



OpenCon Systems, Inc.

WORLDWIDE COMMUNICATION SOLUTIONS

## OCS DCC Solution

**OCS' DCC Solution** combines DCC (Data Communication Channel) Subsystem software and the customization services of an experienced Professional Services Organization to deliver a standards compliant and interoperable package to SONET/SDH equipment vendors who are planning to sell next generation SONET/SDH equipment to carriers.

### BUSINESS NEED

SONET/SDH is the most widely used transport technology in carrier's network today. Deployment of SONET/SDH based network equipment continues to grow as carriers extend the reach of fiber from central offices to business locations. As the size of SONET/SDH networks grow and as carriers start deploying systems from different vendors the problem of managing these networks have become increasingly difficult and complicated. To reduce the cost and complexity of managing these networks, carriers rely on embedded Data Communication Channel (DCC) within a SONET/SDH frame and expect vendors to provide equipments that are interoperable with the SONET equipments that are already deployed in their networks and also support DCC standards such as Telcordia's GR-253, NSIF-033-1999 and ITU G.7712.

### OCS DCC SOLUTION

OCS' standards-based, off-the-shelf DCC System Solution shortens the DCC implementation time and is designed to provide DCC interoperability with equipment from leading SONET/SDH equipment vendors such as Fujitsu, Lucent and Nortel. OCS offers two standards-based DCC Solutions that provide interoperability for products deployed in a SONET/SDH ring: a Full OSI 7-Layer Stack and a Short Stack DCC Subsystem. OCS' solution is designed to be hardware and operating system independent and can be easily ported to most hardware/software platforms.

OCS-DCC package is offered in two versions: as a full stack and a short stack. The full stack version incorporates all seven OSI layers as specified in GR-253 and the short stack version incorporates OSI layers one through three. Both full stack and short stack versions include API for integration with customer developed application and low-level drivers. For customers who develop SONET/SDH terminal equipment, OCS offers a package called "IP Tunneling-Lite" which includes all the components of a Short stack with the exception of IS-IS protocol. OCS-DCC package also includes the following two features:

- ITU G.7712 compliant IP Tunneling Module for IP Relay through OSI network (included in both OSI-7 layer and Short stack packages)

## OCS DCC Solution

- NSIF-033-1999 compliant TL1 Translation Device (T-TD) to convert mediate between TL1 over TCP/IP and TL1 over OSI-7 layer sessions.
- NSIF-033-1999 compliant File Transfer Translation Device (FT-TD) to mediate between FTP and FTAM sessions during file transfer between OSS and Network elements.

For SONET/SDH equipment vendors who use IP based applications for management (e.g., SNMP, HTTP), OCS' Short Stack version, which incorporates OSI layers 1-3, is an ideal base solution for achieving DCC interoperability with other vendors who support only OSI based DCC solution in their products. In the Short Stack, the TL1 API module directly interacts with the Network layer module and can support TL1/IP transport.

### OCS DCC PRODUCT SUITE

#### **IP Tunneling "Lite" Package:**

- LAPD
- ES-IS
- CLNP
- IP Tunneling

#### **Short Stack Package:**

- LAPD
- TL1 API Module
- Provisioning Support
- Support for both Distributed and Centralized Processing Architectures
- (OAMP) Application Interface Module
- LAPB
- ES-IS/IS-IS/CLNP
- X.25(optional)
- IP Tunneling
- TARP

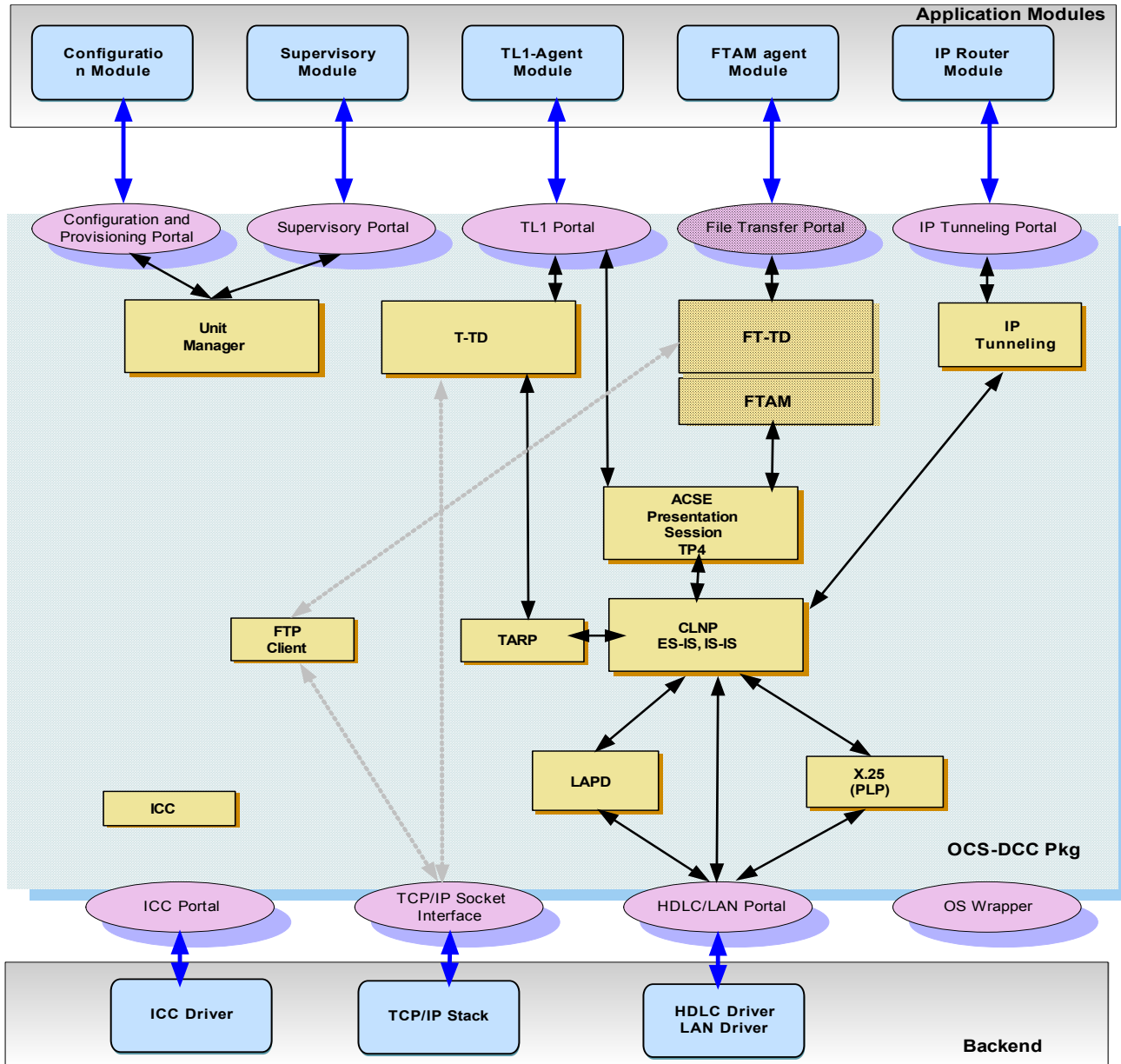
#### **Full OSI 7-Layer Stack Package incorporates the Short Stack Package plus:**

- TP4
- Session Layer
- FT-TD (optional)
- ACSE
- Presentation Layer
- TARP
- T-TD (TL1 over TCP/IP gateway)

### OCS DCC Standard Compliance

- ITU Q.920/Q.921
- ISO8473(CLNP)
- ISO8073 (TP4)
- ISO8650 (ACSE)
- GR-253 (TARP)
- GR-831 (TL1)
- IEEE802.2(LLC1)
- ISO 9542 (ES-IS)
- ISO8327 (Session)
- ISO8571(FTAM)
- NSIF-033-1999 (T-TD, FT-TD)
- ITU X.25 (optional)
- ISO 10589 (IS-IS)
- ISO 8823 (Presentation)
- RFC 959 (FTP)
- ITU G.7712 (IP Tunneling)

## **OCS DCC Solution**



- Target Specific Application Modules
- OCS Protocol Components
- OCS Portals API
- FT-TD: File Transfer Translation Device
- T-TD: TL1 over TCP to TL1 over OSI-7 layer Translation Device
- FT-TD, FTAM and File transfer Portals are Optional Modules

## OCS-DCC Package Components

### OCS DCC Solution