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DMS-100 Family

SuperNode Data Manager Log Delivery

User Guide

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northern telecom

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Contents

About this document

What this document contains

This document contains information about the SuperNode Data Manager (SDM) Log Delivery application. It is intended for SDM system administrators and maintenance personnel.

Organization of this document

The following table describes the organization of this document.

Chapter	Title	Description
1	Understanding the Log Delivery application	Describes the application.
2	Log reports	Describes the logs generated by the application.

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time a document is revised but rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle would be 01.02.

To determine which version and issue of this document applies to the software in your office, check the release information in *DMS-100 Family Guide to Northern Telecom Publications,* 297-1001-001.

References in this document

SDM User Guide, 297-5051-900, is referred to in this document.

What precautionary messages mean

The types of precautionary messages used in NT documents include attention boxes, and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

ATTENTION
If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury

DANGER
Risk of electrocution
Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage

WARNING
Damage to the backplane connector pins
Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

CAUTION
Possible loss of service
Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module (PM). Subscriber service is lost if you remove a card from the active unit.

Writing conventions

This section describes the writing conventions used in this document.

Input prompt

An input prompt (>) indicates that the information that follows is a command:

```
>LIST
```

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

```
>LIST ALL
```

UNIX commands and fixed parameters that are entered at the SDM are shown in lowercase and uppercase letters, depending on the UNIX syntax:

```
>echo $TERM
```

Variables

Variables that are entered at a MAP terminal are shown in lowercase letters:

```
>TABLE table_name
```

UNIX variables that are entered at the SDM are shown in italicized lowercase letters:

>setenv TERM *term_type*

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses are shown in a different typeface:

```
WARNING: Are you sure you want to Busy the SDM?
Please Confirm (‘y’ or ‘n’):
```

Understanding the Log Delivery application

Overview

The SuperNode Data Manager (SDM) Log Delivery application delivers DMS SuperNode logs and SDM logs to local printers and/or an operations support system (OSS) interface.

How the Log Delivery application fits in the SDM world

The SDM is Northern Telecom's new operations, administration, and maintenance (OAM) processing complex. The SDM is a high-performance UNIX computing platform and software applications environment that allows the operating company to operate, administer, maintain, and provision DMS SuperNode components and services. The Log Delivery application provides access to the logs generated by the SDM platform and applications, as well as the logs generated by the DMS SuperNode system. This enhanced log stream can be directed to printers or to an OSS.

Log Delivery software

The Log Delivery application consists of software components developed by Northern Telecom and Talarian. The application provides access to DMS SuperNode and SDM logs by directing the logs to line printers over a serial (RS-232/modem) connection, and/or a remote OSS interface over a TCP/IP connection. The same log streams are delivered to the printers and to the OSS.

The application formats the logs either as Northern Telecom standard (STD) or Number 2 Switch Control Center (SCC2) format. Logs in a STD format contain the switch name, provided the switch name has been specified, and the node name if the ECORE option is on. Logs in SCC2 format do not contain the node or switch name.

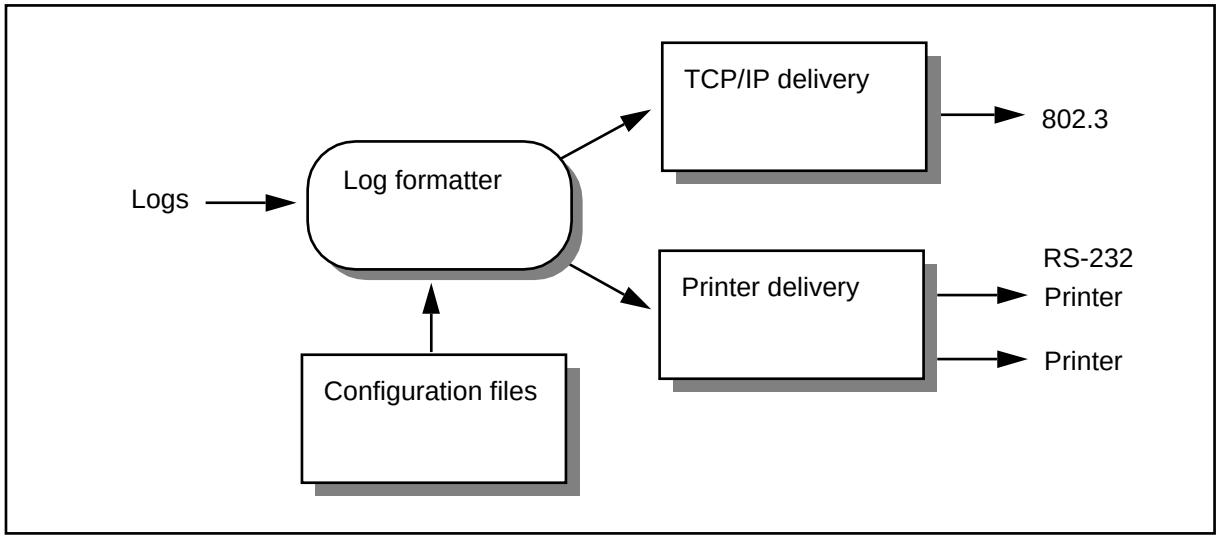
The application also assigns a sequence number to all logs that it receives. The sequence number is a 4-digit number that ranges from 0000 to 9999. The sequence number begins again at 0000 after 9999 is reached, and every time the application is restarted. This sequence number is not related to the global

sequence number and the device sequence number from logs received from the input/output controller (IOC) port.

Log Delivery components

The following figure shows the main components of the Log Delivery application, including the configuration files, the log formatter, printer delivery, and TCP/IP delivery.

Figure 1-1
Log Delivery components



Configuration files

The configuration files are read at initialization time and specify the following parameters:

- the format of logs: STD or SCC2 (the same format applies to the two printers and to the TCP/IP port)
- the ports to which the printers are connected (a port is identified through the UNIX device file name)
- the IP address of the OSS remote host, and the port number associated with the OSS (for example, 47.64.1.123 1024)
- the log delimiters used to customize the formatting of the logs being delivered over the TCP/IP connection
- the baud rates for the printer delivery (1200, 2400, 4800, or 9600)

For information on configuring the Log Delivery application, refer to the release notes provided with the application software.

Log formatter

The log formatter reads the configuration files and formats the logs according to the chosen format.

Printer delivery

The Log Delivery application supports log delivery to one or two printers. The printers are connected to the SDM through a modem rack and dedicated modem links. Logs are delivered in the order they are received by the application, regardless of their severity level. Logs are not delivered when the modem connection is lost or an XOFF message is received. If a printer is unavailable, the logs are not directed to a backup device.

Modem connection

Upon initialization, the application immediately attempts to deliver logs. Before delivering any logs, however, the application verifies that the modem connection has been established. If the modem connection is not established, the software checks periodically to determine whether the connection has been established. The number of times the application verifies the status of the modem connection is configurable using the osfcomtool. Once the limit has been reached, the software stops trying to connect to the printer, and log report SDM304 is generated.

Buffering the logs

The Log Delivery application has two circular buffers, one for each printer, to buffer the logs that it cannot deliver. The buffers are independent of each other; loss of data in one buffer does not affect the other buffer. The buffers can accommodate situations where the delivery rate briefly exceeds the printer capacity due to the arrival of several logs at once.

When an XOFF message is received because a printer buffer has reached its capacity, the application stops delivering logs to that printer and buffers the logs. When the printer buffer can accommodate more logs, an XON message is sent and the delivery of logs to the printer is resumed. In this situation, data is not lost unless the application log buffer was full.

When there is a sustained high rate of logs or a printer is unavailable (for example, when the printer is out of paper), the buffers do not prevent data loss. When the buffer fills up, logs are lost, starting with the oldest logs. In this case, logs are discarded regardless of their severity.

When a printer is turned OFF and the modem connection goes down, the application stops delivering logs; however, logs already in the buffers are lost. This includes the logs in the UNIX driver buffer for the printer and in the

printer local buffer. To minimize the loss of logs, the application resends the entire log that was being sent when the connection was lost. This does not guarantee that data is not lost. A stable modem connection is the best way to avoid losing logs.

Restarting log delivery to the printers

When the Log Delivery application cannot establish a connection with a printer, the software attempts to reconnect a certain number of times and at a certain frequency. Once this limit is reached, the software stops trying to reconnect, and a log is generated. When this occurs, the only way to resume log delivery to that printer is to terminate the application so that the SDM base software can reinitialize and restart the application.

The following procedure describes how to terminate the Log Delivery application, and thus, restart log delivery to printers. You must have root user permissions for accessing the SDM to perform this procedure.

Note: When you kill the Log Delivery application process to restart printer delivery, the TCP/IP connection is also lost, so that logs directed to an OSS may be lost.

Procedure 1-1
Terminating the Log Delivery application

1 Connect to the SDM and log in as the root user.

2 Determine the process identification (PID) of the Log Delivery application by typing

>ps -ef | grep RTosf

and pressing the Enter key.

3 Kill the PID associated with the RTosf process by typing

>kill *pid*

and pressing the Enter key.

where

pid is the PID of the RTosf process

Note: The SDM base software starts the application automatically once it is killed; however, an automatic restart can occur only three times in a day. Once the limit is reached, you must manually restart the application using the **initproc** command.

4 You have completed this procedure.

Note: An alternative to this procedure is to manually busy the SDM and return it to service. While this method does not require root permissions,

it affects all applications running on the SDM; that is all applications are stopped and then restarted.

TCP/IP delivery

Each SDM is equipped with a LAN card used to connect to the operating company LAN. The connection is through a media access unit (MAU) and an Ethernet twisted pair cable. The remote host supporting the log collection application (OSS) must be accessible through the TCP/IP over the operating company's LAN.

Protocol stack

The TCP delivery module is responsible for sending the logs to a remote server using TCP/IP and 802.3.

The OS IF performs the following through TCP:

- Establishes a TCP connection with the Log Delivery application. The Log Delivery is specified by an IP address and a port number in a configuration file. The Log Delivery must be "listening" for connect requests at the same port number. When the connection is established, both the OS IF and the Log Delivery are notified by their respective TCP facility.
- Sends data.
- Notifies the Log Collection that the connection has been terminated due to an error detected by the OS IF.

Flow control

TCP provides flow control which allows the remote application to stop data delivery if it cannot keep up with the flow, and allows the network to stop the delivery if the network is too congested. When the UNIX TCP facility detects a blocking condition, it buffers up the data in its local buffer. Once this buffer if full, the UNIX TCP facility notifies the upper level application, the OS IF. The OS IF in turn stops sending logs, and buffers them in its own circular buffer. Delivery is resumed as soon as the UNIX TCP facility can accept more data.

The OS IF circular buffer can handle most situations of network congestion and congested log delivery. However, it cannot guarantee log delivery when the flow is stopped for an extended period of time. If the flow is stopped for too long, and the OS IF buffer becomes full, logs are discarded, starting with the oldest one. Logs are discarded regardless of their severity.

When log delivery resumes after a blocking condition, the content of the UNIX TCP buffer is delivered first. The OS IF is then notified that more data can be

sent, and the OS IF starts sending the content of its circular buffer beginning with the oldest log.

When the TCP connection is lost, the content of the UNIX TCP buffer is lost. Because of the fast rate of delivery, no more then one log will ever be in the TCP local buffer; therefore lost data is limited to one log. However, if flow control has resulted in the TCP local buffer being full, and the connection is lost at that point, the content of the TCP buffer is lost.

Starting and stopping delivery

To initiate TCP delivery, the remote server must establish a TCP connection by specifying the SDM IP address and port number assigned to TCP delivery.

The OS IF tries to connect to the Log Delivery application on the remote host as soon as the OS IF application starts. If the remote application does not respond, OS IF attempts to connect at regular intervals as long as the OS IF is running.

Once the connection is established, OS IF starts sending logs immediately. The OS IF delivers logs until the connection is dropped. Only one TCP log delivery session is supported at a time.

Log reports

This chapter describes the SuperNode Data Manager (SDM) log reports generated by the Log Delivery application.

SDM304

Explanation

This log is generated when the SDM Log Delivery application stops trying to reconnect to the printer after a connection failure. The osfconfig file on the SDM contains configurable values that specify the number of times and frequency of the reconnect attempts.

Format

The format for log report SDM304 follows:

<switch_name> SDM304 MAY30 13:05:04 1234 FAIL
OSF Delivery Service: Cannot establish connection with printer. Device <device_name>

Example

An example of log report SDM304 follows:

```
FCC1 SDM304 MAY30 13:05:04 1234 FAIL
      OSF Delivery Service: Cannot establish connection with
device </dev/ttyd0p>
```

Field descriptions

The following table explains each of the fields in the log report

Field	Value	Description
device_name	text string (13 characters)	The printer device name to which the logs are sent.

Action

Ensure that the printer has the proper setup and the modem connection is in service. Reinitialize the Log Delivery application to resume printer delivery. Refer to the section “Restarting log delivery to the printers.”

Associated OM registers

None

SDM604

Explanation

The SDM Log Delivery Application generates this log when the CM does not have enough CPU time to format logs and discards the logs. This condition previously was reported by the following message:

```
--WARNING: 22 REPORT NOT PRINTED
```

Format

The format for log report SDM604 follows:

<switch_name> SDM604 mmmdd hh:mm:ss <sequence_number> INFO
Log Delivery Service: lost logs (CM side) : <number_lost>

Example

An example of log report SDM604 follows:

```
FCC1 SDM604 MAY30 13:05:04 1234 INFO
      Log Delivery Service: lost logs (CM side): 22
```

Field descriptions

The following table explains each of the fields in the log report

Field	Value	Description
sequence_number	4-digit numeric	Specifies the sequence number.
number_lost	5-digit numeric	Indicates the number of logs that have been lost.

Action

It is not unusual for the switch to discard logs under normal traffic conditions. If a large number of logs are lost, check DLOG for an indication of the problem.

Associated OM registers

None

List of terms

CM

See computing module.

computing module

The processor and memory used by the DMS SuperNode switch.

IE

See inference engine.

inference engine

The software that generates exception report logs.

KB

See knowledge base.

knowledge base

The knowledge base analyzes incoming DMS SuperNode and SuperNode Data Manager (SDM) log streams and identifies the log reports associated with specific scenarios.

Log Delivery application

The Log Delivery application delivers DMS SuperNode and SuperNode Data Manager (SDM) log reports to a local printers and/or an OSS interface.

operations support interface

The operations support interface delivers datagroups from the SDM to the printers.

OS IF

See operations support interface.

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