Lucent Technologies

Bell Labs Innovations

DDM-2000 FiberReach Wideband Shelf Software Release Description

Release 2.1.2

DDM-2000 FiberReach Wideband Shelf
Software Release Description
Release 2.1.2

Contents   **Page**

Contents   Page

Tables

1. Overview

1.01   The purpose of this software release description (SRD) is to provide information about Software Release 2.1.2 and its interaction with the DDM-2000 FiberReach Wideband Shelf (WBS). This practice contains the following parts:

- **Software Release 2.1.2 Features:** This part provides a description of the features provided by Release 2.1.2.

- **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 2.1.2 that may become evident during the operation of the DDM-2000 FiberReach WBS.

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

- **Implementation Procedure:** This part provides the information required to install the DDM-2000 WBS software, Release 2.1.2.

$\Rightarrow$ **NOTE:**
    Read all parts of this practice before implementing the DDM-2000 FiberReach WBS software.

1.02   This practice, Issue 2, supersedes the previous Issue 1. Issue 2 provides updated information for Software Release 2.1.2. The updated information is included in the "Operating Issues Resolved" and "DDM-2000 Interworking" sections of this practice. Margin bars are used to denote the added information. LTP 363-206-322, Issue 1, provided the coverage for Software Release 2.1.1.

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 2.1.2 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 LTP 363-206-301, *DDM-2000 FiberReach Multiplexer, Wideband/Narrowband Shelf, User/Service Manual*, for convenient storage of this practice.

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

2. Software Release 2.1.2 Features

2.01 The features described below are for DDM-2000 FiberReach WBS.

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 CIT commands `init-sys:sysctl` or `init-sys:all` (or the TL1 command `INIT-SYS`) has been performed on the system, the new default logins will be active.

- **Fourth Level of Security:** A new Maintenance security level, which allows access to Reports and some general level activities is provided in addition to the three current levels of privileged, general, and reports-only. This level allows the user to perform Maintenance operations, but not provisioning operations. Some examples are, all types of protection switching and loopback activities.

B. **Maintenance**

- **DS1 Facility Loopback:** This feature supports a loopback at the DS1 ports on the **BBF1**/**BBF1B**/**BBF3** and the T1 ports on the **BBF6** circuit packs toward the DSX. Operation of the loopback causes all of the incoming signals (four on **BBF1**/**BBF1B**/**BBF3** and two on **BBF6**) on the selected circuit pack to be looped back. Loopback user control is through the `opr-lpbk-t1` and `rls-lpbk-t1` CIT commands and `OPR-LPBK-T1` and `RLS-LPBK-T1` TL1 commands. When the shelf is configured for 1x1 low-speed protection, the commands will accept the aids: `{a,b,c,d}-all` or `{a,b,c,d}-1-all`. When the shelf is configured for 1x7 low-speed protection, the commands will accept the aids: `{a,b,c}-{1,2}-all` or `d-1-all`. The loopback is a bridge which means that the transmit DS1 signal path is not interrupted. Either the facility or terminal loopback, but not both, can be set at any given time for a port.

C. **Network Topologies**

- **Extended FiberReach Topologies:** A DDM-2000 OC-3 R9.1 shelf, when acting as a FiberReach host, supports several new OC-1 ring hairpin topologies. All of these new topologies require the use of **27G2-U OLIU**s to terminate the OC-1 ring(s) on the OC-3 host shelf.

— **OC-1 Ring Pass-Through in Function Unit:** By supporting pass-through cross-connections for an OC-1 ring terminating on **27G2-U OLIU**s in a **FUNCTION UNITS**, circuits between FiberReach WBSs on the OC-1 ring may be established without using any bandwidth on the ring terminating on the OC-3 host's **MAIN** slots.

— **OC-1 Ring Inter-Function Unit Hairpins:** With this topology, OC-1 rings that terminate on different **FUNCTION UNITS** are joined using 0x1 cross-connects. In this way, circuits between FiberReach WBSs on different OC-1 rings may be established without using any bandwidth on the ring terminating on the OC-3 host's **MAIN** slots. Both single and dual homing versions of this topology are supported.

— **OC-1 Ring Intra-Function Unit Hairpins:** This topology is like the inter-function unit hairpin, except that the OC-1 rings to be interconnected terminate on the same **27G2-U OLIU**s. Again, single and dual homing versions of this topology are supported.

D. **Operations**

■ **ITM SNC and CPro 2000 Support:** DDM-2000 FiberReach WBS Release 2.1 is supported by ITM SNC Releases 2.2 (pre 2.1 features only) and 4.0 (includes full support; currently planned for 6/97), and by CPro 2000 Release 5.0 and later.

E. **Performance Monitoring**

■ **15-Minute DS1 PM:** In addition to the daily storing and thresholding of the data for the DS1 line and path PM, this feature provides quarter hour binning and thresholding of the same data as well. The data for the current quarter hour and the previous 8 hours (32 quarter hours) will be stored.

F. **Provisioning**

■ **Provisionable Response to SONET Line, and STS & VT AIS:** Allows a user to provision the alarm level of a line or path AIS condition. Path AIS is provisionable on a per-path basis using the `set-vt1` and `set-sts1` commands. Non-Service Affecting (NSA) line AIS is provisionable for each **OLIU** group using the `set-oc1` command. This capability affects the alarm level reported through all operations interfaces (user panel, parallel telemetry, TL1, CIT). A user can retrieve the provisioned alarm level value with the `rtrv-oc1`, `rtrv-sts1`, and `rtrv-vt1` commands. The provisioned data is stored in EEPROM on the **BBG8 SYSCTL** and the corresponding **MAIN** or **FUNCTION UNITS** pair. Existing alarms change in response to a provisioning change.

G. **Operations Interworking (OI):**

- **Large Networks:** DDM-2000 FiberReach WBS R2.1 supports OI for larger networks. Specifically, networks with only DDM-2000 products (OC-3 R9.1, OC-12 R5.1, or FiberReach WBS R2.1) may contain up to 50 network elements (NEs). Networks that include FT-2000 (Release 7.x) may include up to 32 NEs.

  In addition, the number of simultaneous logins supported by each TL1 RNE increases from 5 to 8, and the number of outgoing logins supported by each TL1 GNE increases from 69 to 105.

- **TL1 Enhancements:** To improve OS access performance during the period of heavy activity immediately following X.25 link resets, OSs provisioned to receive TL1 autonomous alarm and status maintenance messages will no longer receive an automatic alarm status refresh immediately after a successful TL1 login. Instead, DDM-2000 will await TL1 `RTRV-ALM-ALL` and `RTRV-ALM-ENV` commands from such OSs. Associated with this change, the `RTRV-ALM-ENV` command default has been changed to support retrieval of ALL environmental alarms.

  To reduce unnecessary routing of TL1 `REPT PM` messages, DDM-2000's default TL1 autonomous message map has been changed to exclude `REPT PM` from the OS type tl1Other1. This change is compatible with ITM SNC and any other OSs interested in TL1 autonomous maintenance and provisioning messages but not autonomous performance monitoring (PM) reports. The default OS type tl1Maintenance still includes `REPT PM`, and user provisioning can still override any of the default values.

3. Operating Issues Resolved

3.01 For information on Release 2.0.1, refer to LTP 363-206-321, Issue 2, *DDM-2000 FiberReach Wideband Shelf, Software Release Description, Release 2.0.1*.

3.02 This part lists the operating issues (problems) which existed in Release 2.0.1 but are resolved in Release 2.1.1.

(1) **ISSUE:**
A network of DDM-2000 OC-3 R9.0, OC-12 R5.0, FT-2000 OC-48 R6.0, and DDM-2000 FiberReach WBS R1.0 or R2.0 nodes of greater than 24 network elements may experience significant load-related problems with DCC communication among the nodes.

⇒ **NOTE:**
For further information about network size, see the Operations Interworking sub-section of the Features section of this practice.

(2) **ISSUE:**
If the user attempts to download, to the shelf directly connected to a PC, a DDM-2000 FiberReach WBS 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.

(3) **ISSUE:**
The first character of a login password, when accessing a DDM-2000 FiberReach system from TL1 must be alphabetic. This same restriction does not apply to use of passwords from the CIT interface.

(4) **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.

⇒ **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.

(5) **ISSUE:**
The history log for a FiberReach system directly connected to an OC-3 host shelf may show very brief DCC failures. The history log may be seen by executing the **rtrv-hsty** CIT command. Attempts to do remote logins to FiberReach shelves during the time around these brief failures may take up to a minute to complete.

(6) **ISSUE:**
No DDM-2000 system in a network will generate an alarm if there is no DSNE in the network. Without a DSNE in the network, network elements are unable to communicate via the DCC with any other network elements.

As of Release 2.1, each node in the network that is unable to contact a DSNE will report a major `DSNE not reachable` alarm.

(7) **ISSUE:**
The timeout for attempting to login via TL1 to a network element was set for two (2) minutes. Some OSs have a login timeout of 4 minutes.

At the request of customers, the DDM timeout value was raised to 3.5 minutes in order to bring these timers more closely into alignment.

(8) **ISSUE:**
When a slot is transitioned from the equipped to the auto state, the system clears the `CP removed` alarm with a `circuit pack inserted` autonomous TL1 message. It would be more accurate to send a `CP removed cleared` TL1 message.

(9) **ISSUE:**
The user panel of a DDM system does not reflect alarms existing in FT-2000 systems in the same alarm group. The FT-2000 alarms are contained in the **rtrv-alm** report.

(10) **ISSUE:**
DDM-2000 does not adhere to the new Bellcore alarm clearing time requirements. The requirement was lowered from 15 seconds to 10 seconds.

3.03 For information on Release 2.1.1, refer to LTP 363-206-322, Issue 1, *DDM-2000 FiberReach Wideband Shelf, Software Release Description, Release 2.1.1*.

3.04 This part lists the operating issues (problems) which existed in the previous release, but are resolved in Release 2.1.2.

⇒ **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.

(11) **ISSUE:**
If a system attempts to make multiple synchronization reference switches within about 2 seconds, only the first switch will take place. The subsequent synchronization reference switch attempts (within the 2 second window) will be silently ignored. Depending on the circumstances triggering a sequence of synchronization reference switches in a network, timing loops may be caused. These may, in turn, cause data errors on some circuits. A software change has been made to eliminate this problem.

A related problem concerns the synchronization quality reporting between DDM-2000 network elements. The current synchronization quality messages do not distinguish between a node set to free running timing mode and a node in holdover mode. In both cases, the shelf is relying upon its internal oscillator for timing and is not locked to any external timing source. Under some circumstances, timing loops can be created as a result of not distinguishing the two cases. This problem has been corrected by changing, for FiberReach nodes, the synchronization quality level reported when in holdover mode. Within DDM-2000 FiberReach nodes, this level is reported as "Internal Clock Hldvr" in the **rtrv-sync** report. A DDM-2000 OC-3 node receiving the new quality level message from a DDM-2000 FiberReach node would display the new level as "Stratum 4" in its **rtrv-sync** report.

4. Operating Issues

4.01   This part lists information pertaining to recognized operating issues (problems) existing in Release 2.1.2. 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 FiberReach WBS 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:

A. **Download**

(1) **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.

B. **Operations Interworking (OI)**

(2) **ISSUE:**
In a mixed DDM-2000/FT-2000 network, a duplicate DSNE will cause corruption of `rtrv-map-network` report in some nodes, which in turn disables the remote login capability to those sites from other network elements.

WORK AROUND:
Before mixing the two sub-networks, make sure there is only one node with DSNE=yes in the entire network.

(3) **ISSUE:**
In rare circumstances, such as a loss of signal condition on both **MAIN** slot OLIU circuit packs, an erroneous `DSNE not reachable` alarm might be reported.

WORK AROUND:
Check the network status report by typing the CIT **rtrv-map-network** or TL1 **RTRV-MAP-NETWORK** command. If the communication status for the DSNE network element in the report indicates `FAILED`, then the alarm is legitimate. If there is no status displayed, which would indicate good communication between that node and the DSNE, then the alarm is erroneous.

To remove it from the alarm report, perform a reset by typing CIT **reset** or TL1 **RESET-SYS** command on the node with this alarm.

C. **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.

D. **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.

(6) **ISSUE:**
Cutting and restoring power to a DDM-2000 FiberReach WBS while it is connected to an DDM-2000 OC-3 shelf under the conditions described below will cause VT1.5 channels in the OC-3 shelf that are receiving AIS to transition incorrectly to "In Service". this will in turn lead to `inc. VT AIS` alarms. The conditions leading to this problem are:

— OC-1 interface (**27G-U OLIU**) in OC-3 shelf in **MAIN** slots.

— STS cross-connects in the OC-3 shelf between **MAIN** and **FUNCTION UNITS** slots containing **BBG2 MXRVO** circuit packs. In this situation, VT1.5 channel states are defined even though the cross-connect is at the STS level.

WORK AROUND:
Execute update (`upd`) command at the OC-3 shelf. This will cause VT1.5 channels receiving AIS to revert to the "AUTO" state.

(7) **ISSUE:**
If a WBS is dropping traffic from its **MAIN** OLIUs to one or more DS1/T1 circuit packs in low speed slots, and BOTH **MAIN** OLIUs are removed (thereby disrupting transmission) and then re-inserted, transmission will not be restored unless the shelf is reset.

WORK AROUND:
Both **MAIN** OLIUs should never be removed while in-service, but if it becomes necessary to do so, reset the system immediately upon re-inserting the first OLIU.

5. DDM-2000 Interworking

⇒ **NOTE:**
Interworking between products (DDM-2000 FiberReach WBS and DDM-2000 OC-3) is evolving with OC-1 interfaces. Care must be taken to check correct software releases and to check interface provisioning.

5.01 Table A lists the DDM-2000 FiberReach WBS software compatibility and interconnections 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 A. DDM-2000 OC-3 and DDM-2000 FiberReach WBS Software Compatibility and Interconnections

Software Release		Interconnecting Circuit Pack	
DDM-2000 FiberReach	DDM-2000 OC-3	DDM-2000 FiberReach	DDM-2000 OC-3
1.0 (Ring)	9.0 (Ring)	**26G-U/26G2-U OLIU**	**27G-U/27G2-U OLIU**
2.0 (Ring)	9.0 (Ring)	**26G-U/26G2-U OLIU**	**27G-U/27G2-U OLIU**
2.0 (Ring)	9.1 (Ring)	**26G-U/26G2-U OLIU**	**27G-U/27G2-U OLIU**
2.1 (Ring)	9.0 (Ring)	**26G-U/26G2-U OLIU**	**27G-U/27G2-U OLIU**
2.1 (Ring)	9.1 (Ring)	**26G-U/26G2-U OLIU**	**27G-U/27G2-U OLIU**

6. Implementation Procedure

> ⇒ **NOTE:**
>
> Before installing Release 2.1.2 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

6.01 For Releases 2.1.2 and higher, the following parameters should be provisioned to support OSI interworking over the SONET DCC:

- The appropriate User Side/Network 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 User Side/Network Side parameters, refer to TOP in LTP 363-206-301, *DDM-2000 FiberReach Multiplexer, Wideband/Narrowband Shelf, User/Service Manual*, Issue 2.

Software Installation Procedure

DLP-536 and DLP-537 contain the latest information and procedures needed for upgrading a DDM-2000 OC-3 System running any upgradable version of OC-3 software. DLP-525 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-525, DLP-536, or DLP-537 to install the new software.

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Document Title: *DDM-2000 FiberReach Wideband Shelf, Software Release Description, Release 2.1.2*

Document No.: 363-206-322   Issue 2   Date: January 1997

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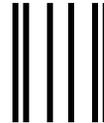Name: _____ Telephone Number: _____

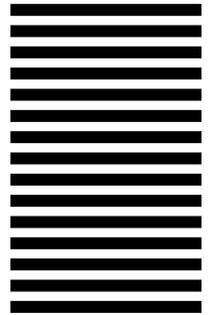Company/Organization: _____ Date: _____

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