

# DOCSIS ةداهش ري فشت ك ف ةي فيك مدوملا ف قوت ةلاح صيخشتل

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## ةمدقملا

ةزهجأ قلع ببس صيخشتل DOCSIS ةداهش زيمرت ك فل ةمزاللا تاوطلال دن تسملا اذه فصي (CMTS) لبك لل مدمول لى صوت ماظن لى (pk) ضفرلا و (pk) ضفرلا ةلاح ي ف تالبك لل مدمول

## ةيساسا تامولعم

فورظ لى ببسلا عجري دق (pk) ضفر ةلاح لى مدمول ةزهجأ يهتنت ، تالاحل نم دي دعال ي ف CA ةوضوم مسا عم CM ردصم قباطتي ال ، CM ةداهش ي ف لاثملا لى بس لى ، ةني عم

لالثملا لى بس لى :

```
SLOT 5/0: May 10 10:13:48.272 CET: Got Issuer 0^A^A1^K0 ^F^CU^D^F^S^BTW1^\0^Z^F^CU^D  
^S^SHitron Technologies1^00  
^F^CU^D^K^S^FDOCSIS1C0A^F^CU^D^C^S:Hitron Technologies Cable Modem Root Certificate Authority  
from Certificate.
```

```
SLOT 5/0: May 10 10:13:48.272 CET: Got a new Invalid CM cert from a84e.3fdd.84c4
```

```
SLOT 5/0: May 10 10:13:48.272 CET: CA Cert Subject does not match CM Cert Issuer
```

```
SLOT 5/0: May 10 10:13:48.272 CET: BPI+ CM Cert Dump:
```

```
SLOT 5/0: May 10 10:13:48.272 CET: Failed CM Issuer not found. CMTS sent AUTH reject.
```

```
SLOT 5/0: May 10 10:13:48.272 CET: Sending KEK REJECT. Reason Code:6 Reason:16
```

```
SLOT 5/0: May 10 10:13:48.272 CET: BPI Authorization Reject Packet: a84e.3fdd.84c4
```

ةلكشم لل ي رذلجلا ببسلا حوضوب جارخال اذه رهظي ال

و (OpenSSL لى نم اهحتف نكمي) ةعارقل لباق ةداهش جاتن ال ةلاقملا هذه مادختسا نكمي  
قباطتال مدع دي دحتل ، (Mac لى KeySeries

# تاب ل ط م ل ا

ة ل ل ا ل ا ع ي ض ا و م ل ا ب ة ف ر ع م ك ي د ل ن و ك ت ن ا ب C i s c o ي ص و ت :

- D O C S I S ي ف ( B P I ) ي س ا س ا ل ا ط خ ل ا ة ي ص و ص خ
- ( C M T S ) ي ل ب ا ك ل ا م د و م ل ا ل ي ص و ت م ا ظ ن

ي ص و ي ، D O C S I S ي ف ي س ا س ا ل ا ط خ ل ا ة ي ص و ص خ ل ل ض ف ا م ه ف ي ل ع ل و ص ح ل ل : ح ي م ل ت [Cisco CMTS](#) ة ل ا ق م ي ل ع [DOCSIS 1.0](#) س ا س ا ل ا ط خ ة ي ص و ص خ ر ب ع ر و ر م ل ا ب

## ة م د خ ت س م ل ا ت ا ن و ك م ل ا

ة ن ي ع م ة ي د ا م ت ا ن و ك م و ج م ا ر ب ت ا ر ا د ص ا ي ل ع د ن ت س م ل ا ا ذ ه ر ص ت ق ي ا ل

ة ص ا خ ة ي ل م ع م ة ئ ي ب ي ف ة د و ج و م ل ا ة ز ه ج ا ل ا ن م د ن ت س م ل ا ا ذ ه ي ف ة د ر ا و ل ا ت ا م و ل ع م ل ا ء ا ش ن ا م ت ت ن ا ك ا ذ ا . ( ي ض ا ر ت ف ا ) ح و س م م ن ي و ك ت ب د ن ت س م ل ا ا ذ ه ي ف ة م د خ ت س م ل ا ة ز ه ج ا ل ا ع ي م ج ت ا د ب ر م ا ي ا ل ل م ت ح م ل ا ر ي ث ا ت ل ل ك م ه ف ن م د ك ا ت ف ، ل ي غ ش ت ل ا د ي ق ك ت ك ب ش

## ز ي م ر ت ل ا ك ف ا ر ج ا

### ت ا ل ج س ل ا ع ي م ج ت 1. ة م ه م ل ا

ا ذ ه ب ت ك ا . ت ا ل ج س ل ا ن ي ك م ت ي ل ا ج ا ت ح ت ، h e x ة د ا ه ش ل ا غ ي ر ف ت ي ل ع ل و ص ح ل ل ، C M T S ي ف ر م ا و ا ل ا .

```
debug cable mac-address
```

Telnet ي ل ع C M T S ن م ت ا ل ج س ل ا ع ي م ج ت و ط خ ل ا ة ق ا ط ب ي ل ا T e l n e t .

```
CMTS#telnet 127.0.0.XY
Trying 127.0.0.XY ... Open
```

```
clc_X_Y>en
clc_X_Y#
clc_X_Y#show log
```

ه ذ ه ل ة ل ث ا م م ت ا ج ر خ م ي ل ع ل و ص ح ل ا ك ن ك م ي .

```
SLOT 5/0: May 10 10:13:48.260 CET: BPI+ Manufacturer Cert Dump: a84e.3fdd.84c4
SLOT 5/0: May 10 10:13:48.260 CET: CA Certificate Dump:
SLOT 5/0: May 10 10:13:48.260 CET: 0x0000: 30 82 03 22 30 82 02 0A A0 03 02 01 02 02 10 43
SLOT 5/0: May 10 10:13:48.260 CET: 0x0010: 64 B5 50 E8 ED 7E E5 57 14 5A C0 A2 67 52 EC 30
SLOT 5/0: May 10 10:13:48.260 CET: 0x0020: 0D 06 09 2A 86 48 86 F7 0D 01 01 05 05 00 30 6F
SLOT 5/0: May 10 10:13:48.260 CET: 0x0030: 31 0B 30 09 06 03 55 04 06 13 02 42 45 31 1F 30
SLOT 5/0: May 10 10:13:48.260 CET: 0x0040: 1D 06 03 55 04 0A 13 16 74 43 6F 6D 4C 61 62 73
```

SLOT 5/0: May 10 10:13:48.260 CET: 0x0050: 20 2D 20 45 75 72 6F 2D 44 4F 43 53 49 53 31 15  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0060: 30 13 06 03 55 04 0B 13 0C 43 61 62 6C 65 20 4D  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0070: 6F 64 65 6D 73 31 28 30 26 06 03 55 04 03 13 1F  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0080: 45 75 72 6F 2D 44 4F 43 53 49 53 20 43 61 62 6C  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0090: 65 20 4D 6F 64 65 6D 20 52 6F 6F 74 20 43 41 30  
SLOT 5/0: May 10 10:13:48.260 CET: 0x00A0: 1E 17 0D 30 34 30 38 31 33 30 30 30 30 30 5A  
SLOT 5/0: May 10 10:13:48.260 CET: 0x00B0: 17 0D 32 34 30 38 31 32 32 33 35 39 35 39 5A 30  
SLOT 5/0: May 10 10:13:48.260 CET: 0x00C0: 81 86 31 0B 30 09 06 03 55 04 06 13 02 54 57 31  
SLOT 5/0: May 10 10:13:48.260 CET: 0x00D0: 1C 30 1A 06 03 55 04 0A 13 13 48 69 74 72 6F 6E  
SLOT 5/0: May 10 10:13:48.260 CET: 0x00E0: 20 54 65 63 68 6E 6F 6C 6F 67 69 65 73 31 14 30  
SLOT 5/0: May 10 10:13:48.260 CET: 0x00F0: 12 06 03 55 04 0B 13 0B 45 75 72 6F 2D 44 4F 43  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0100: 53 49 53 31 43 30 41 06 03 55 04 03 13 3A 48 69  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0110: 74 72 6F 6E 20 54 65 63 68 6E 6F 6C 6F 67 69 65  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0120: 73 20 43 61 62 6C 65 20 4D 6F 64 65 6D 20 52 6F  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0130: 6F 74 20 43 65 72 74 69 66 69 63 61 74 65 20 41  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0140: 75 74 68 6F 72 69 74 79 30 81 9F 30 0D 06 09 2A  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0150: 86 48 86 F7 0D 01 01 01 05 00 03 81 8D 00 30 81  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0160: 89 02 81 81 00 B8 47 DA 9D F1 F6 30 1B 8E 79 BE  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0170: BE 10 C3 2D 9F 7D D6 C7 B2 50 16 AB 85 5C 1C 8C  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0180: 9E 6B F7 15 60 B2 53 F4 2F 6D 49 0C 2C 3E 76 88  
SLOT 5/0: May 10 10:13:48.260 CET: 0x0190: 8A 8A 23 6B 25 47 61 AE B9 DF A8 A7 8C 4D 51 FB  
SLOT 5/0: May 10 10:13:48.260 CET: 0x01A0: E6 C2 0F D9 C7 27 DD F7 D8 CC F0 D8 70 F8 75 75  
SLOT 5/0: May 10 10:13:48.260 CET: 0x01B0: F3 D8 B7 80 C2 36 B0 53 02 A4 E9 84 02 5F 66 AE  
SLOT 5/0: May 10 10:13:48.260 CET: 0x01C0: E7 59 9A 17 4A A0 B1 B4 BA F3 3B 63 C4 75 05 11  
SLOT 5/0: May 10 10:13:48.260 CET: 0x01D0: 40 F1 EB B3 C8 A0 E8 AD 6E 1B 59 CC 41 20 F8 94  
SLOT 5/0: May 10 10:13:48.260 CET: 0x01E0: B3 94 23 A2 99 02 03 01 00 01 A3 26 30 24 30 12  
SLOT 5/0: May 10 10:13:48.260 CET: 0x01F0: 06 03 55 1D 13 01 01 FF 04 08 30 06 01 01 FF 02  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0200: 01 00 30 0E 06 03 55 1D 0F 01 01 FF 04 04 03 02  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0210: 01 06 30 0D 06 09 2A 86 48 86 F7 0D 01 01 05 05  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0220: 00 03 82 01 01 00 09 DB 24 B9 46 76 D7 D0 9F 70  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0230: 86 59 ED 7F 9B AC 96 FD AE 19 DD B3 51 3B A5 C0  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0240: 98 DA 80 2B 53 26 42 FA 6A 11 9F 6D 16 6F 76 F8  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0250: 9A F3 81 53 E8 DB EF 22 DF AC 3F 57 78 0E 70 78  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0260: 07 30 1D FF 19 70 34 E5 7A 52 47 99 B0 EE 7F EA  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0270: 23 99 DF CB 72 FF 0D BE AB 68 20 9F 16 C0 7C 69  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0280: 88 2D 00 6A AF 4B FF 93 A5 07 D3 F2 A8 F9 5B C4  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0290: DD 9F BF 49 36 C4 12 8A 64 C8 35 41 BB E2 B9 9B  
SLOT 5/0: May 10 10:13:48.264 CET: 0x02A0: 52 45 67 38 DC 92 55 E3 33 A4 70 68 FC E7 6E 54  
SLOT 5/0: May 10 10:13:48.264 CET: 0x02B0: 96 CA 89 B4 65 8B 2C AA 58 24 FC 4D 68 D7 84 4E  
SLOT 5/0: May 10 10:13:48.264 CET: 0x02C0: 36 3B B3 CA 9A 42 13 B1 FF 8C 66 D8 52 10 56 74  
SLOT 5/0: May 10 10:13:48.264 CET: 0x02D0: C7 DD 58 C3 EE 9D E3 65 E6 C1 5D B9 75 C2 A8 C9  
SLOT 5/0: May 10 10:13:48.264 CET: 0x02E0: 54 5B A1 85 38 3B E1 E1 DC 55 5D 3E DD 90 ED F8  
SLOT 5/0: May 10 10:13:48.264 CET: 0x02F0: 3A B0 68 93 E9 4A C2 D4 7F DC 90 E3 86 E2 CF C3  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0300: F2 A3 92 84 B3 A3 9A F8 71 30 F8 24 71 C2 07 BD  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0310: E8 6C 3C F7 FC 82 08 86 84 84 1B C4 D8 97 D3 50  
SLOT 5/0: May 10 10:13:48.264 CET: 0x0320: 59 72 2D D5 4C 0B  
SLOT 5/0: May 10 10:13:48.264 CET: Found existing manufacturer certificate for a84e.3fdd.84c4  
with subject cn=Hitron Technologies Cable Modem Root Certificate Authority,ou=Euro-  
DOCSIS,o=Hitron Technologies,c=TW  
SLOT 5/0: May 10 10:13:48.264 CET: BPI: setting a84e.3fdd.84c4 caidx:3  
  
SLOT 5/0: May 10 10:13:48.264 CET: Mfg serial no. from a84e.3fdd.84c4 certificate:  
4364B550E8ED7EE557145AC0A26752EC  
SLOT 5/0: May 10 10:13:48.264 CET: Finger print of a84e.3fdd.84c4 manufacturer certificate  
matched.  
SLOT 5/0: May 10 10:13:48.264 CET: crl0k\_clc\_snmp\_bpipplus\_broadcast\_cert() CA idx:3  
state:Chained rowStatus:Active prov:0 len:1078 idx:3 state:Chained rowState:Active prov:0  
learn:1 idx:3  
SLOT 5/0: May 10 10:13:48.268 CET: BPI: Sent CA Cert to RP successfully.  
SLOT 5/0: May 10 10:13:48.268 CET: Success in validating AUTH Info message from a84e.3fdd.84c4.  
SLOT 5/0: May 10 10:13:48.268 CET: CMTS Received AUTH REQ from a84e.3fdd.84c4.  
SLOT 5/0: May 10 10:13:48.268 CET: BPI Authorization Request Packet: a84e.3fdd.84c4  
SLOT 5/0: May 10 10:13:48.268 CET: BPKM Attributes: a84e.3fdd.84c4  
SLOT 5/0: May 10 10:13:48.268 CET: Found COMPOUND CM Identification (length = 173):

SLOT 5/0: May 10 10:13:48.268 CET: Found Serial Number (length = 12):  
 SLOT 5/0: May 10 10:13:48.268 CET: 32353331 36433030 38303433  
 SLOT 5/0: May 10 10:13:48.268 CET: Found Manufacturer ID (length = 3):  
 SLOT 5/0: May 10 10:13:48.268 CET: 0050F1  
 SLOT 5/0: May 10 10:13:48.268 CET: Found MAC Address (length = 6):  
 SLOT 5/0: May 10 10:13:48.268 CET: A84E3FDD 84C4  
 SLOT 5/0: May 10 10:13:48.268 CET: Found RSA Public Key (length = 140):  
 SLOT 5/0: May 10 10:13:48.268 CET: 30818902 818100B0 D4F2B649 87FCE340  
 SLOT 5/0: May 10 10:13:48.268 CET: B21FB1E0 8CFE04DD DB3D05D5 34170886  
 SLOT 5/0: May 10 10:13:48.268 CET: 7623EE25 4E4A61FC 6D134830 55F402CF  
 SLOT 5/0: May 10 10:13:48.268 CET: 89B11B34 867B3EF7 D9FE6CBE 8B4C251F  
 SLOT 5/0: May 10 10:13:48.268 CET: DA5A2E47 D65C2120 8EFC72E2 238D5443  
 SLOT 5/0: May 10 10:13:48.268 CET: 786F151A A7FE6C21 371957DD 3FEB8435  
 SLOT 5/0: May 10 10:13:48.268 CET: 8AA1B7A2 181DAF7A 4F7DD4E9 128D953C  
 SLOT 5/0: May 10 10:13:48.268 CET: 146B77F4 51A9F868 5D1A253F A9590AC0  
 SLOT 5/0: May 10 10:13:48.268 CET: F69D24DF 2B84C102 03010001  
**SLOT 5/0: May 10 10:13:48.268 CET: Found CM Certificate (length = 652):**  
**SLOT 5/0: May 10 10:13:48.268 CET: 30820288 308201F1 A0030201 02020C41**  
**SLOT 5/0: May 10 10:13:48.268 CET: 38344533 46444438 34433430 0D06092A**  
**SLOT 5/0: May 10 10:13:48.268 CET: 864886F7 0D010105 05003081 81310B30**  
**SLOT 5/0: May 10 10:13:48.268 CET: 09060355 04061302 5457311C 301A0603**  
**SLOT 5/0: May 10 10:13:48.268 CET: 55040A13 13486974 726F6E20 54656368**  
**SLOT 5/0: May 10 10:13:48.268 CET: 6E6F6C6F 67696573 310F300D 06035504**  
**SLOT 5/0: May 10 10:13:48.268 CET: 0B130644 4F435349 53314330 41060355**  
**SLOT 5/0: May 10 10:13:48.268 CET: 0403133A 48697472 6F6E2054 6563686E**  
**SLOT 5/0: May 10 10:13:48.268 CET: 6F6C6F67 69657320 4361626C 65204D6F**  
**SLOT 5/0: May 10 10:13:48.268 CET: 64656D20 526F6F74 20436572 74696669**  
**SLOT 5/0: May 10 10:13:48.268 CET: 63617465 20417574 686F7269 7479301E**  
**SLOT 5/0: May 10 10:13:48.268 CET: 170D3137 30313031 30303030 30305A17**  
**SLOT 5/0: May 10 10:13:48.268 CET: 0D333631 32323832 33353935 395A3081**  
**SLOT 5/0: May 10 10:13:48.268 CET: 86310B30 09060355 04061302 5457311C**  
**SLOT 5/0: May 10 10:13:48.268 CET: 301A0603 55040A13 13486974 726F6E20**  
**SLOT 5/0: May 10 10:13:48.268 CET: 54656368 6E6F6C6F 67696573 313D303B**  
**SLOT 5/0: May 10 10:13:48.268 CET: 06035504 0B13344E 6F2E2034 302C2057**  
**SLOT 5/0: May 10 10:13:48.268 CET: 752D6B75 6E672035 74682052 642E2C20**  
**SLOT 5/0: May 10 10:13:48.268 CET: 57752D6B 752C2054 61697065 69204873**  
**SLOT 5/0: May 10 10:13:48.268 CET: 69656E2C 20546169 77616E31 1A301806**  
**SLOT 5/0: May 10 10:13:48.268 CET: 03550403 13114138 3A34453A 33463A44**  
**SLOT 5/0: May 10 10:13:48.268 CET: 443A3834 3A433430 819F300D 06092A86**  
**SLOT 5/0: May 10 10:13:48.268 CET: 4886F70D 01010105 0003818D 00308189**  
**SLOT 5/0: May 10 10:13:48.268 CET: 02818100 B0D4F2B6 4987FCE3 40B21FB1**  
**SLOT 5/0: May 10 10:13:48.268 CET: E08CFE04 DDBB3D05 D5341708 867623EE**  
**SLOT 5/0: May 10 10:13:48.268 CET: 254E4A61 FC6D1348 3055F402 CF89B11B**  
**SLOT 5/0: May 10 10:13:48.268 CET: 34867B3E F7D9FE6C BE8B4C25 1FDA5A2E**  
**SLOT 5/0: May 10 10:13:48.268 CET: 47D65C21 208EFC72 E2238D54 43786F15**  
**SLOT 5/0: May 10 10:13:48.268 CET: 1AA7FE6C 21371957 DD3FEB84 358AA1B7**  
**SLOT 5/0: May 10 10:13:48.268 CET: A2181DAF 7A4F7DD4 E9128D95 3C146B77**  
**SLOT 5/0: May 10 10:13:48.268 CET: F451A9F8 685D1A25 3FA9590A C0F69D24**  
**SLOT 5/0: May 10 10:13:48.268 CET: DF2B84C1 02030100 01300D06 092A8648**  
**SLOT 5/0: May 10 10:13:48.268 CET: 86F70D01 01050500 03818100 08DFC2DA**  
**SLOT 5/0: May 10 10:13:48.268 CET: 8C3ECCDA 98289410 E1B8657A 9A3F220D**  
**SLOT 5/0: May 10 10:13:48.268 CET: AE368029 0E89923F 0DF09E06 8142BAB7**  
**SLOT 5/0: May 10 10:13:48.268 CET: E8A6D5B3 6D7604FF 6A07A8B8 409D0B0B**  
**SLOT 5/0: May 10 10:13:48.268 CET: 6D568AF4 F9395199 AB54126C E9C22F1B**  
**SLOT 5/0: May 10 10:13:48.268 CET: 6390543A 3B67EFB8 FCF0E755 F642E1E0**  
**SLOT 5/0: May 10 10:13:48.268 CET: 273A3853 F4DDBFF1 391E63CE 8BB7BBC0**  
**SLOT 5/0: May 10 10:13:48.268 CET: 8AFC59FC 767C3FA5 A5EB255C 8878F4AB**  
**SLOT 5/0: May 10 10:13:48.272 CET: 63665AA9 CDCF779A 3DFE0C4C**  
 SLOT 5/0: May 10 10:13:48.272 CET: Found COMPOUND SA Capabilities (length = 13):  
 SLOT 5/0: May 10 10:13:48.272 CET: Found Crypto Suite List (length = 6):  
 SLOT 5/0: May 10 10:13:48.272 CET: 01000200 0300  
 SLOT 5/0: May 10 10:13:48.272 CET: Found BPI Version (length = 1):  
 SLOT 5/0: May 10 10:13:48.272 CET: 01  
 SLOT 5/0: May 10 10:13:48.272 CET: Found SAID (length = 2):

```

SLOT 5/0: May 10 10:13:48.272 CET: 0000
SLOT 5/0: May 10 10:13:48.272 CET: END BPKM Attributes: a84e.3fdd.84c4
SLOT 5/0: May 10 10:13:48.272 CET: Get a CM Certificate.
SLOT 5/0: May 10 10:13:48.272 CET: Cable5/0/12: Auth-Req contains 1 SID(s).
SLOT 5/0: May 10 10:13:48.272 CET: Cable5/0/12: AuthReq with NULL SAID - D3.0 modem.
SLOT 5/0: May 10 10:13:48.272 CET: EAE_BPI_REQ: DISABLE a84e.3fdd.84c4 - OK
SLOT 5/0: May 10 10:13:48.272 CET: BPI_AES: Encryption priority is: aes128-des56-des40.
SLOT 5/0: May 10 10:13:48.272 CET: BPI_AES: AES is a candidate.
SLOT 5/0: May 10 10:13:48.272 CET: BPI Crypto Algorithm: sid:0 cfg_mod:1, cm_cap:0x7, assigned:3
aes_support:1
SLOT 5/0: May 10 10:13:48.272 CET: CMTS generated AUTH_KEY.
SLOT 5/0: May 10 10:13:48.272 CET: CMTS received 0 as primary SAID - D3.0
SLOT 5/0: May 10 10:13:48.272 CET: CM state:2050 MAC:a84e.3fdd.84c4
SLOT 5/0: May 10 10:13:48.272 CET: Parsed/Matched MAC Address:a84e.3fdd.84c4
SLOT 5/0: May 10 10:13:48.272 CET: Got Issuer 0^A^A1^K0 ^F^CU^D^F^S^BTW1^\0^Z^F^CU^D
^S^SHitron Technologies1^00
^F^CU^D^K^S^FDOCSIS1C0A^F^CU^D^C^S:Hitron Technologies Cable Modem Root Certificate Authority
from Certificate.
SLOT 5/0: May 10 10:13:48.272 CET: Got a new Invalid CM cert from a84e.3fdd.84c4
SLOT 5/0: May 10 10:13:48.272 CET: CA Cert Subject does not match CM Cert Issuer

```

ةلصفنم ةيرشع ةيسادس بل اقم كانه نأ ،تال ج س ل ا ك لت ي ف اورت نأ م كن كم ي

1. CA Certificate Dump : نم ق م اغ رطس ب أدب ي . CA ةداهش ل يرشع ي س ادس غ ي ر ف ت .
2. CM Certificate (652 = ل و ط ل ) دو ج و م ق م اغ رطس ب أدب ي . CM ةداهش ل يرشع ي س ادس غ ي ر ف ت .

## تاداهش ل ا م ي ق ع ت 2. ة م ه م ل ا

ت ا م و ل ع م ل ا ة ف ا ك ة ل ا ز ا ل ا ج ا ت ح ت ، ح ي ح ص ل ك ش ب ت ا د ا ه ش ل ا غ ي ر ف ت ة ج ل ا ع م ت ي ك ل ة يرشع ل ا ة ي س ا د س ل ا غ ي ر ف ت م ي ق ب ط ق ف ظ ا ف ت ح ا ل ا و ة ي ف ا ض ا ل ا .

ت ا د ا ه ش ل ا غ ي ر ف ت ي ف ت ا ف ا س م ل ا و ( ل ف س ا ل ا ع ) ة ل ا ح ل ا ب ة ي ل م ع ل ا ه ذ ل ة ل ص ا ل : ة ظ ح ا ل م .

م ت خ ل ا و ت ا ح ت ف ل ا م ق ر ) ر و ط س ل ا س و و ر ع ي م ج ة ل ا ز ا ل ا ل ه س و ة ع ي ر س ة ق ي ر ط : ح ي م ل ت و ا Sublime ل ث م ، ص و ص ن ل ا ر ح م ي ف ALT ح ا ت ف م ب ظ ا ف ت ح ا ل ا ي ه ( ك ل ذ ل ا ا م و ، ي ن م ز ل ا Notepad++ .

CA تاداهش غ ي ر ف ت ل ع ل ا ث م .

```

30 82 03 22 30 82 02 0A A0 03 02 01 02 02 10 43
64 B5 50 E8 ED 7E E5 57 14 5A C0 A2 67 52 EC 30
0D 06 09 2A 86 48 86 F7 0D 01 01 05 05 00 30 6F
31 0B 30 09 06 03 55 04 06 13 02 42 45 31 1F 30
1D 06 03 55 04 0A 13 16 74 43 6F 6D 4C 61 62 73
20 2D 20 45 75 72 6F 2D 44 4F 43 53 49 53 31 15
30 13 06 03 55 04 0B 13 0C 43 61 62 6C 65 20 4D
6F 64 65 6D 73 31 28 30 26 06 03 55 04 03 13 1F
45 75 72 6F 2D 44 4F 43 53 49 53 20 43 61 62 6C
65 20 4D 6F 64 65 6D 20 52 6F 6F 74 20 43 41 30
1E 17 0D 30 34 30 38 31 33 30 30 30 30 30 5A
17 0D 32 34 30 38 31 32 32 33 35 39 35 39 5A 30
81 86 31 0B 30 09 06 03 55 04 06 13 02 54 57 31
1C 30 1A 06 03 55 04 0A 13 13 48 69 74 72 6F 6E
20 54 65 63 68 6E 6F 6C 6F 67 69 65 73 31 14 30
12 06 03 55 04 0B 13 0B 45 75 72 6F 2D 44 4F 43

```

53 49 53 31 43 30 41 06 03 55 04 03 13 3A 48 69  
74 72 6F 6E 20 54 65 63 68 6E 6F 6C 6F 67 69 65  
73 20 43 61 62 6C 65 20 4D 6F 64 65 6D 20 52 6F  
6F 74 20 43 65 72 74 69 66 69 63 61 74 65 20 41  
75 74 68 6F 72 69 74 79 30 81 9F 30 0D 06 09 2A  
86 48 86 F7 0D 01 01 01 05 00 03 81 8D 00 30 81  
89 02 81 81 00 B8 47 DA 9D F1 F6 30 1B 8E 79 BE  
BE 10 C3 2D 9F 7D D6 C7 B2 50 16 AB 85 5C 1C 8C  
9E 6B F7 15 60 B2 53 F4 2F 6D 49 0C 2C 3E 76 88  
8A 8A 23 6B 25 47 61 AE B9 DF A8 A7 8C 4D 51 FB  
E6 C2 0F D9 C7 27 DD F7 D8 CC F0 D8 70 F8 75 75  
F3 D8 B7 80 C2 36 B0 53 02 A4 E9 84 02 5F 66 AE  
E7 59 9A 17 4A A0 B1 B4 BA F3 3B 63 C4 75 05 11  
40 F1 EB B3 C8 A0 E8 AD 6E 1B 59 CC 41 20 F8 94  
B3 94 23 A2 99 02 03 01 00 01 A3 26 30 24 30 12  
06 03 55 1D 13 01 01 FF 04 08 30 06 01 01 FF 02  
01 00 30 0E 06 03 55 1D 0F 01 01 FF 04 04 03 02  
01 06 30 0D 06 09 2A 86 48 86 F7 0D 01 01 05 05  
00 03 82 01 01 00 09 DB 24 B9 46 76 D7 D0 9F 70  
86 59 ED 7F 9B AC 96 FD AE 19 DD B3 51 3B A5 C0  
98 DA 80 2B 53 26 42 FA 6A 11 9F 6D 16 6F 76 F8  
9A F3 81 53 E8 DB EF 22 DF AC 3F 57 78 0E 70 78  
07 30 1D FF 19 70 34 E5 7A 52 47 99 B0 EE 7F EA  
23 99 DF CB 72 FF 0D BE AB 68 20 9F 16 C0 7C 69  
88 2D 00 6A AF 4B FF 93 A5 07 D3 F2 A8 F9 5B C4  
DD 9F BF 49 36 C4 12 8A 64 C8 35 41 BB E2 B9 9B  
52 45 67 38 DC 92 55 E3 33 A4 70 68 FC E7 6E 54  
96 CA 89 B4 65 8B 2C AA 58 24 FC 4D 68 D7 84 4E  
36 3B B3 CA 9A 42 13 B1 FF 8C 66 D8 52 10 56 74  
C7 DD 58 C3 EE 9D E3 65 E6 C1 5D B9 75 C2 A8 C9  
54 5B A1 85 38 3B E1 E1 DC 55 5D 3E DD 90 ED F8  
3A B0 68 93 E9 4A C2 D4 7F DC 90 E3 86 E2 CF C3  
F2 A3 92 84 B3 A3 9A F8 71 30 F8 24 71 C2 07 BD  
E8 6C 3C F7 FC 82 08 86 84 84 1B C4 D8 97 D3 50  
59 72 2D D5 4C 0B

cacert.txt . مساب فلم لا اذه ظفح

CM. ةداهش غيرفت ىلع لاثم

30820288 308201F1 A0030201 02020C41  
38344533 46444438 34433430 0D06092A  
864886F7 0D010105 05003081 81310B30  
09060355 04061302 5457311C 301A0603  
55040A13 13486974 726F6E20 54656368  
6E6F6C6F 67696573 310F300D 06035504  
0B130644 4F435349 53314330 41060355  
0403133A 48697472 6F6E2054 6563686E  
6F6C6F67 69657320 4361626C 65204D6F  
64656D20 526F6F74 20436572 74696669  
63617465 20417574 686F7269 7479301E  
170D3137 30313031 30303030 30305A17  
0D333631 32323832 33353935 395A3081  
86310B30 09060355 04061302 5457311C  
301A0603 55040A13 13486974 726F6E20  
54656368 6E6F6C6F 67696573 313D303B  
06035504 0B13344E 6F2E2034 302C2057  
752D6B75 6E672035 74682052 642E2C20  
57752D6B 752C2054 61697065 69204873  
69656E2C 20546169 77616E31 1A301806  
03550403 13114138 3A34453A 33463A44  
443A3834 3A433430 819F300D 06092A86  
4886F70D 01010105 0003818D 00308189

```
02818100 B0D4F2B6 4987FCE3 40B21FB1
E08CFE04 DDDB3D05 D5341708 867623EE
254E4A61 FC6D1348 3055F402 CF89B11B
34867B3E F7D9FE6C BE8B4C25 1FDA5A2E
47D65C21 208EFC72 E2238D54 43786F15
1AA7FE6C 21371957 DD3FEB84 358AA1B7
A2181DAF 7A4F7DD4 E9128D95 3C146B77
F451A9F8 685D1A25 3FA9590A C0F69D24
DF2B84C1 02030100 01300D06 092A8648
86F70D01 01050500 03818100 08DFC2DA
8C3ECCDA 98289410 E1B8657A 9A3F220D
AE368029 0E89923F 0DF09E06 8142BAB7
E8A6D5B3 6D7604FF 6A07A8B8 409D0B0B
6D568AF4 F9395199 AB54126C E9C22F1B
6390543A 3B67EFB8 FCF0E755 F642E1E0
273A3853 F4DDBFF1 391E63CE 8BB7BBC0
8AFC59FC 767C3FA5 A5EB255C 8878F4AB
63665AA9 CDCF779A 3DFE0C4C
```

مساب فلما اذه ظفح cmcert.txt .

### xxd ةدعاسملا ةأدألل فلما ريضحت 3. ةمهمل

فلما لىل رشع يسادس غيرفت ليوحتب حمست يتل ةدعاسملا كام/سكونيل ةأدا وه XXD نيعم رطس سار لىل لوصحلل ةيرشع ةيسادس تانايب لىل XXD جاتحت .سكعل او ئيئانث يرورضل سارل فيضي يذل يلاتل نوثيابل يذيفنتل صلل مدختسا .لمعلل

```
TVANEGRO-M-N1QP:Desktop tvanegro$ cat addoffset.py
import fileinput
import sys

i = 0
for line in fileinput.input():
    line=line.replace(" ", "")
    print("%06x: %s" % (i,line.strip()))
    i = i+int(len(line.strip())/2)
```

### يئانث قيسننت لىل HEXDUMP نم تاداهشل ليوحت 4. ةمهمل

CA. ةداهش ليوحتل رمال اذه ليغشتب مق

```
python3.5 addoffset.py cacert.txt | xxd -r > cacert.crt
```

CM. ةداهش ليوحتل رمال اذه ليغشتب مق

```
python3.5 addoffset.py cmcert.txt | xxd -r > cmcert.crt
```

قباطت مدع يال هذه ةدلومل CRT تافلما نم ققحتل نال نكمي.

### تاداهشل ةعجارم 5. ةمهمل

Keyseries ةأدا و OpenSSL ةأدا اما مدختسا ،تافلما ةعارقل

CA. ةداهشل OpenSSL ةأدا لىل لاثم

```
TVANEGRO-M-N1QP:Desktop tvanegro$ openssl x509 -inform der -in cacert.crt -noout -text
Certificate:
Data:
Version: 3 (0x2)
Serial Number:
43:64:b5:50:e8:ed:7e:e5:57:14:5a:c0:a2:67:52:ec
Signature Algorithm: sha1WithRSAEncryption
Issuer: C=BE, O=tComLabs - Euro-DOCSIS, OU=Cable Modems, CN=Euro-DOCSIS Cable Modem Root CA
Validity
Not Before: Aug 13 00:00:00 2004 GMT
Not After : Aug 12 23:59:59 2024 GMT
Subject: C=TW, O=Hitron Technologies, OU=Euro-DOCSIS, CN=Hitron Technologies Cable Modem Root
Certificate Authority
Subject Public Key Info:
Public Key Algorithm: rsaEncryption
RSA Public Key: (1024 bit)
Modulus (1024 bit):
00:b8:47:da:9d:f1:f6:30:1b:8e:79:be:be:10:c3:
2d:9f:7d:d6:c7:b2:50:16:ab:85:5c:1c:8c:9e:6b:
f7:15:60:b2:53:f4:2f:6d:49:0c:2c:3e:76:88:8a:
8a:23:6b:25:47:61:ae:b9:df:a8:a7:8c:4d:51:fb:
e6:c2:0f:d9:c7:27:dd:f7:d8:cc:f0:d8:70:f8:75:
75:f3:d8:b7:80:c2:36:b0:53:02:a4:e9:84:02:5f:
66:ae:e7:59:9a:17:4a:a0:b1:b4:ba:f3:3b:63:c4:
75:05:11:40:f1:eb:b3:c8:a0:e8:ad:6e:1b:59:cc:
41:20:f8:94:b3:94:23:a2:99
Exponent: 65537 (0x10001)
X509v3 extensions:
X509v3 Basic Constraints: critical
CA:TRUE, pathlen:0
X509v3 Key Usage: critical
Certificate Sign, CRL Sign
Signature Algorithm: sha1WithRSAEncryption
09:db:24:b9:46:76:d7:d0:9f:70:86:59:ed:7f:9b:ac:96:fd:
ae:19:dd:b3:51:3b:a5:c0:98:da:80:2b:53:26:42:fa:6a:11:
9f:6d:16:6f:76:f8:9a:f3:81:53:e8:db:ef:22:df:ac:3f:57:
78:0e:70:78:07:30:1d:ff:19:70:34:e5:7a:52:47:99:b0:ee:
7f:ea:23:99:df:cb:72:ff:0d:be:ab:68:20:9f:16:c0:7c:69:
88:2d:00:6a:af:4b:ff:93:a5:07:d3:f2:a8:f9:5b:c4:dd:9f:
bf:49:36:c4:12:8a:64:c8:35:41:bb:e2:b9:9b:52:45:67:38:
dc:92:55:e3:33:a4:70:68:fc:e7:6e:54:96:ca:89:b4:65:8b:
2c:aa:58:24:fc:4d:68:d7:84:4e:36:3b:b3:ca:9a:42:13:b1:
ff:8c:66:d8:52:10:56:74:c7:dd:58:c3:ee:9d:e3:65:e6:c1:
5d:b9:75:c2:a8:c9:54:5b:a1:85:38:3b:e1:e1:dc:55:5d:3e:
dd:90:ed:f8:3a:b0:68:93:e9:4a:c2:d4:7f:dc:90:e3:86:e2:
cf:c3:f2:a3:92:84:b3:a3:9a:f8:71:30:f8:24:71:c2:07:bd:
e8:6c:3c:f7:fc:82:08:86:84:84:1b:c4:d8:97:d3:50:59:72:
2d:d5:4c:0b
```

## CM. ةداهش ل OpenSSL ةادأ لى ل اثم

```
TVANEGRO-M-N1QP:Desktop tvanegro$ openssl x509 -inform der -in cmcert.crt -noout -text
Certificate:
Data:
Version: 3 (0x2)
Serial Number:
41:38:34:45:33:46:44:44:38:34:43:34
Signature Algorithm: sha1WithRSAEncryption
Issuer: C=TW, O=Hitron Technologies, OU=DOCSIS, CN=Hitron Technologies Cable Modem Root
Certificate Authority
```



Validity

Not Before: Jan 1 00:00:00 2017 GMT

Not After : Dec 28 23:59:59 2036 GMT

Subject: C=TW, O=Hitron Technologies, OU=No. 40, Wu-kung 5th Rd., Wu-ku, Taipei Hsien, Taiwan, CN=A8:4E:3F:DD:84:C4

Subject Public Key Info:

Public Key Algorithm: rsaEncryption

RSA Public Key: (1024 bit)

Modulus (1024 bit):

00:b0:d4:f2:b6:49:87:fc:e3:40:b2:1f:b1:e0:8c:  
fe:04:dd:db:3d:05:d5:34:17:08:86:76:23:ee:25:  
4e:4a:61:fc:6d:13:48:30:55:f4:02:cf:89:b1:1b:  
34:86:7b:3e:f7:d9:fe:6c:be:8b:4c:25:1f:da:5a:  
2e:47:d6:5c:21:20:8e:fc:72:e2:23:8d:54:43:78:  
6f:15:1a:a7:fe:6c:21:37:19:57:dd:3f:eb:84:35:  
8a:a1:b7:a2:18:1d:af:7a:4f:7d:d4:e9:12:8d:95:  
3c:14:6b:77:f4:51:a9:f8:68:5d:1a:25:3f:a9:59:  
0a:c0:f6:9d:24:df:2b:84:c1

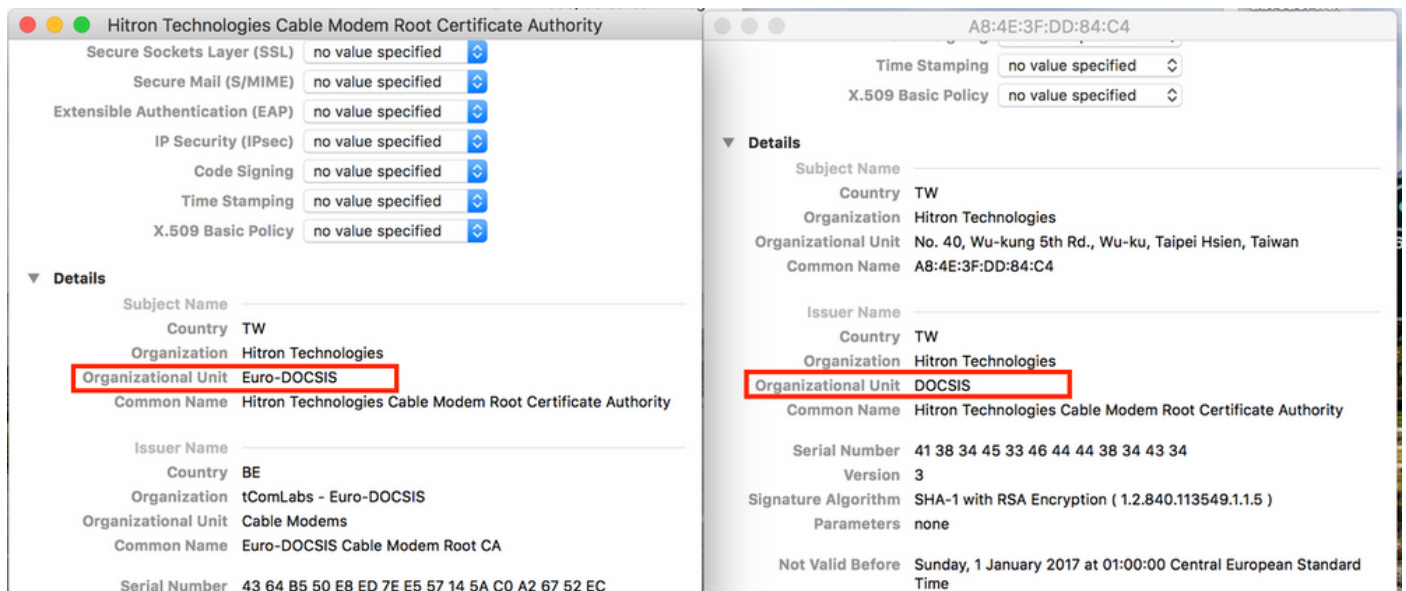
Exponent: 65537 (0x10001)

Signature Algorithm: sha1WithRSAEncryption

08:df:c2:da:8c:3e:cc:da:98:28:94:10:e1:b8:65:7a:9a:3f:  
22:0d:ae:36:80:29:0e:89:92:3f:0d:f0:9e:06:81:42:ba:b7:  
e8:a6:d5:b3:6d:76:04:ff:6a:07:a8:b8:40:9d:0b:0b:6d:56:  
8a:f4:f9:39:51:99:ab:54:12:6c:e9:c2:2f:1b:63:90:54:3a:  
3b:67:ef:b8:fc:f0:e7:55:f6:42:e1:e0:27:3a:38:53:f4:dd:  
bf:f1:39:1e:63:ce:8b:b7:bb:c0:8a:fc:59:fc:76:7c:3f:a5:  
a5:eb:25:5c:88:78:f4:ab:63:66:5a:a9:cd:cf:77:9a:3d:fe:  
0c:4c

يلع عالطالا كنكمي ، لاثملا يف . قباطم ريغ (ةيمظنت ةدحو) OU= لوقح نأ ىرت نأ كنكمي  
ةداهشلل CMTS ضفر عارو ب بسلا وه اذه . Euro-DOCSIS و DOCSIS

ص. خارتلا ضرعل Mac OS يف حياتفملا ةلسلس اءام ادختسا كنكمي .



ةمچرتل هذه لوج

ةللأل تاينقتل نم ةومچم مادختساب دن تسمل اذہ Cisco تچرت  
ملاعلاء أن اعمچ في نيمدختسمل معدى وتحم ميدقتل ةيرشبلاو  
امك ةقيقد نوك تنل ةللأل ةمچرت لصف أن ةظحال مچرئي. ةصاغل مهتغب  
Cisco يلخت. فرتحم مچرت مامدقي يتل ةيفارتحال ةمچرتل عم لالحل وه  
ىل إأمئاد عوچرلاب ي صؤتو تامچرتل هذه ةقدنع اهتيلوئسم Cisco  
Systems (رفوتم طبارلا) يلصلأل يزيلچنل دن تسمل