

Ø£Ø³ØªÙfØ´Ø§Ù ◊ Ø£Ø®Ø·Ø§Ø; Ù†Ù,Ø§Ø· Ø§Ù,,Ù^ØµÙ^Ù,, (APs) Ù^Ø¥ØµÙ,,Ø§ØÙ‡Ø§

Ø§Ù,,Ù...ØØªÙ^ÙšØ§Øª

[Ø§Ù,,Ù...Ù,Ø-Ù...Ø©](#)
[Ø§Ù,,Ù...ØªØ-Ù,,Ø´Ø§Øª Ø§Ù,,Ø£Ø³Ø§Ø³ÙšØ©](#)
[Ø§Ù,,Ù...ØªØ-Ù,,Ø´Ø§Øª](#)
[Ø§Ù,,Ù...ÙfÙ^Ù†Ø§Øª Ø§Ù,,Ù...Ø³ØªØ®Ø-Ù...Ø©](#)
[Ø¹Ù,,Ù% Ù,Ø´Ø¶ Ø±Ø´Ø· Ø£Ø«Ø± \(sniffer Ø£Ø«Ø±\)](#)
[PCAP Ø³Ù,,ÙfÙš Ø¹Ù,,Ù% Ù...Ù†Ù ◊ Ø° AP](#)
[Ø§Ù,,Ø¥Ø-Ø±Ø§Ø; Ø®ÙšØ§Ø±Ø§Øª Ø§Ù,,Ø£Ù^Ø§Ù...Ø±](#)
[PCAP Ø³Ù,,ÙfÙš Ù...Ù† Ø®Ù,,Ø§Ù,, Ø¥Ø³ØªØ®Ø-Ø§Ù... Ø¹Ø§Ù...Ù,, Ø§Ù,,ØªØµ ◊ ÙšØ©](#)
[Ø§Ù,,ØªÙ,Ø§Ø· Ø§Ù,,Ø±Ø§Ø-ÙšÙ^](#)
[Ø§Ù,,Ø¥Ø-Ø±Ø§Ø; Ø§Ù,,ØªØÙ,Ù, Ù...Ù† Ø§Ù,,ØØØ©](#)
[Ø®ÙšØ§Ø±Ø§Øª Ø£Ø®Ø±Ù%](#)
[Ø§Ù,,ØªØÙfÙ... Ù ◊ Ùš ØªØªØ´ Ø¹ Ø¹Ù...ÙšÙ,, Ù†Ù,Ø·Ø© Ø§Ù,,Ù^ØµÙ^Ù,, Ù...Ù† Ø¹Ù†ØµØ±](#)
[Ø§Ù,,ØªØÙfÙ... Ù ◊ Ùš Ø§Ù,,Ø´Ø´ÙfØ© Ø§Ù,,Ù...ØÙ,,ÙšØ© Ø§Ù,,Ù,,Ø§Ø³Ù,,ÙfÙšØ© \(WLC\)](#)
[Ø·Ø±Ø§Ø² 9800](#)
[APs Ù...Ø§Ø-Ø© ØÙ ◊ Ø§Ø²Ø© 91xx Ù ◊ Ùš Ø£Ø³Ù,,Ù^Ø´ sniffer](#)
[ØªÙ,,Ù...ÙšØØ§Øª Ø§Ø³ØªÙfØ´Ø§Ù ◊ Ø§Ù,,Ù...Ø´ÙfÙ,,Ø§Øª Ù^Ø¥ØµÙ,,Ø§ØÙ‡Ø§](#)
[Ù...Ø³Ø§Ø± MTU](#)
[Ù,,ØªÙ...ÙfÙšÙ† ØªØØÙšØ Ø§Ù,,Ø£Ø®Ø·Ø§Ø; Ù ◊ Ùš Ù^Ù,Øª Ø§Ù,,ØªÙ...Ù†ÙšØ-](#)
[Ø£Ù,,ÙšØ© ØªÙ^Ù ◊ ÙšØ± Ø§Ù,,Ø·Ø§Ù,Ø©](#)
[Ø-Ù´Ø-Ø© Ø®Ø-Ù...Ø© Ø§Ù,,Ø¹Ù...Ù,,Ø§Ø; Ù ◊ ØØµ Ø®Ø§Ø±Ø- Ø§Ù,,Ù,Ù†Ø§Ø©](#)
[Ø§ØªØØ§Ù,, Ø§Ù,,Ø¹Ù...ÙšÙ,, Ø³ÙšÙ†Ø§Ø±ÙšÙ^Ù‡Ø§Øª FlexConnect](#)
[Ù†Ø,Ø§Ù... Ù...Ù,,Ù ◊ Ø§Øª AP](#)
[ØªØ®Ø²ÙšÙ† Ù^Ø¥Ø±Ø³Ø§Ù,, syslogs](#)
[Ø²Ù...Ø© Ø-Ø¹Ù... AP](#)
[ØªØ-Ù...ÙšØ¹ Ù...Ù,,Ù ◊ Ø§Øª AP Ø§Ù,,Ø£Ø³Ø§Ø³ÙšØ© Ø¹Ù† Ø´Ø¹Ø-](#)
[Ù^Ø§Ø-Ù†Ø© Ø³Ø·Ø± Ø§Ù,,Ø£Ù^Ø§Ù...Ø± \(CLI\) Ù,,Ù†Ø,Ø§Ù... Ø§Ù,,ØªØ´ØªÙšÙ,, AireOS](#)
[Ù^Ø§Ø-Ù†Ø© Ø§Ù,,Ù...Ø³ØªØ®Ø-Ù... Ø§Ù,,Ø±Ø³Ù^Ù...ÙšØ© AireOS](#)
[IOS® CLI Ù...Ù† Cisco](#)
[IOS® GUI Ù...Ù† Cisco](#)
[IoT Ù^ Bluetooth](#)
[Ø§Ù,,Ù,Ø±Ø§Ø±](#)

Ø§Ù,,Ù...Ù,Ø-Ù...Ø©

ÙšØµ ◊ Ù‡Ø°Ø§ Ø§Ù,,Ù...Ø³ØªÙ†Ø´ Ø´Ø¹Ø¶ Ø£Ø-Ù^Ø§Øª Ø£Ø³ØªÙfØ´Ø§Ù ◊
Ø§Ù,,Ø£Ø®Ø·Ø§Ø; Ù^Ø¥ØµÙ,,Ø§ØÙ‡Ø§ Ø§Ù,,Ù...ØªÙ^Ù ◊ Ø±Ø© Ù,,Ù†Ù,Ø§Ø· Ø§Ù,,Ù^ØµÙ^Ù,,
Ù...Ù† Ù†Ø,Ø§Ù... Ø§Ù,,ØªØ´ØªÙšÙ,, Cheatah OS (Ø§Ù,,Ù...Ø¹Ø±Ù^Ù ◊ Ø´Ø´Ø§Ø³Ù... COs

Ù,,Ø§ØØ, Ø£Ù† Ø§Ù,,ØØ-Ù... Ù...ØØ-Ù^Ø- Ù,,Ù,,Ø°Ø§ÙŠØ© (Ø§Ù,,ØØ- Ø§Ù,,Ø£Ù,,ØŴ%
Ù,,Ù,,ØØ-Ù... 5 Ù...ÙŠØ-Ø§Ø·Ø§ÙŠØ^Ø)Ø£ Ù,,Ø°Ù,,Ù† ÙŠÙ...Ù†Ù† Ø·Ù,,Ø·Ù‡ Ù,,Ø°Ù†Ù^ÙŠÙ†
Ø¹Ù^Ø§Ù...Ù,, Ø§Ù,,Ø°ØŴ ØÙŠØ© Ù,,Ø§Ù,,ØªÙ,,Ø§Ø· ØØ±Ù†Ø© Ø§Ù,,Ù...Ø±Ù^Ø± Ø§Ù,,ØªÙŠ
ØªÙ†ØªÙ... Ø·Ù†Ø§ ÙØÙ,Ø·

ØªØ£Ù†Ø- Ù...Ù† ØŴÙŠÙ,Ø§Ù Ø§Ù,,ØªÙ,,Ø§Ø· ØØ±Ù†Ø© Ø§Ù,,Ù...Ø±Ù^Ø±
Ø· Ø§Ø³ØªØØØ-Ø§Ù... "no debug traffic wired ip capture" Ø£Ù^ Ø· Ø· Ø³Ø§Ø·Ø© "undebug
all" Ù,Ø·Ù,, Ù...Ø§Ù^Ù,,Ø© Ù†Ø³ØØÙ‡ (Ù^ØŴÙ,,Ø§ ÙØŴÙ† Ø§Ù,,Ù†Ø³ØØØ© Ù,,Ø§
ØªÙ†ØªÙ†ÙŠ ØÙŠØ« Ù,,Ø§ ØªØ²Ø§Ù,, Ø§Ù,,ØØ²Ù... Ù...Ù†ØªÙ^Ø· Ø©).

Ø§Ù,,ØŴØ-Ø±Ø§Ø;

Ø§Ù,,ØØØ·Ù^Ø© 1. Ù,Ù... Ø·ØªØ´Ø°ÙŠÙ,, PCAPØ£ ØØ-Ø- Ù†Ù^Ø¹ ØØ±Ù†Ø© Ø§Ù,,Ù...Ø±Ù^Ø±
Ø·Ø§Ø³ØªØØØ-Ø§Ù... "debug traffic wired ip capture":

<#root>

```
AP70DB.98E1.3DEC#debug traffic wired ip capture
% Writing packets to "/tmp/pcap/
AP70DB.98E1.3DEC_capture.pcap0"
```

AP70DB.98E1.3DEC#reading from file /dev/click_wired_log, link-type EN10MB (Ethernet)

Ø§Ù,,ØØØ·Ù^Ø© 2. Ø§Ù†ØªØ,Ø± ØØ±Ù†Ø© Ø§Ù,,Ù...Ø±Ù^Ø± ØªÙ% ØªØªØ-ÙØÙ, Ø«Ù...
Ø£Ù^Ù,ÙØ Ø§Ù,,Ø§Ù,,ØªÙ,,Ø§Ø· Ø· Ø§Ø³ØªØØØ-Ø§Ù... Ø§Ù,,Ø£Ù...Ø± "no debug traffic
wired ip capture" Ø£Ù^ Ø· Ø· Ø³Ø§Ø·Ø© "undebug all":

```
AP70DB.98E1.3DEC#no debug traffic wired ip capture
```

Ø§Ù,,ØØØ·Ù^Ø© 3. Ø§Ù†Ø³ØØ Ø§Ù,,Ù...Ù,,ÙØ ØŴÙ,,Ù% ØØØ§Ø-Ù... TFTP/SCP:

<#root>

```
AP70DB.98E1.3DEC#copy pcap
AP70DB.98E1.3DEC_capture.pcap0
```

```
tftp 192.168.1.100
#####
AP70DB.98E1.3DEC#
```

Ø§Ù,,ØØØ·Ù^Ø© 4. Ø§Ù,,Ø£Ù† ÙŠÙ...Ù†Ù†Ù† ÙØªØ Ø§Ù,,Ù...Ù,,ÙØ ÙØÙŠ
wireshark. Ø§Ù,,Ù...Ù,,ÙØ pcap0. ØªØ°ÙŠÙŠØ± ØŴÙ,,Ù% PCAP Ø· ØÙŠØ« ØªØ±ØªØ· Ø·
ØªÙ,,Ù,Ø§Ø!ÙŠØ§ Ù...Ø¹ wireshark.

0@ÙŠ0\$0±0\$0ª 0\$Ù,,0£Ù^0\$Ù...0±

ÙŠ0ªÙ^ÙŠ 0\$Ù,,0£Ù...0± debug traffic wired 0¹Ù,,Ù% 0\$Ù,,0¹0-ÙŠ0- Ù...Ù† 0\$Ù,,0@ÙŠ0\$0±0\$0ª 0\$Ù,,0ªÙŠ ÙŠÙ...Ù†Ù† 0£Ù† 0ª0³0\$0¹0-Ù† 0¹Ù,,Ù% 0\$Ù,,0ªÙ,0\$0· 00±Ù†0© Ù...0±Ù^0± Ù...0¹ÙŠÙ†0©:

```
APC4F7.D54C.E77C#debug traffic wired
<0-3>  wired debug interface number
filter  filter packets with tcpdump  filter string
ip      Enable wired ip traffic dump
tcp     Enable wired tcp traffic dump
udp     Enable wired udp traffic dum
```

0£Ù†0ª ÙŠ0³0ª0·ÙŠ0¹ 0£0¶Ù◆0ª "verbose" Ù◆ÙŠ 0\$Ù,,Ù†Ù±0\$ÙŠ0© Ù...Ù† 0\$Ù,, debug 0£Ù...0± 0£Ù† ÙŠ0±Ù% 0\$Ù,, hex 0¹Ù...Ù,,ÙŠ0© 0ªÙ◆0±ÙŠ0° Ù...Ù† 0\$Ù,,0±0° 0· Ù†Ù† 0¹Ù,,Ù% 0¹Ù,,Ù... 0°0£Ù† Ù±0°0\$ 0\$Ù,,0¥0-0±0\$0; ÙŠÙ...Ù†Ù† 0£Ù† ÙŠ0±0«0± 0³Ù,,0° 0\$ 0¹Ù,,Ù% 0-Ù,,0³0© Ù^0\$0-Ù±0© 0³0·0± 0\$Ù,,0£Ù^0\$Ù...0± 0° 0³0±0¹0© Ù†0° ÙŠ0±0© 0¥0°0\$ Ù,,Ù... ÙŠÙ†Ù† 0¹0\$Ù...Ù,, 0\$Ù,,0ª0μÙ◆ÙŠ0© Ù,,0-ÙŠÙ† 0¶ÙŠÙ,0\$ 0° 0¹Ù†Ù,, Ù†0\$Ù◆.

PCAP 0³Ù,,Ù†ÙŠ Ù...Ù† 0@Ù,,0\$Ù,, 0¥0³0ª0@0-0\$Ù... 0¹0\$Ù...Ù,, 0\$Ù,,0ª0μ◆ÙŠ0©

ÙŠ0ªÙ^0\$Ù◆Ù, 0ªÙ†0³ÙŠÙ, 0\$Ù,,Ù...0±0° Ù...0¹ 0ªÙ†0³ÙŠÙ, Ù...0±0° 0\$Ù,,0ªÙ,0\$0· tcpdump.

	Ù...0«0\$Ù,, 0¹Ù,,Ù% 0ª0\$Ù...Ù,, 0\$Ù,,0ª0μ◆ÙŠ0©	0\$Ù,,Ù^0μ◆
Ù...0¶ÙŠÙ◆	"0\$Ù,,Ù...0¶ÙŠÙ◆ 192.168.2.5"	ÙŠ0±0-ÙŠ Ù±0°0\$ 0¥Ù,,Ù% 0ª0μ◆ÙŠ0© 0\$Ù,,0ªÙ,0\$0· 0\$Ù,,0²Ù...0© Ù,,0ª0-Ù...ÙŠ0¹ 0\$Ù,,0²Ù... 0\$Ù,,0ªÙŠ 0ªÙ†0ªÙ,Ù,, 0¥Ù,,Ù% 0\$Ù,,Ù...0¶ÙŠÙ◆ 192.168.2.5 0£Ù^ 0ª0£0ªÙŠ Ù...Ù†Ù± Ù◆Ù,0·.
	"Ù...0¶ÙŠÙ◆ SRC 192.168.2.5"	ÙŠ0±0-ÙŠ Ù±0°0\$ 0¥Ù,,Ù% 0ª0μ◆ÙŠ0© 0\$Ù,,0ªÙ,0\$0· 0\$Ù,,0²Ù...0© Ù,,0ª0-Ù...ÙŠ0¹ 0\$Ù,,0²Ù... 0\$Ù,,0ªÙŠ 0ª0£0ªÙŠ Ù...Ù† 192.168.2.5 Ù◆Ù,0·.
	"Ù...0¶ÙŠÙ◆ DST	ÙŠ0±0-ÙŠ Ù±0°0\$ 0¥Ù,,Ù% 0ª0μ◆ÙŠ0©

	192.168.2.5"	Ø§Ù,,ØªÙ,Ø§Ø· Ø§Ù,,Ø²Ù...Ø© Ù,,ØªØ-Ù...ÙŠØ¹ Ø§Ù,,Ø²Ù... Ø§Ù,,ØªÙŠ ØªÙ+ØªÙ,Ù,, Ø¥Ù,,Ù% 192.168.2.5 ÙØÙ,Ø·.
Ø§Ù,,Ù...Ù†ÙØ°	"Ø§Ù,,Ù...Ù†ÙØ° 443"	Ù†Ø°Ø§ ÙŠØ±Ø´Ø Ø§Ù,,Ø±Ø´Ø· Ø§Ù,,ØªÙ,Ø§Ø· Ø£Ù† ÙŠØ-Ù...Ø¹ ÙØÙ,Ø· Ø±Ø´Ø· Ù...Ø¹ Ù...ØµØ´Ø± Ø£Ù^ Ø°Ø§ÙŠØ© Ù...Ù† Ù...ÙŠÙ†Ø§Ø; 443.
	"Ù...Ù†ÙØ° SRC 1055"	Ø¹Ù,,Ù% Ù,Ø´Ø¶ Ù†Ø°Ø§ ØØ±ÙfØ© Ù...Ø±Ù´Ø± Ø£ÙŠ ÙŠÙfÙ´Ù† Ù...ØØ´Ø± Ù...Ù† Ù...ÙŠÙ†Ø§Ø; 1055.
	"Ø§Ù,,Ù...Ù†ÙØ° DST 443"	Ø¹Ù,,Ù% Ù,Ø´Ø¶ Ù†Ø°Ø§ ØØ±ÙfØ© Ù...Ø±Ù´Ø± Ù...Ø¹Ø´ Ù,, Ù,,Ù,,Ù...ÙŠÙ†Ø§Ø; 443.

Ù†Ù†Ø§ Ù...Ø«Ø§Ù,, ØÙŠØ« ÙŠØ¹Ø±Ø¶ Ø§Ù,,Ø¥Ø®Ø±Ø§Ø- Ø¹Ù,,Ù% Ù´ØØ-Ø© Ø§Ù,,ØªØÙfÙ...
Ù´Ù,,ÙfÙ†Ù† ØªÙ...Øª ØªØµÙŠØªÙ† Ø£ÙŠØ¶Ø§ Ù,,Ø¹Ø±Ø¶ Ø²Ù... Ø´ÙŠØÙ†Ø§Øª
CAPWAP ÙØÙ,Ø·:

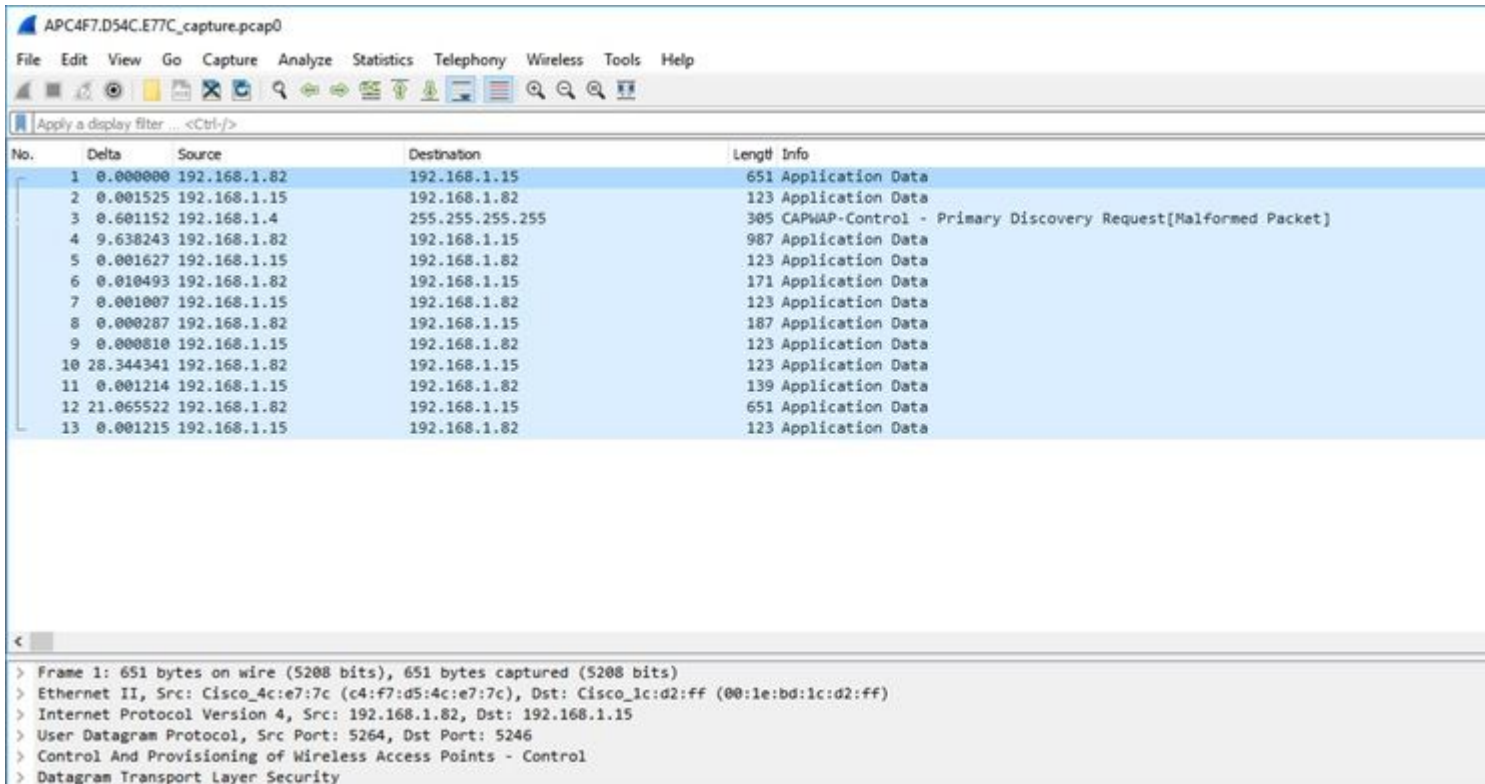
```
APC4F7.D54C.E77C#debug traffic wired filter "port 5246"
APC4F7.D54C.E77C#reading from file /dev/click_wired_log, link-type EN10MB (Ethernet)
12:20:50.483125 IP APC4F7-D54C-E77C.lan.5264 > 192.168.1.15.5246: UDP, length 81
12:20:50.484361 IP 192.168.1.15.5246 > APC4F7-D54C-E77C.lan.5264: UDP, length 97

APC4F7.D54C.E77C#no debug traffic wired filter "port 5246"
APC4F7.D54C.E77C#Killed
APC4F7.D54C.E77C#
```

Ù...Ø«Ø§Ù,, Ù,,Ù,,Ø¥Ø®Ø±Ø§Ø- Ø¹Ù,,Ù% Ø§Ù,,Ù...Ù,,ÙØ:

```
APC4F7.D54C.E77C#debug traffic wired filter "port 5246" capture
% Writing packets to "/tmp/pcap/APC4F7.D54C.E77C_capture.pcap0"
APC4F7.D54C.E77C#reading from file /dev/click_wired_log, link-type EN10MB (Ethernet)
APC4F7.D54C.E77C#no debug traffic wired filter "port 5246" capture
APC4F7.D54C.E77C#copy pcap APC4F7.D54C.E77C_capture.pcap0 tftp 192.168.1.100
#####
APC4F7.D54C.E77C#
```

Ù,,ÙØªØ Ø§Ù,,ØªÙ,Ø§Ø· Ø¹Ù,,Ù% Wireshark:



Ø§Ù,,ØªÙ,Ø§Ø· Ø§Ù,,Ø±Ø§Ø-Ù§Ù`

Ù...Ù† Ø§Ù,,Ù...Ù...ÙfÙ† ØªÙ...ÙfÙ§Ù† Ø§Ù,,ØªÙ,Ø§Ø· Ø§Ù,,ØØ²Ù... Ø¹Ù,,Ù% Ù...Ø³ØªÙ`Ù% Ø§Ù,,ØªÙfÙ... Ù`Ù§ Ø§Ù,,Ø±Ø§Ø-Ù§Ù`. Ù†Ø,Ø±Ø§ Ù,,ØªØ£Ø«Ù§Ø± Ø§Ù,,Ø£Ø-Ø§Ø;Ø£ Ù,,Ø§ Ù§Ù...ÙfÙ† Ø§Ù,,Ø§Ù,,ØªÙ,Ø§Ø· Ø¹Ù,,Ù% Ù,,Ù`ØØ© Ø`Ù§Ø§Ù†Ø§Øª Ø§Ù,,Ø±Ø§Ø-Ù§Ù`.

Ù`Ù‡Ø°Ø§ Ù§Ø¹Ù†Ù§ Ø£Ù† ØªØ-Ù`Ù, Ø§Ù,,ØªØ±Ø§Ù† Ø§Ù,,Ø¹Ù...Ù§Ù,, (Ø§Ù,,Ù...Ø³ØªÙfØ`Ù`Ø§Øª Ù`Ø§Ù,,Ù...ØµØ§Ø-Ù,Ø© Ù`Ø§Ù,,Ø§Ù,,ØªØ±Ø§Ù† Ù` EAP Ù` ARP Ù`Ø²Ù... DHCP Ø`Ø§Ù,,Ø¥Ø¶Ø§Ù`Ø© Ø¥Ù,,Ù% Ø²Ù... Ø§Ù,,ØªÙfÙ... Ù`Ù§ IPv6 Ù` ICMP Ù` NDP) Ù...Ø±Ø`Ù§ Ù`Ù,,ÙfÙ†Ù‡ Ù,,Ù§Ø³ Ø§Ù,,Ø`Ù§Ø§Ù†Ø§Øª Ø§Ù,,ØªÙ§ Ù§Ø-ØªØ§Ø²Ù‡Ø§ Ø§Ù,,Ø¹Ù...Ù§Ù,, Ø`Ø¹Ø-Ø§Ù,,Ù†Ù,Ù,, Ø¥Ù,,Ù% Ø§Ù,,ØØ§Ù,,Ø© Ø§Ù,,Ù...ØªØµÙ,,Ø©.

Ø§Ù,,Ø¥Ø-Ø±Ø§Ø;

Ø§Ù,,Ø®Ø-Ù`Ø© 1. Ø¥Ø¶Ø§Ù`Ø© Ø¹Ù†Ù`Ø§Ù† Ø§Ù,,ØªØÙfÙ... Ù`Ù§ Ø§Ù,,Ù`ØµÙ`Ù,, Ù,,Ù,,Ù`Ø³Ø§Ø|Ø· Ø§Ù,,Ø®Ø§Øµ Ø`Ø§Ù,,Ø¹Ù...Ù§Ù,, Ø§Ù,,Ø°Ù§ ØªÙ... ØªØ¹Ù,Ø`Ù‡. Ù§Ù...ÙfÙ† Ø¥Ø¶Ø¶Ø§Ù`Ø© Ø§Ù,,Ø¹Ø-Ù§Ø-Ù...Ù† Ø¹Ù†Ø§Ù`Ù§Ù† MAC. ÙfÙ...Ø§ Ù...Ù† Ø§Ù,,Ù...Ù...ÙfÙ† ØªØ´Ø°Ù§Ù,, Ø§Ù,,Ø£Ù...Ø± Ù,,Ø-Ù...Ù§Ø¹ Ø§Ù,,Ø¹Ù...Ù,,Ø§Ø; Ù`Ù,,ÙfÙ† Ù,,Ø§ Ù§Ù`ØµÙ% Ø`Ø°Ù,,Ùf.

```
config ap client-trace address add < client-mac> --- Per client debugging. Allows multiple macs.
config ap client-trace all-clients <enable | disable> -- All clients debugging. Not recommended.
```


Ù,,ØÿÙŠÙ,,Ø§Ù◆ Ø§Ù,,Ø§Ù,,ØªÙ,,Ø§Ø:

```
configure ap client-trace stop
configure ap client-trace clear
configure ap client-trace address clear
```

Ø§Ù,,ØªØÙ,,Ù, Ù...Ù† Ø§Ù,,ØØØ©

Ø§Ù,,ØªØÙ,,Ù, Ù...Ù† ØªØªØ·Ø¹ Ø§Ù,,Ø¹Ù...ÙŠÙ,,:

<#root>

AP70DB.98E1.3DEC#

show ap client-trace status

```
Client Trace Status          : Started
Client Trace ALL Clients     : disable
Client Trace Address         : a8:db:03:08:4c:4a
Remote/Dump Client Trace Address : a8:db:03:08:4c:4a

Client Trace Filter          : probe
Client Trace Filter          : auth
Client Trace Filter          : assoc
Client Trace Filter          : eap
Client Trace Filter          : dhcp
Client Trace Filter          : dhcpv6
Client Trace Filter          : icmp
Client Trace Filter          : icmpv6
Client Trace Filter          : ndp
Client Trace Filter          : arp

Client Trace Output          : eventbuf
Client Trace Output          : console-log
Client Trace Output          : dump
Client Trace Output          : remote

Remote trace IP              : 192.168.1.100
Remote trace dest port       : 5688
NOTE - Only VIP packets are seen on remote if VIP is enabled

Dump packet length          : 10
Client Trace Inline Monitor  : disable
Client Trace Inline Monitor pkt-attach : disable
```

Ù...Ø«Ø§Ù,, Ø¹Ù,,Ù%o Ø§ØªØØ§Ù,, Ø¹Ù...ÙŠÙ,, Ù†Ø§Ø-Ø:

<#root>

AP0CD0.F894.46E4#

show ap client-trace events mac a8:db:03:08:4c:4a

```

[*04/06/2020 10:11:54.287675] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v1> [U:W] DOT11_AUTHENTICATION
[*04/06/2020 10:11:54.288144] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] DOT11_AUTHENTICATION
[*04/06/2020 10:11:54.289870] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [U:W] DOT11_ASSOC_REQUEST
[*04/06/2020 10:11:54.317341] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] DOT11_ASSOC_RESPONSE
[*04/06/2020 10:11:54.341370] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] EAPOL_KEY.M1 : Descr
[*04/06/2020 10:11:54.374500] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [U:W] EAPOL_KEY.M2 : Descr
[*04/06/2020 10:11:54.377237] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] EAPOL_KEY.M3 : Descr
[*04/06/2020 10:11:54.390255] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [U:W] EAPOL_KEY.M4 : Descr
[*04/06/2020 10:11:54.396855] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [U:W] DOT11_ACTION : (.)
[*04/06/2020 10:11:54.416650] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] DOT11_ACTION : (.)
[*04/06/2020 10:11:54.469089] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [U:W] DOT11_ACTION : (.)
[*04/06/2020 10:11:54.469157] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] DOT11_ACTION : (.)
[*04/06/2020 10:11:57.921877] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [U:W] DOT11_ACTION : (.)
[*04/06/2020 10:11:57.921942] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] DOT11_ACTION : (.)
[*04/06/2020 10:15:36.123119] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] DOT11_DEAUTHENTICATI
[*04/06/2020 10:15:36.127731] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr1v0> [D:W] DOT11_DISASSOC : (.)
[*04/06/2020 10:17:24.128751] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [U:W] DOT11_AUTHENTICATION
[*04/06/2020 10:17:24.128870] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v1> [U:W] DOT11_AUTHENTICATION
[*04/06/2020 10:17:24.129303] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [D:W] DOT11_AUTHENTICATION
[*04/06/2020 10:17:24.133026] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [U:W] DOT11_ASSOC_REQUEST
[*04/06/2020 10:17:24.136095] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [D:W] DOT11_ASSOC_RESPONSE
[*04/06/2020 10:17:24.138732] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [D:W] EAPOL_KEY.M1 : Descr
[*04/06/2020 10:17:24.257295] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [U:W] EAPOL_KEY.M2 : Descr
[*04/06/2020 10:17:24.258105] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [D:W] EAPOL_KEY.M3 : Descr
[*04/06/2020 10:17:24.278937] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [U:W] EAPOL_KEY.M4 : Descr
[*04/06/2020 10:17:24.287459] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [U:W] DOT11_ACTION : (.)
[*04/06/2020 10:17:24.301344] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [D:W] DOT11_ACTION : (.)
[*04/06/2020 10:17:24.327482] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [U:W] DOT11_ACTION : (.)
[*04/06/2020 10:17:24.327517] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [D:W] DOT11_ACTION : (.)
[*04/06/2020 10:17:24.430136] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [U:W] DOT11_ACTION : (.)
[*04/06/2020 10:17:24.430202] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [D:W] DOT11_ACTION : (.)
[*04/06/2020 10:19:08.075326] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [U:W] DOT11_PROBE_REQUEST
[*04/06/2020 10:19:08.075392] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v0> [D:W] DOT11_PROBE_RESPONSE
[*04/06/2020 10:19:08.075437] [AP0CD0.F894.46E4] [a8:db:03:08:4c:4a] <apr0v1> [U:W] DOT11_PROBE_REQUEST

```

0^0 0±0š0° 0š0,,00²0... 0`0^0+0³0š0, hex

0š0...0f0†0f 0^0 0±0š0° 0š0,,00²0... 0`0^0+0³0š0, hex 0 0š CLI:

```

configure ap client-trace output dump address add xx:xx:xx:xx:xx:xx
configure ap client-trace output dump enable x -> Enter the packet dump length value

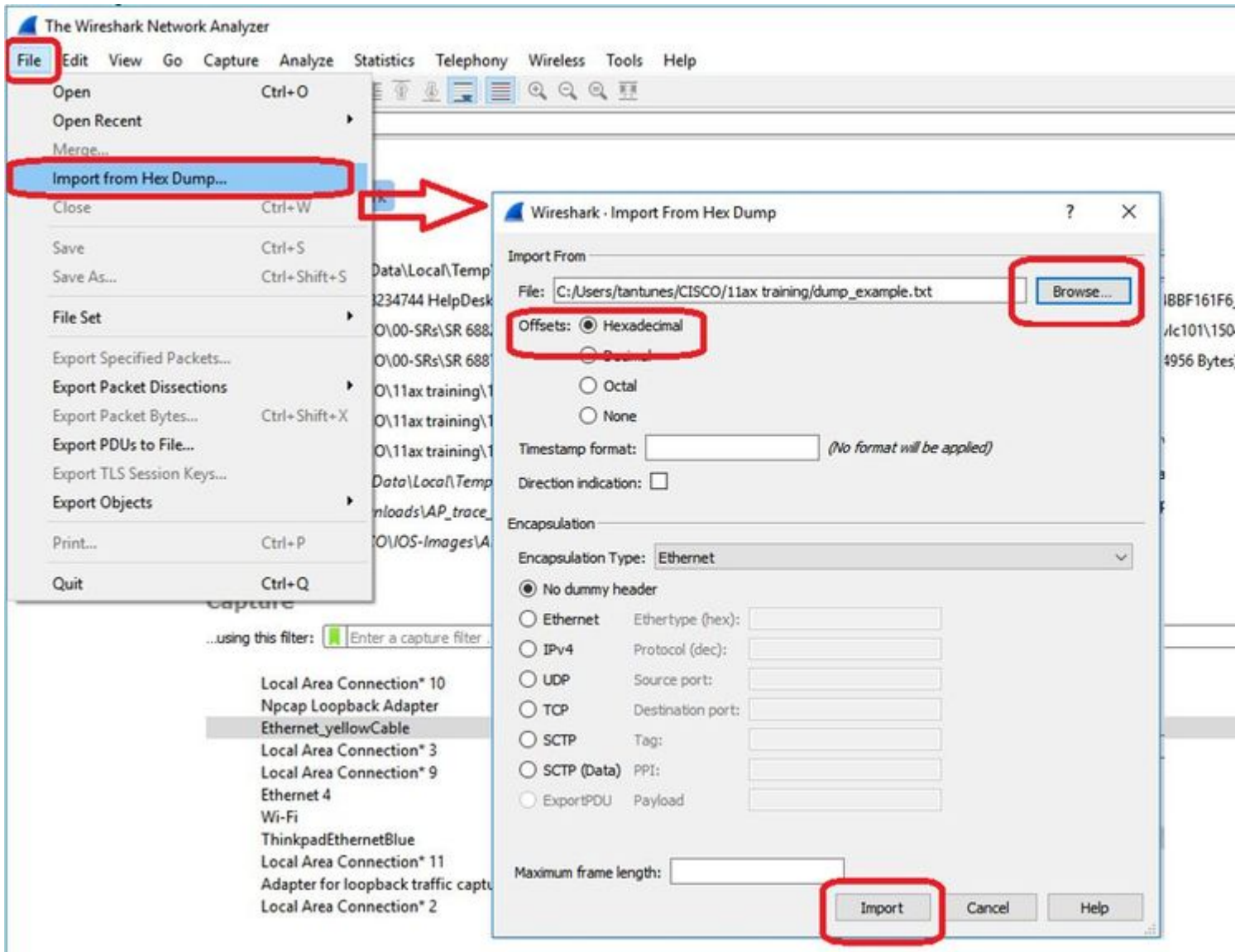
```


Time:20010us Dir:Rx Rate:1 Rssi:-37 Ch:1 Fc:b0 Dur:13a 00:27:e3:36:4d:a0 a8:db:03:08:4c:4a 00:27:e3:36:4d:a0 Seq:1(1) Info:DOT11_AU
0000 00 00 00 00 00 00 00 00 00 00 00 00 08 00 45 00
0010 00 00 00 00 00 00 00 11 00 00 00 00 00 00 00 00
0020 00 00 13 88 15 b3 ff ff 00 00 db c8 00 29 00 29
0030 00 00 5e 8b 2f 1f 00 00 57 36 02 01 13 00 b0 00
0040 3a 01 00 27 e3 36 4d a0 a8 db 03 08 4c 4a 00 27
0050 e3 36 4d a0 10 00 00 00 01 00 00 00 dd 09 00 10
0060 18 02 00 00 10 00 00 00 00 00 00 6b 6b 6b 6b 6b
0070 6b

Time:43054us Dir:Tx Rate:1 Rssi:-95 Ch:1 Fc:d0 Dur:13a a8:db:03:08:4c:4a 00:27:e3:36:4d:a0 00:27:e3:36:4d:a0 Seq:66c(1644) Info:DOT11
0000 00 00 00 00 00 00 00 00 00 00 00 00 08 00 45 00
0010 00 00 00 00 00 00 00 11 00 00 00 00 00 00 00 00
0020 00 00 13 88 15 b3 ff ff 00 00 a1 a1 00 1e 00 1e
0030 00 00 5e 8b 2f 1f 00 00 57 b2 02 01 00 00 d0 00
0040 3a 01 a8 db 03 08 4c 4a 00 27 e3 36 4d a0 00 27
0050 e3 36 4d a0 c0 66 03 02 00 08 01 00 00 00 00 00
0060 6b 6b 6b 6b 6b 6b 6b

Time:43155us Dir:Tx Rate:1 Rssi:-95 Ch:1 Fc:b0 Dur:13a a8:db:03:08:4c:4a 00:27:e3:36:4d:a0 00:27:e3:36:4d:a0 Seq:66d(1645) Info:DOT11
0000 00 00 00 00 00 00 00 00 00 00 00 00 08 00 45 00
0010 00 00 00 00 00 00 00 11 00 00 00 00 00 00 00 00
0020 00 00 13 88 15 b3 ff ff 00 00 a1 a1 00 29 00 29
0030 00 00 5e 8b 2f 1f 00 00 5d 06 02 01 00 00 b0 00
0040 3a 01 a8 db 03 08 4c 4a 00 27 e3 36 4d a0 00 27
0050 e3 36 4d a0 d0 66 00 00 02 00 00 00 dd 09 00 10
0060 18 02 00 00 10 00 00 00 00 00 00 6b 6b 6b 6b 6b
0070 6b

Time:43261us Dir:Rx Rate:1 Rssi:-34 Ch:1 Fc:800 Dur:13a 00:27:e3:36:4d:a0 a8:db:03:08:4c:4a 00:27:e3:36:4d:a0 Seq:2(2) Info:DOT11_AS
0000 00 00 00 00 00 00 00 00 00 00 00 00 08 00 45 00
0010 00 00 00 00 00 00 00 11 00 00 00 00 00 00 00 00
0020 00 00 13 88 15 b3 ff ff 00 00 de cc 00 c4 00 c4
0030 00 00 5e 8b 2f 1f 00 00 8a a1 02 01 12 00 00 08
0040 3a 01 00 27 e3 36 4d a0 a8 db 03 08 4c 4a 00 27
0050 e3 36 4d a0 20 00 31 15 0a 00 00 0c 74 65 73 74
0060 65 77 6c 63 77 6c 61 6e 01 08 82 84 8b 96 24 30
0070 48 6c 32 04 0c 12 18 60 21 02 05 13 24 02 01 0d
0080 30 14 01 00 00 0f ac 04 01 00 00 0f ac 04 01 00
0090 00 0f ac 04



Wireshark).

wireshark:

config ap client-trace output remote enable

192.168.68.68 Peekremote

CoS Client-trace 002U... U...0000-U,00 00U,,U^UŠ0

U...010±U 0³0µ0Š0 00U,,0E0@0·000; U...U† Cisco [CSCvm02613](#) 000@0±000- AP CoS Client-Trace 00U,,0·01UŠ0- U,,00 UŠ01U...U,,

U...010±U 0³0µ0Š0 00U,,0E0@0·000; U...U† Cisco [CSCvm00855](#) 000±U,00U... SEQ U,,0³0³0·01 00U,,01U...UŠU,, 0°UŠ0± U...0³U+000³U,00

00U,,0³0UfU... U 0Š 0³0³0·01 01U...UŠU,, U†U,0·00 00U,,U^0µU^U,, U...U† 01U+0µ0± 00U,,0³0UfU... U 0Š 00U,,0·0·Uf00 00U,,U...0U,,UŠ00 00U,,U,,000³U,,UfUŠ00 (WLC) 0·0±000² 9800

00U†0³ UŠ0³0³0·UŠ01 0·UfU,,0³ 010-00 APs 00U† UŠ0³U... U,,000³U,,UfUŠ 0²0·U^U† 0³0³0·01 U^0·0±0U‡ U...U† 00U,,

00U,,000·U^00 1. 0³UfU^UŠU† U...U,,U 0³010±UŠU 0³0³0·01 U†U,0·00 00U,,U^0µU^U,, 00U,,0°UŠ UŠ00-0- 00±Uf00 00U,,U...0±U^0± 00U,,0³UŠ 0³UŠ0³U... 00U,,0³U,000·U‡00

```
config term
  wireless profile ap trace
```

```
filter all no filter probe output console-log
```

00U,,000·U^00 2. U,U... 0·000000U 000 U...U,,U 0³010±UŠU 0³0³0·01 U†U,0·00 00U,,U^0µU^U,, 00U,,U%0 U...U,,U 0³010±UŠU 0±0·0· U†U,0·00 00U,,U^0µU^U,, 00U,,0°UŠ UŠ0³U... 000³0³0@0-00U...U‡ U...U† U,0·U,, U†U,000· 00U,,U^0µU^U,, 00U,,0³UŠ 0³0³0³U‡0-U 0U‡00.

```
ap profile < ap join profile name>
  trace
```

0³00Uf0- U...U† 0³0·0·UŠU, U...U,,U 0³010±UŠU 0±0·0· U†U,0·00 00U,,U^0µU^U,,

Ù±Ø°Ø§ Ø¹Ù,,Ù%ø Ø¹Ù,,Ø§Ù...Ø© Ù...Ù^Ù,Ø¹ ØªØ³ØªØ®Ø¯Ù...Ù±Ø§ Ù†Ù,Ø§Ø· Ø§Ù,,Ù^ØµÙ^Ù,,
Ø§Ù,,Ù±Ø¯Ù

Ø§Ù,,Ø®Ø·Ù^Ø© 4 Ø·Ø·Ø;Ø¥ÙŠÙ,Ø§Ù Ø§Ù,,Ù...Ø´Ø°Ù,,

ap trace client start ap

client all/

ap trace client stop ap

client all/

ap trace client start site

client all/

ap trace client stop site

client all/

Ø£Ù^Ø§Ù...Ø± Ø§Ù,,ØªØÙ,Ù, :

```
show wireless profile ap trace summary
show wireless profile ap trace detailed PROF_NAME detail
sh ap trace client summary
show ap trace unsupported-ap summary
```

APs Ù...Ø§Ø-Ø© ØÙØ§Ø²Ø© 91xx ÙØÙŠ Ø£Ø³Ù,,Ù^Ø" sniffer

Ø§Ù,,Ù...Ø§Ø-Ø© ØÙØ§Ø²Ø© Ø-Ø-ÙŠØ- 9115Ø£ 9117Ø£ 9120 Ù^ 9130 ÙŠØ³ØªØ·ÙŠØ¹
ÙfÙ†Øª Ø´ÙfÙ,,Øª ÙØÙŠ sniffer Ø£Ø³Ù,,Ù^Ø". ÙŠØ´Ø"Ù‡ Ù‡Ø°Ø§ Ø§Ù,,Ø¥Ø-Ø±Ø§Ø;
Ø·Ø±Ø² AP Ø§Ù,,Ø³Ø§Ø"Ù,Ø©.

Search Menu Items

- Dashboard
- Monitoring
- Configuration
- Administration
- Troubleshooting

Configuration > Wireless > Access Points

All Access Points

Number of AP(s): 4

AP Name	AP Model	Slots	Admin Status	IP Address
AP70D9.98E1.3DEC	AIR-AP3802I-I-K9	2		192.168.1.83
AP0C00.F894.46E4	C9117AXI-B	2		192.168.1.95
APb4de.318b.fee0	AIR-CAP3702I-I-K9	2		192.168.1.79
APC4F7.D54C.E77C	C9120AXI-B	2		192.168.1.82

- > 5 GHz Radios
- > 2.4 GHz Radios
- > Dual-Band Radios
- > Country
- > LSC Provision

Edit AP

General Interfaces High Availability Inventory

General

AP Name*

Location*

Base Radio MAC

Ethernet MAC

Admin Status

AP Mode

Operation Status

Fabric Status

LED State

LED Brightness Level

CleanAir [NSLKey](#)

Tags

Policy

Site

Search Menu Items

- Dashboard
- Monitoring
- Configuration
- Administration
- Troubleshooting

Configuration > Wireless > Access Points

All Access Points

Number of AP(s): 4

AP Name	AP Model	Slots	Admin Status	IP Address
AP70DB.98E1.3DEC	AIR-AP3802I-I-K9	2	✓	192.168.1.83
AP0CD0.F894.46E4	C9117AXI-B	2	✓	192.168.1.95
APb4de.318b.fee0	AIR-CAP3702I-I-K9	2	✓	192.168.1.79
APC4F7.D54C.E77C	C9120AXI-B	2	✓	192.168.1.82

5 GHz Radios

2.4 GHz Radios

Number of AP(s): 4

AP Name	Slot No	Base Radio MAC	Admin St
AP70DB.98E1.3DEC	0	0027.e336.4da0	✓
AP0CD0.F894.46E4	0	dcd0.f897.03e0	✓
APb4de.318b.fee0	0	b4de.31a4.e030	✓
APC4F7.D54C.E77C	0	c064.e422.1780	✓

Edit Radios 2.4 GHz Band

Configure Detail

Admin Status **ENABLED**

CleanAir Admin Status **ENABLED**

Antenna Parameters

Antenna Type Internal

Antenna A

Antenna B

Antenna C

Antenna D

Antenna Gain 10

Sniffer Channel Assignment

Enable Sniffing

Sniff Channel 6

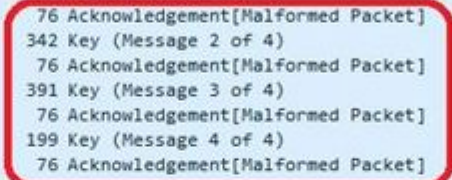
Sniffer IP* 192.168.1.100

Sniffer IP Status Valid

Download Core Dump to bootflash

Cancel

No.	Delta	Source	Destination	Length	Info
2..	0.032866	SamsungE_08:4c:4a	Cisco_97:03:ef	107	Authentication, SN=37, FN=0, Flags=.....C
2..	0.000001	192.168.1.15	192.168.1.100	76	Acknowledgement[Malformed Packet]
2..	0.001720	Cisco_97:03:ef	SamsungE_08:4c:4a	107	Authentication, SN=0, FN=0, Flags=.....C
2..	0.000301	192.168.1.15	192.168.1.100	76	Acknowledgement[Malformed Packet]
2..	0.000791	SamsungE_08:4c:4a	Cisco_97:03:ef	360	Association Request, SN=38, FN=0, Flags=.....C, SSI
2..	0.000230	192.168.1.15	192.168.1.100	76	Acknowledgement[Malformed Packet]
2..	0.004269	Cisco_97:03:ef	SamsungE_08:4c:4a	398	Association Response, SN=1, FN=0, Flags=.....C
2..	0.000750	192.168.1.15	192.168.1.100	76	Acknowledgement[Malformed Packet]
2..	0.010966	Cisco_97:03:ef	SamsungE_08:4c:4a	221	Key (Message 1 of 4)
2..	0.000001	192.168.1.15	192.168.1.100	76	Acknowledgement[Malformed Packet]
2..	0.021911	SamsungE_08:4c:4a	Cisco_97:03:ef	342	Key (Message 2 of 4)
2..	0.000002	192.168.1.15	192.168.1.100	76	Acknowledgement[Malformed Packet]
2..	0.002186	Cisco_97:03:ef	SamsungE_08:4c:4a	391	Key (Message 3 of 4)
2..	0.000935	192.168.1.15	192.168.1.100	76	Acknowledgement[Malformed Packet]
2..	0.013829	SamsungE_08:4c:4a	Cisco_97:03:ef	199	Key (Message 4 of 4)
2..	0.000174	192.168.1.15	192.168.1.100	76	Acknowledgement[Malformed Packet]



```

> Tag: Supported Rates 6(8), 9, 12(8), 18, 24(8), 36, 48, 54, [Mbit/sec]
> Tag: Vendor Specific: Microsoft Corp.: WMM/WME: Parameter Element
> Tag: Vendor Specific: Cisco Systems, Inc.: Aironet Unknown (44)
> Tag: HT Capabilities (802.11n D1.10)
> Tag: HT Information (802.11n D1.10)
> Tag: Extended Capabilities (8 octets)
> Tag: VHT Capabilities
> Tag: VHT Operation
> Tag: Mobility Domain
> Tag: Fast BSS Transition
> Tag: RM Enabled Capabilities (5 octets)
> Tag: BSS Max Idle Period
v Ext Tag: HE Capabilities (IEEE Std 802.11ax/D3.0)
  Tag Number: Element ID Extension (255)
  Ext Tag length: 46
  Ext Tag Number: HE Capabilities (IEEE Std 802.11ax/D3.0) (35)
  > HE MAC Capabilities Information: 0x800002100009
  > HE Phy Capabilities Information
  v Supported HE-MCS and NSS Set
    v Rx and Tx MCS Maps <= 80 MHz
      v Rx HEX-MCS Map <= 80 MHz: 0xaaaa
        .... ..10 = Max HE-MCS for 1 SS: Support for HE-MCS 0-11 (0x2)
        .... ..10.. = Max HE-MCS for 2 SS: Support for HE-MCS 0-11 (0x2)
        .... ..10 .... = Max HE-MCS for 3 SS: Support for HE-MCS 0-11 (0x2)
        .... ..10.. .... = Max HE-MCS for 4 SS: Support for HE-MCS 0-11 (0x2)
        .... ..10 .... = Max HE-MCS for 5 SS: Support for HE-MCS 0-11 (0x2)
        .... ..10.. .... = Max HE-MCS for 6 SS: Support for HE-MCS 0-11 (0x2)
        ..10 .... .... = Max HE-MCS for 7 SS: Support for HE-MCS 0-11 (0x2)
        10.. .... .... = Max HE-MCS for 8 SS: Support for HE-MCS 0-11 (0x2)
      > Tx HEX-MCS Map <= 80 MHz: 0xaaaa
    > PPE Thresholds
  v Ext Tag: HE Operation (IEEE Std 802.11ax/D3.0)
    Tag Number: Element ID Extension (255)
    Ext Tag length: 9
    Ext Tag Number: HE Operation (IEEE Std 802.11ax/D3.0) (36)
    > HE Operation Parameters: 0x003ff4
    > BSS Color Information: 0x01
    > Basic HE-MCS and NSS Set: 0xffff
  
```

Ù...Ù,,0\$00,00: Ùš0^Ù... 0\$Ù,,0^Ù,0\$0· 0¥0·0\$0±0\$0^ 0\$Ù,,0`Ùš0\$Ù†0\$0^ 0\$Ù,,Ù...0±0³Ù,,00 0`Ù...0¹0-Ù,,0\$0^ 0`Ùš0\$Ù†0\$0^ WiFi 60œ Ù`Ù,,ÙfÙ† Ù†0,0±0\$ Ù,,0£Ù† Peekremote 0°Ùš0± Ù...00-0<00 0¹Ù,,Ù%o Wireshark0œ Ù0¥Ù†Ù±0\$ 0^0,Ù±0± ÙfÙ†Ù^0¹ 802.11AX PHY 00^Ù%o 0\$Ù,,0çÙ†. ÙšÙ-0-0- 0\$Ù,,0¥0μÙ,,0\$0 Ù0Ùš Wireshark 3.2.4 0Ùš0« Ùš0¹0±0¶ Wireshark Ù...0¹0-Ù,, WiFi6 PHY 0\$Ù,,Ù...Ù†0\$0³0`.

Ù...Ù,,0\$00,00: Ù,,0\$ ÙšÙ...ÙfÙ† Ù,,Ù†Ù,0\$0· 0\$Ù,,Ù0µ^Ù,, Ù...Ù† Cisco

Ø§Ù,,ØªÙ,,Ø§Ø· Ø¥Ø·Ø§Ø±Ø§Øª MU-OFDMA Ù❖ÙŠ Ù±Ø°Ø§ Ø§Ù,,Ù^Ù,,Øª Ù^Ù,,ÙfÙ† ÙŠÙ...ÙfÙ†Ù±Ø§ Ø§Ù,,ØªÙ,,Ø§Ø· Ø¥Ø·Ø§Ø±Ø§Øª Ø§Ù,,Ù...Ø´Ø°Ù,, (Ø§Ù,,Ù...Ø±Ø³Ù,,Ø© Ø´Ù...Ø¹Ø´Ù,, Ø´ÙŠØ§Ù†Ø§Øª Ø§Ù,,Ø¥Ø´Ø§Ø±Ø©) Ø§Ù,,ØªÙŠ ØªØ¹Ù,,Ù† Ø¹Ù† Ù†Ø§Ù❖Ø°Ø© MU-OFDMA. ÙŠÙ...ÙfÙ†Ùf Ø´Ø§Ù,,Ù❖Ø¹Ù,, Ø¥Ø³ØªÙ†ØªØ§Ø¬- Ø£Ù† MU-OFDMA ÙŠØØ´« (Ø£Ù^ Ù,,Ø§ ÙŠØØ´«) Ù^Ù...Ø¹ Ø£ÙŠ Ø¹Ù...ÙŠÙ,,.

ØªÙ,,Ù...ÙŠØØ§Øª Ø§Ø³ØªÙfØ´Ø§Ù❖ Ø§Ù,,Ù...Ø´ÙfÙ,,Ø§Øª Ù^Ø¥ØµÙ,,Ø§ØÙ±Ø§

Ù...Ø³Ø§Ø± MTU

Ø¹Ù,,Ù% Ø§Ù,,Ø±Ø°Ù... Ù...Ù† Ø£Ù† Ø§ÙfØªØ´Ø§Ù❖ Ù^ØØ´Ø© Ø§Ù,,ØØ´ Ø§Ù,,Ø£Ù,ØµÙ% Ù,,Ù,,Ù†Ù,Ù,, (MTU) Ù,,Ù,,Ù...Ø³Ø§Ø± ÙŠØ¬Ø´ Ø£Ù❖Ø¶Ù,, Ù^ØØ´Ø© Ø§Ù,,ØØ´ Ø§Ù,,Ø£Ù,ØµÙ% Ù,,Ù,,Ù†Ù,Ù,, (MTU) Ù,,Ù†Ù,Ø·Ø© Ø§Ù,,Ù^ØµÙ^Ù,,Ø£ Ø¥Ù,,Ø§ Ø£Ù†Ù± Ù...Ù† Ø§Ù,,Ù...Ù...ÙfÙ† ØªØ¬Ø§Ù^Ø² Ù±Ø°Ù± Ø§Ù,,Ø¥Ø¹Ø´Ø§Ø¬Ø§Øª ÙŠØ´Ù^ÙŠØ§.

Ù❖ÙŠ AireOS 8.10.130 WLCØ£ ÙŠÙ,Ù^Ù... Ø§Ù,,Ø£Ù...Ø± **config ap pmtu disable** <ap/all>ØªØ¹ÙŠÙŠÙ† MTU Ø³Ø§ÙfÙ† Ø¥Ø³ØªØ§ØªÙŠÙfÙŠ Ù,,Ù^Ø§ØØ´Ø© Ø£Ù^ ÙfÙ,, APs Ø´Ø´Ù,,Ø§ Ù...Ù† Ø§Ù,,Ø§Ø¹ØªÙ...Ø§Ø´ Ø¹Ù,,Ù% Ø£Ù,,ÙŠØ© Ø§Ù,,Ø§ÙfØªØ´Ø§Ù❖ Ø§Ù,,Ø´ÙŠÙ†Ø§Ù...ÙŠÙfÙŠ.

Ù,,ØªÙ...ÙfÙŠÙ† ØªØØÙŠØ Ø§Ù,,Ø£Ø®Ø·Ø§Ø; Ù❖ÙŠ Ù^Ù,,Øª Ø§Ù,,ØªÙ...Ù±ÙŠØ´

ÙŠÙ...ÙfÙ†Ùf ØªØ´ØªÙŠÙ,, Ù...ÙŠØ²Ø© ØªØØÙŠØ Ø£Ø®Ø·Ø§Ø; Ø§Ù,,ØªÙ...Ù±ÙŠØ´ Ù,, config boot capwap Ù,,ØªÙ...ÙfÙŠÙ† Ø¹Ù...Ù,,ÙŠØ§Øª ØªØØÙŠØ Ø£Ø®Ø·Ø§Ø; CAPWAP Ù^ DTLS Ù^ DHCP Ù❖ÙŠ Ù^Ù,,Øª Ø§Ù,,ØªÙ...Ù±ÙŠØ´ Ø§Ù,,ØªØ§Ù,,ÙŠØ£ ØØªÙ% Ù,Ø´ Ù,, ØªÙ...Ù±ÙŠØ´ Ù†Ø,Ø§Ù... Ø§Ù,,ØªØ´ØªÙŠÙ,, Ù^Ø¥Ø,Ù±Ø§Ø± Ù...Ù^Ø¬Ù± Ø§Ù,,Ø£Ù...Ø±.

Ù,,Ø´ÙŠÙf Ø£ÙŠØ¶Ø§ "config boot debug memory xxxx" Ù,,Ù,,Ø¹Ø´ÙŠØ´ Ù...Ù† ØªØØÙŠØ Ø£Ø®Ø·Ø§Ø; Ø§Ù,,Ø°Ø§ÙfØ±Ø©.

ÙŠÙ...ÙfÙ†Ùf Ø£Ù† ØªØ±Ù% Ù...Ø§ Ø¥Ø°Ø§ ØªÙ... ØªÙ...ÙfÙŠÙ† ØªØØÙŠØ Ø£Ø®Ø·Ø§Ø; Ø§Ù,,ØªÙ...Ù±ÙŠØ´ Ø£Ù... Ù,,Ø§ Ù❖ÙŠ Ø¥Ø¹Ø§Ø¬Ø© Ø§Ù,,ØªÙ...Ù±ÙŠØ´ Ø§Ù,,ØªØ§Ù,,ÙŠØ© Ù...Ø¹ "show boot".

Ù±Ù... ÙŠØ³ØªØ·ÙŠØ¹ ÙfÙ†Øª Ø£Ø¹Ø¬Ø²Øª Ù...Ø¹ Ø§Ù,,Ø¥Ø¶Ø§Ù❖Ø© Ù...Ù† Ø§Ù,, disable Ø§Ù,,ÙfÙ,,Ù...Ø© Ø§Ù,,Ù...Ù❖ØªØ§Ø Ù❖ÙŠ Ø§Ù,,Ù†Ù±Ø§ÙŠØ© Ù...Ø«Ù,, "config boot debug capwap disable".

Ø£Ù,,ÙŠØ© ØªÙ^Ù❖ÙŠØ± Ø§Ù,,Ø·Ø§Ù,Ø©

Ù,Ø´ ÙŠØ³ØªØ´Ø´ ØªÙ^Ù❖ÙŠØ± Ø§Ù,,Ø·Ø§Ù,Ø© Ù,,Ø¹Ù...ÙŠÙ,, Ù...Ø¹ÙŠÙ† Ù❖ÙŠ ØØ´Ù^Ø« Ù...Ø´ÙfÙ,,Ø§Øª Ø£Ø«Ù†Ø§Ø; Ø§Ù,,ØªØ´ØªÙŠÙ,,

debug client trace <mac address>

Ø-Ù^Ø-Ø© Ø®Ø-Ù...Ø© Ø§Ù,,Ø¹Ù...Ù,,Ø§Ø;

Ù,,Ù,,ØªØÙ,Ù, Ù...Ù† ØªØ·ÙŠÙ, Ø¹Ù,,Ø§Ù...Ø§Øª Ø-Ù^Ø-Ø© Ø§Ù,,Ø®Ø-Ù...Ø©ØÆ
ÙŠÙ...Ù†Ù†Ù† ØªØ·ÙŠÙ,, Ø-Ù^Ø-Ø© Ø®Ø-Ù...Ø© *Debug capwap client*".

ÙŠØ¹Ø±Ø¶ Ø§Ù,,Ù,ÙŠÙ...Ø© Ø§Ù,,Ø£Ø¹Ù,,Ù% Ù,,Ù,,Ø²Ù... Ù,,Ù,,Ø¹Ù...Ù,,Ø§Ø;
Ø§Ù,,Ù,,Ø§Ø³Ù,,Ù†ÙŠÙŠÙ†.

Ù...Ù^ Ù...Ù...Ù†Ù† ØªØ¶ ØÙŠØªÙ±Ø§ Ù...Ù† 8. 8 (Ø·Ù,,Ø· Ø§Ù,,ØªØ³ÙŠÙ† Cisco
IDCSCvm08899).

labAP#debug capwap client qos

```
[*08/20/2018 09:43:36.3171] chatter: set_qos_up :: SetQosPriority: bridged packet dst: 00:AE:FA:78:36:89
[*08/20/2018 09:43:45.0051] chatter: set_qos_up :: SetQosPriority: bridged packet dst: 00:AE:FA:78:36:89
[*08/20/2018 09:43:45.5463] chatter: set_qos_up :: SetQosPriority: bridged packet dst: 00:AE:FA:78:36:89
[*08/20/2018 09:43:46.5687] chatter: set_qos_up :: SetQosPriority: bridged packet dst: AC:81:12:C7:CD:35
[*08/20/2018 09:43:47.0982] chatter: set_qos_up :: SetQosPriority: bridged packet dst: AC:81:12:C7:CD:35
```

Ù†Ù...Ø§ ÙŠÙ...Ù†Ù†Ù† Ø§Ù,,ØªØÙ,Ù, Ù...Ù† Ø-Ø-Ù^Ù,, Ø-Ù^Ø-Ø© Ø§Ù,,Ø®Ø-Ù...Ø© ØªÙ%
DSCP Ø¹Ù,,Ù% Ù†Ù,Ø·Ø© Ø§Ù,,Ù^Ø¶Ù,, Ø·Ø§Ù,,Ø¶Ø¶Ø§Ù Ø© Ø¶Ù,,Ù% Ø§Ù,,Ù...Ù,Ø-Ø§Ø±
Ø§Ù,,Ø¶Ø-Ù...Ø§Ù,,ÙŠ Ù,,Ù,,Ø²Ù... Ø§Ù,,ØªÙŠ ØªÙ... Ù^Ø¶Ø¹ Ø¹Ù,,Ø§Ù...Ø© Ø¹Ù,,ÙŠÙ±Ø§
Ù^ØªÙ±ÙŠÙ, ØªÙ±Ø§ Ù^Ø¶Ø³Ù,Ø§Ø·Ù±Ø§ Ø·Ù^Ø§Ø³Ø·Ø© Ø-Ù^Ø-Ø© Ø§Ù,,Ø®Ø-Ù...Ø©:

LabAP#show dot11 qos
Qos Policy Maps (UPSTREAM)

no policymap
Qos Stats (UPSTREAM)

total packets: 0
dropped packets: 0
marked packets: 0
shaped packets: 0
policed packets: 0
copied packets: 0

DSCP TO DOT1P (UPSTREAM)

Default dscp2dot1p Table Value:
[0]->0 [1]->2 [2]->10 [3]->18 [4]->26 [5]->34 [6]->46 [7]->48
Active dscp2dot1p Table Value:
[0]->0 [1]->2 [2]->10 [3]->18 [4]->26 [5]->34 [6]->46 [7]->48

Qos Policy Maps (DOWNSTREAM)

no policymap
Qos Stats (DOWNSTREAM)

total packets: 0
dropped packets: 0
marked packets: 0
shaped packets: 0

policed packets: 0
copied packets: 0

DSCP TO DOT1P (DOWNSTREAM)

Default dscp2dot1p Table Value:

[0]->0 [1]->-1 [2]->1 [3]->-1 [4]->1 [5]->-1 [6]->1 [7]->-1
[8]->-1 [9]->-1 [10]->2 [11]->-1 [12]->2 [13]->-1 [14]->2 [15]->-1
[16]->-1 [17]->-1 [18]->3 [19]->-1 [20]->3 [21]->-1 [22]->3 [23]->-1
[24]->-1 [25]->-1 [26]->4 [27]->-1 [28]->-1 [29]->-1 [30]->-1 [31]->-1
[32]->-1 [33]->-1 [34]->5 [35]->-1 [36]->-1 [37]->-1 [38]->-1 [39]->-1
[40]->-1 [41]->-1 [42]->-1 [43]->-1 [44]->-1 [45]->-1 [46]->6 [47]->-1
[48]->7 [49]->-1 [50]->-1 [51]->-1 [52]->-1 [53]->-1 [54]->-1 [55]->-1
[56]->7 [57]->-1 [58]->-1 [59]->-1 [60]->-1 [61]->-1 [62]->-1 [63]->-1

Active dscp2dot1p Table Value:

[0]->0 [1]->-1 [2]->1 [3]->-1 [4]->1 [5]->-1 [6]->1 [7]->-1
[8]->-1 [9]->-1 [10]->2 [11]->-1 [12]->2 [13]->-1 [14]->2 [15]->-1
[16]->-1 [17]->-1 [18]->3 [19]->-1 [20]->3 [21]->-1 [22]->3 [23]->-1
[24]->-1 [25]->-1 [26]->4 [27]->-1 [28]->-1 [29]->-1 [30]->-1 [31]->-1
[32]->-1 [33]->-1 [34]->5 [35]->-1 [36]->-1 [37]->-1 [38]->-1 [39]->-1
[40]->-1 [41]->-1 [42]->-1 [43]->-1 [44]->-1 [45]->-1 [46]->6 [47]->-1
[48]->7 [49]->-1 [50]->-1 [51]->-1 [52]->-1 [53]->-1 [54]->-1 [55]->-1
[56]->7 [57]->-1 [58]->-1 [59]->-1 [60]->-1 [61]->-1 [62]->-1 [63]->-1

LabAP#

01U+0 0a00-UŠ0 03UŠ0š030š0a 0-U^0-00 0šU,,0@0-U...00 01U,,U%0 01U+00± 0šU,,0a0-
UfU... U0UŠ 0šU,,0'0`Uf00 0šU,,U...0U,,Uš00 0šU,,U,,0š03U,,UfUš00 (WLC)
U^0aU+02UŠU,,U±0š 01U,,U%0 U+U,,0-00 0šU,,U^0μU^U,, (AP) 0`0aU,,U+Uš00
FlexConnect0E UŠU...UfU+Uf 0šU,,0a0U,,U, U...U+U±0š 0`0š030a0@0-0šU... :

AP780C-F085-49E6#show policy-map

2 policymaps

Policy Map BWLimitAAAClients type:qos client:default

Class BWLimitAAAClients_AVC_UI_CLASS

drop

Class BWLimitAAAClients_ADV_UI_CLASS

set dscp af41 (34)

Class class-default

police rate 5000000 bps (625000Bytes/s)

conform-action

exceed-action

Policy Map platinum-up type:qos client:default

Class cm-dscp-set1-for-up-4

set dscp af41 (34)

Class cm-dscp-set2-for-up-4

set dscp af41 (34)

Class cm-dscp-for-up-5

set dscp af41 (34)

```
Class cm-dscp-for-up-6
  set dscp ef (46)
```

```
Class cm-dscp-for-up-7
  set dscp ef (46)
```

```
Class class-default
  no actions
```

Ù❖ÙŠ ØØSÙ,, ØªØØ-ÙŠØ- Ù...Ø¹Ø-Ù,, Ø-Ù^Ø-Ø© ØSÙ,,Ø®Ø-Ù...Ø© :

```
AP780C-F085-49E6#show rate-limit client
```

```
Config:
```

```
          mac vap rt_rate_out rt_rate_in rt_burst_out rt_burst_in nrt_rate_out nrt_rate_in nrt_burst
A8:DB:03:6F:7A:46 2          0          0          0          0          0          0          0
```

```
Statistics:
```

name	up	down
Unshaped	0	0
Client RT pass	0	0
Client NRT pass	0	0
Client RT drops	0	0
Client NRT drops	0	38621
	9 54922	0

Ù❖ØØµ Ø®ØSØ±Ø- ØSÙ,,Ù,Ù†ØSØ©

ÙŠÙ...ÙfÙ† Ø£Ù† ÙŠÙfÙ^Ù† ØªØØÙŠØ Ø£Ø®Ø·Ø§Ø; Ø§Ù,,Ù...Ø³Ø Ø§Ù,,Ø¶Ù^Ø!ÙŠ Ø®Ø§Ø±Ø- Ø§Ù,,Ù,Ù†Ø§Ø© Ù,,Ù†Ù,Ø·Ø© Ø§Ù,,Ù^Ø¶^Ù,, Ù...Ù❖ÙŠØ-ØS Ø¹Ù†Ø- Ø£Ø³ØªÙfØ'ØSÙ❖ ØSÙ,,Ø£Ø®Ø·ØSØ; Ù^Ø¥ØµÙ,,ØSØÙ±ØS (Ù,,Ù,,ØªØÙ,Ù, Ù...Ù† ØµØØ© Ù...ØS Ø¥Ø°ØS ÙfØSÙ†Øª Ù†Ù,Ø·Ø© ØSÙ,,Ù^ØµÙ^Ù,, ØªÙ†ØªÙ,,Ù,, Ø¥Ù,,Ù% Ù,Ù†ØSØ© Ù...Ø¹ÙŠÙ†Ø© Ù,,Ø¥Ø-Ø±ØSØ; ØSÙ,,Ù...Ø³Ø ØSÙ,,Ø¶Ù^Ø!ÙŠ Ù^Ø¹Ù†Ø-Ù...ØS ÙŠØªÙ... Ø°Ù,,ÙfØ£ Ù^Ù,,ÙfÙ† ÙŠÙ...ÙfÙ† Ø£Ù† ÙŠÙfÙ^Ù† Ù...Ù❖ÙŠØ-ØS Ø£ÙŠØ¶ØS Ù❖ÙŠ Ø£Ø³ØªÙfØ'ØSÙ❖ Ø£Ø®Ø·ØSØ; ØSÙ,,Ù❖ÙŠØ-ÙŠÙ^ Ù^Ø¥ØµÙ,,ØSØÙ±ØS ØÙŠØ« ÙŠØµÙ,, Ø-Ù❖Ù, ØSÙ,,Ù^Ù,Øª ØSÙ,,Ù❖Ø¹Ù,,ÙŠ ØSÙ,,ØØ³ØSØ³ Ø¹Ù,,Ù% Ù...Ù,ØSØ·Ø¹ØSØª Ù...Ø³ØªÙ...Ø±Ø© Ø¥Ø°ØS Ù,,Ù... ÙŠØªÙ... Ø¥Ø³ØªØ®Ø-ØSÙ... Ù...ÙŠØ²Ø© "Ø¥ÙŠÙ,ØSÙ❖ ØªØ'Ø°ÙŠÙ,, Ø£Ø-ØSØ© Ø¥Ù,,Ø°ØSØ; ØSÙ,,Ù...Ø³Ø ØSÙ,,Ø¶Ù^Ø!ÙŠ Ù,,Ù,,Ù,Ù†ØSØ©".

```
debug rrm off-channel defer
debug rrm off-chanel dbg (starting 17.8.1)
debug rrm off-channel schedule
debug rrm off-channel voice (starting 17.8.1)
debug rrm schedule (starting 17.8.1, debug NDP packet tx)
show trace dot_11 channel enable
```

[*06/11/2020 09:45:38.9530] wcp/rrm_userspace_0/rrm_schedule :: RRMSchedule process_int_duration_timer_1

[*06/11/2020 09:45:39.0550] noise measurement channel 5 noise 89
[*06/11/2020 09:45:43.5490] wcp/rrm_userspace_1/rrm_schedule :: RRMSchedule process_int_duration_timer_1
[*06/11/2020 09:45:43.6570] noise measurement channel 140 noise 97

Ø§ØªØ§ØÙ,, Ø§Ù,,Ø¹Ù...ÙŠÙ,,

Ù...Ù† Ø§Ù,,Ù...Ù...ÙfÙ† Ø³Ø±Ø- Ø§Ù,,Ø¹Ù...Ù,,Ø§Ø; Ø§Ù,,Ø°ÙŠÙ† Ø¹Ù... Ø¥Ù,,Ø°Ø§Ø; Ø§Ù,,Ø¹Ù†Ù... Ø·Ù^Ø§Ø³Ø·Ø© Ù†Ù,Ø·Ø© Ø§Ù,,Ù^Øµ^Ù,, Ø·Ø§Ø³ØªØ®Ø-Ø§Ù... Ø§Ù,,Ø·Ø§Ø·Ø¹ Ø§Ù,,Ø²Ù...Ù†ÙŠ Ù,,Ù,,Ø£ØØ-Ø§Ø« Ø§Ù,,Ø£Ø®ÙŠØ±Ø©:

```
LabAP#show dot11 clients deauth
      timestamp          mac vap reason_code
Mon Aug 20 09:50:59 2018 AC:BC:32:A4:2C:D3 9 4
Mon Aug 20 09:52:14 2018 00:AE:FA:78:36:89 9 4
Mon Aug 20 10:31:54 2018 00:AE:FA:78:36:89 9 4
```

Ù◆ÙŠ Ø§Ù,,Ø¥Ø®Ø±Ø§Ø¬ Ø§Ù,,Ø³Ø§Ø·Ù,Ø© ÙŠÙfÙ^Ù† Ø±Ù...Ø² Ø§Ù,,Ø³Ø·Ø· Ù†Ù^ Ø±Ù...Ø² Ø³Ø·Ø· Ø¥Ù,,Ø°Ø§Ø; Ø§Ù,,Ù...ØµØ§Ø¬Ù,Ø© ÙfÙ...Ø§ Ù†Ù^ Ù...Ù◆ØµÙ,, Ù◆ÙŠ Ù†Ø°Ø§ Ø§Ù,,Ø§Ø±ØªØ· Ø§Ø· :

<https://community.cisco.com/443/t5/wireless-mobility-knowledge-base/802-11-association-status-802-11-deauth-reason-codes/ta-p/3148055>

ÙŠÙ^ÙŠØ± Ø§Ù,, VAP Ø¥Ù,,Ù% Ø§Ù,,Ù...Ø¹Ø±Ù◆ Ù...Ù† Ø§Ù,, WLAN Ø-Ø§Ø®Ù,, Ø§Ù,, ap (Ø£ÙŠ Ù...Ø®ØªÙ,,Ù◆ Ù...Ù† Ø§Ù,, WLAN id Ø¹Ù,,Ù% Ø§Ù,, WLC !!!).

ÙŠÙ...ÙfÙ†Ùf Ø±Ø·Ø·Ù†Ø§ Ø·Ù...Ø®Ø±Ø-Ø§Øª Ø£Ø®Ø±Ù% Ù...Ù◆ØµÙ,,Ø© Ù◆ÙŠÙ...Ø§ Ø·Ø¹Ø¬ Ù^Ø§Ù,,ØªÙŠ Øª°ÙfØ± Ø¬Ø§Ø!Ù...Ø§ Ù†Ù,Ø·Ø© Ø§Ù,,Ù^ØµÙ^Ù,, Ø§Ù,,Ø®Ø§ØµØ© Ø·Ø§Ù,,Ø¹Ù...Ù,,Ø§Ø; Ø§Ù,,Ù...ØªØµÙ,,ÙŠÙ†.

Ø£Ù†Øª ÙŠØ³ØªØ·ÙŠØ¹ Ø±Ø£ÙŠØª Ø§Ù,,Ù,Ø§Ø;Ù...Ø© Ù...ÙŠÙ,,Ø§Ù† Ø¥Ù,,Ù% Ø-Ø§Ù†Ø· Ù...Ù† Ù...Ø¹Ø±Ù◆Ø§Øª VAP Ù...Ø¹ Ø¹Ø±Ø¶Ø-Ù†Ø§Ø² Øª°ÙfÙ... dot11radio 0/1 wlan".

Ø¹Ù†Ø-Ù...Ø§ ÙŠÙ,Ù,, Ø§Ù,,Ø¹Ù...Ù,,Ø§Ø; Ù...Ø±ØªØ·Ø·ÙŠÙ†Ø© ÙŠÙ...ÙfÙ†Ùf Ø§Ù,,ØØµ^Ù,, Ø¹Ù,,Ù% ØªÙ◆Ø§ØµÙŠÙ,, ØÙ^Ù,, Ø¥ØªØµØ§Ù,,Ù†Ù... Ø·:

```
LabAP#show dot11 clients
Total dot11 clients: 1
      Client MAC Slot ID WLAN ID AID WLAN Name RSSI Maxrate WGB
00:AE:FA:78:36:89      1      10      1      TestSSID -25 MCS82SS No
```

ÙŠÙ...ÙfÙ† Ø§Ù,,ØØµ^Ù,, Ø¹Ù,,Ù% Ù...Ø²ÙŠØ- Ù...Ù† Ø§Ù,,ØªÙ◆Ø§ØµÙŠÙ,, ØÙ^Ù,, Ø¥Ø¬Ø®Ø§Ù,, Ø§Ù,,Ø¹Ù...ÙŠÙ,, Ù...Ø¹:

LabAP#show client summ

Radio Driver client Summary:

=====

wifi0

[*08/20/2018 11:54:59.5340]
[*08/20/2018 11:54:59.5340] Total STA List Count 0
[*08/20/2018 11:54:59.5340] | NO| MAC|STATE|
[*08/20/2018 11:54:59.5340] -----

wifi1

[*08/20/2018 11:54:59.5357]
[*08/20/2018 11:54:59.5357] Total STA List Count 1
[*08/20/2018 11:54:59.5357] | NO| MAC|STATE|
[*08/20/2018 11:54:59.5357] -----
[*08/20/2018 11:54:59.5357] | 1| 0:ffffffae:fffffffa:78:36:ffffff89| 8|

Radio Driver Client AID List:

=====

wifi0

[*08/20/2018 11:54:59.5415]
[*08/20/2018 11:54:59.5415] Total STA-ID List Count 0
[*08/20/2018 11:54:59.5415] | NO| MAC|STA-ID|
[*08/20/2018 11:54:59.5415] -----

wifi1

[*08/20/2018 11:54:59.5431]
[*08/20/2018 11:54:59.5431] Total STA-ID List Count 1
[*08/20/2018 11:54:59.5431] | NO| MAC|STA-ID|
[*08/20/2018 11:54:59.5432] -----
[*08/20/2018 11:54:59.5432] | 1| 0:ffffffae:fffffffa:78:36:ffffff89| 6|

WCP client Summary:

=====

mac radio vap aid state encr Maxrate is_wgb_wired wgb_mac_addr
00:AE:FA:78:36:89 1 9 1 FWD AES_CCM128 MCS82SS false 00:00:00:00:00:00

NSS client Summary:

=====

Current Count: 3

Table with columns: MAC, OPAQUE, PRI, POL, VLAN, BR, TN, QCF, BSS, RADID, MYMAC. Rows show MAC addresses F8:0B:CB:E4:7F:41, F8:0B:CB:E4:7F:40, and 00:AE:FA:78:36:89 with their respective values.

Datapath IPv4 client Summary:

=====

id vap port node tunnel mac seen_ip hashed_ip sniff_ac
00:AE:FA:78:36:89 9 apr1v9 192.0.2.13 - 00:AE:FA:78:36:89 192.168.68.209 10.228.153.45 5.990000

Datapath IPv6 client Summary:

=====

client mac seen_ip6 age scope port
1 00:AE:FA:78:36:89 fe80::2ae:faff:fe78:3689 61 link-local apr1v9

Wired client Summary:

=====

mac port state local_client detect_ago associated_ago tx_pkts tx_bytes rx_pkts rx_bytes

ÛŠÛ...ÛšÛ†ÛšÛ Û±Û¶Û Û,Û·Û¹ ÛšÛ³ÛµÛšÛ,, Û¹Û...ÛšÛ,, Û...Û¹ÛšÛ† Û·ÛšÛ³Û³Û®ÛšÛ... :

test dot11 client deauthenticate

ÙšÙ...ÙfÙ† ØšÙ,,ØØµ^Ù,, Ø¹Ù,,Ù% Ø¹Ø-ØšØ-ØšØª ØØ±ÙfØ© ØšÙ,,Ù...Ø±Ù^Ø± Ù,,ÙfÙ,, Ø¹Ù...ÙšÙ,, Ø·ØšØ³ØªØ©Ø-ØšÙ...:

```
LabAP#show client statistics wireless 00:AE:FA:78:36:89
Client MAC address: 00:AE:FA:78:36:89
Tx Packets           : 621
Tx Management Packets : 6
Tx Control Packets   : 153
Tx Data Packets      : 462
Tx Data Bytes        : 145899
Tx Unicast Data Packets : 600
Rx Packets           : 2910
Rx Management Packets : 13
Rx Control Packets   : 943
Rx Data Packets      : 1954
Rx Data Bytes        : 145699
LabAP#
```

ØšÙ,,Ù...Ø²ÙšØ- Ø¹Ù,,Ù% Ù...Ø³ØªÙ^Ù% ØšÙ,,Ø±ØšØ-ÙšÙ^Øœ ÙšÙ...ÙfÙ† ØšÙ,,ØØµ^Ù,, Ø¹Ù,,Ù% ØšÙ,,ÙfØ«ÙšØ± Ù...Ù† ØšÙ,,Ù...Ø¹Ù,,Ù^Ù...ØšØª ÙØÙš *show controllers*". Ø¹Ù†Ø- Ø¥Ø¶ØšÙØØ Ø¹Ù†Ù^ØšÙ† MAC ØšÙ,,ØØØšØµ Ø·ØšÙ,,Ø¹Ù...ÙšÙ,,Øœ ÙšØªÙ... Ø¹Ø±Ø¶ Ù...Ø¹Ø^Ù,,ØšØª ØšÙ,,Ø·ÙšØšÙ†ØšØª ØšÙ,,Ù...Ø¹Ù^Ù...Ø© Ù^Ù^ØØ-ØšØª Ø¥Ø³ØªØ±Ø-ØšØ- ØšÙ,,Ø·ÙšØšÙ†ØšØª ØšÙ,,ØØšÙ,,ÙšØ© Ù^Ø¥Ù...ÙfØšÙ†ØšØª PHY Ø·ØšÙ,,Ø¥Ø¶ØšÙØØ Ø¥Ù,,Ù% Ù...Ù,Ø-ØšØ± Ø¹Ù...Ù,,ÙšØšØª Ø¥Ø¹ØšØ-Ø© ØšÙ,,Ù...ØØšÙ^Ù,,Ø© Ù^ÙØÙ,, ØšÙ,,Ø¥Ø±Ø³ØšÙ,,:

<#root>

```
LabAP#show controllers dot11Radio 0 client 00:AE:FA:78:36:89
          mac radio vap aid state          encr Maxrate is_wgb_wired          wgb_mac_addr
00:AE:FA:78:36:89    0  9  1  FWD AES_CCM128    M15                false 00:00:00:00:00:00
Configured rates for client 00:AE:FA:78:36:89
Legacy Rates(Mbps): 11
HT Rates(MCS):M0 M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15
VHT Rates: 1SS:M0-7 2SS:M0-7

HT:yes      VHT:yes      HE:no       40MHz:no    80MHz:no    80+80MHz:no  160MHz:no
11w:no      MFP:no         11h:no     encrypt_polocy: 4
_wmm_enabled:yes  qos_capable:yes  WME(11e):no  WMM_MIXED_MODE:no
short_preamble:yes  short_slot_time:no  short_hdr:yes  SM_dyn:yes
short_GI_20M:yes  short_GI_40M:no   short_GI_80M:yes  LDPC:yes  AMSDU:yes  AMSDU_long:no
su_mimo_capable:yes  mu_mimo_capable:no  is_wgb_wired:no  is_wgb:no

Additional info for client 00:AE:FA:78:36:89
RSSI: -90
PS : Legacy (Sleeping)
Tx Rate: 0 Kbps
Rx Rate: 117000 Kbps
VHT_TXMAP: 0
CCX Ver: 4
```

Statistics for client 00:AE:FA:78:36:89
mac intf TxData TxMgmt TxUC TxBytes

TxFail

TxDcrd TxCumRetries RxData RxMgmt RxBytes RxErr TxRt RxRt idle_counter stats_ago expiration
00:AE:FA:78:36:89 apr0v9 8 1 6 1038 1 0 0 31 1 1599

Per TID packet statistics for client 00:AE:FA:78:36:89

Priority	Rx Pkts	Tx Pkts	Rx(last 5 s)	Tx (last 5 s)	QID	Tx Drops	Tx Cur	Qlimit
0	899	460		1	1 144	0	0	1024
1	0	0		0	0 145	0	0	1024
2	0	0		0	0 146	0	0	1024
3	59	0		0	0 147	0	0	1024
4	0	0		0	0 148	0	0	1024
5	0	0		0	0 149	0	0	1024
6	0	0		0	0 150	0	0	1024
7	0	0		0	0 151	0	0	1024

Legacy Rate Statistics:

(Mbps : Rx, Tx, Tx-Retries)
11 Mbps : 2, 0, 0
6 Mbps : 0, 9, 0

HT/VHT Rate Statistics:

(Rate/SS/Width : Rx, Rx-Ampdu, Tx, Tx-Ampdu, Tx-Retries)
0/1/20 : 4, 4, 0, 0, 0
6/2/20 : 4, 4, 0, 0, 0
7/2/20 : 5, 5, 0, 0, 0

webauth done:
false

Ù...Ù† Ø£Ø-Ù,, Ø³Ø³Ø¹ Ù...Ø¹Ø-Ù,, Ø ÙŠØ§Ù†Ø§Øª Ø§Ù,,Ø¹Ù...ÙŠÙ,, Ù/Ø£Ù Ù,ÙŠÙ...Ø© RSSI
Ø·Ø·ÙfÙ,, Ù...Ø³ØªÙ...Ø±Ø£ ÙŠÙ...ÙfÙ†Ùf ØªØ·ØªÙŠÙ,, Ø¹Ù†Ù^Ø§Ù† <mac>Ù,,Ù...Ø¹Ø·Ù,,
Ø¹Ù...ÙŠÙ,, Debug dot11" Ù^ØªØ³Ø-ÙŠÙ,, Ù‡Ø°Ù‡ Ø§Ù,,Ù...Ø¹Ù,,ÙÙ...Ø§Øª ÙfÙ,, Ø«Ø§Ù†ÙŠØ©:

LabAP#debug dot11 client rate address 00:AE:FA:78:36:89

Time	MAC	Tx-Pkts	Rx-Pkts	Tx-Rate	Rx-Rate	RSSI	SNR	Tx-Rate
[*08/20/2018 14:17:28.0928]		0	0	12	a8.2-2s	-45	53	
[*08/20/2018 14:17:28.0928]	00:AE:FA:78:36:89	0	0	12	a8.2-2s	-45	53	
[*08/20/2018 14:17:29.0931]	00:AE:FA:78:36:89	7	18	12	a8.2-2s	-45	53	
[*08/20/2018 14:17:30.0934]	00:AE:FA:78:36:89	3	18	12	a8.2-2s	-45	53	
[*08/20/2018 14:17:31.0937]	00:AE:FA:78:36:89	2	20	12	a8.2-2s	-45	53	
[*08/20/2018 14:17:32.0939]	00:AE:FA:78:36:89	2	20	12	a8.2-2s	-45	53	
[*08/20/2018 14:17:33.0942]	00:AE:FA:78:36:89	2	21	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:34.0988]	00:AE:FA:78:36:89	1	4	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:35.0990]	00:AE:FA:78:36:89	9	23	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:36.0993]	00:AE:FA:78:36:89	3	7	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:37.0996]	00:AE:FA:78:36:89	2	6	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:38.0999]	00:AE:FA:78:36:89	2	14	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:39.1002]	00:AE:FA:78:36:89	2	10	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:40.1004]	00:AE:FA:78:36:89	1	6	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:41.1007]	00:AE:FA:78:36:89	9	20	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:42.1010]	00:AE:FA:78:36:89	0	0	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:43.1013]	00:AE:FA:78:36:89	2	8	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:44.1015]	00:AE:FA:78:36:89	0	0	12	a8.2-2s	-46	52	
[*08/20/2018 14:17:45.1018]	00:AE:FA:78:36:89	0	0	12	a8.2-2s	-46	52	

[*08/20/2018 14:17:46.1021]	00:AE:FA:78:36:89	0	0	12	a8.2-2s	-46	52
[*08/20/2018 14:17:47.1024]	00:AE:FA:78:36:89	0	0	12	a8.2-2s	-46	52
[*08/20/2018 14:17:48.1026]	00:AE:FA:78:36:89	7	15	12	a8.2-2s	-46	52
[*08/20/2018 14:17:49.1029]	00:AE:FA:78:36:89	0	6	12	a8.2-2s	-46	52
[*08/20/2018 14:17:50.1032]	00:AE:FA:78:36:89	0	0	12	a8.2-2s	-46	52
[*08/20/2018 14:17:51.1035]	00:AE:FA:78:36:89	1	7	12	a8.2-2s	-46	52
[*08/20/2018 14:17:52.1037]	00:AE:FA:78:36:89	0	17	12	a8.2-2s	-46	52
[*08/20/2018 14:17:53.1040]	00:AE:FA:78:36:89	1	19	12	a8.2-2s	-46	52
[*08/20/2018 14:17:54.1043]	00:AE:FA:78:36:89	2	17	12	a8.2-2s	-46	52
[*08/20/2018 14:17:55.1046]	00:AE:FA:78:36:89	2	22	12	a8.2-2s	-45	53
[*08/20/2018 14:17:56.1048]	00:AE:FA:78:36:89	1	18	12	a8.2-2s	-45	53
[*08/20/2018 14:17:57.1053]	00:AE:FA:78:36:89	2	18	12	a8.2-2s	-45	53
[*08/20/2018 14:17:58.1055]	00:AE:FA:78:36:89	12	37	12	a8.2-2s	-45	53

Ù❖Š Ù±°Ø Ø¥Ù†Ø³Ø§Ø-Øœ Ø§Ù,, Tx Ù^ Rx Ø±Ø°· Ø±Ø°· ÙšØ°« Ù❖Š
 Ø§Ù,,Ø«Ø§Ù†ÙšØ© Ù❖Ø§ØµÙ,, Ù...Ù†Ø° Ø£Ù† Ø·Ø°¹Ø³ ØçØ®Ø± Ù...Ø±Ø©Øœ Ø§Ù,,
 Ù†Ù❖Ø³Ù± Ù,, Tx ÙšØ¹ÙšØ°· Ù^Ù...Ø¹ Ø°Ù,,ÙfØœ Ù❖Ø¥Ù† RSSI Ù^ SNR Ù^Ù...Ø¹Ø°Ù,,
 Ø§Ù,,Ø° ÙšØ§Ù†Ø§Ø³ Ù±Ùš Ø§Ù,,Ù,ÙšÙ... Ù...Ù† Ø§Ù,,Ø²Ù...Ø© Ø§Ù,,Ø£Ø®ÙšØ±Ø© Ù...Ù†
 Ø°Ù,,Ùf Ø§Ù,,Ù❖Ø§ØµÙ,, Ø§Ù,,Ø²Ù...Ù†Ùš (Ù^Ù,,ÙšØ³ Ø§Ù,,Ù...Ø³Ù^Ø³Ø· Ù,,Ø-Ù...ÙšØ¹
 Ø§Ù,,Ø²Ù... Ù❖Š Ø°Ù,,Ùf Ø§Ù,,Ù❖Ø§ØµÙ,, Ø§Ù,,Ø²Ù...Ù†Ùš).

Ø³ÙšÙ†Ø§Ø±ÙšÙ^Ù±Ø§Øª FlexConnect

ÙšÙ...ÙfÙ†Ùf Ø§Ù,,Ø³Ø²Ù,Ù, Ù...Ù† Ù,Ù°Ø§Ø;Ù... Ø§Ù,,Ø³Ø²ÙfÙ... Ù❖Š Ø§Ù,,Ù^ØµÙ^Ù,, (ACL)
 Ø§Ù,,Ø³Ùš ÙšØ³Ù... Ø³Ø·Ø° ÙšÙ,Ù±Ø§ Ø§Ù,,ÙšØ§ Ø¹Ù,,Ù% Ø¹Ù...ÙšÙ,, Ù❖Š
 Ø³ÙšÙ†Ø§Ø±ÙšÙ^ Ù...Ø§ Ù,Ø°Ù,, Ø§Ù,,Ù...ØµØ§Ø°Ù,Ø© (CWA Ø¹Ù,,Ù% Ø³Ø° ÙšÙ,,
 Ø§Ù,,Ù...Ø«Ø§Ù,,) Ø£Ù^ Ù...Ø§ Ø°¹Ø° Ø§Ù,,Ù...ØµØ§Ø°Ù,Ø©:

```
AP#show client access-lists pre-auth all f48c.507a.b9ad
Pre-Auth URL ACLs for Client: F4:8C:50:7A:B9:AD
IPv4 ACL: IPv6 ACL:
ACTION URL-LIST
```

```
Resolved IPs for Client: F4:8C:50:7A:B9:AD
HIT-COUNT URL ACTION IP-LIST
```

```
REDIRECT
rule 0: allow true and ip proto 17 and src port 53
rule 1: allow true and ip proto 17 and dst port 53
rule 2: allow true and src 10.48.39.161mask 255.255.255.255
rule 3: allow true and dst 10.48.39.161mask 255.255.255.255
rule 4: deny true
No IPv6 ACL found
```

```
AP#show client access-lists post-auth all f48c.507a.b9ad
Post-Auth URL ACLs for Client: F4:8C:50:7A:B9:AD
IPv4 ACL: IPv6 ACL:
ACTION URL-LIST
```

```
Resolved IPs for Client: F4:8C:50:7A:B9:AD
HIT-COUNT URL ACTION IP-LIST
```

post-auth

rule 0: deny true and dst 192.0.0.0mask 255.0.0.0
rule 1: deny true and src 192.0.0.0mask 255.0.0.0
rule 2: allow true
No IPv6 ACL found

Ù†Ø,Ø§Ù... Ù...Ù,,Ù◆Ø§Øª AP

Ù,,Ø§ ØªØ³Ù...Ø Ù†Ù,Ø§Ø· Ø§Ù,,Ù^Øµ^Ù,, Ù...Ù† Ù†Ù^Ø¹ CoS Ø·Ø¥Ø-Ø±Ø§Ø¬ Ø-Ù...ÙŠØ¹
Ù...ØØªÙ^ÙŠØ§Øª Ù†Ø,Ø§Ù... Ø§Ù,,Ù...Ù,,Ù◆Ø§Øª Ø¹Ù,,Ù%Ø Ø§Ù,,Ø£Ù†Ø,Ù...Ø©
Ø§Ù,,Ø£Ø³Ø§Ø³ÙŠØ© Ù,, Unix.

ÙŠØ¹Ø·ÙŠ Ø§Ù,,Ø£Ù...Ø± *show filesystem*" ØªÙ◆Ø§ØµÙŠÙ,, Ø¹Ù† Ø¥Ø³ØªØ®Ø-Ø§Ù...
Ø§Ù,,Ù...Ø³Ø§ØØ© Ù^ØªÙ^Ø²ÙŠØ¹Ù†Ø§ Ø¹Ù,,Ù%Ø Ø§Ù,,Ù,Ø³Ù... Ø§Ù,,ØØ§Ù,,ÙŠ:

```
2802#show filesystems
Filesystem      Size      Used Available Use% Mounted on
/dev/ubivol/storage 57.5M    364.0K    54.1M    1% /storage
2802#
```

Ø§Ù,,Ø£Ù...Ø± *show flash*" ÙŠØ¹Ø-Ø- Ø§Ù,,Ù...Ù,,Ù◆Ø§Øª Ø§Ù,,Ø±Ø!ÙŠØ³ÙŠØ© Ø¹Ù,,Ù%Ø
Ø§Ù,, AP flash. ÙŠÙ...Ù†Ù†Ù† Ø£ÙŠØ¶Ø§ Ø¥Ù,,ØØ§Ù, Ø§Ù,, syslog Ø£Ù^ Ø£Ø³Ø§Ø³ÙŠ
Ø§Ù,,Ù†Ù,,Ù...Ø© Ø§Ù,,Ù...Ù◆ØªØ§Ø Ø£Ù† ÙŠØ³Ø±Ø- ØªÙ,,Ù† Ø§Ù,,Ù...Ø-Ù,,Ø-Ø§Øª
Ø§Ù,,Ù...ØØ-Ø-Ø©.

```
ap_2802#show flash
Directory of /storage/
total 84
-rw-r--r--    1 root    root           0 May 21  2018 1111
-rw-r--r--    1 root    root           6 Apr 15 11:09 BOOT_COUNT
-rw-r--r--    1 root    root           6 Apr 15 11:09 BOOT_COUNT.reserve
-rw-r--r--    1 root    root          29 Apr 15 11:09 RELOADED_AT_UTC
drwxr-xr-x    2 root    root          160 Mar 27 13:53 ap-images
drwxr-xr-x    4 5      root        2016 Apr 15 11:10 application
-rw-r--r--    1 root    root        6383 Apr 26 09:32 base_capwap_cfg_info
-rw-r--r--    1 root    root          20 Apr 26 10:31 bigacl
-rw-r--r--    1 root    root        1230 Mar 27 13:53 bootloader.log
-rw-r--r--    1 root    root           5 Apr 26 09:29 bootloader_verify.shadow
-rw-r--r--    1 root    root           18 Jun 30  2017 config
-rw-r--r--    1 root    root        8116 Apr 26 09:32 config.flex
-rw-r--r--    1 root    root           21 Apr 26 09:32 config.flex.mgroup
-rw-r--r--    1 root    root           0 Apr 15 11:09 config.local
-rw-r--r--    1 root    root           0 Jul 26  2018 config.mesh.dhcp
-rw-r--r--    1 root    root          180 Apr 15 11:10 config.mobexp
-rw-r--r--    1 root    root           0 Jun  5  2018 config.oepap
-rw-r--r--    1 root    root        2253 Apr 26 09:43 config.wireless
drwxr-xr-x    2 root    root          160 Jun 30  2017 cores
drwxr-xr-x    2 root    root          320 Jun 30  2017 dropbear
drwxr-xr-x    2 root    root          160 Jun 30  2017 images
-rw-r--r--    1 root    root          222 Jan  2  2000 last_good_uplink_config
drwxr-xr-x    2 root    root          160 Jun 30  2017 lists
-rw-r--r--    1 root    root          215 Apr 16 11:01 part1_info.ver
```

```

-rw-r--r-- 1 root root 215 Apr 26 09:29 part2_info.ver
-rw-r--r-- 1 root root 4096 Apr 26 09:36 random_seed
-rw-r--r-- 1 root root 3 Jun 30 2017 rxtx_mode
-rw-r--r-- 1 root root 64 Apr 15 11:11 sensord_CSPRNG0
-rw-r--r-- 1 root root 64 Apr 15 11:11 sensord_CSPRNG1
drwxr-xr-x 3 support root 224 Jun 30 2017 support
drwxr-xr-x 2 root root 2176 Apr 15 11:10 syslogs

```

```

-----
Filesystem      Size      Used Available Use% Mounted on
flash           57.5M    372.0K    54.1M     1% /storage

```

ØªØ®Ø²ÙŠÙ‡ ÙˆØ¥Ø±Ø³Ø§Ù,, syslogs

Ø§Ù,, syslog ÙŠØ®Ø²Ù‡ Ù...Ø¬Ù,,Ø- Ø§Ù,, syslog Ø¥Ù‡ØªØ§Ø¬ Ù...Ù‡ Ø³Ø§Ø¬Ù, reboot.
 Ø§Ù,,Ø£Ù...Ø± show log" ÙŠØ,Ù‡Ø± ÙˆÙ,Ø· syslog Ù...Ù†Ø° ØçØ®Ø± Ø¥Ø¹Ø§Ø¬Ø©
 ØªÙ...Ù‡ÙŠØ¬.

ÙˆÙŠ ÙfÙ,, Ø¬ÙˆØ±Ø© Ø¥Ø¹Ø§Ø¬Ø© ØªÙ...Ù‡ÙŠØ¬Øœ ØªØªÙ... ÙfØªØ§Ø¬Ø© syslogs
 Ø¹Ù,,Ù% Ù...Ù,,ÙˆÙŠØª Ù...Øª²Ø§ÙŠØ¬Ø©.

```

artaki# show flash syslogs
Directory of /storage/syslogs/
total 128

```

```

-rw-r--r-- 1 root root 11963 Jul 6 15:23 1
-rw-r--r-- 1 root root 20406 Jan 1 2000 1.0
-rw-r--r-- 1 root root 313 Jul 6 15:23 1.last_write
-rw-r--r-- 1 root root 20364 Jan 1 2000 1.start
-rw-r--r-- 1 root root 33 Jul 6 15:23 1.watchdog_status
-rw-r--r-- 1 root root 19788 Jul 6 16:46 2
-rw-r--r-- 1 root root 20481 Jul 6 15:23 2.0
-rw-r--r-- 1 root root 313 Jul 6 16:46 2.last_write
-rw-r--r-- 1 root root 20422 Jul 6 15:23 2.start

```

```

-----
Filesystem      Size      Used Available Use% Mounted on
flash           57.6M    88.0K    54.5M     0% /storage

```

```

artaki# show flash cores
Directory of /storage/cores/
total 0

```

```

-----
Filesystem      Size      Used Available Use% Mounted on
flash           57.6M    88.0K    54.5M     0% /storage

```

Ø§Ù,,Ù...Ø®Ø±Ø¬ Ø§Ù,,Ø£ÙˆÙ,, Ø¬Ø¹Ø- Ø§Ù,,ØªÙ...Ù‡ÙŠØ¬ Ø§Ù,,Ø£ÙˆÙ,,ÙŠ Ù‡Ùˆ
 Ø§Ù,,Ù...Ù,,ÙˆÙŠØªÙ... Ø¥Ù‡ØªØ§Ø¬; Ø§Ù,,Ù...Ù,,ÙˆÙŠØª Ø¥Ø°Ø§ Ø£ØµØ¬Ø- Ø
 Ø§Ù,,Ø¥ØµØ¬Ø§Ø± 1.0 Ø¬ÙˆÙŠÙ,, Ø¬Ø¬Ø§. Ø¬Ø¹Ø¬ Ø¥Ø¹Ø§Ø¬Ø© Ø§Ù,,ØªØ’Ø°ÙŠÙ,,Øœ
 ÙŠØªÙ... Ø¥Ù‡ØªØ§Ø¬; Ù...Ù,,ÙˆÙŠØ¬ 2.0 ÙˆÙ...Ø§ Ø¥Ù,,Ù% ØªÙ,,Ùf.

Ù...Ù‡ Ø§Ù,, WLCØœ Ø£Ù‡Øª ÙŠØ³ØªØ·ÙŠØ¹ ØÙfÙ,,Øª Ø§Ù,, syslog Ø°Ø§ÙŠØ© Ø¥Ù‡ ÙŠØ±ÙŠØ-
 Ø£Ù‡Øª APs Ùf Ø£Ù‡ ÙŠØ±Ø³Ù,, Ù‡Ù... syslog Ø±Ø³Ø§Ù,,Ø© unicast Ø¥Ù,,Ù% Ù†Ø§Ø¬Ù,, Ø®Ø§Øµ

ÙŠØ±Ø³Ù,, Ø§Ù,, ap syslog Ø±Ø³Ø§Ù,,Ø© Ø®Ø§Ø±Ø-Ø§.

Ø¥Ø°Ø§ ùfù+Øª Øªù,,ùù... Ø·Ø§Ø³ØªùfØ´Ø§ù ð Ø£Ø®Ø·Ø§Ø; Ù+Ù,Ø·Ø© Ø§Ù,,ù^Øµù^ù,, ù^Ø¥Øµù,,Ø§Øù±Ø§ ØùŠØ« ù...ù+ Ø§Ù,,ù...Øªù...ù,, Ø£Ù+ Øªù ðù,Ø- Ø§ØªØµØ§ù,, Ø§Ù,,Ø´Ø´ ùfØ© (Ø£ù^ Ø¹ù,,ù% WGB Ø¹ù,,ù% Ø³Ø´ ùŠù,, Ø§Ù,,ù...Ø«Ø§ù,,)Ø£ ù ð¥Ù+ syslog ù,,Ø§ ùŠù...ùfù+ Ø§Ù,,Ø§Ø¹Øªù...Ø§Ø- Ø¹ù,,ùŠù± ùfù...Ø§ ù,,Ø§ ùŠØªù... Ø¥Ø±Ø³Ø§Ù,, Ø£ùŠ Ø±Ø³Ø§Ø;ù,, Ø¥Ø°Ø§ ù ðù,Ø-Øª Ù+Ù,Ø·Ø© Ø§Ù,,ù^Øµù^ù,, Ø§ØªØµØ§ù,, Ø§Ù,,ù^Øµù,,Ø© Ø§Ù,,Ø®Ø§ØµØ© Ø´ ù±Ø§.

ù,,Øªù,,ùfØ£ ù ð¥Ù+ Ø§Ù,,Ø¥Ø¹Øªù...Ø§Ø- Ø¹ù,,ù% ù...ù,,ù ð§Øª syslog Ø§Ù,,ù...Ø®Ø²Ù+Ø© ù ðùŠ Ø§Ù,,Ø°Ø§ùfØ±Ø© Ø§Ù,,ù...Øªù,ØªØ© (flash) ù±ù^ Ø·Ø±ùŠù,Ø© Ø¹Ø,ùŠù...Ø© ù,,ØªØµØùŠØ Ø£Ø®Ø·Ø§Ø; Ø§Ù,,Ø¥Ø®Ø±Ø§Ø- ù^ØªØ®Ø²ùŠù+ù± Ø¹ù,,ù% ù+Ù,Ø·Ø© Ø§Ù,,ù^Øµù^ù,, ù+ù ð³ù±Ø§ Ø«ù... ØªØù...ùŠù,,ù± Ø´Ø´ùfù,, Ø-ù^Ø±ùŠ ù ðùŠ ù^ù,Øª ù,,Ø§Øù,,.

ØØ²ù...Ø© Ø-Ø¹ù... AP

ùŠù...ùfù+ Øªùù ðùŠØ± Ø´Ø¹Ø¶ ù...Ø¹ù,,ùù...Ø§Øª Ø§Ù,,ØªØ´Ø®ùŠØµ Ø§Ù,,ØªùŠ ùŠØªù... ØªØ-ù...ùŠØ¹ù±Ø§ Ø´Ø´ùfù,, Ø´Ø§Ø;Ø¹ ù...ù+ Ø£ù+ù^Ø§Ø¹ ù...Ø®Øªù,,ù ð© ù ðùŠ ØØ²ù...Ø© ù^Ø§ØØ-Ø© ùŠù...ùfù+ùf ØªØù...ùŠù,,ù±Ø§ ù...ù+ ù+ù,Ø§Ø· Ø§Ù,,ù^Øµù^ù,,.

ù...Ø¹ù,,ùù...Ø§Øª Ø§Ù,,ØªØ´Ø®ùŠØµù,,ØªùŠ ùŠù...ùfù+ùf ØªØ¶ù...ùŠù+ù±Ø§ ù ðùŠ Ø§Ù,,ØØ²ù...Ø© ù±ùŠ:

- Ø§Ø³ù^Ø´ùŠØªØ´ Ø´Ø±Ø³ Ø´ù^
- AP syslogs
- Ø³Ø-ù,,Ø§Øª Ø-ù...Ø§Ø° AP CAPWAPD
- Ø³Ø-ù,,Ø§Øª Ø´Ø´; ØªØ´Ø°ùŠù,, ù+Ù,Ø·Ø© Ø§Ù,,ù^Øµù^ù,, ù^Ø§ù,,Ø±Ø³Ø§Ø;ù,,
- ù...ù,,ù ð§Øª AP ù,,ù,,ØªØ±ù...ùŠØ²

ù,,ù,,ØØ¶ù,, Ø¹ù,,ù% ØØ²ù...Ø© Ø-Ø¹ù... ù+Ù,Ø·Ø© Ø§Ù,,ù^Øµù^ù,,Ø£ ùŠù...ùfù+ùf Ø§ù,,Ø§ù+Øªù,Ø§ù,, Ø¥ù,,ù% ù^Ø§Ø-ù±Ø© Ø³Ø·Ø± Ø£ù^Ø§ù...Ø± (CLI) ù+Ù,Ø·Ø© Ø§ù,,ù^Øµù^ù,, ù^Ø¥Ø-Ø®Ø§ù,, Ø§ù,,Ø£ù...Ø± **copy support-bundle tftp: x.x.x.x**".

Ø´Ø¹Ø´ ù±Ø°Ø§ ùŠù...ùfù+ùf Ø§ù,,ØªØù,ù, ù...ù+ Ø§ù,,ù...ù,,ù ð§Ù,,ù...Ø³ù...ù% Ø´Ø§Ø³ù... ù+Ù,Ø·Ø© Ø§Ù,,ù^Øµù^ù,, Ø§Ù,,ù...Ø±ù ðù, ù...Ø¹ support.apversion.date.time.tgz ùfù...Ø§ ù±ù^ ù...ù^Ø¶ù ðùŠù...Ø§ Ø´Ø¹Ø´ :

```

APC4F7.D54C.E77C#copy support-bundle tftp: 192.168.1.100
<cr>
APC4F7.D54C.E77C#copy support-bundle tftp: 192.168.1.100
Creating support bundle, please wait...ifconfig: wired1: error fetching interface information: Device not found
Unit systemd-journald.socket could not be found.
tar: ./*.tgz: No such file or directory
tar: error exit delayed from previous errors
tar: *.tgz: No such file or directory
tar: error exit delayed from previous errors
+=== Support file APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.tgz created ===+
#####
Successful file transfer:
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.tgz
APC4F7.D54C.E77C#

```

Ø¹Ù†Ø- "Ø¥Ù,,Ø°Ø§Ø; tar" Ø§Ù,,Ù...Ù,,Ù Ø¹Ù...ÙÙ†Ù†Ù† Ø¹Ø±Ø¶ Ù...Ø®ØªÙ,,Ù Ø§Ù,,Ù...Ù,,Ù Ø§Øª Ø§Ù,,Ù...Ø-Ù...Ø¹Ø©:

i-Images > APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526

Name	Date modified	Type	Size
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.brain.error.log.gz	4/8/2020 4:55 PM	GZ File	1 KB
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.brain.log.gz	4/8/2020 4:55 PM	GZ File	3 KB
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.info	4/8/2020 4:55 PM	INFO File	1 KB
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.messages.gz	4/8/2020 4:55 PM	GZ File	11 KB
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.startlog.gz	4/8/2020 4:55 PM	GZ File	5 KB
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.syslogs.gz	4/8/2020 4:55 PM	GZ File	2 KB
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.tech_support.gz	4/8/2020 4:55 PM	GZ File	34 KB
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.wsa_info.json.gz	4/8/2020 4:55 PM	GZ File	1 KB
APC4F7.D54C.E77C_support.17.2.1.11.20200408.145526.wsa_status.json.gz	4/8/2020 4:55 PM	GZ File	1 KB

ØªØ-Ù...Ù§Ø¹ Ù...Ù,,Ù Ø§Øª AP Ø§Ù,,Ø£Ø³Ø§Ø³Ù§Ø© Ø¹Ù† Ø¹Ø¹Ø

Ù,,ØªØ-Ù...Ù§Ø¹ Ù...Ù,,Ù Ø§Øª AP Ø§Ù,,Ø£Ø³Ø§Ø³Ù§Ø© Ø¹Ù† Ø¹Ø¹ØØØ Ø§Ù,,Ø±Ø-Ø§Ø; ØªÙ...Ù†Ù§Ù† ØªÙØ±Ù§Ø° Ø§Ù,,Ø£Ø³Ø§Ø³Ù§ Ù,,Ù§ØªÙ... ØªØ¶Ù...Ù§Ù†Ù‡ ÙØ¹ Ø²Ù...Ø© Ø§Ù,,Ø¹Ø¹Ù... Ø«Ù... ØªØÙ...Ù§Ù,, Ø²Ù...Ø© Ø§Ù,,Ø¹Ø¹Ù... Ù...Ù† Ù†Ù,Ø·Ø© Ø§Ù,,Ù^ØµÙ^Ù,,ØØ Ø£Ù^ Ø§Ù,,Ø¥Ø±Ø³Ø§Ù,, Ù...Ø¹Ø§Ø´Ø±Ø© Ø¥Ù,,Ù% Ø®Ø§Ø¹Ù... TFTP. Øª³Øª®Ø¹Ù... Ø§Ù,,Ø£Ù...Ø«Ù,,Ø© Ø§Ù,,ØªØ§Ù,,Ù§Ø© Ø®Ø§Ø¹Ù... TFTP 192.168.1.100.

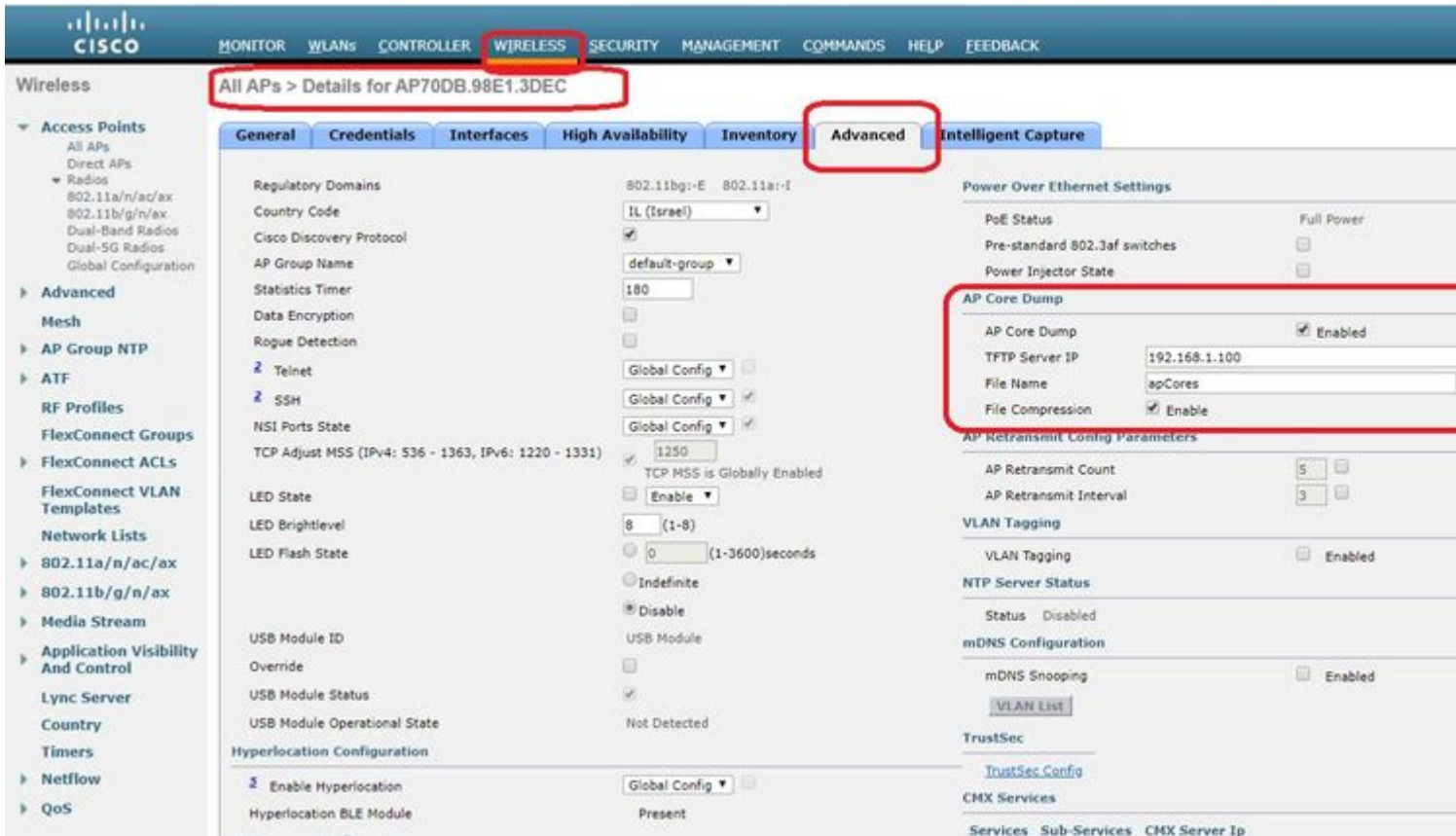
Ù¹Ø§Ø-Ù‡Ø© Ø³Ø·Ø± Ø§Ù,,Ø£Ù¹Ø§Ù...Ø± (CLI) Ù,,Ù†Ø,Ø§Ù... Ø§Ù,,ØªØ¹Ø¹Ù,, AireOS

```

(c3504-01) >config ap core-dump enable 192.168.1.100 apCores uncompress ?
<Cisco AP> Enter the name of the Cisco AP.
all Applies the configuration to all connected APs.

```

Ù¹Ø§Ø-Ù‡Ø© Ø§Ù,,Ù...Ø³Øª®Ø¹Ù... Ø§Ù,,Ø±Ø³Ù^Ù...Ù§Ø© AireOS



IOS® CLI

<#root>

eWLC-9800-01(

config

)#ap profile TiagoOffice

eWLC-9800-01(

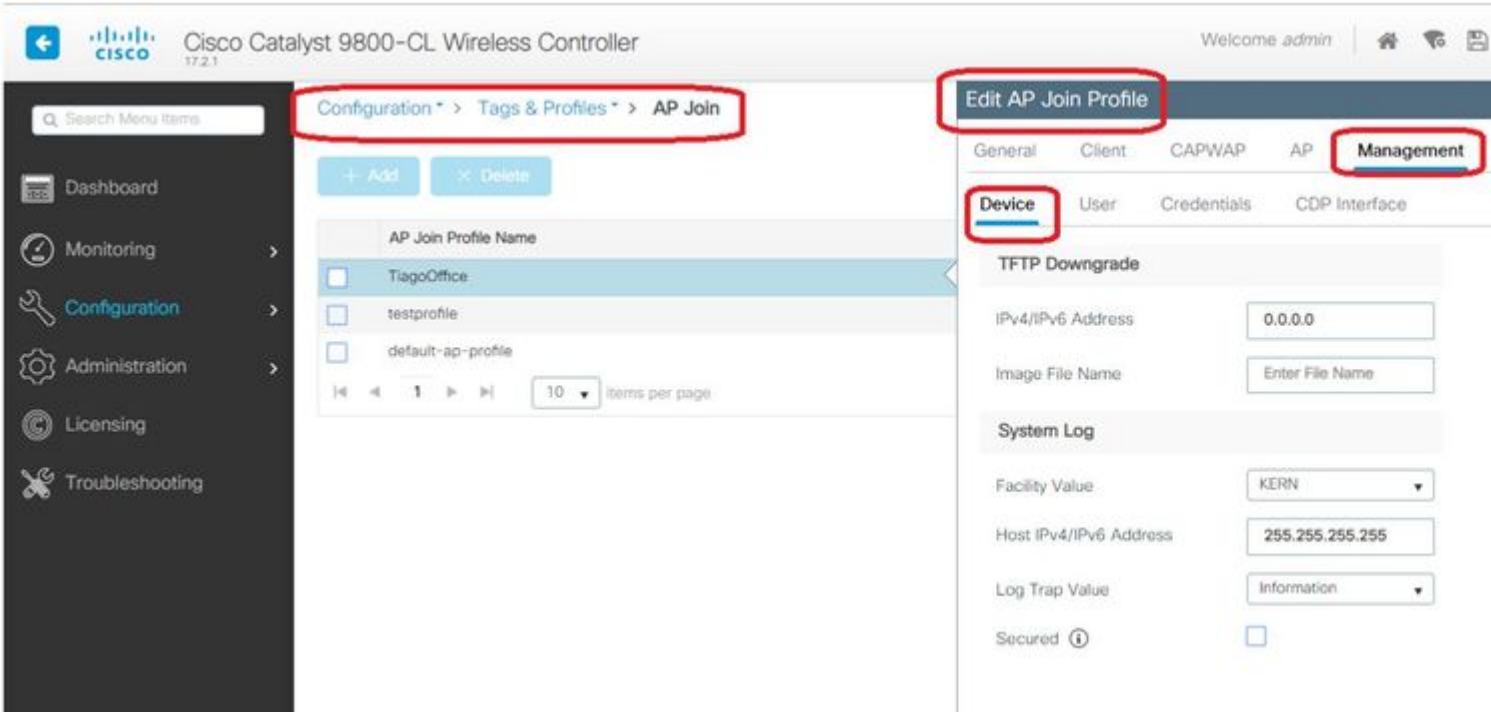
config-

ap

-profile

)#core-dump tftp-server 192.168.1.100 file apCores uncompress

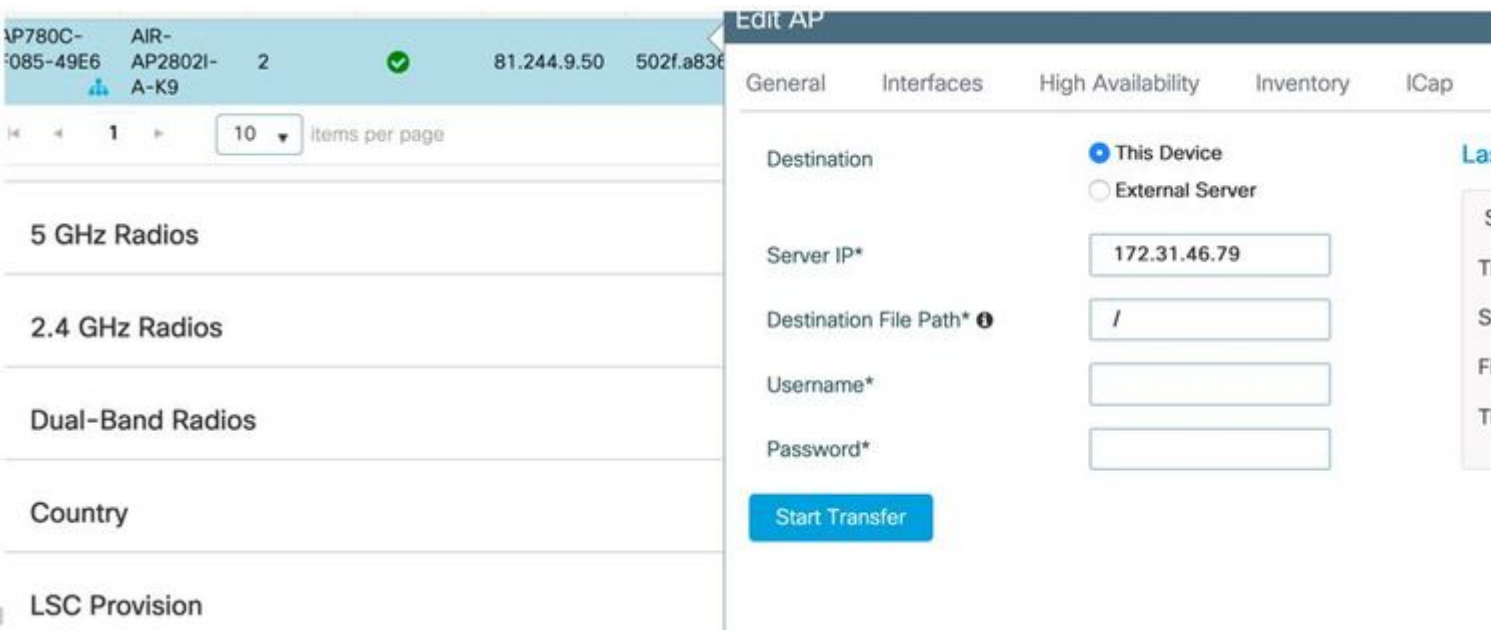
IOS® GUI



ÙfÙ...Ø§ Ù‡Ùˆ Ø§Ù„,ØØ§Ù„, Ù...Ù‡ Cisco IOS® XE 17.3.1Øœ Ù„,Ø-ÙšÙf Ø¹Ù„,Ø§Ù„...Ø© Ø§Ù„,ØªØ-Ù-ÙšØ- ØØ²Ù...Ø© Ø-Ø¹Ù... Ù-ÙšÙ...ÙfÙ‡Ùf ØªÙ‡Ø²ÙšÙ„, AP SB Ù...Ù‡ Ù-Ø§Ø-Ù‡Ø© Ø§Ù„,Ù...Ø³ØªØØØ-Ù... Ø§Ù„,Ø±Ø³Ù-Ù...ÙšØ© (GUI) Ø§Ù„,ØØØ§ØØ© Ø-Ù-ØØ-Ø© Ø§Ù„,ØªØÙfÙ... ÙˆÙš Ø§Ù„,Ø-Ø-ÙfØ© Ø§Ù„,Ù...ØÙ„ÙšØ© Ø§Ù„,Ù„Ø§Ø³Ù„ÙfÙšØ© (WLC).

ÙfÙ„, Ù...Ø§ ØªÙ„,Ù-Ù... Ø-Ù‡ Ù‡Ùˆ ØªÙ‡ÙˆÙˆÙšØ° ØEÙ...Ø± Ù‡Ø³ØØØ© Ø-Ø¹Ù... ØØ²Ù...Ø©" Ø¹Ù„,Ù% Ù‡Ù„,Ø-Ø© Ø§Ù„,Ù-ØµˆÙ„, Ù-Ø¥Ø±Ø³Ø§Ù„,Ù‡Ø§ Ø¹Ø-Ø± SCP Ø¥Ù„,Ù% Ø¹Ù‡ØØ± Ø§Ù„,ØªØÙfÙ... ÙˆÙš Ø§Ù„,Ø-Ø-ÙfØ© Ø§Ù„,Ù...ØÙ„ÙšØ© Ø§Ù„,Ù„Ø§Ø³Ù„ÙfÙšØ© (WLC) (Ù„ØEÙ‡ Ø¹Ù‡ØµØ± Ø§Ù„,ØªØÙfÙ... ÙˆÙš Ø§Ù„,Ø-Ø-ÙfØ© Ø§Ù„,Ù...ØÙ„ÙšØ© Ø§Ù„,Ù„Ø§Ø³Ù„ÙfÙšØ© (WLC) ÙšÙ...ÙfÙ‡ ØEÙ‡ ÙšÙfÙˆÙ‡ ØØØ§Ø-Ù... SCP).

Ù-Ø-Ø¹Ø-Ø-Ù„,Ùf ÙšÙ...ÙfÙ‡Ùf ØªÙ‡Ø²ÙšÙ„,Ù‡ Ù...Ù‡ Ø§Ù„,Ù...Ø³ØªØ¹Ø±Ø¶ Ø§Ù„,ØØØ§Øµ Ø-Ùf:



IoT Bluetooth

ÜŠÜ...ÛfÛ† Ø§Ü,,ØªØÜ,Û, Û...Û† Ø³Ø-Û,,Ø§Øª Ø®Ø§Ø-Û... gRPC Û ÜŠ Û†Û,Ø·Ø©
Ø§Ü,,Û^ØµÛ^Û,, Ø¨ Ø§Ø³ØªØ®Ø-Ø§Ü... :

AP# show grpc server log

```
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] spaces conn url 10.22.243.33:8000"  
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] entering stopDNASpacesTmpTokenRoutine"  
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] exiting stopDNASpacesTmpTokenRoutine"  
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] entering startDNASpacesTmpTokenRoutine"  
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] launching token request cycle"  
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] exiting startDNASpacesTmpTokenRoutine"  
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] spaces token expiration time 2020-04-02 01:36:52 +0000"  
time="2020-04-01T01:36:52Z" level=info msg=" Calling startDNASpacesConn routine "  
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] Receive Success status"  
time="2020-04-01T01:36:52Z" level=info msg="[DNAS] Connection not in ready state sleeping for 10 seconds"  
time="2020-04-01T01:37:02Z" level=info msg="[DNAS] Setup Stream for the gRPC connection"  
time="2020-04-01T01:37:02Z" level=info msg="[DNAS] Connect RPC Succeeded."  
time="2020-04-01T01:37:02Z" level=info msg="[DNAS] RX routine got enabled "  
time="2020-04-01T01:37:02Z" level=info msg="[DNAS] TX routine got enabled "
```

ÜŠÜ...ÛfÛ† Ø§Ü,,ØªØÜ,Û, Û...Û† Ø§Ü,,Ø§ØªØ®Ø§Ü,, Ø·Û...Û^Øµ,, Û...Ø³Ø§Ü ÜŠØª DNA
Ø¨ Ø§Ø³ØªØ®Ø-Ø§Ü... :

AP# show cloud connector key access

Token Valid : Yes

Token Stats :

Number of Attempts : 44

Number of Failures : 27

Last Failure on : 2020-03-28 02:02:15.649556818 +0000 UTC m=+5753.097022576

Last Failure reason : curl: SSL connect error

Last Success on : 2020-04-01 00:48:37.313511596 +0000 UTC m=+346934.760976625

Expiration time : 2020-04-02 00:48:37 +0000 UTC

Connection Retry Interval : 30

AP# show cloud connector connection detail

Connection State : READY

Connection Url : 10.22.243.33:8000

Certificate Available : true

Controller Ip : 10.22.243.31

Stream Setup Interval : 30

Keepalive Interval : 30

Last Keepalive Rcvd On : 2020-04-01 00:32:47.891433113 +0000 UTC m=+345985.338898246

Number of Dials : 2

Number of Tx Pkts : 2788175

Number of Rx Pkts : 11341

Number of Dropped Pkts : 0

Number of Rx Keepalive : 11341

Number of Tx Keepalive : 11341

Number of Rx Cfg Request : 0

Number of Tx AP Cfg Resp : 0

Ø§Ù,,Ù...ØªÙ,Ø¬Ù... ØÙŠØ« ÙŠØªÙ... Ù†Ø´Ø± ØªØ·Ø¬ ÙŠÙ,ØÆ ÙŠÙ...ÙfÙ†Ùf Ø§Ù,,ØªØÙ,Ù,
Ù...Ù† Ø§Ù,,Ø© ØªØ·Ø¬ ÙŠÙ, IoX Ø¬ Ø§Ø³ØªØ®Ø¬Ø§Ù... :

```
AP#show iox applications
Total Number of Apps : 1
```

```
-----
App Name          : cisco_dnas_ble_iox_app
App Ip            : 192.168.11.2
App State         : RUNNING
App Token         : 02fb3e98-ac02-4356-95ba-c43e8a1f4217
App Protocol      : ble
App Grpc Connection : Up
Rx Pkts From App  : 3878345
Tx Pkts To App    : 6460
Tx Pkts To Wlc    : 0
Tx Data Pkts To DNASpaces : 3866864
Tx Cfg Resp To DNASpaces : 1
Rx KeepAlive from App : 11480
Dropped Pkts      : 0
App keepAlive Received On : Mar 24 05:56:49
```

ÙŠÙ...ÙfÙ†Ùf Ø§Ù,,Ø§ØªØ§Ù,, Ø¬ØªØ¬ÙŠÙ, IoX Ø¬Ø§Ø³ØªØ®Ø¬Ø§Ù... Ù†Ø°Ù†
Ø§Ù,,Ø£Ù^Ø§Ù...Ø± Ø«Ù... Ù...Ø±Ø§Ù,Ø¬Ø© Ø§Ù,,Ø³Ø¬Ù,,Ø§Øª Ø£Ø«Ù†Ø§Ø; ØªÙfÙ¬ÙŠÙ†
Ù...Ù†Ø§Ø±Ø© Ø§Ù,,Ø£Ø±Ø¶ÙŠØ© :

```
AP#connect iox application
/ #
```

```
/# tail -F /tmp/dnas_ble.log
Tue Mar 24 06:55:21 2020 [INFO]: Starting DNA Spaces BLE IOx Application
Tue Mar 24 06:55:21 2020 [INFO]: Auth token file contents: db26a8ab-e800-4fe9-a128-80683ea17b12
Tue Mar 24 06:55:21 2020 [INFO]: Setting grpc endpoint to: 1.1.7.101:57777
Tue Mar 24 06:55:21 2020 [INFO]: Auth with token: db26a8ab-e800-4fe9-a128-80683ea17b12
Tue Mar 24 06:55:21 2020 [INFO]: Attempt to connect to DNAS Channel
Tue Mar 24 06:55:21 2020 [INFO]: Starting to run metrics
Tue Mar 24 06:55:21 2020 [INFO]: Starting to run Channel Keepalive
Tue Mar 24 06:55:21 2020 [INFO]: Initialize DNAS Reader Channel
Tue Mar 24 06:55:21 2020 [INFO]: Start listener for messages
Tue Mar 24 06:55:21 2020 [INFO]: Running BLE scan thread
```

Ø§Ù,,Ù,Ø±Ø§Ø±

Ù†Ù†Ø§Ùf Ø§Ù,,ØªØ¬ÙŠØ¬ Ù...Ù† Ø£Ø¬Ù¬Ø§Øª Ø£Ø³ØªÙfØ´Ø§Ù ♦ Ø§Ù,,Ø£Ø®Ø¬Ø§Ø; Ù¬Ø¥ØµÙ,,Ø§ØÙ†Ø§ Ø§Ù,,Ù...ØªØ§Ø© Ù,,Ù...Ø³Ø§Ø¹Ø¬ØªÙ†Ø§ Ù♦ÙŠ ØÙ,, Ø§Ù,,Ù...Ø´Ø§ÙfÙ,, Ø§Ù,,Ù...ØªØ¹Ù,,Ù,Ø© Ø¬Ù†Ù,Ø§Ø· Ø§Ù,,Ù¬ØµÙ^Ù,, (AP) Ø§Ù,,Ø®Ø§ØµØ© Ø¬ÙfÙ^Ø³.

ÙŠØ³Ø±Ø¬ Ù†Ø°Ø§ Ø§Ù,,Ù...Ø³ØªÙ†Ø¬ Ø§Ù,,Ù...Ø³ØªÙ†Ø¬Ø§Øª Ø§Ù,,Ø£ÙfØ«Ø± Ø¥Ø³ØªØ®Ø¬Ø§Ù...Ø§ Ù¬ÙŠØªÙ... ØªØ¬ÙŠØ«Ù†Ø§ Ø¬Ø§Ù†Øª,Ø§Ù....

ةمچرتل هذه ل و ح

ةلأل تاي نقتل ن م ة و مچ م ادخت ساب دن تسمل اذ ه Cisco ت مچرت
ملاعلاء ن أ عي مچ ي ف ن ي م دخت سمل ل م عد ي و تح م مي دقت ل ة ي رش ب ل و
امك ة ق ي قد ن و ك ت ن ل ة ي ل أ ة مچرت ل ض ف أ ن أ ة ظ حال م ي ج ر ي . ة ص ا خ ل م ه ت غ ل ب
Cisco ي ل خ ت . ف ر ت ح م مچرت م ا ه م د ق ي ي ت ل ا ة ي ف ا ر ت ح ا ل ا ة مچرت ل ا ع م ل ا ح ل ا و ه
ي ل ا م ئ ا د ع و ج ر ل ا ب ي ص و ت و ت ا مچرت ل ا ه ذ ه ة ق د ن ع ا ه ت ي ل و ئ س م Cisco
Systems (ر ف و ت م ط ب ا ر ل ا) ي ل ص أ ل ا ي ز ي ل ج ن إ ل ا دن تسمل ا