Definitions and Abbreviations

Definitions

1

1+1 protected connection: A connection that is using two channels through the network. One channel is active and the other is in stand-by mode, waiting to take over as active channel in case of failure. Data is transmitted on both channels at all times; the receiver is deciding which channel to use and handles switch over in case of malfunction. This design ensures that 1+1 protected channels have a very short fail-over time.

1000Base-T: The term for the Electrical Gigabit Ethernet interface. This is the most common interface for Gigabit Ethernet. Most Gigabit-enabled PCs and equipment use this interface.

A

Access device Access device is a network component that provides access for services to the network. Examples of services are ASI/SDI video transport, PDH transport and DLE**.**

Administrative status: The desired state of resources, as configured.

AES/EBU Audio Engineering Society/European Broadcasting Union. Enabling digital audio transport with guaranteed quality of service in studio, contribution and distribution networks.

ARP: Address Resolution Protocol. A protocol used to "resolve" IP addresses into underlying Ethernet MAC addresses.

ASI: Asynchronous Serial Interface, a video interface. Enabling digital multimedia transport with guaranteed quality of service in studio, contribution and distribution networks.

ATSC: Advanced Television Systems Committee. An American organization working with standardization of digital television broadcasts, primarily in the US but also in Asia and other parts of the world.

B

By-pass link connection: The part of a by-pass trail that originates in the transmitting DTM interface and terminates on the neighboring receiving interface. For most practical situations, this corresponds to the physical link from one to the next adjacent network element.

C

CLI Command Line Interface, a text based method used to communicate with Nimbra nodes over a terminal connection.

Connection: The virtual circuit set-up for a service between two trail termination points. The connection can use one or two channels depending on whether it is 1+1 protected or not.

Control channel: A channel between adjacent network elements used is the network for control data.

Control module The Control module of a DTM switch handles communication with other control modules (nodes). It also handles resource management and network management.

Control slot A DTM frame is divided into data slots for transferring user data and control slot for sending control messages (DCP messages) between DTM nodes. There are static control slots, set up initially and not alterable and dynamic control slots, which can be configured on demand to change the signaling capacity of a node. Dynamic control slots can be point-to-point, multicast or broadcast. Static control slots are always broadcast.

D

DCAP DTM encapsulation is the mechanism of adapting a service to transport over DTM. DCAP-0/1/2 are defined; DCAP-0/2 handles to ITS services and DCAP-1 handles encapsulation of packets.

DLE: DTM LAN Emulation (DLE) allows DTM to be used as a bridge between different segments of an Ethernet network. The DLE segments are parts of the in-band management network.

DLE client The DLE client connects to a DLE server through a DTM Ethernet connection. Normally, the DLE client can be used for network management. During different events in the nodes (like reboot) or network failure, the connection to the DLE server may be down and in this case the DLE client can't be used for network management.

DLE server The DLE server handles all connections to the various DLE clients of the DLE segment. It can be configured with a back-up server to improve security and reduce the risk of downtime.

DLSP is the DTM Link State Protocol**.** DTM Link is the physical medium connecting DTM Access Nodes and/or DTM Switches. It is typically implemented on optical fiber, but could be implemented on other types of media like microwave links as well.

DSTI: DTM Service Type Instance, a unique number (within the service type) that identifies the trail termination point and indirectly the channel. To be completely defined, DSTI must be set at both ends. DSTI can be compared to port numbers in TCP.

DTM network map: A map that graphically displays the network elements and the DTM links. Nimbra Vision generates DTM network maps.

DTM channel: The DTM channel is a unidirectional end-to-end channel over a DTM network. A DTM channel has a capacity corresponding to the number of allocated slots with a granularity of one slot or 512 kbps.

DTM frame: A DTM frame is transmitted every 125 µs. A DTM frame consists of control slots and data slots. The total number of slots in the frame depends on the bit rate of the DTM link. The number of frames per second is the same for all DTM links in a DTM network, namely 8000.

DTM Link or DTM Communication Link: DTM Link is the physical medium connecting DTM Access Nodes and/or DTM Switches. It is typically an optical fiber, but may be any type of media.

E

Ethernet is a simple LAN protocol, originally developed by Digital and Xerox for use with servers and workstations. It was later standardized as IEEE 802.3. Originally, it was using 10 Mbps. The success of Ethernet for use with personal computers has encouraged further developments towards higher speed Fast Ethernet (100 Mbps) and Gigabit Ethernet (1 Gbps). Ethernet switches in the network take care of routing Ethernet frames between nodes.

ETS: Ethernet Transport Service is a way to send IP/Ethernet packets over the DTM infrastructure. It is defined by the two end-points and the channel defined between them.

F

FEC: Forward Error Correction. A mechanism to add extra data to a transmission in order to protect it. Dependent on the amount of extra data added, the receiver will be able to correct errors (i.e. regenerate lost packets) in case of network packet loss.

FRP: Fast Reroute Protection (FRP) reroutes traffic when the network topology changes or there is a lack of bandwidth due to network problems.

G

GigE: Gigabit Ethernet

H

HD-SDI: High Definition - Serial Digital Interface. Also known as ANSI/SMPTE SMPTE 292M-1998. A specification describing how to digitize and transmit uncompressed high definition video signals. The typical bit rate of an HD-SDI signal is 1485 Mbps.

HDTV: High Definition Television. The new, coming television standard(s) that gives clearer and more detailed TV pictures. Many TV sets sold today (especially flat-screen TVs) are prepared for high definition TV.

HTTP: HyperText Transfer Protocol. The fundamental protocol used on the Internet for transmission of WEB pages and other data between servers and PCs.

I

ICMP: Internet Control Message Protocol. ICMP messages, delivered in IP packets, are used for out-of-band messages related to network operation.

IGMP: Internet Group Management Protocol. IGMP is a protocol used to manage multicasts on the Internet. For a host (receiver unit) to receive a multicast, it needs to transmit IGMP "join"

messages on the right format. Three versions exist. IGMPv2 is common today but IGMPv3 is the next step.

In-band management network: An IP network emulated in the DTM network that is used for (network) management of nodes. The network does not require any external equipment, except one entry-point.

IP: Internet Protocol is the Internet network protocol. It handles addressing and routing in the Internet. IP is the fundamental protocol in the Internet and usually works together with TCP. IP is a connection-less protocol that operates at the network layer (layer 3) of the OSI model.

Isochronous Time-dependent: refers to processes where data must be delivered with certain time constraints. For example, multimedia streams require an isochronous transport mechanism to ensure that data is delivered as fast as it is displayed and to ensure that the audio is synchronized with the video. Isochronous can be contrasted with asynchronous, which refers to processes in which data streams can be broken by random intervals, and synchronous processes, in which data streams can be delivered only at specific intervals. Isochronous service is not as rigid as synchronous service, but not as lenient as asynchronous service.

J

JPEG 2000: A wavelet-based image compression standard. It was created by the Joint Photographic Experts Group committee with the intention of superseding their original discrete cosine transform-based JPEG standard. JPEG 2000 can operate at higher compression ratios without generating the characteristic 'blocky and blurry' artifacts of the original DCT-based JPEG standard.

M

Managed: An object is considered managed if Nimbra Vision monitors and if desired changes its status.

Metadata: Metadata is descriptive data that is "tagged" to a movie or audio clip. Metadata is essential for the broadcaster.

MIB Management Information Base, a set of data definitions for describing managed objects in a conceptual database that is accessed with SNMP.

MPEG2: Moving Picture Experts Group 2. The compression standard used today on most satellite and cable TV digital broadcasts.

MPLS: Multi-protocol Label Switching. A Quality of Service mechanism for IP networks that allow IP packets to flow along a predefined path in a network, thus improving the reliability and robustness of the transmission.

MPTS: Multi Program Transport Streams. Transport Streams that carry multiple TV/Radio services

MXF: Material eXchange Format is a container format for professional digital video and audio media defined by a set of SMPTE standards.

Multicast: An IP mechanism that allows transmission of data to multiple receivers. A multicast can also have several transmit sources simultaneously. In video applications, multicast is typically used to distribute a video signal from a central source to multiple destinations.

N

Network database: The database containing all managed objects. Different views can be applied on the database to display a subset of managed objects, with well-defined properties.

NMS: Network Management System. A system used to supervise elements in an IP network. When a device reports an alarm, the alarm will be collected by the NMS and reported to the operator. NMS systems typically collect valuable statistics information about the network performance and can warn the operator early.

Node: A node is a network device directly connected to the DTM network, e.g. a switch or an access device.

O

Operational status: The operational state of a resource. This is the actual state that the resource has. Normally, it is identical to the administrative status.

OS The Operating System is the system that manages all other programs or applications.

Out-band management network: An IP network for managing the network elements. The management network is external to the DTM network and requires that all network elements are connected to the IP network.

P

PCR: Program Clock Reference. A sampled 27MHz video clock used in MPEG2 Transport Streams. The primary purpose of the PCR is timing synchronization between transmitter and receiver.

PDH Plesiochronous Digital Hierarchy, a way to multiplex several telephony trunks into one bit stream

PDH transport A service that allows transparent PDH connections across a DTM network.

PDH tunnel The logical connection set up over DTM to allow PDH transport.

PSI/SI: Program Specific Information / Service Information. This is information tables (meta-data) that is carried in MPEG2 transport streams in addition to video and audio. The information carried is typically service/program IDs, program names, conditional access information etc.

Q

QAM: Quadrature Amplitude Modulation. A digital modulation type that is used for transmission of digital TV signals over cable TV networks. Often referred to as DVB-C.

QoS: Quality of Service. A common term for a set of parameters describing the quality you get from an IP network: Throughput, availability, delay, jitter and packet loss.

QPSK: Quadrature Phase-Shift Keying. The digital modulation type typically used for transmission of digital TV signals over satellite. Often referred to as DVB-S.

R

Resedit: Resources (of the node) editor.

RIP2: Routing Information Protocol v2. A protocol used between network routers to exchange routing tables and information.

RSVP: ReSerVation Protocol. A Quality-of-service oriented protocol used by network elements to reserve capacity in an IP network before a transmission takes place.

RTP: Real-time Transfer Protocol. A protocol designed for transmission of real-time data like video and audio over IP networks. RTP is used for most video over IP transmissions.

S

SD-SDI: Serial Digital Interface. Also known as ANSI/SMPTE 259M-1997 or ITU-R BT.656. A specification describing how to digitize and transmit uncompressed video signals. The typical bit rate of an SDI signal is 270Mbps.

SDI: Serial Digital Interface. Used to describe both HD-SDI and SD-SDI input and output port.

SDP: Session Description Protocol. A protocol to signal multicasts in a network. SDP is used as a mechanism to describe an ongoing multicast; for example the type of compression used, IP addresses etc.

SDTI: Serial Data Transport Interface. A mechanism that allows transmission of various types of data over an SDI signal. This may be one or more compressed video signals or other proprietary data types. The advantage of SDTI is that existing SDI transmission infrastructure can be used to transport other types of data.

SDTV: Standard Definition Television. The normal television standard/resolution in use today.

Services: A service is the transport that the network is providing. This could be for example SDI, ASI, PDH, SDH, or Ethernet data.

Service interface: The physical interface connecting external equipment to the data ingress and egress points, e.g. an ASI, PDH or Ethernet interface.

SFP: Small Form-factor Pluggable module. A standardized mechanism to allow usages of various optical interfaces for Gigabit Ethernet. Several types of SFP modules exist: Single mode fiber modules for long-distance transmission and multi mode fiber modules for shorter distances. SFP is also known as "mini-GBIC".

SIP: Session Initiation Protocol. A common acronym for the ongoing effort to standardize signaling over IP networks, i.e. connection setup and tear-down. SIP makes it possible to "dial" a remote receiver of data and set up the connection in this way.

SNDU: Sub Network Data Unit. Protocol Data Units (PDUs), such as Ethernet Frames, IP datagrams, or other network-layer packets, used for transmission over an MPEG-2 Transport Multiplex are passed to an Encapsulator. This formats each PDU into a SNDU by adding an encapsulation header and an integrity check trailer. The SNDU is fragmented into a series of one or more MPEG-2 Transport Stream (TS) Packets that are sent over a single TS Logical Channel.

SNMP: Simple Network Management Protocol. A fundamental, simple protocol for management of network elements. Very common in use today by most Network Management Systems and other applications.

SNTP: Simple Network Time Protocol is an Internet protocol used to synchronize the clocks of computers to a timing reference. It is a simplified version of the protocol NTP protocol which is too complicated for many systems.

SPTS: Single Program Transport Streams. A Transport Stream that contains a single program/ service.

SLIP Serial Line IP is a framing protocol for transferring IP packets on serial (point-to-point) links.

Slot: A slot is the smallest unit of data that can be used for a channel. A slot contains 64 bits of data, making the channel bandwidth granular in steps of 512 kbps.

SMIv2 Short for SNMPv2 SMI; SMI stands for Structure of Management Information and is an extension for SNMPv2. SNMP specifies a set of rules for naming and defining objects and SMI sets some additional rules for these rules.

SNMP manager A workstation or similar node, acting as the client in an SNMP based management system. Correct term is SNMP entity acting as notification receiver and command generator.

Statistics: Collected data of channel or link performance.

T

TCP: Transmission Control Protocol. A protocol above the IP layer that provides automatic retransmission of datagrams in case of packet loss, making it very robust and tolerant against network errors. TCP is the fundamental protocol used in the Internet for WEB traffic (HTTP protocol). TCP is indented for point-to-point protocol; you cannot use TCP for communication from one node to many others.

TCP/IP: A common term used for the Internet protocol suite, i.e. the set of protocols needed to get fundamental IP network access: TCP, IP, UDP, ARP etc.

ToS: Type of Service. This is a field in the header of IP datagrams to provide various service types. It has now been "taken over" and reused by DiffServ.

Transport Streams: The common name for MPEG2 Transport Streams. A bit stream used to carry packets with MPEG-2 compressed video. A transport stream typically carries approximately 10 compressed TV channels, but can consist of an arbitrary number of TV and Radio services.

Trunk interface: The physical interface connecting the trunks between the DTM network elements. This is the high-speed interface where the DTM bypass link connections are set-up.

TTP: Trail Termination Point is a logical entity that constitutes an end-point of a connection. The TTP also connects to the service interface, which completes the end-to-end transport.

U

UDP: User Datagram Protocol. A protocol above the IP layer that provides port multiplexing; In essence, you can transmit IP data packets to several receiving processes in the same unit/device.

Unicast: Point-to-point connection, i.e. the "opposite" of multicast which is one too many (or many to many). In this mode, a transmit unit sends video data direct to a unique destination address.

Unmanaged: A managed object is considered unmanaged if the web browser doesn't monitor its status.

V

VLAN: Virtual LAN, a network of units that behave as if they are connected to the same wire even though they may actually be physically located on different segments of a LAN.

W

Watermarking: A mechanism to "stamp" video content with unique marks, making it possible to trace the origins of illegally distributed content. The marks are invisible for the viewer.

X

XML: eXtensible Markup Language. A very common self-describing text-based data format, used for many purposes: Meta-data, configuration files, documents, etc. The readability of the format has made it very popular and is now the fundament for many types of WEB services.

Abbreviations

Abbreviation	Explanation
AC	Alternating Current
AES/EBU	Audio Engineering Society/European Broadcasting Union
ASI	Asynchronous Serial Interface
ATM	Asynchronous Transfer Mode
AU	Administrative Unit
AUX	Auxiliary
BBE	Background Block Error
CLI	Command Line Interface
CWDM	Coarse Wavelength Division Multiplexing
DC	Direct Current
DCP	DTM Channel Protocol
DRP	DTM Routing Protocol
DTM	Dynamic synchronous Transfer Mode
DWDM	Dense Wavelength Division Multiplexing
ESD	ElectroStatic Discharge
EEC	European Economic Community
EMC	ElectroMagnetic Compatibility
ES	European Standard
ES	Errored Second
ETS	Ethernet Transport Service

ETSI	European Telecommunications Standards Institute
EXT	EXTension module
FCC	Federal Communications Commission
FTP	File Transfer Protocol
Gbps	Gigabit per second
GNU	GNU's Not Unix
GPL	GNU General Public License
GUI	Graphical User Interface
HD/SD-SDI	High Definition/Standard Definition – Serial Data Interface, a video standard
kbps	kilobit per second
IF	Interface
IP	Internet Protocol
IPMC	Intelligent Platform Management Controller
ITS	Isochronous Transport Service
LR	Long Range 1 (ITU-T)
LED	Light Emitting Diode
LOS	Loss Of Signal
MIB	Management Information Base
MSA	Multi-Source Agreement
Mbps	Megabit per second
NC	Node Control module
NG-SDH	Next Generation SDH
NTP	Network Time Protocol

OC	Optical Channel
OSPF	Open Shortest Path First
PDH	Plesiochronous Digital Hierarchy
PM	Performance Monitoring
PMM	Performance Manager monitoring
PNNI	Private Network-to-Network Interface
POS	Packet Over SONET/Packet Over SDH
PCU	Power Conditioning Unit
PSU	Power Supply Unit
QoS	Quality of Service
RAL	Restricted Area Location
RDI	Remote Defect Indication
RPM	Revolutions Per Minute
Rx	Receive
S	Space
SES	Severely Errored Second
SFP	Small Form factor Pluggable
SDH	Synchronous Digital Hierarchy
SLA	Service Level Agreement
SNMP	Simple Network Management Protocol
SONET	Synchronous Optical NETwork
SPE	Synchronous Payload Envelope
STM-N	Synchronous Transport Module at level N, N=0, 1, 4, 16, 64, …
STS	Synchronous Transport Signal

SW	Software
T	Time
TCP	Transmission Control Protocol
TP	Twisted Pair
TS	Transport Stream
TSF	Trail Signal Fail
TST	Time-Space-Time
TTP	Trail Termination Point
Tx	Transmit
UL	Underwriters Laboratories
USB	Universal Serial Bus
VC	Virtual Container
VDC	Voltage, Direct Current
Vpp	Voltage, peak-peak
VT100	Video Terminal 100
WDM	Wavelength Division Multiplexing
XFP	10 Gigabit/s Small Form factor Pluggable