ECAS

ECAS Data Transfer Specification

Issue 4.1

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1. Introduction

The following specification describes the transfer of data from operators (both fixed line and mobile) to the ECAS (Emergency Call Answering Service) required to facilitate the identification of caller location for the purposes of identifying the correct “connect to” number and other information required by the emergency services. The information required is described in detail in the following specifications:

- ECAS Fixed Line Information Specification
- ECAS Mobile Location Conversion Specification

And is required to support the handling of emergency calls, and the subsequent forwarding of available and appropriate information to the Emergency Services, in connection with an emergency call.

Note, in this specification an “Operator” refers to any Authorised Operator.

1.1 Scope of the specification

The provision by an Operator of Fixed or Mobile Location Information is subject to a separate agreement between the Operator and the ECAS, and to regulatory oversight by Comreg. Where such information is provided, the format and definition of records and other aspects, shall comply with this specification.

This specification defines the data transfer arrangement, the required processes which must be implemented and any operational arrangements which should be put in place by both ECAS and the operators concerned.

2. Data requirements

2.1 Information Types and required files

The following information (where appropriate to the operators service and subscriber base) shall be supplied to ECAS at regular intervals

1. Fixed line installation records – This information will be used by the ECAS system to determine the location and address of a person calling from a fixed line installation.
2. Fixed line billing records – This information will be used by ECAS and the emergency services for additional information on the caller such as the likely name and the details of the retail operator.
3. Mobile location conversion information (or cell ids and locations). Two separate data files are required for mobile location conversion information, one describing the Location Area Codes which can be expected in the Mobile Location Transfer Information (described in schedule 3) and the other describing the Cell Global Identifier or Cell identifiers which can be expected. Crucially the CGI file shall include the Cell site location and optionally the approximate area and direction of coverage.

The ECAS system will import this information from each operator as a separate file for each information type. For each imported file, the import process will create a report file which will contain the number of records imported and details of any rejected records.

2.2 High Level File Specifications

The format of all files produced will depend on the information type and the file being submitted. This is described in detail in the relevant specifications for these files.

2.2.1 Operator id

A Variable length operator id will be assigned to each operator by ECAS. This operator id shall be included in the file name for all files as described below.

The operator id and other required details will be agreed between ECAS and the operator at an operational level prior to Go-Live.

2.2.2 Control Files

In the case of Fixed line information only where the number of records and file sizes are expected to be large, a control file shall be produced for each data file to be submitted to ECAS. This does not apply to mobile location conversion information.

The Control file shall contain one single field record only which will be a variable width numeric value indicating the number of records in the associated data file.

The control file should be sent or submitted to the ECAS server after the associated data file has been successfully transferred and will be used by the operator to indicate that processing of the data file can now be performed.

2.2.3 File Records and update types

A description of all fields contained within the various record types including details the allowable values are Numeric or Alpha/Numeric as well as the available update types (full and incremental) and operations is given in the following specifications:

- ECAS Fixed Location Information Specification
- ECAS Mobile Location Conversion Specification

2.3 Processing and import errors

Records in all input files will be processed and imported sequentially. In the case where a record can not be processed, for example the record is not correctly formatted, or field validation failed, this will be identified in the report file associated with that import file as described below.

2.4 Report files

The ECAS system will generate a report file for each input file received containing details of any processing errors encountered during the import of the data file.

Operators shall retrieve the relevant report files from the ECAS system once processing has concluded and take action to resolve any processing errors reported in a reasonable timeframe in order to ensure that the records are correctly formatted and will process correctly and will be re-submitted as soon as is practical.

Data records within the report files are described in section 3.

2.4.1 Header, Trailer and report records

Header and trailer records will be constructed and included in the report files as follows:

2.4.1.1. Header Records

The Header record will be pipe (|) delimited and contain 5 fields in the following order

- The operator ID
- The String “REPORT”
- The full name of the input file that this report relates to

- The number of records from the import file that were successfully processed
- The number of records from the import file that could not be processed

2.4.1.2. Report records

Following the Header record in the report file there may be zero or more report records. Report records will only be created for data records from the import file which could not be processed.

2.4.1.3. Trailer Records

The Trailer record will contain 1 field i.e. the number of Data records in the report file which will be the total number of lines in the file less 2

2.5 Frequency of updates

Operators shall provide fixed line information updates to ECAS on a daily basis where appropriate or as agreed with ECAS at an operational level.
Operators supplying mobile location conversion information should do so as and when required. Mobile operators should upload a full update of all mobile conversion information as soon as is practical following a change to the relevant information on cell sites in the operator's network.
It is expected that the export and transfer process will be automated on the operator's systems to support this.
The times of day (and days of the week in the case of mobile location information) that operators should perform the transfer and also retrieve report files will be agreed between the operator and ECAS at an operational level.

For example, it may by agreed operationally that a particular organisation will provide their 'fixed line billing records' daily from Tuesday to Saturday in line with the update process on their billing system i.e. no records will be produced on Sunday or Monday mornings.

2.6 Timeliness of updates

Updates to both fixed line information and mobile location conversion information should be submitted to ECAS as soon as practical following updated information being available on the Operator's systems. Operators should note that the ECAS systems will import any and all submitted information on both fixed lines and mobile cell sites on a nightly basis.
Operators shall endeavour to make updated information available to ECAS prior to or as soon as possible after a new installation is configured within its internal systems or in the case of a change to a mobile cell site affecting range or area covered is identified.

2.7 Missed updates

Operators shall take reasonable steps to ensure that missed updates do not occur. This is particularly relevant to fixed location information.

In the situation where for any reason an expected update is not produced by the Operator, then one of the following actions should be taken by the Operator as quickly as practical:

1. The missed update(s) should be re-run or re-produced by the Operator and submitted to ECAS. When taking this course of action, Operators MUST ensure that the update files are named as they should have been including the original date that the update should have been produced in order to preserve the sequence in which the updates should be applied.
2. In the case of fixed location information and where only one consecutive incremental update has been missed, the Operator may choose to abort the update and include the relevant changes in the next daily update

In all cases missed updates must be resolved and the required data submitted to ECAS as soon as is practical.
In the case where more than 2 consecutive updates have been missed, or 2 or more non consecutive updates have been missed in a 7 day period, ECAS *may* require that a full update is produced and submitted by the operator as soon as possible. This will be agreed and addressed by ECAS and the operator at an operational level.

2.8 Data consistency

For fixed line information where full and incremental updates are being provided, the Operator should provide a consistent representation of the required fixed line information, so that it can be constructed by ECAS using the last full update and the application of the changes contained in all subsequent incremental updates provided.

2.9 In the case where (for any reason) the operator has concerns about the relative consistency of the data that has previously been submitted to the ECAS, the operator should inform the ECAS of these concerns and arrange to submit a full update to ECAS as soon as possible in order to resolve any potential inconsistencies.Data Accuracy

2.9.1 Location Information

BT ECAS has specified the format for transferring data to the ECAS and will check for the formatting of the data received on receipt of the data. The timeliness and accuracy of the information provided is the responsibility of the operator/providers supplying the information to the BT ECAS.

2.9.2 Billing Address

As for the location information BT has specified the format for the billing data and the BT ECAS will check for the formatting of the data received. It is

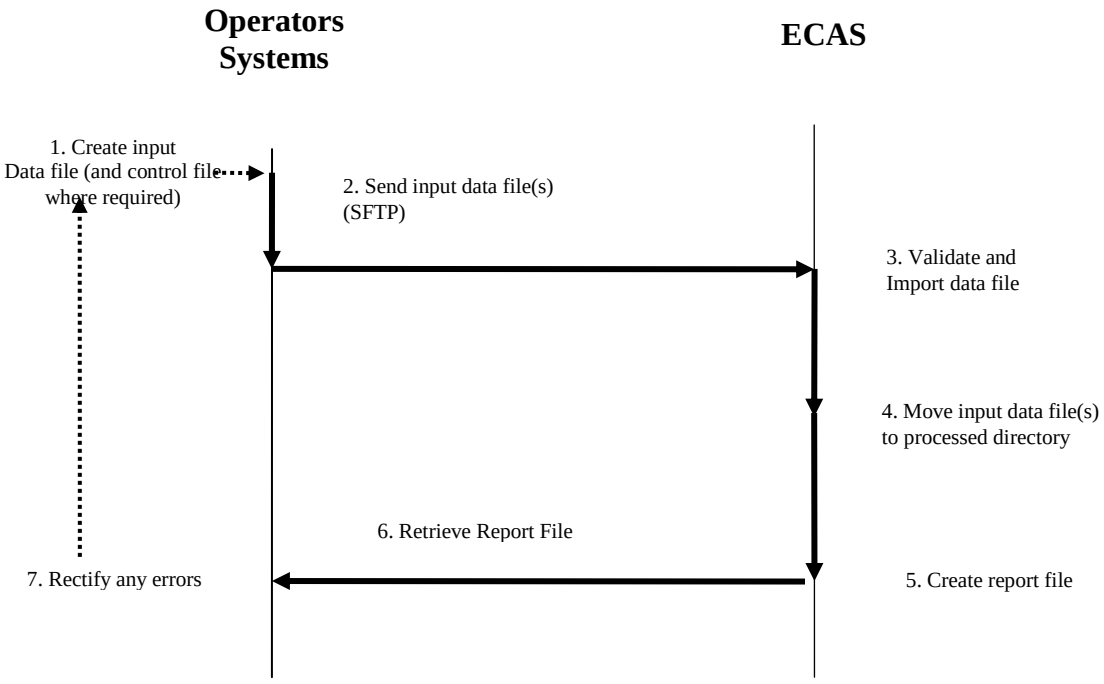
acknowledged that in many cases the billing address and the location information may not be the same, for example corporate clients using central billing addresses, nomadic services etc.

2.9.3 Periodic Reporting

It should be noted that the BT ECAS has an obligation to periodically report to the DCENR mismatches of data between the data supplied by operators/providers to locate a customer and the actual address of the caller using the 112/999 service.

2.10 Process requirements

The high level process and responsibilities for both the ECAS and the operators are outlined in the following diagram.



No.	Action	Full Description
1.	Create Input data file (and control file where required).	Operator creates full or incremental update input data file (and associated control file as required) using chosen systems and export processes.
2.	Send Input data file(s) and control file	Using SFTP client the Operator will send the input files via the IPSEC VPN to the server in ECAS. The input data file should be written first and the input control file should only be written once the input data file has been successfully transferred.
3.	Validate and import data file	ECAS import processes import data from the provided files noting errors in report file

4.	Move file to processed directory	ECAS import process moves files to the processed subdirectory when processing completes.
5.	Create Report file	Report file is created containing details of records processed and any errors encountered.
6.	Retrieve report file	Operator retrieves reports file from SFTP Server.
7.	Rectify any errors	Operator reviews report file and rectifies any errors in its underlying data or export process in order to ensure that data is successfully processed in future.

2.11 File Names

File names of all input data files presented to ECAS and retrieved from ECAS by Operators shall be in the format described in the relevant specifications.

2.12 File Transfer directory structure

The required file transfer mechanisms and process to be used by operators to transfer data to and from ECAS is described in detail in Section 3 of this schedule. At a high level, a SFTP (Secure File Transfer Protocol) transfer mechanism will be employed and each operator will be assigned authentication details for SFTP by ECAS.

A separate directory structure on the SFTP server will be assigned to each operator which from the perspective of the authenticated SFTP user for each operator will appear as a root directory. Within this directory the following directory structure shall be used by operators.

./INPUT/ This is the directory into which operators shall upload all input (data and control) files to ECAS

./REPORTS/ Generated report files will be created in this directory to correspond to the input files which have been processed. Operators shall retrieve report files from this location. Basic housekeeping will be performed automatically by the ECAS systems on this directory to delete any files older than 1 month.

./PROCESSED/ Input (data and control) files which have been processed and imported by ECAS will be stored in this location. The presence of a file in this location will not indicate the success or otherwise of the import. This information will be contained in the report files

./RET_REPORTS/ An optional subdirectory available to operators into which retrieved report files may be moved for tracking purposes once they have been retrieved required. Operators may choose to use this directory and a file move operation from the REPORTS subdirectory as a record of report files which have been successfully retrieved. The files in this directory may be archived by ECAS as required over time.

File level permissions for each operator *may* be set in the above directories as appropriate and required by function.

2.13 Capitalisation within a file

Operators shall where possible send records with mixed case letters, as appropriate to the field value e.g. Normal personal names and place names towns counties should be lowercase starting with a capital or as appropriate to the business name e.g. AIB Bank.

3. Report files and records

For each input file processed by the ECAS systems a report file will be generated to indicate to the Operator if the submitted information has been successfully imported.

3.1 Operators shall retrieve all report files and take appropriate action based on the content to ensure that any import or processing errors attributable to the quality or consistency of the data submitted are rectified before being re-submitted for processing. Operators should endeavour to rectify reported errors in submitted data as soon as practical.File and record format

Report files will contain one header record, zero or more report records and one Trailer record.

3.1.1 Header Records

The Header record will be pipe delimited and contain 5 fields in the following order

- The operator ID
- The String “REPORT”
- The full name of the input file that this report relates to
- The number of records from the import file that were successfully processed
- The number of records from the import file that could not be processed

3.1.2 Report records

Following the Header record in the report file there may be zero or more report records. Report records will only be created for data records which fail the import process.
The format report records created will differ based on the input information type that the report file has been generated for.

3.1.2.1. Fixed line information

For both fixed line installation (FI) and fixed line billing (FB) information and file types the report records will be as follows.
Report records will contain 5 pipe delimited fields as described in the following table:

ID	Field	Format	Definition
1.	STD Code	N	The STD Code that this error report record relates to or null in the case where the STD code could not be determined.
2.	Telephone Number	N	The Telephone number that this error report record relates to or null in the case
3.	Line number	N	The line number of the input file that this error relates to
4.	Error Code	N	The error code indicating the failure encountered
5.	Error Description	AN	Optional text description of the error encountered.

The fields types for the above fields are “AN” denoting an alphanumeric variable length string, and “N” for a purely numeric value.

3.1.2.2. Mobile Conversion Information – LAC records

Report records will contain 6 pipe delimited fields as described in the following table:

ID	Field	Format	Definition
1.	MCC	N	The Mobile country Code that this error report record relates to or null in the case where the MCC could not be determined.
2.	MNC	N	The Mobile network Code that this error report record relates to or null in the case where the MNC could not be determined.
3.	LAC	N	The LAC code that this error report relates to or null in the case where the LAC code could not be determined
4.	Line number	N	The line number of the input file that this error relates to
5.	Error Code	N	The error code indicating the failure encountered
6.	Error Description	AN	Optional text description of the error encountered.

The fields types for the above fields are “AN” denoting an alphanumeric variable length string, and “N” for a purely numeric value.

3.1.2.3. Mobile Conversion Information – CGI records

Report records will contain 7 pipe delimited fields as described in the following table:

ID	Field	Format	Definition
1.	MCC	N	The Mobile country Code that this error report record relates to or null in the case where the MCC could not be determined.
2.	MNC	N	The Mobile network Code that this error report record relates to or null in the case where the MNC could not be determined.
3.	LAC	N	The LAC code that this error report relates to or null in the case where the LAC code could not be determined
4.	CI	N	The Cell id that this error report record relates to or null in the case where the CI could not be determined.
5.	Line number	N	The line number of the input file that this error relates to
6.	Error Code	N	The error code indicating the failure encountered
7.	Error Description	AN	Optional text description of the error encountered.

The fields types for the above fields are “AN” denoting an alphanumeric variable length string, and “N” for a purely numeric value.

3.1.3 Trailer Records

The Trailer record will be pipe delimited and contain 1 field which is the number of Data records in the report file which will be the total number of lines in the file less 2

3.2 Error and Warning Codes

The ECAS import process will provide basic error and warning codes to identify a small number of expected error conditions as described in the following table

Code	Description
001	Input file incorrectly formatted – complete file has been rejected.
002	Record incorrectly formatted
003	Incorrect field type
004	Incorrect action requested
005	Record exists for another Operator
999	Unknown or unspecified error – contact the ECAS for further details.

Warning code “004” may be produced in the following situations:
An Add operation was submitted for a CLI that already exists in the database
A Delete operation was submitted for a CLI that does not exist in the database

Warning code “005” may be produced in the situation where an Operator submits an add, delete, or full load action for a CLI record which exists in the database and is associated with another Operator i.e. is owned by another Operator. This will apply to both billing and installation records for fixed line information.

4. Data Transfer

Transfer of all files will be accomplished using SFTP (SSH file transfer protocol) over an IP-SEC VPN connection which will be configured between the operator and ECAS as described below.

4.1 Underlying network Transport – IPSEC VPN

An IPSEC VPN connection will be configured between suitable external systems on the part of the operator (e.g. external or 3rd party access firewalls or routers) and Internet accessible Firewalls provided by ECAS. ECAS will provide firewalls for this purpose at 2 locations (equipment centres) and operators should ensure that VPN connections are configured from all of their candidate firewalls to both of these locations in order to ensure that multiple routes are available from the operators systems to ECAS and that appropriate routing tables/rules are implemented on their systems.

The details of the IPSEC-VPN connections including end-point addresses, pre-shared keys, and any IP addressing and/or NAT considerations will be discussed and agreed at an operational level between each operator and ECAS however the following points should be noted:

- Operators should ensure that all routers or firewalls used to terminate one end of the various IPSEC VPN connections use fixed public IP addresses. Connections from Dynamic IP addresses or Private addresses will not be accepted.

- VPN connections must be configured as “always on”. No temporary or dial on demand type connections should be used.

- Operators shall ensure that Un-encrypted traffic (i.e. not part of the IPSEC-VPN) does not traverse any publicly available or visible network under any circumstances as part of the transmission between the operator’s source systems and the ECAS destination systems.

- Operators will be responsible for implementing appropriate access controls and traffic filtering to ensure that only SFTP traffic between source systems on their network and the staging or destination SFTP servers on the ECAS network is allowed. All other traffic should be denied.

4.2 File transfer mechanism

Files will be transferred using SFTP (SSH file transfer protocol) between any chosen SFTP client on the part of the operator and either one of 2 SFTP servers provided by ECAS. Operators should note the following with regards to the SFTP client to be chosen and the file transfer operations.

- SFTP clients which use SSH V2 only will be supported

- The SFTP Server will support Version 3 of the SFTP protocol.

Two (2) SFTP servers will be available for file transfer. One of these servers will normally be designated by ECAS as the primary server and the other a a secondary server.

IP Addresses for both servers will be supplied to operators which will be routable over th IP-SEC VPN connections only.

Operators should attempt the required SFTP file transfers to the designated primary SFTP server in all cases. In the event where this server is not available or any part (data files or any required control file) of the transfer fails,operators should attempt the full transfer operation of all files to the backup SFTP server.

Report files may retrieved from either SFTP server.

5. Operational Considerations

Operators shall ensure that the mechanisms and processes within their organisations required to provide both fixed and mobile location information to the ECAS are will supported within their organisation, and expected to operate consistently and reliably at all times.

Detailed operational procedures and considerations are outside the scope of this agreement however the following points should be noted and observed by Operators providing the ECAS with fixed and mobile location information.

5.1 Contact details

Contact details of the individuals and groups responsible for supporting and maintaining the export and data transfer mechanisms shall be provided to the ECAS support and administrative staff.

Contact details for the ECAS support and Administrative staff responsible for maintaining the data transfer arrangements will be provided to operators.

5.2 Configuration details

Configuration details for IP-SEC VPN endpoints, shared keys and SFTP user authentication details etc will be exchanged and agreed.

These and other details will be exchanged and agreed at an operations level

5.3 Disaster recovery and contingency for data transfer

In the event of an extended failure of the data transfer or other associated infrastructure either within the ECAS system or the Operators systems, ECAS may request either full or incremental updates as required to be supplied on DVD for hand delivery to ECAS.

Operators shall ensure that the facility to export to and transport the required data on Data-DVD or CD (as dictated by file size) exists within their infrastructure and that such requests are complied in a timely manner (with due consideration to the purpose of the mobile and fixed location information)

6. References

1. ECAS Fixed Location Information Specification
2. ECAS Mobile Location Conversion Specification