ElectraLink

RGMA User File Design Specification

Version 1.2

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A. Distribution List

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B. Document History

Issue	Date Issued	Reason for issue
Version 0A	11 Feb 2004	Draft internal version for discussions with EDS about RGMA support
Version 0B	24 May 2004	Brought header in line with RGMA spec 3.2. Max file size defined. Extended character set extended.
Version 1.0	2nd February 2005	Updated and reviewed prior to release.
Version 1.1	25th October 2005	Updated for clarity.
Version 1.2	2 October 2008	Updated for clarity.

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1 Introduction

1. This document is intended for data analysts, system designers and implementers in organisations which intend to connect to the ElectraLink RGMA Service managed by ElectraLink to send and receive RGMA compliant data flows.

2. It describes how users should structure the RGMA files which are to be transferred between Users' applications and the Gateway. It also defines what validation is performed on the RGMA files.

3. RGMA User Files are those files which RGMA market participants will send to and receive via their Gateways.

4. The aim of this RGMA User File Design Specification is to provide an unambiguous structure for the header and trailer records of RGMA compliant data which will be transferred between a User's applications and the User's Gateway. It does not, however, include a full definition of how RGMA files are to be encoded. This is defined in other RGMA documentation which is outside the control of ElectraLink.

Scope and purpose of the document

5. This document describes the principles, structure and syntactic rules for constructing RGMA User Files for use on the ElectraLink RGMA Service. The document is generic, i.e. not specific to any particular file type code and is intended to apply to all users of the RGMA service. The document should be used in conjunction with the other RGMA documentation which defines the physical and logical file formats.

6. RGMA User Files must be in a form that is unambiguous to the user applications and the ElectraLink Gateway. It is necessary that all RGMA User Files adhere strictly to the rules in this document for structuring the file and encoding of data items within the header and trailer of the files.

7. Glossary of key terms

Data Item	Refers to atomic (i.e. non-divisible) data.
Data Flow	Refers to File Types as defined in the RGMA documentation e.g. RNAGE etc.
Domain Format	Refers to domain formats as defined in the RGMA documentation e.g. DATE, CHAR etc.
File Header	The reference data at the start of a RGMA *User File* preceding the data flow information.
File Trailer	The reference data at the end of a RGMA *User File* following the data flow information.

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User	An organisation making use of the service for sending and receiving RGMA files.
RGMA User File	The physical file of data exchanged between a user system or application and the ElectraLink Gateway in RGMA file format.

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References

Documentation refers to the following documents:

- Review of Gas Metering Arrangements RGMA Processes and Data (Baseline and Appendices)
- RGMA Electronic File Transfer Specification
- RGMA Gateway Interface Specification

Structure

8. The remainder of the document is structured as follows:

Section 2 Summarises the major changes from previous versions of the document

Section 3 describes the technical context of the RGMA User File Format and explains how RGMA User Files fit into the data transfer technical architecture as a whole.

Section 4 describes the principles and design decisions which underlie the RGMA User File Format and its use on the ElectraLink RGMA Service.

Section 5 defines the rules to be applied in creating RGMA User Files, however only where these rules impact their use on the ElectraLink RGMA Service.

Change Control

9. This document is subject to formal change control procedures which are published separately.

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2 Summary of Major Changes

10. This document has been updated to incorporate the following accepted change requests since the previous version

Change identifier	Nature of change	Impacted parties	Impact assessments requested from
n/a	Amended header data item Created Date from CHAR to DATE to match RGMA spec 3.2	EDS	
n/a	Added detail of max file size	EDS	
n/a	Extended character set now includes the at '@' symbol.	EDS	
	Optional line termination standards	EDS & Users	

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3 RGMA User File Context

11. The RGMA User File Design Specification establishes the content and structure of the data which will be transferred between a User's gateway and their local systems and applications when transferring RGMA compliant files.

12. This document contains all necessary specifications, structures and encoding rules to ensure that RGMA User Files generated by user applications will be unambiguous and syntactically correct when presented to the ElectraLink Gateway.

13. In order to be accepted by the Gateway, the physical structure of the RGMA User Files must adhere to the rules set out in this document.

14. The logical structure of a data flow within a RGMA User File is defined in other RGMA documentation.

15. A RGMA User File will be generated initially by the sender of a message and passed to their local Gateway where it will be sent, unaltered, to the recipient's Gateway, via the central services.

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4 Design Principles

Overall Principles

16. There are a number of key principles which are adopted in the design of the RGMA file format (specified by users at the outset):

- the structure of the RGMA User File Format is designed to be as simple as possible such that it can be produced and read by a variety of applications on different hardware/operating system platforms. At the same time it has been designed to support all data flows within the RGMA documentation;
- the RGMA file format is generic for all data flows and independent of operating system or hardware specific renditions; and
- the design of the RGMA User File Format aims to minimise as far as possible the effort and time required for Users to develop the capability to generate RGMA User Files.

17. The scope of this section covers design issues for the RGMA User File Format only.

Overall Structure

18. The RGMA User File is structured to accommodate the requirement to carry more than one instance of a Transaction, and to accommodate the complexity of the Transactions themselves.

19. The top level consists of the following items:

a) a single RGMA File header;

b) Transaction instances (from 0 to many);

c) a single RGMA File trailer.

20. The RGMA File header contains reference information which may be required in transit, for example for onward routing or audit purposes. The structure of the RGMA File header is independent of data flows and Transactions. For each file there is only one physical header and one physical trailer as shown in Figure 4 and the content of the header will not be repeated.

21. Following the RGMA File header information are a number of Transactions, ranging from 0 instances to many instances.

22. Beneath the transaction level, is the ‘Data Set level’ or ‘Record’ level.

23. The lowest level is the ‘data item level’, which corresponds to the data items defined in the other RGMA documentation. A Data Set is comprised of data items; data items do not appear in a RGMA User File without being part of a Data Set. An

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instance of any data item belongs to one, and only one, Data Set. Data items belonging to a particular Data Set are defined in the other RGMA documentation for the Transaction in question. The structure of data items within the File header and File trailer are repeated in this document for convenience.

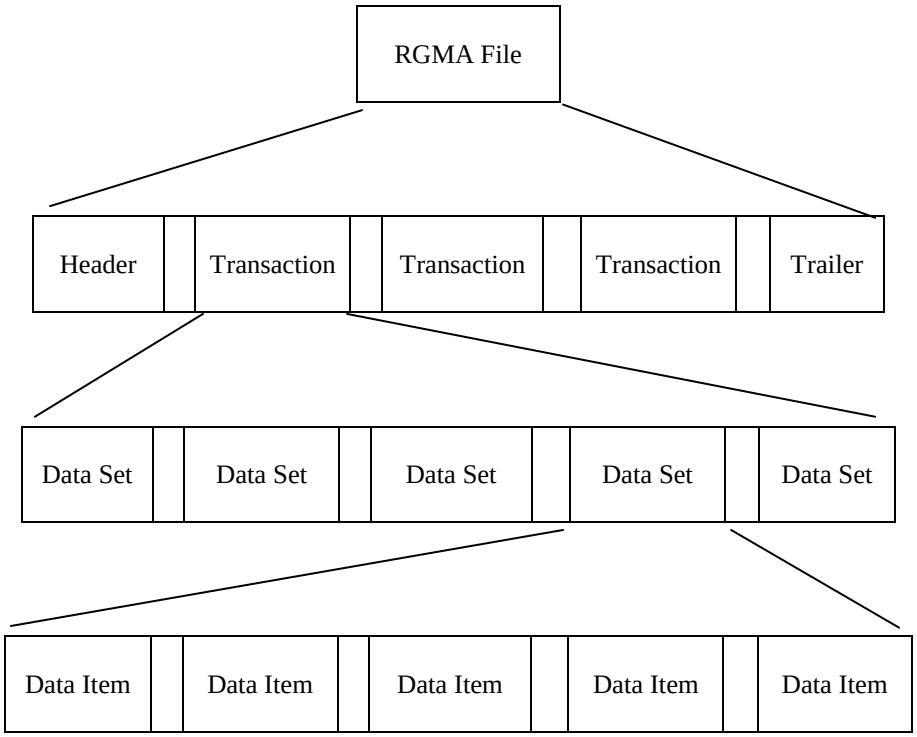

Figure 4. Overall Structure of a RGMA User File

Design Statements

24. This section specifies:

a) The design which forms the basis of the file creation procedures; and

b) Rules which must be adhered to in the production of RGMA User Files which are required if the files are to be transferred by the ElectraLink RGMA Service. There may be other rules defined in the other RGMA documentation, however this are not relevant to the DTS.

File Characteristics

25. The maximum file size for RGMA data files is 40Mbytes. There is no restriction on the number of instances of transactions within a file. The size of data files and the number of instances of a Transaction is an end to end application issue.

26. Each RGMA User File may only contain Transactions for one destination as determined by the ‘recipient identifier, ‘recipient role’, ‘file type code’ and ‘file usage code’.

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27. The set of valid characters to be used in User Files (including special characters and delimiters within data items) is defined in Appendix A. Only characters within this character set may be used. Data item delimiters (the comma ‘,’) may be used within data items as long as they are enclosed in double quotes (“”).

RGMA File Header and Trailer

28. The RGMA file header is defined to contain the necessary addressing and timestamping information to ensure the integrity and routability of the file as a whole. This information will be used as part of the RGMA acknowledgement messages.

29. The file header has the following structure (where status ‘M’ denotes ‘mandatory’, ‘O’ denotes optional, ‘C’ denotes conditional):

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	File	*Header*	*Structure*
Data Item	**Status**	**Format**	**Comments**
Record Identifier	M	CHAR(5)[1]	"HEADR" – indicating the header record of an RGMA file
File Type Code	M	CHAR(5)	Denotes the flow type, as defined in the other RGMA documentation e.g. ONAGE etc.
Originator ID	M	CHAR(12)	Sending Market participant's abbreviated name e.g."SOP"
Originator Role	M	CHAR(5)	Sending Market participant's abbreviated role e.g."SUP"
Recipient ID	M	CHAR(12)	Receiving Market participant's abbreviated name e.g."ONS"
Recipient Role Code	M	CHAR(5)	Receiving Market participant's abbreviated role e.g."MAM"
Created Date	M	DATE	Date in the format yyyymmdd e.g. 20040224
Created Time	M	CHAR (6)	Clock time in 24-hour clock format - hhmmss e.g. "102358"
File Identifier	M	CHAR (8)	File generation number (unique)
File Usage Code	M	CHAR (5)	Indicates the environment that the file is to be used for e.g. "PRDCT" for production
Record Count	M	INT(10)	The number of Records in the file excluding the Header and Trailer Records
Transaction Count	M	INT(10)	The number of Transactions in the file excluding the Header and Trailer

Table 1. RGMA File Header Record

[1] The largest physical size of CHAR data items is the logical item size plus 2 for the double quotes surrounding the data. For example a data item defined as CHAR(5) has logical length up to 5 and physical length up to 7 characters including the double quotes e.g. "HEADR".

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30. The RGMA File trailer has the following structure:

	File	***Trailer***	***Structure***
Data Item	**Status**	**Format**	**Comments**
Record Identifier	M	CHAR(5)	"TRAIL" – indicating the trailer of an RGMA file.

Table 2. RGMA File trailer structure

Data Sets and Transactions

31. Transactions will be structured in *Data Sets*. The Data Sets are defined in the other RGMA documentation and are transparent to the DTS.

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6 RGMA User File Generation Rules

Generic Rules

32. These rules apply to all RGMA User Files.

Encoding Rules - General

Rule 1. A separate RGMA User File must be created for each different destination (a combination of 'recipient ID', 'recipient role', 'file type code' and 'file usage code').

Rule 2. The RGMA File Header is created according to the structure defined in table 1 in the previous section.

Rule 3. All mandatory elements shall be present.

Rule 4. The data item delimiter (comma ',') must not be used within data items, unless included in a CHAR data item which is surrounded by the ASCII (decimal 34) double quotes character ("").

Rule 5. The RGMA File Trailer shall be created according to the structure in Table 2 in the previous section.

Encoding Rules - Domain formats

Rule 6. The other RGMA documentation identifies the following domain formats which are used in the header record and the trailer record: CHAR, DATE, INT, and TIME. This section defines precise rules for the encoding of each of these domain format types in the header and trailer records. Other domain types which are not used in the header and trailer records are not discussed here other than to state that they must only contain characters in the agreed character set (see Appendix A).

Rule 7. CHAR(n) is a set of characters of length up to 'n+2' including the double quote characters (ASCII 34) which surround each set of CHAR(n) characters. Any characters supported by the EDIFACT Level B character set, which is a sub-set of ISO 646, may be used (the complete list in Appendix A). In addition, the underscore character '_' and the "@" symbol (not part of the EDIFACT Level B character set) may be used. If the length of the character string to be encoded is less than 'n+2', characters shall be left justified. The character string may be terminated prematurely by the data item delimiter, comma','.

Rule 8. DATE is a valid date encoded in a CHAR(8) field in the format yyyymmdd.

Rule 9. INT(n) is an integer of logical and physical length 'n' as specified in the other RGMA documentation .

If the field width is smaller than the maximum length, the INT may be terminated prematurely by the data item delimiter, comma','.

Rule 10. TIME is a valid time encoded in a CHAR(6) in the format hhmmss.

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Encoding rules - Additional characters

Rule 11. The representation of the data in the file will be as one data stream.

Rule 12. End of Line (EOL) terminators, used to denote the end of a group or line within a file must comply with the standards set out in Appendix A.

Rule 13. The file transferred between the Gateway and the user system will be treated as a continuous sequence of 7 bit ISO 646 data starting with the RGMA File header and terminating with the RGMA file trailer and correct end of line terminator (see Appendix A).

Rule 14. There may be delimiters (other than comma ‘,’) or other characters of special significance used within the file body if required, providing that they are within the set of allowable characters defined in Appendix A. This is a matter for the other RGMA documentation definition and is transparent to the structure of the RGMA User File.

Rule 15. Data Items within the header and trailer records shall be delimited with the comma (‘,’) character at the end of each data item except the last data item in each.

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8 Example RGMA File Format

File Structure

33. The following example shows the header and trailer records for the “ONJOB” file type. The Transactions within the file are not shown in detail as they are not relevant to the data transfer functionality and are denoted by “TRANS”. The complete description of the file type can be found in the other RGMA documentation.

34. The following conventions are used to improve readability of the example. These should **not** be regarded as legitimate encoding practices:

> In the following example each Transaction represented on a new line in the following example, for ease of reading, with the Transaction delimiter typed as <EOL>. See Appendix A for detail of the allowable standards for End of Line Terminators (EOL).
> standards.

```
"HEADR","ONJOB","SOP","SUP","ONS","MAM",20021231,
"101131","12345ABC ",”PRDCT”,n,2 <EOL>    ;file header
“TRANS” <EOL>
“TRANS” <EOL>
“TRAIL”<EOL>


Where:

“HEADR” is the Record Identifier indicating that this record
is an RGMA header
”ONJOB” is the File Type Code indicating that this file
contains the MDDTR Transactions
”SOP” is the ID of the Originator of the file
”SUP” is the Role that the Originator of the file is acting in
with regard to this file
”ONS” is the ID of the Recipient of the file
”MAM” is the Role that the Recipient of the file is acting in
with regard to this file
20021231 is the date of the file, being 31 December 2002
”101131” is the time of the file, being 11 minutes and 31
seconds past 10am
”28736465” is the unique file identifier
”PRDCT” is the file usage code, being production
n is the numeric value relating to the number of records in
the file.
2 is the number of Transactions in the file.
<EOL> is an allowed EOL (see Appendix A for detail). for the
file header.
"TRANS"<EOL> is a RGMA transaction correctly terminated with
an allowed EOL (see Appendix A for detail).



“TRAIL” <EOL> is the RGMA file trailer correctly terminated
with an allowed EOL (see Appendix A for detail).
```


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Appendix A Valid characters to be used in RGMA User Files

35. The EDIFACT Level B character set contains the following ASCII characters:

Letters, upper case	A to Z
Letters, lower case	a to z
Numerals	0 to 9
Space Character	
Full stop	.
Comma	,
Hyphen/ minus sign	-
Opening parenthesis	(
Closing parenthesis	)
Oblique stroke(slash)	/
Apostrophe	‘
Plus sign	+
Colon	:
Equals sign	=
Question mark	?
Exclamation mark	!
Quotation mark	"
Percentage sign	%
Ampersand	&
Asterisk	*
Semi-colon	;
Less-than sign	<
Greater-than sign	>

36. In addition to the EDIFACT Level B character set above, the underscore character ‘_’ and the at symbol ‘@’ may be used in RGMA User Files.

37.

The RGMA Service will pass files using either of 2 standards* for End of Line (EOL) terminators. The standards allowed by the service are:

- All lines terminated with Single line feed character <LF>
- All lines terminated with Carriage Return and Linefeed characters <CRLF>

It is essential that Users of the ElectraLink RGMA Service agree between themselves the standard to be adopted in the creation and sending of User files. Whilst the service will allow files to be created with a mixture of line terminators, ElectraLink strongly recommend that users avoid using both standards within any agreed business process.

* This optional state, regarding the line termination standards, exists to support the current requirements of the RGMA user community.

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Appendix B File Format Translations

File Format Translations

There is no requirement to convert from RGMA file format into any other file format, or into RGMA file format from any other file format.

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Appendix C Data Validation of RGMA Format Files

RGMA Data Validation

The ElectraLink RGMA Service supports validation of RGMA file header and trailer records at a *syntactic* level - i.e. to check that the physical encoding rules for the header and trailer records have been adhered to in terms of data item length, and type.

Syntactic validation of the physical data ensures that the header and trailer can be parsed correctly by the ElectraLink RGMA Service.

It also provides receiving users with assurance that the physical layout of the header and trailer records of the RGMA User Files they receive are correct.

The ElectraLink RGMA Service does NOT carry out validation of anything other than the header and trailer records in RGMA flows. Additional validation could be added in future if required.

The ElectraLink RGMA Service does NOT validate 'originator' and 'recipient' market participants as specified in the RGMA MDD on a per flow basis. If the recipient's ID and Role are valid and contained in the address tables, the RGMA User File will be processed as normal.

The ElectraLink RGMA Service does NOT check anything other than the header and trailer records.

Table 1 below shows the syntactic validation.

Table 1 - Validation in the Generic Translation Process

Record	Data Item	Validation
Header Record	Record Identifier	"HEADR" denotes the file to be a RGMA format file.
	File Type Code	Used as part of the routing look-up in conjunction with the Recipient ID, the Recipient Role and the File Usage Code. If a match is not found in the routing tables, the file is rejected. Validated as a CHAR of length (up to) 5.
	Originator ID	Must be configured as a valid sending Originator ID on the sending Gateway. Validated as a CHAR of length up to 12.
	Originator Role	Validated as a CHAR of length up to 5.

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	Recipient ID	Used as part of the routing look-up in conjunction with the Recipient Role, the File Type Code and the File Usage Code. If a match is not found in the routing tables, the file is rejected. Validated as a CHAR of length (up to) 12.
	Recipient Role Code	Used as part of the routing look-up in conjunction with the Recipient ID, the File Type Code and the File Usage Code. If a match is not found in the routing tables, the file is rejected. Validated as a CHAR of length up to 5.
	Created Date	Data item length and domain type validation only – note that this is not validated as a valid date. Validated as an INT (8).
	Created Time	Data item max length validation only – note that this is not validated as a valid time . Validated as a CHAR of length up to 6.
	File Identifier	Data item maximum length validation only Validated as a CHAR of length up to 8.
	File Usage Code	Used as part of the routing look-up in conjunction with the Recipient ID, Recipient Role and the File Type Code. If a match is not found in the routing tables, the file may be rejected if no default route has been configured by the recipient. Validated as a CHAR of length up to 5.
	Record Count	Data item length validation only – note that this is not validated to check it matches the actual number of records in the file Validated as an Integer of length up to 10.

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	Transaction Count	Data item length validation only - note that this is not validated to check it matches the actual number of Transactions in the file Validated as an Integer of length up to 10. Must end with a valid EOL marker (see Appendix A)
Trailer Record	Record Identifier	Must equal "TRAIL" otherwise the file is rejected. Must end with a valid EOL marker (see Appendix A).

Notes:

#1 No other validation is undertaken, including Transactions and Data Sets that sit between the header and trailer record.

#2 An item is deemed to be too long if the delimiters are too far apart.

#3 The action on error is always to stop after the first error has been detected, and set the message status to "Failed to translate User File". This diagnostic will be returned via the RGMA Acknowledgement file, which is in RGMA File Format. The user is required to correct and resend the original RGMA User File.

#4 The RGMA service will check that the line terminators used within RGMA files to ensure they comply with the standard defined in Appendix A of this document.

It is incumbent on Users of the RGMA service to ensure that either :-

- RGMA files are formatted to a common standard that has been agreed with corresponding Users, or;
- develop applications that can accept any of the standard line terminators defined in Appendix A.

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Appendix D File Usage Codes (Test Flags)

The ElectraLink RGMA Service is configured to support the following File Usage Codes.

- PRDCT
- TST01
- TST02
- TST03

Please note that the RGMA service observes the same default routing rules as those employed by the core DTS and subsequently relies on a minimum configuration of an inbound route for ‘logical’ test flag TR01 at receiving Gateways .

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