IECC Data Preparation

IDPM 1102

Issue 4.1

Date1 November 1999

Service and BRX Reference

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Contents

1 Introduction 1

2 Assumptions And Restrictions 2

3 Overview Of Components 3

4 File Format 4

5 Operation 11

6 Error Messages 13

7 Worked Example of Service Data Files 29

8 Worked Example of BRX Data File 35

9 Service Data CompilerSyntax 36

10 BRX Data Compiler 44

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1 Introduction

This document is the reference manual for the Service and BRX data compilers and contains information concerning the following subjects :-

- operation of the Service and BRX data compilers;
- input file format and syntax description;
- error messages and their interpretation;
- a worked example of the Service and BRX data input files.

Users of Automated Data Preparation (ADP) tools may use this document to check and modify ADP prepared data.

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2 Assumptions And Restrictions

2.1 The Central Parameter File may be referred to within this document by its abbreviation, CPF.

2.2 The reader of this document is assumed to be familiar with the content of the CPF.

2.3 ECS, PCS and IS subsystems exist on the information network only.

2.4 DIS (RDF or SDS) and SSI exist on the signalling network only.

2.5 Service data is not required to be generated for SSIs.

2.6 All DISs (RDFs or SDSs) require Listen to Master data. No other subsystems require this data.

2.7 The minimal IECC configuration contains one SSI and one DIS (RDF or SDS).

2.8 Each subsystem which uses RCM must have either: (a) at least one MVME101 and one MVME123 or MVME162 board; or (b) at least two MVME172 boards.

2.9 An IECC can have an ECS or a PCS, but not both.

2.10 The BRX input file consists of the level 1 and 2 passwords only which are applicable to all subsystems within an IECC.

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3 Overview Of Components

3.1 SERVICE DATA COMPILER

The Service data compiler generates the fixed site dependent object files for the NDS, RCM, SSIC and system wide data areas in three phases :-

- level 2 compilation - reads high level input files to produce the level 1 input files. Validation of the input files is rigorous at this level;
- level 1 compilation - reads lower level input files produced by the level 2 compilation phase to produce even lower level files suitable for C language compilation. Validation of the input files is less rigorous at this level; and
- (optional) C compilation - reads the very low level input files produced by the level 1 compilation phase to produce object files.

The Service data compiler consists of three components:

Service the top level shell executable;
service2 performs the level 2 compilation phase; and
service1 performs the level 1 compilation phase.

3.2 BRX DATA COMPILER

The BRX data compiler generates the fixed site dependent object file for the level 1 and 2 BRX passwords in two phases :-

- reads high level input file and produces C language source file; and
- C compiles source file to generate the object file.

The BRX data compiler consists of one component:

brxp the shell executable.

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4 File Format

4.1 SERVICE DATA COMPILER

Before the Service data compiler can be used, the following files require preparing, either through ADP or manually:

- Central Parameter File;
- Site Specific Overview file;
- Primary Quiet and Enquiry Times Table files;
- Secondary Quiet and Enquiry Times Table files;
- Task Table files;
- SSIC ROM Default file;
- RCM Mapping files;
- Message Queue file.

Preparation of the CPF is described elsewhere within this manual. The other files are described within this document.

The Site Specific Overview file and the Quiet and Enquiry Times Table files contain data which is specific to the IECC site and are set up accordingly.

The Task Table files, Message Queue file, SSIC ROM Default file and the RCM Mapping files contain more general data and are not likely to change between IECC sites.

This section describes the input file format and the effect of the various data fields on subsystem operation. The syntax is described in English, but for a more rigorous description of the input file syntax, refer to section 5 Service Data Compiler Syntax.

In addition to the files listed above, the GWS Task Table file is also required which is described in more detail in sections TASK Statement and Task Table File.

It should be noted that where either general or specific logical subsystem names can be used, the special logical subsystem data will override the general logical subsystem where appropriate.

4.1.1 Site Specific Overview File

This file contains the path and names of the files which are searched by the Service data compiler.

Some of the file pathnames were originally optional but when data is generated by ADP, all files are included. Where the file pathnames were originally optional the keyword **USE** is used, otherwise the keyword **FILE** is used.

Additionally, this file contains, for each SSI, references to the latches for which special default values are required.

The Site Specific Overview file is described below. It should be noted that ADP automatically supplies default files where appropriate and referenced through the .library directory.

4.1.1.1 CPF Statement

CPF: { FILE '../SERVICE/cpf1' }

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The **CPF**: statement sets the search pathname which is used to load the CPF.

4.1.1.2 QUIET statement

```
QUIET:  { information
                primary   FILE    '../SERVICE/qeti1'
                secondary         FILE    '../SERVICE/qeti2'
          signalling
                primary   FILE    '../SERVICE/qets1'
                secondary         FILE    '../SERVICE/qets2'
          }
```

The **QUIET:** statement sets the search pathname which is used to load the Primary and Secondary Quiet and Enquiry Times Table files.

A description of the actual format and contents of the Quiet and Enquiry Times Table files may be found in section Quiet and Enquiry Times Table Files

4.1.1.3 TASK Statement

```
TASK:       { information     USE     '../../.library/ser.taski'
              signalling      USE     '../../.library/ser.tasks'
              custom  USE     '../SERVICE/taskc'
              gws             USE     '../GWS/output/task'
            }
```

The **TASK:** statement sets the search paths which are used to load any of the Task Table Files. Four such files exist:

- General Task Table for Information network (GTTIN);
- General Task Table for Signalling network (GTTSN);
- Customised Task Table for Information network (CTTIN); and
- GWS Task Table for both networks (GWSTT).

A description of the actual format and contents of site specific Task Table Files may be found in section Task Table File.

4.1.1.4 SSIC Statement

```
SSIC:       {                       USE     '../../.library/ser.ssic }
```

The **SSIC:** statement sets the search path which is used to load the SSIC ROM Default file. One such file exists.

A description of the actual format and contents of the SSIC ROM Default File may be found in section SSIC ROM Default File

4.1.1.5 RCM Statement

```
RCM:        {               USE     '../../.library/ser.rcm'
            custom          USE     '../SERVICE/rcmc'
            }
```

The **RCM:** statement sets the search paths which are used to load the Default RCM Mapping File and the Custom RCM Mapping File, where:

Default RCM Mapping file contains entries for generic subsystems e.g. GWS, ISM etc.; and

Custom RCM Mapping file contains entries for specific subsystems e.g. ECS1, RII1 etc.

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The Custom RCM Mapping file may be empty if only default entries are required. It is, however, entered using the **custom** keyword.

A description of the actual format and contents of the RCM Mapping file may be found in section 5 RCM Mapping Files.

4.1.1.6 QUEUE Statement

QUEUE: { USE '../../library/ser.queue' }

The **QUEUE:** statement sets the search path which is used to load the Message Queue File. One such file exists.

A description of the actual format of and contents of the Message Queue File may be found in section 6 Message Queue File.

4.1.1.7 SSI Statement

SSI: INT { LATCH1, LATCH2, ... , LATCHn }
entries for other INT

where :-

INT is the logical name of an SSI; and

LATCH1,2..n is a list of zero or more latches requiring special default values.

The **SSI:** statement is used to list SSI latches requiring the special default value e.g. TRTS latches. The special default value is defined in the SSIC ROM Default File, the contents of which are described in section 5 SSIC ROM Default File.

All SSIs are present in this statement even if there are no special latches associated with them.

4.1.2 Quiet and Enquiry Times Table Files

There are two distinct types of Quiet and Enquiry Times Table files:

- Primary Quiet and Enquiry Times Table files; and
- Secondary Quiet and Enquiry Times Table files.

The Primary Quiet and Enquiry Times Table file contains, in a tabular form, the quiet and enquiry times for all subsystems which communicate with each other. These are as defined in BR1631 "Internal Subsystems Communications Requirements".

The Primary Quiet and Enquiry Times Table file format, for either the signalling or information network, is as follows:

QUIET: {

	SUB1	**SUB2**	**SUB3**	**...**	**...**	**SUBN**
SUB1	-	**QUI,ENQ**	**QUI,ENQ**	**...**	**...**	**QUI,ENQ**
SUB2	**QUI,ENQ**	-	**QUI,ENQ**	**...**	**...**	**QUI,ENQ**
SUB3	**QUI,ENQ**	**QUI,ENQ**	-	**...**	**...**	**QUI,ENQ**
…						
…						
SUBN	**QUI,ENQ**	**QUI,ENQ**	**QUI,ENQ**	**...**	**...**	-

}

where :-

SUB1,2,3 ... N are logical subsystem names (either general or specific);

QUI is the quiet time between sending subsystem (column) and the receiving subsystem (row); and

ENQ is the enquiry time between sending subsystem (column) and receiving subsystem (row).

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Note that when two subsystems do not communicate with each other, **QUI,ENQ** is replaced by a **hyphen**.

The sending subsystems (one per column) form a list of all subsystems which are on the network and which transmit enquiry messages. These always include subsystems which run NDS and may include specifically developed subsystems. Where the subsystem has been specifically developed, the organisation responsible should be consulted to determine if enquiry messages are transmitted as these are unlikely to be expressed in BR1631.

The receiving subsystems (one per row) form a list of all subsystems on the network.

Subsystems which are clustered have sender and receiver entries for the cluster master only.

The Secondary Quiet and Enquiry Times Table file contains, in a tabular form, the quiet and enquiry times for subsystems which are duplicated and carry out master to standby communications over the relevant network.

The Secondary Quiet and Enquiry Times Table file format, for either the signalling or information network, is as follows:

QUIET: { SUB MQUI,MENQ SQUI,SENQ
other SUBs
}

where :-

SUB is the logical subsystem name (either general or specific);

MQUI is the quiet time for the master computer unit as sender;

MENQ is the enquiry time for the master computer unit as sender;

MQUI is the quiet time for the standby computer unit as sender; and

MENQ is the enquiry time for the standby computer unit as sender.

4.1.3 Task Table File

The Task Table files contain, in a tabular form, the sending and receiving tasks for each type of subsystem. There are four Task Table files, as follows :-

- General Task Table for Information Network (GTTIN);
- General Task Table for Signalling Network (GTTSN);
- Customised Task Table for Information Network (CTTIN);
- GWS Task Table for Both Networks (GWSTT).

The Task Table files GTTIN, GTTSN and CTTIN have the same general format as follows :-

TASK:

SUB { sending TSK,TSK, ...
receiving TSK
}
other SUBs

where :-

SUB is a logical subsystem name (either general or specific); and

TSK is a subsystem task number. This can have then form:

TSK (TSK) where **(TSK)** is the NCS equivalent of the NDS task **TSK**.

It should be noted that the **TASK:** statement is omitted in CTTIN. There can also be one or more sending tasks separated by a **comma**.

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The GWS Task Table file is a special case, in that it is generated by the GWS data compiler. This file is dependent on the initialisation task number generation of the data compiler and will not be required to be prepared manually.

4.1.3.1 GTTIN and GTTSN

The General Task Table for Information and Signalling Network files contain entries giving sending and receiving tasks for subsystems on the information and signalling networks respectively and will only change on modification to application or service software.

4.1.3.2 CTTIN

The Custom Task Table for Information and Signalling Network file contains entries giving sending and receiving tasks for custom subsystems, which are site dependent. It generally contains entries giving sending and receiving tasks for:

- ECS or PCS; and
- IS.

These sending and receiving tasks are obtained from subsystem application code and is likely to change between sites.

Where subsystems are clustered, entries are required for each subsystem.

4.1.4 SSIC ROM Default File

The SSIC ROM Default file contains the SSIC ROM defaults which are used by the ARS, GWS and DIS (RDF or SDS) subsystems for each signalling item type. Its format is as follows :-

```
SSIC:
SUB     {       SIGEL           =       NUM
                other SIGELs
        }
other SUBs
```

where :-

SUB is a logical subsystem name, either:

ARS or
GWS or
SDS (for DIS, RDF or SDS);

SIGEL is a signalling element as follows (and in this order):

signals	for signals
points	for point sets
routes	for routes
tracks	for track circuits
suboverlaps	for suboverlaps
subroutes	for subroutes
latches	for latches
special	for special latches (see below); and

NUM is the decimal number defining the default state.

Special latches are those latches which are declared in the Site Specific Overview File as described in sectioSite Specific Overview File

The SSIC ROM Default will change only on modification of the application and service software.

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4.1.5 RCM Mapping Files

The RCM Mapping files contain a description of the internal hardware configuration of the boards which constitute a subsystem. Two RCM Mapping files are used :-

- Default RCM Mapping file; and
- Custom RCM Mapping file.

The Default RCM Mapping file contains entries for generic subsystems (e.g. GWS, FB) and the Custom RCM Mapping file contains entries for specific subsystems (e.g. ECS1, RII1). Both files have the same format as follows :-

RCM:

SUB {
NUM BOARD o=HEX fin=HEX ID=SLOT
other o, fin and IDs
other BOARDs
}

other SUBs

where :-

SUB is a logical subsystem name (either general or specific);

NUM is the number of boards of type **BOARD** in the subsystem;

BOARD is the type of board (in the following order):
mvme101
mvme123
mvme162
mvme172_c
mvme172_m
mvme333
mvme211
mvme215
mvme216
mvme236
display

HEX is a hexadecimal number:
for **o** it is a start address
for **fin** it is either an end address or length (see below);

fin is either an end address or a length:
e is an end address for processor boards
l is a length for memory boards; and

SLOT is the bus slot number for memory boards only.

Note that: **NUM** is zero or greater (zero if board does not exist in the subsystem when only **BOARD** needs to be present).

o, fin and ID may be repeated for a **BOARD** where address ranges are not contiguous.

ID=SLOT is only present with memory boards.

display (board used in DIS, RDF or SDS only) references the C/D board and not the D/D boards and is classed as a memory board.

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