X.25

NETWORK NODE DCE/RC NET ACCESS

DCE SW 3810/1

RC NET

General

The DCE module functions as an X.25 access to RCNET. The protocol implemented is the CCITT X.25 level 3 (ref. 1).
A number of HDLC connections are supported by the DCE module, and the module can be part of a RCNET configuration with several nodes or it can act as a single X.25 switch. An arbitrary number of logical channels can be multiplexed on each HDLC line.

Functional description

When the DCE module starts-up, all the logical channels are free, i.e. they are not connected to any particular RCNET-Host or HDLC line. A channel will dynamically be connected to a Host and a HDLC line when a virtual call is established.

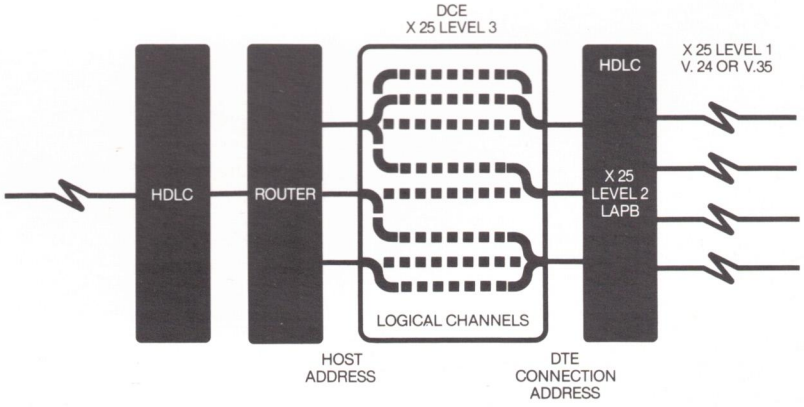
When a "Call Request" is received from a DTE a free channel is allocated and the receiver host-id corresponding to the called DTE-address in the "Call Request" will be calculated.
Then the channel will be connected to the HDLC line and the receiver host in question and the "Call Request" will be transmitted to the receiver Host. In case no channels are free a "Clear Indication" will be transmitted to the calling DTE.

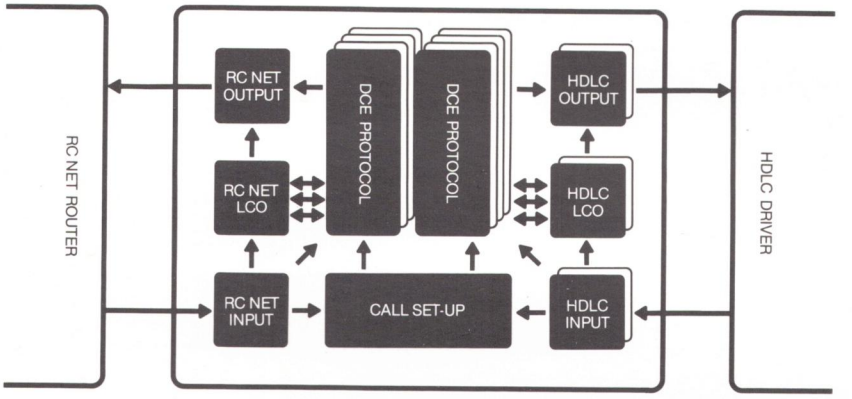
In the same way a "Call Indication" received from another Host will cause the DCE module to search for a free channel. If it is found the HDLC line to be used will be calculated from the called DTE-address received in the "Call Indication". Then the channel will be connected to the sender Host and the HDLC line in question and a "Call Indication" will be transmitted to the called DTE. In case no free channel is found a "Clear Indication" will be transmitted to the sender Host.

When a "Clear- or a Restart Request" is received on a logical channel the corresponding channel will be set free.

When a reset, clear or restart indication is generated by the DCE module, a cause telling the reason will be transmitted to the DTE together with the reset, clear and restart indication, respectively.

A number of facilities are implemented such as the use of different window sizes at the internal and external interface, automatic DTE-address insertions in case of failures and support of the D-bit.





Internal structure

The configuration shown is supporting four logical channels and two HDLC lines, i.e. there are one pair of DCE-Protocol coroutine incarnations for each logical channel and one HDLC interface coroutine incarnation for each HDLC line.

Dependent upon the packet size used internally in RCNET, transactions to the same receiver host will be blocked together at the Host interface.

The DCE module can also be used as a X.25 switch. In that case no RCNET module is needed.

Environments/program size

Hardware requirements:
RC3803 CPU, 128Kb memory.
RC3684 HDLC controller.

Software requirements:
MUS or DOMUS operating system, Vers. 3.01 or later versions.
Coroutine monitor CM011 or later versions.
HDLC driver HLC09 or later versions.
RCNET-ROUTER (SW3250) if several nodes are required.
Program size (window size = 2, packet size = 128b):
DCE supporting 1 VC and 1 HDLC line: 20 Kb
Extra for each VC: 1,2 Kb
Extra for each HDLC link: 1 Kb
Extra for each RCNET-Host: 0,1 Kb

Documentation

1. RCNET-DCE Reference Manual
RCSL: 43-GL11136

General

The DCE module functions as an X.25 access to RCNET. The protocol implemented is the CCITT X.25 level 3 (ref. 1).
A number of HDLC connections are supported by the DCE module, and the module can be part of a RCNET configuration with several nodes or it can act as a single X.25 switch. An arbitrary number of logical channels can be multiplexed on each HDLC line.

Functional description

When the DCE module starts-up, all the logical channels are free, i.e. they are not connected to any particular RCNET-Host or HDLC line. A channel will dynamically be connected to a Host and a HDLC line when a virtual call is established.

When a "Call Request" is received from a DTE a free channel is allocated and the receiver host-id corresponding to the called DTE-address in the "Call Request" will be calculated.
Then the channel will be connected to the HDLC line and the receiver host in question and the "Call Request" will be transmitted to the receiver Host. In case no channels are free a "Clear Indication" will be transmitted to the calling DTE.

In the same way a "Call Indication" received from another Host will cause the DCE module to search for a free channel. If it is found the HDLC line to be used will be calculated from the called DTE-address received in the "Call Indication". Then the channel will be connected to the sender Host and the HDLC line in question and a "Call Indication" will be transmitted to the called DTE. In case no free channel is found a "Clear Indication" will be transmitted to the sender Host.

When a "Clear- or a Restart Request" is received on a logical channel the corresponding channel will be set free.

When a reset, clear or restart indication is generated by the DCE module, a cause telling the reason will be transmitted to the DTE together with the reset, clear and restart indication, respectively.

A number of facilities are implemented such as the use of different window sizes at the internal and external interface, automatic DTE-address insertions in case of failures and support of the D-bit.