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Title:

RC855 DATEX IBM 3270 BSC
General Description

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RC8000, RC3600, FORMAT 8000, IBM 3270, NCP, transaction oriented systems, online systems, RC855, X.21.

Abstract:

This manual is an introductory description of the connection of RC855 DATEX IBM 3270 BSC Terminal Systems to the RC8000 computer through an RC8303 frontend computer in preparation for running FORMAT 8000 application programs. Communication is established through the X.21 Public Datanet Service.

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1. INTRODUCTION 1.

This manual is intended to be an introductory description of the connection of RC855 DATEX IBM 3270 BSC Terminal Systems to an RC8000 computer, in preparation for running the FORMAT_8000_ application programs. This means for instance programs using the FORMAT_8000_ ALGOL procedures. The communication is established through the X.21 Public Datanet Service.

The manual is especially addressed to those who later on want to go into further details with the internal software structure of the transport system in the RC8303 front-end computer which connects the RC855 DATEX display- and printer-system to the RC8000 series of computers.

Before reading this manual you will be recommended to maintain a basic knowledge of the NCP (ref. [1]) and the FORMAT_8000 concept (refs. [2] and [3]). Besides, the description of the FORMAT_8000 system as it runs on the RC3500 computer would clarify the understanding of this subject (ref. [4]).

2. PRODUCT HIGHLIGHTS 2.

+ RC855 Support

  The RC855 DATEX IBM 3270 BSC package has especially been designed to support the RC855 DATEX IBM 3270 BSC Terminal System.

+ Multi DCE Environment

  The RC855 DATEX Remote Station may be switched to connect to several RC8303 frontend computers (4) without user reconfiguration.

+ Multi Host Environment

  The RC8303 frontend computer may be FPA-connected to several hosts (8).

+ DATEX Select Operation

  The DATEX-numbers used to establish the connection between the DATEX Remote Stations and the frontend computer (the 'DCE') may be redefined (or extended) by any application linked to the frontend.

+ Format Oriented Printer Support

  The printers are addressable devices, and operate independent of the associated display. Any printer may temporarily be associated to whichever host.

+ MENU Select Operations

  Each application in the host has an associated link number. Such link numbers and some descriptive text constitutes a MENU portion from which the terminal selects a link.
  In the case of reselecting a link the logical device number will be invariant.
  The MENU portion is common for all terminals and may be redefined by any application linked to the frontend computer.
  The MENU portions from one or more frontends constitute the MENU as displayed on the DATEX terminals.

+ FORMAT 8000 Support

  The RC855 DATEX IBM 3270 BSC SYSTEM will fully support the FORMAT 8000 DATA TRANSACTION SYSTEM.

+ Dynamical Addressing Technique

  New devices may be connected without change of software.
  Devices are unambiguously identified by either their physical- or their logical device number.
  The application normally uses the logical device number but may unambiguously identify the physical number as well.

+ Automated Application Switch

  The devices may - by the application program itself - be switched to connect to a new application linked to the frontend computer.
  A message may be transferred from the old application to the new one when performing the application switch.

+ User Written MENU Application

  The MENU operation combined with the Automated Application Switch provides the user with the tools of building a user written MENU application. Such an application may typically supervise the individual terminal's access to the links associated with the frontend computer.

+ Multiplexing, Spooling and Printing Facilities

  The software package MIPS/TS offers facilities for multiplexing and spooling of terminals. Besides, the printing of ISO text-files on the attached format oriented printers are supported.

3. CONFIGURATION IN GENERAL 3.

There are several configuration possibilities for the connection of one or more 3270 Control Unit Remote Stations each comprising a number of displays and printers (a maximum of up to 64 devices for each 3270 Control Unit) to the RC8000 computer through an RC8303 front-end computer.

The relevant max. hardware configuration, the DATEX numbers and the connections to the RC8303 computer is to be precisely defined in the software modules of the front-end computer, however, the configuration seen from the RC8000 computer's point of view is rather a series of devices each represented by a specific unified address. The displays are considered to be both input- as well as output-devices, the printers normally only output-devices.

The addressing of the individual device may be done in a nice way by means of the FORMAT 8000 transaction system. This system in turn is capable of generating the header and trailer information.

The below mentioned section reveal the max. parameters relevant to the entire system:

MAX ACTIVE APPLICATIONS (max links to one or more hosts) ..	8
MAX DEVICES PER LINK (displays as well as printers)	512
MAX LINES ('modem-connections', DCE's)	8
MAX LINE SPEED (bps)	9600
MAX CLUSTERS, TOTAL ('DATEX REMOTE STATIONS')	32
MAX CLUSTERS SUPPORTED PER DCE	8
MAX DEVICES PER CLUSTER (RC855-master)	63
(displays and printers, max. one printer per display)	

4. HARDWARE CONFIGURATION 4.

As mentioned in chapter 2 several configuration possibilities may in turn be relevant. Fig. 1 shows a possible hardware configuration with one Master Unit (remote station) supporting three displays and two printers.

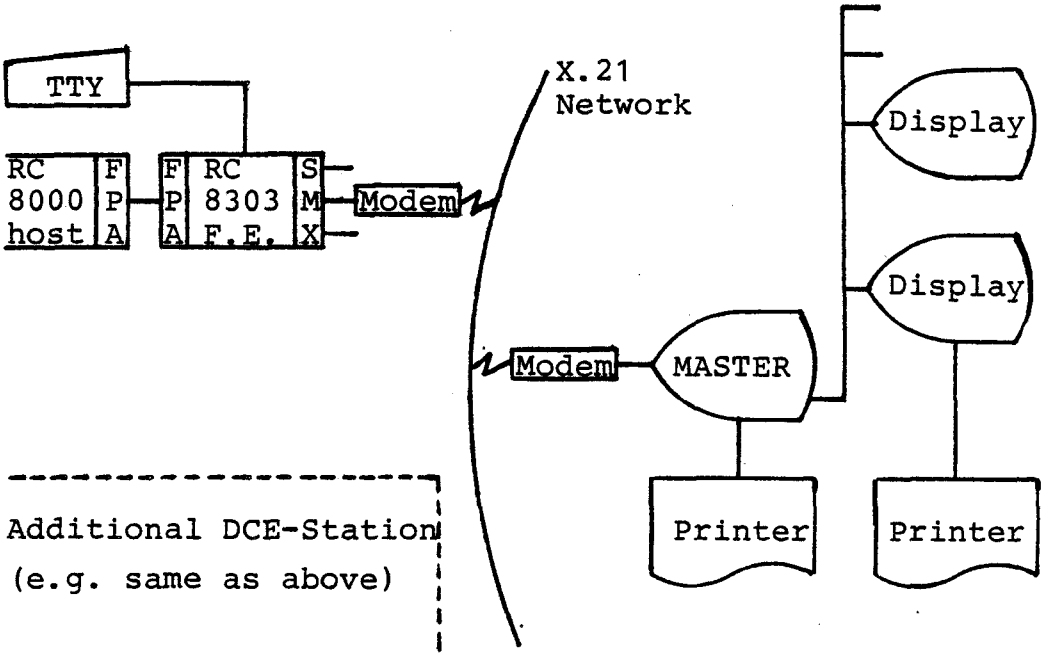

Figure 1: An example of a hardware configuration comprising three displays and two printers.

The maximum number of links to one (or more) RC8000 computers is limited to 8 as is the number of modem-lines ('DCE lines'), but with each modem line capable of handling eight (multidropped) remote stations (the total of the system however limited to 32) each comprising up to 64 devices, the total amount of displays as well as printers to be connected to the RC855 DATEX Terminal System is found to be 2048.

5. SOFTWARE CONFIGURATION 5.

The software modules which form the transport system between the RC8000 computer and the X.21 Network are shown in fig. 2.

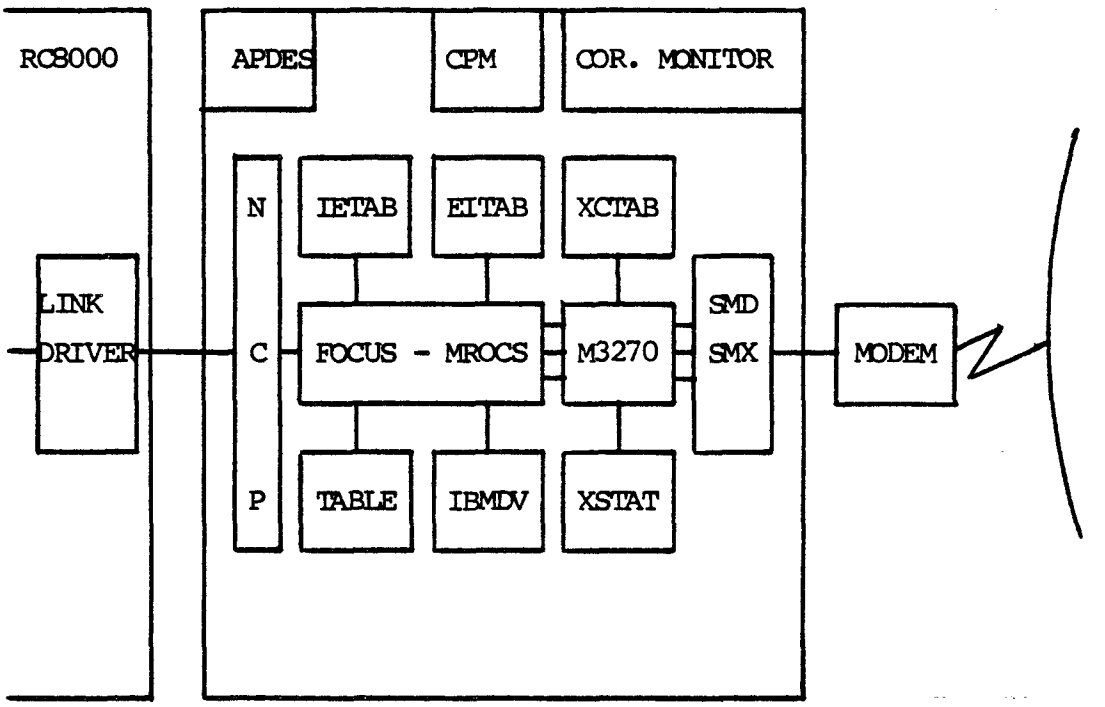

Figure 2: Software configuration of the transport system.

Consult the survey of the software modules in appendix B for further information.

6. SURVEY OF MEMORY REQUIREMENTS 6.

The memory requirements in the RC8303 front-end computer are highly dependent on the number of modem lines (DCE's) to the control- units as well as the number of links to one or more host computers.

As an example, a system with four DCE's, four links and space reserved for supporting 32 remote stations occupies in total 99088 bytes (N: 51646, X: 47442).

Core	LINK	LINE
N	1110	3900
X	1024	1024
Total	2134	4924

Table 1: Showing the number of bytes to be used per link and per line (DCE) respectively. The table is reliable within certain limits according to release 1.0 of the RC855 DATEX IBM 3270 BSC package.

A. REFERENCES A.

[1] RCSL No 43-RI260:
RC-NET
User Defined Driver Programs in RC3600 Device Controller
Reference Manual
Ole Krag Hansen

[2] RCSL No 42-I1278:
ALGOL8, Part 2
User's Guide
Edith Rosenberg

[3] RCSL No 52-AA640:
FORMAT 8000
A Transaction Oriented System
Bo Bagger Laursen

[4] RCSL No 52-AA494:
FORMAT 8000
Display System
Bo Bagger Laursen

[5] RCSL No 31-D693:
IBM3270 Terminal Handler
User's Guide
Bent Johansen

[6] RCSL No 31-D694:
IBM3270 Terminal Handler
System Messages
Bent Johansen

COROUTINE MONITOR — CM011 coroutine monitor or later versions.

APDES — Application program description. The APDES is used to establish the connection between the NCP and the FOCUS module.

CPM — Codeprocedure module. Used by the FOCUS module.

EITAB — Conversion table. EBCDIC to ISO conversion.

FOCUS — The Mini RC3600 Remote Online Communication System (in some matters of contents denoted the MROCS-module). FOCUS interfaces the I/O protocol of the M3270 module to the corresponding protocol of the NCP as well as switching and routing the data from a line to a link and vice versa. Consulting refs. [5] and [6] will further reveal the more subtle details.

IBMDV — Configuration table representing the relevant displacement of the Cluster Units available in the system.

IETAB — Conversion table. ISO to EBCDIC conversion.

M3270 — Master module observing the 3270 protocol, that is: polling and selecting the relevant cluster units in turn and distributing data upstreams as well as downstreams. The module furthermore handles the DATEX environments.

MROCS — C.f. FOCUS.

NCP — Network control program. The NCP comprises a different number of GAC's (General Application Coroutine). Consult ref. [1] for further details.

SMD<xx> Main driver observing the BSC protocol.

SMX<xx> Channel driver for SMD.

TABLE MROCS program description. The TABLE contains some of the constants used by the FOCUS (Default-MENU text, number of links, number of logical 3270 lines, attention key, select key and the default link). The TABLE contains the conversion between the 8000 (link, CU, dev) and the 3270 (logical-line, CU, dev) as well.

XCTAB DATEX program description table. The XCTAB contains the datex-numbers with reference to the system. Normally the XCTAB at start-up will reflect the default situation, e.g. a dummy-table sized to contain 32 datex-numbers.

XSTAT Statistics module superceeded to monitor the X.21 protocol (the DCE's connected to the frontend).

RETURN LETTER

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