Title:

RC850 Terminal System Using an
X.21 Public Data Network

RCSL 42-i1592

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Abstract:

This manual is a short describtion of the main characteristics
of the RC850 Terminal system via Nordic Public Data Network,
NPDN.

(12 printed pages)

RCSL 42-11592

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The Nordic Public Data Network (NPDN) is an X.21 based circuit
switched network dedicated to data communication. It offers a
very fast connection establishment, less than 100 ms in 90% of
the calls. This creates possibilities to utilize the NPDN as an
alternative means of communications for applications, where the
telephone network (switched as well as leased lines) has been
used previously.

The NPDN also provides characteristics and facilities which in
many cases makes it superior to the leased telephone lines.

The IBM 3271 BSC protocol is build on a polling/selecting stra-
tegi. (This strategy requires that the communication line is
established every time a poll is issued). An economical utili-
zation of the NPDN, however, demands that the polling/selecting
scheme is only maintained between the establishment and the dis-
connection phase of the communication link, and that the initia-
tion of a link is performed automatically on the basis of trans-
actions.

This implies that the terminal or control unit itself initiates
the establishment of a communication line through the network,
whenever a terminal user has generated a transaction.

The drawing shows how the system will be connected. The front
end, an RC3803, can be connected to the IBM host either by BSC
lines or directly with IBM channel connection.

The clusters can consist of up to 8 RC855 terminals, and a
cluster is able to communicate with 4 different front ends at the
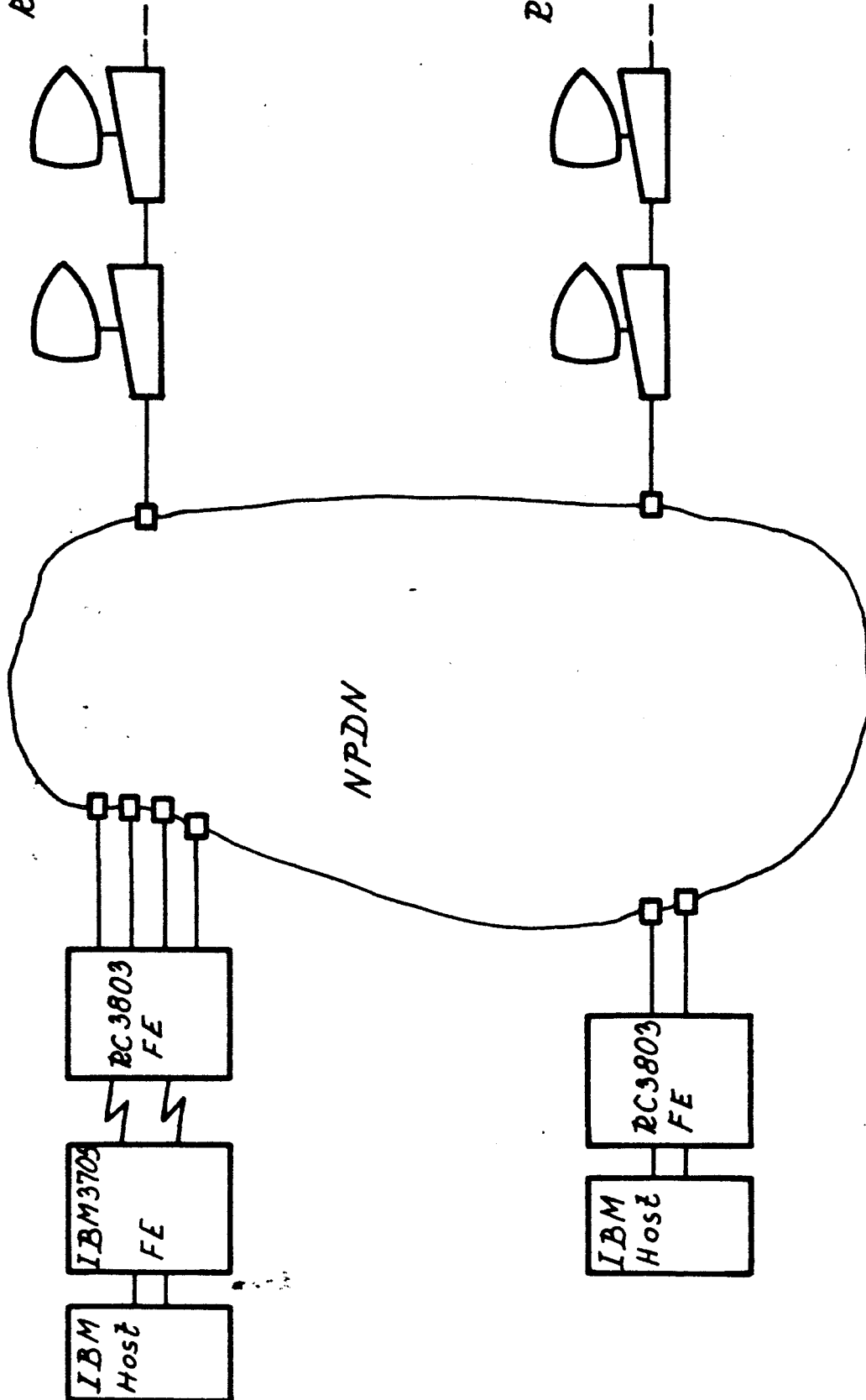same time.

Figure 1: System connection.

2.   CALLING   2.

To meet the requirement of the network, the polling in the front
end is modified, so only those lines that are open are polled.
The terminal, which have no line open to the front end, are
considered unchanged, i.e. they have nothing to transmit. The
polling can never initiate a call.

If a front end wants to transmit to a terminal, it calls up the
terminal (if a line is not already open). When the line is
established it continues with selections and commands.

The terminal initiates a call if it has anything to answer to a
poll, i.e. status or data. When the line is established it waits
for poll.

3.   CLEARING

If the terminal is only communicating with one front end, it is
natural to hold the line for 5 seconds, because current tax po-
licy indicates that the first 5 seconds are included in the price
for a call. However, in certain cases it would be better to hold
the line even longer because it might take more than 5 seconds to
get an answer to a transaction. If the trafic is heavy on the
front end lines (too few lines) the calls should be kept for as
short a time as possible to keep the lines free for connection.

Furthermore, if a cluster is communicating with several front
ends, the performance will be lowered, if the lines are kept up
for 5 seconds without trafic.

To meet these requirements the clearing is controlled the
following way:

Normally only the front end initiates a clearing. When a line is
established a timer in the front end is started. On certain
points in the protocol (after negativ poll) the front end exami-
nes the timer. If it is exausted, the line is cleared.

The timer is not restarted on new trafic while the line is open.

Each installation defines its own timer.

To obtain that at least one front end line is free for connection
the following is defined. When all front end lines are occupied
for calls the front end will clear one line without trafic, even
though the corresponding timer has not exausted.

The advantage by leaving the clearing fase to the front end only,
is that no transmissions will be stopped by a clearing, because
all transmission is initiated by the front end.

However, if the terminal cluster is communicating with more than one front end, it is necessary to clear the line as soon as the transmission is finished, ignoring the timer in the front end. In this case the cluster clears the line proceded by a warning to the front end. The warning consist in sending "DLE EOT" instead of "EOT" in response to a poll sequense.

4. CONFIGURATIONS

A terminal cluster is able to communicate with 4 front ends at the same time.

However, the cluster can call up 100 different front ends using abbreviated address call, as long as the sessions are taken one after the other, and not in parallel within the cluster.

A front end is at the moment able to address 64 different clusters, independed of how many lines it has into the network. Each cluster can consist of up to 8 terminals.

Note that the lines from the front end into the network has the same address seen from the network, and that all clusters can use any line which is free at a certain moment.

RETURN LETTER

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