
DDS Analyzer

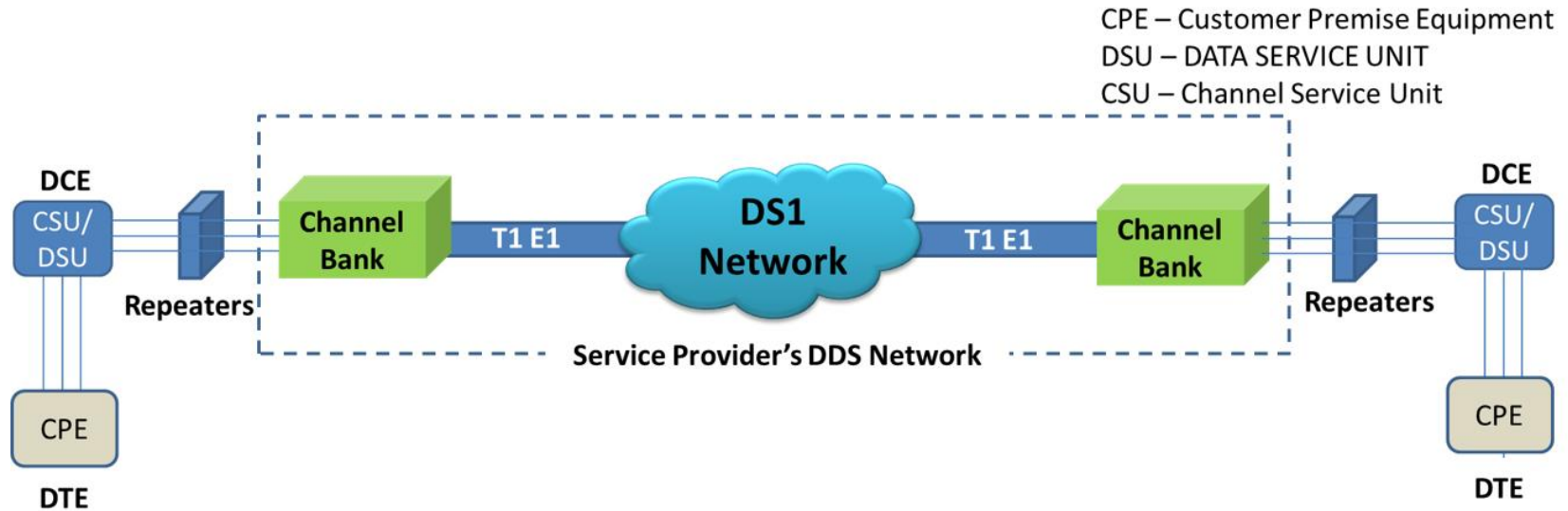


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Overview

- DDS Networks and Testing Techniques
- DDS Protocol Analysis
- T1 Analyzer Hardware and Accessories
- Software Operation

DDS Networks



DDS Data Format

- Digital data rates are serviced at : 2.4kbps, 4.8kbps, 9.6kbps, 19.2kbps, 38.4kbps, 56kbps, 64kbps, N x 56kbps or N x 64kbps
- Rate multipliers above 56 kbps/ 64 kbps require a T1 circuit to the subscriber

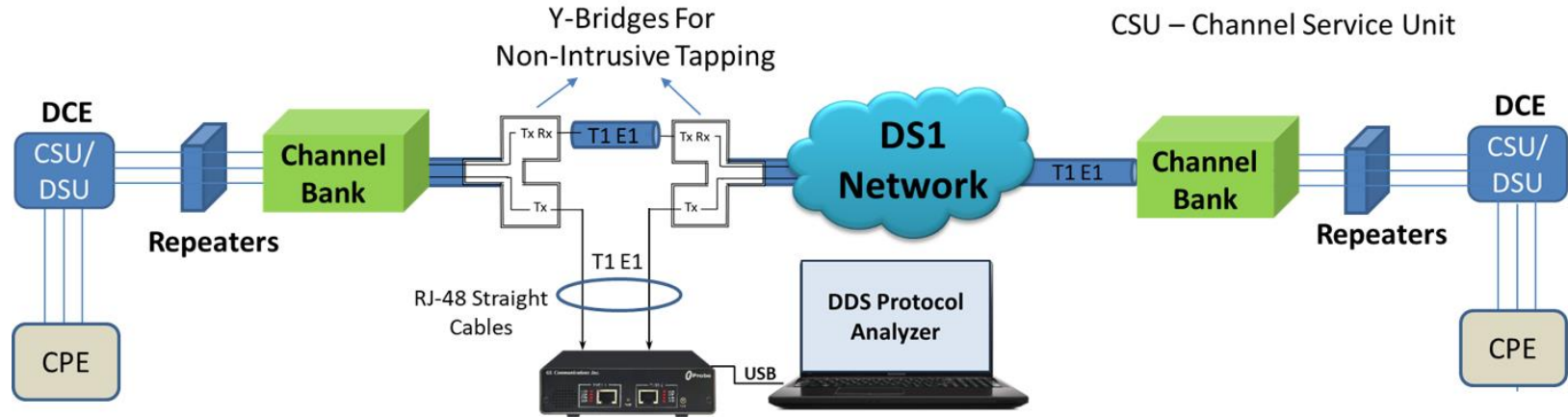
DDS Testing Techniques

Normal testing methods used to verify DDS circuits are –

- BERT Testing at DS0 level with standard set of pseudorandom and fixed patterns
- Circuit sync at subscribed rate (4.8kbps, 9.6kbps, 19.2kbps, 64kbps, etc)
- Loopback or End-to-End tests to isolate faulty DDS circuits
- Non-Intrusive monitoring and analysis of frames at certain points within the network infrastructure or at customer premises

DDS Protocol Analyzer

CPE – Customer Premise Equipment
DSU – DATA SERVICE UNIT
CSU – Channel Service Unit



T1 Analyzer Hardware



Front Panel

Back Panel

**tProbe™ - Portable USB based T1 E1 VF
FXO FXS and Serial Datacom Analyzer**



Quad / Octal T1 E1 PCIe Card



Dual T1 E1 Express (PCIe) Board

**tScan16™ with
16-port T1 E1 Breakout Box**



PCIe Board

Hardware and Accessories



- Y-Bridge

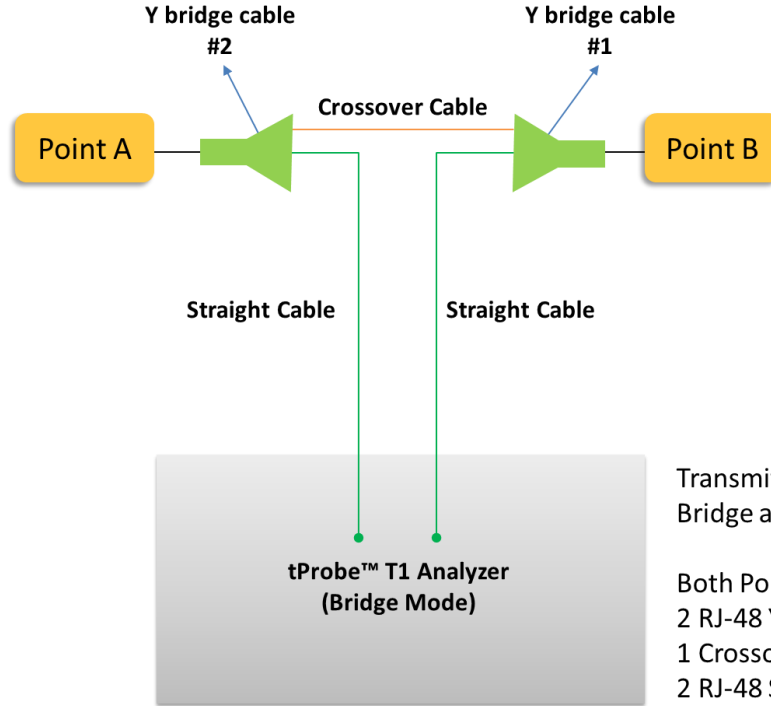


- RJ-48 Crossover Cable



- RJ-48 Straight Cable

Operations



Transmitter is Disabled in
Bridge and Monitor Modes

Both Ports are in Bridge Mode (Must not be in Terminate Mode)
2 RJ-48 Y-Bridges (SA007e) are required
1 Crossover Cable (SA007h) is required
2 RJ-48 Straight Cable (SA007g) is required

- GL's T1 Analyzer Hardware non-intrusively taps the T1 line using Y-bridges to capture all frames

Operations

T1 tProbe Analyzer 32-bit (Administrator)

File Config View Monitor IntrusiveTest **Special Applications** Window Help

Port	Framing	Loopback	Termination	Clock	8B2S	Cross-port
1	ESF (193E)	No Loopback	Terminate	Internal	On	Normal
2	ESF (193E)	No Loopback	Terminate	Internal	On	Normal

Set all cards as selected
< Double-click to change values

T1/E1 Alarms

Reset	All Ports	#1	#2
Sync Loss	✓	✓	✓
Bipolar Violation	✓	✓	✓
Carrier Loss	✓	✓	✓
Frame Error	✓	✓	✓
Blue Alarm	✓	✓	✓
Yellow Alarm	✓	✓	✓
AIS	✓	✓	✓

T1/E1 Statistics

	1544000	1544000
Frequency (Hz)	0.029	-0.029
Level (dBdsx)	0	0
BPV Errors	0	0
CRC Errors	0	0
Frame Errors	0	0
Transmit Under Run	0	0
Receive Over Run	0	0
==Bit/Frame Clock Slip==		

Ready

Card 1

VF (Audio)
Tx (VF In)
Gain(dB)
0.0 dB

TS
0

Insert

Speaker

Rx (VF Out)
Gain(dB)
0.0 dB

TS
0

Drop
Speaker

T1/E1 Sync Info

Special Applications

Protocol Analysis

DDS Analysis

Windows Client Server (WCS)

Record to File

Dial Digits

Call Capture & Analysis

Physical Layer Testing

Echo Test Solutions

MCBERT, HDLC, TRAU

Facility Data Link

AudioBridge, StripChart

Voice Quality Assessment

Card and Stream Selection

Select Data Rate as 64 Kbps

Select Port and Channel on which the DDS frames are expected

Enable Octet Bit Reversion

PORT ACTIONS

P...	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
✓ ✗ 📄 📌 1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
✓ ✗ 📄 📌 2																								

Data Transmission Rate

Single Channel

☒ 64 kbps

56 kbps

Hyper-Channel

☐ Nx64 kbps

☐ Nx56 Kbps (bits 1-7)

☐ Nx56 Kbps (Bits 2-8)

Multiple Hyper-Channels

☐ 128, 192, ... kbps

Subchannels 8-56 kbps

DSO bits

8 16 24 32 40 48 56

1 2 3 4 5 6 7 8

All

None

All Port Settings

HOLC FCS

☒ 16 bits

☐ 32 bits

☐ None

Interface

☒ User

☐ Network

☐ Bit Inversion 1<->0

☒ Octet Bit Reversion (MSB <-> LSB)

Row (Port) Select, Clear, Paste Operations

Paste operations apply to the clipboard contents created by clicking on a row "C" (copy) button for the port which timeslot selection is served as the source for paste.

Select All

Clear All

Paste All

Paste Clipboard to Port List

Paste List

Different Views

The screenshot displays the DDS Protocol Analysis software interface. The top section shows a table of captured frames. The middle section shows the detailed ASCII decode of a selected frame. The bottom section shows the hex dump of the frame data.

Dev	TSlot	SubCh	Frame#	TIME (Relative)	Len	Error
✓ 1	2		42	00:41:50.246500	411	
✓ 1	3		43	00:42:20.699000	411	
✓ 1	0		44	00:42:41.681875	411	
✓ 1	2		45	00:45:10.427625	411	
✓ 1	6		46	00:45:26.277000	411	
✓ 1	2		47	00:46:03.320625	411	
✓ 1	4		48	00:47:26.436875	411	

Card1 TimeSlot=2 Frame=42 at 00:41:50.246500 OK Len=411
HDLC Frame Data + FCS

```
===== DDS Layer =====  
DDS = 202  
DDS = A4- 36 ESN=029 2  
DDS = (903) 203-4861 17:25 07/28/2017  
DDS = 101  
DDS = GUM SPRINGS RD - SE SECTOR  
DDS = (903) 511-9812 WRLS  
DDS = LONGVIEW TX  
DDS =  
DDS = WIRELESS-ATT MOBILITY  
DDS = ALT# = TELCO=ATTMO  
DDS = X=-94.7156023 CNF=000  
DDS = Y=32.49131441 UNC=0  
DDS =  
DDS = VERIFY  
DDS = VERIFY
```

Hex Dump of the Frame Data

Hex	ASCII
32 30 32 0D 41 34 2D 20 20 33 36 20 20 20 20 20	202 A4- 36
45 53 4E 3D 30 32 39 20 20 20 20 20 20 20 20	ESN=029
20 32 20 0D 28 39 30 33 29 20 32 30 33 2D 34 38	2 (903) 203-48
36 31 20 31 37 3A 32 35 20 30 37 2F 32 38 2F 32	61 17:25 07/28/2
30 31 37 0D 20 20 20 20 20 31 30 31 20 20 20 20	017 101
20 20 20 20 0D 47 55 4D 20 53 50 52 49 4E 47 53	GUM SPRINGS
20 52 44 20 2D 20 53 45 20 53 45 43 54 4F 52 20	RD - SE SECTOR

- **Summary View**

All captured DDS frames are displayed here

Right-click on decoded layer to copy content to clipboard

- **Detail View**

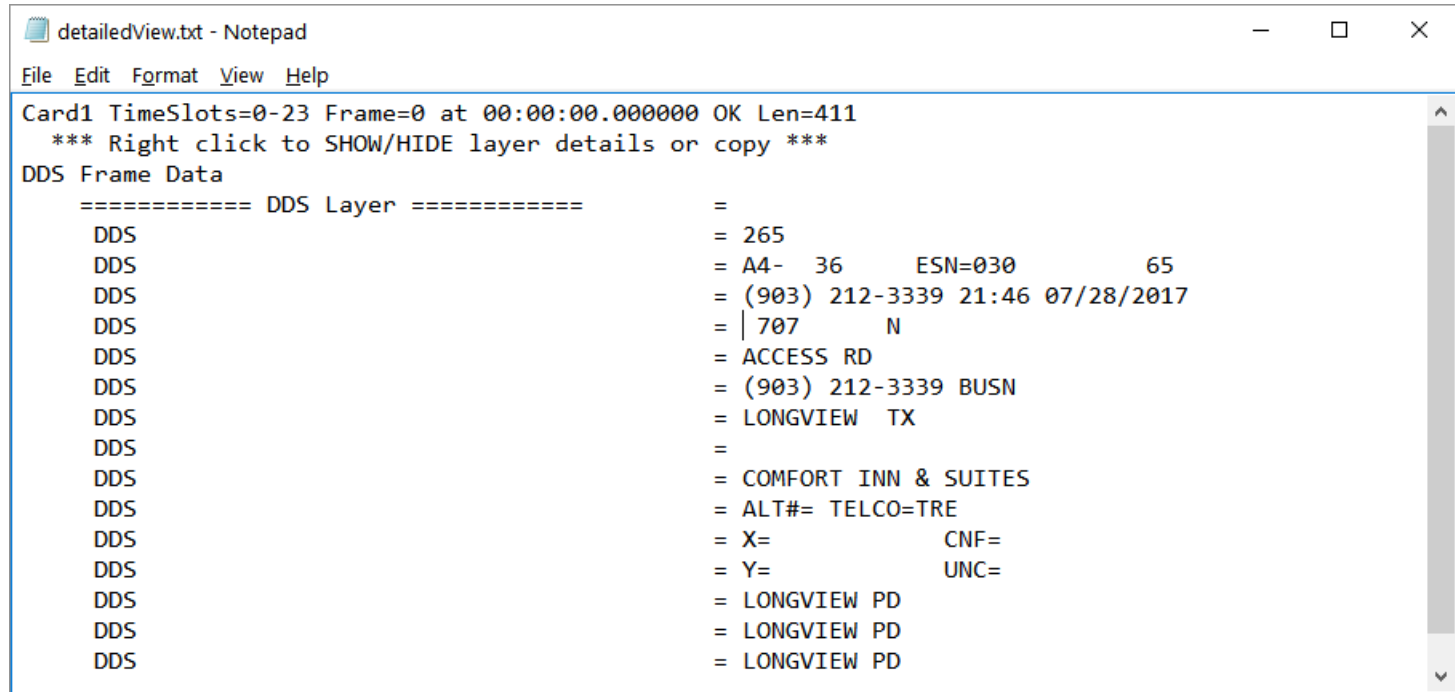
Displays the ASCII decode of selected DDS frame

- **Hex Dump View**

Displays Hex Dump Data

Detail View

- Right-click on **Detail View** and copy layer contents to a notepad for further diagnosis and troubleshooting



```
detailedView.txt - Notepad
File Edit Format View Help
Card1 TimeSlots=0-23 Frame=0 at 00:00:00.000000 OK Len=411
*** Right click to SHOW/HIDE layer details or copy ***
DDS Frame Data
===== DDS Layer =====
DDS =
DDS = 265
DDS = A4- 36 ESN=030 65
DDS = (903) 212-3339 21:46 07/28/2017
DDS = 707 N
DDS = ACCESS RD
DDS = (903) 212-3339 BUSN
DDS = LONGVIEW TX
DDS =
DDS = COMFORT INN & SUITES
DDS = ALT#= TELCO=TRE
DDS = X= CNF=
DDS = Y= UNC=
DDS = LONGVIEW PD
DDS = LONGVIEW PD
DDS = LONGVIEW PD
```

Thank you