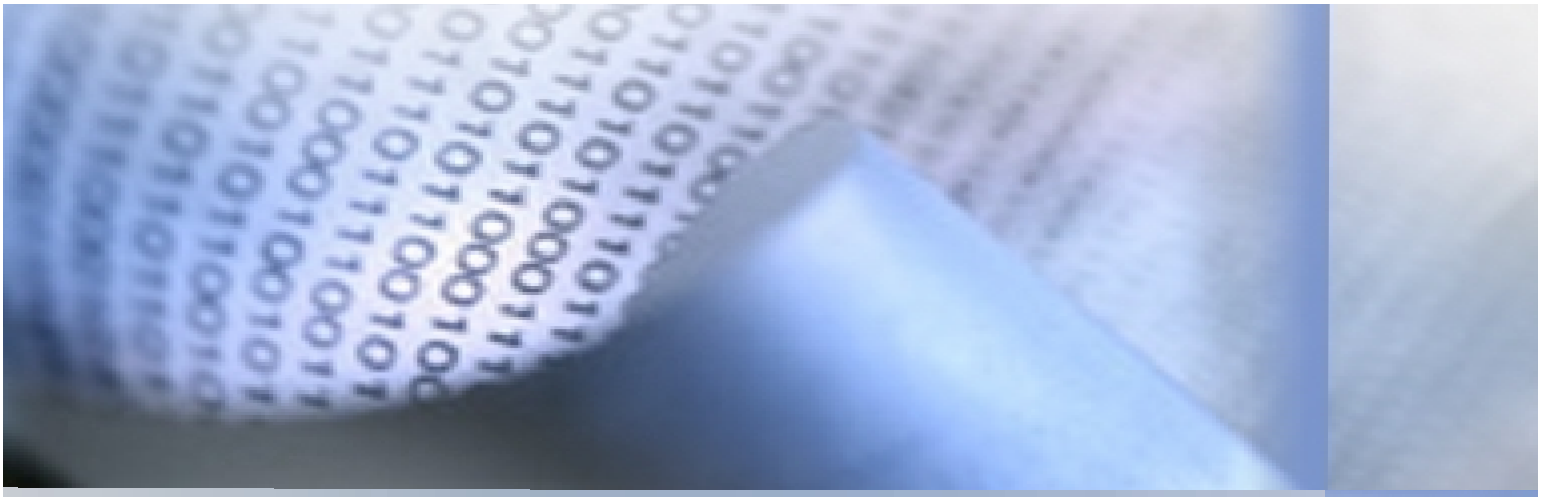
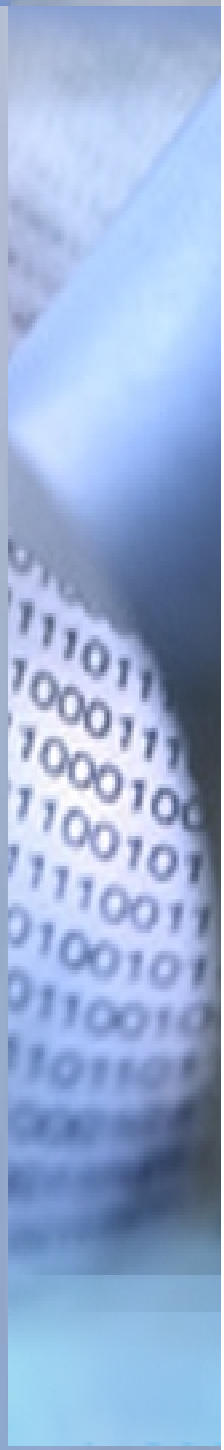


# SunSet E20 Application Series:

## DASS2 and DPNSS Testing



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# 1. DASS2

## 1.1 Overview

Digital Access Signalling System 2 (DASS2) is a common channel signalling system intended for use between the customer's equipment (PBX) and an ISDN local exchange. DASS2 is specified in BTNR 190 (British Telecom). A 2.048 Mbit/s line connects the PBXs to the ISDN exchange. This 2.048M, 32 timeslot signal is divided as follows:

- 30 x 64 kbit/s Circuit Switched Traffic Channels (Timeslots 1_15 and 17_31)
- 1 x 64 kbit/s Frame Alignment Signal (Timeslot 0)
- 1 x 64 kbit/s Signalling Channel (Timeslot 16)

The common channel signalling (Link Access Protocol) is always carried on timeslot 16; no other timeslots are used for DASS2 signalling. DASS2 is based on the first three layers of the ISO reference model. Layer 1, Physical Layer, involves the activating/deactivating of the physical connection. Layer 2, Link Access Protocol, provides secure, error_free transmission of the Layer 3 messages. Layer 3, Call Handling Layer, contains the call control messages conveyed within a HLDC (High Level Data Link) standard frame.

## 1.2 Layer 2

Layer 2, Data Link Layer, provides a transport mechanism for the Layer 3 messages. Link Access Protocol (LAP) operates in parallel with each other over the signalling channel (timeslot 16). LAP control is effected using one of the two frame formats shown in Figure 1.

In brief, the LAP fields shown above are defined as:

Address Field
- Transmitted first
- 2 octets long
- Identifies the traffic channel (carried on timeslot 0) associated with its signaling frame.

Control Field
- Transmitted second
- 1 octet long
- Contains a frame type code and sometimes, a sequence number.

Information Field
- Not always present in the LAP frame
- Contains an information block, from 0 – 45 octets long
- Transfers information transparently across the link.

Frame Check Sequence
- Transmitted last
- 2 octets long
- Conveys the Cyclic Redundancy Code corresponding to the Address, Control, and possibly Information fields.
- FCS is calculated according to the method defined in BTNR Vol. 190 5.5.

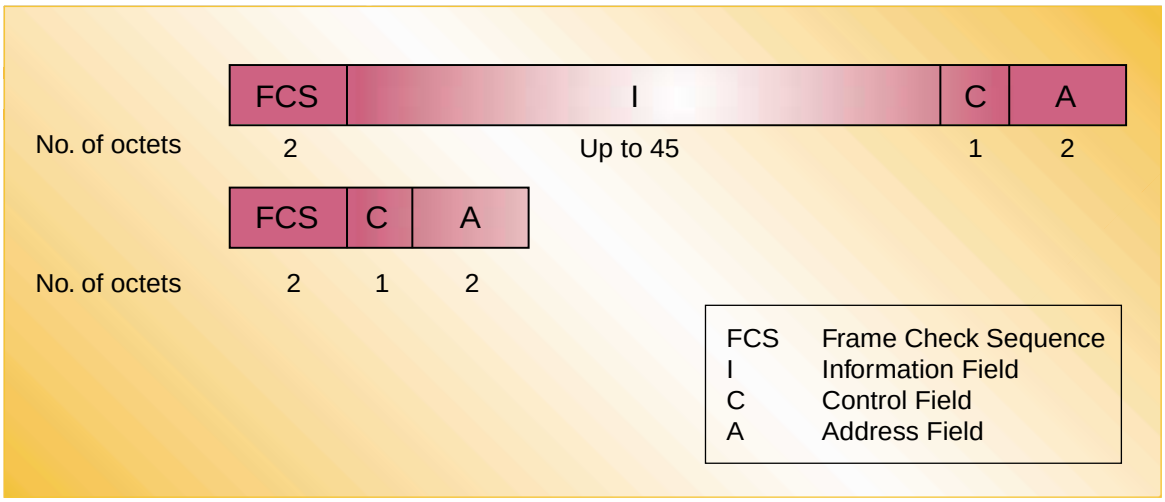


*Figure 1 LAP Frames*

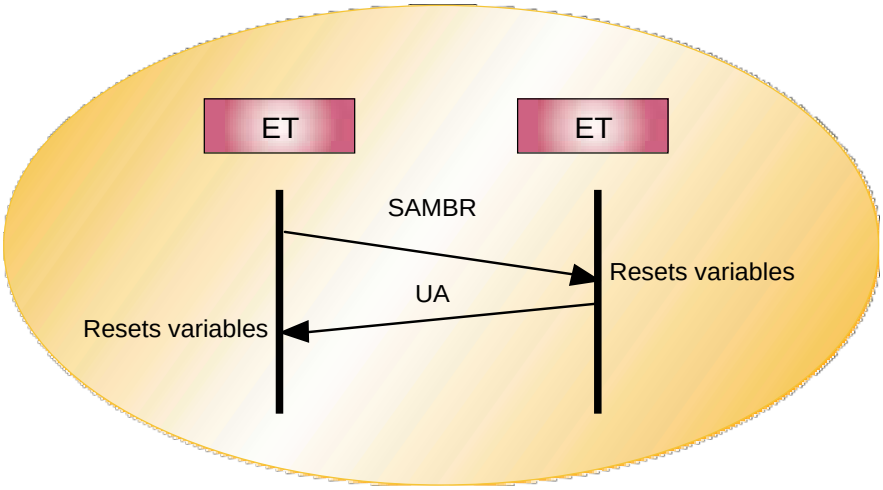


*Figure 2 SAMBR Frames*

### 1.3 DASS2 Frame Types

There are three frame types: Unnumbered Information (UI), Set Asynchronous Balanced Mode Restricted (SABMR), and Unnumbered Acknowledgement (UA). A frame may be transmitted as either a command or response frame, as indicated by the Command/Response bit within the Address Field. Command frames are used to carry information and control the link. Response frames acknowledge the receipt of a command frame. UI may be either a command (UIC) or a response (UIR). SABMR is only a command, while UA is only a response. UIC control field carries a Send Sequence Number, which identifies this UIC in a sequence of UIC frames. The UIC frame conforms to the top framing format of Figure 1 (FCS, I, C, A). It contains an Information Field (up to 45 octets long) that may carry higher level signalling information. The UIR conveys an acknowledgement that a particular UIC frame has been received correctly. The control field contains a Receive Sequence Number, which corresponds to the Send Sequence Number of the acknowledged UIC. The UIR frame conforms to the bottom-framing format of Figure 1 (FCS, C, A). It is lacking the Information Field. A SABMR message may only be sent as a command frame. Upon receiving a SABMR message, the remote ET/PBX resets its variables (a variable is an operational value against which the sequence number or received U frames are checked to determine the appropriate action) and sends a UA as response. Upon receiving the UA response, the initial PBX/ET resets its variables as well. Figure 2 provides an illustration.

## 2. DPNSS Technology

Digital Private Network Signalling System (DPNSS) was de0rived from DASS to provide signalling between two PBXs connected in private digital networks. DPNSS is specified in BTNR 188. As with DASS2, it is based on the first three layers of the ISO reference model. The signalling is carried on timeslot 16. Since DPNSS was derived from DASS, certain level three messages are common to both signalling systems. However, some messages do differ between the two.