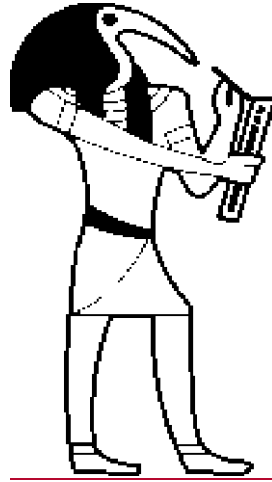


*Section 4.0 External Reference*

*MCI International Procedures*





## *Procedures Table of Contents*

<b>SECTION 1.0 LAN ROUTER PROCEDURES .....</b>	<b>6</b>
SECTION 1.1 CISCO ROUTERS .....	6
1.1.1 SHUT DOWN.....	7
1.1.2 To INITIALIZE A CISCO ROUTER .....	9
<b>  1.1.3 MONITORING A CISCO ROUTER.....</b>	<b>11</b>
1.1.4 DIAGNOSTICS COMMANDS .....	22
1.1.5 TROUBLESHOOTING COMMANDS .....	27
<b>SECTION 2.0 LAN SWITCH PROCEDURES.....</b>	<b>33</b>
SECTION 2.1 CISCO 1600 TOKEN RING SWITCH.....	33
2.1.1 Shut Down .....	34
2.1.2 To INITIALIZE a CISCO switch.....	35
2.1.3 Monitoring A CISCO Switch .....	36
2.1.4 Diagnostics Commands.....	38
2.1.5 Troubleshooting commands.....	39
<b>SECTION 4.0 CSU/DSU PROCEDURES .....</b>	<b>40</b>
SECTION 4.1 INTERNAL COMMUNICATIONS (ED KELLY) CSU/DSU.....	41
4.1.1 Shut Down .....	41
4.1.2 To INITIALIZE the CSU/DSU .....	41
4.1.3 Monitoring the CSU/DSU .....	42
4.1.4 Diagnostics Commands.....	42
4.1.5 Troubleshooting commands.....	42
SECTION 4.2 INCCSU/SW56 CM1156 CSU/DSU .....	43
4.2.1 Shut Down .....	43
4.2.2 To INITIALIZE the CSU/DSU .....	44
4.2.3 Monitoring the CSU/DSU .....	44
4.2.4 Diagnostics.....	44
4.2.5 Troubleshooting commands.....	45
SECTION 4.3 MOTOROLA CODEX 3500 CSU/DSU.....	46
4.3.1 Shut Down .....	46
4.3.2 To INITIALIZE the CSU/DSU .....	46
4.3.3 Monitoring the CSU/DSU .....	46
4.3.4 Diagnostics.....	47
4.3.5 Troubleshooting commands.....	47
SECTION 4.4 CODEX 2640 CSU/DSU .....	47
4.4.1 Shut Down the CODEX 2640 .....	48
4.4.2 Initialize the CODEX 2640 .....	48
4.4.3 Monitoring the Codex 2640 Modem.....	48
4.4.4 Diagnostics.....	49
4.4.5 Troubleshooting.....	49
SECTION 4.5 VERILINK CSU/DSU.....	50
4.5.1 Shut Down .....	51
4.5.2 Initialize .....	51
4.5.3 Monitoring the Verilink CSU/DSU .....	51
4.5.4 Diagnostics.....	51
4.5.5 Troubleshooting the Verilink CSU/DSU .....	51

SECTION 4.6 LARSE CSU/DSU - ACCESS-T AND SPLIT-T ..... 52

    4.6.1 Shut Down ..... 52

    4.6.2 Initialize ..... 52

    4.6.3 Monitoring the LARSE CSU/DSU ..... 52

    4.6.4 Diagnostics ..... 52

    4.6.5 Troubleshooting ..... 52

SECTION 4.7 CODEX 2185 DIGITAL BRIDGE MODEM ..... 53

    4.7.1 Shut Down ..... 53

    4.7.2 Initialize ..... 53

    4.7.3 Monitoring the Codex 2185 ..... 53

    4.7.4 Diagnostics ..... 54

    4.7.5 Troubleshooting ..... 54

SECTION 4.8 IDNX ..... 55

    4.8.1 Shut Down ..... 55

    4.8.2 Initialize ..... 55

    4.8.3 Monitoring ..... 55

    4.8.4 Diagnostics ..... 55

    4.8.5 Troubleshooting ..... 55

SECTION 4.9 ATLANTIC RESEARCH 7200 TURBO TEST SET ..... 56

    4.9.1 Shut Down ..... 56

    4.9.2 Initialize ..... 56

    4.9.3 Monitoring ..... 56

    4.9.4 Diagnostics ..... 57

    4.9.5 Troubleshooting ..... 57

SECTION 4.10 CODEX 6740 MUX ..... 58

    4.10.1 Shut Down ..... 58

    4.10.2 Initialize ..... 58

    4.10.3 Monitoring ..... 58

    4.10.4 Diagnostics ..... 58

    4.10.5 Troubleshooting ..... 59

SECTION 4.11 SHORT HAUL MODEM RACK ..... 59

SECTION 4.12 MODEM ELIMINATOR ..... 59

SECTION 4.13 ACCESS-T ANALOG TONE TESTER ..... 59

SECTION 4.14 HAYES MODEM CHASSIS ..... 59

SECTION 4.15 CODEX 3262 V-FAST MODEM CHASSIS ..... 60

    4.15.1 Shut Down ..... 60

    4.15.2 Monitoring ..... 60

    4.15.4 Diagnostics ..... 60

    4.15.5 Troubleshooting ..... 61

SECTION 4.16 CODEX 2239 MODEM CHASSIS ..... 62

    4.16.1 Shut Down ..... 62

    4.16.2 Initialize ..... 62

    4.16.3 Monitoring the Codex 2239 ..... 62

    4.16.4 Diagnostics ..... 63

    4.16.5 Troubleshooting ..... 63

4.17.0 TDM'S ..... 63

**SECTION 8.0 CONTROL UNITS ..... 64**

SECTION 8.1 IBM CONTROLLERS - LOCALLY ATTACHED ..... 64

    8.1.1 Shut Down ..... 64

    8.1.2 Initialize ..... 64

    8.1.3 Monitoring ..... 64

    8.1.4 Diagnostics ..... 65

    8.1.5 Troubleshooting ..... 65

**SECTION 9.0 INTERNAL NETWORK MANAGEMENT SYSTEMS..... 66**

SECTION 9.1 MADGE TRUEVIEW PROCEDURES ..... 66

    9.1.1 Shut Down ..... 66

    9.1.2 Initialize ..... 66

    9.1.3 Monitoring..... 67

    9.1.4 Diagnostics..... 68

    9.1.5 Troubleshooting..... 68

**SECTION 10.0 GENERAL INFRASTRUCTURE(HUBS)..... 69**

10.1 PROCEDURES FOR CAUS, LAMS AND MAUS ..... 69

**CAU OPERATIONS ..... 69**

    10.1.1 Shut Down..... 69

    10.1.2 Initialization ..... 69

    10.1.3 Monitoring..... 69

    10.1.4 Diagnostics ..... 70

    10.1.5 Troubleshooting..... 70

10.2.1 LAM OPERATIONS..... 70

    10.2.1 Shut Down..... 70

    10.2.2 Initialization ..... 70

    10.2.4 Diagnostics ..... 71

    10.2.5. Troubleshooting..... 71

10.3.0 MAU OPERATIONS ..... 71

**SECTION 11.0 CIRCUIT TURNS ..... 72**

## **Section 1.0 LAN Router Procedures**

The procedures are outlined in the following manner

**Note:** *This section applies to all CISCO routers , specific procedures for the WAN routers are not listed.*

### ***SECTION 1.1 CISCO Routers***

- 1.1.1 Shut Down
- 1.1.2 Initialize
- 1.1.3 Monitor
- 1.1.4 Diagnostics
- 1.1.5 Troubleshooting

## 1.1.1 Shut down

### To Shut down a CISCO router Interface

1. Login to router
2. Enter login password
3. type **ENABLE** enter
4. type the password for this router *enter*
5. A new prompt with the suffix # appears
6. type **CONFIG T** *enter*
7. A a new prompt with the suffix config# appears
8. type **INT TOK 1** *enter* this is for a token ring interface the number 1 can be changed to any interface number
9. type **INT SER 1** enter this is for a serial interface the number 1 can be changed to any interface number
10. You will now get a prompt with the the suffix inf#
11. type **SHUTDOWN** enter  
you will get a console message notifying you that the interface is administratively down
12. Press the **CRTL-Z** keys
13. The config# prompt will disappear
14. Type **WRI MEM**
15. Wait for a message that the configuration was written from console
16. Check with performing a **SH INT int #** and see if the first line says "administratively down"

## To shut down the Router completely

Shut down each interface as described in section 1.1

1. Type **ENABLE** *enter*
2. Enter the enable password
3. Type **WRI MEM** *enter*
4. Wait for **OK**
5. Physically shut off power to router



## 1.1.2 To INITIALIZE a CISCO router

### To Bring up(Initialize) an interface that was shutdown administratively

1. Login to router
  2. Enter login password
  3. type **ENABLE** *enter*
  4. type        the password for this router        *enter*
  5. A a new prompt with the suffix # appears
  6. type **CONFIG T**        *enter*
  7. A new prompt with the suffix config# appears
  8. type **INT TOK 1**        *enter*    this is for a token ring interface the number 1 can be changed to any interface number
  9. type **INT SER 1**        *enter*    this is for a serial interface the number 1 can be changed to any interface number
  10. A a prompt with the the suffix inf# appears
  10. type        **NO SHUTDOWN**        *enter*
  11. Wait for the console message notifying that the interface is administratively down
1. Press the **CRTL-Z** keys  
The config# prompt will disappear
  2. Type **WRI MEM**
  3. Wait for a message that the configuration was written from console
  4. Check with performing a **SH INT int #** and see if the first line says "Serial or Token Ring UP , Line protocol up "

## To start up the Router

1. Ensure that all cables are inserted to their respective ports
2. Ensure that all CSU/DSU (for WAN routers ) are online
3. Turn router on
4. Monitor console for the following
  - Memory test
  - Router IOS banner
  - Interface initialization
  - Command prompt
5. Use monitor commands to determine proper operation

## 1.1.3 Monitoring A CISCO Router

### Monitoring commands

*Command*

**sh int t 0** *Press Enter*

*Result*

```
TokenRing0 is up, line protocol is up
Hardware is TMS380, address is 0000.3072.1a3b (bia 0000.3072.1a3b)
Description: TO BACKBONE IN NCC
Internet address is 166.44.0.1 255.255.252.0
MTU 4464 bytes, BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255
Encapsulation SNAP, loopback not set, keepalive set (60 sec)
ARP type: SNAP, ARP Timeout 4:00:00
Ring speed: 16 Mbps
Multiring node, Source Route Transparent Bridge capable
Source bridging enabled, srn 256 bn 1 trn 401 (ring group)
  proxy explorers disabled, spanning explorer disabled, NetBIOS cache disabled
Group Address: 0x00000000, Functional Address: 0x0880011A
Ethernet Transit OUI: 0x0000F8
Last input 0:00:00, output 0:00:00, output hang never
Last clearing of "show interface" counters 5d06
Output queue 0/40, 78 drops; input queue 0/75, 0 drops
5 minute input rate 395000 bits/sec, 129 packets/sec
5 minute output rate 70000 bits/sec, 84 packets/sec
  506819018 packets input, 185298384 bytes, 0 no buffer
  Received 37794559 broadcasts, 0 runts, 0 giants
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  434186832 packets output, 2412632617 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets, 0 restarts
  0 output buffer failures, 0 output buffers swapped out
  0 transitions
```

## To view the configuration file

1. Login to router
2. Enter login password
3. type **ENABLE** *enter*
4. type        the password for this router        *enter*

*command*

**sh config**      *press ENTER*

*Result*

```
Using 3105 out of 32762 bytes
!
! Last configuration change at 09:46:50 UTC Mon Dec 16 1996
! NVRAM config last updated at 10:02:23 UTC Mon Dec 16 1996
!
version 10.3
!
hostname RYEBROOK
!
enable password desktop
!
ip subnet-zero
ipx routi
interface Ethernet0
no ip address
shutdown
!
interface Serial0
description T1 TO WASH MGC95591-0236
ip address 166.44.15.129 255.255.255.252
ip ospf authentication-key MCII
ip ospf cost 5
ipx input-sap-filter 1000
ipx network A62C0F80
!
interface Serial1
description T-1 to KCC MGC95591-0229
ip address 166.44.15.133 255.255.255.252
ip ospf authentication-key MCII
ip ospf cost 1
ipx input-sap-filter 1000
ipx network A62C0F84
!
interface TokenRing0
description TO BACKBONE IN NCC
ip address 166.44.0.1 255.255.252.0
ip ospf authentication-key MCII
ip ospf cost 1
bandwidth 16000
keepalive 60
ipx network A62C0000
ring-speed 16
multiring all
source-bridge 256 1 401
!
router ospf 3372
network 166.44.0.0 0.0.255.255 area 0.0.0.0
area 0.0.0.0 authentication
```

**(config continued)**

```
ip route 166.44.10.6 255.255.255.255 166.44.10.2
ip route 166.44.17.65 255.255.255.255 166.44.0.14
ip ospf-name-lookup
access-list 1000 permit 11111001 4
access-list 1000 permit 10001005 4
access-list 1000 permit 10002001 4
access-list 1000 permit ACE 4
access-list 1000 permit 10001001 4
access-list 1000 permit 10001002 4
access-list 1000 permit 10001003 4
access-list 1000 permit 10001004 4
access-list 1000 permit 6001 4
access-list 1000 permit 1001007 4
access-list 1000 permit 10004002 4
access-list 1000 permit ABC123D 4
access-list 1000 permit 11004002 4
access-list 1000 permit A62C080A 4
access-list 1000 permit A62C0809 4
access-list 1000 permit A62C080E 4
access-list 1000 permit A62C080F 4
access-list 1000 permit 30CC95A3 4
access-list 1000 permit 30CDE890 4
access-list 1000 permit A62C0014 4
access-list 1000 permit 312B52C5 4
access-list 1000 permit 3149CA55 4
access-list 1000 permit 3149BA54 4
access-list 1000 permit A62C061E 4
access-list 1000 permit B040901 4
access-list 1000 permit BACBAC 4
access-list 1000 permit 19950405 4
access-list 1000 permit EA69 4
access-list 1000 permit 2E50DD52 4
access-list 1000 permit ABCDDD 4
access-list 1000 permit ACDC3 4
access-list 1000 permit 313C8A84 4
access-list 1000 permit 10131703 4
access-list 1000 permit 1111 4
access-list 1000 permit 5AA84FED 4
access-list 1000 permit 5AA85FED 4
access-list 1000 permit A62C0000 39B
access-list 1000 permit A62C0400 39B
access-list 1000 permit A62C120E 39B
access-list 1000 permit A62C0000 1E4
access-list 1000 permit 2FDF2DEF 4
access-list 1000 permit FFFFFFFF 5
access-list 1000 permit 6352431A 4
access-list 1000 deny FFFFFFFF 4
access-list 1002 permit FFFFFFFF 5
snmp-server community public RO
snmp-server trap-source TokenRing0
!
!
!
!
bridge 1 protocol ieee
!
line con 0
exec-timeout 0 0
line aux 0
exec-timeout 0 0
line vty 0 4
exec-timeout 0 0
password notepad
login
!
end
```

*Command***sh int s 0** *Press Enter**Result*

```
Serial0 is up, line protocol is up
  Hardware is HD64570
  Description: T1 TO WASH MGC95591-0236
  Internet address is 166.44.15.129 255.255.255.252
  MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
  Last input 0:00:00, output 0:00:00, output hang never
  Last clearing of "show interface" counters 5d06
  Output queue 0/40, 0 drops; input queue 1/75, 0 drops
  5 minute input rate 1000 bits/sec, 5 packets/sec
  5 minute output rate 6000 bits/sec, 4 packets/sec
    326295173 packets input, 1775050860 bytes, 0 no buffer
    Received 474202 broadcasts, 0 runts, 0 giants
    245684 input errors, 221648 CRC, 21815 frame, 216 overrun, 2988 ignored, 159542 abort
    319989354 packets output, 2557156472 bytes, 0 underruns
    0 output errors, 0 collisions, 245 interface resets, 0 restarts
    0 output buffer failures, 0 output buffers swapped out
    459 carrier transitions
  DCD=up DSR=up DTR=up RTS=up CTS=up
```

*Command*

**SH INT** *Press Enter*

*Result*

shows all router interfaces active or down



*Command*

**sh process**      *Press Enter*

*Result*

CPU utilization for five seconds: 13%/12%; one minute: 14%; five minutes: 15%

PID	Q	T	PC	Runtime (ms)	Invoked	uSecs	Stacks	TTY	Process
1	M	E	31A3CB0	19695912	6333944	3109	886/1500	0	OSPF Router
2	L	E	303E816	699150472	6194611	112867	906/1000	0	Check heaps
3	M	E	3064E0E	2012376	45058889	44	550/1000	0	Timers
4	L	E	3093A3A	13875792	10744579	1291	540/1000	0	ARP Input
5	L	E	30BC886	0	1	0	926/1000	0	Probe Input
6	M	E	30BC41E	948	6804	139	942/1000	0	RARP Input
7	H	E	30AF020	12211368	22219551	549	1448/2000	0	IP Input
8	M	E	30D4834	72656	3771081	19	390/1000	0	TCP Timer
9	L	E	30D648A	872	350	2491	578/1000	0	TCP Protocols
10	M	E	30B966E	13780	50325	273	796/1000	0	BOOTP Server
11	M	E	3112BDE	1847572	3449139	535	744/1000	0	CDP Protocol
12	M	E	316787A	740	32611	22	840/1000	0	MOP Protocols
13	L	T	3181126	256524	310731	825	750/1000	0	IP Cache Ager
14	M	E	321DCB6	0	1	0	1900/2000	0	SNMP Traps
15	M	E	3034E10	2176	3625	600	452/1000	0	Net Background
16	L	E	305F428	48	642	74	860/1000	0	Logger
17	M	P	303F51E	9512800	18644901	510	384/1000	0	TTY Background
18	H	E	30350C2	24973816	135203470	184	270/500	0	Net Input
19	M	P	3034D44	18815876	310748	60551	560/1000	0	Per-minute Jobs
20	H	E	3296DE6	56798912	51672160	1099	582/1000	0	IPX Input
21	L	E	32A43B2	18380136	7906327	2324	696/1000	0	IPX RIP
PID	Q	T	PC	Runtime (ms)	Invoked	uSecs	Stacks	TTY	Process
22	L	E	32A0272	70170188	37336786	1879	734/1000	0	IPX SAP
23	M	E	32A15FA	142592	718328	198	674/1000	0	IPX RSUpdate
24	L	E	32A2416	13136	33214	395	698/1000	0	IPX GNS
25	L	E	32A4106	64076	292131	219	920/1000	0	IPX Forwarder
26	M	E	32A1350	3008052	2260037	1330	868/1000	0	IPX OutputFork
27	L	E	32C4CC2	0	2	0	952/1000	0	IPXWAN Input
28	L	E	32C5808	0	2	0	952/1000	0	IPXWAN Timer
29	M	E	31E8A50	0	1	0	968/1000	0	TCP Driver
30	M	E	3391548	7960	1864067	4	944/1000	0	LLC2 Timer
31	M	E	342A3D2	0	2	0	958/1000	0	LOCACK LinkUp
32	M	T	342A062	2564	621449	4	946/1000	0	LOCACK Backgnd
33	M	E	33EC29A	27847628	76249624	365	682/1000	0	LanNetMgr Supt
34	H	E	340E82C	1166832	19528196	59	1650/2000	0	SRB Background
35	M	E	31A3FD0	3759400	9674345	388	316/1000	0	OSPF Hello
36	M	E	3484428	4380832	18307960	239	916/1000	0	Spanning Tree

*Command*

**who**      *Press Enter*

*Result*

Line	User	Host(s)	Idle Location
0 con 0		idle	
1 aux 0		idle	
* 2 vty 0		idle	0 166.44.1.116

*Command*

**systat**      *Press Enter*

*Result*

Line	User	Host(s)	Idle Location
0 con 0		idle	
1 aux 0		idle	
* 2 vty 0		idle	0 166.44.1.116

*Command*

**sh protocol**      *Press Enter*

*Result*

Global values:

Internet Protocol routing is enabled

Novell routing is enabled

Ethernet0 is administratively down, line protocol is down

Serial0 is up, line protocol is up

Internet address is 166.44.15.129 255.255.255.252

Novell address is A62C0F80.0000.0c4e.58dd

Serial1 is up, line protocol is up

Internet address is 166.44.15.133 255.255.255.252

Novell address is A62C0F84.0000.0c4e.58dd

TokenRing0 is up, line protocol is up

Internet address is 166.44.0.1 255.255.252.0

Novell address is A62C0000.0000.3072.1a3b

*Command***sh ip traffic**      *Press Enter**Result*

## IP statistics:

Rcvd: 267854989 total, 20442249 local destination  
    0 format errors, 4 checksum errors, 3856 bad hop count  
    0 unknown protocol, 0 not a gateway  
    0 security failures, 0 bad options  
Frgs: 0 reassembled, 0 timeouts, 0 couldn't reassemble  
    68 fragmented, 2261 couldn't fragment  
Bcast: 3156912 received, 423453 sent  
Mcast: 13826906 received, 9202598 sent  
Sent: 12224042 generated, 247375226 forwarded  
    28633 encapsulation failed, 2958 no route

## ICMP statistics:

Rcvd: 0 format errors, 0 checksum errors, 1284 redirects, 924302 unreachable  
    357243 echo, 499 echo reply, 0 mask requests, 0 mask replies, 0 quench  
    0 parameter, 0 timestamp, 0 info request, 0 other  
    0 irdp solicitations, 0 irdp advertisements  
Sent: 78289 redirects, 6705 unreachable, 1050 echo, 357241 echo reply  
    0 mask requests, 0 mask replies, 0 quench, 0 timestamp  
    0 info reply, 3824 time exceeded, 0 parameter problem  
    0 irdp solicitations, 0 irdp advertisements

## UDP statistics:

Rcvd: 2914894 total, 0 checksum errors, 2184512 no port  
Sent: 680955 total, 33 forwarded broadcasts

## TCP statistics:

Rcvd: 129103 total, 0 checksum errors, 61 no port  
Sent: 135939 total

## EGP statistics:

Rcvd: 0 total, 0 format errors, 0 checksum errors, 0 no listener  
Sent: 0 total

## IGRP statistics:

Rcvd: 0 total, 0 checksum errors  
Sent: 0 total

## OSPF statistics:

Rcvd: 15596300 total, 0 checksum errors  
    9603608 hello, 153565 database desc, 58 link state req  
    1439472 link state updates, 4311264 link state acks

Sent: 10960209 total

## IGMP statistics: Sent/Received

Total: 0/0, Format errors: 0/0, Checksum errors: 0/0  
Host Queries: 0/0, Host Reports: 0/0, DVMRP: 0/0, PIM: 0/0

## ARP statistics:

Rcvd: 11386925 requests, 35685 replies, 6881 reverse, 0 other  
Sent: 48326 requests, 73249 replies (19243 proxy), 0 reverse

## Probe statistics:

Rcvd: 0 address requests, 0 address replies  
    0 proxy name requests, 0 where-is requests, 0 other  
Sent: 0 address requests, 0 address replies (0 proxy)  
    0 proxy name replies, 0 where-is replies

*Command*

**sh ipx serv**      *Press Enter*

*Result*

Codes: S - Static, P - Periodic, E - EIGRP, N - NLSP, H - Holddown, + = detail  
93 Total IPX Servers

Table ordering is based on routing and server info

Type	Name	Net	Address	Port	Route	Hops	Itf
P	4 BK	11111001.0000.0000.0001:0451			2/01	1	To0
P	4 CDROM_1	10001005.0000.0000.0001:0451			2/01	1	To0
P	4 HELP_DESK_1	ACE.0000.0000.0001:0451			2/01	1	To0
P	4 MIS_SERVER_1	10001001.0000.0000.0001:0451			2/01	1	To0
P	4 MIS_SERVER_2	10001002.0000.0000.0001:0451			2/01	1	To0
P	4 MIS_SERVER_3	10001003.0000.0000.0001:0451			2/01	1	To0
P	4 MIS_SERVER_4	10001004.0000.0000.0001:0451			2/01	1	To0
P	4 PALINDROME	6001.0000.0000.0001:0451			2/01	1	To0
P	4 QUE	11004002.0000.0000.0001:0451			2/01	1	To0
P	4 HELP_DESK_2	ACE2.0000.0000.0001:0451			3/02	2	To0
P	4 NEWSERVER	10004002.0000.0000.0001:0451			3/02	2	To0
P	4 APPS_RYE_1	5AA84FED.0000.0000.0001:0451			4/03	3	To0
P	4 APPS_RYE_2	5AA85FED.0000.0000.0001:0451			5/04	4	To0
P	4 FS00300101	A62C080E.0000.0000.0001:0451			8/02	2	Se0
P	4 FSR0100112	30CC95A3.0000.0000.0001:0451			8/02	2	Se1
P	4 MCIMAIL_1	A62C080A.0000.0000.0001:0451			8/02	2	Se0
P	4 MCIMAIL_SYBASE	A62C0809.0000.0000.0001:0451			8/02	2	Se0

*Command***sh ipx traffic** *Press Enter**Result*

```
System Traffic for 0.0000.0000.0001 System-Name: RYEBROOK
Rcvd: 3097831621 total, 42713 format errors, 0 checksum errors, 77594 bad hop
      7226574 packets pitched, 41712100 local destination, 0 multicast
Bcast: 41707247 received, 12025198 sent
Sent: 49027387 generated, 3047802307 forwarded
      3002 encapsulation failed, 991572 no route
SAP: 86779 SAP requests, 86814 SAP replies, 93 servers
      34030585 SAP advertisements received, 8356021 sent
      0 SAP flash updates sent, 0 SAP poison sent
      12 SAP format errors, last seen from 0.0000.0000.0000
RIP: 780092 RIP requests, 29809 RIP replies, 215 routes
      6454297 RIP advertisements received, 3336588 sent
      158113 RIP flash updates sent, 0 RIP poison sent
      0 RIP format errors
RIP: 0 RIP format errors
Echo: Rcvd 0 requests, 0 replies
      Sent 0 requests, 0 replies
      301667 unknown: 1043 no socket, 0 filtered, 294919 no helper
      0 SAPs throttled, freed NDB len 0
Watchdog:
      0 packets received, 0 replies spoofed
Queue lengths:
      IPX input: 0, SAP 0, RIP 0, GNS 0
      SAP throttling length: 0/(no limit), 0 nets pending lost route reply
EIGRP: Total received 0, sent 0
      Updates received 0, sent 0
      Queries received 0, sent 0
      Replies received 0, sent 0
      SAPs received 0, sent 0
NLSP: Level-1 Hellos received 0, sent 0
      PTP Hello received 0, sent 0
      Level-1 LSPs received 0, sent 0
      LSP checksum errors received: 0
      Level-1 CSNPs received 0, sent 0
      Level-1 PSNPs received 0, sent 0
      Level-1 DR Elections: 0
      Level-1 SPF Calculations: 0
      Level-1 Partial Route Calculations: 0
```

## 1.1.4 Diagnostics Commands

*Command*

**sh buffers**      *Press Enter*

*Result*

Buffer elements:

336 in free list (500 max allowed)  
195257816 hits, 0 misses, 0 created

Public buffer pools:

Small buffers, 104 bytes (total 1187, permanent 50):

149 in free list (20 min, 150 max allowed)  
1609622433 hits, 3179 misses, 346 trims, 1483 created

Middle buffers, 600 bytes (total 219, permanent 25):

120 in free list (10 min, 150 max allowed)  
227039372 hits, 1540 misses, 0 trims, 194 created

Big buffers, 1524 bytes (total 127, permanent 50):

41 in free list (5 min, 150 max allowed)  
33540030 hits, 25 misses, 0 trims, 77 created

VeryBig buffers, 4520 bytes (total 91, permanent 10):

84 in free list (0 min, 100 max allowed)  
20293260 hits, 1010 misses, 199 trims, 280 created

Large buffers, 5024 bytes (total 0, permanent 0):

0 in free list (0 min, 10 max allowed)  
0 hits, 0 misses, 0 trims, 0 created

Huge buffers, 18024 bytes (total 1, permanent 0):

0 in free list (0 min, 4 max allowed)  
0 hits, 1 misses, 0 trims, 1 created

Interface buffer pools:

Ethernet0 buffers, 1524 bytes (total 32, permanent 32):

8 in free list (0 min, 32 max allowed)  
24 hits, 0 fallbacks  
8 max cache size, 8 in cache

Serial0 buffers, 2108 bytes (total 16, permanent 16):

5 in free list (0 min, 16 max allowed)  
445534 hits, 1129993 fallbacks  
4 max cache size, 1 in cache

Serial1 buffers, 2108 bytes (total 16, permanent 16):

3 in free list (0 min, 16 max allowed)  
225044 hits, 401929 fallbacks  
4 max cache size, 4 in cache

TokenRing0 buffers, 4516 bytes (total 48, permanent 48):

0 in free list (0 min, 48 max allowed)  
14677 hits, 98457 fallbacks  
16 max cache size, 16 in cache

5720 failures (0 no memory)



*Command*

**sh controller serial 0**      *Press Enter*

*Result*

```
HD unit 0, idb = 0x93388, driver structure at 0x94E08
buffer size 2108 HD unit 0, V.35 DTE cable
cpb = 0x1, eda = 0x4850, cda = 0x4864
RX ring with 8 entries at 0x4014800
00 bd_ptr=0x4800 pak=0x097BE8 ds=0x4016CE0 status=80 pak_size=45
01 bd_ptr=0x4814 pak=0x097A70 ds=0x4021DD8 status=80 pak_size=50
02 bd_ptr=0x4828 pak=0x1FAE08 ds=0x40FA7EC status=80 pak_size=45
03 bd_ptr=0x483C pak=0x097608 ds=0x40163E0 status=80 pak_size=44
04 bd_ptr=0x4850 pak=0x1FA828 ds=0x4015AE0 status=80 pak_size=45
05 bd_ptr=0x4864 pak=0x095150 ds=0x40202D8 status=80 pak_size=44
06 bd_ptr=0x4878 pak=0x0952C8 ds=0x40FB9EC status=80 pak_size=44
07 bd_ptr=0x488C pak=0x1FAB18 ds=0x40F95EC status=80 pak_size=45
08 bd_ptr=0x48A0 pak=0x0978F8 ds=0x40214D8 status=80 pak_size=45
cpb = 0x1, eda = 0x503C, cda = 0x503C
TX ring with 4 entries at 0x4015000
00 bd_ptr=0x5000 pak=0x000000 ds=0x40569A6 status=80 pak_size=50
01 bd_ptr=0x5014 pak=0x000000 ds=0x4044326 status=80 pak_size=50
02 bd_ptr=0x5028 pak=0x000000 ds=0x404558E status=80 pak_size=50
03 bd_ptr=0x503C pak=0x000000 ds=0x4047A5E status=80 pak_size=50
04 bd_ptr=0x5050 pak=0x000000 ds=0x40F1AF4 status=80 pak_size=50
4414 missed datagrams, 1124 overruns
0 bad datagram encapsulations, 0 memory errors
0 transmitter underruns
```



*Command***sh controller tok 0** *Press Enter**Result* *shows all Token-Ring controller status*

TMS380 unit 0: 512 Kb RAM, state 4, idb 0x9CAB0, ds 0x9E530  
current address: 0000.3072.1a3b, burned in address: 0000.3072.1a3b

ssb\_ptr 0x1040, srb\_ptr 0x1140, arb\_ptr 0x1240, stb\_ptr 0x1400, ipb\_ptr 0x1356  
bia\_addr 0x8CE, swlev\_addr 0x5FC, address\_addr 0x902, parm\_addr 0x6D8  
mac\_buff 0x406, ti\_ring\_speed\_ptr 0x8CA, adapter\_ram\_ptr 0x448  
adapter\_ram 486, ti\_ring\_speed 65535, memory paragraphs 8  
sifsts 0x0000, sifacl 0x042E, sifadr 0x1AE0, sifadrx 0x0001  
rx internal buf size 40, rx total buffers avail 1016,  
rx buffers in use 0, rx frames lost 0,

Last Ring Status: none

Stats: soft: 123/212, hard: 9/11, sig loss: 0/0  
tx beacon: 0/2, wire fault 0/0, recovery: 68/112  
only station: 0/2, remote removal: 0/0

Bridge: local 256, bnum 1, target 401  
max\_hops 7, target idb: 0x0, not local

Interface failures: 0

Monitor state: (active)

flags 0xC0, code 0x0, reason 0x0  
chip f/w: MDGME31100, [bridge capable]  
SMT versions: 1.01 kernel, 130.00 fastmac  
ring mode: F00, internal enables: SRB REM RPS CRS/NetMgr  
internal functional: 0880011A, group: 00000000  
if\_state: 1, ints: 0/0, ghosts: 0/0, bad\_states: 0/0  
ring: 256, bridge num: 1, target: 401, max hops: 7  
last open options: (00001180)

error log reads 2, error log failures 0  
too big packets 0, full tx buffer errors 378  
input\_throttled 0  
receive delimiter error 552, receive implicit errors 208092  
receive explicit error 208113, receive dma overrun 22  
receive buffer runoff 22

Packet counts:

receive total: 1956141952/0, small: 1956133896/0, large 12578/0  
runts: 0/0, giants: 0/0  
local: 1808523207/0, bridged: 147623267/0, promis: 0/0  
bad rif: 0/0, multiframe: 0/0  
ring num mismatch 0/0, spanning violations 0  
transmit total: 1642448519/0, small: 1642448519/0, large 0/0  
runts: 0/0, giants: 0/0, errors 0/0  
bad fs: 0/0, bad ac: 0/0  
congested: 0/0, not present: 0/0  
Unexpected interrupts: 0/0, last unexp. int: 0

**Internal controller counts:**

line errors: 0/2, internal errors: 0/0  
burst errors: 0/510, ari/fci errors: 0/0  
abort errors: 0/0, lost frame: 0/3  
copy errors: 0/0, rcvr congestion: 0/2  
token errors: 0/0, frequency errors: 0/0  
dma bus errors: -/-, dma parity errors: -/-  
adapter checks 0, info from last adapter check:  
status 0x0, parm0 0x0, parm1 0x0, parm2 0x0, intval 0x0

**Internal controller smt state:**

Adapter MAC: 0000.3072.1a3b, Physical drop: 00000050  
NAUN Address: 0000.30ec.4613, NAUN drop: 00000000  
Last source: 0000.f648.44f1, Last poll: 0000.f648.44f1  
Last MVID: 0005, Last attn code: 0005  
Txmit priority: 0006, Auth Class: 7FFF  
Monitor Error: 0002, Interface Errors: FFFF  
Correlator: 8B65, Soft Error Timer: 00C8  
Local Ring: 0100, Ring Status: 2000  
Beacon rcv type: 0001, Beacon txmit type: 0004  
Beacon type: 0001, Beacon NAUN: 4000.0000.9001  
Beacon drop: 01CB, Reserved: 0000  
Reserved2: 0000

## 1.1.5 Troubleshooting commands

*Command*

**ping 166.44.0.1**      *Press Enter*

*Result*

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 166.44.0.1, timeout is 2 seconds:

!!!! 100% complete

*Command*

**sh ip route**

*Result*

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP  
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, \* - candidate default

Gateway of last resort is 166.44.0.15 to network 0.0.0.0

```
O E1 147.147.0.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 147.151.0.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 193.36.224.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 147.150.0.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 147.149.0.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 193.113.183.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 147.148.0.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 193.113.184.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
  10.0.0.0 255.255.0.0 is subnetted, 1 subnets
O E1  10.19.0.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
  192.135.75.0 255.255.255.128 is subnetted, 1 subnets
O E1  192.135.75.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
  192.135.74.0 255.255.255.128 is subnetted, 1 subnets
O E1  192.135.74.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 192.135.72.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
O E1 131.146.0.0 [110/66] via 166.44.0.15, 01:04:54, TokenRing0
```



*Command*

**sh ip cache**      *Press Enter*

*result*

IP routing cache 153 entries, 22604 bytes  
Minimum invalidation interval 2 seconds, maximum interval 5 seconds,  
  quiet interval 3 seconds, threshold 0 requests  
Invalidation rate 0 in last second, 0 in last 3 seconds  
Last full cache invalidation occurred 1:06:59 ago

Prefix/Length	Age	Interface	MAC Header
10.19.0.0/16	1:06:55	TokenRing0	000030E0551F000030721A3BAAAA0300 00000800
10.24.0.0/16	0:09:22	TokenRing0	000030E0551F000030721A3BAAAA0300 00000800
39.0.0.0/8	0:45:41	TokenRing0	000030E0551F000030721A3BAAAA0300 00000800
135.145.0.0/16	0:01:03	TokenRing0	000030E0551F000030721A3BAAAA0300 00000800
165.91.0.0/16	0:22:17	TokenRing0	000030E0551F000030721A3BAAAA0300 00000800
166.32.0.0/16	0:07:41	TokenRing0	000030E0551F000030721A3BAAAA0300 00000800
166.35.0.0/16	0:06:10	TokenRing0	000030E0551F000030721A3BAAAA0300 00000800
166.37.0.0/16	0:05:37	TokenRing0	000030E0551F000030721A3BAAAA0300 00000800

*Command***sh ip arp**      *Press Enter**Result*

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	166.44.0.140	1	4000.0331.6895	SNAP	TokenRing0
Internet	166.44.1.146	36	4000.0331.6145	SNAP	TokenRing0
Internet	166.44.3.201	1	0000.f612.dba2	SNAP	TokenRing0
Internet	166.44.0.203	0	0000.f612.b7c6	SNAP	TokenRing0
Internet	166.44.0.193	9	0000.f63a.8b09	SNAP	TokenRing0
Internet	166.44.0.198	5	0000.3028.7a16	SNAP	TokenRing0
Internet	166.44.3.198	0	0000.f628.3635	SNAP	TokenRing0
Internet	166.44.0.208	7	0000.f612.d1ae	SNAP	TokenRing0
Internet	166.44.0.11	58	1000.5aa8.de65	SNAP	TokenRing0
Internet	166.44.0.14	1	4000.0000.9001	SNAP	TokenRing0
Internet	166.44.0.15	2	0000.30e0.551f	SNAP	TokenRing0
Internet	166.44.0.2	59	0000.3072.c60a	SNAP	TokenRing0
Internet	166.44.0.1	-	0000.3072.1a3b	SNAP	TokenRing0
Internet	166.44.0.24	83	0002.d00e.2831	SNAP	TokenRing0
Internet	166.44.0.25	195	0000.305c.3665	SNAP	TokenRing0
Internet	166.44.2.16	68	4000.0331.6418	SNAP	TokenRing0
Internet	166.44.0.19	2	0000.f609.c8e2	SNAP	TokenRing0
Internet	166.44.0.16	7	4000.0000.9100	SNAP	TokenRing0
Internet	166.44.1.17	60	4000.0331.7130	SNAP	TokenRing0
Internet	166.44.0.17	107	1000.5ab1.970b	SNAP	TokenRing0
Internet	166.44.0.22	195	0000.30ec.4613	SNAP	TokenRing0
Internet	166.44.0.23	97	0002.d00e.2f41	SNAP	TokenRing0
Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	166.44.2.33	66	4000.0331.6421	SNAP	TokenRing0
Internet	166.44.0.62	4	0000.f612.694a	SNAP	TokenRing0
Internet	166.44.0.60	1	0000.f612.619e	SNAP	TokenRing0
Internet	166.44.0.51	0	0000.f612.b2ac	SNAP	TokenRing0
Internet	166.44.0.52	1	0000.f612.b3bc	SNAP	TokenRing0
Internet	166.44.1.53	1	0000.f628.3817	SNAP	TokenRing0
Internet	166.44.0.94	0	0000.f648.3c15	SNAP	TokenRing0
Internet	166.44.0.104	154	0000.f641.662b	SNAP	TokenRing0
Internet	166.44.1.109	14	0000.f641.3605	SNAP	TokenRing0
Internet	166.44.1.98	4	0000.f625.185f	SNAP	TokenRing0
Internet	166.44.1.116	3	4000.0331.6887	SNAP	TokenRing0

*Command***sh ipx route**      *Press Enter**Result*

Codes: C - Connected primary network, c - Connected secondary network  
 S - Static, F - Floating static, L - Local (internal), W - IPXWAN  
 R - RIP, E - EIGRP, N - NLSP, X - External, s - seconds, u - uses

215 Total IPX routes. Up to 1 parallel paths and 16 hops allowed.

No default route known.

```

C A62C0000 (SAP),      To0
C A62C0F80 (HDLC),    Se0
C A62C0F84 (HDLC),    Se1
R   1 [09/03] via A62C0F84.0000.3072.c679,  4s, Se1
R   2 [11/05] via A62C0F84.0000.3072.c679,  4s, Se1
R   3 [11/05] via A62C0F84.0000.3072.c679,  4s, Se1
R   5 [09/03] via A62C0F84.0000.3072.c679,  4s, Se1
R   B [10/04] via A62C0F84.0000.3072.c679,  4s, Se1
R   F [11/05] via A62C0F84.0000.3072.c679,  4s, Se1
R  10 [10/04] via A62C0F84.0000.3072.c679,  4s, Se1
R 100 [10/04] via A62C0F84.0000.3072.c679,  4s, Se1
R 165 [10/04] via A62C0F84.0000.3072.c679,  4s, Se1
R  77 [10/04] via A62C0F84.0000.3072.c679,  4s, Se1
R  80 [11/05] via A62C0F84.0000.3072.c679,  4s, Se1
R  ACE [02/01] via A62C0000.0000.f641.611e,  2s, To0
R 1080 [08/02] via A62C0F84.0000.3072.c679,  7s, Se1
R 1111 [09/03] via A62C0F84.0000.3072.c679,  7s, Se1
R 1229 [09/03] via A62C0F84.0000.3072.c679,  7s, Se1
R 2200 [10/04] via A62C0F84.0000.3072.c679,  7s, Se1
R 2300 [10/04] via A62C0F84.0000.3072.c679,  7s, Se1
R 5000 [09/03] via A62C0F84.0000.3072.c679,  7s, Se1
R 6001 [02/01] via A62C0000.0000.f619.e9a6,  4s, To0
R 8787 [09/03] via A62C0F84.0000.3072.c679,  7s, Se1
R 9200 [11/05] via A62C0F84.0000.3072.c679,  7s, Se1
R 9300 [11/05] via A62C0F84.0000.3072.c679,  7s, Se1

```

*Command*

**sh ipx cache**     *Press Enter*

*Result*

IPX routing cache version is 178, 496 entries, 496 valid

```
      Destination Itf   MAC Header
* A62C0400.4000.0783.4208 Se1   0F008137
* 10001001.0000.0000.0001 To0   0000F63A43E3000030721A3BE0E003
* A62C1195.0000.3072.c68a To0   00003072C60A000030721A3BE0E003
*   1111.0000.0000.0001 Se1   0F008137
* 313C8A84.0000.0000.0001 Se1   0F008137
* 10001003.0000.0000.0001 To0   530003317119000030721A3BE0E003
* A62C0400.0000.f641.5c66 Se1   0F008137
* A62C0000.0001.e3ce.bb1e To0
0001E3CEBB1E800030721A3B06B090311000E0E003
* A62C0A02.4000.0783.4603 Se1   0F008137
* 10001002.0000.0000.0001 To0   0000F63A47B8000030721A3BE0E003
* A62C0116.0001.e384.fa05 To0   000030287A16000030721A3BE0E003
* A62C0000.0001.fa23.2b7d To0
0001FA232B7D800030721A3B06B090611000E0E003
```



## **Section 2.0 LAN Switch Procedures**

The procedures are outlined in the following manner

### **SECTION 2.1 CISCO 1600 Token Ring Switch**

- 2.1.1 Shut Down
- 2.1.2 Initialize
- 2.1.3 Monitor
- 2.1.4 Diagnostics
- 2.1.5 Troubleshooting

## **2.1.1 Shut down**

### **To shut down the Switch completely**

1. Check the status of the ports using the comands in section 2.3
- 2.
3. Physically turn off the router by flipping the on/off switch

## 2.1.2 To INITIALIZE a CISCO switch

### To start up the Switch

1. Ensure that all Token Ring segment cables are inserted into their respective ports
2. Turn switch on
3. Monitor console for the following
  - Memory test
  - Switch IOS banner
  - Interface initialization
  - Command prompt
  - Green LEDs on TX for each port
4. Use monitor commands in section 2.3 to determine proper operation

## 2.1.3 Monitoring A CISCO Switch

### Monitoring commands

*Command*

**show bridge all**      *press ENTER*

*Result*

```
Bridge Name:           RYE-SW-2
Bridge Number:         1
IP Address:            166.44.0.24
IP Subnet Mask:        255.255.252.0
IP Gateway:            0.0.0.0
Spanning Tree Root Priority: 32768

Spanning Tree Bridge ID: 00400B70140C
Spanning Tree Designated Root Priority: 32768
Spanning Tree Designated Root: 00400B70140C
Software Version:      1.35.00
Boot EPROM Version:    1.00.42
System Self Test Version: 1.08.00
Switch Hardware Version: 2.00.21
Switch Software Version: 1.03.01
MAC Software Version:  2.06.00

Total Frames Transmitted: 1,761,447,201
Total Frames Received:   1,317,817,051
Frames Per Second:       195
Bytes Per Second:        37,660
Input Broadcast Discards: 1,503
Output Broadcast Discards: 0
Switched Frame Discards: 52,130
```

*Command*

**show port characteristics {port #}**

**show port characteristics 1**      *press ENTER*

*Result*

```
Interface Admin. Status:      Enabled
Interface Mode:              Node
Interface Speed:             16 Mbps
S.R. Port Admin. Status:     Enabled
S.R. Port Segment Number:    100
S.R. Port Spanning Tree Mode: Automatic
S.R. Port Hop Count:         3
S.R. Port Spanning Tree Path Cost: 100
```

show port all

```
Interface Admin. Status:      Enabled
Interface Mode:              Node
Interface Speed:             16 Mbps
S.R. Port Admin. Status:     Enabled
S.R. Port Segment Number:    100
S.R. Port Spanning Tree Mode: Automatic
S.R. Port Hop Count:         7
S.R. Port Spanning Tree Path Cost: 100
```

```
Interface Actual Status:      Enabled
Interface Active MAC Address: 0002D00E2F41
S.R. Port Actual Status:      Operational
S.R. Port Spanning Tree Broadcast: Enabled
S.R. Port Designated Bridge: 00400B70140C
```

```
Bytes Transmitted:           4,196,568,326
Bytes Received:              153,972,034,708
Non-broadcast Frames Transmitted: 21,260,735
Non-broadcast Frames Received: 22,249,647
All Routes Explorer Frames Received: 1,312,346
All Routes Explorer Frames Transmitted: 5,200
Spanning Tree Explorer Frames Received: 15,664,892
Spanning Tree Explorer Frames Transmitted: 976,801
Receiving Segment Mismatch Discards: 0
Duplicate Segment Mismatch Discards: 0
ARE Hop Count Exceeded Discards: 13,211
```

## 2.1.4 Diagnostics Commands

*Command*

**show bridge characteristics**     *press ENTER*

*Result*

```
Bridge Name:           RYE-SW-2
Bridge Number:        1
IP Address:           166.44.0.24
IP Subnet Mask:       255.255.252.0
IP Gateway:           0.0.0.0
Spanning Tree Root Priority: 32768
>show bridge all
Bridge Name:           RYE-SW-2
Bridge Number:        1
IP Address:           166.44.0.24
IP Subnet Mask:       255.255.252.0
IP Gateway:           0.0.0.0
Spanning Tree Root Priority: 32768

Spanning Tree Bridge ID: 00400B70140C
Spanning Tree Designated Root Priority: 32768
Spanning Tree Designated Root: 00400B70140C
Software Version:      1.35.00
Boot EPROM Version:    1.00.42
System Self Test Version: 1.08.00
Switch Hardware Version: 2.00.21
Switch Software Version: 1.03.01
MAC Software Version:  2.06.00

Total Frames Transmitted: 1,761,516,388
Total Frames Received:   1,317,867,736
Frames Per Second:       209
Bytes Per Second:        28,440
Input Broadcast Discards: 1,510
Output Broadcast Discards: 0
Switched Frame Discards: 52,132
```

## 2.1.5 Troubleshooting commands

*Command*

**show bridge status**            *press ENTER*

*Result*

```
Spanning Tree Bridge ID:      00400B70F402
Spanning Tree Designated Root Priority: 32768
Spanning Tree Designated Root: 00400B70140C
Software Version:             1.35.00
Boot EPROM Version:           1.00.42
System Self Test Version:     1.08.00
Switch Hardware Version:     2.00.21
Switch Software Version:     1.03.01
MAC Software Version:         2.06.00
```

## **Section 4.0 CSU/DSU Procedures**

MCI International utilizes many different brands of CSU/DSU equipment. The procedures outlined maintain a consistent format for each product.



## ***Section 4.1 Internal Communications (Ed Kelly) CSU/DSU***

There are seven of these NT QMT 21 CSUS/DSUs

Two are used for production PBX links, the remaining are used for spares and tests

The procedures are outlined as follows:

- 4.1.1 Shut Down
- 4.1.2 Initialize
- 4.1.3 Monitor
- 4.1.4 Diagnostics
- 4.1.5 Troubleshooting

### **4.1.1 Shut down**

#### **To shut down the CSU/DSUs**

1. Pull power cord

### **4.1.2 To INITIALIZE the CSU/DSU**

1. Plug in the cord
2. Monitor power on self test

### 4.1.3 Monitoring the CSU/DSU

#### Monitoring the NT QMT 21

##### CSU/DSU is working properly and circuit is up

1. Check the CONNECT status LED indicator for activity
2. Check the SD and RD LEDs for blinking activity
3. DTR LED is active

##### CSU/DSU is working properly and line is down

1. Connect LED is off
2. DDN LED is active

### 4.1.4 Diagnostics Commands

#### Loopback of the NT QMT 21

1. Set switch # 8 in bank SW#1 to OFF(loopback)
2. Press the **RELEASE** button on the front panel

### 4.1.5 Troubleshooting commands

#### CONNECT LED is no longer active

1. **Call Internal Communications** at vnet **331-6464**
2. Open a trouble ticket
3. Provide Internal Communications the following information:
  - *TN number located on the CSU/DSU*
  - *LOOPBACK # 35*
  - *Channel # 24*

## **Section 4.2 IncCSU/SW56 CM1156 CSU/DSU**

There are four of these INC CM1156 CSUS/DSUs  
All are used for Disaster Recovery Dial-in and Out.  
The configurations on all units are set to factory defaults.

The procedures are outlined as follows:

- 4.2.1 Shut Down
- 4.2.2 Initialize
- 4.2.3 Monitor
- 4.2.4 Diagnostics
- 4.2.5 Troubleshooting

### **4.2.1 Shut down**

#### **To shut down the CSU/DSUs**

1. Pull power cord

## 4.2.2 To INITIALIZE the CSU/DSU

1. Plug in the cord
2. Monitor power on self test
3. Check for **OFF-LINE - READY** - status message on the **LCD**

## 4.2.3 Monitoring the CSU/DSU

### Monitoring the CM1156 CSU/DSU

**When in use for Disaster Recovery:**

**In a NON ACTIVE state**

1. **DSR** and **DTR** LEDs are **GREEN**
2. LCD displays a **READY** message

**In an ACTIVE(during Disaster Recovery) State**

1. **DSR DTR CTS RLSD TD LED** indicators are all **GREEN** for a completed call
2. The message **CALL ESTABLISHED** is displayed on the LCD

A **failed** call shows only the **DTR LED** is **GREEN**

## 4.2.4 Diagnostics

1. Cycle power on the CSU/DSU to run the diagnostics at startup
2. Monitor for errors

## Loopback of the CM1166

**To perform a Local loopback of the unit:**

1. Press the **LL** key
2. Monitor for a **loopback** message on the LCD
3. Press the **LL** key to end

**To perform a remote loopback of the unit:**

1. Press the **RL** key
2. monitor the **LCD** for the **ANSWER** message
3. press **RL** to end

*To kill a call hit the cancel key*

**4.2.5 Troubleshooting commands**

1. Cycle power on the CSU/DSU to run the diagnostics at startup
2. Monitor for errors
3. Replace the unit with a spare if an error is indicated on the LCD or LEDs

## Section 4.3 Motorola CODEX 3500 CSU/DSU

This is the only CSU/DSU of this model used in the NCC. This CSU/DSU is used for the Puerto Rico circuit. The procedures are outlined as follows:

- 4.3.1 Shut Down
- 4.3.2 Initialize
- 4.3.3 Monitor
- 4.3.4 Diagnostics
- 4.3.5 Troubleshooting

### 4.3.1 Shut down

#### To shut down the CSU/DSUs

1. Flip **ON/OFF** switch in rear of unit

### 4.3.2 To INITIALIZE the CSU/DSU

1. Flip **ON/OFF** switch in rear of unit
2. Monitor power on self test
3. Check for LCD status message **3500**

### 4.3.3 Monitoring the CSU/DSU

#### Monitoring the CODEX 3500

##### For normal operation condition

1. Front panel LED **ST** is **GREEN**
2. **T-R** LED is **AMBER** and active
3. LCD displays **3500** message

##### For abnormal operations

1. Front panel LED **ST** is **RED**
2. **T-R** LED is **unlit** and not active
3. LCD displays **ERROR** message

### 4.3.4 Diagnostics

1. Cycle power on the CSU/DSU to run the diagnostics at startup
2. Monitor for errors

### Loopback of the CODEX 3500

To perform a loopback of the unit:

1. Press the **Ź** button to select TEST from the LCD menu
2. Press the **Ź** until **LOOPBACK** is displayed
  1. Press the **Ź Ź Ź** button to select the type of loopback required
  2. Press the + key for the port selection
  3. Press the **⊙** key to execute the test

### 4.3.5 Troubleshooting commands

1. Cycle power on the CSU/DSU to run the diagnostics at startup
2. Monitor for errors
3. Replace the unit with a spare if an error is indicated on the LCD or LEDs

## Section 4.4 Codex 2640 CSU/DSU

The procedures are as follows:

- 4.4.1 Shut Down
- 4.4.2 Initialize
- 4.4.3 Monitor
- 4.4.4 Diagnostics
- 4.4.5 Troubleshooting

#### 4.4.1 Shutdown the CODEX 2640

1. Unplug the power from the unit

#### 4.4.2 Initialize the CODEX 2640

1. Plug power into the unit

#### 4.4.3 Monitoring the Codex 2640 Modem

##### Point-to-Point Dial Up

*Before Dial Up Initiated:*

1. Check for **Green Power** and **Red DSR** LEDs on solid

*After Connection Established:*

1. Check for **RSQ, DCD, RTS, CTS** LEDs on Solid
2. Check for **RXD** LED on
3. Check for **FLBK** LED on solid
4. Check for **TXD** and **DTR**

##### Multi-Point Dial-Up

*Before Dial Up Initiated*

Check for **Green Power** and **Red DSR** LEDs are solid

*After Dial-Up Connection Established*

Check for **RSQ, RTS, CTS, DCD LED** for flicker activity

*After Front End/System Connection Established*

Check for **RXD & TXD** for flicker activity

*Note: If the remote end modem is not the same, check for **FLBK LED** to come on solid*



## Monitoring the Line Status

1. Press **Status**
2. Press **CQMS**
3. Press **Down Arrow** (↓) Line Parameters come up
4. **RL** - should be -12 to -20 DB
5. **SNL** - should be 30 to 38 DB
6. **CRP** - should be all zeros
7. **PH** - should 02
8. **IH** - should be all zeros
9. **GH** - should be all zeros

### *Conditions for Redialing:*

1. If above levels are not met or come close, **drop line and redial.**
2. If **VTAM** shows the line to be **good**, even if the levels are not met, **do not drop line.**
3. If **VTAM** shows the live is **not up**, even if the levels are acceptable, **drop the line and redial.**

If the above does not work, follow diagnostic procedure or escalate to a higher level technician who can use the **Data Scope** to diagnose the problem.

## 4.4.4 Diagnostics

N/A

## 4.4.5 Troubleshooting

1. If the **RSQ LED** is blinking after connection established, **drop the line and redial.** If that **does not work, contact Engineering.**
2. If the top row of LEDs do not come on after connection established, drop the line and redial. If that does not work, **contact Engineering.**
3. If you **cannot connect, reset** to another mode.
4. If you cannot connect after the line is established and/or **VTAM** brings the line **up, Put an analog phone on the line to test.**

### *Escalate to Engineering If*

1. The line continually **receives errors**
2. Terminals operating on the line do not come up
3. Frequent redialing is needed
4. **RSQ** continually goes out or flickers
5. A need is identified to log on to the remote modem

## **Section 4.5 VERILINK CSU/DSU**

The procedures are as follows:

- 4.5.1 Shut Down
- 4.5.2 Initialize
- 4.5.3 Monitor
- 4.5.4 Diagnostics
- 4.5.5 Troubleshooting

### 4.5.1 Shut Down

1. Unplug electrical cord from rear of modem

### 4.5.2 Initialize

1. Confirm with Help Desk or Tech. Support the line is up through VTAM/Netview

### 4.5.3 Monitoring the Verilink CSU/DSU

1. Check for **DM, TR, RR, RS, CS, TT** LEDs on Solid

### 4.5.4 Diagnostics

1. Check to see the LEDs listed under “Monitoring” section
2. Escalate to a higher level technical who can use the Data Scope to diagnose the problem.
3. Call Major Accounts if the above is not possible

### 4.5.5 Troubleshooting the Verilink CSU/DSU

1. If the **Alarm LED** and/or Looped **CRC LEDs are on**, follow escalation procedure
2. If the pulsing **LEDs** are in an **orange** or **red** state, follow escalation procedure
3. Ignore the middle row of LEDs. They have no function.

## Section 4.6 LARSE CSU/DSU - ACCESS-T and SPLIT-T

The procedures are as follows:

- 4.6.1 Shut Down
- 4.6.2 Initialize
- 4.6.3 Monitor
- 4.6.4 Diagnostics
- 4.6.5 Troubleshooting

### 4.6.1 Shut Down

1. Unplug electric cord from rear of modem

### 4.6.2 Initialize

1. Confirm with Help Desk or Tech. Support the line is up through VTAM/Netview

### 4.6.3 Monitoring the LARSE CSU/DSU

1. Check for Green LEDs on Solid

### 4.6.4 Diagnostics

1. Press **Status**
2. Press **Line**
3. Observe LEDs
4. **LEDs** with the colors or **Orange, Amber or Red** signal a **problem**. Follow troubleshooting procedure listed in section 4.6.5.

### 4.6.5 Troubleshooting

1. **Escalate** to a higher level technician who can use the **Data Scope** to diagnose the problem.
2. **Call Major Accounts** if the above is not possible

## Section 4.7      CODEX 2185 DIGITAL BRIDGE MODEM

(Located in Top of Cabinet #7)

The procedures are as follows:

### Card Operation

- 4.7.1 Shut Down
- 4.7.2 Initialize
- 4.7.3 Monitor
- 4.7.4 Diagnostics
- 4.7.5 Troubleshooting

#### 4.7.1 Shut Down

*Modem Chassis:*

1. Power on modem rack using off/on switch on front of modem chassis

*Modem Card:*

1. Release card, unseat and reseat it in chassis (pull-it-out and in)

#### 4.7.2 Initialize

1. Each card has two modems. Note which number is lit, 1 or 2 to determine which modem is in use.

#### 4.7.3 Monitoring the Codex 2185

1. Check for **CIU** and **DR LEDs** on solid
2. Check for **amber LED** to left of **DR** to be **flickering**

### 4.7.4 Diagnostics

1. **Check** to see if any **LEDs are displayed** on card
2. **Check** with Help Desk or Tech Support to see if **VTAM is polling**
3. Check to see if the **Alarm LED** next to the port is **active**
4. Check to see if the RS-232 cable is connected in the back of the modem

### 4.7.5 Troubleshooting

1. **Confirm** the control unit on the remote end is up
2. Check the back of the modem to see if the **“Y” cable** has on end going to the Front End, and the other to the Communication Device
3. **Release card**, unseat and reseal it in chassis
4. Swap out card
5. Escalate to a higher level technician

## Section 4.8 IDNX

(Located in Top of Cabinet #5)

- 4.8.1 Shut Down
- 4.8.2 Initialize
- 4.8.3 Monitor
- 4.8.4 Diagnostics
- 4.8.5 Troubleshooting

### 4.8.1 Shut down

1. **NEVER** Power On/Off this box

### 4.8.2 Initialize

1. **NEVER** Initialize this box
2. Wait for **MCIT** to call and handle the situation

### 4.8.3 Monitoring

1. **Check** with Help Desk or Tech. Support to see if **VTAM** or End User is **down**
2. **Check in TSO** to find out the **Circuit Path (DSN8JT0.Circuit.Network)**

### 4.8.4 Diagnostics

1. Check to see if there are any **LEDs** on
2. Check to see if power cord is installed

### 4.8.5 Troubleshooting

1. **Call** National Accounts at **800-678-5755**

## **Section 4.9 ATLANTIC RESEARCH 7200 TURBO TEST SET**

(Located in Cabinet #4)

- 4.9.1 Shut Down
- 4.9.2 Initialize
- 4.9.3 Monitor
- 4.9.4 Diagnostics
- 4.9.5 Troubleshooting

**Note:** *This Protocol Analyzer/Data Scope is for third level technician use only.*

### ***ATLANTIC RESEARCH 8000 TEST SET***

(Located in Cabinet #3)

This Protocol Analyzer/Data Scope is for third level technician use only. It is for circuits running 56KB and up and is Cross Connected to Patch Panel 1 and 2 in Cabinet #2.

#### **4.9.1 Shut Down**

1. Unit is always on

#### **4.9.2 Initialize**

1. Unit is always on

#### **4.9.3 Monitoring**

1. Anything other than a “G” displayed on the scope is a bad frame



## ***SPECTRON PATCH PANEL***

(Located in Cabinet #2)

1. This Patch Panel is cross connected to the Atlantic Research 8000 Protocol Analyzer.
2. The first Patch Panel is set up as a DTE
3. The second Patch Panel is set up as a DCE
4. Used for 9.6 up to 19.2 circuits

### **Monitoring on the Spectron Patch Panel**

1. Check for the **Red 232 LED** to be on
2. Check for the **Green RDY LED** to be on

## **4.9.4 Diagnostics**

1. This equipment is for third level technician use only.

## ***SPECTRON PATCH PANEL***

(Located in Cabinet #1)

Used for Dial up Modems. The last two Patch Panels connect to the 3745.

## **4.9.5 Troubleshooting**

1. Use of this equipment is technician dependent.

## Section 4.10 CODEX 6740 MUX

(Located in Cabinet #3)

- 4.10.1 Shut Down
- 4.10.2 Initialize
- 4.10.3 Monitor
- 4.10.4 Diagnostics
- 4.10.5 Troubleshooting

**Note:** *This mux is used as a test bed for Frank Diano's Q-2 Server in Piscataway  
It runs on an Internal Comm. PBX 9.6 leased line to a Codex 6005 mux in Piscataway*

### 4.10.1 Shut Down

1. Press Power off/on switches are on top front of unit.

### 4.10.2 Initialize

1. Make sure software diskettes are in the diskette drives before power up. If not, insert diskettes and **press SysReset button.**

### 4.10.3 Monitoring

1. Check for **Green PWR/FAIL** LED on top of Modem Chassis
2. Check for **Green FAN/FAIL** LED on top of Modem Chassis
3. Check for **Green ST LEDs** on all Cards
4. Check to see whether the back of the mux is cabled to another communications device.

### 4.10.4 Diagnostics

1. Check to see if **red AL** LED is **on**
2. Check to see if **DCD** is **off**
3. Check to see if **LU1 or LU2** LED is **off** or **flashing**

## **4.10.5 Troubleshooting**

1. If LED conditions from section 4.10.4 are displayed, escalate to third level technician.

## **Section 4.11 SHORT HAUL MODEM RACK**

(Located in Bottom of Cabinet #5)

**Not in Use**

## **Section 4.12 MODEM ELIMINATOR**

(Located in Bottom of Cabinet #5)

**Not in Use**

## **Section 4.13 ACCESS-T ANALOG TONE TESTER**

(Located in Cabinet #3 and 4)

This equipment is for use by third level technicians only.

## **Section 4.14 HAYES MODEM CHASSIS**

(Located in Cabinet #3)

**Not is use**

## Section 4.15 CODEX 3262 V-FAST MODEM CHASSIS

(Located in Cabinet #2)

- 4.15.1 Shut Down
- 4.15.2 Initialize
- 4.15.3 Monitor
- 4.15.4 Diagnostics
- 4.15.5 Troubleshooting

**Note:** *These modems are reserved for Mainframe dial-in and client use*

### 4.15.1 Shut down

1. Press **master Off/on** switch in back of unit
2. **Reset individual cards** by unseating and reseating them

### 4.15.2 Monitoring

*For "A" Modem*

1. Check for **TR LED** to be **on**

*For "B" Modem*

1. Press **Return**
2. Press **Enter**
3. Check for **TR LED** to be **on**

*When modem is in Connect State*

1. Check for **RX, TX CD** LEDs to be **on**

### 4.15.4 Diagnostics

1. Try unseating/reseating card
2. Call Codex for replacement card

## 4.15.5 Troubleshooting

1. Check to see if any **LEDs are displayed** on the modem:

**If No LEDs** are displayed

1. Unseat and reseal modem
2. Replace modem

*If an Error Has Occurred*

1. Have client try **dialing in again**. Check to see what message is displayed in the display panel. If it say “**No Disconnect**”, there is a problem
2. Unseat and Reseat the modem

## Section 4.16 CODEX 2239 MODEM CHASSIS

(Located in Cabinet #6)

- 4.16.1 Shut Down
- 4.16.2 Initialize
- 4.16.3 Monitor
- 4.16.4 Diagnostics
- 4.16.5 Troubleshooting

These modems are used as dial ups through the IBM 3174 Controllers. There are two modems to each card.

### 4.16.1 Shut Down

*Modem Chassis:*

1. Power on modem rack using off/on switch on front of modem chassis

*Modem Card:*

1. Release card, unseat and reseat it in chassis (pop-it-out and in)

### 4.16.2 Initialize

1. Each card has two modems. **Press appropriate switch to move from A to B.** You can also use CDI to move from modem #1 to modem #2.

### 4.16.3 Monitoring the Codex 2239

1. Check for **TR LED** on solid
2. Check for all **green LEDs** on Chassis
3. Note that a **Busy State** indicated the **modem is in use**
4. Check for **CD, TR, RI, TX, RX** to all be flickering when the **modem is in use**

#### 4.16.4 Diagnostics

1. Check to see if any **LEDs** are displayed on card
2. Release card, unseat and reseal it in chassis (pop-it-out and in)

#### 4.16.5 Troubleshooting

1. Confirm the control unit on the remote end is up
2. Check to see if the red **AL, DL TPN LEDs are on.**
3. Check to see if the **Asynch Busy LED is on**
4. Release card, unseat and reseal it in chassis
5. Swap out card if reseating it does not work
6. Escalate to a higher level technician
7. Put an analog phone on the line to confirm you have dial tone
8. If there is no dial tone, report the problem to Internal Comm.

Note: There is no checkback test.

#### 4.17.0 TDM'S

These modems are not in use.

## Section 8.0 Control Units

### Section 8.1 IBM Controllers - LOCALLY ATTACHED

- 8.1.1 Shut Down
- 8.1.2 Initialize
- 8.1.3 Monitor
- 8.1.4 Diagnostics
- 8.1.5 Troubleshooting

The following procedure is for the I B M Controllers located in the Rye Brook NCC. All dial-up modems run through the two controllers except the 2640's.

#### 8.1.1 Shut Down

1. Press the **Off/On** Switch on the front left of the controller.

#### 8.1.2 Initialize

1. Check to see whether there is a microcode diskette in each drive #1 of the controller.
2. Press the **IML Button** on the front of the controller.

#### 8.1.3 Monitoring

Check to see if the **green power LED** is **on**.

Check to see if the **green diskette drive LEDs** are **on**

Check to see if the **green Data Transfer LED** is **flickering** from time to time or “3174” is displayed in the Status Panel



## 8.1.4 Diagnostics

1. Press the **Enter** key
2. Check to see whether “**3174**” is displayed in the Status Panel
3. Check with the Help Desk or Tech. Support to see whether the line is active

## 8.1.5 Troubleshooting

1. Turn the **Power Control** switch to Local
2. Lift the **Power switch to Start** and release it
3. Turn the **Power Control** switch to Remote
4. Continue normal operation or refer to 3174 User’s Guide, the third level technician or Technical Support for assistance.

## **Section 9.0 Internal Network Management Systems**

### **Section 9.1 Madge TrueView Procedures**

TrueView is a Windows-based application that allows for the monitoring and configuration of Controlled Access Units (CAUs) and Lobe Attachment Modules or LAMs on Token Ring networks.

- 9.1.1 Shut Down
- 9.1.2 Initialize
- 9.1.3 Monitor
- 9.1.4 Diagnostics
- 9.1.5 Troubleshooting

#### **9.1.1 Shutdown**

1. Click on **File** and **Select Exit**

#### **9.1.2 Initialize**

1. Select TrueView Icon
2. Double click n Icon

### 9.1.3 Monitoring

1. **Double click TrueView Icon** in Windows to start the application: all the CAUs configured for the application are displayed.
2. **Pick a CAU** to monitor by **clicking its icon**: you see the picture of the CAU. All the LAMs connected to it are also shown.

The remaining operations can be performed in any order. They are not done sequentially.

3. To check the CAU's setup parameters, **double click the CAU's display screen**.  
You can browse through features such as:
  - Name**: the name given or to be given to the CAU.
  - Location**: physical location of the unit.
  - Password**: any password needed to access the CAU.
  - Base Address**: the physical address of the CAU.
  - IP address/Subnet mask**: internet parameters for the CAU.
  - Ring speed**: 4 or 16 Mbps.
  - Comments**: a field for any additional item pertaining to the unit
  - Reset**: to click if resetting the unit.
4. To monitor or configure a LAM, **double click the LAMs #**: you can see a display showing the status of all the 20 ports; a green LED LED means shows active ports.
5. Click a port and you can **Enable/Disable** it.
6. A task bar allows you to get the following menu items:
  - OK**: to save configuration changes
  - I**: to show the information on the display screen (step 3.)
  - Chart**: to represent a diagram of the Backbone traffic monitoring as a function of operation time.
  - Key**: symbol representing the security settings of the system.
  - Diagnostic**: to perform diagnostics on the unit.
  - Temperature**: shown in degrees Fahrenheit or Celsius.
  - Fan**: to set the unit to manufacturer's operational range of temperature
  - Help**: help menu

## 9.1.4 Diagnostics

The diagnostic is primarily done by monitoring the status of the LEDs on the LAM ports for any unusual sign (blinking signal).

If you see a **blinking LED**, do the following:

1. - verify that the port is enabled
2. - check the port cabling for proper connectivity
3. - Move the connection to another available LAM port if possible

**Do not do the following** on a CAU without supervisory approval, since up to 80 users may be connected to the unit at any given time:

1. - Turning off or unplugging the CAU.
2. - Resetting the CAU.
3. - Changing the setup parameters (Step 3.)

## 9.1.5 Troubleshooting

N/A

## Section 10.0 General Infrastructure(HUBS)

### 10.1 Procedures for CAUs, LAMs and MAUs

Controlled Access Units or CAUs represent intelligent network wiring hubs for Token Ring networks. The actual network stations are connected to Lobe Attachment Modules or LAMs that are attached to CAUs (up to four LAMs may be connected to a CAU.) MAUs (Multistation Access Units) are passive hubs that can handle up to 8 stations.

The procedures are as follows:

- 10.1.1 Shut Down
- 10.1.2 Initialize
- 10.1.3 Monitor
- 10.1.4 Diagnostics
- 10.1.5 Troubleshooting

### CAU Operations

#### 10.1.1 Shut Down

1. Press the ON/OFF switch

#### 10.1.2 Initialization

1. Set the power switch ON: the unit runs initialization diagnostics.

#### 10.1.3 Monitoring

In normal operation, the LEDs on the CAU have the states shown below:

<b>LED</b>	<b>State</b>
RI	On
RO	On
Power (IO)	On
OK	On
LAMs(1-4)	On
Error Code Display	Off

## 10.1.4 Diagnostics

N/A

## 10.1.5 Troubleshooting

If any of LEDs are not in the state described in section 10.1.3, the CAU is defective.

To isolate the problem, perform the following:

1. Record the **2-digit status code** and the state of each LED.
2. Check the **4/16 Mbps switch setting**
3. Determine the type of error displayed from the **Error Code Display**.
4. If the problem is LAM related, refer to the LAM section for troubleshooting.
5. Turn the power on, and wait for the unit to the auto-diagnostics.

***Note:** Do Not turn off the power of the CAU unless instructed to do so.  
These troubleshooting procedures are also possible with TrueView software.*

## 10.2.1 LAM Operations

The procedures are as follows:

- 10.2.1 Shut Down
- 10.2.2 Initialize
- 10.2.3 Monitor
- 10.2.4 Diagnostics
- 10.2.5 Troubleshooting

### 10.2.1 Shut Down

1. Unplug LAM from CAU

### 10.2.2 Initialization

1. Press ON/OFF switch
2. Once the LAM's cables are connected to the CAU, it starts its internal diagnostics: all of the LEDs on the front panel will flash for few seconds.

### 10.2.3 Monitoring

1. In normal operation, the LEDs should be flashing on the LAM.

### 10.2.4 Diagnostics

N/A

### 10.2.5. Troubleshooting

TrueView allows for the troubleshooting of LAMs. A defective LAM or cabling could cause flashing of the LEDs or errors in the LAM's Error Code.

From the error code, determine which LAM is showing the error message.

1. - check the LAM connections to the CAU.
2. - disconnect and reconnect LAM to the base unit.
3. - if the LAM is proved to be defective, replace it.

**Note:** *A LAM can be removed or installed without shutting down the CAU. So, Do Not turn off the power on the CAU.*

### 10.3.0 MAU Operations

MAUs are passive elements used to extend Token Ring networks. A MAU can support 8 user stations. To extend a network, the RI and RO ports of the MAU are respectively connected to the RO and RI ports of the device on the existing network. No special monitoring or troubleshooting operations are performed on a MAU.

## **Section 11.0                      CIRCUIT TURNS**

Jose is capturing the circuit information into TSO and then converting it to NetVis diagrams.