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L.O.L.A.

To: *Martin,*

From: R Humber FMA/CREDITORS

Re: Interfaces

Over recent years there has been several attempts at building bridges between EXTERNAL Borough systems and FMA or CREDITORS for the purpose of posting charges or producing payments.

Most of these attempts have yet to be completed for one reason or another and are resource expensive to LOLA.

One of the problems we have experienced is a lack of a standard framework in LOLA of dealing with interfaces.

Jim Betts organised joint meetings with us, OSG and Job Control to try and establish some standard procedures. Attached is the report and Steve Robson's technical specification for RJE that emanated from those meetings. *13270 file Transfer*

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L O L A

EXTERNAL INTERFACE WITH FMA/CREDITORS

REPORT TO VINCE PADI - FROM J BETTS/R HUMBER FMA/CREDITORS - OCTOBER 1990

There has been an increased demand from the Boroughs, mainly from departments within the Boroughs, for interfaces with FMA and Creditors in order primarily to feed in data generated from computer systems external to LOLA.

These interfaces have required large amounts of resource for liaison, specification, testing, implementation and general support. The FMA group have looked at ways of reducing this resource requirement particularly as such requests can allegedly be urgent and can usurp work items in the agreed annual work program with the consequent problem for re-scheduling work programme items and allocating staff duties.

Reviewing the existing interface procedures it was decided to deal with the data requirements separately from the possible method(s) of interface.

Data Requirements

Data integrity is of course vitally important and an area of concern when data is supplied from external systems. If data is supplied by a computer system it should be 100% accurate even if being input to a vet program. Consequently FMA/Creditors have and are specifying such precautions and incorporating them in the receiving programs. These include using a control dataset to test to prevent re-submission of previous data, and testing in the main update that 'vetted' data has correct serial number.

Methods of Interface

This area needed reviewing and updating in order to clarify LOLA's technical and operational response as well as providing users with relevant information at an early stage. The FMA team arranged meetings with other LOLA involved groups whose contributions were informative and productive.

Three main methods of interface were identified and updated technical specifications for RJE and 3270 File transfer were drafted by S Robson and A O'Connor respectively. These were discussed and agreed by the meetings as documents which should accompany and/or precede the data requirement specification for user information. (Copies are attached). The actual decision as to which method of interface should be utilised would depend on a number of factors and thus involve individual consideration.

1) RJE

OSG could provide telephone and site support for the development and operational maintenance of RJE. Operationally there was a preference for this method as it could involve non-intervention by Production Division and the automatic running of the data through the receiving program. Neither one off nor ad hoc requests for RJE would be efficient due to the setting up work involved.

As a back up to RJE in the event of line problems OSG/Job Control could support the interface of 1/2" reel tape/3480 cartridge as specified.

2) 3270 File Transfer

Once the link has been established a high level of user expertise is not necessary. However once the data is on the mainframe (pack to be decided by OSG) there is no automatic submission possible. Job Control would need notification preferably by MEMO unless on a fixed, regular basis. I Yarrien will prepare control procedure guidelines. A O'Connor can provide telephone and some site support for users in 3270 development and maintenance.

3) Diskettes and Tape Cartridges of a Size and Format Compatible with LOLA Devices

A O'Connor had converted one off and ad hoc files many times but could support this level of interface only.

Recommendation

Method 3) in its own right and as a back up to 1) and 2) need cover in A O'C's absence. This might possibly be provided by MCS, but would still only apply to irregular data. To satisfy user requirements and enhance business opportunities it was considered that a clear responsibility for supporting methods 3) and 2) on an operational basis should be allocated by LOLA together with any necessary resource and investment.

A questionnaire would also be sent to each interface requester seeking details as to contacts, machine, volumes, frequencies, timescales etc. This would be helpful in focusing the user/supplier's attention to key information as well as evaluating whether the volume and nature of the request justifies an interface development or use of an existing system e.g. punching.

Downloading data was not covered at these meetings as such requests for extracts normally channel through PCG.

Interface meetings attendees: J Betts, B Humber
S Robson, I Yarrien
A O'Connor

Technical Specification for Remote Job Entry

1. Introduction

This document sets out the requirements for a micro, mini or mainframe application to provide data for LOLA applications via Remote Job Entry.

2. Data Transmission

(a) Telephone Circuits : The software provided must be capable of transmitting the data in defined time slots to the LOLA central hardware. This will require the ability to emulate IBM 3770 SDLC (SNA) communications with MVS JES II. (IBM 3780 BSC is supported for existing users only)

The equipment should be capable of transmission over dial up or leased line circuits. Dial up circuits will require the ability to communicate with LOLA's auto answer service which operates at 2400 bps. Leased line circuits may operate at 2400 and 9600 bps, with higher speeds available on request to the Telecommunications Group.

The supplier is required to provide a statement explaining the expected times for transmissions of defined quantities of user data.

Remote Job Entry data transmissions will be required to undergo three levels of testing before data can be passed to a LOLA application. These tests are to ensure efficiency, stability and integrity of the data transferred. Details of the test phases are outlined in Appendix A.

(b) Data Recording on Magnetic Tape : If required by the authority, the following magnetic media may be proposed to provide a BACKUP for data transmission.

i) Half inch reel tape recorded at either ;

.9 track 1600 BPI	ANSI, STD or NON - labeled
.9 track 6250 BPI	" " "

ii) IBM 3480 cartridge (or equiv.) recorded at

.18 track 38000 BPI (non IDRC)

It should be noted that the current LOLA standard is 3480 cartridge media and although 1600/6250 tape is currently supported, this facility cannot be relied on beyond 1991.

All tapes sent to LOLA must be certified to 6250 BPI recording, even if 1600 BPI recording is to be used. This is to reduce the risk of tape errors.

3. Data Format

Where data is transmitted in card format, over dial up or leased line, facilities are required to send the Remote Job Entry control cards, Job Control Language and formatted data, as well as to receive messages from the LOLA application (for printing or file storage) indicating the acceptance and validity of the file.

Sample JCL for the various testing stages, and control cards for 3770 and 3780 emulation, are outlined in Appendix B.

Layout of data for Remote Job Entry and Magnetic Media will be outlined in the Application Specification supplied by the appropriate Systems Development group at LOLA.

4. Maintenance, Development and Testing

(a) Future Developments : It is inevitable that, during the life of the equipment, changes will occur in the central site software requirements, and possibly in the detailed content and format of the Job Control Language and Data transmitted.

For this reason the proposed system should allow easy Job Control Language and data format amendments.

(b) Testing phases : The supplier will undertake to support the application throughout the three testing phases outlined in appendix A.

(c) Acceptance trials : It will be necessary, before both system and hardware can be accepted, to establish that both perform to this specification.

Where possible, initial proving of basic communications facilities should be demonstrated by the supplier at LOLA's central computer site. Where this is not possible, the initial testing should be carried out at the relevant authority site with representatives from LOLA's Telecommunications Group and the supplier present.

5. Supporting Documentation -

LOLA STANDARD GUIDELINES MANUAL - contains general information on running through the testing stages, typical problem areas etc.

IBM MVS JES II COMMANDS - contains descriptions of the various commands required to control remote job entry from the host end.

3780 DATA COMMUNICATIONS (GA27-3063) - contains technical detail on the set up an running of SNA remote job entry.

6. Technical Support

Any queries relating to information in the Remote Job Entry Technical Specification should be initially referred to the LOLA Operations Support Group on ext 270/271.

TESTING PHASESInitial Field TestGeneral -

- .Ensure line installed (where appropriate)
- .Ensure line working (tested)
- .Ensure dial up number supplied (where appropriate)
- .Ensure remote id set up in SYS1.PROCLIB

- must be appropriate to comms type (SNA or BSC)
- all components must default to STARTED
- line passwords to be set if agreed with user

.Where feasible, arrange for first test run to be done at LOLA.

Where this is not possible, arrange for OSG/TCG support to be available, preferably with a representative of those groups present at the site where the hardware is located.

Where new equipment/software is involved, the supplier should also be present to assist in any firefighting.

.Supply copy of RJE guidelines to user/supplier.

Ensure JCL, SIGNON and SIGNOFF are correctly coded (via print or fax of files created for transfer)

First test will simply turnaround a print of whatever data is transmitted.

.Check data sent is what was received

Second test stage -

.As per first run, this time ensuring that appropriate telephone support is available and new JCL is supplied.

.Ensure ACF2 logonid has been set up. This second test creates a file on disk and a userid has to be set up.

The logonid should end ****RJE and be set such that the password does NOT expire. This is because an RJE work station does not normally have the ability to 'logon' and cannot, therefore, change its password.

.Ensure that the DASD ACF2 rules have been set to allow allocation of

the appropriate file

.Any data can be sent at this stage as the test is designed to check out the environment, not the data.

Third test stage -

.SDD to supply spec for data layout and second stage tests to be repeated.

.SDD to check files created and advise user on changes required (if any) to meet specification

STAGE 1 JCL

```
//jobname1 JOB (aaaaaaa,Z),'LOLA RJE',MSGCLASS=B,CLASS=A,  
//      NOTIFY=aaaaaaa  
/*ROUTE PUNCH LOCAL  
/*ROUTE PRINT LOCAL  
//JESOUT OUTPUT JESDS=ALL,DEST=LOCAL  
//COPY EXEC RJETEST,RMT=RMTbb  
//COPY.INPUT DD *  
data.....  
data.....  
data.....  
data.....
```

Where jobname1 = LOLA std jobname reflecting test coordinator
aaaaaaa = logonid of coordinator
bb = remote id number
data = card image data to be transmitted

STAGE 2 JCL

```
//jobname1 JOB (aaaaaaa,Z), 'LOLA RJE',MSGCLASS=B,CLASS=A,
//      NOTIFY=aaaaaaa
//*LOGONID cccccc
//*PASSWORD pswd
//JESOUT OUTPUT JESDS=ALL,DEST=LOCAL
//COPY EXEC RJEPROC1,BORO=b,FILE=xxxxxxxx,RMT=rmtid
//COPY.INPUT DD *
data.....
data.....
data.....
data.....
```

Where jobname1 = LOLA std jobname reflecting test coordinator
aaaaaaa = logonid of coordinator
b = alternate boro letter (a, b, c, d)
ccccc = logonid of submittor
data = card image data to be transmitted
pswd = password to submittors logonid
rmtid = id of remote (e.g. RMT46)
xxxxxxxx = unique identifier to form third level of dsn

STAGE 3 JCL

This would be supplied once the relevant LOLA SDD group has defined the vetting procedures to be used

Technical Specification for 3270 File Transfer

1. Introduction

Applications running on other systems, from microcomputer through to mainframe, may require data files to be transferred to or from LOLA mainframe applications. This document describes the technical requirements for a system incorporating 3270 file transfer (the REMOTE system) to be able to transfer files to or from the LOLA mainframe (the HOST system). It does not address the issue of data format compatibility between the two applications, nor the run control mechanisms required to ensure that files are processed correctly. These application requirements can be divorced from the task of the physical transfer of the file from the source media to the target media.

2. Hardware and Software Requirements

2.1 3270 Terminal Emulation

The method used to provide a 3270 connection to the LOLA mainframe is not important other than when estimating the speed of data transfer. Thus the link could be leased or dialled and the software could be emulating both communications controller and terminal functions or just the terminal function if it was connected to a communications controller. How the 3270 connection is achieved is irrelevant to file transfer operation. What is important is that both 3270 terminal operation and file transfer facilities must be available within the remote product.

The speed of the communications line will obviously affect the transfer rate as will other users if it is a shared link. It is therefore difficult to predict file transfer rates but a VERY GENERAL GUIDELINE can be calculated by halving the line speed to the remote location in bits per second (bps) and then multiplying by 10 to give the number of characters transferred in one minute.

e.g. 2400 bps = 12,000 characters per minute
 9600 bps = 48,000 characters per minute

2.2 File Transfer Software

The remote system must incorporate software to provide 3270 terminal operation onto the LOLA mainframe so that at least one screen and keyboard may be used to access the host services. The emulation must also include file transfer facilities that can interact with one of the two file transfer programs available on the mainframe. These two programs are:-

IBM File Transfer Program	-	IND\$FILE
IRMA File Transfer Program	-	IRMALINK FT/TSO

The following features are required for the file transfer software:

Code Set Conversion

The LOLA mainframe stores data in the EBCDIC code set. If the remote system uses the ASCII code set the host file transfer software can be requested to convert between ASCII and EBCDIC. Any other code set conversion will have to be performed on the remote system. Note that, during the conversion process when a TEXT file is transferred, each character is converted from one code set to the other. This requires each character in the source file to be a valid character in the source code set table. Character positions that do not represent valid entries in the source code set will NOT be transferred correctly. This includes any packed decimal fields or fields representing literal bit patterns.

The remote software should also be able to request a BINARY file transfer during which no code set conversion takes place. This can be useful for file transfer between remote systems via the LOLA mainframe.

TEXT file transfers require that both upper and lower case characters should be supported and international characters such as pound, hash and dollar must be handled correctly (see section 3 for a verification procedure). An Expand Tabs option should be available to insert the correct number of spaces for each tab character to retain a file's original format.

Record Format

The software should be able to specify Fixed or Variable length, Blocked or Unblocked records and handle a record size up to 32,760 bytes (which is the limit on the mainframe).

There should also be a facility to process a line numbers field should one exist within the file. This requires the file transfer program to be able to identify such a field by position within the record and its length.

Mainframe Allocation

When a file is transferred to the LOLA mainframe the file transfer software must be able to allocate space for the new dataset. This requires it to specify parameters such as allocation units (e.g. TRKS, CYLS or BLKS) and primary and secondary quantities.

3. Verification Procedure

A user logon id which includes file transfer capability (normally I as the second character of the id) is required to be able to test file transfer with the LOLA mainframe using 3270 emulation. The procedure will vary depending on the remote software being used to implement file transfer. Generally, the steps required are as follows:-

- 1) The user logs on to the LOLA mainframe from the remote system, using an id which is capable of file transfer, and proceeds to the TSO READY prompt.

- 2) The user switches from 3270 terminal emulation mode to local processing mode to invoke the file transfer software which communicates with the established 3270 session.
- 3) Files can then be transferred to or from the mainframe as required.
- 4) The user then switches from local processing back to 3270 emulation mode and, from the TSO READY prompt, issues the command LOGOFF to terminate the session.

A file resides on the LOLA mainframe for file transfer testing:-

Host File Name = NEWS.FT.TEST

This is a small file that contains all of the characters likely to be used in text files. It is therefore a good test of character conversion. It should be downloaded to the remote system and then transferred back to the LOLA mainframe ensuring that the record size is the same as the original mainframe file. A file comparison can then be run on the two mainframe files to ensure that they are identical. This verifies that file transfer works both ways and that the code set conversion tables are working correctly.