**Development Documentation**

DPP Test Instruction

# **Overview**

This document describes the DPP test steps and instructions with wpa\_supplicant. And list the wpa\_supplicant commands used in test for each device role when dpp auth, dpp configure and associate.

# **References**

# **Abbreviations and Acronyms**

|  |  |
| --- | --- |
| DPP | Device Provision Protocol |
| DUT | Device Under Test |
| CTT | Compliance Test Tool |
|  |  |

# **Design Notes**

## **Note : openssl should be updated to 1.02l in all devices running DPP (procedure mentioned in Appendix) and host\_mlme=1 should be set during load**

## **4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA**

The command flow is as following. DUT act as initiator and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.1 STAUT configured in Enrollee STA role and acts as an authentication Initiator test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

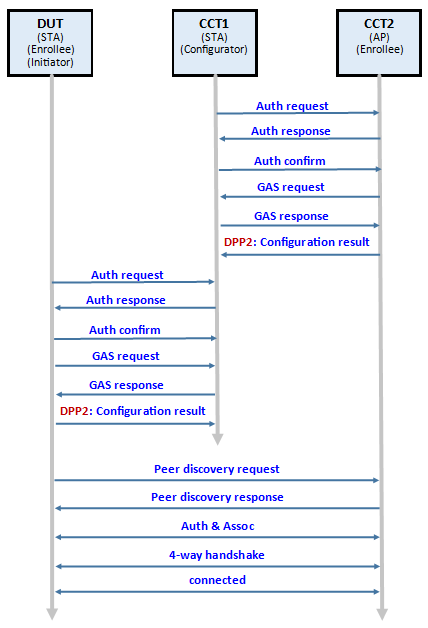


Figure 1. Frame Exchange Flow(QR)

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

1. CTT2: wlan-set-mac 00:50:43:02:11:01
2. CTT2: wlan-add testAP ssid DPPNET01 ip:192.168.10.1,192.168.10.1,255.255.255.0 role uap channel 11 wpa2 ThisIsDppPassphrase

3. CTT2: wlan-start-network testAP

4. CTT2: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:12:01"

bootstrap generate id = 1

4. CTT2: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:12:01"

5. CTT2: wlan-dpp-bootstrap-get-uri <bootstrap\_id>

Bootstrapping QR Code URI:

DPP:C:81/11;M:005043021201;K:……

6. CTT1: wlan-set-mac 00:50:43:02:11:03

7. CTT1: wlan-dpp-configurator-add

conf\_id = 1

8. CTT1: wlan-dpp-qr-code DPP:C: 81/11;M:005043021201;K:……

DPP qr code id = 1

9. CTT1: wlan-dpp-auth-init " peer=<qrcode\_id> conf=ap-dpp ssid=4450504e45543031 configurator=< conf\_id>"

# ssid=DPPNET01 for example: ssid=4450504e45543031

Results:

CTT2: DPP-AUTH-SUCCESS, DPP-CONF-RECEIVED, DPP-CONFOBJ-AKM, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-NET-ACCESS-KEY

CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT

10. CTT1: wlan-dpp-configurator-params " conf=sta-dpp ssid=<hex\_ascii> configurator=< conf\_id>"

# space character exists between “ & conf word.

11. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:03"

bootstrap generate id = 1

12. CTT1: wlan-dpp-bootstrap-get-uri <bootstrap\_id>

Bootstrapping QR Code URI:

DPP:C:81/11;M:005043021103;K:…….

13. CTT1: wlan-dpp-listen "2462 role=configurator"

14. DUT: wlan-set-mac 00:50:43:02:11:02

15. DUT: wlan-dpp-qr-code DPP:C:81/11;M:005043021103;K:……….

DPP qr code id = 1

16. DUT: wlan-dpp-auth-init " peer=1 role=enrollee"

Results:

DUT: DPP-AUTH-SUCCESS, DPP-CONF-RECEIVED, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-NET-ACCESS-KEY

CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT

Connection between DUT and CTT2 success and ping can work for more than 30 seconds.

## **4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA**

The command flow as following. DUT act as responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.2 STAUT configured in Enrollee STA role and acts as an authentication Responder test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

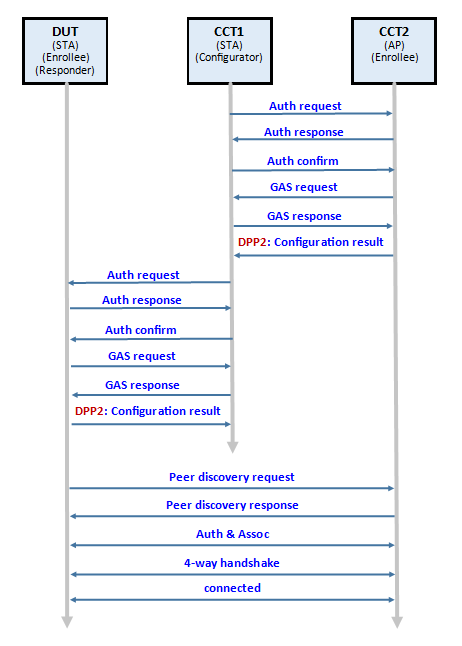


Figure 2. Frame Exchange Flow(QR)

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

1. Please configure CCT1 & CCT2 refer from step 1~9 of refer “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA”.

2. DUT: wlan-set-mac 00:50:43:02:11:02

3. DUT: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:02"

bootstrap generate id = 1

4. DUT: wlan-dpp-bootstrap-get-uri <bootstrap\_id>

Bootstrapping QR Code URI:

DPP:C:81/11;M:005043021102;K:……

5. DUT: wlan-dpp-listen "2462 role=enrollee"

6. CTT1: wlan-dpp-qr-code DPP:C:81/11;M:005043021201;K:……

7. CTT1: wlan-dpp-auth-init " peer=1 conf=ap-dpp ssid=4450504e45543031 configurator=< conf\_id>"

# ssid=DPP\_TEST for example: ssid=4450504e45543031

Results:

DUT: DPP-CONF-RECEIVED, DPP-CONFOBJ-AKM, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-PP-KEY, DPP-NET-ACCESS-KEY

CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT

Connection between DUT and CTT2 success and ping can work for more than 30 seconds.

## **4.3 DUT as Enrollee STA, using different bootstrapping key and signing key elliptical curve test**

The command flow as following. DUT act as initiator/responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.3 STAUT configured in Enrollee STA using different bootstrapping key and signing key elliptical curve test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

DUT Authentication Role is initiator:

Please refer the test procedure of “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA”, and change some steps:

Change step ***4.1.7. CTT1: wlan-dpp-configurator-add***

To ***7. CTT1: wlan-dpp-configurator-add " curve=P-384"***

# space character exists between “ & curve= word.

Change step ***4.1.11. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:03"***

To ***11. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:03 curve=P-256"***

DUT Authentication Role is responder:

Please refer the test procedure of “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA”, and change some steps:

Change step ***4.1.7. CTT1: wlan-dpp-configurator-add***

To ***7. CTT1: wlan-dpp-configurator-add " curve=P-384"***

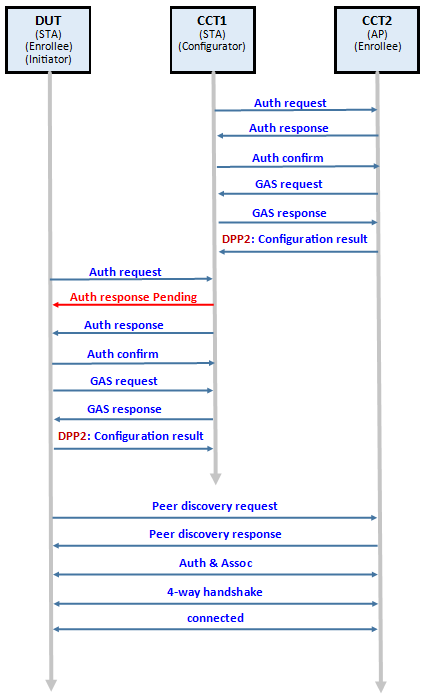
# space character exists between “ & curve= word.

Change step ***4.2.3. DUT: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:02"***

To ***3. DUT: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:02 curve=P-256"***

## **4.4 DUT as Enrollee STA, Initiator(Authentication), handles STATUS\_RESPONSE\_PENDING during authentication test**

The command flow as following. DUT act as initiator and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.4 STAUT configured in Enrollee STA role acting as an authentication Initiator handles STATUS\_RESPONSE\_PENDING during authentication test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf* Figure 3. Frame Exchange Flow(QR)

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Please refer the test procedure of “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA”, and change some steps after 4.1.13:

13. CTT1: wlan-dpp-listen "2462 role=configurator qr=mutual"

14. DUT: wlan-set-mac 00:50:43:02:11:02

15. DUT: wlan-dpp-qr-code DPP:C:81/11;M:005043021103;K:……….

DPP qr code id = 1

16. DUT: wlan-dpp-auth-init " peer=1 role=enrollee"

Wait to see the string in console “DPP-RESPONSE-PENDING DPP:V:3;K:……;;”

17. CCT1: wlan-dpp-qr-code DPP:V:3;K:……;;

Enter the URI from “DPP-RESPONSE-PENDING”

Results:

DUT: DPP-AUTH-SUCCESS, DPP-CONF-RECEIVED, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-NET-ACCESS-KEY

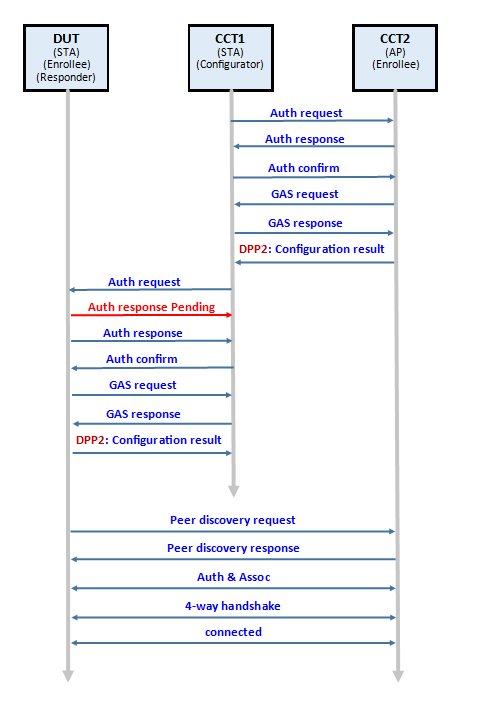
CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT

Connection between DUT and CTT2 success and ping can work for more than 30 seconds.

## **4.5 DUT as Enrollee STA, Responder(Authentication), handles STATUS\_RESPONSE\_PENDING during authentication test**

The command flow as following. DUT act as responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.5 STAUT configured in Enrollee STA role acting as an authentication Responder sends STATUS\_RESPONSE\_PENDING during authentication test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

 Figure 4. Frame Exchange Flow(QR)

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Please refer the test procedure of “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA”, and change some steps after 4.2.5:

5. DUT: wlan-dpp-listen "2462 role=enrollee qr=mutual"

6. CTT1: wlan-dpp-qr-code DPP:C:81/11;M:005043021201;K:……

7. CTT1: wlan-dpp-auth-init " peer=1 conf=ap-dpp ssid=4450504e45543031 configurator=< conf\_id>"

Wait to see the string in console “DPP-RESPONSE-PENDING DPP:V:3;K:……;;”

17. DUT: wlan-dpp-qr-code DPP:V:3;K:……;;

Enter the URI from “DPP-RESPONSE-PENDING”

Results:

DUT: DPP-AUTH-SUCCESS, DPP-CONF-RECEIVED, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-NET-ACCESS-KEY

CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT

Connection between DUT and CTT2 success and ping can work for more than 30 seconds.

## **4.6 DUT as Enrollee STA, Initiator(Authentication), includes Channel attribute during authentication test**

The command flow as following. DUT act as initiator and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.7 STAUT configured in Enrollee STA role acting as an authentication Initiator includes Channel attribute during authentication test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

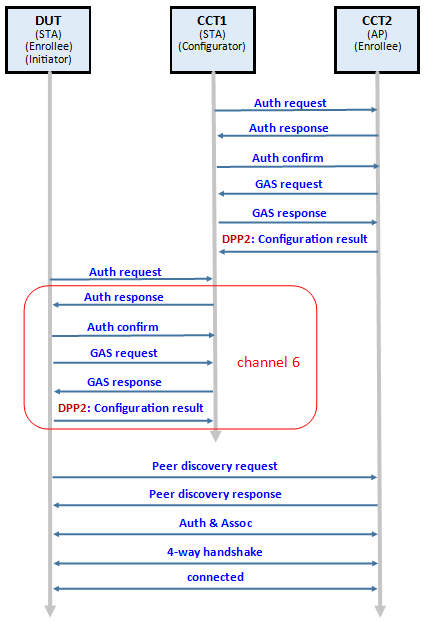
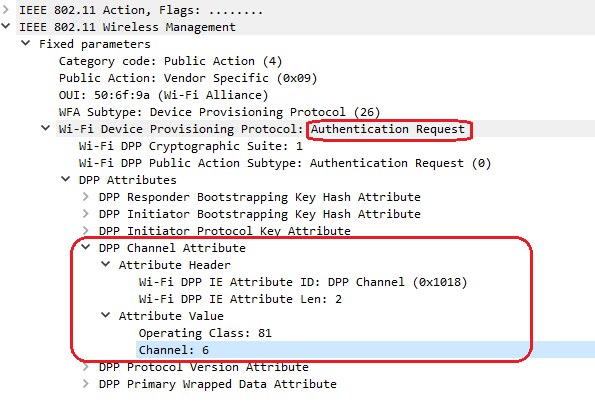


Figure 5. Frame Exchange Flow(QR)



In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Please refer the test procedure of “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA”, and change channel to 1 and dpp\_listen on frequency 2462, and change the last step:

Change step ***4.1.16. DUT: wlan-dpp-auth-init " peer=1 role=enrollee"***

To ***16. DUT: wlan-dpp-auth-init " peer=1 role=enrollee neg\_freq=2437"***

## **4.7 DUT as Enrollee STA, Responder(Authentication), includes Channel attribute during authentication test**

The command flow as following. DUT act as responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.8 STAUT configured in Enrollee STA role acting as an authentication Responder handles Channel attribute during authentication test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

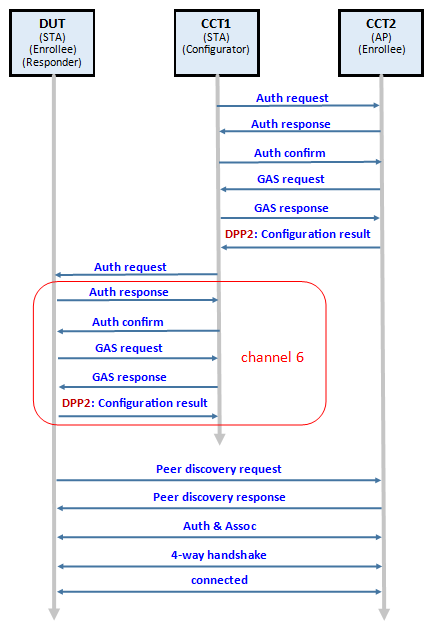
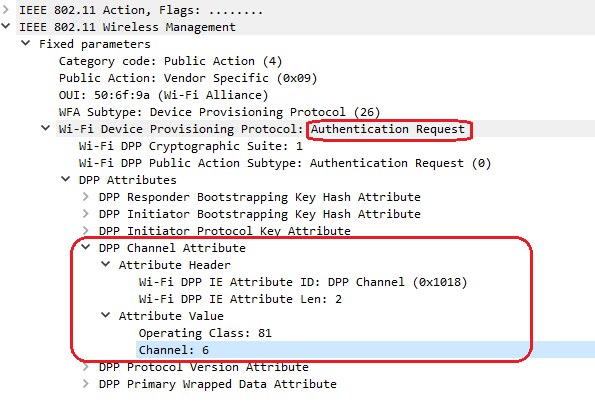


Figure 6. Frame Exchange Flow(QR)



In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Please refer the test procedure of “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA”, and change channel to 1 and dpp\_listen on frequency 2462, and change the last step:

Change step ***4.2.7. CTT1: wlan-dpp-auth-init " peer=1 conf=ap-dpp ssid=4450504e45543031 configurator=< conf\_id>"***

To ***7. CTT1: wlan-dpp-auth-init " peer=1 conf=ap-dpp ssid=4450504e45543031 configurator=< conf\_id> neg\_freq=2437"***

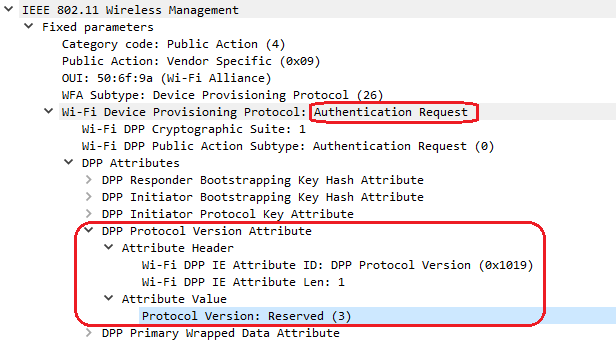
## **4.8 DUT as Enrollee STA, Initiator(Authentication), includes Protocol Version attribute test**

The command flow as following. DUT act as initiator and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.9 STAUT configured in Enrollee STA role acting as an authentication Initiator includes Protocol Version attribute test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Test procedure is the same “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA”.



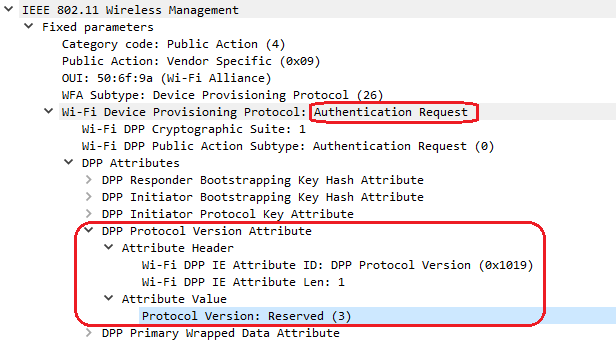
## **4.9 DUT as Enrollee STA, Responder(Authentication), includes Protocol Version attribute test**

The command flow as following. DUT act as responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.10 STAUT configured in Enrollee STA role acting as an authentication Responder includes Protocol Version attribute test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Test procedure is the same “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA”.



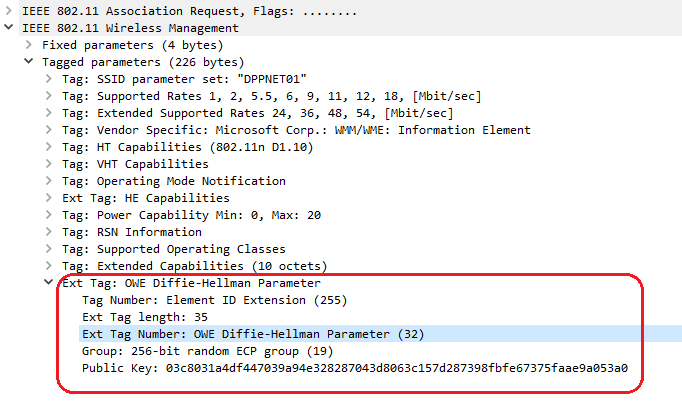
## **4.10 DUT as Enrollee STA and connect by PFS test**

The command flow as following. DUT act as initiator/responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.15 STAUT configured in Enrollee STA and connect by PFS test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Test procedure is the same “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA” and “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA”, and verify that Association Request frame includes the Diffie-Hellman Parameter element.



## **4.11 DUT as Enrollee STA, Initiator(Authentication), handles multiple attributes during Configuration test**

The command flow as following. DUT act as initiator and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.16 STAUT configured in Enrollee STA role acting as an authentication Initiator handles multiple attributes during Configuration test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

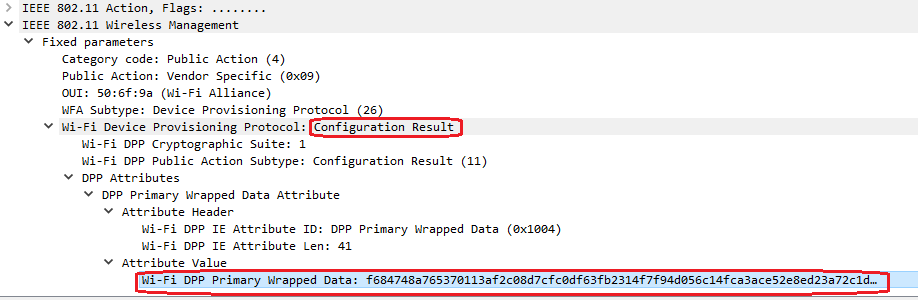
In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Test procedure is the same “4.1 DUT as Enrollee, Initiator(Authentication) , enrolled as STA”, and verify that a DPP Configuration Result frame is sent as a Public Action frame with the following attributes present:

• Wrapped data

• DPP Status

• Enrollee Nonce



Note: wpa\_supplicant wrapped “DPP Status” and “Enrollee Nonce” into a package of DPP Primary Wrapped Data

## **4.12 DUT as Enrollee STA, Responder(Authentication), handles multiple attributes during Configuration test**

The command flow as following. DUT act as responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.17 STAUT configured in Enrollee STA role acting as an authentication Responder handles multiple attributes during Configuration test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

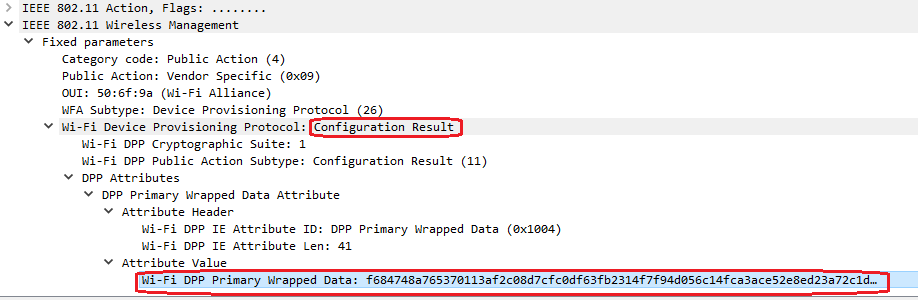
In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Test procedure is the same “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA”, and verify that a DPP Configuration Result frame is sent as a Public Action frame with the following attributes present:

• Wrapped data

• DPP Status

• Enrollee Nonce



Note: wpa\_supplicant wrapped “DPP Status” and “Enrollee Nonce” into a package of DPP Primary Wrapped Data

## **4.13 DUT as Enrollee STA, Reconfiguration test**

The command flow as following. DUT act as initiator/responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.19 STAUT Reconfiguration test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Test procedure is the same “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA” and “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA”. After the DUT is successfully connected to the AP, proceed to the following steps:

1. CTT2: wlan-reset 2
2. CTT2: wlan-set-mac 00:50:43:02:11:01
3. CTT2: wlan-add testAP ssid DPPNET01 ip:192.168.10.1,192.168.10.1,255.255.255.0 role uap channel 11 wpa2 ThisIsDppPassphrase

3. CTT2: wlan-start-network testAP

4. CTT2: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:12:01"

bootstrap generate id = 1

4. CTT2: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:12:01"

5. CTT2: wlan-dpp-bootstrap-get-uri 1

Bootstrapping QR Code URI:

DPP:C:81/11;M:005043021201;K:……

6. CTT1: wlan-dpp-qr-code DPP:C: 81/11;M:005043021201;K:……

DPP qr code id = 3

7. CTT1: wlan-dpp-auth-init " peer=3 conf=ap-dpp ssid=4450504e45543031 configurator=1"

Results:

CTT2: DPP-AUTH-SUCCESS, DPP-CONF-RECEIVED, DPP-CONFOBJ-AKM, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-NET-ACCESS-KEY

CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT

8. DUT: wlan-dpp-reconfig 1

Results:

DUT: DPP-AUTH-SUCCESS, DPP-CONF-RECEIVED, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-NET-ACCESS-KEY

CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT

Connection between DUT and CTT2 success and ping can work for more than 30 seconds.

## **4.14 DUT as Enrollee STA, sends DPP presence announcement test**

The command flow as following. DUT act as initiator/responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.20 STAUT sends DPP presence announcement test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

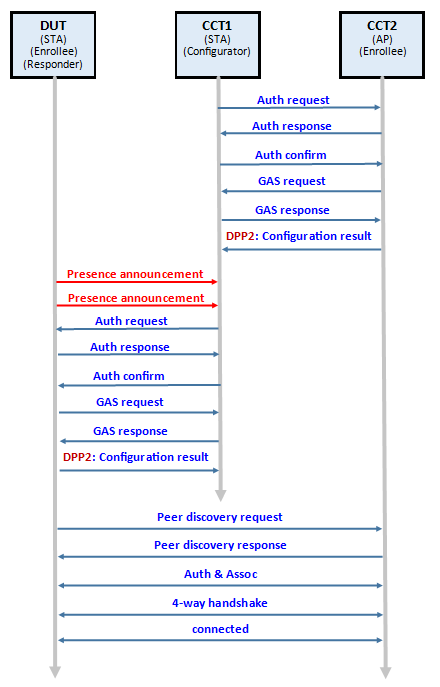


Figure 7. Frame Exchange Flow(QR)

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

Test procedure is the same as “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA” and change some steps after 4.2.5 DUT: wlan-dpp-listen "2462 role=enrollee".

1. DUT: wlan-dpp-chirp " own=1 listen=2462"

# Send presence announcement frame

# Wait 20 seconds and then CTT1 sets DUT's bootstrapping URI.

1. CTT1: wlan-dpp-qr-code DPP:C:81/11;M:005043021201;K:……
2. DUT: wlan-dpp-chirp " own=1 listen=2462"

# Send presence announcement frame again.

Results:

DUT: DPP-CONF-RECEIVED, DPP-CONFOBJ-AKM, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-PP-KEY, DPP-NET-ACCESS-KEY

CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT

Connection between DUT and CTT2 success and ping can work for more than 30 seconds.

## **4.15 DUT as Enrollee STA, Initiator(Authentication), and sends the MUD URL**

The command flow is as following. DUT act as initiator and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.23 STAUT sends the MUD URL****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

1. CTT1: wlan-set-mac 00:50:43:02:11:03
2. CTT1: wlan-dpp-configurator-add
3. CTT1: wlan-dpp-configurator-params " conf=sta-dpp ssid=<hex\_ascii> configurator=< conf\_id>"

# space character exists between “ & conf word.

1. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/1 mac=00:50:43:02:11:03"
2. CTT1: wlan-dpp-bootstrap-get-uri <bootstrap\_id>

Bootstrapping QR Code URI:

DPP:C:81/11;M:005043021103;K:…….

1. CTT1: wlan-dpp-listen "2462 role=configurator"
2. DUT: wlan-set-mac 00:50:43:02:11:02
3. wlan-dpp-mud-url "https://example.com/mud"
4. DUT: wlan-dpp-qr-code DPP:C:81/11;M:005043021103;K:……….

DPP qr code id = 1

1. DUT: wlan-dpp-auth-init " peer=1 role=enrollee"

Results:

CTT1: DPP-AUTH-SUCCESS, DPP-MUD-URL https://example.com/mud, DPP-CONF-SENT

DUT: DPP-AUTH-SUCCESS, DPP-CONF-RECEIVED, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-NET-ACCESS-KEY

## **4.16 DUT as Enrollee STA, Initiator(Authentication), handles DPP Connection Status Result test**

The command flow is as following. DUT act as initiator and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.24 STAUT handles DPP Connection Status Result test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

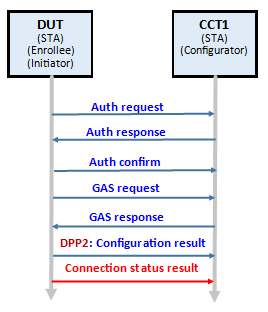
**

Figure 8. Frame Exchange Flow(QR)

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

1. CTT1: wlan-set-mac 00:50:43:02:11:03
2. CTT1: wlan-dpp-configurator-add
3. CTT1: wlan-dpp-configurator-params " conf=sta-dpp ssid=<hex\_ascii> configurator=< conf\_id> conn\_status=1"

# space character exists between “ & conf word.

1. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/1 mac=00:50:43:02:11:03"
2. CTT1: wlan-dpp-bootstrap-get-uri <bootstrap\_id>

Bootstrapping QR Code URI:

DPP:C:81/11;M:005043021103;K:…….

1. CTT1: wlan-dpp-listen "2462 role=configurator"
2. DUT: wlan-set-mac 00:50:43:02:11:02
3. DUT: wlan-dpp-qr-code DPP:C:81/11;M:005043021103;K:……….

DPP qr code id = 1

1. DUT: wlan-dpp-auth-init " peer=1 role=enrollee"

Results:

CTT1: DPP-AUTH-SUCCESS, DPP-CONF-SENT, DPP-CONN-STATUS-RESULT

DUT: DPP-AUTH-SUCCESS, DPP-CONF-RECEIVED, DPP-CONFOBJ-SSID, DPP-CONNECTOR, DPP-C-SIGN-KEY, DPP-NET-ACCESS-KEY

## **4.17 DUT as Enrollee STA, reconfiguration using different bootstrapping key and signing key elliptical curves test**

The command flow as following. DUT act as initiator/responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.25 STAUT Reconfiguration using different bootstrapping key and signing key elliptical curves test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

DUT Authentication Role is initiator:

Please refer the test procedure of “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA” and “4.13 DUT as Enrollee STA, Reconfiguration test”, and change channel to 1 and change some steps:

Change step ***4.1.7. CTT1: wlan-dpp-configurator-add***

To ***7. CTT1: wlan-dpp-configurator-add " curve=P-384"***

# space character exists between “ & curve= word.

Change step ***4.1.11. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:03"***

To ***11. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/1 mac=00:50:43:02:11:03 curve=P-256"***

DUT Authentication Role is responder:

Please refer the test procedure of “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA” and “4.13 DUT as Enrollee STA, Reconfiguration test”, and change channel to 1, and change some steps:

Change step ***4.1.7. CTT1: wlan-dpp-configurator-add***

To ***7. CTT1: wlan-dpp-configurator-add " curve=P-384"***

# space character exists between “ & curve= word.

Change step ***4.2.3. DUT: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:02"***

To ***3. DUT: wlan-dpp-bootstrap-gen "type=qrcode chan=81/1 mac=00:50:43:02:11:02 curve=P-256"***

## **4.18 DUT as Enrollee STA, configured using different elliptical curves for NAK and bootstrapping key test**

The command flow as following. DUT act as initiator/responder and enrollee, configured as STA. CTT1 act as configurator. CTT2 act as enrollee, configured as AP.

*Refer to “****5.1.25 STAUT Reconfiguration using different bootstrapping key and signing key elliptical curves test****” in Wi-Fi\_CERTIFIED\_Easy\_Connect\_Test\_Plan\_v3.0.pdf*

In test, STA uses wpa\_supplicant and AP uses hostapd. QR code test steps(values in () represent command returned value. Command in <> represent optional value):

DUT Authentication Role is initiator:

Please refer the test procedure of “4.1 DUT as Enrollee, Initiator(Authentication), enrolled as STA” and “4.13 DUT as Enrollee STA, Reconfiguration test”, and change some steps:

Change step ***4.1.7. CTT1: wlan-dpp-configurator-add***

To ***7. CTT1: wlan-dpp-configurator-add " net\_access\_key\_curve=P-256"***

# space character exists between “ & curve= word.

Change step ***4.1.10. CTT1: wlan-dpp-configurator-params " conf=sta-dpp ssid=<hex\_ascii> configurator=< conf\_id>"***

To ***10. CTT1: wlan-dpp-configurator-params " conf=sta-dpp ssid=<hex\_ascii> configurator=< conf\_id> net\_access\_key\_curve=P-256"***

Change step ***4.1.11. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:03"***

To ***11. CTT1: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:03 curve=BP-384"***

DUT Authentication Role is responder:

Please refer the test procedure of “4.2 DUT as Enrollee, Responder(Authentication), enrolled as STA” and “4.13 DUT as Enrollee STA, Reconfiguration test”, and change some steps:

Change step ***4.1.7. CTT1: wlan-dpp-configurator-add***

To ***7. CTT1: wlan-dpp-configurator-add " net\_access\_key\_curve=P-256"***

# space character exists between “ & curve= word.

Change step ***4.1.10. CTT1: wlan-dpp-configurator-params " conf=sta-dpp ssid=<hex\_ascii> configurator=< conf\_id>"***

To ***10. CTT1: wlan-dpp-configurator-params " conf=sta-dpp ssid=<hex\_ascii> configurator=< conf\_id> net\_access\_key\_curve=P-256"***

Change step ***4.2.3. DUT: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:02"***

To ***3. DUT: wlan-dpp-bootstrap-gen "type=qrcode chan=81/11 mac=00:50:43:02:11:02 curve=BP-384"***