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CiscoWorks Blue Internetwork Status Monitor Data Areas

Version 2, Release 2

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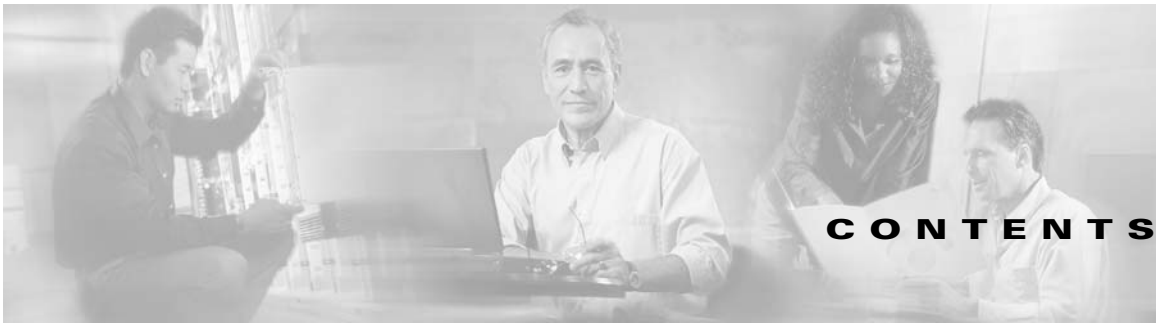

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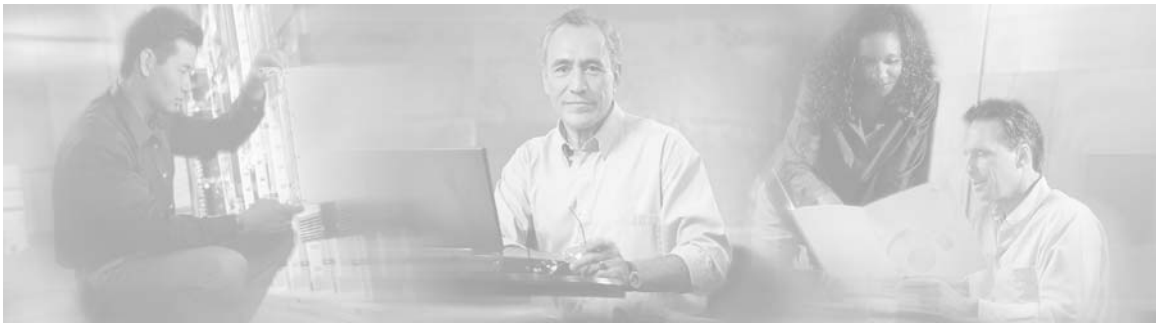

About This Guide

This chapter provides information on the following topics:

Document Objectives

This book describes the data areas used by the CiscoWorks Blue Internetwork Status Monitor (ISM) product.

Audience

This guide is intended for network engineers and Multiple Virtual Storage (MVS) system programmers who are responsible for installing and configuring Cisco routers in a Systems Network Architecture (SNA) environment. This guide assumes that you are familiar with the basic concepts and terminology used in internetworking and that you understand the network topology and protocols.

Document Organization

This guide is divided into the following chapters:

- Chapter 1, "Control Blocks," describes the control blocks used by ISM to monitor resources.
- Chapter 2, "VSAM Control Files," describes the control files used by ISM to save information for each resource. The control fi8les are written to VSAM.
- Chapter 3, "Statistics Written to VSAM and SMF," describes the record formats for performance, statistics, and log data that is written to VSAM and SMF.

Document Conventions

The terms *resource* and *router* are used throughout this documentation. To avoid confusion, be aware that all routers are resources, therefore the term *resource* encompasses *router*—whereas the term *router* is specific.

This guide uses basic conventions to represent text and table information.

Command descriptions in this guide use the following conventions:

- Commands and keywords are in **boldface** font.
- Arguments for which you supply values are in *italic* font.
- Elements in square brackets ([ ]) are optional.
- Alternative, but required, keywords are grouped in braces ({ }) and separated by a vertical bar (|).

Examples use the following conventions:

- Terminal sessions and information the system displays are printed in `screen` font.
- Information you enter is in **`boldface screen`** font.
- Variables you enter are printed in *`italic screen`* font.
- In examples, an exclamation point (!) at the beginning of a line in a router configuration indicates a comment line.

In addition, this guide uses the following conventions:

Note Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

Caution Means *reader be careful*. You are capable of doing something that might result in equipment damage or loss of data.

Tips Means *the following are useful tips*.

Related Documentation

For more information about CiscoWorks Blue ISM, refer to the following Cisco publications:

- *CiscoWorks Blue Internetwork Status Monitor Installation Guide*
- *CiscoWorks Blue Internetwork Status Monitor User Guide*
- CiscoWorks Blue Internetwork Status Monitor Online Help

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The following sections provide sources for obtaining documentation from Cisco Systems.

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Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

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http://www.cisco.com/tac

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

http://www.cisco.com/register/

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

http://www.cisco.com/tac/caseopen

Contacting TAC by Telephone

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http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

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- WWW: http://www-europe.cisco.com
- WWW: http://www-china.cisco.com
- Telnet: cco.cisco.com
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8, parity: none; stop bits: 1; and baud rates up to 28.8 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

Control Blocks

This chapter describes the control blocks used by ISM to monitor resources. This chapter includes the following sections:

Standard Module Names:

This book uses the following standard module names:

- NSPxxxxx—ISM Routines
- NSPSNxxx—SNMP
- ISMWCxxx—Web client routines

Standard Panel Names:

This book uses the following standard panel names:

- NSPVNDxx—ISM
- NSPVSNxx—SNMP
- NSPVxxxx—Other ISM applications
- NSPHxxxx—ISM Help panels
- NSPHSNxx—SNMP Help panels
- NSPHxxxx—Other ISM applications

ISM Common Global Variables

Table 1-1 describes the common global variables used throughout ISM. These variables are set when ISM is initialized.

Table 1-1 ISM Common Global Variables

Variable	Description
ISMSINIT	ISM Initialization Status
ISMMGR	Contains name of autotask managing ISM
ISMAUTO	Contains name of autotask that responds to messages
ISMREFOPER	Contains name of autotask that does screen refresh
ISMMGRI	Contains name of autotask that monitors interfaces
ISMRMONI	Monitoring interval for resources
ISMIMONI	Monitoring interval for interfaces
NSPMOPER	Security control word
ISMAPPLS3	ISM application list – group1
ISMAPPLS4	ISM application list – group4
ISMRINIT	ISM Resource Initialization Status
ISMCINIT	ISM CMCC Initialization Status
ISMTNINIT	ISM TN3270 Initialization Status
SNMPINIT	SNMP Initialization Status
ISMIxINT	ISM x interface Initialization Status
ISMRDELAY	Minimum refresh rate for status summary panel
ISMDELAYSON	Set to yes when refresh delay is on
PREFIX	Control characters used to suppress logging of commands
DOMAINID	Current NetView domain
ISMCIPTHPU	CMCC performance threshold level
ISMCIPTHMU	CMCC free memory threshold level
ISMCMCCRCV	Controls channel recovery

Table 1-1 ISM Common Global Variables (continued)

Variable	Description
ISMALRTCL	Alert control: x x x x Resource | Resource Mem/CPU | CMCC Mem/CPU | Interface
ISMTBASE	Base timer when using ISM scheduler
ISMSINIT	Indicates when ISM scheduler initialized
ISMMTHMU	Router/Switch Memory Threshold
ISMMTHPU	Router/Switch CPU Threshold
ISMSMFR	Indicates if SMF recording required
ISMRECID	SMF record ID
ISMRTRHDB	Resource statistics database
ISMRIFHDB	RIF and mac_address database
ISMCONHDB	Router Configuration database
ISMCIPHDB	CMCC statistics database
ISMTN32DB	TN3270 Server statistics database
ISMSWSNINIT	Date and time that the SNASw task started
ISMSWSNOPR	Operator id for SNASw monitoring
ISMSWSNNUM	Number of SNASw servers
ISMSWSNLMON	Indicates if SNASw links should be monitored
ISMSWSNDB	SNASw VSAM database id
ISMSUBINTx	Indicates if subinterfaces of type **x** showld be monitored

ISM Resource Control Block Structures

Table 1-2 describes prefixes for resource control block variables that begin with RT and RX.

Table 1-2 ISM Resource Control Block Structures

Name	Description	Length	Example
RTAn	Last Status Change	36	11:21 06/09/00 UNKNOWN
RTBn	Busy with operator	8	HAL1
RTCn	Configuration	80	C7000
RTDn	Owning Domain	8	CNM56
RTEn	Resource Description	80	Cisco IOS
RTFn	Resource Features	20	CIP TN32 DSPU
RTGn	Operation Groups	26	SNMP SNMPB COMMON
RTHn	Host name (as-is)	26	CWB-C1
RTIn	IP Address	15	172.18.3.33
RTJn	CMCC Management Indicator	4	CIP
RTKn	DSPU Management Indicator	4	DSPU
RTLn	Last related alert	26	
RTMn	Managing Autotask	8	ISMMGR
RTNn	Resource Control Variables	11	Y A Y Y N Y
RTOn	Enabled Operator	8	CE1
RTPn	Performance VSAM key	26	RTRHCWBC01XX 117 48 06/22./00 14:41 ISMMGR
RTQn	Threshold overrides	15	
RTRn	Not used		
RTSn	Current Status	8-10	ACTIV
RTTn	Last performance record	70	
RTUn	Service Point Name	8	CWBC01
RTVn	VTAM major node	8	SWDNETD

Table 1-2 ISM Resource Control Block Structures (continued)

Name	Description	Length	Example
RTWn	XCA Major Node	8	SGXC4D02
RTXn	Extended Status Indicators	1-8	DCLS
RT@n	IOS Pipe Support	3	YES
RXZn	Interface cross index pointers	20	
RXAn	Monitor mode	3-4	SNA|SNMP|BOTH
RXCn	CASA support on router	2-3	YES
RXDn	TN3270 support on router	2-3	YES
RXEn	SNA SW support on router	4	SWSN
RXFn	Last Failure	10-40	
RXLn	SYSUPTIME (MIB Value)		
RXMn	SNMP Mask	15	
RXNn	Community Name – Read	8-22	public
RXSn	SYSUPTIME - converted	2	
RXTn	Resource type	2	RT SW CA UN OS

ISM Interface Control Block Structures

Table 1-3 describes prefixes for resource control block variables that begin with ISMI.

Table 1-3 ISM Interface Control Block Structures

Name	Description	Example
ISMIxAn	Last Status Change	10:57 06/16/04 INVALID
ISMIxBn	Owning Domain	CNM56
ISMIxCn	Desired Status	UP

Table 1-3 ISM Interface Control Block Structures (continued)

Name	Description	Example
ISMIxDn	Control Data	RTZ5.D1S0S0 IDISMGALWYD1S0S0 ISMGALWY FASTETHERNET1/0/0 1/0/0 DS(UP) M(YES) G(1S0S0) E() T() I() 14:57 04/22/04 ISMMGR NSPIBCV
ISMIxEn	Encapsulation	ARPA
ISMIxFn	Archive keep count	99
ISMIxGn	PVC Archive Pointer	GCWBC05XXS2S0 101 48 06/17/04 11:34 ISMMGRI
ISMIxHn	History pointer (VSAM key)	HISMGALWYD1S0S0 111 48 06/17/04 11:12 ISMMGRI
ISMIxJn	Last PVC	20040617 11:34 PVC Serial2/0 Local(0 0 0 1) Switched(0 0 0 0) Unused(0 0 0 0)
ISMIxKn	Copy of last Performance record	20040617 11:12 MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, reliabiity 255/255, txload 1/255, rxload 1/255
ISMIxLn	Copy of last statistics record (history)	20040617 11:12 B=(0/40,0) D=(0/75,0) F=0 FF=0 Q=8876 R=535042 IE(0 0 0 0 0 0 0 0 0 0) OE(0 0 0 0 0 0 0) EF(0 0 0 0 0 0 0 0)
ISMIxMn	Monitor mode	YES
ISMIxNn	DLCI Statistics Pointer (VSAM Key)	NCWBC05XXS2S0 147 48

Table 1-3 ISM Interface Control Block Structures (continued)

Name	Description	Example
ISMIxOn	Last Performance record for compare checks	06/17/04 11:12 MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, reliability 255/255, txload 1/255, rxload 1/255
ISMIxPn	Performance pointer (VSAM key)	PISMGALWYD1S0S0 111 48 06/17/04 11:12 ISMMGRI
ISMIxQn	Last DLCI record	06/17/04 11:34 MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, reliability 255/255, txload 1/255, rxload 1/255
ISMIxSn	Current Status	UP

VSAM Control Files

This chapter describes the control files used by ISM to save information for each resource. The control files are written to VSAM.

Control and data files sometimes contain output from router **show** commands; such output is explained in this book. It is essential to understand this output, because should the output of a **show** command change, it could affect the way data is processed.

When describing a record, or giving an example, a "+" is used at the end of a line to indicate that the next line is a continuation of the record.

This chapter describes the following control files:

ISM System Initialization Control File Format

The ISM system initialization control file is created from ISM Setup, and is used to initialize ISM. There are two control files.

Location: VSAM Data set A (ISMDSA).

Description

```
Record 1 of 2
Key = ISMSETUP_ccccc_R3 where ccccc is the NetView domain name.

Data = APPL( S1 S2 S3 S4 S5 S6 S7 S8 S9) MI( STS ) TH( SU SO ) +
 IM( I1 I2 I3 I4 I5 I6 I7 I8 I9 I10 I11 I12 ) MI2( STT ) +
 DB( D1 D2 D3 D4 D5 ) CM( C1 C2 C3 C4 C5 ) CIP(E1 E2) Date Time OPID

Field      Description                                        Default
APPL( S1 S2 S3 S4 S5 S6 S7 S8 S9 )
         ISM Applications
         Resource Management    (S1)   ( YES | NO )          YES
         Interface Monitoring   (S2)   ( YES | NO )          YES
         Operator Management    (S3)   ( YES | NO )          YES
         SNA Session MGMT       (S4)   ( NO | YES )          NO
         ISM Scheduler          (S5)   ( NO | NO  )          NO
         CMCC Management        (S6)   ( NO | NO  )          NO
         DSPU Management        (S7)   ( NO | NO  )          NO
         FPM Management         (S8)   ( NO | NO  )          NO

MI( STS )      Monitoring interval for Resources             00:15

TH(SU SO)      Thresholds
               CPU Utilization     (SU)   ( 0 | 99 )        95
               Memory Utilization  (SO)   ( 0 | 99 )        10
IM( I1 I2 I3 I4 I5 I6 I7 I8 I9 I10 I11 I12 ) Interface Monitoring
         Token Ring           (I1)   ( YES | NO )           YES
         Ethernet             (I2)   ( YES | NO )           YES
         Serial               (I3)   ( YES | NO )           YES
         FDDI                 (I4)   ( YES | NO )           YES
         Loopback             (I5)   ( NO | YES )           NO
         Async                (I6)   ( NO | YES )           NO
         Channel              (I7)   ( NO | YES )           NO
         HSSI                 (I8)   ( NO | YES )           NO
         ISDN                 (I9)   ( NO | YES )           NO
         Tunnel               (I10)  ( NO | YES )           NO
         ATM                  (I11)  ( NO | YES )           NO
         Fastethernet         (I12)  ( NO | YES )           NO

 MI2(STT)      Monitoring interval for interfaces           02:00
```

```
DB( D1 D2 D3 D4 D5 ) Data Bases:
        Resource History       (D1)                      H
        Interface History      (D2)                      I
        RIF History            (D3)                      R
        Router Configuration   (D4)                      C
        CMCC History           (D5)                      H

CM( C1 C2 C3 C4 C5 ) Wrap Counts:
         Router History        (C1)                     48
         Interface History     (C2)                     48
         RIF History           (C3)                      5
         Router Configuration  (C4)                     99
         CMCC History          (C5)                     51

CIP(E1 E2)     CMCC Thresholds:
         CPU                   (E1) ( 0 | 99 )          90
         Memory                (E2) ( 0 | 99 )          10

Misc     Last Update                        (Date Time)
         Operator who made last update      (OPID)
```

Example

```
NSPSETUPCNM01R3          APPL(YES YES YES YES NO YES YES +
 YES) MI(00:15) TH(95 10) IM(YES YES YES YES YES YES YES YES YES YES +
 YES YES) MI2(02:00) DB(H I R C H) CM(95 95 5 99 51) CIP(90 10) +
 06/25/98 10:09 CHAND1


Record 2 of 2
Key = ISMSETUP_ccccc_R4 where ccccc is the NetView domain name.

Data = ISMMGR ISMMGRS ISMMGRM D1 ALRT( G1 G2 G3 G4 ) E1 T(T1) +
 APPL4( A1 A2 A3 A4) ISMMGRI SM( S1 S2) EN( N1 ) +
 IN( I1 I2 I3 I4 ) TH(T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11)
B(B1B2B3B4B5B6) Date Time OPID

Field    Description            Default

 ISMMGR   Name of ISMMGR Autotask.

 ISMMGRS  Name of ISMMGRS Autotask used for refresh operation.

 ISMMGRM  Name of ISMMGRM Autotask used for message automation.
 D1       Refresh delay
```

```
 ALRT( G1 G2 G3 G4) Generic Alert Generation
          G1 Router Status
          G2 Router Perf/Memory
          G3 CMCC Perf/Memory
          G4 Interface Status

 E1 CMCC Recovery
T(T1) ISM base timer for scheduler
APPL4( A1 A2 A3) Additional Applications
          A1 TN3270 Monitoring
          A2 Spare
          A3 SNMP Management
          A4 SNASw Monitoring

ISMMGRI Name of ISMMGRI Autotask used for interface monitoring.

SM( S1 S2) SMF Control Variables

          S1 SMF control
          S2 SMF record identifier

EN( N1 ) Enable limit
N1 Number of minutes that an operator can remain in enable mode.

IN( I1 I2 I3 I4 ) Additional Interface monitoring controller

            I1 IBMCLAW                    ( YES | NO )          NO
            I2 MPC                        ( YES | NO )          NO
            I3 Future                     ( YES | NO )          NO
            I4 Gigabitethernet            ( YES | NO )          NO

TH(T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11) Interface Reliability
Thresholds
     T1 Token Ring
     T2 Ethernet
     T3 Serial
     T4 FDDI
     T5 Loopback
     T6 Async
     T7 Channel
     T8 HSSI
     T9 ISDN
     T10 Tunnel
     T11 ATM
B(B1B2B3B4B5B6) Subinterface Monitoring
     B1 Ethernet
     B2 Serial
     B3 HSSI
```

```
     B4 ATM
     B5 FastEthernet
     B6 GigabitEthernet

 Misc      Last Update                      (Date Time)
           Operator who made last update    (OPID)
```

Example

```
ISMSETUPCNM56R4         ISMMGR ISMMGRS ISMMGRM 20 ALRT( NO NO NO NO )
NO T(15) APPL4(YES NO YES YES) ISMMGRI SM(YES 220) EN(15) IN( YES YES
NO YES ) TH(254 256 254 254 254 254 254 254 254 254 254 ) B(YYYYYY)
06/18/04 14:14 JI
```

ISM Operator Profile Control File Format

This control file is used to maintain an ISM operator's profile. Any operator can create this file, but only an administrator can change fields A, S, U, RT1 and RT2.

Location: VSAM Data set A (ISMDSA).

Description

Key = *NSPO_opid where opid is the operator name.

Note * indicates a special character for security.

```
Data = (( A( A S G ) U( U ) GF( RT1 RT2 ) +
 SF( E RT3 RT4 RT5 ) NAME( N1 )) MISC

Field     Description                                        Default
(A(A S G) Group A (Resource Management)
          Enable Authority    (A) D=Display E=Enable         D
          Filter Enabled      (S) N=No Y=Yes                 N
          Group Management    (G) N=No Y=YES                 N

 U( U )   Administrator
           Authority          (U) N=No Y=Yes                 N

 GF( RT1 RT2 )       Group Filters
          Group Filter 1      (RT1)
          Group Filter 2      (RT2)

 SF( E RT3 RT4 RT5 )   Status Filters
          Filter Mode         (E)    X=Exclude I=Include    X
          Status Filter 1     (RT3)
          Status Filter 2     (RT4)
          Status Filter 3     (RT5)

 NAME( N1 )      Operator Data
                 Name and data      (N1)

 Misc     Last Update                        (Date Time)
          Operator who made last update      (OPID)
```

Example

```
*NSPONSPADMIN            (( A(N N N) U(Y) GF(  ) SF(X  ) +
NAME(ISM Administrator - Do not delete) )) 10/29/96 10:33 CE1
```

ISM Resource Control File Format

This control file is used to build the control block with which you manage a resource. There are two control file records for each resource.

Location: VSAM Data set A (ISMDSA).

Description

```
Key = IRAcntlname, where: cntlname is the resource name.

Data = A RES D=( RT2 ) H=( RT3 ) I=( RT4 ) V=( RT7A RT7B )   +
 G=( RT8A RT8B RT8C )   N=( N1 N2 N3 N4 N5 N6 )   Q=( Q1 Q2 Q3 )
R( R1 ) +
 F=( RT9 )MISC

Key = IRBcntlname, where,cntlname,is the resource name.

Data = B RES E=( EB ) C=( CB ) MA ( MB ) CN( RT5 ) MO( MB ) +
 TY( TB ) MISC
```

ISMAxxxxx

```
Field                 Description           Default
A                     A type record

RES                   Control Name

D=( RT2 )             Domain

H=( RT3 )             Host Name

I=( RT4 )             Resource IP address

V=( RT7A RT7B )       VTAM Interfaces
                      Major Node            ( RT7A)
                      XCA Major Node        ( RT7B)

G( RT8A RT8B RT8C )   Operation Group(s)
                      Group 1 Name          ( RT8A )
                      Group 2 Name          ( RT8B )
                      Group 3 Name          ( RT8C )

N=(Y A N N N Y)       Resource Control variables:

N1        N2             N3         N4          N5      N6
Monitor   Availability   Collect    Archive     Create  Interface
Resource  Monitor        Statistics Statistics  Alarms  Archiving
```

```
Q= ( Q1 Q2 Q3 )        Threshold Overrides
                       P=  CPU Threshold      ( Q1 )
                       M=  Memory Threshold   ( Q2 )
                       A=No  No Archiving     ( Q3 )

R= ( YES )             Interface Monitoring   ( R1 )

F=( RT9A RT9B )        Resource Features
                       DSPU / CIP /TN3270     ( RT9A )
                       CIP / DSPU /TN3270     ( RT9B )
                       TN3270 / CIP / DSPU    ( RT9C )

MISC                   Last Update            (Date Time)
                       Operator who made last update     (OPID)
```

Note N=, Q=, and R= appear in the VSAM record only if they were set at some time. Typically, they are not present in the data fields.

ISMBxxxxx

```
Field                Description                       Default
B                          B type record

RES                  Control Name

E=( EB )             Description

C=( R=RT6A V=RT6B ) Configuration
                     R= Software Level                 ( RT6A )
                     V= Hardware Level                 ( RT6B )

MA ( MB )            MB = SNMP Mask

CN( CB )             CB = Community name

TY( TB )             TB = Resource Type
                     RT = Cisco Router
                     SW = Cisco Switch
                     UN = Unknown SNMP managed device
                     CA = Cisco CAT
                     OS = OS/390 with SNMP support
                     LD = Cisco Local Director

MISC                 Last Update                       (Date Time)
                     Operator who made last update     (OPID)
```

Note N=, Q=, and R= appear in the VSAM record only if they were set at some time. Typically, they are not present in the data fields.

Example

```
IRACAT19002             A CAT19002 D=(CNM56) H=(CWB-CAT1900-2 )
I=(172.18.7.63) V=(UNKNOWN ) G=(SW1900  ) N=(Y A N N N Y) Q=(  )
R=(YES) F=( ) 17:54 07/18/00 HAL2

IRBCAT19002             B CAT19002 E=( CISCO SYSTEMS CATALYST 1900 )
C=((UNKNOWN )) MA(255.255.255.0) CN(public) MO(SNMP) TY(CA) 17:54
07/18/00 HAL2
```

ISM Interface Control File Format

This control file is used to build the control block with which you manage an interface. Not all variables listed are used.

Location: VSAM Data set A (ISMDSA).

Description

```
Key = I_type_cntlname_convint   where: Type is the interface type
                                       cntlname is the resource name
                                       convint is the converted
interface
 CONVINT example: 0/0 = 0S0
                  0/0.123 = 0S0P123
Data = cntlname interface convint DS( D1 ) M( M1 ) G( G1 ) +
 E( E1 ) T( T1 ) I(I1) MISC
```

Field	Description	Default
cntlname	Service Point Name	
interface	Interface Name	
convint	Converted Interface	
DS (D1)	Desired Status (D1) (UP | DOWN)	
M (M1)	Monitor Mode (M1) (YES | NO)	YES
G (G1)	Converted Interface	
E (E1)	Encapsulation Type	
T (T1)	TN3270 Monitoring Status (Channel only)	
I (I1)	SNMP Index	
Misc	Last Update	(Date Time)
	Operator who made last update	(OPID)

Example

```
Channel (TN3270 SNMP)
ICCWBC01XXC3S0   CWBC01 CHANNEL3/0   3/0   DS(UP) M(YES) G(3S0) E
(CHANNEL) T(NOMON) I(12) 07/17/00 17:15 HAL1

TokenRing (SNMP)
```

```
ITCWBC01XXT0S2           CWBC01 TOKENRING0/2   0/2  DS(UP ) M(YES)
G(0S2)
 E(SNAP) I(3) T() 08:33 07/17/00 ISMMGR
```

CMCC Control File Format

This control file is used to build the control block with which you manage a CMCC (CIP).

Location: VSAM Data set A (ISMDSA).

Description

```
Key = CIP_cntlname_S_slot   where: CIP is the interface type
                                   cntlname is the router name
                                   slot is the slot number

Data = cntlname slot M( M1 ) T( T1 T2 T3) V( V1 V2 V3 ) I( I1 I2 I3 )
MISC

Field          Description                              Default

Cntlname       Service Point Name

slot           Position in Router


M( M1)          Monitor Mode
                            (M1)  ( YES | NO )        YES

T( T1 T2 T3 )  Override Values
               CPU            (Tn) C=
               MEM            (Tn) M=
               ARCHIVE        (Tn) A=( YES | NO )      YES

V( V1 V2 V3 )  CMCC Type and version
               CMCC Type      (V1)
               CMCC Hardware  (V2)
               CMCC Software  (V3)

I( I1 I2 I3 )  Channels Used
               Channel n/0    (I1)
               Channel n/1    (I2)
               Channel n/2    (I3)

MISC           Last Update                              (Date Time)
               Operator who made last update            (OPID)
```

Example

```
CIPCWBC01XXS3            CWBC01 3 M(YES) T(C=75  ) +
V(CIP 4.132 210.40) I( 3/0 3/1 3/2) 11:59 09/08/98 CE4
```

Scheduler Control File Format

This control file is used to build the scheduler environment.

Location: VSAM Data set A (ISMDSA).

Description

Key = NSPSTMR_n where: n (1 - 33) is the control file index.

Data = A(TA) R(TR) I(TD) G(TF) MISC

Field	Description	Default
A(TA)	Autotask (TA) (aaaaaaaa)	
R(TR)	Resource interval (TR) (0 to 96)	
I(TD)	Interface Interval (TD) (0 to 96)	
G(TF)	Group Identifier (TF) (gggggggg)	
MISC	Last Update Operator who made last update	(Date Time) (OPID)

Note The TR and TD limits depend upon the base time value. If the base time is 15 minutes, the above values would apply.

Example

```
NSPSTMR1                A(ISMMGR) R(1) I(8) G(NONE) 16:28 07/12/98
CHAND2

NSPSTMR2               A(ISMMGRA) R(1) I(12) G(TEST1) 16:28 07/12/98
CHAND2

NSPSTMR3                A(ISMMGRC) R(1) I(8) G(TEST2) 16:28 07/12/98
CHAND2

NSPSTMR4               A(ISMMGR) R(2 ) I(18) G(TEST3) 15:00 09/03/98
CHAND1
```

```
NSPSTMR5                    A(ISMMGR) R(5) I(10) G(TEST4) 15:00 09/03/98
CHAND1
```

TN3270 Control File Format

This control file is used to build the tn3270 monitor environment.

Location: VSAM Data set A (ISMDSA).

Description

```
Key = ISMTN32SETUP

Data = L=(LU) D=(DB) W=(WC) S=(S) H=(H) M=(M) R=(RE) Time +
Date OPID

Field                Description                              Default

L=(LU)            LU per cent free threshold         10
D=(DB)            History Logging data base         D
W=(WC)            History wrap count                    99
S=(S)             SMF logging                              YES
H=(H)             History logging                          YES
M=(M)             Access mode                              SNA
R=(RE)            Response time threshold            1000
Misc              Last Update                              (Time
Date)
OPID              Operator who made last update
```

Example

```
ISMTN32SETUP   L=(10) D=(H) W=(99) S=(YES) H=(YES) + M=(SNA)  R=(1000)
11:23 01/28/04 JIM1
```

SNA Switch Control File Format

This control file is used to build the SNASw monitor environment.

Location: VSAM Data set A (ISMDSA).

Description

```
Key = ISMSWSNSETUP
```

```
Data = O=(O) D=(W) W=(W) S=(S) H=(H) M=(M) L=(L) F=(F) Time +
  Date OPID

Field                Description                              Default

O=(O)              Monitor operator id                       SNASWMON
D=(DB)             History Logging data base                 W
W=(WC)             History wrap count                        99
S=(S)              SMF logging                               YES
H=(H)              History logging                           YES
M=(M)              Access mode                               SNA
L=(L)              Monitor links                             YES
F=(F)              History data set name
Misc               Last Update                               (Time
Date)
OPID               Operator who made last update

Example


ISMSWSNSETUP   O=(SNASWMON) D=(W) W=(99) S=(YES) + H=(YES) M=(SNA)
L=(YES) F=() 13:17 06/14/04 JIM2
```

SNMP Control File Format

This control file is used to build the SNMP environment.

Location: VSAM Data set A (ISMDSA).

Description

```
Key = SNMPSETUP

Data = MGR(MG) MON(MO) TR(T) PI(P) AL(A) MI(MI) TS(T) LO(L) +
  RT(RT) MA(MA) CN(C) Date Time OPID

Field                Description                              Default

MGR(MG)            SNMP Monitoring Operator                  SNMPMGR
MON(MO)            SNMP Message Autotask                     SNMPOPER
TR(T)              SNMP TRAP Monitoring                      YES
PI(P)              SNMP PING Monitoring                      NO
AL(A)              Generic Alert Generation                  NO
MI(MI)             Monitoring Interval                      not used
TS(T)              TCP/IP OS/390 Task Name
```

```
LO(L)               Local IP_Address
RT(RT)              Recovery Interval                       not used
MA(MA)              Default Mask
255.255.255.0
CN(C)               Community Name                          public
Misc                Last Update                             (Date Time)
OPID                Operator who made last update
```

Example

```
SNMPSETUP               MGR(SNMPMGR) MON(SNMPOPER) +
TR(YES) PI(NO) AL(NO) MI(00:00) TS(TCPMVSE1) +
LO(172.18.55.15) RT(00) MA(255.255.255.0) CN(public) 01/28/04 11:25
JIM1
```

SNA Switch Server Control File Format

This control file is used to build the SNASw server monitor environment.

Location: VSAM Data set A (ISMDSA).

Description

```
Key = SNASW_cccccccc where cccccccc is the SNASw CP name.

Data = CPNAME ROUTER DS(DS) E(E1 E2 E3 E4) N(N) C(C) H(H) +
   I(I) V(V) Time Date OPID

Field               Description                             Default

CPNAME             Control Point Name
ROUTER             Router Focal Point Name
DS(DS)             Desired Status                          ACTIV
E( E1 E2 E3 E4)    Control Values
  E1               Monitor resource                        Y
  E2               Collect Statistics                      Y
  E3               Archive Statistics                      Y
  E4               Write SMF Records                       Y
N(N)               Node Type
C(C)               CP Alias
H(H)               Host Name
I(I)               Node ID (IDNUM/IDBLK)
V(V)               VTAM Net Name
Misc               Last Update                            (Time
Date)
```

```
OPID                Operator who made last update
```

Example

```
SNASWCATDOG   CATDOG ISMCATDG DS(ACTIV) E(Y Y Y Y ) N(Branch) C(CISCO)
H(CATDOG) I(X'FFF00000')  V(NETA.CATDOG) 14:32 04/30/04 JIM1
```

CHAPTER 3

Statistics Written to VSAM and SMF

This chapter describes the format of all performance and statistical records written to the ISM VSAM data sets. If SMF recording is specified, the content of the SMF records is identical to that of the VSAM records.

Control and data files sometimes contain output from router **show** commands; such output is explained in this book. It is essential to understand this output, because should the output of a **show** command change, it could affect the way data is processed.

When describing a record, or giving an example, a "+" is used at the end of a line to indicate that the next line is a continuation of the record.

This chapter describes the following history record formats:

ISM SMF Recording Identifiers

Table 3-1 lists the keys used for each SMF recording.

Table 3-1 Recording Identifiers

Record Identifier	Description
01	Router/Switch CPU and Memory Usage
02	CMCC (CIP) CPU and Memory Usage
04	TN3270 Statistics
05	Interface Performance Statistics
06	Interface Statistics
07	Path Statistics

Table 3-1 Recording Identifiers (continued) (continued)

Record Identifier	Description
08	Frame Relay PVC Statistics
09	Frame Relay DLCI Statistics
10	SNA Switch CPU and Memory Usage
14	SNA Switch Link Statistics
66	ISM Event Log

SMF Record Format

The header for the SMF record is as follows:

```
220          1   07             4   CWBC01XXC4S1ADAP   30
Record_ID    1   record_type    4   record_key         30 data
```

The offset of the record identifier is 1. The length of the record type field is 3. The length of the field of the record key is 30.

Channel Interface History Control File Format

This control file is used to manage the history data for a channel interface. If the connection to the router is via SNMP, the record is found in the section describing interface statistics. The following record is for SNA monitoring.

```
Location: VSAM Data set A (ISMDSA).
```

Description

```
Key = H_punamex_C_cid_100 where: punamex is the Service Point Name
                                 padded with x(s) to build an
8-character name
                                 cid is the converted id for the
channel
                                 100 is the record number containing
VSAM Control
Data = data_key last_index Keep_count MISC

Field           Description                              Default
```

```
data_key        Base key for history records

last_index      Last record number

keep_count      Number of records to archive

MISC            Last Update                          (Date Time)
                Operator who made last update        (OPID)
```

Example

```
HCWBC01XXC4S1100         HCWBC01XXC4S1 176 95 09/29/98 10:01 ISMMGR
```

Channel Interface Path Control File Format

This control file contains a list of paths for a channel interface. This record is available only when using SNA monitoring.

```
Location: VSAM Data set I (ISMDSI).
```

Description

```
Key = S_punamex_C_cid where: punamex is the puname padded with
                             x(s) to build an 8-character name,
                             cid is the converted id for the channel.

Data = data_key last_index P=pn A=a path_name -- ADAP

Field           Description                              Default

data_key        Base key for history records

last_index      Last record number

P=pn            Path Counter
                Number of Paths (pn)

A=a             Adapter Control
                Adapter present (a) ( N | Y )

Path_name       Path identifier (1 for each path) (pn)

ADAP            Adapter available, if (a = Y)
```

Example

```
SCWBC01XXC4S1            09/29/98 10:01 P=1 A=N E160
```

Channel Interface Path History Record Format

This is the file format for a channel history record for a specific path.

```
Location: VSAM Data set I (ISMDSI).
```

Description

```
Key = H_punamex_C_cid_path_1_rr where: punamex is the puname padded
with
                                       x(s) to build an 8-character
name,
                                      cid is the converted id for the
channel,
                                       path is the path name,
                                       rr is the record number ( 01
-99).
Data = Path
Data = 'date time P1=path GRP1 g1 g2 g3 g4 g5 g5 g7 GRP2 g9 g10 g11
g12 g13 g14 '

Field           Description                              Default
Date            Date when record was written.

time            Time when record was written.

P1=path         Channel Path
                        Path                 (path)

GRP1 g1 g2 g3 g4 g5 g6 g7      Group 1 variables
                connects                     (g1)
                command_reties               (g2)
                cancels                      (g3)
                selective_reset              (g4)
                system_reset                 (g5)
                device_errors                (g6)
                cu_busy                      (g7)

GRP2 g8 g9 g10 g11 g12 g13 g14   Group 2 variables
                blocks_read                  (g8)
                blocks_write                 (g9)
                bytes_read                   (g10)
                bytes_write                  (g11)
```

```
                dropped_read                (g12)
                blk_write                   (g13)
                mend_wait                   (g14)
```

Example Path

```
HCWBC01XXC4S1E160101     '09/23/98 09:24 P1=E160 GRP1
153703 63746 2 0 20 0 0 GRP2 63752 63750 2361752 12130482 0 0 0'

HCWBC01XXC4S1E160102     '09/23/98 11:24 P1=E160 GRP1
158877 65858 2 0 20 0 0 GRP2 65864 65862 2434394 12565544 0 0 0'

HCWBC01XXC4S1E160103     '09/23/98 13:24 P1=E160 GRP1
163653 67809 2 0 20 0 0 GRP2 67815 67813 2500606 12974872 0 0 0'
```

Data Source

The following is a capture of the data used to build the path statistics records:

Command

```
show extended channel 3/1 statistics E160
```

Output

```
Path: E160 -- ESTABLISHED
                Command            Selective     System     Device
CU
Dev   Connects    Retries    Cancels      Reset      Reset     Errors
Bus
 10         11          0          0          0          3          0
 12         11          0          0          0          3          0
                Blocks                Bytes               Dropped Blk
Mend
Dev-Lnk      Read      Write      Read      Write       Read
Write  wait Co
 10-00          0          0          0          0          0          0
0
 12-00          0          0          0          0          0          0
0
Path E160
Total:         0          0          0          0          0          0
0
 Last statistics 9 seconds old, next in 1 seconds
cwb-c1>
Data = ADAPTER Card (ADAP)
Data = 'date time ADAP GRP5 blocks_read blocks_write bytes_read
bytes_write dropped_read +
 blk_write mend_wait'
```

```
Field           Description                              Default
Date            Date when record was written.

time            Time when record was written.

ADAP            Adapter data

GRP5 g8 g9 g10 g11 g12 g13 g14     Group 5 variables
                                   blocks_read          (g8)
                                   blocks_write         (g9)
                                   bytes_read           (g10)
                                   bytes_write          (g11)
                                   dropped_read         (g12)
                                   blk_write            (g13)
                                   mend_wait            (g14)
```

Example ADAP

```
HCWBC01XXC4S1ADAP101     '09/10/98 12:13 ADAP GRP5 4059 4057 128478
806722 0 0 0'

HCWBC01XXC4S1ADAP102     '09/10/98 14:13 ADAP GRP5 6008 6006 190620
1218614 0 0 0'

HCWBC01XXC4S1ADAP103     '09/10/98 16:13 ADAP GRP5 8044 8042 259836
1639934 0 0 0'
```

Data Source

The following is a capture of the data used to build the ADAP statistics records:

To be added.

SMF Record Format: Channel Path History Record Format

```
VPDLOG &ISMRECID 1 07 4 '&KEYI' 30 '&DATE &TIME &DATA'

VPDLOG 220 1 07 4 CWBC01XXC4S1ADAP    30    '09/10/98 12:13 ADAP
GRP5 4059 4057 128478 806722 0 0 0'
```

CMCC History Control File Format

This control file is used to manage the history data for a CMCC.

Location: VSAM Data set H (ISMDSH).

Description

```
Key = HCIP_punamex_S_n_100 where: punamex is the puname padded with
                                  x(s) to build an 8-character name,
                                  n is slot number (1 - 9), and
                                  100 is the record number containing
VSAM Control

Data = data_key last_index Keep_count MISC

Field           Description                              Default

data_key        Base key for history records

last_index      Last record number

keep_count      Number of records to archive

MISC            Last Update                              (Date Time)
                Operator who made last update            (OPID)
```

Example

```
HCIPCWBC01XXS4100         HCIPCWBC01XXS4    128 51 09/29/98 11:59
ISMMGR
```

CMCC History Record Format

This is the file format for a channel history record for a specific path.

Location: VSAM Data set H (ISMDSH).

Description

```
Key = HCIP_punamex_S_slot_1_rr where: punamex is the puname padded
with
                                      x(s) to build an 8-character
name,
```

```
                                        S indicates that this is for a
CMCC,
                                        slot is the position of the
CMCC,
                                        rr is the record number ( 01
-99)

Data = date time s1 s2 s3 s4 MEM m1 m2 CPU c1 c2 c3 DMA d1 d2 d3
ECA0/PCA0 p1 p2 p3 + ECA1/PCA1 e1 e2 e3
```

Note MEM, CPU, ECA0/PCA0 and PCA1/ECA1 are used as delimiters.

```
Field           Description                              Default
Date            Date when record was written.

time            Time when record was written.

MEM m1 m2     Memory usage
                SRAM in_use/available     (m1)
                DRAM in_use/available     (m2)

CPU c1 c2 c3  CPU Usage
                1 minute % usage          (c1)
                5 minute % usage          (c2)
                60 minute % usage         (c3)

DMA d1 d2 d3  Direct Memory Access Usage
                1 minute % usage          (d1)
                5 minute % usage          (d2)
                60 minute % usage         (d3)

PCA0/ECA0 p1 p2 p3  PCA0 or ECA0 Usage
                1 minute % usage          (p1)
                5 minute % usage          (p2)
                60 minute % usage         (p3)

PCA1/ECA1 e1 e2 e3  PCA1 or ECA1 Usage
                1 minute % usage          (e1)
                5 minute % usage          (e2)
                60 minute % usage         (e3)
```

Example

```
HCIPISMRILEYS1104   ' 20040621 05:11 MEM 112446624/128M CPU 1 1 0 DMA
1 0 0 ECA0 0 0 0 '
```

Note A '¬' in front of a data field indicates a change in a counter.

Data Source

The following is a capture of the data used to build the CMCC statistics records:

CIP Type

Command

```
show controller cbus
```

Output

```
    Switch Processor 5, hardware version 11.1, microcode version 11.15
      Microcode loaded from system
      512 Kbytes of main memory, 128 Kbytes cache memory
      16 256 byte buffers, 4 1024 byte buffers, 56 1520 byte buffers,
    89 4496 byte
      Restarts: 0 line down, 0 hung output, 0 controller error
     TRIP 0, hardware version 1.4, microcode version 10.4
Records not shown

slot1: CIP2, hw 5.00, sw 218.138, ccb F800FF20, cmdq E8000088, vps
8192
    software loaded from flash slot0:cip218-138.no_load_kernel_hw5
    Loaded:seg_802         Rev. 0    Compiled by jmollman on Thu
03-Jun-2004 08:
    Loaded:seg_csna        Rev. 0    Compiled by jmollman on Thu
03-Jun-2004 08:
    Loaded:seg_eca         Rev. 0    Compiled by jmollman on Thu
03-Jun-2004 08:
    Loaded:seg_pca         Rev. 0    Compiled by jmollman on Thu
03-Jun-2004 08:
    Loaded:seg_sslc        Rev. 0    Compiled by jmollman on Thu
03-Jun-2004 08:
    Loaded:seg_tcpip       Rev. 0    Compiled by jmollman on Thu
03-Jun-2004 08:
    Loaded:seg_tn3270      Rev. 0    Compiled by jmollman on Thu
03-Jun-2004 08:
    EPROM version 2.1, VPLD version 5.9
    PCA0: hw version 01, microcode version C1010000
    ECA1: hw version 02, microcode version C20602C3
    Load metrics:
      Memory    dram 52921296/64M
      CPU       1m   1%, 5m   1%, 60m   1%
```

```
      DMA        1m   1%, 5m   0%, 60m   0%
      PCA0       1m   0%, 5m   0%, 60m   0%
      ECA1       1m   1%, 5m   0%, 60m   0%
    Channel1/0
      gfreeq E8000160, lfreeq E80001D0 (4512 bytes)
      rxlo 4, rxhi 120, rxcurr 0, maxrxcurr 0
      txq E80001D8, txacc E80000B2 (value 77), txlimit 77
    Channel1/1
      gfreeq E8000160, lfreeq E80001E0 (4512 bytes)
      rxlo 4, rxhi 187, rxcurr 0, maxrxcurr 0
      txq E80001E8, txacc E80000BA (value 77), txlimit 77
    Channel1/2
      gfreeq E8000160, lfreeq E80001F0 (4512 bytes)
      rxlo 4, rxhi 187, rxcurr 4, maxrxcurr 8
      txq E80001F8, txacc E80000C2 (value 77), txlimit 77
      Channel1/2, txq E80001F8, txacc E80000C2 (value 77), txlimit
4ECPA Type
```

Command

```
show controller channel 3/0
```

Output

```
 ECPA 3, hardware version 0.1, microcode version 214.4
    Mailbox commands: 1 forevers, 66 max elapsed usecs
    Microcode loaded from flash slot0:xcpa214-4_kernel_xcpa
     Loaded:seg_802          Rev. 0    Compiled by jpod on Thu
05-Feb-98 12:51
     Loaded:seg_csna         Rev. 0    Compiled by jpod on Thu
05-Feb-98 12:51
     Loaded:seg_eca          Rev. 0    Compiled by jpod on Thu
05-Feb-98 12:51
     Loaded:seg_tcpip        Rev. 0    Compiled by jpod on Thu
05-Feb-98 12:51
     Loaded:seg_tn3270       Rev. 0    Compiled by jpod on Thu
05-Feb-98 12:51
    EPROM version 1.0, VPLD version 0.88
    ECA0: hw version 255, microcode version C50602D1
    Load metrics:
     Memory    sram 2871624/4096K, dram 6870544/16M
      CPU       1m   1%, 5m   1%, 60m   0%
      DMA       1m   1%, 5m   0%, 60m   0%
       ECA0       1m   1%, 5m   0%, 60m   0%
     Interface Channel3/0
    Hardware is Escon Channel
    HW Registers control status=0x0001EC07 LED control=0xFFFFFFFF
    HW Poll Register 4B06FEE0:(00000001)
    Free buffer queues
```

```
      queue=0 max_entries=128 size=600 head=103 ring=4B0A8900
      queue=1 max_entries=32 size=4520 head=23 ring=4B0A8840
      queue=2 max_entries=64 size=4520 head=63 ring=4B0A8B40
    Tx Queues
Data records not shown
```

PCPA Type

Command

```
show controller channel 5/0
```

Output

```
 PCPA 5, hardware version 0.1, microcode version 214.40
    Mailbox commands: 1 forevers, 59 max elapsed usecs
    Microcode loaded from flash slot0:flee/PCPA_082598_kernel_xcpa
    Loaded:seg_802         Rev. 0    Compiled by rogorman on Tue
25-Aug-98 13:26
    Loaded:seg_csna        Rev. 0    Compiled by rogorman on Tue
25-Aug-98 13:26
    Loaded:seg_pca         Rev. 0    Compiled by rogorman on Tue
25-Aug-98 13:26
    EPROM version 1.0, VPLD version 0.117
    PCA0: hw version 255, microcode version C1010000
    Load metrics:
      Memory    sram 2737288/4096K, dram 9437688/16M
      CPU       1m   1%, 5m   0%, 60m   0%
      DMA       1m   1%, 5m   0%, 60m   0%
      PCA0      1m   0%, 5m   0%, 60m   0%
 Interface Channel5/0
 Hardware is Parallel Channel (Bus & Tag)

Data Deleted.
```

SMF Record Format: CMCC History Record Format

```
VPDLOG &ISMRECID 1 02 4 '&KEYI' 30 '&DATE &TIME &DATA'

VPDLOG 220 1 02 4 CIPCWBC01XXS4 30    09/29/98 05:14 ¬127754
¬127754 0 +
1 MEM 520/512K 20132960/32M CPU 0 0 0 DMA 1 0 0 PCA0 0 0 0 ECA1 1 0 0
```

Resource Performance History Control File Format

This control file is used to manage the performance history data for a Cisco router/switch.

```
Location: VSAM Data set H (ISMDSH).
```

Description

```
Key = RTRH_punamex_100 where: punamex is the puname padded with x(s)
                              to build an 8-character name
                             100 is the record number containing VSAM
Control

Data = data_key last_index Keep_count MISC

Field           Description                              Default

data_key        Base key for history records

last_index      Last record number

keep_count      Number of records to archive

MISC            Last Update                              (Date Time)
                Operator who made last update            (OPID)
```

Example

```
RTRHCWBC03XX100          RTRHCWBC03XX 140 95 09/29/98 14:14 ISMMGR
```

Cisco Router/Switch Performance History Record Format

This is the file format for a Cisco router/switch performance history record.

```
Location: VSAM Data set H (ISMDSH).
```

Description

```
Key = RTRH_punamex_index where: punamex is the puname padded with x(s)
                                to build an 8-character name
                                index is the record number
```

```
Data = date time c1 c2 c3 m1 m2 m3 pf

Field           Description                                 Default
Date            Date when record was written.

time            Time when record was written.

c1 c2 c3        CPU Utilization
                5 Sec    (c1)
                1 Min    (c2)
                5 Min    (c3)

m1 m2 m3        Memory Utilization
                Total    (m1)
                Used     (m2)
                Free     (m3) pf  % free memory
```

Example

```
 RTRHISMCATDG111         20040620 23:41 4%/0%  0% 0% 70427200
15892104 54535096 77.4
```

Note A '¬' in front of a data field indicates a change in a counter.

Data Source

The following is a capture of the data used to build the performance records:

CPU Performance

Command

```
show process cpu
```

Output

```
CPU utilization for five seconds: 6%/5%; one minute: 10%; five
minutes: 9%
 PID  Runtime(ms)  Invoked  uSecs    5Sec   1Min   5Min TTY Process
   1       12460    331327     37   0.00%  0.00%  0.00%   0 Load Meter
   2       76316      7714   9893   0.00%  0.00%  0.00%   0 Exec
   3    43805672    430407 101778   0.00%  3.55%  2.85%   0 Check
heaps
   4          12         5   2400   0.00%  0.00%  0.00%   0 Pool
Manager
   5           0         2      0   0.00%  0.00%  0.00%   0 Timers by
```

```
Partial output.
```

Note Only the first line is used. If the data exceeds threshold, the rest of the data will be written to the NetView log.

Memory Utilization

Command

```
show process mem
```

Output

```
Total: 54633684, Used: 3000624, Free: 51633060
  PID  TTY  Allocated      Freed    Holding    Getbufs    Retbufs
Process
    0    0     185176       1236    2412852          0          0
*Init*
    0    0        612   27380436        612          0          0
*Sched*
    0    0  203811044  189748120       3656     386140          0
*Dead*
    1    0        256        256       1720          0          0 Load
Meter
    2    0  241690312  241510540     162204          0          0 Exec
Partial output.
```

Note Only the first line is used. If the data exceeds threshold, the rest of the data will be written to the NetView log.

SMF Record Format: Cisco Router/Switch Performance History Record Format

```
VPDLOG &ISMRECID 1 01 4 '&NSPSPN' 30 '&DATE &TIME &DATA'

VPDLOG 220 1 01 4 RTRHCWBC03 30 09/29/98 04:44 7%/7% 7% 7%
56077856 2298984 53778872
```

Interface Performance History Control File Format

This control file is used to manage the performance history data for an interface.

```
Location: VSAM Data set I (ISMDSI).
```

Description

```
Key = P_punamex_i_convint_100 where: punamex is the puname padded with
                                     x(s) to build an 8-character
name,
                                     'i' = interface type (A=Async
M=ATM E=Ethernet
                                     D=FastEthernet F=FDDI H=HSSI
B=ISDN L=Loopback
                                     S=Serial T=Tokenring U=Tunnel ),
                                     convint is the converted
interface,
                                     100 is the record number
containing VSAM Control

Data = data_key last_index Keep_count MISC

Field          Description                          Default

data_key       Base key for history records

last_index     Last record number

keep_count     Number of records to archive

MISC           Last Update                          (Date Time)
               Operator who made last update        (OPID)
```

Example

```
PCWBC01XXT0S2100            PCWBC01XXT0S2 113 95 09/29/98 14:01 ISMMGR
```

Interface Performance History Record Format

The format of this record is the same for all interfaces.

```
Location: VSAM Data set I (ISMDSI).
```

Description

This is the file format for an interface performance history record.

```
Key = P_punamex_i_convint_1_rr where: punamex is the puname padded
with
                                      x(s) to build an 8-character
name,
                                      'i' = interface type (A=Async
M=ATM E=Ethernet
                                      D=FastEthernet F=FDDI H=HSSI
B=ISDN L=Loopback
                                      S=Serial T=Tokenring U=Tunnel ),
                                      convint is the converted
interface,
                                      rr is the record number

Data = date time 01   MTU p1 bytes, BW p2 Kbit, DLY p3 usec, rely p4,
load p5
```

Note This record is copied straight from the show interface without any processing of the text.

```
Field       Description                              Default
Date        Date when record was written.

time        Time when record was written.

p1      MTU                 (p1)

p2      Bandwidth           (p2)

p3      Delay               (p3)

p4      Reliability         (p4)

p5      Load                (p5)
```

Example

```
PCWBC01XXT0S2101          09/28/98 14:01   MTU 4464 bytes,   +
BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255

PCWBC01XXT0S2102          09/28/98 16:01   MTU 4464 bytes,   +
BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255

PCWBC01XXT0S2103          09/28/98 18:01   MTU 4464 bytes,   +
BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255

PCWBC01XXT0S2104          09/28/98 20:01   MTU 4464 bytes,   +
BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255
```

Data Source

The following is a capture of the data used to build the performance records:

Interface Performance

Command

```
show interface TOKENRING0/2
```

Output

```
TokenRing0/2 is up, line protocol is up
 Hardware is cxBus Token Ring, address is 0000.30e2.a35e (bia
0000.30e2.a35e)
 Description: Bridge between Data Center and NCP TIC 1088 rings (thru
Ring 101)
 Internet address is 172.18.9.17/28
 MTU 4464 bytes, BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255
 Encapsulation SNAP, loopback not set, keepalive set (10 sec)
Partial output.
```

Note The line (MTU ---) containing the performance record is the same for all interfaces. The field following the word “Encapsulation” is saved in the interface control block NSPI_type_E_index field.

SMF Record Format: Interface Performance History Record Format

```
VPDLOG &ISMRECID 1 05 4 '&KEYI' 30 '&DATE &TIME &DATA'

VPDLOG 220 1 05 4 CWBC01XXT0S2 30 09/28/98 14:01   MTU 4464 bytes,   +
BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255
```

Interface Statistics History Control File Format

This control file is used to manage the statistics history data for an interface.

```
Location: VSAM Data set I (ISMDSI).
```

Description

```
Key = H_punamex_i_convint_100 where: punamex is the puname padded with
                                     x(s) to build an 8-character
name,
                                     'i' = interface type (A=Async
M=ATM E=Ethernet
                                     D=FastEthernet F=FDDI H=HSSI
B=ISDN L=Loopback
                                     S=Serial T=Tokenring U=Tunnel),
                                     convint is the converted
interface,
                                     100 is the record number
containing VSAM Control

Data = data_key last_index Keep_count MISC

Field           Description                              Default

data_key        Base key for history records

last_index      Last record number

keep_count      Number of records to archive

MISC            Last Update                              (Date Time)
                Operator who made last update            (OPID)
```

Example

```
HCWBC01XXT0S2100         HCWBC01XXT0S2 113 95 09/29/98 14:01 ISMMGR
```

Interface Statistics History Record Format

This record format is the same for all interfaces. Some fields are missing for some interfaces.

```
Location: VSAM Data set I (ISMDSI).
```

Description

This is the file format for an interface performance history record.

```
Key = H_punamex_i_convint_1_rr where: punamex is the puname padded
with
                                      x(s) to build an 8-character
name,
                                      'i' = interface type (A=Async
M=ATM E=Ethernet
                                      D=FastEthernet F=FDDI H=HSSI
B=ISDN L=Loopback
                                      S=Serial T=Tokenring U=Tunnel),
                                      convint is the converted
interface,
                                      rr is the record number

Data = 'date time B=( b1 b2 ) D=( d1 d2 ) F=PI FF=BY Q=PO R=BO IE( NB
RB RU GI TH IE CR FR OV IG AB ) OE( UN OE CO IR RS OBF OBS TR )
EF( IZ IIT IIU IIV IIW IIX IIS IS) +
FA=TA FB=CL FC=BE '

Field       Description                              Default
Date        Date when record was written.
time        Time when record was written.

B=(b1 b2)   Output queue b1, b2 drops
D=(d1 d2)   Input queue d1, d2 drops
F=PI        Packets input
FF=BY       Input bytes
Q=PO        Packets output
R=BO        Bytes output

IE(         Beginning of input errors
NB          No buffer
RB          Received h1 broadcasts,
RU          Runts
GI          Giants
TH          Throttles
IE          Input errors
CR          CRC
```

```
FR          Frame
OV          Overrun
IG          Ignored
AB          Abort
 )          End of Input errors
OE(         Beginning of output errors
UN          Underruns
OE          Output errors
CO          Collisions
IR          Interface resets
RS          Restarts
OBF         Output buffer failures
OBS         Output buffers swapped out
TR          Transitions / multicast watchdogs (ethernet)
)           End of Output errors

For Ethernet, FastEthernet, or GigabitEthernet

EF( IZ IIT IIU IIV IIW IIX IIS IS)
IZ          Multicast
IIT         Babbles
IIU         Late collisions
IIV         Deferred
IIW         Lost carrier
IIX         No carrier
IIS         Input packets
IS          Watchdog
For FDDI:
FA=TA       Traces
FB=CL       Claims
FC=BE          Beacons
```

Example

```
HISMCATDGE4S0101        '20040620 17:41 B=(0/40,0) D=(0/75,0)
F=51862986 FF=1619466562 Q=15449174 R=3722767406 IE( 0 38980711 0 0 0
0 0 0 0 0 0 )  OE( 0 0 1356244 2 0 0 0 ) EF( 0 0 0 0 0 0 0 0  ) '
```

Note A '¬' in front of a data field indicates a change in a counter.

Data Source

The following is a capture of the data used to build the statistics records:

Note The scanning of the data depends upon the interface type.

Interface Statistics for Token Ring

Command

```
show interface TOKENRING0/2
```

Output

```
TokenRing0/2 is up, line protocol is up
 Hardware is cxBus Token Ring, address is 0000.30e2.a35e (bia
0000.30e2.a35e)
 Description: Bridge between Data Center and NCP TIC 1088 rings (thru
Ring 101)
 Internet address is 172.18.9.17/28
 MTU 4464 bytes, BW 16000 Kbit, DLY 630 usec, rely 255/255, load 1/255
 Encapsulation SNAP, loopback not set, keepalive set (10 sec)
 ARP type: SNAP, ARP Timeout 04:00:00
 Ring speed: 16 Mbps
 Single ring node, Source Route Transparent Bridge capable
 Source bridging enabled, srn 10 bn 1 trn 1010 (ring group)
    proxy explorers disabled, spanning explorer enabled, NetBIOS cache
disabled
 Group Address: 0x00000000, Functional Address: 0x0800011A
 Ethernet Transit OUI: 0x000000
 Last input 00:00:00, output 00:00:00, output hang never
 Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 2000 bits/sec, 3 packets/sec
5 minute output rate 1000 bits/sec, 2 packets/sec
   2798050 packets input, 244349591 bytes, 0 no buffer
   Received 1462643 broadcasts, 0 runts, 0 giants, 0 throttles
   2 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
   1746925 packets output, 94762225 bytes, 0 underruns
   0 output errors, 0 collisions, 2 interface resets
   0 output buffer failures, 0 output buffers swapped out
   3 transitions
```

Interface Statistics for Ethernet

Command

```
show interface ETHERNET1/0
```

Output

```
Ethernet1/0 is up, line protocol is down
 Hardware is cxBus Ethernet, address is 0000.0c47.c580 (bia
0000.0c47.c580)
 MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec, rely 255/255, load
1/255
 Encapsulation ARPA, loopback not set, keepalive set (10 sec)
 ARP type: ARPA, ARP Timeout 04:00:00
 Last input never, output 00:00:06, output hang never
 Last clearing of "show interface" counters never
 Queueing strategy: fifo
 Output queue 0/40, 0 drops; input queue 0/75, 0 drops
 5 minute input rate 0 bits/sec, 0 packets/sec
 5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 input packets with dribble condition detected
166675 packets output, 10000774 bytes, 0 underruns
0 output errors, 0 collisions, 1 interface resets
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
```

Interface Statistics for FDDI

Command

```
show interface FDDI2/0
```

Output

```
Fddi2/0 is administratively down, line protocol is down
 Hardware is cxBus FDDI, address is 0010.5493.9840 (bia
0010.5493.9840)
 MTU 4470 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load
1/255
 Encapsulation SNAP, loopback not set, keepalive not set
 ARP type: SNAP, ARP Timeout 04:00:00
```

```
 Phy-A state is     off, neighbor is unk, cmt signal bits 008/000,
status QLS
 Phy-B state is     off, neighbor is unk, cmt signal bits 20C/000,
status QLS
 ECM is out, CFM is isolated, RMT is isolated
 Requested token rotation 5000 usec, negotiated 0 usec
 Configured tvx is 2500 usec ring not operational
 Upstream neighbor 0000.f800.0000, downstream neighbor 0000.f800.0000
 Last input never, output never, output hang never
 Last clearing of "show interface" counters never
 Queueing strategy: fifo
 Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
   0 packets input, 0 bytes, 0 no buffer
   Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
   0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
   0 packets output, 0 bytes, 0 underruns
   0 output errors, 0 collisions, 1 interface resets
   0 output buffer failures, 0 output buffers swapped out
   0 transitions, 0 traces, 0 claims, 0 beacon
```

Interface Statistics for Fast Ethernet

Command

```
show interface FASTETHERNET0
```

Output

```
FastEthernet0 is up, line protocol is up
 Hardware is DEC21140, address is 00e0.1eae.d952 (bia 00e0.1eae.d952)
 Internet address is 172.18.7.35/24
 MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, rely 255/255, load
1/255
 Encapsulation ARPA, loopback not set, keepalive set (10 sec)
 Full-duplex, 100Mb/s, 100BaseTX/FX
 ARP type: ARPA, ARP Timeout 04:00:00
 Last input 00:00:00, output 00:00:03, output hang never
 Last clearing of "show interface" counters never
 Queueing strategy: fifo
 Output queue 0/40, 0 drops; input queue 0/75, 0 drops
 5 minute input rate 5000 bits/sec, 8 packets/sec
 5 minute output rate 0 bits/sec, 0 packets/sec
     5884689 packets input, 505694016 bytes, 0 no buffer
     Received 5541961 broadcasts, 0 runts, 0 giants, 0 throttles
997 input errors, 997 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
```

```
 0 watchdog, 0 multicast
 496 input packets with dribble condition detected
 813152 packets output, 67707970 bytes, 0 underruns
 0 output errors, 0 collisions, 3 interface resets
 0 babbles, 0 late collision, 0 deferred
 0 lost carrier, 0 no carrier
 0 output buffer failures, 0 output buffers swapped out
```

Interface Statistics for Loopback

Command

```
show interface LOOPBACK0
```

Output

```
Previous date used for performance (MTU ----)
Loopback0 is up, line protocol is up
 Hardware is Loopback
 Internet address is 172.18.9.1/32
 MTU 1500 bytes, BW 8000000 Kbit, DLY 5000 usec, rely 255/255, load
1/255
 Encapsulation LOOPBACK, loopback not set, keepalive set (10 sec)
 Last input 00:00:00, output never, output hang never
 Last clearing of "show interface" counters never
 Queueing strategy: fifo
 Output queue 0/0, 0 drops; input queue 0/75, 0 drops
 5 minute input rate 0 bits/sec, 0 packets/sec
 5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     360952 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
```

Interface Statistics for Serial

Command

```
show interface SERIAL0
```

Output

```
Hardware is HD64570
```

```
Description: connection to cwb-c5
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
Encapsulation FRAME-RELAY, loopback not set, keepalive not set
Broadcast queue 0/64, broadcasts sent/dropped 135851/0, interface
broadcasts
Last input 00:00:03, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/0 (size/max total/drops)
   Conversations 0/3/64 (active/max active/threshold)
   Reserved Conversations 0/0 (allocated/max allocated)
5 minute input rate 0 bits/sec, 1 packets/sec
5 minute output rate 1000 bits/sec, 1 packets/sec
 615221 packets input, 47796639 bytes, 0 no buffer
 Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
 992504 packets output, 74315233 bytes, 0 underruns
 0 output errors, 0 collisions, 2 interface resets
 0 output buffer failures, 0 output buffers swapped out
 0 carrier transitions
 DCD=up DSR=up DTR=up RTS=up CTS=up
```

Interface Statistics for ISDN

Command

```
show interface BRI0
```

Output

```
BRI0 is up, line protocol is up (spoofing)
 Hardware is BRI with integrated NT1
 Interface is unnumbered. Using address of Ethernet0 (161.44.96.153)
 MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec, rely 255/255, load 1/255
 Encapsulation PPP, loopback not set
 lcp state = CLOSED
 ncp ccp state = CLOSED   ncp ipcp state = CLOSED
 ncp osicp state = CLOSED   ncp ipxcp state = CLOSED
 ncp xnscp state = CLOSED   ncp vinescp state = CLOSED
 ncp deccp state = CLOSED   ncp bridgecp state = CLOSED
 ncp atalkcp state = CLOSED   ncp lex state = CLOSED
 ncp cdp state = CLOSED
 Last input 0:00:02, output 0:00:02, output hang never
 Last clearing of "show interface" counters never
 Output queue 0/40, 0 drops; input queue 0/75, 0 drops
 5 minute input rate 0 bits/sec, 0 packets/sec
```

```
 5 minute output rate 0 bits/sec, 0 packets/sec
     19975 packets input, 89721 bytes, 1 no buffer
     Received 0 broadcasts, 0 runts, 0 giants
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     20819 packets output, 95405 bytes, 0 underruns
     0 output errors, 0 collisions, 4 interface resets, 0 restarts
     0 output buffer failures, 0 output buffers swapped out
     3 carrier transitions
```

Interface Statistics for ASYNC

Command

```
show interface ASYNC1
```

Output

```
Async1 is down, line protocol is down
 Hardware is Async Serial
 MTU 1500 bytes, BW 9 Kbit, DLY 100000 usec, rely 255/255, load 1/255
 Encapsulation SLIP, loopback not set
 DTR is pulsed for 5 seconds on reset
 Last input never, output never, output hang never
 Last clearing of "show interface" counters never
 Input queue: 0/75/0 (size/max/drops); Total output drops: 0
 Queueing strategy: weighted fair
 Output queue: 0/1000/64/0 (size/max total/threshold/drops)
     Conversations 0/0/256 (active/max active/max total)
     Reserved Conversations 0/0 (allocated/max allocated)
 5 minute input rate 0 bits/sec, 0 packets/sec
 5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
     0 carrier transitions
```

Interface Statistics for HSSI

Command

```
show interface HSSI0
```

Output

Interface Statistics for Tunnel

Command

```
show interface TUNNEL0
```

Output

```
Tunnel1 is up, line protocol is down
 Hardware is Tunnel
 MTU 1514 bytes, BW 9 Kbit, DLY 500000 usec, rely 255/255, load 1/255
 Encapsulation TUNNEL, loopback not set, keepalive set (10 sec)
 Tunnel source 0.0.0.0, destination 0.0.0.0
 Tunnel protocol/transport GRE/IP, key disabled, sequencing disabled
 Checksumming of packets disabled, fast tunneling enabled
 Last input never, output never, output hang never
 Last clearing of "show interface" counters never
 Queueing strategy: fifo
 Output queue 0/0, 0 drops; input queue 0/75, 0 drops
 5 minute input rate 0 bits/sec, 0 packets/sec
 5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
```

Interface Statistics for ATM

Command

```
show interface ATM4/0
```

Output

```
ATM4/0 is administratively down, line protocol is down
 Hardware is cxBus ATM
 MTU 4470 bytes, sub MTU 4470, BW 34013 Kbit, DLY 200 usec, rely
255/255, load 1/255
 Encapsulation ATM, loopback not set
 Encapsulation(s): AAL5, PVC mode
 256 TX buffers, 256 RX buffers,
```

```
 2048 maximum active VCs, 1024 VCs per VP, 0 current VCCs
 VC idle disconnect time: 300 seconds
 Last input never, output never, output hang never
 Last clearing of "show interface" counters never
 Queueing strategy: fifo
 Output queue 0/40, 0 drops; input queue 0/75, 0 drops
 5 minute input rate 0 bits/sec, 0 packets/sec
 5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
 Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
```

SMF Record Format: Interface History Record Format

```
VPDLOG &ISMRECID 1 06 4 '&KEYI' 30 '&DATE &TIME &DATA'

VPDLOG 220 1 06 4 CWBC01XXT0S2 30 '09/28/98 14:01 B=(0/40, 0 )
+
D=(0/75, 0 ) F=2395700 G=0 H=1278434 I=0 J=0 K=2 L=0 M=0 N=0 O=0 +
P=0 Q=1480933 R=80921620 S=0 T=0 U=0 V=2 W= X=0 Y=0 Z=3 '
```

Session Management History Control File Format

This control file is used to manage the history data for a session.

```
Location: VSAM Data set R (ISMDSR).
```

Description

```
Key = RIF_punamex_100 where: punamex is the puname padded with x(s)
                             to build an 8-character name,
                             100 is the record number containing VSAM
Control.

Data = data_key last_index Keep_count MISC

Field           Description                              Default

data_key        Base key for history records

last_index      Last record number
```

```
keep_count      Number of records to archive

MISC            Last Update                              (Date Time)
                Operator who made last update            (OPID)
```

Example

```
NSP1900I RIFCWBC01XX100           RIFCWBC01XX 105 5 07/15/98 13:44
ISMGRM
```

Session Management History Record Format

This is the file format for a session history record.

```
Location: VSAM Data set R (ISMDSR).
```

Description

```
Key = RIF_punamex_index where: punamex is the puname padded with x(s)
                               to build an 8-character name
                               index is the record number

Data = date time Network_ID IDBLK_IDNUM Local_MAC_Addr +
Local_SAP Remote_Mac_Addr Remote_SAP Routing_Information_Field majnode

Field           Description
Date            Date when record was written.

time            Time when record was written. An eight-digit time
field indicates that
                part of the session data was obtained from a channel
attached router.
Network_ID      Network name assigned by VTAM.

IDBLK_IDNUM     Unique identifier containing the device
                IDBLK and IDNUM defined in VTAM and the PU.

Local_MAC_Addr  Local MAC address that the remote PU
                uses to connect to this VTAM.
Local_SAP       A 4-digit SAP field indicates the data is
                provided by a CMCC.

Remote_Mac_Addr Remote MAC address used by the PU.

Remote_SAP      A 4-digit SAP field indicates that this data
                was provided by a CMCC.
```

```
Routing_Information_Field  A field of all 0's indicates no
                           RIF data available. A long string
                           of RIF data indicates the data came
                           from a CMCC.
majnode          VTAM major node
```

Example

```
RIFJMDLUR10101          20040610 07:28 NETA.MVSE 00000000 4000CCCC5E5E
04 400550055005 04 063003751F40 JMX6E30
```

Remote MAC Address Record Format

This is the file format for a remote MAC address record.

```
Location: VSAM Data set R (ISMDSR).
```

Description

```
Key = Remote_Mac_Addr

Data = date time puname Network_ID IDBLK_IDNUM Local_MAC_Addr +
Local_SAP Remote_Mac_Addr Remote_SAP Routing_Information_Field_majnode

Field           Description
Date            Date when record was written.

Time            Time when record was written.

Puname          PU name with this remote MAC address.

Network_ID      Network name assigned by VTAM.

IDBLK_IDNUM     Unique identifier containing the device
                IDBLK and IDNUM defined in VTAM and the PU.

Local_MAC_Addr  Local MAC address that the remote PU
                uses to connect to this VTAM.

Local_SAP       A 4-digit SAP field indicates the data is
                provided by a CMCC.


Remote_Mac_Addr Remote MAC address used by the PU.

Remote_SAP      A 4-digit SAP field indicates that this data
                was provided by a CMCC.

Routing_Information_Field  A field of all 0's indicates no
                           RIF data available. A long string
                           of RIF data indicates the data came
                           from a CMCC.
majnode         VTAM major node
```

Example

```
404700000000            JMPU32E8 20040611 11:44 NETA.MVSE E0847517
40AA00007001 04 404700000000 80 0000000 JMX02C1
```

IDBLK/IDNUM Record Format

This is the file format for a remote MAC address record.

Location: VSAM Data set R (ISMDSR).

Description

Key = IDBLK_IDNUM

Data = date time puname Network_ID IDBLK_IDNUM Local_MAC_Addr +
Local_SAP Remote_Mac_Addr Remote_SAP Routing_Information_Field_majnode

Field	Description
Date	Date when record was written.
Time	Time when record was written.
Puname	PU name with this remote MAC address.
Network_ID	Network name assigned by VTAM.
IDBLK_IDNUM	Unique identifier containing the device IDBLK and IDNUM defined in VTAM and the PU.
Local_MAC_Addr	Local MAC address that the remote PU uses to connect to this VTAM.
Local_SAP	A 4-digit SAP field indicates the data is provided by a CMCC.
Remote_Mac_Addr	Remote MAC address used by the PU.
Remote_SAP	A 4-digit SAP field indicates that this data was provided by a CMCC.
Routing_Information_Field	A field of all 0's indicates no RIF data available. A long string of RIF data indicates the data came from a CMCC.
majnode	VTAM major node

Example

```
50047517               JMPU3250 20040611 07:47 NETA.MVSE 50047517
4FFFFFFFFFFF 04 4FFFFFFFFFFF 90 0000000 JMXTEST
```

Cisco Router Configuration Control File Format

This control file is used to manage the archived configuration of a router at a specific date and time.

Location: VSAM Data set C (ISMDSC).

Description

```
Key = punamex_H_datetime where: punamex is the puname padded with x(s)
                                to build an 8-character name,
                                H indicates that this is a control
file,
                                datetime is a year 2000 compliant key.

Data = data_key num date time type

Field             Description                                Default

data_key          Data key for configuration records

num               Number of records

date              Date when configuration archived

time              Time when configuration was archived

type              Command used to collect T=write term
```

Example

```
CWBC01XXH199809160907        194 09/16/98 09:07 T

CWBC01XXH199809241027        195 09/24/98 10:27 T

CWBC01XXH199809251420        195 09/25/98 14:20 T

CWBC01XXH199809251422        195 09/25/98 14:22 T
```

Cisco Router Configuration Record Format

This is the file format for a Cisco router configuration record. One record is built for each statement in the router configuration.

Location: VSAM Data set C (ISMDSC).

Description

```
Key = punamex_C_datetime_index where: punamex is the puname padded
with
                                      X(s) to build an 8-character
name,
                                      datetime is a year 2000
compliant key,
                                      C indicates this is a
configuration record,
                                      Index is a 4-character count
with leading zeros.

Data = config_record

Field           Description                              Default
Config_record   One router configuration statement
```

Example

```
CWBC01XXC1998091609070001    Building configuration...

CWBC01XXC1998091609070002    Current configuration:

CWBC01XXC1998091609070003    !
CWBC01XXC1998091609070004    ! Last configuration change at 12:32:51
EDT Tue Sep 15 1998

CWBC01XXC1998091609070005    !

CWBC01XXC1998091609070006    version 11.2
```

Cisco Router User Commands Format

Two files are created to store the user commands that are defined when in update mode for option ‘B’ of the Router Status with Options menu. This function is available only for SNA-attached routers.

```
Location: VSAM Data set A (ISMDSA).
```

Description

```
Key = NSPUCMDS_n where: NSPUCMDS is the key with n being the index.

Data (n=1) = 1(c1) 2(c2) 3(c3) 4(c4) 5(c5) 6(c6) 7(c7)
```

```
Data (n=2) =   8(c8) 9(c9) 10(c10) 11(c11) 12(c12) 13(c13) 14(c14)
15(c15) +
                16(c16) 17(c17)

Field             Description                                  Default

1(c1)             The data key 1( is used to indicate the beginning of
command c1.
                  Command c1 is saved between the 1( and ). The first
record contains
                  commands 1 to 7 which are presented on the command
menu from positions
                  8 to 14.

8(c8)             The data key 8( is used to indicate the beginning of
command c8.
                  Command c8 is saved between the 8( and ). The second
record contains
                  commands 8 to 17, which are presented on the command
menu from positions
                  15 to 24.
```

Example

```
NSPUCMDS1                1(lnm ) 2() 3() 4() 5() 6() 7()

NSPUCMDS2                8() 9(processor mem) 10() 11()
12() 13() 14(rtr) 15() 16() 17(processor cpu)
```

Cisco Router Dump Control File Format

This control file is used to manage a dump for a router for a specific date and time. This function is available only for SNA attached routers.

```
Location: VSAM Data set D (ISMDSD).
```

Description

```
Key = punamex_H_dtype_datetime where: punamex is the puname padded
with
                                      x(s)to build an 8-character
name,
                                      H indicates that this is a
control file,
                                      dtype = PM = 'show processes
memory'
                                dtype = FR = 'show memory free'
                                dtype = IO = 'show memory io'
                                dtype = FA = 'show memory fast'
                                      dtype = PR = 'show memory
processor'
                                dtype = DE = 'show memory dead'
                                      dtype = SU = 'show memory
summary'
                                      dtype = MU = 'show memory
multibus'
                                dtype = PC = 'show memory pci'
                                      dtype = AC = 'show memory
allocating-process'
                                      dtype = VE = 'show version'
                                      datetime is a year 2000
compliant key.

Data = data_key num date time type

Field            Description                              Default

data_key         Data key for configuration records H-> C

num              Number of records

date             Date when configuration was archived

time             Time when configuration was archived

type             Command used to collect
```

Example

```
CWBC02XXHAC199805221619 ,23   05/22/98 16:19

CWBC02XXHPM199804241503 ,89   04/24/98 15:03 show processes memory

CWBC02XXHPM199805221610 ,87   05/22/98 16:10 show processes memory

CWBC02XXHPM199806171649 ,91   06/17/98 16:49 show processes memory

CWBC02XXHVE199804241504 ,32   04/24/98 15:04 show version
```

Cisco Router Dump Record Format

This is the file format for a router dump record. One record is built for each statement in the router dump.

```
Location: VSAM Data set D (ISMDSD).
```

Description

```
Key = punamex_D_dtype_datetime_index where: punamex is the puname
                                            Padded with (X)s to build
an 8-character name,
                                            D indicates this is a
configuration record,
                                            dtype = PM = 'show
processes memory'
                                            dtype = FR = 'show memory
free'
                                            dtype = IO = 'show memory
io'
                                            dtype = FA = 'show memory
fast'
                                            dtype = PR = 'show memory
processor'
                                            dtype = DE = 'show memory
dead'
                                            dtype = SU = 'show memory
summary'
                                            dtype = MU = 'show memory
multibus'
                                            dtype = PC = 'show memory
pci'
                                            dtype = AC = 'show memory
allocating-process'
                                            dtype = VE = 'show
version'
                                            datetime is a year 2000
compliant key,
                                            Index is a 4-character
count with leading
                                              zeros.


Data = dump_record

Field           Description                              Default
dump_record    One line of dump output per record.
```

Example

```
CWBC02XXDAC1998052216190001 Fast memory

CWBC02XXDAC1998052216190002 Address Bytes Prev.  Next   Ref   Alloc +
Proc   Alloc PC What

CWBC02XXDAC1998052216190003 61139760    44 0       611397B8   0
+
               0         (fragment)

CWBC02XXDAC1998052216190004 611397B8   3732 61139760 6113A678
1  *Init* +        601A9C00 *Hardware IDB*

CWBC02XXDAC1998052216190005 6113A678   3732 611397B8 6113B538
1  *Init* +        601A9C00 *Hardware IDB*

CWBC02XXDAC1998052216190006 6113B538   3732 6113A678 6113C3F8
1  *Init* +        601A9C00 *Hardware IDB*

CWBC02XXDAC1998052216190007 6113C3F8   3732 6113B538 6113D2B8
1  *Init* +        601A9C00 *Hardware IDB*
```

DSPU Control File Format

This control file is used to build the control block used to manage a DSPU resource.

Location: VSAM Data set A (ISMDSA).

Description

Key = NSPD_dspu-name

Data = dspu_name cntlname dspu_host_name MISC

Field	Description	Default
dspu_name	DSPU Name (VTAM PU Name)	
cntlname	Service Point Name	
dspu_host_name	DSPU Host Name	
MISC	Last Update	(Date Time)
	Operator who made last update	(OPID)

Example

```
NSPDCWBC01              CWBC01 CWBC01 DSPUPC8 07/12/98 17:17 CE4
```

LOG Control Record Format

This is the format of the record used to control which ISM log is active.

Location: VSAM Data set M/N (ISMDSA/ISMDSN).

Description

Key = RECORDMODE

Data = status

Field	Description	Default
status	Recording status	
	ACTIVE Indicates this is active log	

```
                    INACTIVE Indicates this is inactive log
```

Examples

```
RECORDMODE                ACTIVE

RECORDMODE                INACTIVE
```

ISM Event LOG Record Format

This is the format of the record used to record ISM events. The log function uses two VSAM data sets. Messages are written to the active log.

```
Location: VSAM Data set M/N (ISMDSA/ISMDSN).
```

Description

```
Key = reckey                where: Reckey is made from the standard
format of the date
                                   combined with time in the long
format.

Data = msgid message data MISC

Field           Description                              Default

msgid           Message id

message_data    Message data

MISC            When written                           (Date Time)
                Routine that created message           (Routine)
```

Examples

```
1998100215:16:34:678178 NSP1177I INTERFACE STATE CHANGE +
>> CWBC10 SERIAL2.220 WAS UNKNOWN, NOW MISSING 10/02/98 15:16 NSPIDISC

1998100215:16:35:306655 NSP1177I INTERFACE STATE CHANGE +
>> CWBC10 LOOPBACK0 WAS UNKNOWN, NOW MISSING 10/02/98 15:16 NSPIDISC

1998100215:16:35:474420 NSP1177I INTERFACE STATE CHANGE +
>> IPM3600A LOOPBACK0 WAS UNKNOWN, NOW MISSING 10/02/98 15:16 NSPIDISC

1998100215:18:15:015785 NSP1177I INTERFACE STATE CHANGE +
>> IPM3600A LOOPBACK0 WAS UNKNOWN, NOW MISSING 10/02/98 15:18 NSPIDISC
```

Frame Relay PVC Statistics History Control File Format

This control file is used to manage the frame relay PVC history data for an interface.

```
Location: VSAM Data set I (ISMDSI).
```

Description

```
Key = G_punamex_i_convint_100 where: punamex is the puname padded with
    x(s) to build an 8-character name,
    convint is the converted interface,
    100 is the record number containing VSAM Control
    Data = data_key last_index Keep_count MISC

    FieldDescription Default
    data_key Base key for history records
    last_index Last record number
    keep_count Number of records to archive
    MISCLast Update (Date Time)
    Operator who made last update (OPID)
```

Example

```
GCWBC05XXS2S0P1100      GCWBC05XXS2S0P1 129 48 06/21/04 12:34 ISMMGRI
```

Frame Relay PVC Statistics History File Format

This is the file format for a frame relay PVC history record.

```
Location: VSAM Data set I (ISMDSI).
```

Description

```
Key = G_punamex_i_convint_rr where: punamex is the puname padded with
    x(s) to build an 8-character name,
    convint is the converted interface,
    rr is the record number
Data = 'date time PVC int Local(LA LI LD LS) Switched(SA SI SD SS) +
Unused(UA UI UD US)

    Field Description Default
```

```
Date Date when record was written.
time Time when record was written.
PVCIdentifies this as a PVC record.
IntThe interface name
Local(LA LI LD LS)Local PVCs
LAActive Local PVCs
LIInactive Local PVCs
LDDeleted local PVCs
LSStatic local PVCs
Switched(SA SI SD SS)Switched PVCs
SAActive Switched PVCs
SIInactive Switched PVCs
SDDeleted switched PVCs
SSStatic switched PVCs
Unused(UA UI UD US)Unused PVCs
UAActive Unused PVCs
UIInactive Unused PVCs
UDDeleted unused PVCs
USStatic unused PVCs
```

Example

```
GCWBC05XXS2S0P1101      20040620 09:34 PVC Serial2/0.1 +
Local(0 0 0 1) Switched(0 0 0 0) Unused(0 0 0 0)
```

SMF Record Format: Frame Relay PVC Statistics History

```
VPDLOG &ISMRECID 1 08 4 '&KEYI' 30 '&DATE &TIME &GDATA'

VPDLOG 220 1 08 4 'GCWBC05XXS2S0P1' 30 '20040621 10:09 PVC Serial2/0.1
Local(0 0 0 1)  +
Switched(0 0 0 0)  Unused(0 0 0 0)'
```

Frame Relay DLCI Statistics History Control File Format

This control file is used to manage the frame relay DLCI history data for an interface.

```
Location: VSAM Data set I (ISMDSI).
```

Description

```
Key = N_punamex_i_convint_100 where: punamex is the puname padded with
    x(s) to build an 8-character name,
    convint is the converted interface,
    100 is the record number containing VSAM Control
    Data = data_key last_index Keep_count MISC

    Field Description Default
    data_keyBase key for history records
    last_index Last record number
    keep_count Number of records to archive
    MISCLast Update (Date Time)
     Operator who made last update (OPID)
```

Example

```
NCWBC05XXS2S0P1100      NCWBC05XXS2S0P1 141 48 06/21/04 12:34 ISMMGRI
```

Frame Relay DLCI Statistics History File Format

This is the file format for a frame relay DLCI history record.

```
Location: VSAM Data set I (ISMDSI).
```

Description

```
Key = G_punamex_i_convint_rr where: punamex is the puname padded with
    x(s) to build an 8-character name,
    convint is the converted interface,
    rr is the record number
Data = 'date time DLCI(DN DU DS DI) IP=IP OP=OP IB=IB OB=OB DP=DP
IFECN=IF +
    IBECN=IC OF=OFECN OBECN=OC IDP=ID ODP=OD OBP=OBP
    OBB=OBB PVCCT=PT PVCSC=PV

    Field   Description
    Date    Date when record was written.
    time    Time when record was written.
    DLCI    DLCI information
    DN      DLCI number
    DU      DLCI usage
    DS      DLCI status
    DI      Interface name
    IP=IP   Input packets
    OP=OP   Output packets
    IB=IB   Input bytes
    OB=OB   Output bytes
    DP=DP   Dropped packets
    IFECN=IFinput FECN packets
    OFECN=OFOutput FECN packets
    OBECN=OCOutput BECN packets
    IDP=ID  Input DE packets
    ODP=ODP     Output DE packets
    OBP=OBP     Output broadcast packets
    OBB=OBB     Output broadcast bytes
    PVCCT=PTPVC create time
    PVCSC=PVLast time PVC status changed
```

Example

```
NCWBC05XXS2S0P1101     '20040619 21:34 DLCI (16 LOCAL STATIC
Serial2/0.1) IP=0 OP=288059 +
IB=0 OB=18437912 DP=0 IFECN=0 IBECN=0 OFECN=0 OBECN=0 IDP=0 ODP=0
OBP=288058 +
OBB=18437888 PVCCT=2w1d PVCSC=2w1d '
```

SMF Record Format: Frame Relay DLCI Statistics History

```
VPDLOG &ISMRECID 1 09 4 '&KEYI' 30 '&DATE &TIME &DATANS'

VPDLOG 220 1 09 4 'NCWBC05XXS2S0P1' 30 '20040621 10:09 DLCI (16 LOCAL
STATIC SERIAL2/0.1 +
BW  1544 Kbit) IP=0 OP=316528 IB=0 OB=20259928 DP=0 IFECN=0 IBECN=0
OFECN=0 OBECN=0 IDP=0 +
ODP=0 OBP=316527 OBB=20259904 PVCCT=2w2d PVCSC=2w2d'
```

SNA Switch Performance History Control File Format

This control file is used to manage the SNA Switch performance history for a SNASw server.

```
Location: VSAM Data set W (ISMDSW).
```

Description

```
Key = SWSNP_cpnamex_100 where: cpnamex is the cpname padded with
    x(s) to build an 8-character name,
    100 is the record number containing VSAM Control
Data = data_key last_index Keep_count MISC

    Field Description Default
    data_key    Base key for history records
    last_index Last record number
    keep_count Number of records to archive
    MISC        Last Update (Date Time)
     Operator who made last update (OPID)
```

Example

```
SWSNPCATDOGXX100        SWSNPCATDOGXX 122 99 06/21/04 14:26 SNASWMON
```

SNA Switch Performance History File Format

This is the file format for a SNA Switch server performance history record.

```
Location: VSAM Data set W (ISMDSW).
```

Description

```
Key = SWSNP_cpnamex_rr where: punamex is the puname padded with
    x(s) to build an 8-character name,
    rr is the record number
Data = date time c1 c2 c3 m pf

    Field   Description
    Date    Date when the record was written
    time    time when the record was written
    c1 c2 c3CPU utilization by the SNASw server
    c15 Seconds
    c21 Minute
    c35 Minutes
    m       memory utilization by the SNASw server
    pf      percentage of total router memory which is free
```

Example

```
SWSNPCATDOGXX101        20040621 09:11 0.07 0.04 0.05 1572784 77.3
```

SMF Record Format: SNA Switch Performance History

```
VPDLOG &ISMRECID 1 10 4 '&KEYI' 30 '&DATE &TIME &DATA'

VPDLOG 220 1 10 4 'SWSNPGALWAY' 30 '20040621 15:40 0.00 0.00 0.00
1837612 71.3'
```

SNA Switch Link Statistics Control File Format

This control file is used to manage the SNA Switch link statistics history for a SNASw server.

```
Location: VSAM Data set W (ISMDSW).
```

Description

```
Key = L_puname#_link#_1000 where: puname# is the puname padded with
    #(s) to build an 8-character name,
    link# is the link name padded with #(s) to build
    an 8-character name,
    1000 is the record number containing VSAM Control
Data = data_key last_index Keep_count MISC

    FieldDescription Default
    data_key    Base key for history records
    last_index Last record number
    keep_count Number of records to archive
    MISC        Last Update (Date Time)
     Operator who made last update (OPID)
```

Example

```
LISMCATDGMVSE####1000   LISMCATDGMVSE#### 1006 99 06/21/04 14:42
SNASWMON
```

SNA Switch Link Statistics Record Formats

This is the file format for a SNA Switch link statistics history record.

```
Location: VSAM Data set W (ISMDSW).
```

Description

```
Key = L_puname#_rr where: puname# is the puname padded with
    #(s) to build an 8-character name,
    rr is the record number
Data = date time adjcp link A=a B=b C=c D=d E=e F=f G=g H=h I=I J=j
K=k L=l

    FieldDescription
    DateDate the record was written
    TimeTime the record was written
    AdjcpCPName of the other end of the link
    LinkSNASw link name
    A=a Total XID bytes sent
    B=b Total XID bytes received
    C=c Total XID frames sent
    D=d Total XID frames received
    E=eTotal data bytes sent
    F=fTotal data bytes received
    G=gTotal data frames sent
    H=hTotal data frames received
    I=ITotal session control frames sent
    J=jTotal session control frames received
    K=kTotal number of successful XID exchanges
    L=lTotal number of unsuccessful XID exchanges
```

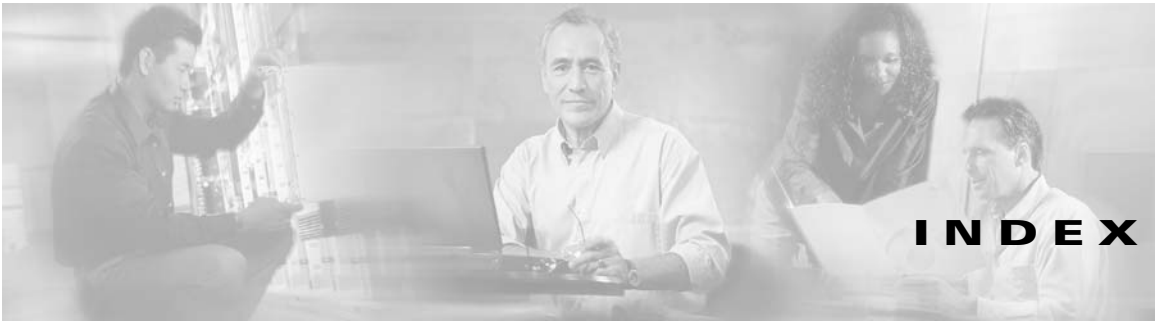
Example

```
LISMCATDGMVSE####1001   '20040621 12:12 NETA.MVSE MVSE A=3822 B=3630
C=2280 D=39 E=2741 F=2492 G=41 H=38 I=6 J=6 K=8 L=0'
```

SMF Record Format: SNA Switch Link Statistics

```
VPDLOG &ISMRECID 1 14 4 '&KEYI' 30 '&DATE &TIME &DATA'

VPDLOG 220 1 14 4 'LISMGALWYMVSE####' 30 '20040621 15:42 NETA.MVSE
MVSE A=392 B=439 C=5 +
D=4 E=75285 F=125091 G=688 H=689 I=18 J=19 K=1 L=0'
```



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