Lucent Technologies
Bell Labs Innovations

DDM-2000 OC-3 Multiplexer Software Release Description

Release 7.2.5

DDM-2000 OC-3 Multiplexer
Software Release Description
Release 7.2.5

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1. Overview

1.01   The purpose of this software release description (SRD) is to provide information about Software Release 7.2.5 and its interaction with the DDM-2000 OC-3 System. This practice contains the following parts:

- **Software Release 7.2.5 Features:** This part provides a description of the features provided by Release 7.2.5.

- **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 7.2.5 that may become evident during the operation of the DDM-2000 OC-3 System.

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

- **DDM-2000 OC-3 Multiplexer DRI Software Compatibility:** This part provides the dual ring interworking (DRI) software compatibility table for the DDM-2000 OC-3 Multiplexer for both EC-1 and OC-3 interfaces.

- **Implementation Procedure:** This part provides the information required to install the DDM-2000 OC-3 System software, Release 7.2.5.

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

1.02   This practice, Issue 5, supersedes the previous Issue 4. Issue 5 provides updated information for Software Release 7.2.5. The updated information is included in the Software Release 7.2.5 Features (Section 2.01) and Operating Issues Resolved (Sections 3.07 and 3.08) sections of this practice. Margin bars are used to denote the added information. 363-206-253, *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 7.2.4*, Issue 4 provided the coverage for Software Release 7.2.4.

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 7.2.5 may be resolved by contacting the Lucent Technologies 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 AT&T
363-206-202, *DDM-2000 OC-3 Multiplexer, User/Service Manual (TOP), Volume
II*, Issue 5A for convenient storage of this practice.

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

2. Software Release 7.2.5 Features

2.01   The features described below are for DDM-2000 OC-3 Release 7.2.5.

A. **Administration**

- Because of the spinoff of Lucent Technologies from AT&T, the default
login ids and software download banners have been changed.

  □ Users who receive software upgrades or new **SYSCTL** circuit packs
  from the factory may find that a new default login (LUC01, LUC02, or
  LUC03) is needed to allow access into the system. If none of the new
  default logins permits access to the system, the user should try one of
  the old default logins (ATT01, ATT02, ATT03).

  If the CIT command `init-sys:sysctl` (or the TL1 command
  `INIT-SYS`) has been performed on the system, the new default login
  IDs will be active. However, it is not necessary to activate the new LUC
  default login IDs; the old ATT default login IDs can still be used.

  ⚠ **CAUTION:**
  Execution of the `init-sys:sysctl` *command may affect
  service. The command should* **NOT** *be used on an in-service
  system. (In in-service systems, the user is encouraged to use the*
  `set-lgn` *command to customize the new logins, if needed).*

  The `init-sys:sysctl` *command should only be used at the
  end of installation before system turnup. This command should
  only be used after a* **SYSCTL** *is replaced.*

- The DDM-2000 TL1 login banner has been changed to include:

  — `Lucent Technologies` <system>, replacing `AT&T` <system>

  — `LUCENT TECHNOLOGIES - PROPRIETARY`, replacing `AT&T -
  PROPRIETARY` in the login proprietary banner.

- The DDM-2000 CIT login banner has been changed to include:

  — `Lucent Technologies`, replacing `AT&T`

— `LUCENT TECHNOLOGIES - PROPRIETARY,` replacing `AT&T -`
`PROPRIETARY` in the login proprietary banner.

- The reference to `AT&T` in the PC software download banner has been
changed to `Lucent Technologies.`

B. **Transmission**

- **OC-3/IS-3 Dual Ring Interworking with VT1.5/STS-1 Drop and
Continue:** OC-3/IS-3 dual ring interworking (DRI) with VT1.5/STS-1 drop
and continue supports the interconnection of two rings via OC-3/IS-3
interfaces and supports single-ended operations and date communications
channel (DCC) connectivity between DDM-2000 systems, or DDM-2000
and FT-2000 systems in dual ring interworking applications. The cross-
connect commands (**ent-crs-vt1**, **dlt-crs-vt1**, **rtrv-crs-vt1**,
ent-crs-sts1, **dlt-crs-sts1**, and **rtrv-crs-sts1**) have been
enhanced to support this feature.

- **DRI Upgrade from EC-1 to OC-3/IS-3:** DRI upgrade from EC-1 to
OC-3/IS-3 supports a network in-service upgrade to OC-3/IS-3 interface
(one DRI node down or out-of-service is expected during the upgrade for
fiber connection).

- *SLC*®**-2000 Interworking with DDM-2000:** DDM-2000 ring compatibility
with the *SLC*-2000 product is supported. *SLC*-2000 interworking with
DDM-2000 ring is supported. Both transmission and single-ended
operations between *SLC*-2000 synchronous optical network (SONET)
subsystem of the access resource manager (ARM) shelf and the
DDM-2000 are supported. (Release 3.2 of *SLC*-2000 is supported.)

- **B8ZS Encoding Option for *SLC*-96 Applications:** Bipolar 3-zero
substitution (B8ZS) encoding option for *SLC*-96 applications supports
compatibility with *SLC*-96 applications by allowing B8ZS-encoded DS1 line
signals. When provisioned for this option, the DDM-2000 will detect
incoming DS1 line failures, translating the incoming DS1 bipolar violations
(BPV) alarm into an outgoing loss of signal (LOS). At the downstream
DS1 drop point, the *SLC*-96 is able to detect the LOS and initiate a DS1
protection switch.

C. **Operations**

- **CPro-2000 and ITM SNC Support:** CPro-2000 Release 5.0 and ITM SNC
Release 5.0 and later will include any change needed to accommodate the
compatibility between CPro, ITM SNC, and DDM-2000 OC-3 Release
7.2.5, and therefore CPro-2000 Release 5.0 and ITM SNC Release 5.0
should be deployed with the DDM-2000 Release 7.2.5.

  OC-3 software Release 7.2.5 is incompatible with CPro-2000 Release 3.0.

D. **Single-Ended Operations (SEO)**

- **Multiple TL1 X.25 Gateway Network Element (GNE):** In DDM-2000/*SLC*-2000 networks, any network element (NE) may be physically connected to X.25, allowing the operations systems (OS) to select an alternative GNE in the event of a primary GNE failure. Multiple TL1 X.25 GNE support also provides the ability to configure different GNEs to support different OSs simultaneously. GNEs are automatically provisioned by connecting an active X.25 to the DDM/*SLC* shelf. GNE provisioning is no longer a part of the `set-ne` or `ENT-SYS` commands.

  The following rules apply to DDM-2000 networks of OC-3 and *SLC*-2000:

  — A maximum of 5 incoming TL1 logins can be supported by an NE.

  — A maximum of 53 outgoing TL1 logins can be supported by a single GNE.

  — A second GNE can be configured as a backup in a subnetwork. An additional active GNE will degrade the network performance.

- **Directory Services Network Element (DSNE) - DSNE Provisioning:** Provisioning of one DSNE is required to support SEO using the `set-ne` command. (In previous releases, the TL1 GNE was automatically provisioned as DSNE.) There is a new parameter in the `set-ne` command to set the DSNE. The `rtrv-ne` command will display this new parameter. Similarly, the TL1 command equivalent (`ENT-SYS` and `RTRV-SYS`) also adds this new parameter.

- **SEO Network Element Status using Alarm Gateway:** Partition a network into maintenance domain (alarm group) for alarm and status information. Provisioning of one alarm gateway network element (AGNE) is required in order to support remote office alarms and summary alarm information of remote network elements in the local alarm report. A subnetwork with one alarm group (default) and one AGNE provides the same alarming capabilities as in previous OC-3 releases. This parameter does not affect TL1 alarm reporting.

  — By default, the subnetwork contains a single alarm group of all network elements.

  — Provision at least one AGNE per subnetwork. A second AGNE can be provisioned as a backup. Additional AGNEs will degrade the network performance.

  — Use `set-ne` command to change alarm groups and to enable AGNEs.

  — Use `rtrv-map-network` or `RTRV-MAP-NETWORK` command to list alarm group number for each NE.

  — Use `rtrv-ne` command to list AGNEs for current alarm group.

- **Provisionable X.25 Packet Size:** X.25 packet size is provisionable to either 128 or 256 bytes using the `set-x25` CIT command (256 will be the default packet size). The `rtrv-x25` CIT command is used to retrieve the value set by the `set-x25` command.

- **Increased Network Size:** SEO supports 24 NEs (maximum) in combined OC-3/OC-48 ring network. Supports SEO functions for 24 NEs (maximum) in a ring application of mixed and compatible releases.

  The following provisioning rule applies to a network size of > 16 nodes: A single node can be provisioned for only one of the following attributes — TL1 GNE or AGNE. This is required for optimum performance.

- **SEO with FT-2000:** SEO with FT-2000 provides the following DDM/FT operations interworking features:

  — Support TL1 and CIT logins from FT to DDM.

  — Display network map and alarm information from any node in the network.

  — Display FT alarm information in DDM alarm report, user panel, and office alarm relays.

  The following provisioning rules apply:

  — The DSNE is always on FT node.

  — TL1 GNE on FT can access both FT and DDM (all nodes).

  — TL1 GNE on DDM can access DDM only.

  — Maximum subnetwork size is 24 nodes. See rules for provisioning for network size of > 16 nodes (Increased Network Size feature).

E. **Performance Monitoring (PM):**

- **DS1 Line PM:** DS1 line PM provides the ability to monitor, report, and set thresholds for line errored seconds (ESL) on the incoming DS1 bipolar violations from DSX-1. The `rtrv-pm-t1` command has been enhanced to support this feature when equipped with **BBF3** circuit pack. The `set-pmthres-t1` command provides provisionable threshold-crossing alerts (TCAs) for current day bins on a per shelf basis.

- **DS1 Path PM Enhancement:** Expanded DS1 path PM report [PM reports of errored seconds (ES), severely errored seconds (SES), and unavailable seconds (UAS) counts] to provide coding violations (CV) daily counts for superframe-near end (SF-NE), extended superframe-near end (ESF-NE), and extended superframe-far end (ESF-FE). Also included are performance thresholds for the new counts. The `rtrv-pm-t1` command has been enhanced to report coding violations. The `set-pmthres-t1` command provides provisionable TCAs for current day bins on a per shelf basis.

- **Enhanced P-bit DS3 PM (from DSX):** Enhanced P-bit DS3 PM calculates and provide counts of DS3 P-bit CV, ES, SES, and UAS incoming from the DSX-3. Quarter-hour and current day bins are provided with provisionable TCAs by using `set-pmthres-t3` command. The TCA is provisionable on a per shelf basis. This capability is intended for full DS3 tariff verification by the customer. Severely errored frame seconds (SEFS) counts are also provided. Software distinguishes between the old and new DS3 circuit packs (**BBG4** versus **BBG4B**) and displays the appropriate DS3 performance-monitoring (PMON) report. The **BBG4B** DS3 circuit pack is a newer version of the **BBG4** and can be mixed with the **BBG4** at any time. If in service, the **BBG4B** provides the more detailed PMON report. The `rtrv-pm-t3` command has been enhanced to support this feature.

- **F & M Bit DS3 PM (from DSX):** F & M bit DS3 PM calculates and provides estimated counts of DS3 CV, ES, SES, and UAS incoming from the DSX-3. The algorithm used for estimating these counts is the adjusted F&M bit algorithm. Quarter-hour and current day bins are provided with provisionable TCAs using `set-pmthres-t3` command. The TCAs are provisionable on a per shelf basis. The data is used for full DS3 tariff verification. SEFS counts are also provided. Software distinguishes between the old and new DS3 circuit packs (**BBG4** versus **BBG4B**) and displays the appropriate DS3 PMON report. The **BBG4B** DS3 circuit pack is a newer version of the **BBG4** and can be mixed with the **BBG4** at any time. If in service, the **BBG4** provides the more detailed PMON report. The `rtrv-pm-t3` command has been enhanced to support this feature

- **DS3 Line PM:** DS3 line PM provides the ability of storing, monitoring, and reporting line coding violations (CVL), errored seconds (ESL), and severely errored seconds (SESL) on the incoming DS3 B3ZS violations from DSX-3. Software distinguishes between the old and new DS3 circuit packs (**BBG4** versus **BBG4B**) and displays the appropriate DS3 PMON report. The **BBG4B** DS3 circuit pack is a newer version of the **BBG4** and can be mixed with the **BBG4** at any time. If in service, the **BBG4B** provides the more detailed PMON report. The `rtrv-pm-t3` command has been enhanced to support this feature. Quarter-hour and current day bins are provided with provisionable TCAs using the `set-pmthres-t3` command.

3. Operating Issues Resolved

3.01 For information on Release 7.2.1, refer to AT&T 363-206-253, Issue 1, *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 7.2.1*.

3.02 This part lists the operating issues (problems) which existed in Release 7.2.1 but are resolved in Release 7.2.2.

(1) **ISSUE:**
If the X.25 packet size is provisioned for 128 bytes (using the `set-x25` command) and a SVC call request packet is sent "without" the packet negotiation facility specified (otherwise known as flow control), the packet size transmitted by DDM-2000 will be 256 bytes.

(2) **ISSUE:**
If the X.25 packet size is configured for 128 bytes and a TL1 command is submitted with more than 128 bytes (between two packets with the more bit set on the first packet), then DDM-2000 ignores the use of the more bit and returns a syntax error for "both" packets containing the command. In Release 7.2, the only commands which are possible to be longer than 128 bytes is `ED/ENT-T0` (SLC-2000 commands).

(3) **ISSUE:**
It is possible that when a TL1 command has been submitted to the GNE, a message with the description `Command Timed Out` will be seen soon after the command has executed. In addition, this message can prohibit the response to another TL1 command or terminate the response of a command already in progress.

(4) **ISSUE:**
It is possible that if TL1 logins are established on multiple virtual circuits to 6 or more remote nodes and the X.25 link is reset, that TL1 communication to the remote nodes will be disabled. In addition, if the GNE is reset to recover from the situation, one or more of the remote nodes will autonomously reset (note - transmission traffic is not affected).

(5) **ISSUE:**
If a TL1 `sched-pmrept-t1` command is executed requesting performance monitoring data for 9 or more DS1s, then the shelf will have to be reset by physically reseating the **SYSCTL** circuit pack (neither a remote login nor TL1 session can be established after the shelf is in this state). Note, the problem does not exist if only 4 DS1's worth of PM data is requested (e.g. b-1-all) or if the TL1 `rtrv-pm-t1` command is used to request the PM data for the 9 or more DS1s.

(6) **ISSUE:**
If an attempt is made to execute TL1 commands to a DDM-2000 FiberReach shelf, the following TL1 message will be displayed before the actual response to the command is displayed:

```
   <TID> yy-mm-dd hh:mm:ss M  <ctag> DENY
   SROF
   /* Status, Requested Operation Failed, no access to NE
via DDM-2000 */
```

(7) **ISSUE:**
In the rare event of a double failure in the **MAIN** OLIU circuit packs (in **MAIN-1** and **MAIN-2(P)** slots), there is some possibility that when the circuit pack recovers, an outgoing STS and/or VT yellow signal could be generated and not cleared. The symptoms are that the far-end would report `inc. STS yellow` and/or `inc. VT yellow` alarm for no apparent reason.

3.03 For information on Release 7.2.2, refer to AT&T 363-206-253, Issue 2, *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 7.2.2.*

3.04 This part lists the operating issues (problems) which existed in Release 7.2.2 but are resolved in Release 7.2.3.

(1) **ISSUE:**
When two subnetworks each having an network element (NE) with the same target identifier (TID) are merged into one subnetwork, the duplicate TID alarm is not reported. The **rtrv-map-network** report will not include all the NEs in the network.

(2) **ISSUE:**
The **rtrv-map-network** **Product Type** entry shows *SLC* NEs as DDM-2000 instead of *SLC*-2000.

(3) **ISSUE:**
If there is an active TL1 login at an NE and the target identifier (TID) of that NE is changed via the craft interface terminal (CIT), the TL1 command and response functionality will be lost on that NE.

(4) **ISSUE:**
There are times when network elements have incomplete **rtrv-map-network** reports.

(5) **ISSUE:**
Autonomous TL1 messages are not reported after an **INH-MSG** TL1 command and then later an **ALW-MSG** TL1 command.

(6) **ISSUE:**
In an alarm group with multiple AGNEs servicing the subnetwork, if one of the AGNE resets, that AGNE may not relearn the alarms in the alarm group.

(7) **ISSUE:**
Some long TL1 reports (such as **sched-pmrept** for all T1 ports), when being sent to at least 3 TL1 logins will cause the system to stop responding to all stimuli.

(8) **ISSUE:**
When a **set-ne** command is executed to change any input parameters, an incoming TL1 association to the local node will erroneously be dropped.

(9) **ISSUE:**
Sometimes when two X.25 virtual circuits (VC)s are both provisioned to report the same TL1 autonomous messages using the same Application Context ID (ACID), for example, `tl1Maintenance`, the remote network element (RNE) doesn't report any of the requested TL1 autonomous messages.

(10) **ISSUE:**
Sometimes when multiple copies of a TL1 performance monitoring (PM) report are scheduled to be output from a RNE to more than one X.25 VC, the RNE resets and the PM reports are incomplete.

(11) **ISSUE:**
Sending approximately 16 TL1 commands in a row to a RNE, without any delay between the commands sent, caused the RNE to stop responding to subsequent TL1 commands. Some, but not all, of the 16 commands completed normally.

(12) **ISSUE:**
If there is an active TL1 login, DDM-2000 denies subsequent duplicate TL1 **ACTIVATE-USER** attempts with the same user ID and password. In fact, one TL1 login remains active.

(13) **ISSUE:**
The NEs autonomous messaging function may not function smoothly when the NEs may have to report large volumes of performance data to multiple OSs simultaneously.

(14) **ISSUE:**
When a DS1 low-speed protection switch takes place, any active terminal loopbacks on the circuit pack being switched will not transfer to the protection circuit pack. The loopback(s) will be restored when the service circuit pack is reinserted.

(15) **ISSUE:**
When an in-service upgrade of a **BBF1**/**BBF1B DS1** circuit pack to a **BBF3 DS1PM** circuit pack is completed, no DS1 performance monitoring report will be available, even though **set-feat** and **set-t1** commands have already been provisioned appropriately.

(16) **ISSUE:**
Following some network rearrangements or failed DCC link recoveries, the **rtrv-map-network** report may show a good communication status to some other nodes when, in fact, remote login attempts to those nodes will fail.

(17) **ISSUE:**
When **RTRV-T1:<TID>:ALL:<CTAG>**; TL1 command is executed on the *SLC*-2000 SONET subsystem, it is denied.

3.05 For information on Release 7.2.3, refer to AT&T 363-206-253, Issue 3, *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 7.2.3*.

3.06 This part lists the operating issues (problems) which existed in Release 7.2.3 but are resolved in Release 7.2.4.

(1) **ISSUE:**
An EC-1 port's `inc. EC-1 line AIS` alarm condition cannot be cleared while this EC-1 port is in the NMON state; the line AIS alarm condition must be cleared after setting the EC-1 port to the AUTO state.

(2) **ISSUE:**
In some situations the NEs TL1 autonomous messaging function may not report all created autonomous messages to the corresponding TL1 users. This problem can be triggered by executing a TL1 **ACT-USER** command to a remote NE through one of the VCs, when you already have an active login to that remote NE on that same VC.

(3) **ISSUE:**
If an alarm for a particular AID is reported to TL1 and the alarm level for that AID subsequently changes, a new autonomous alarm message is sent. However, a message indicating the clearing of the first alarm level event is not sent. When the alarm condition finally clears, a TL1 message is sent indicating only the clearing of the current alarm level.

(4) **ISSUE:**
When accessing an NE from TL1, it requires the user to enter a password starting with an alphabetical character.

(5) **ISSUE:**
The NE responds to the removal of OLIU circuit pack with the incorrect alarm level (MINOR).

(6) **ISSUE:**
Assume communication fails between NEx and NEy; as a result of this, NEx becomes unable to reach NEy and if NEy is connected to other NEs, those NEs become unreachable also and the appropriate alarms are generated. When communication is recovered between NEx and NEy, it is very possible that alarms (that are active in the NEs around NEy for instance) that should have been cleared would not clear, even though the alarms are not necessarily active anymore.

(7) **ISSUE:**
For a pair of TGS circuit packs that are External or Line Timed, the failure of the active TGS circuit pack has resulted in a protection switch to a standby TGS circuit pack, where an active mode of Holdover was already provisioned. No alarm was present to indicate that the Holdover condition was active, and service was degraded over a period of time.

(8) **ISSUE:**
After loading Release 7.2.3 and establishing twoway (Drop) VT1.5 cross-connects in an NE within a ring configuration and causing the service affecting `inc. VT AIS` alarms, a permanent `inc. VT yellow` alarm condition may be created; `inc. VT yellow` alarms should be transient.

(9) **ISSUE:**
Release 7.2.4 has fixed a problem associated with the **BBG4B DS3** circuit pack's software, in which the STS-1 yellow signal was not sent in response to an unprotected incoming STS-1 failure.

(10) **ISSUE:**
TL1 autonomous messages originating on the DLC side of a *SLC*-2000 shelf are not reported.

3.07   For information on Release 7.2.4, refer to 363-206-253, Issue 4, *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 7.2.4*.

3.08   This part lists the operating issues (problems) which existed in Release 7.2.4 but are resolved in Release 7.2.5.

⇛ **NOTE:**
It is possible that 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:**
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 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.

(2) **ISSUE:**
After a power outage or after disconnecting the X.25 cable from a GNE, the X.25 session is temporarily lost (as expected). However, when the power is recovered or the X.25 cable is reconnected to the GNE, the shelf needs to be reset for it to recover the X.25 session.

(3) **ISSUE:**
Autonomous T1 PM reports for 15-minute or 1- to 24-hour intervals, sometimes cannot be turned off by the `SCHED-PMREPT-T1` command.

(4) **ISSUE:**
During periods of heavy TL1 traffic between a GNE and a RNE, it is possible for the TL1 login session to get into a hung state where no response would be returned. Meanwhile, if TL1 commands continue to be submitted, the response would become "`RL <ctag>`".

Occasionally, this can cause an excessive amount of "`RL <ctag>`" messages to
scroll on the monitoring screens, regardless of the TL1 traffic flow at the GNE or
RNE; causing the customer's ability to communicate with their NEs to be halted.

The "`RL <ctag>`" is normally used to indicate that due to high TL1 traffic
congestion, either at the GNE or the RNE, the TL1 command cannot be
processed at this time and the user should "Retry Later".

4. Operating Issues

4.01   This part lists information pertaining to recognized operating issues (problems)
existing in Release 7.2.5. Suggestions to work around the operating issues are
mentioned, if available.

4.02   The current plan calls for a resolution to the following operating issues in future
DDM-2000 OC-3 software releases. Information and procedures developed
subsequent to the release of this practice will be made available to users via the
diagnostic dictionary in the Lucent Technologies COACH system. To obtain a COACH
login or additional information, please write or call:

COACH Software Development
Lucent Technologies
1600 Osgood Street
North Andover, MA 01845

Telephone: 1-800-238-4021

4.03   The following list contains known problems in the software:

(1) **ISSUE:**
As network size grows, the bandwidth of the X.25 link to the GNE can become a
bottleneck under heavy TL1 traffic conditions, causing the GNE's output buffers
to overflow.

WORK AROUND:
For networks larger than 16 network elements:

1. Use a 19.2 Kbps X.25 link.

2. Do not send heavy TL1 traffic creating commands, such as **`RTRV-AO`** and
   `RTRV-PM`, to many nodes simultaneously.

3. Upgrade the network element that has been provisioned as the GNE to the
   latest DDM-2000 OC-3 Release 9.0 software generic. Refer to **NTP-046** in
   363-206-280, *DDM-2000 OC-3 Multiplexer, Release 8 and Higher,
   User/Service Manual (TOP)-Volume II* for this upgrade.

(2) **ISSUE:**
If an upgrade from an **MXRVO** to an **STS1E** low-speed interface is made without deleting the cross-connections to the function unit first, the channel states for the new interface will be wrong.

WORK AROUND:
Follow the upgrade procedure and delete cross-connections before changing from **MXRVO** to **STS1E** low-speed circuit packs.

(3) **ISSUE:**
When the `set-sync:mdsw` command is executed successfully, the completion message may contain an incorrect warning `source selected currently is unusable for timing`.

WORK AROUND:
Ignore the incorrect warning message.

(4) **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 switches not being set properly between DDM and FT.

WORK AROUND:
Before setting up an optical connection between DDM and FT, check the User-Side/Network-Side switches. See AT&T 363-206-202, *DDM-2000 OC-3 Multiplexer, User/Service Manual (TOP) - Volume II*, Issue 5A on how to set User-Side/Network-Side switches.

(5) **ISSUE:**
If there is a dual DSNE condition in a subnetwork and after provisioning one of the DSNEs as a non-DSNE, a locked directory information base (DIB) message may persist.

WORK AROUND:
Reset the DSNE.

(6) **ISSUE:**
This issue applies only to the DCC on an OC-3 1+1 interface between DDM-2000 and FT-2000. Under certain installation and failure scenarios, including a single OC-3 fiber cut, the DDM-2000 may be receiving DCC on the protection fiber while the FT-2000 is transmitting DCC on the service fiber. This results in a DCC failure. Specifically, this occurs if both transmit and receive are active on the protection OC-3 fibers (for example, **MAIN-2(P)**) and the DDM-2000 active (protection) transmit fiber fails. In that case, the FT-2000 switches to transmit the DCC on the service fiber, but the DDM-2000 is still expecting DCC (and OC-3) on the protection fiber, thus the DCC fails.

WORK AROUND:
The first priority is to repair any fiber cuts. If the DCC doesn't restore automatically, the DCC can be restored with a manual protection switch at either DDM-2000 or FT-2000, using the `switch-line:manual` command to realign the FT-2000 DCC transmit and DDM-2000 DCC receive.

(7) **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.

WORK AROUND:
If remote TBOS reporting is disabled (the default situation), users need not be concerned about this operating issue. If remote TBOS reporting is enabled, ensure that the display number of 8 is not duplicated within a single alarm group. One situation which might lead to this duplication is the joining of two previously separate networks. When preparing to implement such a network change, carefully audit the TBOS display provisioning for the two networks before joining them to ensure that the display number value of 8 is not duplicated within an alarm group following the network change.

5. DDM-2000 OC-3/OC-12 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 for the same protection mode (1+1 or dual 0x1, for example).

5.01 Table A describes which optical connections are supported between DDM-2000 OC-3 and DDM-2000 OC-12 shelves for the current software releases. All configurations listed support single-ended operations (SEO). The table lists all possible software combinations for OC-3 Releases 7.0, 7.1, and 7.2 rings. Combinations not listed are not supported.

Table A. DDM-2000 OC-3 and OC-12 Interconnections (Note 1)

OC-3 Release	OC-12 Release	Interconnection (Note 2) Method	Notes
7.0.n	2.1.n	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3 optical extensions to OC-12 point to point.
7.0.n	2.2	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3 optical extensions to OC-12 point to point.
7.1.n	2.1.n	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3 optical extensions to OC-12 point to point.
7.1.n	2.2	22-Type∗, 22D-Type†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3 optical extensions to OC-12 point to point.
7.1.n	3.1	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	VT1.5 ring on OC-12 dual 0x1 ring.
7.2.n	5.0.n	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	Supports DCC connectivity.

Notes:

(1) All DDM-2000 OC-3 ring shelves in a subnetwork should be running the same version of software. Similarly, all DDM-2000 OC-12 shelves in a subnetwork should be running the same version of software. "n" is the latest point release available.

(2) The OLIU types referenced in Table A are as follows: 21D-Type-21D and 21D-U, 21G-Type-21G, 21G-U, and 21G2-U, 22F-Type-22F, 22F-U, and 22F2-U, 22G-Type-22G-U, 22G2-U, and 22G3-U, and 22D-U.

∗   The 22-Type (22D-U, 22F-Type, and 22G-Type) optical line interface unit (OLIU) must be used in the DDM-2000 OC-3 shelf.

†   The 22D-U OLIU can be used in the DDM-2000 OC-3 shelf in place of the 22F/22F-U/22F2-U OLIU for short reach applications.

‡   The 22G-Type OLIU can be used in the DDM-2000 OC-3 shelf in place of the 22F-Type OLIU for long reach applications.

§   The 21D-Type OLIU can be used in the DDM-2000 OC-12 shelf in place of the 21G-Type OLIU for short reach applications.

5.02 Table B describes which optical connections are supported between DDM-2000 OC-3 rings and DDM-2000 OC-3 linear shelves for the current software releases. All configurations listed support SEO. The table lists all possible software combinations for OC-3 Releases 7.0, 7.1, and 7.2 rings. Combinations not listed are not supported.

Table B. DDM-2000 OC-3 Ring to OC-3 Linear Interconnections (Note 1)

OC-3 Release	OC-3 Release	Interconnection (Note 2) Method	Notes
7.0.n	6.1.n	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3/IS-3 optical extensions of rings.
7.0.n	6.2	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3/IS-3 optical extensions of rings.
7.1.n	6.1.n	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3/IS-3 optical extensions of rings.
7.1.n	6.2	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3/IS-3 optical extensions of rings.
7.2.n	8.0.n	22-Type∗, 22D-U†, 22G-Type‡, 21D-Type§, or 21G-Type OLIU	OC-3/IS-3 optical extensions of rings.

Notes:

(1) All DDM-2000 OC-3 non-ring shelves in a subnetwork should be running the same version of software. Similarly, all DDM-2000 OC-3 ring shelves in a subnetwork should be running the same version of software. "n" is the latest point release available.

(2) The OLIU types referenced in Table B are as follows: 21D-Type-21D and 21D-U, 21G-Type-21G, 21G-U, and 21G2-U, 22F-Type-22F, 22F-U, and 22F2-U, 22G-Type-22G-U, 22G2-U, and 22G3-U, and 22D-U.

∗ The 22-Type (22D-U, 22F-Type, and 22G-Type) optical line interface unit (OLIU) must be used in the DDM-2000 OC-3 shelf.

† The 22D-U OLIU can be used in the DDM-2000 OC-3 shelf in place of the 22F/22F-U/22F2-U OLIU for short reach applications.

‡ The 22G-Type OLIU can be used in the DDM-2000 OC-3 shelf in place of the 22F-Type OLIU for long reach applications.

§ The 21D-Type OLIU can be used in the DDM-2000 OC-12 shelf in place of the 21G-Type OLIU for short reach applications.

6. DDM-2000 OC-3 Multiplexer DRI Software Compatibility

6.01 Table C lists the dual ring interworking (DRI) software compatibility for the DDM-2000 OC-3 Multiplexer for both EC-1 and OC-3 interfaces. The table lists all possible software combinations. Combinations not listed are not supported.

Table C. DDM-2000 OC-3 Multiplexer DRI Software Compatibility

DDM-2000 OC-3	DDM-2000 OC-12 and FT-2000	Notes
Release 7.x	OC-12 Release 3.x and 5.0 FT-2000 Releases 4.1,5.1 and 6.0	EC-1 interfaces. No DCC connectivity.
Release 7.2	OC-12 Release 5.0	OC-3 Interfaces. DCC connectivity.
Release 7.2	FT-2000 Release 5.0	OC-3 Interfaces. No DCC connectivity.
Release 7.2∗	FT-2000 Release 6.0∗	OC-3 Interfaces. DCC connectivity.

∗ These software releases are also compatible when connected together using OC-3 ring (0X1) interfaces.

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 1:**
The same version of software should be installed in all DDM-2000 OC-3 Systems that are connected to each other by optical interfaces. After this software is installed in one system, it should also be installed in all associated far-end systems without unnecessary delays to ensure normal operation of all single-ended operations functions.

⇨ **NOTE 2:**
Before installing Release 7.2.5 software, the following hardware versions *must* be in place at all sites before continuing with the implementation procedure:

    BBG5 SYSCTL: Series 2:2 or higher
    BBG7 OHCTL: Series 2:4A or higher.

For **BBG7 OHCTL** circuit packs with earlier vintages than Series 2:4A, upgrade the **BBG7 OHCTL** circuit packs by sending them (with a repair order that states "Modification per CCN 31066-MV") to:

> Lucent Technologies
> Returned Goods Dept.
> Dept. JC0221210
> 1600 Osgood Street
> North Andover, MA 01845
>
> Telephone 1-508-960-5179 OR 1-508-960-1705

7.01   For Releases 7.2.5 and higher, the following parameters should be provisioned to support OSI interworking over the SONET DCC:

- The appropriate user-side/network-side switches on the **BBG7 OHCTL** circuit packs on opposite ends of any optical span need to be set to opposite values. For instructions about installing or replacing the **OHCTL** circuit pack, refer to TOP **DLP-500** in AT&T 363-206-202, *DDM-2000 OC-3 Multiplexer, User/Service Manual (TOP)-Volume II*, Issue 5A.

Software Installation and Upgrade Procedure

⚠ **CAUTION:**
While doing upgrades, incompatible software may cause continuous resets on the shelf that is being upgraded (i.e. when an OC-12 Release 5.0 is connected to an OC-3 Release 7.1). To avoid this situation during upgrades that can result in software incompatibility, it is recommended that the DCC be temporarily disabled until the NE upgrade is completed. The DCC can be disabled through the `set-fecom` *command.*

DLP-532 contains the information and procedures needed for upgrading a DDM-2000 OC-3 System running any upgradable version of OC-3 software. This procedure can also be used to install 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 copy of DLP-532 to install the new software.

How Are We Doing?

Document Title: *DDM-2000 OC-3 Multiplexer, Software Release Description, Release 7.2.5*

Document No.: 363-206-253   Issue 5   Date: March 1998

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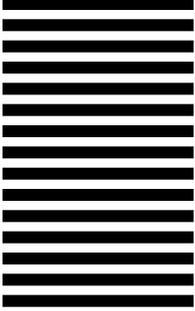
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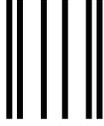or Fax to: 910-727-3043.

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