Other Useful Utilities

After you finish deploying VeridiumID, you might find the following utilities useful for troubleshooting. While connecting to your stack, please use the SSH key provided in the deployment input procedure.

- file transfer utility like **WinSCP** or **scp** to transfer files.
- ssh client like **PuTTy** to access the VeridiumID server command line.
- a utility like telnet or nc (netcat) to test for open ports.

Install Self-Signed Root Certificate on Mobile Devices

You can install and use a self-signed root certificates on iOS and Android phones using the appropriate procedure.

Before you begin

- Download or email the VeridiumID server certificate's root CA certificate to your phone. Tap the file or attachment to install the certificate.

Install (and Remove) Self-Signed Certificates on iPhone

This procedure is for later model iPhones.

Procedure

1. Open your **Settings** on the Home screen, select **General**.
2. Tap **Profiles and device management**.

   The certificate appears as a downloaded profile.
3. Tap the profile.

   The phone checks the certificate and displays **Verified**.
4. Tap **Install**.

   The phone installs the certificate and displays **Verified**.
5. Use this same screen to Remove the profile when finished using it.

Install (and Remove) Self-Signed Certificates on Android Phones

This procedure is for a Samsung Galaxy S9.

Procedure

1. Tap the downloaded certificate in your **Downloads** folder.
2. Enter a name for the certificate and click **OK**.

3. Your phone installs the certificate.
4. To view or remove the certificate tap **Settings**. Then:
    a. Tap **Biometrics and security** > **Other security settings/.**
    b. Tap **User certificates**.
    c. Tap the certificate.

       Use this screen to view or remove the certificate.