

# Understanding CIP TN3270 Tracing

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### Related Information

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## Introduction

This document describes CIP TN3270 tracing.

## Prerequisites

## Requirements

There are no specific requirements for this document.

## Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

## CIP TN3270 Tracing with If-Console Commands

Assume CIP card is in slot 1 position on the router. Enter the CIP console using the following global command:

```
Router#if-con 1 c
```

```
Entering CONSOLE for CIP 1
```

Type **quit** to end this session.

The CIP console command **trace70** is used to trace both upstream SNA and downstream TCP sessions in CIP TN3270 environment. Trace70 is used in CIP microcode Version 22-x; the equivalent in CIP microcode Version 24-x and higher is **tn3270 trace / capture**.

For CIP microcode 22-xx:

```
CIP-Slot1#trace70
usage: trace70 <"ON" | "OFF">

      = "LU" | "PU" | "DLUR" | "TNETCP" | "TNETSESS" | "TN3270" | "ALL"

      = "FSM" | "PACKET" | "ERROR" | "CONTROL" | "ALL"

CIP-Slot1#trace70 on all all
```

To stop the capture:

```
CIP-Slot1#capture70 reset
```

For CIP/CPA microcode 24-xx and later:

```
CIP-Slot1#tn3270 capture
Incorrect usage of "tn3270 capture".

tn3270 capture          - Turns display filter of Tn3270-server for lu or ip
                        Usage: tn3270 capture <RESET> | <WHAT> | <IP A.B.C.D [mask]>
                               | <PU pu-name> | <LU <lu>>
                        <RESET> = stop capturing
                        <WHAT>  = query which LUs are being captured
                        <lu>    = <pu-name.locaddr | lu-name>
                        locaddr = LU locaddr 1..255

CIP-Slot1#tn3270 capture ip 172.17.240.41
<---This would trace the session with the tn3270 client with IP address is 172.17.240.41
```

To stop the capture:

```
CIP-Slot1#tn3270 capture reset

CIP-Slot1#tn3270 trace
Incorrect usage of "tn3270 trace".

tn3270 trace          - Turns display of Tn3270-server logging ON/OFF for a certain CATEG
                        of a specific COMPONENT.

                        Usage: tn3270 trace <"ON" | "OFF"> <component> <what>
                               <component> = "LU" | "PU" | "DLUR" | "LINK" | "TNETCP" | "TNETSESS"
                                               | "TN3270" | "ALL"
                               <what>      = "FSM" | "PACKET" | "ERROR" | "CONTROL" | "ALL"

CIP-Slot1#tn3270 trace on all all
```

To stop the capture:

```
CIP-Slot1#tn3270 trace off all all
```

# Sample Trace Output

## Direct PU Configured

```
cappuccino(config-if)#tn
cappuccino(cfg-tn3270)#pu cappu1 05d18101 10.14.20.11 tok 1 20
cappuccino(tn3270-pu)#exit
cappuccino(cfg-tn3270)#

%CIP2: [pu external state trans]4[puIndex]14:[puNameLclAdmin]CAPPU1
%CIP2: ----:[puSnmpState]3:
%CIP2: [tnet ext state transition]25[ipAddrLcl]10.14.20.11:[tcpPort
%CIP2: ----Lcl]0x17:[listenPointStateExtern]2:
%CIP2: PU 14: fsm ([reset],func_create_pu_sess)-->[inactive]
%CIP2: TN3270S: Link CAPPU1 from state 0, event 0, to state 1
%CIP2: TN3270S: Link CAPPU1 from state 1, event 1, to state 3
%CIP2: TN3270S: Link CAPPU1 from state 3, event 2, to state 4
%CIP2: TN3270S: Link CAPPU1 Active, MAXDATA=1033
%CIP2: [pu external state trans]4[puIndex]14:[puNameLclAdmin]CAPPU1
%CIP2: ----:[puSnmpState]2:
%CIP2: PU 14: fsm ([inactive],func_create_pu_sess)-->[inactive]
%CIP2: Out Pu 14: len=21,2D000000 013C6B80 00111201 05000000
                                     == 0x11 ACTPU from VTAM
%CIP2: PU 14: fsm ([inactive],ru_req_actpu)-->[ready]
%CIP2: Out Pu 14: Len=12,2D000100 013D6B80 000D0201
                                     == 0x0d ACTLU from VTAM
                                     == 0x01 1st static LU
%CIP2: Out Lu 14.1: sna-state=0000,lu-flags=00000100
%CIP2: In Pu 14: Len=25,2D000001 013DEB80 000D0201 00000000
%CIP2: [LU entered as specific]16[puIndex]14:[luLocaddr]0x1:[luName
%CIP2: ----Sna]CAPPU101:
%CIP2: LU 14.1: fsm ([Reset],Req_Actlu)-->[Actlud]
%CIP2: Out Pu 14: Len=12,2D000200 013E6B80 000D0201
                                     == 0x02 2nd static LU
                                     Because there're 2 LUs defined in VTAM for this PU
%CIP2: Out Lu 14.2: sna-state=0000,lu-flags=00000100
%CIP2: In Pu 14: Len=25,2D000002 013EEB80 000D0201 00000000
%CIP2: [LU entered as specific]16[puIndex]14:[luLocaddr]0x2:[luName
%CIP2: ----Sna]CAPPU102:
%CIP2: LU 14.2: fsm ([Reset],Req_Actlu)-->[Actlud]
%CIP2: [tnet ext state transition]25[ipAddrLcl]10.14.20.11:[tcpPort
%CIP2: ----Lcl]0x17:[listenPointStateExtern]3:
cappuccino(cfg-tn3270)#
```

## Start an LU-LU Session from Reflection Client by Entering IP Address

### Static LU

```
IP2: [bad tnet connect]13[ipAddrClient]10.14.10.21:[tcpPortClient
%CIP2: ----]0xD61:[connectReasonCode]0x3:[tn3270eDeviceType]IBM-327
%CIP2: ----8-2-E:[tn3270eDeviceName]CAP01L02:[tn3270eSubErr]not fou
%CIP2: ----n:
%CIP2: Out Tnet 127: Len=3,FFFD28
%CIP2: In Tnet 127: Len=3,FFFB28
%CIP2: Out Tnet 127: Len=7,FFFA2808 02FFF0
%CIP2: In Tnet 127: Len=28,FFFA2802 0749424D 2D333237 382D322D
%CIP2: Out Tnet 127: Len=12,FFFA2802 060503FF F0FFFE28
%CIP2: [tnet session connected]15[puIndex]14:[luLocaddr]0x2:[ipAddr
%CIP2: ----Client]10.14.10.21:[tcpPortClient]0xD62:[ipAddrLcl]10.14
%CIP2: ----.20.11:[tcpPortLcl]0x17:[connectSpecificP]specific:
%CIP2: Out Tnet 127: Len=3,FFFD28
%CIP2: In Tnet 127: Len=3,FFFB28
%CIP2: Out Tnet 127: Len=7,FFFA2808 02FFF0
```

```

%CIP2: In Tnet 127: Len=28,FFFA2802 0749424D 2D333237 382D322D
%CIP2: Out Tnet 127: Len=28,FFFA2802 0449424D 2D333237 382D322D
%CIP2: In Tnet 127: Len=12,FFFA2803 07000102 0304FFF0
%CIP2: Out Tnet 127: Len=12,FFFA2803 04000102 0304FFF0
%CIP2: In Pu 14: Len=20,2C000002 00010B80 00810620 0C060300
          ==          ===== NOTIFY
          We sends NOTIFY to VTAM to notify we're ready
%CIP2: LU 14.2: fsm ([Actlud],Tnet_Conn)-->[Ntfy_Av_Sent]
%CIP2: Out Pu 14: Len=12,2C000200 00018B80 00810620
%CIP2: Out Lu 14.2: sna-state=0101,lu-flags=00040100
%CIP2: LU 14.2: fsm ([Ntfy_Av_Sent],Rsp_Ntfy)-->[Sscp]
%CIP2: Out Pu 14: Len=50,2D000201 013F6B80 00310103 03B19030
          ==          == 0x31 BIND from VTAM
          to establish LULU session between
          VM Primary LU and client 2ndary LU
%CIP2: Out Lu 14.2: sna-state=0101,lu-flags=00040100
%CIP2: In Pu 14: Len=10,2D000102 013FEB80 0031
          == 0xEB 1st bit of it indicated +Rsp
          of BIND from us
%CIP2: [bind parameters]10[luLocaddr]0x2:[snaMaxRuIn]1024:[snaMaxRu
%CIP2: ----Out]1536:[luType]0x2:
%CIP2: LU 14.2: fsm ([Sscp],Req_Bind)-->[Bound]
%CIP2: Out Pu 14: Len=10,2D000201 01406B80 00A0
          == 0xA0 (SDT)Start Data Traffic
          from VTAM
%CIP2: Out Lu 14.2: sna-state=0101,lu-flags=00041100
%CIP2: Out Tnet 127: Len=48,03000000 00310103 03B19030 80000887
%CIP2: In Pu 14: Len=10,2D000102 0140EB80 00A0
          == 0xEB 1st bit of it indicated +Rsp
          of SDT from us
%CIP2: LU 14.2: fsm ([Bound],Req_Sdt)-->[Lulu]
%CIP2: Out Pu 14: Len=1033,28000201 00010291 C0F5C711 40401DE8
%CIP2: Out Lu 14.2: sna-state=0101,lu-flags=00047100
%CIP2: Out Tnet 127: Len=1029,00000100 0005C711 40401DE8 E5D461C5
%CIP2: Out Pu 14: Len=518,24000201 00014040 40404040 40404040
%CIP2: Out Lu 14.2: sna-state=0111,lu-flags=85045100
%CIP2: Out Tnet 127: Len=512,40404040 40404040 40404040 40404040
%CIP2: In Pu 14: Len=9,2D000102 00008301 00
%CIP2: Out Pu 14: Len=141,2C000201 00020180 00404040 40404040
%CIP2: Out Lu 14.2: sna-state=0111,lu-flags=85045100
%CIP2: Out Tnet 127: Len=134,40404040 40404040 40404040 40404040
%CIP2: In Pu 14: Len=9,2C000102 00028380 00
cappuccino(cfg-tn3270)#

```

## Dynamic LU Request from Reflection

```

TN3270 Client
%CIP2: [tnet session connected]15[puIndex]14:[luLocaddr]0x3:[ipAddr
%CIP2: ----Client]10.14.10.21:[tcpPortClient]0xD63:[ipAddrLcl]10.14
%CIP2: ----.20.11:[tcpPortLcl]0x17:[connectSpecificP]dynamic:
%CIP2: Out Tnet 125: Len=3,FFFD28
%CIP2: In Tnet 125: Len=3,FFFC28
%CIP2: Out Tnet 125: Len=3,FFFD18
%CIP2: In Tnet 125: Len=3,FFFB18
%CIP2: Out Tnet 125: Len=6,FFFA1801 FFF0
%CIP2: In Tnet 125: Len=18,FFFA1800 49424D2D 33323739 2D322D45
%CIP2: Out Tnet 125: Len=12,FFFD19FF FB19FFFD 00FFFB00
%CIP2: In Tnet 125: Len=12,FFFB19FF FD19FFFB 00FFFD00
%CIP2: [send PSID]8[puIndex]14:[luLocaddr]0x3:
%CIP2: In Pu 14: Len=101,2C000000 000D0B82 0041038D 00000000
          ===== NMVT req from us
%CIP2: PU 14: fsm ([ready],func_rts)-->[wait]
0%CIP2: LU 14.3: fsm ([Reset],Tnet_Conn)-->[Psid_Sent]
%CIP2: Out Pu 14: Len=12,2C000000 000D8B82 0041038D
%CIP2: LU 14.3: fsm ([Psid_Sent],Rsp_Psid_Pos)-->[Actlu_Wt]
%CIP2: PU 14: fsm ([wait],ru_rsp_sscpu)-->[ready]

```



```
%CIP2: Out Pu 14: Len=212,2C000301 00060381 C0F1C311 5B5F1DC1
%CIP2: Out Lu 14.3: sna-state=0101,lu-flags=8F005000
%CIP2: Out Tnet 125: Len=205,01C3115B 5F1DC111 5D6B1D60 D9E4D5D5
%CIP2: In Pu 14: Len=9,2C000103 00068381 C0
cappuccino(cfg-tn3270)#
```

## User Clicks on DISCONNECT on Reflection (Dynamic one) to Disconnect the Dynamic LULU Session

```
%CIP2: [bad request data or type]17[puIndex]14:[luLocaddr]0x3:[ruDu
%CIP2: ----mp] Len=12,2C000003 00018790 00083100 :
%CIP2: In Pu 14: Len=15,2D000103 00026B80 0032FE08 310000
                                         == 0x32 UNBIND from us to VTAM to
                                         tear down LULU session
%CIP2: LU 14.3: fsm ([Lulu],Tnet_Disc)-->[Unbind_Sent]
%CIP2: Out Pu 14: Len=10,2D000301 0002EB80 0032
%CIP2: Out Lu 14.3: sna-state=0101,lu-flags=8F001000
%CIP2: In Pu 14: Len=20,2C000003 00030B80 00810620 0C060000
                                         ===== NOTIFY from us again
%CIP2: LU 14.3: fsm ([Unbind_Sent],Rsp_Unbind)-->[Ntfy_Ua_Sent]
%CIP2: Out Pu 14: Len=1033,28000300 00010380 00C3C9E2 C3D640E2
%CIP2: Out Lu 14.3: sna-state=0100,lu-flags=8F003000
%CIP2: In Pu 14: Len=13,2C000003 00018790 00083100 00
%CIP2: Out Pu 14: Len=480,24000300 0001E3E3 E3E3E3E3 E34040C5
%CIP2: Out Lu 14.3: sna-state=0100,lu-flags=8F001000
%CIP2: Out Pu 14: Len=12,2C000300 00038B80 00810620
%CIP2: Out Lu 14.3: sna-state=0100,lu-flags=8F001000
%CIP2: LU 14.3: fsm ([Ntfy_Ua_Sent],Rsp_Ntfy)-->[Actlud]
```

## User Clicks on DISCONNECT on Reflection (Dynamic) to Disconnect the Static LULU Session

```
%CIP2: In Pu 14: Len=15,2D000102 00046B80 0032FE08 310000
                                         == Same thing as above
%CIP2: LU 14.2: fsm ([Lulu],Tnet_Disc)-->[Unbind_Sent]
%CIP2: [bad request data or type]17[puIndex]14:[luLocaddr]0x2:[ruDu
%CIP2: ----mp] Len=12,2C000002 00018790 00083100 :
%CIP2: Out Pu 14: Len=10,2D000201 0004EB80 0032
%CIP2: Out Lu 14.2: sna-state=0101,lu-flags=0A041100
%CIP2: In Pu 14: Len=20,2C000002 00050B80 00810620 0C060000
%CIP2: LU 14.2: fsm ([Unbind_Sent],Rsp_Unbind)-->[Ntfy_Ua_Sent]
%CIP2: Out Pu 14: Len=1033,28000200 00010380 00C3C9E2 C3D640E2
%CIP2: Out Lu 14.2: sna-state=0100,lu-flags=0A043100
%CIP2: In Pu 14: Len=13,2C000002 00018790 00083100 00
%CIP2: Out Pu 14: Len=480,24000200 0001E3E3 E3E3E3E3 E34040C5
%CIP2: Out Lu 14.2: sna-state=0100,lu-flags=0A041100
%CIP2: Out Pu 14: Len=12,2C000200 00058B80 00810620
%CIP2: Out Lu 14.2: sna-state=0100,lu-flags=0A041100
%CIP2: LU 14.2: fsm ([Ntfy_Ua_Sent],Rsp_Ntfy)-->[Actlud]
```

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