No additional (note) U-plane function visible to the users are performed by the network. If needed by the application, additional functions are performed end- to-end by layer(s) above the core functions.

Note : - Some additional auxilary U-plane functions such as reset or explicit congestion control may be defined if needed from the service perspective.

The bearer service provided by the network at the S/T reference point supports the full Recommendation I.441 function. Received frames that satisfy the Recommendation I.441 procedure are passed on to an adjacent node according to a routing plant established at call set up time, or at subscription time.

No additional U-plane functions visible to the users are performed in the network. If needed by the application, additional functions are performed end-to-end by layer(s) above layer 2.

A.2.4 X.25-based additional packet mode

The U-plane configuration can comprise several nodes having layer 1, layer 2, and layer 3 functions as is shown in Figure A-4/I.122. Figure A-4/I.122 shows the network in a generic way and illustrates all functions up to and including layer 3. Other configurations with nodes making use only of the core aspects of Recommendation I.441 as defined in section 3.1 are possible.

Note 2 - The core functions of Recommendation I.441 are described in section 3.1.

Note 3 - The U-Plane functions provided by the network at the S/T reference point are determined by the network after negotiation with the user, based on the requested bearer service and associated parameters. These functions are user selectable for each call. A network may choose not to implement the full set of options. These functions may not be available one by one. So far only three groupings have been identified: a) the null set, b) the upper part of I.441, and c) the upper part of I.441 and the data transfer part of X.25 PLP.

If not already prescribed by the selected packet mode bearer service, the user may also implement functions such as, for example, recovery from detected transmission, format, and operational errors above the core functions using the full procedures of Recommendation 1.441. Additional functions such as flow control may also be implemented. For example, X.25 data transfer functions may also be implemented above the preceding stack.

Note 1 - I.441* (upper) is one protocol. Other standard or proprietary protocols may also be used. Additional requirements may be placed on terminals depending on the congestion control and throughput enforcement used.

FIGURE A-1/I.122

Frame relaying 1 service

U-Plane

No additional (note) U-plane functions visible to the users are performed by the network. If needed by the application, additional functions are performed end-to-end by layers(s) above the core functions.

Note - Some additional auxiliary U-plane functions such as reset or explicit congestion control may be defined if needed from the service perspective.

A.2.2 Frame relaying 2

The U-plane configuration for this service is shown in Figure A-2/I.122 below:

The terminals operate end-to-end with the complete I.441* protocol.
In all other cases, the frame is relayed to one of the adjacent nodes according to the routing plan established at call setup time, or at subscription time (if the network is providing a permanent virtual circuit service).

Residual Error Rate

Residual Error Rate is defined for both the additional packet-mode bearer services and the corresponding layer services.

The layer services corresponding to the additional packet-mode bearer services are characterized by the exchange of Service Data Units (SDUs). For Frame Relaying 1 SDUs are exchanged at the functional boundary between the core functions of I.441* and the end-to-end protocol implemented above them. For France Relaying 2 and Frame Switching, SDUs are exchanged at the functional boundary between the complete I.441* and the end-to-end functions implemented above I.441*. For X.25 based Additional Packet Mode Service, SDUs are exchanged at the functional boundary of X.25 PLP (DTP) and the end-to-end functions implemented above.

The network participates in this exchange by means of Protocol Data Units (PDUs). In Frame Relaying 1 and 2 PDUs are frames as defined in the core functions of I.441*, in Frame Switching PDUs are frames as defined in I.441*, while in X.25 based APMS they are packets as defined in X.25 PLP.

The Residual Error Rate for the corresponding layer service of APMS is defined as:

$$R = 1 - \frac{\text{Total correct SDUs delivered}}{\text{total offered SDUs}}$$

The Residual Error Rate for the APMSs is defined as the ratio:

$$R = 1 - \frac{\text{Total correct PDUs delivered}}{\text{total offered PDUs}}$$

The U-plane capabilities are the same as in X.25 PLP Data Transfer Part (DTP).

In the C-plane all signalling capabilities for call control, parameter nogotiation, etc., are based on a common set of protocols (e.g. 1.451 extended) as for all ISDN telecommunication services. In the case of permanent virtual circuits (PVC) no real time call establishment is necessary and any parameters are agreed upon at subscription time.

3.User-network interface protocol reference model

Figure 1/I.122 is a direct application of the ISDN protocol reference

Note 1 - The U-Plane functions applicable to each bearer service are given in Table 1/I.122.