

# Samsung KNOX™ Technical Note:

## VPN Profile Creation: JSON Format Description

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## **Document Information**

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# Preface

The purpose of this document is to describe the VPN parameter JSONObject format in detail.

## Audience

The audience for this guide comprises VPN partners. The content presentation is based on the assumption that you are knowledgeable in the Android platform environment.

## About this Document

This document describes how the VPN profile needs to be created for generic framework.

Use the following links to jump to a specific location of your interest in this document:

- [Chapter 1, Samsung KNOX VPN: Profile Creation](#)
- [Chapter 2, VPN Layout](#)
- [Chapter 3, Sample Generic VPN Profile Configuration](#)



## Notational Conventions

This guide uses the following notation conventions:

- **Boldface** emphasizes words in text such as screen or window names
- *Italic* identifies new words, emphasizes phrases, or identifies document names
- `Monospace` represents information as it appears on a display or in command syntax

## Notice Icons

This guide uses the following notice icons:

Icon	Alerts you to...
 Note	Important features, instructions, or additional relevant information.
 Caution!	Information on conditions that can cause unintended or adverse consequences.

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# 1 Samsung KNOX VPN: Profile Creation

## About KNOX\_VPN\_PARAMETERS

KNOX\_VPN\_PARAMETERS is the parent JSON object in the file. KNOX\_VPN\_PARAMETERS contains the following sub-objects.

- profile\_attribute: Contains the basic VPN profile info
- ipsec: Contains the ipsec related parameters
- ssl: Contains the ssl related parameters
- knox: Contains KNOX-specific parameters
- vendor: Contains vendor-specific parameters

## Caveats

Most of the contents in this document are VPN vendor specific. The administrator must be mindful of this aspect. We have tried to indicate the parameters which are mandatory or optional from a KNOX VPN framework perspective in accordance with the legend below. It must be noted that an optional parameter may be mandatory from a VPN vendor's perspective. These nuances are captured in vendor specific documents which you can request from the Samsung KNOX team separately

- M: Mandatory
- O: Optional

## Notes

- A JSON object can contain only one profile at a time. (Either it can be ssl or an ipsec profile.)
- The Keys which are marked as mandatory are required to create and start a VPN connection.
- All the key values which are marked mandatory are constant across different vendors. Regarding the keys which are mentioned optional, it is up to the vendors to set the values for the key

## profile\_attribute Object (M)

This object contains the parameters related to profile creation (M)

- profileName = profile Name of the VPN Connection (String) (M)
- host = IP address of the VPN server (String)
- isUserAuthEnabled = parameter need to specify if user authentication is required to establish VPN connection. (boolean) (O)

- vpn\_type = specifies whether the particular VPN connection is an ipsec or ssl connection. (String) (M)
- vpn\_route\_type = specifies whether the VPN is a system or a per-app VPN (int) (M)
  - 0: System VPN
  - 1: per-app VPN (splitTunnelType in ipsec section should be set to 0 or disabled)

## ipsec Object (M)

The ipsec object contains the following parameters.

### Basic (M)

- username = if isUserAuthEnabled is enabled, then this parameter is Mandatory. (String)
- password = if isUserAuthEnabled is enabled, then this parameter is Mandatory. (String)
- authentication\_type = Parameter specifies the ipsec authentication type. (int)
  - 1: Using Certificate.
  - 2: Using Pre-shared Key.
  - 3: Hybrid RSA (only applicable if IKEv1 is selected).
  - 4: EAP MD5 (applicable only if IKEv2 is selected).
  - 5: EAP MSCHAPv2 (applicable only if IKEv2 is selected).
  - 6: CAC based Authentication.
- psk = ipsec parameter. (String)
- ikeVersion = parameter to describe the IKE version. (int)
  - 1: IKEv1
  - 2: IKEv2
- dhGroup = Valid values are 0, 1, 2, 5, 14-26. (int)
- p1Mode = IKE Phase 1 key exchange mode for the Vpn connection profile. (int)
  - 2: Main Mode
  - 4: Aggressive Mode
- identity\_type = The IPsec group id type for the profile. (int)
  - 0: Default. (If Certificate authentication method is set then the value should be set to default)
  - 1: IPv4 Address.

- 2: FQDN.
- 3: User FQDN.
- 11: IKE Key ID.
- identity = sets the IPsec group id type Value for the connection profile. (String)
- splitTunnelType = The splitTunnel Type can be (int)
  - 0: Disabled
  - 1: Manual (forwardRoutes field should be used to set the routes)
  - 2: Auto (used if the VPN Server is Cisco ASA.)
- forwardRoutes = This field is used to set the forward routes when splitTunnelType is set to manual (1). (Array of Strings)

#### Advanced (O)

- mobikeEnabled = This field is used to enable or disable mobike option. (boolean)
- pfs = The PFS (perfect forward secrecy) value for the connection profile. (boolean)
- ike\_lifetime = ipsec parameter. (int)
- ipsec\_lifetime = ipsec parameter. (int)
- deadPeerDetect = This field is used to enable or disable deadPeerDetection option. (boolean)

#### Algorithms (O)

- ipsec\_encryption\_algorithm = ipsec parameter. (int)
- ipsec\_integrity\_algorithm = ipsec parameter. (int)
- ike\_encryption\_algorithm = ipsec parameter. (int)
- ike\_integrity\_algorithm = ipsec parameter. (int)

### ssl Object (M)

The ssl object contains the parameters related to create a SSL vpn connection.

#### Basic (M)

- username = if isUserAuthEnabled is enabled, then this parameter is Mandatory. (String)
- password = if isUserAuthEnabled is enabled, then this parameter is Mandatory. (String)
- splitTunnelType = The splitTunnel Type can be (int)
  - 0: Disabled

- 1: Manual (forwardRoutes field should be used to set the routes)
- 2: Auto (used if the VPN Server is Cisco ASA.)
- forwardRoutes = This field is used to set the forward routes when splitTunnelType is set to manual (1). (Array of String)
- authentication\_type = Parameter specifies the ssl authentication type. (int)
  - 0: Not Applicable.
  - 1: Certificate based Authentication.
  - 6: CAC based Authentication.

#### Algorithms (O)

- ssl\_algorithm = used to specify the encryption algorithm needed for ssl vpn connection. (int)

#### knox Object (M)

All parameters in this section are supported only from KNOX2.2

- **uidpid\_search\_enabled (O):** Set by the MDM if they intend to have the Samsung kernel append UID/PID information to individual packets punted to the VPN client from the kernel. MDM needs to work with VPN vendor to understand if they support this feature.
  - The Cisco AnyConnect client for KNOX2.2 expects this to be enabled ALWAYS.
  - All other VPN clients do not use this feature
- **chaining\_enabled (O):** The valid values are [-1, 0, 1] - Default is -1; if admin wants to support chaining, then 0 corresponds to outer tunnel, 1 corresponds to inner tunnel.
- **connectionType (O):** the valid values are "**ondemand**" , "**keepon**". OnDemand starts VPN connection only if a VPN protected application is started. The VPN connection is terminated automatically, if the application is killed. Default behavior is "keepon"

#### vendor Object

This is a vendor specific section, completely defined and controlled by the VPN vendor. Please contact Samsung with the specific vendor you are interested in and documentation will be provided to you.



## 2 VPN JSON Layout

```
{
  "KNOX_VPN_PARAMETERS": {
    "profile_attribute": {
    },
    "ipsec": {
      "basic": {
      },
      "advanced": {
      },
      "algorithms": {
      }
    },
    "ssl": {
      "basic": {
      },
      "algorithms": {
      }
    },
    "knox": {
    },
    "vendor": {
    }
  }
}
```

# 3 Sample Generic VPN Profile Configuration

```
{
  "KNOX_VPN_PARAMETERS": {
    "profile_attribute": {
      "profileName": "planet",
      "host": "66.7.251.72",
      "isUserAuthEnabled": true,
      "vpn_type": "ipsec",
      "vpn_route_type": 1
    },
    "ipsec": {
      "basic": {
        "username": "Stars",
        "password": "pluto",
        "authentication_type": 1,
        "psk": "example",
        "ikeVersion": 1,
        "dhGroup": 2,
        "plMode": 2,
        "identity_type": 1,
        "identity": "test@sta.com",
        "splitTunnelType": 1,
        "forwardRoutes": [ {"route": "10.10.1.2"} ],
{"route": "10.10.1.3"} ]
      },
      "advanced": {
        "mobikeEnabled": true,
        "pfs": true,
        "ike_lifetime": 10,
        "ipsec_lifetime": 25,
        "deadPeerDetect": true
      },
      "algorithms": {
        "ipsec_encryption_algorithm": 1,
        "ipsec_integrity_algorithm": 2,
        "ike_encryption_algorithm": 3,
        "ike_integrity_algorithm": 4
      }
    },
    "ssl": {
      "basic": {
        "username": "Stars",
        "password": "pluto",
        "authentication_type": 1,
        "splitTunnelType": 1,
        "forwardRoutes": [ {"route": "10.10.1.2"} ] },
      "algorithms": {
        "ssl_algorithm": 1
      }
    },
    "knox": {
      "uidpid_search_enabled": 0,
      "connectionType": "ondemand"
    },
    "vendor": {
      "certAlias": "mercury",
      "backupVPNServer": "10.10.10.1"
    }
  }
}
```

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For more information about Samsung KNOX, visit [www.samsung.com/knox](http://www.samsung.com/knox)

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