Lucent Technologies
Bell Labs Innovations

DDM-2000 OC-3 Multiplexer Software Release Description

Release 8.1.2

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Software Release Description
Release 8.1.2

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1. Overview

1.01 The purpose of this software release description (SRD) is to provide information about Software Release 8.1.2 and its interaction with the DDM-2000 OC-3 System. This practice contains the following parts:

- **Software Release 8.1.2 Features:** This part provides a description of the features provided by Release 8.1.2.

- **Operating Issues Resolved:** This part provides the list of issues (problems) which existed in previous software releases that were resolved with this issue of software.

- **Operating Issues:** This part provides information about the existing issues (problems) in Release 8.1.2 that may become evident during the operation of the DDM-2000 OC-3 System.

- **DDM-2000 Interworking:** This part provides a description of the optical connections that are supported between OC-3 and OC-12 shelves, OC-3 and FT-2000, and the software releases that can coexist in the same subnetwork.

- **Inservice Upgrades:** This part provides the information required to upgrade the DDM-2000 OC-3 System software to Release 8.1.2.

- **Implementation Procedure:** This part provides the information required to install the DDM-2000 OC-3 System software, Release 8.1.2.

⇒ **NOTE:**
   Read all parts of this practice before implementing the DDM-2000 OC-3 System software update.

1.02 This practice, Issue 3, supersedes the previous Issue 2. Issue 3 provides updated information for DDM-2000 OC-3 Software Release 8.1.2. The updated information is included in the Operating Issues Resolved (Section 3.02) section of this practice. Margin bars are used to denote the added information. 363-206-251, *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 8.1.1*, Issue 1 provided the coverage for Software Release 8.1.1.

1.03 Lucent Technologies welcomes your comments on this practice. Your comments will aid in improving the quality and usefulness of Lucent Technologies documentation. Please use the Feedback Form provided at the end of this practice.

1.04 Any difficulty encountered while implementing Release 8.1.2 may be resolved by contacting the Regional Technical Assistance Center in your area. Dial 1-800-225-RTAC (7822).

1.05 A tab designated **Software Release Description** has been provided in 363-206-280, *DDM-2000 OC-3 Multiplexer, Releases 8.0 Through 11.1, User/Service Manual (TOP) - Volume II*, for convenient storage of this practice.

1.06 This practice is issued by Lucent Technologies Customer Training and Information Products organization.

2. Software Release 8.1.2 Features

2.01 The features described below are for DDM-2000 OC-3 Release 8.1.2.

A. **Administration**

- **New Default Login Values:** The previous three default logins of ATT01, ATT02, and ATT03 have been replaced by three new default logins of LUC01, LUC02, and LUC03 (all upper-case letters). When the Craft Interface Terminal (CIT) commands `init-sys:sysctl` or `init-sys:all` (or the Transaction Language 1 (TL1) command `INIT-SYS`) has been performed on the system, the new default logins will be active.

B. **Synchronization**

- **S1 Byte Synchronization Messaging:** This feature uses the S1 byte of the SONET line overhead (bits 5-8) to pass timing status information to different nodes in a network. The synchronization messaging mode (S1 byte or K2 byte) is provisionable on a per OC-N basis. When K2 byte messaging is provisioned (default value), both K2 and S1 sync message information will be transmitted, but only the K2 byte will be interpreted on the receive side. When S1 byte messaging is provisioned, only the S1 sync message information will be transmitted and interpreted on the receive side. When an optical interface has its sync messaging disabled, "Don't Use" will be sent on that interface for both K2 and S1 bytes.

C. **MegaStar® 2000 Support**

- **MegaStar:** DDM-2000 OC-3 R8.1 adds two mechanisms for processing orderwire datastreams to previously delivered support for MegaStar 2000 radio applications. The first option passes only data from the E1 SONET transport overhead byte between the DDM-2000 OC-3 shelf and a Dantel orderwire shelf using a standard 64 kbps data link. With this capability, orderwire data may be sent and received for only one direction (east or west) around the SONET ring. The second option passes data from the E1, E2, and F1 SONET overhead bytes between the DDM-2000 OC-3 shelf and the Harris Farinon MegaStar orderwire shelf using a 1.544 mbps proprietary data link. With this option, data from both directions (east and west) of the ring is passed. Both of these capabilities require use of the **BBG10 OHCTL** circuit pack in the DDM-2000 OC-3 shelf.

Provisioning of orderwire options, including selection between the orderwire interfaces and selection of the ring direction for the E1-only option, is done via jumper on the **BBG10 OHCTL** circuit pack and the `set-ow` CIT command or the `SET-OW` TL1 command. The `rtrv-ow` CIT command or the `RTRV-OW` TL1 command allow the user to display provisioned orderwire options.

3. Operating Issues Resolved

3.01 This part lists the operating issues (problems) which existed in Release 8.1.1, but are resolved in Release 8.1.2.

3.02 For information on Release 8.1.1 refer to 363-206-251, Issue 1, *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 8.1.1*.

⮕ **NOTE:**
It is possible a problem listed below as resolved may not have appeared in previous issues of the SRD because the problem was discovered between the time of the release of that SRD and the release of this software.

(1) **ISSUE:**
If the user attempts to download, to the shelf directly connected to a PC, a DDM-2000 FiberReach generic to an DDM-2000 OC-3 shelf or vice-versa, the user will receive confirmation messages implying that the download will be allowed. If the user responds affirmatively to the confirmation request, the download attempt will eventually be denied, but the **BBG8 SYSCTL** circuit pack will be stuck displaying a "**P**" for about 5 minutes.

(2) **ISSUE:**
The `rtrv-map-network` report at the DSNE may have an inaccurate TID if the TID is changed shortly after enabling DCC communication with `set-fecom` command.

(3) **ISSUE:**
In a mixed DDM-2000/FT-2000 network, some DCC traffic patterns may cause one or more FT-2000 controllers to reset. Two known situations that can cause this problem are:

— Adding or deleting AGNEs beyond the first one.

— Doing a `cpy-prog` command such that the software being copied must pass through an FT-2000.

This problem was fixed in FT-2000 Release 6.0.2.

(4) **ISSUE:**
The DDM-2000 system maintains two copies of the boot code for the software.
During any reset of the system controller, the system will calculate the checksum
on the default and the back-up boot codes. The calculated checksums are then
compared with stored checksums. If calculated checksum for one of the boot
codes does not match with it's stored checksum, the controller will fail to restart.

When a shelf with DDM-2000 OC-3 Release 8.1.2 software resets, the system
controller will restart even if only one of boot codes matches with it's stored
checksum.

Some examples of events which cause a shelf to reset are power failures,
manual resets, and software upgrades. Following the reset to a controller that
fails to restart, all operations, administration, and maintenance of the the shelf is
lost. Transmission through the shelf will not be directly affected.

(5) **ISSUE:**
Due to the autobaud feature being enabled and the link provisioning on the User
Interface Panel (UIP) being ignored, the rear-CIT on a *SLC*®-2000 shelf produced
garbled output when used. The autobaud feature has been disabled so that
provisioning on the UIP works (`set-baud`) for both the front and rear CIT port.

(6) **ISSUE:**
While a TL1/X.25 session is active, removing and restoring the X.25 cable may
sometimes result in the X.25 link failing to restart and the DDM-2000 OC-3 shelf
has to be reset to restore the link. In addition, the X.25 link session will fail in the
event of a shelf power outage.

(7) **ISSUE:**
If the **BBG8 SYSCTL** circuit pack in an operational shelf is replaced with a circuit
pack that has never been loaded with generic software (i.e. a fresh-from-the-
factory circuit pack), the shelf-level parameters should be restored onto the
SYSCTL from the backup copy on the **TGS** circuit pack. Instead, they will be set
to their default values. The specific parameters involved are: tid, dsne, site, ne,
shelf, tbos parameters, power minor alarm level, co/rt, and us/ns settings for DCC
links.

(8) **ISSUE:**
With remote TBOS reporting enabled, provisioning two or more network elements
within the same alarm group to have the same TBOS display number value of 8
will cause the DSNE network element to reset continuously until the duplicate
TBOS display provisioning is eliminated.

(9) **ISSUE:**
A user logged in as a reports-only user, will not be able to execute the following
commands: `rtrv-vt1`, `rtrv-sts1`, and `set-link`. This problem only exists
in DDM-2000 OC-3 Release 8.1.1 and was fixed in DDM-2000 OC-3 Release
8.1.2.

4. Operating Issues

4.01   This part lists information pertaining to recognized operating issues (problems) existing in Release 8.1.2. Suggestions to work around the operating issues are mentioned, if available.

4.02   The following list contains known problems in the software:

A. **Network Size**

(1) **ISSUE:**
As network size grows, heavy use of TL1 to send long reports (either on-demand retrievals or scheduled **REPT PM** messages) over multiple X.25 virtual circuits (VCs) or from multiple RNEs simultaneously can cause overload conditions at the GNE. In some cases, this overload may cause the GNE to reset. Further, while the GNE is under such heavy loads, heavy login/logout activity (via **ACT-USER**/**CANC-USER**/**VC reset**) may result in the inability to login to some RNEs.

WORK AROUND:
Under moderate TL1 usage, the problems described above should not be seen, so no action needs to be taken. If the symptoms are seen, some steps that can be taken to reduce TL1 load-related problems are:

1. Use a 19.2 Kbps X.25 link.

2. Where possible, limit the data requested in report retrieval commands, and avoid sending such commands simultaneously to many NEs in the same subnetwork.

3. The same TL1 autonomous message should be routed to no more than two OSs. DDM-2000 supports flexible routing by TL1 autonomous message type.

4. The retrieval and scheduled reporting of PM data, in particular, is a key area due to the large volume of PM data stored by DDM-2000s. The following PM-related steps are suggested:

    a. Monitoring of daily PM data instead of 15-minute PM data, when daily PM data is sufficient (e.g., for service assurance), is encouraged.

    b. Monitoring only non-zero PM data (by using the default monitored level of 1-UP in **RTRV-PM** and **SCHED-PMREPT** commands) is encouraged.

    c. If using **SCHED-PMREPT** to generate large (or many) **REPT PM** reports, stagger the output schedules for each NE, and among the NEs in the same subnetwork, to avoid significant overlap.

    d. **REPT PM** messages should be routed to at most two OSs, preferably to just one OS.

e. The Bellcore NMA PM Analysis Polling Process should be used judiciously; at a minimum, NMA should wait for the response to each command sent to a NE before sending another command to the same NE. That is the NMA option recommended by Bellcore (SR-1665, NMA OS Generic Transport NE Interface Support, Issue 5, December 1995).

B. **Download**

(2) **ISSUE:**
Multiple `cpy-prog` executions in the same subnetwork may result in interactions that cause one or more of the executions to fail.

WORK AROUND:
Do only one `cpy-prog` at a time in the same subnetwork.

C. **Operations Interworking (OI)**

(3) **ISSUE:**
On turnup, if an FT NE and DDM NE are optically connected, sometimes the FT will report a DCC failure and the DDM does not indicate any failure. This condition is caused by the User Side/Network Side parameters not being assigned properly between DDM and FT.

WORK AROUND:
Before setting up an optical connection between DDM and FT, use the `rtrv-fecom` command to check the User Side/Network Side parameters on the DDM. Use the `set-fecom` command to change the User Side/Network Side parameters on the DDM, if necessary.

D. **TL1**

(4) **ISSUE:**
Under heavy TL1 traffic conditions, combining any two of the following RNE->GNE message traffic types on a single VC may cause some of the messages not to be sent to the OS:

— Command response messages

— PM-related autonomous messages

— Other autonomous messages.

Unsent autonomous messages may still be retrieved using the `RTRV-AO` TL1 command.

WORK AROUND:
If TL1 traffic is not sufficiently heavy to cause this problem, no work around is needed. If needed, the work around is to use the `ent-osacmap` and `ent-tl1msgmap` commands to separate each of the three traffic types to use separate ACIDs.

E. **Maintenance**

(5) **ISSUE:**
Under some circumstances, one or more alarms indicating the presence of maintenance signals (such as AIS) will be reported even though the maintenance signal either is not or should not be present.

WORK AROUND:
The "stuck" alarms can be cleared by resetting either the node reporting the alarm or the node that is reported as sending the maintenance signal.

F. **Provisioning**

(6) **ISSUE:**
The STS-1 channel state may incorrectly be reported to be in the AUTO state. However, alarms and status conditions will continue to be reported correctly. This condition may be caused when a **DS3** or **MXRVO** circuit pack is removed from the DDM-2000 OC-3 shelf and the **UPD/INIT** pushbutton is not pressed to change the state of the slot to unequipped. When the circuit pack is reinserted, the STS-1 channel state and any associated VT1 channel states are changed to AUTO. This occurs only in a DDM-2000 OC-3 shelf that is provisioned for default cross-connections.

WORK AROUND:
To prevent the problem from occurring, press the **UPD/INIT** pushbutton or enter the update (`upd`) command on the CIT when the circuit pack is removed.

If the problem exists, it may be rectified by changing the state of the channel to NMON using the `set-state-sts1` command. After the channel state is verified to be NMON using the `rtrv-state-sts1` command, use `set-state-sts1` to change the channel state to AUTO. The channel will then automatically transition to the IS state.

A `reset` of the DDM-2000 OC-3 shelf will also cause the channel state to be corrected and set to the IS state. This is non-service affecting.

(7) **ISSUE:**
VT channel state processing may be disabled in a shelf equipped with STS-1 high speed circuit packs even though the VT channel state reported is AUTO or IS state. This condition may be caused when a new controller is inserted into the DDM-2000 OC-3 shelf and the **UPD/INIT** pushbutton is not pressed during the 10-second initialization interval.

WORK AROUND:
To prevent the problem from occurring, press the **UPD/INIT** pushbutton when a new controller is installed during the 10-second initialization interval.

If the problem exists, it may be rectified by changing the state of the channel to NMON using the `set-state-vt1` command. After the channel state is verified to be NMON using the `rtrv-state-vt1` command, use `set-state-vt1` to change the channel state to AUTO.

A `reset` of the DDM-2000 OC-3 shelf will also correct the problem. This is non-service affecting.

5. DDM-2000 Interworking

⇒ **NOTE:**
Interworking between products (DDM-2000, FT-2000, and DACS IV-2000, etc.) is evolving with EC-1, OC-3, IS-3, and DS3 interfaces. Care must be taken to check correct software releases and to check interface provisioning. For OLIU interfaces, care must be taken to ensure that both ends of a span are provisioned/equipped for the same protection mode (1+1 or dual 0x1, for example).

5.01   Table A lists the software compatibility within a subnetwork for the DDM-2000 OC-3 and OC-12 Multiplexers. All configurations listed support SEO. The table lists all possible software combinations. Combinations not listed are not supported.

Table A. DDM-2000 OC-3 and OC-12 Software Compatibility (Note)

OC-3 Release	OC-12 Release	Interconnection Method	Notes
8.0 ∗ and 8.1 ∗	5.0	22-type † or **21G/21G-U/ 21D/21D-U ‡ OLIU**	Supports OC-3/OC-12 interworking.
8.0 ∗ and 8.1 ∗	5.1	22-type † or **21G/21G-U/ 21D/21D-U ‡ OLIU**	Supports OC-3/OC-12 interworking.
8.0 ∗ and 8.1 ∗	5.2	22-type † or **21G/21G-U/ 21D/21D-U ‡ OLIU**	Supports OC-3/OC-12 interworking.

Note: All NEs in a ring network, which may be part of a larger network, must be running the same software. Similarly, all NEs in a linear network, which may be part of a larger network, must be running the same software. In a subnetwork, which may consist of a mixture of ring and linear networks, all NEs must be running compatible software according to the table.

∗   22-type OLIUs must be used in DDM-2000 OC-3 ring shelves in **MAIN** and **FUNCTION UNITS** slots for optical extensions. 21-type OLIUs used in OC-12.

†   The 22-type OLIUs can only be used in the DDM-2000 OC-3 shelf.

‡   The **21D/21D-U OLIU** can be used in the DDM-2000 OC-3 shelf in place of the **21G/21G-U OLIU** for short reach applications. The **21D/21D-U OLIU** can be used in the DDM-2000 OC-12 shelf in place of the **21G/21G-U OLIU** for short reach applications.

5.02 Table B lists the ring and linear software compatibility for the DDM-2000 OC-3 Multiplexers. All configurations listed support SEO. The table lists all possible software combinations. Combinations not listed are not supported.

Table B. DDM-2000 OC-3 Software Compatibility

OC-3 Release	OC-3 Release	Interconnection Method	Notes
7.2 (Ring) *	8.0 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
7.2 (Ring) *	8.1 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
9.0 (Ring) *	8.0 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
9.0 (Ring) *	8.1 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
9.1 (Ring) *	8.0 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
9.1 (Ring) *	8.1 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
11.0 (Ring) *	8.0 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
11.0 (Ring) *	8.1 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
11.1 (Ring) *	8.0 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.
11.1 (Ring) *	8.1 (Linear)	22-type OLIU	Supports OC-3/IS-3 interworking between OC-3 ring and linear networks.

* Requires 22-type OLIUs in **MAIN** and **FUNCTION UNITS** slots for DDM-2000 OC-3 ring shelves.

5.03   Table C lists the DDM-2000 OC-3 Multiplexers software compatibility with the
FT-2000 OC-48. All configurations listed support SEO. The table lists all
possible software combinations. Combinations not listed are not supported.

Table C. DDM-2000 OC-3 and FT-2000 OC-48 Software Compatibility

OC-3 Release	FT-2000 Release				
	4.0 ∗	4.1 †	5.0 ‡	6.0 §	7.X §
R8.0/8.1	X	X	X	X	X

∗   Supports EC-1 interworking.

†   Supports EC-1 dual ring interworking (DRI).

‡   Supports OC-3 interfaces without DCC.

§   Supports OC-3 operations interworking with DCC.

See 824-102-147, *Lucent Technologies 2000 Product Family Operations Interworking
Guide* for more information on operations interworking.

6. Inservice Upgrades

6.01 Table D lists the current software releases of the DDM-2000 OC-3 Multiplexer that can be directly upgraded inservice. Specific procedures for upgrades are provided in 363-206-280, *DDM-2000 OC-3 Multiplexer, Releases 8.0 Through 11.1, User/Service Manual (TOP) - Volume II.*

Table D. DDM-2000 OC-3 Inservice Software Upgrade Compatibility (Notes)

Current Release	Upgrade to*							
	7.1	7.2	8.0	8.1	9.0	9.1	11.0	11.1
7.1 (Ring)	X	C	NA	NA	C†	C†	C†	C†
7.2 (Ring)	NA	X	NA	NA	C	C	C	C
8.0 (Linear)	NA	C	X	X	C	C	C	C
8.1 (Linear)	NA	C	NA	X	C	C	C	C
9.0 (Ring)	NA	NA	NA	NA	X	X	X	X
9.1 (Ring)	NA	NA	NA	NA	NA	X	X	X
11.0 (Ring)	NA	NA	NA	NA	NA	NA	X	X
11.1 (Ring)	NA	NA	NA	NA	NA	NA	NA	X

Notes:

(1) All DDM-2000 OC-3 shelves in a subnetwork should be using the same version of software.

(2) See attached **NTP-046** for information and procedures needed for upgrading Release 6.2 to Release 8.0/8.1 for a system in service.

∗ When doing an upgrade, it is recommended that the latest point release of software be used, if possible.

X Requires local or remote software download only to upgrade the system.

C Requires an upgrade procedure with on-site equipment/fiber changes as well as software download to upgrade the system. Additional changes to software and equipment provisioning may be needed to use features of the new release. See 363-206-280, *DDM-2000 OC-3 Multiplexer, Releases 8.0 Through 11.1, User/Service Manual (TOP) - Volume II*, for upgrade procedures.

NA
Not Applicable. If an NA conversion is required, contact the Regional Technical Assistance Center (RTAC) [1-800-225-RTAC (7822)] in your area.

† When doing this upgrade, it is necessary to first upgrade to Release 7.2 before upgrading to Release 9.X or 11.X.

7. Implementation Procedure

⚠ **CAUTION:**
   If this software is to be used in the SONET subsystem of a SLC-2000 Access System, a compatible version of the digital loop carrier (DLC) subsystem software must be installed before upgrading the SONET subsystem software.

⇒ **NOTE:**
   Any network made up of DDM-2000 OC-3 R9.0, R8.0, OC-12 R5.0, and FiberReach R1.0 should be limited to 32 network elements. When FT-2000 OC-48 R6.0 is included, the network will be restricted to 24 network elements. Another network maximum is that a single GNE supports only 69 outgoing TL1 logins.

⇒ **NOTE:**
   Before installing Release 8.1.2 software, the following hardware versions *must* be in place at all sites before continuing with the implementation procedure:

   BBG8 SYSCTL: Series 1:1 or higher
   BBG9 OHCTL: Series 1:1 or higher.

7.01 For Release 8.1.2, the following parameters should be provisioned to support OSI interworking over the SONET DCC:

- The appropriate Network Side/User Side parameters on opposite ends of any optical span need to be set to opposite values with the `set-fecom` command. For instructions about setting the Network Side/User Side parameters, refer to 363-206-280, *DDM-2000 OC-3 Multiplexer, Releases 8.0 Through 11.1, User/Service Manual (TOP) - Volume II*.

Software Installation and Upgrade Procedure

DLP-566, **DLP-532**, and **DLP-562** contain the latest information and procedures needed for upgrading a DDM-2000 OC-3 System running any upgradable version of OC-3 software. **DLP-566** and **DLP-561** contains the latest information and procedures needed for installing software in new shelf installations where the **SYSCTL** and **OHCTL** are new and contain no software.

This release of software takes approximately 15 to 25 minutes to download to a local shelf using a newer PC with the autobaud feature. This release of software takes approximately 45 minutes to download to a local shelf using an older PC set to 9600 baud. This release of software takes approximately 30 minutes to copy from one shelf in the subnetwork to another shelf if the DCC traffic is not excessive from other shelves. The download time will be longer (even without excessive DCC traffic) when there are additional spans between the source and target network elements.

Use the attached copies of **DLP-532**, **DLP-561**, **DLP-562**, or **DLP-566** to install the new software.

How Are We Doing?

Document Title: *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 8.1.2*

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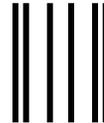
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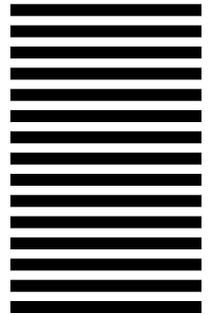Company/Organization: _____ Date: _____

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