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**Operational Review of the
CAPS / Pathway Interface**

Ref: **CS/REP/009**
Version: **0.8**
Date: **26/02/1998**

Document Title:	**Operational Review of the CAPS / Pathway Interface**
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Abstract: This document presents the findings of a review of the technical integrity and operability of the current CAPS / Pathway interface and recommends actions for improvement.

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0. DOCUMENT CONTROL

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0.2 CHANGES FORECAST

0.3 DOCUMENT HISTORY

Version	Date	Reason

0.8	26/02/1998	The report has been updated in response to:
		
		- the meeting of 25th February, with ICL, CAPS, and EDS participating, minuted in [12],
		
		- comments received from:
		  - S. Bamber (ICL Systems)
		  - A. O. Chambers (ICL Systems)

0.7	20/02/1998	The report has been updated in response to: - the review of 17th February, with ICL and CAPS participating, minuted in [9], - a memorandum [10] received at the review of 17th February, - a letter received from Mark Smith (CAPS) [11].
0.6	13/02/1998	The report has been updated in response to the unminuted review of 12th February. Those participating were: - A. O. Chambers (ICL Systems) - M. Clarke (PDA) - S. Fowler (ICL CFM) via telephone link - E. O'Hare (ICL CFM) via telephone link - S. Parker (Pathway) - M. Riddell (Pathway) - R. C. Smith (ICLE / ESC)

0.5	11/02/1998	1) This report has been updated with comments received from:
		  - A. O. Chambers (ICL Systems)
		  - S. Fowler (ICL CFM)
		  - M. Riddell (Pathway)
		
		2) The issues have been renumbered.

0.4	04/02/1998	This is the *first* draft of this document. The version number has been chosen to reflect continuity from the document's predecessor.
		
		1) The material from the document's predecessor has been presented as a Pathway document.
		
		2) It has also been recast to conform to the requirements of the ToR [8].
		
		3) It has been updated with comments received from:
		  - S. Bamber (ICL Systems)
		  - A. O. Chambers (ICL Systems)
		  - S. Fowler (ICL CFM)
		  - M. Riddell (Pathway)

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0.4 DOCUMENT PREDECESSORS

The Status Report [6]

0.5 REFERENCES

Ref	Document ID (Pathway Reference, where Different)	Title	Source
[1]	SU/DES/0001	CAPS Access Service High Level Design	Pathway
[2]	CAS.120 (CA/DES/003)	CAPS Access Service (VME): Release 0300: System Design Specification	ICLE/ESC
[3]	CAS.119 (CA/ION/009)	CAPS Access Service (VME): Release 0300: Installation and Support Guide	ICLE/ESC
[4]	Minutes of Meeting 26/01/98 1400 Fel01	Discussions on Audit of VME/CAS Working Operations Including Design and Operational Issues	Pathway
[5]	caps\pta\pr\0050	High Level Design to Satisfy Contractual Obligations	CAPS
[6]	CAS.125	CAPS Access Service (VME): Status Report on Support of the Live Service	ICLE/ESC
[7]	B270101	Letter from Deputy Director PDA (Bruce McNiven) to MD ICL Pathway (John Bennet): "Interface Audit"	PDA
[8]	none	Review of CAPS / Pathway Interface: Terms of Reference	PDA
[9]	dated 17/02/1998	Minutes Review of CAPS/Pathway Operational Interface. 17th February 1998	Pathway
[10]	dated 13/02/1998	CAPS Requirements to Improve End-to-End File Transfer Mechanism	ITSA
[11]	1:\data\caps\techdev\ livesupt\gc\gc694.wpw dated 19/02/1998	Operational Review of the CAPS/Pathway Interface: Issue: SMGJMSRETRIEVE Utility	CAPS
[12]	dated 25/02/1998	Minutes Review of Pathway/EDS/CAPS Operational Issues 25th February 1998	Pathway

0.6 TERMS AND ABBREVIATIONS

BA	Benefits Agency
CAPS	(1) Customer Accounting and Payments Strategy (a customer organisation)
CAPS	(2) Customer Accounting and Payments System (a software system)
CAS	CAPS Access Service
CAS HLD	CAPS Access Service High Level Design
CAS DCM	the on-line CAPS Access Service
CMF	Control Matching File
CMS	Card Management System

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CS	Customer Services
DCM	Dialogue Control Modules
ESC	Enterprise Skill Centre
file level validation	validation of a file that, if it fails, results in rejection of the entire file
FTF	File Transfer Facility
FTF transfer	the FTF part of the transfer of a named file to a single destination
HLDSCO	High Level Design to Satisfy Contractual Obligations
ISG	Installation and Support Guide
ICL	(1) International Computers Limited
ICL	(2) Inward Control Log
inbound file	a file received from the other side of the interface (for Pathway, a file received from CAPS that is to be transferred by CAS (VME) to the Sequent SMP via FTF)
OCL	Outward Control Log
outbound file	a file sent to the other side of the interface (for Pathway, a file either from the Sequent SMP or generated by CAS VME and destined for CAPS)
PAS	Payment Authorisation Service
PDA	Programme Delivery Authority
reference data file	(also known as a "codes file") a file containing records of control or validation information, such as post office codes or valid file types
SDS	System Design Specification
SLA	Service Level Agreement
SMP	Symmetric Multi-Processor
SSC	System Support Centre
TDA	Technical Design Authority
ToR	Terms of Reference
VME	Virtual Machine Environment: ICL's proprietary mainframe operating system
XPERT	Open Process and Message Router; an EDS product

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1.　GENERAL

1.1　INTRODUCTION

This document presents the findings of a review of the technical integrity and operability of the current CAPS / Pathway interface and recommends actions for improvement.

A letter [7], from Deputy Director PDA (Bruce McNiven) to MD ICL Pathway (John Bennet), identified a requirement to carry out a "technical audit of the interface" and John Meagher of PDA produced Terms of Reference [8] for that exercise, which are included as Annex 1. The current document is the report specified as the deliverable in the ToR [8]. This report draws much of its content from its predecessor, the Status Report [6], which had a slightly different perspective.
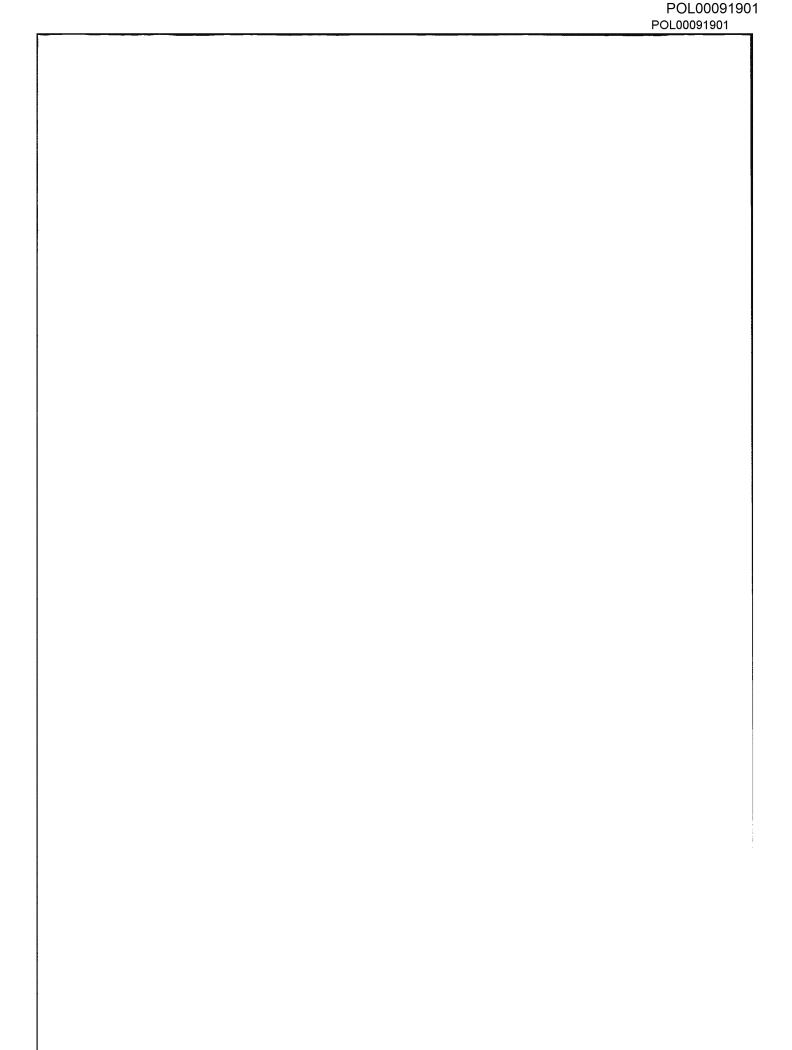
1.2　SCOPE

The scope of this report is dictated by the ToR [8]. It is worth repeating the significant points here.

This is principally a report on a technical and operational review of the current CAPS / Pathway interface . As stated in the ToR [8], following a number incidents on the live service, which required corrective and contingency actions to be taken, concern arose "regarding the level of intervention that [is] necessary and whether [it] is sustainable as volumes increase.". The CAPS Board therefore commissioned a review of "all characteristics that bear on the technical integrity and operability of the interface".

The objective of the review, as stated in the ToR [8], is to answer these questions:

1.　"Is the interface technically stable in terms of its ability to maintain data integrity through all processes, e.g. 'recall and reissue' within Pathway and exception handling within CAPS?"

2.　"Is the interface operationally stable in terms of its ability to identify and manage each possible combination of failure conditions, employ fallback actions, and return to normal running? Are responsibilities clear, understood by all, and documented for all normal and failure states?"

3.　"Is the operation of the interface adequately resilient in terms of its ability to recover from failure states?"

4.　"Can the interface be operated to the contracted service levels and what level of support may be required?"

This report is the deliverable described in the ToR [8] and so answers the questions set out above and makes recommendations, where possible, to improve the technical integrity and operability of the interface. For each recommendation, a priority is assigned based on the relative effectiveness of the consequent change and, where there are alternative means of implementation, the options are explained fully. All recommended changes are, of course, subject to the Joint Change Control Process.

The boundary of the review and, consequently, this report is also defined in the ToR [8] as all factors "affecting the successful exchange, acceptance, and management of data between CAPS and Pathway domains".

Although not specified in the ToR [8], the limitations of the scope of this review are as follows:

It does not consider any other interface within the total Pathway system or between Pathway and systems outside Pathway control

It does not consider directly the application level of processing, e.g. on the Pathway side of the interface, the PAS or CMS application software. This is because the interface operates at a level of abstraction to which application processing specifics are largely irrelevant.

Although the larger volumes to be expected in the future are taken into account in some of the issues raised, this review is confined to the resolution of issues at Release 1c of the Pathway software.

The current concern, and consequently the scope of this document, is limited to consideration of that part of the total system that may be characterised as "the interface". However, this should be seen to be within the wider context of communication, at all levels, between the CAPS and Pathway ends of the total system. Concurrently, an exercise to consider this wider context is being planned.

1.3   SOURCE INFORMATION

This report concerns support of the live service which is currently based on CAS (VME) Version 0300. The relevant documents for this version of the software are:

Document	Version/ Issue	Date	Ref.
Pathway HLD	5.0	21/01/1997	[1]
CAS (VME) SDS	1.0	05/09/1997	[2]
CAS (VME) ISG	1.0	25/06/1997	[3]
CAS (VME) Status Report	0.3	29/01/1998	[6]
ToR	0.1	27/01/1998	[8]

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2.   MANAGEMENT SUMMARY

2.1   PREAMBLE

Thirty one issues were identified as being important to the current dissatisfaction with the quality of operation and support of the CAPS / Pathway interface and, consequently, confidence in the ability of the interface to meet SLAs at Release 2. These have been assigned to the questions listed in the Objective defined in the ToR [8] and, for each, options have been identified and recommendations made.

2.2   ISSUES

The issues so far identified fall into these main categories:

Unclear Boundaries and Liabilities:
This is shown as a single issue (Issue 9) but it is considered to be of the highest significance and should be given High Priority.

Unclear Responsibilities:
This covers several related issues (Issues 13, 15, 16, and 17) which are also related to the issue of Unclear Boundaries and Liabilities. They too should be given a High Priority

Limited Support Tools:
This category comprises the largest number of identified separate issues.

Existing Processing Problems:
There are several of these and investigation is hindered by the problems of unclear boundaries and responsibilities.

2.3   RECOMMENDATIONS

The recommendations to address the issues are:

Unclear Boundaries:

The operational requirement should be reviewed in consultation with the parties directly involved in the operation and support of the interface and the contractual agreement revised accordingly.

Unclear Responsibilities:

a)   The operational requirement should be reviewed in consultation with the parties directly involved in the operation and support of the interface and the contractual agreement revised accordingly.

b)   Specifically identified operation and support processes should be formalised or revised.

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Limited Support Tools:

a) Some processes ancillary to the interface are currently not specified or are specified but not yet developed, on CAPS or Pathway. These should be designed and implemented in order to provide the corresponding facilities.

b) The alert types produced by CAS (VME) should be reviewed and revised in order to improve diagnostic information.

c) Either through new development or by bringing forward components existing in test releases, CAS (VME) should be enhanced in two ways. Parts of its regular processing should be changed to provide better diagnostic information and specifically identified support utilities should be added. Both of these will facilitate problem resolution.

d) Specifically identified documentation should be enhanced and there should be a document audit of operation and support documents.

e) VME Journal processing should be reviewed and revised.

Existing Processing Problems:

a) The tracking of transactions through the system should be reviewed.

b) Full evidence should be supplied when new processing problems are raised.

c) CAS (VME) should be enhanced: a) to account for file locking of the Control Logs, b) to schedule scanning processes so that they cannot be duplicated, and c) to carry out housekeeping more efficiently (after review).

d) There should be a sizing and performance study to account for current operational experience and predicted growth, with special attention paid to failure conditions.

e) Pathway should investigate jointly the feasibility and requirement for an XPERT processing blocking mechanism to ease problem solving.

2.4   CONCLUSION

If most of the recommendations are carried out successfully, then it is believed that the quality of operation and support for the Pathway Release 1c product can be improved to the point where there can indeed be confidence in the ability of these processes to meet SLAs at Release 2.

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3.   BRIEF DESCRIPTION OF THE INTERFACE

The CAPS Access Service (CAS) provides the batch interface between CAPS, running on a Benefits Agency ICL VME mainframe, and PAS and CMS, running on a Sequent SMP. CAS (VME) is the part of that interface that runs on the BA ICL VME mainframe. The part of the interface that runs on the Sequent SMP, sometimes referred to as CAS (Sequent), is quite separate and consists of Unix scripts.

The CAS On-Line Service, referred to variously in other documentation as "CAS On-Line", "CAS TP", or "CAS DCM", is a quite separate product and is not considered herein.

CAS provides the functions and facilities required to pass files of data, in both directions, between CAPS, on one side, and PAS and CMS, on the other. It communicates with CAPS via XPERT and it communicates with PAS and CMS via FTF ICL VME File Transfer Facility (FTF), which is set up to communicate with CAS software on the Sequent SMP.

For each inbound data file, CAS (VME) carries out full file level validation, reformats it if necessary, and initiates an FTF transfer to the Sequent SMP. For each outbound data file, CAS (VME) checks its check sum, reformats it if necessary, and informs XPERT that it is ready for collection by CAPS. This is complicated by the need to handle error report files and maintain control logs to record all significant events for every data file.

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4. APPROACH

4.1 BASIC DESCRIPTION

The objective stated in the ToR [8] needs to be interpreted with respect to the question "What precisely constitutes an adequate answer to each of the four questions?"

It would be possible to consider each question rather superficially and give a positive answer, backed up by assurances that the software products and support services provided conform to specified requirements. This could be qualified by citing any exceptions and claiming that such can be dealt with as they arise. However, this approach would be unlikely to yield any useful result.

It would also be possible to claim, not unreasonably, that the questions are very big ones indeed and that what is required is a detailed technical analysis exercise. This would involve subjecting all of the software components, individually and collectively, together with associated operating and support procedures, to a rigorous analysis with respect to the four questions, each of which would be regarded as a new formal requirement. The first step would have be to refine the questions in order to arrive at precise requirements. This opposite extreme would require months of work.

Bearing in mind the severe time constraint on the production of the first draft of this report, the approach taken is a pragmatic one that lies between the above extremes. The basic idea is for all parties involved to identify specific issues that either: a) have prompted this exercise (see the letter from Deputy Director PDA to MD Pathway [7]), or b) might give rise to similar concerns in the future. The parties involved are: ICL Pathway, ICL CFM, PDA, EDS, and CAPS. The issues are then to be addressed with respect to the four key questions of the objective (see ToR [8]). It should be clearly understood that although this approach is likely to yield useful results, it lacks the rigour of a detailed technical analysis exercise.

The assignment of an issue to a particular question may well be debatable, indeed it could be argued that it should be assigned to more than one, and it should also be noted that some issues are closely related. The underlying intention has been to avoid duplication but to keep separate issues separate; i.e. to have a fine granularity rather than a coarse one so that each issue can be dealt with more easily.

Priorities have been assigned to recommendations on the following basis:

A: Strongly recommended and / or of greater urgency.

B: Recommended.

C: Recommended but qualified (e.g. if development schedule permits)

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4.2   UTILISATION OF PRELIMINARY WORK

Before the ToR document [8] was received, a meeting was held in Feltham, on 26th January, to review the effectiveness of support for the Live CAS (VME) Service; to identify difficulties and to suggest ways of overcoming them, in order to improve working methods, and especially the working relationship with CAPS and EDS. This was seen as an effective method of identifying issues for consideration in the "Interface Audit".

This document's predecessor, the Status Report [6], was based on the discussions in that meeting regarding the actual operation of CAS (VME) and therefore draws on the minutes thereof [4]. It was intended that, in contrast to the minutes, the report should cover the topics discussed in greater detail and should evolve as a discussion document.

The issues raised in the Status Report [6] have been used as the basis of the initial draft of this report. They have been recast and assigned as issues to be addressed against the major questions raised in the objective of the review. The parties involve in identifying and developing this initial set of issues are: ICL Pathway, ICL CFM, and staff from other parts of ICL involved in the development of the CAS (VME) product.

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5.   QUESTION 1: MAINTENANCE OF DATA INTEGRITY

5.1   STATEMENT OF THE QUESTION

"Is the interface technically stable in terms of its ability to maintain data integrity through all processes, e.g. 'recall and reissue' within Pathway and exception handling within CAPS?"

5.2   BRIEF ANALYSIS OF THE QUESTION

The basic question "Is the interface technically stable?" could be interpreted in a variety of ways but it is carefully qualified. The underlying question is "Is the interface as a whole capable of maintaining the integrity of the data that it processes throughout that processing?" The examples make clear that this should be viewed within the wider context of the total system.

The interface software is not application level software. As an example, the closest that CAS (VME) gets to dealing with the data at the level of the application, is file level validation; i.e. it validates and accepts or rejects whole files on the basis of their conformity to validation criteria that have little or nothing to do with the application itself (e.g. a correct record count value). It is assumed that there is a similar logical division in the CAPS software. This report covers the interface and not the application processes between which it lies. Although it is outside the scope of this document, as it stands presently, there is the potential to expand the question to include application level issues.

In the context of this report, "exception handling" is considered to cover the following:

> The action taken when inbound data files are found to be invalid.

> The action taken when an Error Report File is received.

> The action taken to cope with abnormal responses during processing.

The topic is summarised as "Maintenance of Data Integrity".

5.3   ISSUES

5.3.1   ISSUE 1:
XPERT: DUPLICATE NOTIFICATION

5.3.1.1   Description of the Issue

The XPERT software has been observed, on occasion, to issue a duplicate of the File Notifications for an inbound data file. This is an error in the specified interface and CAS (VME) detects it and reports it as a logical error.

According to Paul Dibb (EDS) and Mike Nicholson (EDS), the reason for this error is now known and understood; the XPERT software was timing out in certain circumstances. Code in the software has been amended (20/12/1997) to reduce the chance of timing out and the chance of the circumstances being repeated has been substantially

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reduced by operational changes. There has been no repetition of the problem since the beginning of the year but the situation is still being monitored.

5.3.1.2 Design Options

Not applicable at this point.

5.3.1.3 Recommendations

i) (Priority B) The processes for investigating and resolving XPERT-related problems, especially regarding communication between Pathway and EDS, should be formally specified and agreed. See also Issue 9 and Issue 4.

ii) (Priority C) The situation regarding the cause of the problem should be monitored as it is at present.

5.3.2 ISSUE 2:
XPERT: FAILURE TO PROVIDE NOTIFICATION

5.3.2.1 Description of the Issue

The XPERT software has been observed, on occasion, to fail to issue a File Notification for an inbound data file. This is an error in the specified interface. CAS (VME) cannot logically detect it since this is the specified means of informing CAS (VME) of the very existence of a data file. It only comes to light when some other related problem occurs later. The CAPS software does not detect it directly because it does not monitor for the response to the provision of the data file.

According to Paul Dibb (EDS), the reason for this error is now known and understood; the XPERT software was timing out in certain circumstances, specifically when a journal partition was filling up. Code in the software has been amended to reduce the chance of timing out and the chance of the circumstances being repeated has been substantially reduced by operational changes. There has been some repetition of the problem since the beginning of the year and the situation is still being monitored. EDS is investigating methods for eliminating the cause of the problem.

5.3.2.2 Design Options

Not applicable at this point.

5.3.2.3 Recommendations

i) (Priority B) The processes for investigating and resolving XPERT-related problems, especially regarding communication between Pathway and EDS, should be formally specified and agreed. See also Issue 9 and Issue 4.

ii) (Priority B) The situation regarding the cause of the problem should be monitored as it is at present.

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iii)   (Priority B) EDS should continue to investigate alternative methods for eliminating the cause of the problem entirely and implement a solution. Paul Dibb (EDS) will pursue this.

Action: PD

5.3.3   ISSUE 3:
CAS (VME) USABILITY:
LACK OF PROCESSING FOR CONTROL MATCHING FILES FOR SUPPORT PURPOSES

5.3.3.1 Description of the Issue

In accordance with the Customer's requirements (see HLDSCO [5]) to do so, CAS (VME) produces Inward and Outward Control Matching Files (ICMF and OCMF) and transmits them to CAPS. In addition, in accordance with Pathway audit requirements specified in the CAS HLD [1], CAS (VME): a) transmits copies of the ICMF and OCMF via FTF to the Sequent SMP, and b) generates a *Reference Data* Control Matching File (RCM) which it also transmits to the Sequent SMP.

The Control Matching Files and copies are required for audit purposes and Pathway software currently stores this information on the Sequent SMP for later assessment against SLAs.

Currently these files, when received by CAPS or by the Sequent SMP, are not automatically processed in a way that makes the information accessible, in a timely manner, for operation and support purposes.

5.3.3.2 Design Options

If the information in the Control Matching Files (CMFs) is to have any value for operation and support, they should be processed appropriately in a timely manner on the VME mainframe.

It should be understood that the value of the information for operation and support purposes is not high, for the following reasons:

1.   CMFs are generated daily; entries corresponding to more recent Control Log entries would not be present.

2.   An entry in a CMF is only a subset of the information stored in the corresponding entry in a Control Log; only certain key Status Entry Groups are utilised and not all of the fields from those.

3.   An entry is only generated in a CMF for a data file that, according to its STATUS in the Control Log, has had all processing successfully completed; no entry is generated for a partially processed data file, let alone one that has given rise to processing problems.

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4.   The purpose of a CMF file is the recording of audit information and its format is defined for that purpose. Any proposed change to make that format more useful for operation and support purposes would be likely to be unacceptable.

5.3.3.3   Recommendations

i)   In so far as the utility of the information held in CMFs is of doubtful value for operation and support, and fuller and more up-to-date information is available from other files in the system, it is recommended that no additional processing of these file for the purpose stated is carried out.

ii)   (Priority B) This Issue should be withdrawn.

5.3.4   ISSUE 4:
CAS (VME) USABILITY:
LACK OF PROCESSING FOR ERROR REPORT FILES

5.3.4.1   Description of the Issue

In accordance with the Customer's requirements (see HLDSCO [5]) to do so, CAS (VME): a) produces Error Report Files for inbound data files and transmits them to CAPS, and b) accepts Error Report Files for outbound data files from CAPS and transmits them to the Sequent SMP.

Currently, when an Error Report File is received and processed by CAPS, the file is processed and an alert is raised and logged but this is invisible to support staff on the Pathway side of the interface.

Currently, when an Error Report File is received by Pathway, it is not processed except in so far as it is transmitted to the Sequent SMP and its data stored in tables. No analysis of the data is carried out and the information in the files is not readily accessible in an understandable format for any purpose, including product support. It is not visible to support staff on the Pathway side of the interface nor on the CAPS side of the interface.

There is no agreed support process, on either side of the interface, to cope with the receipt of such a file or to communicate, in that circumstance, with support staff on the other side of the interface.

5.3.4.2   Design Options

The Error Report Files are required for error handling and audit purposes. Their provision and transfer is mandated by the HLDSCO [5]. If that processing is to have any value, they should be processed by the receiving systems. Additionally, if that processing is to have any value for support purposes, they should be processed by the receiving systems in such a way that support staff have useful and timely information.

5.3.4.3   Recommendations

i)   (Priority B) It is recommended that that the current manual process for resending a file across the interface is formalised by being properly documented, especially the

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6. QUESTION 2: OPERATIONAL STABILITY

6.1 STATEMENT OF THE QUESTION

"Is the interface operationally stable in terms of its ability to identify and manage each possible combination of failure conditions, employ fallback actions, and return to normal running? Are responsibilities clear, understood by all, and documented for all normal and failure states?"

6.2 BRIEF ANALYSIS OF THE QUESTION

Again, the basic question "Is the interface operationally stable?" could be interpreted in a variety of ways but it is carefully qualified. The qualification given allows the underlying questions to be easily listed:

"Can the interface identify each possible combination of failure conditions?"

"Can the interface manage each possible combination of failure conditions?"

"Can the interface employ fallback actions for each possible combination of failure conditions?"

"Can the interface return to normal running after each possible combination of failure conditions?"

"Are responsibilities clear and understood by all for all normal and for all failure states?"

"Are responsibilities documented for all normal and for all failure states?"

"Operational Stability" is used to characterise this set of related topics The question certainly asks a great deal and is one that would only be rigorously answered by a formal detailed technical analysis exercise. It is to be expected that this will raise the largest category of issues.

6.3 ISSUES

6.3.1 ISSUE 5:
CAS (VME) USABILITY:
DUPLICATION OF NEXT ACTION TIME ALERTS

6.3.1.1 Description of the Issue

When an alert has been raised and recognised by a member of operations staff, any additional alert raised for the same data file, for the same condition or event, is perceived as being: a) unnecessary for the purposes of initiating exception procedures, and b) increasing the size of the Alert File to no purpose. Such additional alerts have been characterised as "spurious" by operations staff as only one alert is seen to be required and file filling is feared. If an automatic process were made available to notify operations staff

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of alerts as they occur, the situation would be even worse as they would be paged for all the "spurious alerts" as well.

This has been observed for Alert Code 16, when NEXT-ACTION-TIME on an ICL entry at STATUS = 08 is exceeded.

6.3.1.2 Design Options

The CAS (VME) design was originally based on a strict reading of source documentation (the HLDSCO [5]). It was assumed that the intention is for an incident to be raised on the first occasion that a Control Log entry offends *and also* every time thereafter when the same entry is scanned, *if it still offends*. Alert 16 was later made an exception. Therefore, in normal operation, "spurious alerts" (in the sense described above) of Type 16 are not possible. Spurious Type 16s are now known to occur only when scanning operations overlap (see Issue 23) and particularly when the XPERT software hangs.

It was suggested that CAS (VME) could be changed to raise an alert, in all cases (not just Type 16), only on the first occasion that the offending condition is detected by a scan.

It was also suggested that CAS (VME) could, in this context, be enhanced to provide an interface for "Cancelling Next Action Times".

What is required therefore is a solution that caters for abnormal operation, allowing operations staff to rectify an unusual situation after it has been investigated and understood. There are two options:

1.   Provide a Simple Utility:

As suggested, a utility could be provided to permit "Cancelling Next Action Times". This means manipulating an offending Control Log entry so that, when it is scanned, it no longer gives rise to an alert. This could be achieved by setting NEXT-ACTION-TIME to a suitable value. In principle, there is no objection to this:

The control information required by CAPS is extracted from the Control Logs into corresponding Control Matching Files for audit purposes. However, that information does *not* include NEXT-ACTION-TIME which contains a volatile value that provides no useful information at the time the corresponding Control Matching File is generated.

Providing a utility conforms to the general principle that, in order to erase evidence of an error incident, something must be done intentionally, rather than automatically.

The utility could be written to disallow a change to any value for NEXT-ACTION-TIME that would *not* generate the offending alert.

The utility could be written to generate a single alert for recording on the Alert File, thereby providing a record of its use.

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Routines already exist to manipulate the Control Logs. Development would therefore draw on existing code and experience and so would be greatly accelerated. There would probably four or five man/days work involved

2.   Provide a Screen-Based Interface:

It would be possible to create a screen-based utility to allow operations staff to manipulate the values of fields within the Control Logs. The screen would display a Control Log Entry, or alternatively the Control Log Header Group and a selection of associated Status Entry Groups, whichever were more convenient. The fields would be clearly named and all values would be available for updating. Clearly, this is far more than is required in the context of the current issue but such a Rolls Royce solution would have the virtue of being useful in other contexts. However, there are two significant objections to it:

Every field would have to be considered in the light of its use as audit information and a policy formulated to cope with difficult cases.

It would take much longer to implement than a simple utility, say ten man/days minimum for a very basic version.

6.3.1.3   Recommendations

i)   (Priority B) A simple utility should be designed and developed to manipulate an offending Control Log entry so that, when it is scanned, it no longer gives rise to an alert due to NEXT-ACTION-TIME being less than current time. Due consideration must be given to the requirement of auditing such an action. Richard Smith (ICLE / ESC) is to produce a technical specification and Graham Lloyd (Pathway) is to raise a Change Proposal for CAS (VME).

Action: GL, RCS

ii)   (Priority B) A further consideration is the potential for other types of spurious (multiple) alert. The code should be examined for other candidates to be made exceptions, similarly to Type 16. Types that have already been identified as possible candidates are: 20 ("Receipts out of sequence on OCL") and 21 ("expected Receipt arrived late"). Before making another such exception of a candidate, it should be considered in the light of contractual requirements and the practical issue of the potential loss of information. This task should be assigned to one of the CAS (VME) Development Team by Richard Smith (ICLE / ESC).

Action: RCS

6.3.2   ISSUE 6:
CAS (VME) USABILITY:
DIFFICULTY DETERMINING THE LAST VALUE OF STATUS

6.3.2.1   Description of the Issue

When a file has been completely processed, the value of STATUS in the last Status Entry Group of its Control Log entry is set to 39 or 40. It is then eligible for removal from the

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Control Log by the housekeeping process, subject to a period of grace controlled by NEXT-ACTION-TIME. Entries must be removed from a Control Log to prevent it from growing indefinitely. However, it is often important or useful to be able to check back on a particular file and see what final status it reached. If the file's entry has already been deleted, this is not possible by reference to the Control Log using CAS_ENQUIRE.

6.3.2.2   Design Options

It was suggested that a record is written to a serial log file whenever a file's entry is removed from a Control Log. The records of this log file would contain: the filename, date, time, final status and accepted and rejected record counts.

There are several solutions to this problem and they are inter-related:

1.   Reading the Corresponding Control Matching File

The very purpose of a Control Matching File is to record and retain a summary of the information in the Control Log Entry of every data file that has completed processing. Since the Control Matching Files are retained on VME for several days and also transferred to the Sequent SMP, they would seem to be the obvious source for the required information. There are, however, two problems:

There is no utility for examining a Control Matching File conveniently. VME procedures could be used. Creating a special utility could be based on CAS_ENQUIRE; it would take say five man/days work.

The VME "filename" is not recorded in a Control Matching File entry any more than it is recorded in the corresponding Control Log Entry on which it is based..

2.   Entry Written to an Additional Log File on Deletion from Control Log:

This the suggested solution and it would seem to be logical and straightforward but there are two objections to it:

In the information required is specified "filename". This is not available from the Control Log since it is not recorded in it. It would involve a significant change to the format of the Control Log and, obviously, the processes that manipulate it. This could be raised as a separate issue but implementation would not be trivial; ten man/days is probably not pessimistic. Also it would mean storing an additional eighty bytes in every Control Log entry, which is significant increase in size.

Also, Yet another file or pair of files is to be produced, taking up space and having to be controlled, i.e. set up, cycled, archived, and purged, adding to the burden on the housekeeping process.

3.   Entry Written to an Additional Log File when Writing to Control Log:

This a is a variant on the suggested solution. The additional log file would have the same index as the Control Log and CAS_ENQUIRE would be enhanced to read it as well. There are two points to be made:

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In its favour, in this case "filename" can be recorded directly from the File Notification; there is no requirement to enhance the format of the Control Log to record it.

However, again yet another file or pair of files is to be produced, taking up space and having to be controlled, i.e. set up, cycled, archived, and purged, adding to the burden on the housekeeping process.

4.   Retaining Moribund Control Log Entries

Instead of deleting a Control Log entry when it is no longer required by current formal requirements, it could be marked as moribund. it would be ignored by all processing except housekeeping which could be amended to delete moribund entries after a period of grace controlled by parameter. There are two observations to make:

A point for this solution is the fact that it is already implemented at Release 0360 of the product.

Against this solution is that fact that "filename" is still not available.

6.3.2.3   Recommendations

i)   (Priority B) The fourth solution listed above is recommended; moribund entries on a Control Log would be kept for a period of grace as in the Release 0360 of the CAS (VME) product. The change should be brought forward. Richard Smith (ICLE / ESC) is to raise a Change Proposal for CAS (VME) 0300.

Action: RCS

ii)   (Priority C) The implementation of an additional file to provide a log of filenames in parallel to each of the Control Logs is an option. It would have the disadvantages listed under the third solution given above. Richard Smith (ICLE / ESC) is to raise a Change Proposal for CAS (VME).

Action: RCS

6.3.3   ISSUE 7:
CAS (VME) USABILITY:
DIFFICULTY IN IDENTIFYING ASSOCIATED ERROR REPORTS

6.3.3.1   Description of the Issue

Whenever one or more validation errors, at file level or record level, are detected in a data file, by any of the various validation routines in the total system, a Type 020 Error Report File is generated to contain report(s) on the error(s). It is occasionally necessary, when diagnosing problems involving data validation errors, to determine the VME filename of the Error Report associated with the invalid data file. In these cases, it would be very useful if CAS_ENQUIRE could return this information.

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6.3.3.2   Design Options

It was suggested that the Control Logs could be enhanced to record the information necessary for CAS_ENQUIRE to be able to do this.

There is an important points to be made:

> When a sending system sends a data file to a corresponding receiving system, if that data file is found by the receiving system to contain a validation error or errors, the receiving system replies by sending back an Error Notification (STATUS = 28, 29, or 39) via XPERT. In that Error Notification there is a field called SUPPLEMENTARY-FILE-NAME, which contains the VME filename of the corresponding Error Report File. The purpose of providing SUPPLEMENTARY-FILE-NAME is to identify the Error Report File by name to the receiving process within the sending system (i.e. the one that sent the original data file) so that it may be accessed for processing.

> The Error Notification is transitory; it is used to access the Error Report File for processing and to construct in the Control Log a Status Entry Group with STATUS = CALL-REASON, and then it is discarded. Since neither a Status Entry Group nor its Control Header Group has a field to record the value of SUPPLEMENTARY-FILE-NAME, that value is also transitory.

> It is clearly the intention of the designer(s) of the interface that the specification, as given in the HLDSCO [5], should be adequate for processing Error Reports. A requirements to enhance the Control Logs to record SUPPLEMENTARY-FILE-NAME challenges the current specification and so CAPS should be consulted.

There are two possible solutions:

1.   The Proposed Solution:

> In principle, this is a perfectly feasible change. However, it would involve a significant change to the format of the Control Log and, obviously, the processes that manipulate it. This could be raised as a separate issue but implementation would not be trivial; ten man/days is probably not pessimistic. Also it would mean storing an additional eighty bytes in every Control Log entry.

2.   Entry Written to an Additional Log File when Writing to Control Log:

> This a is a variant on the suggested solution. The additional log file would have the same index as the Control Log and CAS_ENQUIRE would be enhanced to read it as well. There are two points to be made:

> > In its favour, in this case "filename" of the Error Report can be recorded directly from the File Notification; there is no requirement to enhance the format of the Control Log to record it.

> > However, another file or pair of files is to be produced, taking up space and having to be controlled, i.e. set up, cycled, archived, and purged, adding to the burden on the housekeeping process.

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6.3.3.3   Recommendations

(Priority B) The implementation of an additional file to provide a log of Error Report filenames in parallel to each of the Control Logs is recommended, although it would have the disadvantages listed under the second solution given above. Richard Smith (ICLE / ESC) is to raise a Change Proposal for CAS (VME).
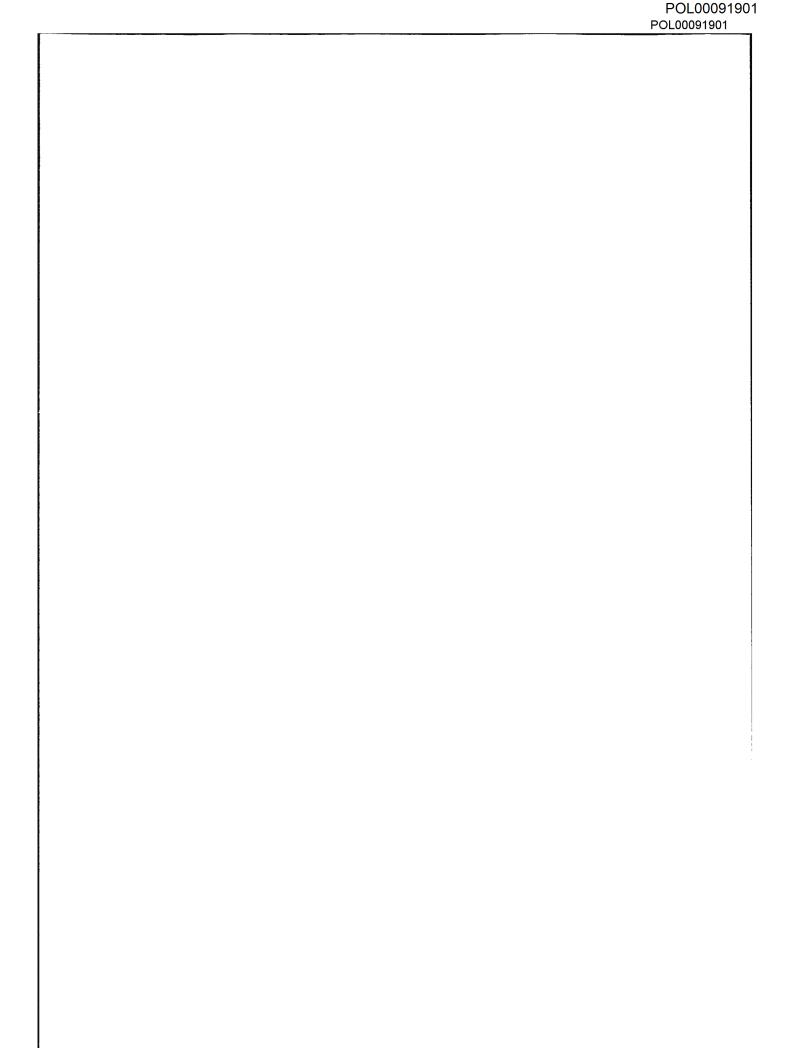
Action: RCS

6.3.4   ISSUE 8:
CAS (VME) USABILITY
IDENTIFYING ERRONEOUS ACCEPTANCE FILES FOR DELETION

6.3.4.1   Description of the Issue

There are four basic types of file that contain data file validation information:

> If CAS (VME) detects that an inbound data file is invalid, it creates a <u>File Level Error Report</u> (name format: FE*iiiissss*020) file based on the validation errors it detects.

> CAS (VME) creates a <u>Record Level Error Report</u> (name format: RE*iiiissss*020) files based on information it receives from the Sequent SMP via FTF.

> The Sequent SMP supplies the required information for zero or more Record Level Error Reports by writing an <u>Acceptance File</u> (name format: AF*ccyymmddnnn*) in the CAS Out Tray.

> For CAS (VME) to generate Record Level Error Reports, the Acceptance File on which they are based must be valid. If it is valid and the Record Level Error Files are created successfully, then the Acceptance File is treated as transient data and deleted immediately. However, if there is any problem, the file is not deleted; instead its name is changed and it becomes a <u>Failed Acceptance File</u> (name format: FAILAF*ccyymmddnnn*).

After diagnosis of a problem involving an invalid data file, the associated file or files containing the validation information tend to be forgotten and left in the CAS Out Tray.

In the case of a File Level Error Report or of a Record Level Error Report, this is unimportant since the housekeeping process deletes these after one week. An Acceptance File is deleted when the resultant Record Level Error Report or Reports have been successfully generated or it is deleted when the Failed Acceptance File is created. It may therefore be regarded as a transient file. A problem arises, however, with the final kind of file, the Failed Acceptance File. It is not purged by the housekeeping process nor is it transient; it is expected that it is deleted manually by operations staff when the underlying problem has been fully dealt with.

6.3.4.2   Design Options

It was suggested that there is a need for an SCL interface that allows the diagnostician to inform CAS (VME) that "All Investigation is Complete" for a problem associated with a

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particular data file. It would identify the original data file by its VME filename and would remove (or copy to another area for later archiving) all the diagnostic files associated with the named data file. This would remove clutter from the CAS Out Tray and thereby reduce possible confusion.

It was suggested, as an alternative, that CAS_HOUSEKEEPING could be enhanced to delete a Failed Acceptance File automatically, although after a suitable period of grace.

1.   The "All Investigation is Complete" Interface:

Such an interface is highly problematical:

> It would involve storing, somewhere, the information connecting the files to be deleted with the VME filename of the original data file.

> It was suggested that the Inward Control Log (ICL) could be enhanced to record the necessary information. However, the ICL does not currently (or in existing later releases of the product) contain the VME filename of the data file. As has been discussed elsewhere in this report, merely recording that information, would require 80 bytes per ICL entry and changing every process that accesses the ICL.

> Nor does the problem end there. Recording the filename of each of the other possible associated files would consume a similar amount of space.

> Alternatively, a separate file could be set up and updated only when files containing validation information are created on the system. The development of this would probably involve a couple of man/weeks, bearing in mind that this new file would be another burden on the housekeeping process.

> Another problem is that the Failed Acceptance File, which is the type that is really the subject of this issue, is usually associated not with one, but with *several* data files. The proposed file for storing the association information begins to look more like a database.

> Also, the data files associated with an Acceptance File, and consequently the Failed Acceptance File, cannot be determined until it is read. If the file is invalid anyway, reading the file is itself problematical.

> It is recommended that this solution is not adopted as the benefit to be gained is unlikely to justify the development cost.

2.   Automatic Deletion by CAS_HOUSEKEEPING:

The suggestion to allow CAS_HOUSEKEEPING to delete a failed Acceptance File automatically goes against the general philosophy of ensuring that diagnostic information is not deleted until a deliberate decision has been made to do so. If it were acceptable to operations staff and explicitly requested, then would be easy to implement; say two man/days work.

3.   Acceptance File Browser Utility:

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A utility could be provided which would operate like that which looks at journals. It would display all failed Acceptance Files and give the caller the options of browsing and / or deleting.

4. Existing EDS File Browser Tool:

Typically, operations staff develop useful tools in order to browse files for diagnostic purposes. EDS already has tool that may be used when adapted.

6.3.4.3 Recommendations

(Priority B) ICL CFM should consult EDS to see if an existing tool may be utilised. Stephen Fowler (ICL CFM) and Steve Parker will provide specification of requirements to Dave Mulroney (EDS) by the end of March.

Action: SF, SP

6.3.5 ISSUE 9: FILE TRANSFER: BOUNDARY OF OPERATIONAL RESPONSIBILITY

6.3.5.1 Description of the Issue

An issue raised by the emergence of the faults described herein, is that of where the boundary lies between the Customer and Pathway regarding responsibility for the detection of, and the resolution of, faults in the total system.

For example, in the case of a failure to provide a File Notification, CAPS representatives have put the case that the Customer's responsibility ends when a data file has been placed in the appropriate CAPS Out Tray and XPERT has been instructed to pass the corresponding File Notification (STATUS = 10) to CAS (VME).

However, Pathway takes the position that, according to contractual agreement, Pathway does not accept responsibility for a file until it has passed back an Initial Acknowledgement (STATUS = 20). Therefore CAPS should not assume that the file, and responsibility for it, has been accepted until an Initial Acknowledgement is received.

One point that should not be forgotten is that the mechanism for alerting CAS (VME) to the existence of a data file and for informing CAS (VME) where to look for it, is the very thing that is failing. Therefore CAS (VME) has no way of knowing of the file's existence.

The mechanism used for alerting CAS (VME) to the existence of a data file is not that originally envisaged in the contractual agreement and the contractual agreement is no longer consistent with the technical specification.

6.3.5.2 Design Options

Considerations of changes to the design are not applicable at this time. However, this should not be taken to mean that changes to the design are ruled out as a partial means of achieving a solution.

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6.3.5.3 Recommendations

i) (Priority A) It is recommended that the contractual agreement is carefully examined for its precision and relevance to actual operational experience and practice. It should also be determined, without prejudice, whether one or both parties are failing to conform to the agreement and, if so, why.

ii) (Priority A) It is further recommended that the results of this exercise are use as a basis of negotiation for a new version of the agreement which takes into account the practicalities of daily operation and support as understood by the parties directly involved: CAPS Operations and Live Support, EDS, ICL CFM, ICL Pathway. The critical division that must be addressed is:

> Where does CAPS responsibility end and Pathway responsibility begin, and vice versa?

NB: There are two closely related issues:

> Issue 28, which concerns the example given above, has been separated from Issue 9, as the original Issue 9 really covered two separate points.

> Issue 19, which concerns the means of recovery from failure of the XPERT software to pass a File Notification.

6.3.6 ISSUE 28:
FILE TRANSFER: DIFFICULTY IN DETECTING FAILURES
(ITSA MEMO [10] "REQUIREMENT 1")

6.3.6.1 Description of the Issue

XPERT has been observed, on occasion, to fail to issue a File Notification for an inbound data file. This problem is dealt with under Issue 2. A further issue is that detecting the problem is currently very difficult.

The CAPS software conforms to the original contractual agreement. It is designed assuming that the responsibility of CAPS ends when a data file has been placed in the appropriate CAPS Out Tray. At this time, XPERT is also instructed to pass the corresponding File Notification (STATUS = 10) to CAS (VME).

However, the CAS (VME) software conforms to the HLDSCO [5]. It is designed assuming that Pathway does not accept responsibility for a file until it has passed back an Initial Acknowledgement (STATUS = 20). Therefore CAPS should not assume that the file, and responsibility for it, has been accepted until an Initial Acknowledgement is received.

Consequently, if XPERT fails to pass a File Notification from CAPS to Pathway, CAS (VME) has no way of knowing of the file's existence; it is not processed at all. The CAPS software, on the other hand, assumes that all is well as it does not check for a returning Initial Acknowledgement.

According to CAPS, a file "missing", "lost", or "late" may not be detected until twenty four to thirty six hours after the event and this is further complicated by the complexity of

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the report. There is a requirement to provide a better service; to identify file transactions as being potentially missing, lost, or late within six to eight hours.

6.3.6.2 Design Options

A scanning utility will shortly be made available to EDS operations staff, that will permit ad hoc scanning of control files. This will facilitate detection of potential file transfer problems.

CAPS design staff are also examining the possibility of including this function in the existing SLA concurrent scan and / or making that scanning process more flexible in use. The final solution should be appropriately auditable and secure.

6.3.6.3 Recommendations

i) (Priority B) Staff supporting the Pathway side of the interface should monitor for late arrival of Initial Acceptance Receipts (CALL-REASON = 20) and take appropriate action for each data file so affected. CAS (VME) already raises an alert, as part of a more general process, in CAS_SCAN_OCL. Stephen Fowler (ICL CFM) reports that this is already in place.

ii) (Priority B) It is recommended that Staff supporting the CAPS side of the interface should monitor for late arrival of Initial Acceptance Receipts (CALL-REASON = 20) and take appropriate action for each data file so affected. This needs to be done more frequently than hitherto and the method prescribed is to utilise the scanning process described above and to raise alerts via the help desk. Mark Smith (CAPS) will ensure that the operational process is adopted.

Action: MSm

iii) (Priority B) It is recommended that CAPS design staff continue to investigate further automation of this function. Mick Clarke (PDA) and Alan Nesbit (CAPS) will discuss the method to be employed with Dave Cant (CAPS HLD) and report by the end of March. See also Issue 29.

Action: MC, AN

NB: A closely related issue is Issue 9, from which this issue has been separated.

6.3.7 ISSUE 10:
CAS (VME) USABILITY:
AUTOMATIC MONITORING OF THE ALERT FILE

6.3.7.1 Description of the Issue

The Alert File is an important tool for support of the live service. In it appear reports of most, if not all, of the incidents that support must address. However, when CAS VME raises an alert it does so simply by writing an Alert Record to its Alert File, which is a simple serial file that is regularly replaced by CAS (VME)'s housekeeping process. To view this file, it is necessary: first to decide to do so, and then to look at it using a VME utility.

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This feature is so simple because it has never been fully specified in a source document. The references to the raising of alerts in the CAS HLD [1] assume the existence of some connection from the VME machine to Sequent SMP and the utilisation of a Unix package ("BMC Patrol" and "Insight Manager" have been suggested). These facilities have never been provided. At the draft design stage, when enquiries were made regarding what provision should be made in CAS (VME) for the monitoring of alerts, the reply was that an alert should be raised simply by adding it to the end of a serial file and that the monitoring would be done by a package to be provided in future.

This situation causes two problems:

1)   There is no means for the operations staff to be alerted to an incident, and be given full details of that incident, at the moment that it occurs. This means that certain kinds of incidents are not discovered until much later.

2)   There is no convenient way of viewing the incidents reported in a clear and well-formatted way and this makes understanding more difficult.

The lack of an automated monitoring facility is a significant usability problem.

The reason why no such facility has been specified is that operational and support responsibility has been subject to continuing discussion and, consequently, the location of the alert monitoring facility is currently undecided.

NB: Whether examining this information and / or carry out corrective action based upon it should be regarded as a regular operations function, or contrarily as a special support provision, is the subject of a quite separate Issue (see Issue 9).

6.3.7.2   Design Options

The Alert Report File is required for operational support purposes. Its provision by CAS (VME) is required by the CAS HLD [1]. If it is to have any value, it should be processed.

Owing to the lack of formal specification for what might be termed the Alert Interface, much of the Alert Record generation has been developed on an ad hoc basis during development; as the need for a new Alert Type was recognised, so it was introduced and its format devised. There has been little feedback on the suitability of the types of alert and the comprehensiveness of the information supplied in each case. It is probable that the fact that they are not processed by any automatic process is a contributory factor.

As an example, a Type 10 ("programme failure") is raised when there is a failure in a programme for which there is no other obvious appropriate alert type. It provides this information:

Header: ALERT-DATE, ALERT-TIME, ALERT-CODE, RESULT-CODE

Tail: PROGRAMME-ID, STAGE

However, it is known that this type of alert is sometimes produced when processing a Receipt (also known as a "Notification") and the data in the Receipt would be very

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useful. There is a different format of alert (used for Types 05 to 08, 11 to 14, 18, and 22) which gives this information:

Header: ALERT-DATE, ALERT-TIME, ALERT-CODE, RESULT-CODE

Tail: RECEIPT, OLD-STATUS

The case described raises some interlinked questions:

"Should operations staff simply accept the that sometimes they will only get a Type 10 and not get the Receipt information that would be useful?"

"Should the system be providing the other format of alert instead, in which case different information (PROGRAMME-ID, STAGE) would be lost?"

"Should the system be providing both alerts for one incident, possibly causing confusion?"

"Should the alert be providing a new combined format of alert, which would be very long (377 bytes)?"

6.3.7.3   Recommendations

i)   (Priority B) In order for the omission of Alert File processing to be rectified, the requirement must be clearly defined and the means and method of processing should be designed and implemented. Whether this would involve the writing of a Patrol "knowledge module" or some other approach depends upon the precise requirement. This requires scheduling into the Pathway development cycle. Graham Lloyd (Pathway) will discuss this with EDS and raise a change proposal, which may or may not involve the CAS (VME) software. If alerting requires a change to the products to be run on VME, then details must be supplied to EDS Core Products for evaluation.

Action: GL

ii)   (Priority B) It is further recommended that the types of alert are reviewed by the Technical Design Authority for the CAPS Access Service and the party *to be involved* in using the Alert File information, in the light of the established requirement.

6.3.8   ISSUE 11: UNDERSTANDING: NEXT-ACTION-TIME

6.3.8.1   Description of the Issue

Operations staff admit to an imperfect understanding of how NEXT-ACTION-TIME works. The perception is that it is a complex and difficult subject and that knowledge of it resides solely in the heads of a few "experts" who are not readily available. Specific topics that require clarification are: a) the implications of the removal of a file's entry from a Control Log, e.g. during the housekeeping process, and b) the implications of the amendment of a file's entry in a Control Log, e.g. when coping with an alert that indicates NEXT-ACTION-TIME has been exceeded.

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The Subject has been covered in several documents during software development, some of them informal correspondence from the Customer, and the ISG [3] and SDS [2] do not reproduce that information in its entirety. Also, the text of the informal documentation is not always clear and was subject to significant discussion. There is a need to bring all of this information together and make it readily available to operations staff, in a form that is digestible and useful from an operations perspective.

6.3.8.2 Design Options

Anne Chambers (ICL Systems) has expressed doubt that NEXT-ACTION-TIME can actually be explained convincingly as it is and that CAPS and Pathway should get together to produce a proper definition of the requirement. A definitive specification would provide a basis for reviewing the current implementation and as well as a document that would be useful in supporting the Live Service.

6.3.8.3 Recommendations

i) (Priority B) It is recommended that Anne Chambers (ICL Systems) will document the current implementation based on the actual code used in CAS (VME).

Action: AOC

ii) (Priority B) It is further recommended that the CAPS and Pathway TDAs review the current implementation. Mick Clarke (PDA) has agreed to represent CAPS in this. Mike Stewart (Pathway) will determine Mick's availability for this task.

Action: MC, MSt

iii) (Priority B) Finally, it is recommended that CAPS and Pathway TDAs get together to produce a proper documented definition of the requirement.

6.3.9 ISSUE 12:
CAS (VME) USABILITY
VIEWING JOURNALS MORE THAN TWO DAYS OLD

6.3.9.1 Description of the Issue

ICL CFM was not aware of a means to see a job journal for CAS (VME) that is more than two days old. This hampers diagnosis for a problem that occurred more than two days ago. This limitation is within the software supplied to browse journals, JMSB, rather than in retention of the journals themselves; CAS (VME) maintains journals for the previous week.

EDS has revealed that a utility, SMG_JMS_RETRIEVE, can be used to retrieve archived journals, up to seventy days old, from tape.

6.3.9.2 Design Options

not applicable

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6.3.9.3   Recommendations

(Priority B) It is recommended that EDS provides documentation of the utility to Pathway support staff (ICL CFM). Derek Carr (EDS) has agreed to do this.

Action: DC

6.3.10   ISSUE 27:
CAPS USABILITY: USE OF SMG_JMS_RETRIEVE UTILITY IS TOO SLOW

6.3.10.1 Description of the Issue

The following was provided by Mark Smith (CAPS):

"It is not possible to retrieve job journals if another user (within the same machine) has currency to the :MASTER.JMSRETRIEVE library. The utility deletes the contents of the library prior to recovering the target journals from tape. The whole process can take upto five hours; this does not include the user maintaining currency to the library. As a result, resolution of Live incidents to within required timescales can be severely jeopardised.

As the CAPS service support team expands to cater for the anticipated increase in incidents, the demand to recover job journals will increase accordingly."

6.3.10.2 Design Options

not applicable

6.3.10.3 Recommendations

(Priority B) It is recommended that this problem be investigated by EDS and the method of retrieval changed to facilitate problem resolution within time scales. Paul Dibb (EDS) and Mike Nicholson (EDS) have agreed to pursue this with EDS Core Products, in consultation with CAPS.

Action: PD, MN

6.3.11   ISSUE 13:
RESPONSIBILITY:
CONTROL OF THE USE OF SUPPORT UTILITIES

6.3.11.1 Description of the Issue

The use of a utility such as CAS_DELETE_CONTROL_LOG_ENTRY and a proposed utility to delete individual Status Entry Groups constitutes a threat to the integrity of the control information stored in the ICL and OCL. Since this control information is the source of audit information for the software, it is consequently also a threat to the integrity of that too.

Clearly, the design of such a utility must be carefully considered in terms of: what it allowed to do, in what circumstances, and how its action is recorded. However, that is not the issue raised here. The point is that use of these utilities, and any others of similar purpose that may in future be developed, must be strictly controlled. They should only be

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used by trained personnel, who have been given the proper authority, and only when the problem and solution are fully understood.

6.3.11.2 Design Options

It was suggested that some thought should be given to controlling the use of these utilities. It may be that the establishment of formal manual procedures and the exploitation of VME security features is sufficient.

It should be understood that the utilities described are not for general use in normal daily operation of the Live Service. Their use should be very rare and the problems that invoke their use should be thoroughly investigated and solved so that they do not recur.

6.3.11.3   Recommendations

i)   (Priority A) ICL CFM should write an Operational Procedures manual to cover this issue of who is allowed to do what with the utilities, in consultation with other interested parties, especially EDS.

NB Assigning this task to ICL CFM should not be seen as pre-judging the outcome of other issues raised herein, e.g. Issue 9, from which it follows on.

ii)   (Priority B) It is recommended that there is a review of the current known conditions, especially those that cause process locking, that invoke the sort of corrective procedure for which the utilities are intended. This review would give rise to corrective action for each condition. Steve Parker (Pathway) has agreed to carry this out, in consultation with the CAS (VME) Development Team.

Action: SP

6.3.12   ISSUE 14:
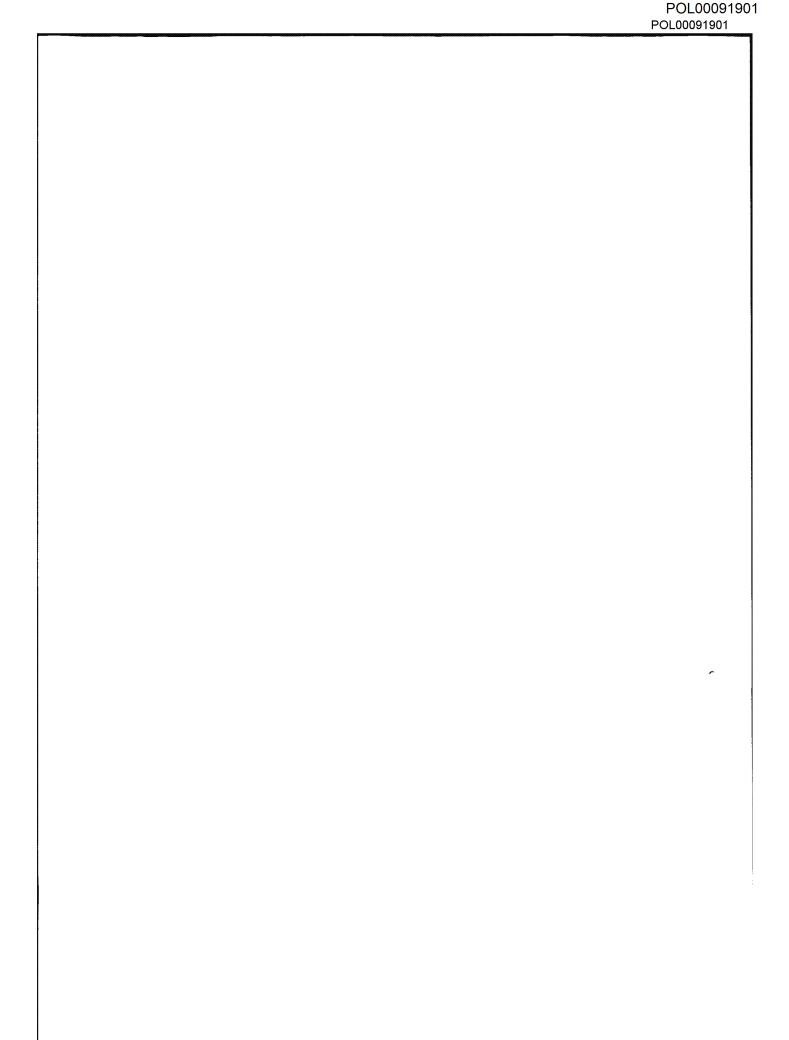### DOCUMENTATION: DISTRIBUTION

6.3.12.1   Description of the Issue

There are two major documents pertinent to the support of the CAS (VME) software. The Installation and Support Guide (ISG) [2] should be the primary reference, as is clear from its title. However, there is useful information for support purposes to be gleaned from the System Design Specification (SDS) [1]. Ideally, all involved in the support of the product should at least have convenient access to copies of both of these documents.

In addition, CFM and Pathway SSC have also issued documents regarding support of the Live Service.

6.3.12.2   Design Options

It was suggested that a "document audit" should be carried out. This would involve consideration of the document set, the distribution list, and the efficacy of the current distribution method.

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6.3.12.3   Recommendations

(Priority B) The Operations Service Manager for Pathway should carry out an audit of the documents that Pathway issues to support the components of the interface on the Live Service. Martin Riddell (Pathway) has agreed to carry this out.

Action: MR

6.3.13   ISSUE 15:
RESPONSIBILITY: RESOLUTION OF PROBLEMS

6.3.13.1   Description of the Issue

At present EDS Technical Support carries out procedures to resolve problems on the Live Service; e.g. manipulating the CAS (VME) Control Logs. It needs to be established precisely who will have this responsibility when the current review has been completed and the consequent actions implemented. Specifically, it must be must be clearly specified that ICL CFM staff will have access to the utilities concerned and also have the sanction to use them, or that they will remain strictly within the control of EDS.

This issue is closely tied to Issue 9 but the emphasis is different:

> Where does normal regular operations (the responsibility of EDS) end, and the provision of support (the responsibility of ICL CFM) begin?

The service provided by EDS to CAPS is specified based on a Service Description, CR/PRP/002, Version 1.0. Taking the content of this into account, there is still a requirement to state precisely what is meant by "operation of the System" and "support of the System" and, additionally, to determine where CFM responsibilities end and SSC responsibilities start.

There is currently a small anomaly in the service that EDS provides, in so far as the Service Description does not allow for manual scheduling of processes yet the CAS (VME) housekeeping process is scheduled manually.
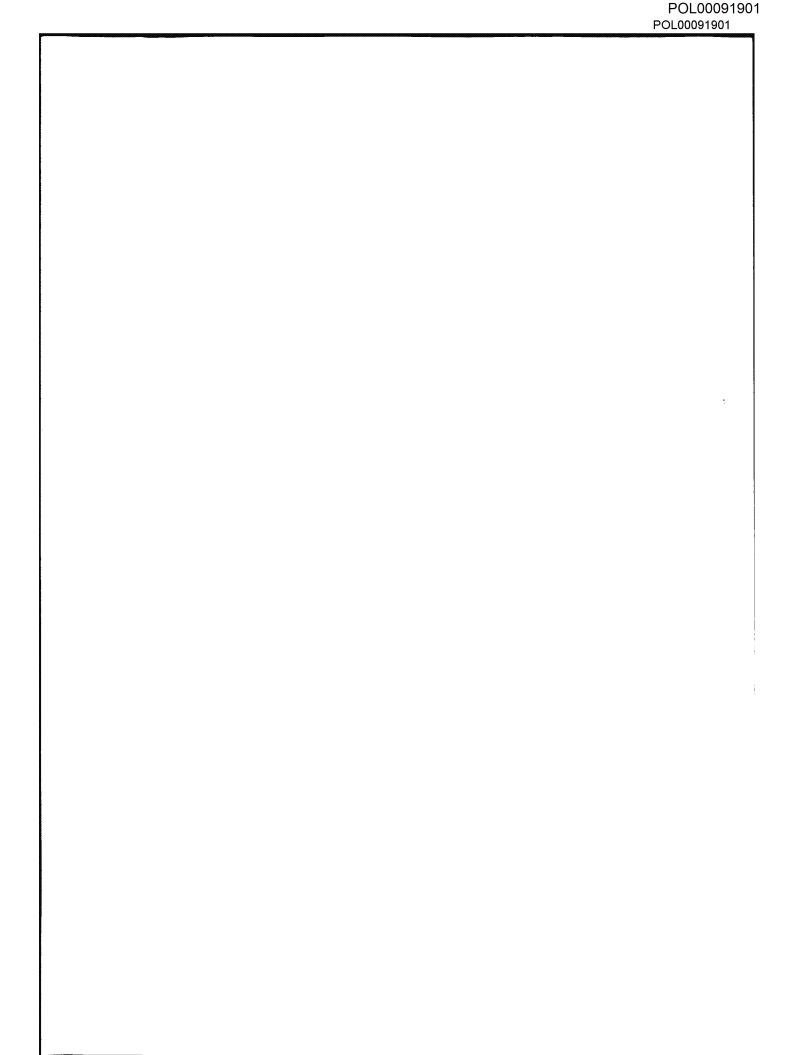
6.3.13.2   Design Options

Considerations of changes to the design are not applicable at this time. However, this should not be taken to mean that changes to the design are ruled out as a partial means of achieving a solution.

6.3.13.3   Recommendations

i)   (Priority A) It is recommended that the existing agreement is carefully examined for its precision and relevance to actual operational experience and practice. It should also be determined, without prejudice, whether one or both parties are failing to conform to the agreement and, if so, why. Stephen Fowler (ICL CFM) and Steve Parker (Pathway) have agreed to produce jointly a matrix of current processes with responsibilities, by 6th March. This will be produced in consultation with Paul Dibb (EDS) and provided to Colin Tweddle (CAPS) for review.

Action: SF, SP

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ii)   (Priority A) It is further recommended that the results of this exercise are use as a basis of negotiation for a new version of the agreement which takes into account the practicalities of daily operation and support as understood by the parties directly involved: CAPS Operations and Live Support, EDS, ICL CFM, ICL Pathway. The critical division that must be addressed is:

> Where does normal regular operations (the responsibility of EDS) end, and the provision of support (the responsibility of ICL CFM) begin?

Martin Riddell will take the results of the above exercise and raise Change Proposals against the Service Description, as necessary.

Action: MR

iii)   (Priority A) This issue should be dealt with in conjunction with Issue 9.

6.3.14   ISSUE 16: RESPONSIBILITY: OPERATION OF CAS TP

6.3.14.1   Description of the Issue

ICL CFM has no knowledge of the CAS TP product or its documentation and wishes to establish who has responsibility for its operation.

6.3.14.2   Design Options

not applicable

6.3.14.3   Recommendations

(Priority C) It is recommended that the Operations Service Manager for Pathway clarifies what is required and what will be required in supporting this product. Martin Riddell (Pathway) will pursue this.

Action: MR

6.3.15   ISSUE 17: PREPARATION: CHANGES TO THE LIVE SERVICE

6.3.15.1   Description of the Issue

Preparation for the support of changes to the Live Service needs to be formalised. When new patches, software upgrades, or new versions of documentation are released, ICL CFM staff need to informed and copies of new items despatched so that the on-site test environment can be kept up-to-date.

6.3.15.2   Design Options

not applicable

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6.3.15.3 Recommendations

(Priority B) It is recommended that the part of Pathway responsible for the release management process, amends that process to include familiarity activity by ICL CFM. Martin Riddell (Pathway) will ensure that whatever changes to CAS (VME) 0300 software are notified to EDS are also notified to ICL CFM.

Action: MR

6.3.16 ISSUE 18:
INTERFACE USABILITY: OPERATIONAL PROBLEM MULTIPLICATION

6.3.16.1 Description of the Issue

When a problem does occur, both sides of the interface, CAPS and CAS, will continue to send receipts (sometimes referred to as "notifications") through the XPERT software. This continuation of regular processing when a problem has occurred often exacerbates the situation. Either the processing is pointless and merely generates more iterations of the same problem or the existence of the original problem gives rise to additional problems. In both cases, *normal* processing is *not* facilitated and both recovery and problem diagnosis are further complicated.

6.3.16.2 Design Options

It has been suggested by S. Fowler (ICL CFM) that some mechanism, which could be invoked to halt temporarily the generation of receipts, or the processing of receipts by XPERT, would greatly ease problem solving. The idea is to stop transfer of receipts and the associated data files in a carefully managed way, across the interface. It would also be useful when routine maintenance has to be carried out. It could be automatically invoked by the alert function on either or both sides of the interface if a policy were agreed between all interested parties.

This is very much a preliminary suggestion and the level of control required is not fully defined. Any solution would require access to XPERT functions and facilities not currently used and ICL CFM might require enhancement to the XPERT package or to the routines that are used to administer it.

EDS has revealed that XPERT has a "CAPS contingency mode" that may be useful in this context although it does not provide the required facility. EDS is willing to contribute to discussion of a potential solution.

Halting the passage of data files temporarily has clear implications for SLAs so contractual matters must be considered in the design and the policy for use of such a function

6.3.16.3 Recommendations

i) (Priority B) It is recommended that ICL CFM considers this possible enhancement to the system in greater detail and documents a formal requirement. Stephen Fowler (ICL CFM) has agreed to do this.

ICL
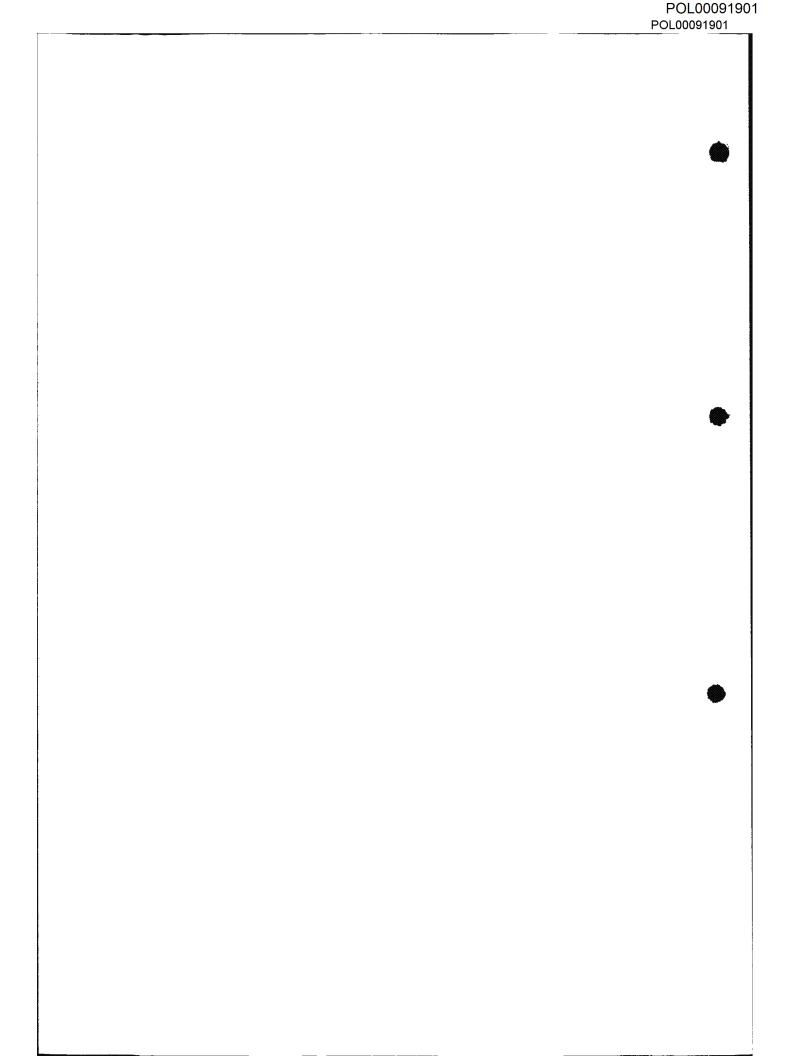
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Action: SF

ii) (Priority B) It is recommended that the practicality of this significant enhancement to the total interface is considered from the high level design perspective. Richard Smith (ICLE / ESC) has agreed to discuss it with Graham Lloyd (Pathway), the TDA for CAS.

Action: RCS

iCL

7.   QUESTION 3: ADEQUATE RESILIENCE

7.1   STATEMENT OF THE QUESTION

"Is the operation of the interface adequately resilient in terms of its ability to recover from failure states?"

7.2   BRIEF ANALYSIS OF THE QUESTION

Putting the question more simply "Can the interface recover from failure states adequately?" There are two points to make regarding this question:

> Firstly, it is closely coupled to Question 2 and it therefore assignment of an issue to one or the other may be debatable.

> In this context "adequate" has been taken to mean "adequate, as judged by the parties directly involved in the day-to-day operation" which conveniently maps onto the intended contributors to this document.

7.3   ISSUES

7.3.1   ISSUE 19:
CAS (VME) USABILITY: CAS_MEND
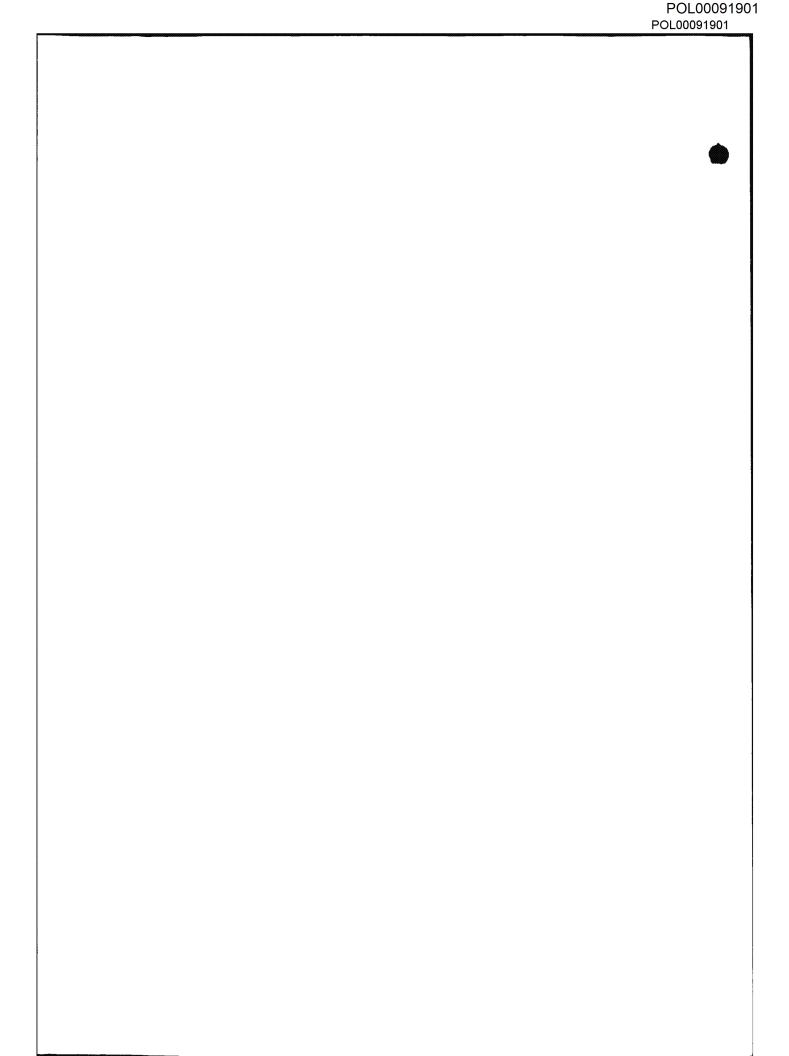
7.3.1.1   Description of the Issue

In order to pass a file to CAS (VME), the CAPS software writes the file to a CAPS Out Tray and passes a File Notification (CALL-REASON = 10) to CAS (VME) via XPERT. Certain problems in the use of XPERT have resulted in: a) such a File Notification going missing because XPERT apparently failed to transmit it, or b) in a data file's entry in the CAS ICL being stuck at STATUS = 10 because the Initial Acknowledgement (CALL-REASON = 20) was rejected by XPERT.

When resolving such problems, it has proven very useful to be able to pass a File Notification to CAS (VME) manually. This has been done by using CAS_MEND, which was provided informally by Anne Chambers (ICL Systems), a member of the CAS (VME) Development Team. It is anticipated that similar problems will be encountered in future and that the same SCL procedure or something very like it would prove equally useful.

7.3.1.2   Design Options

It was strongly suggested that the utility should be formally incorporated in the product at the next release.

It was also strongly suggested that the utility should be issued formally as an enhancement to the live version of the software, since it is already in use.

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However, it was pointed out that the condition that gave rise to actions, in which this utility was used, was an error condition and not normal processing. Such an error condition should be investigated and understood, the current situation recovered, and the root cause eliminated to *prevent repetition*. Therefore, occasion for the use of the utility should be very rare indeed.

It was further pointed out that the use of the utility affects audit data for CAS (VME). The CAS ICL is updated with information from a File Notification specially created on the CAS side of the interface. That information is passed forward to the ICMF. It was queried whether, in principle, a utility of this nature should be provided by Pathway as a standard component of the CAS (VME) product, since it compromises the integrity of the audit trail and its use could prove an embarrassment to Pathway in any contractual dispute.

A compromise position was formulated. It was recognised, by Pathway and CAPS, that the interface is not yet fully stable and that problems of the kind described may be encountered in the future. Such problems require that there should be a means of recovery. If, after due investigation and understanding of the underlying problem, the best means of recovery is found to be the process that the utility in question performs, then it is better to employ a properly designed utility than to use ad hoc means that are likely to be complicated and error prone.

7.3.1.3 Recommendations

i) (Priority B) It is recommended that CAS (VME) is enhanced at Version 0300 by the formal provision of a utility, based on CAS_MEND, which will allow CAS (VME) support staff to provide a File Notification for an inbound data file to CAS (VME), thereby substituting for one that has failed to be passed across the interface from CAPS to Pathway. The design would have to take into account the visibility of the use of the utility in terms of informing the alert system and recording the event for audit purposes. The utility would be based on existing work, however, it would require a significant effort to turn CAS_MEND into a reliable product component. Quite a few hard-coded values would need to be turned into parameters, particularly date and time, and additional validation would probably need to be added. Five man/days is probably the minimum. Steve Parker (Pathway) has agreed to raise a Change Proposal.

Action: SP

ii) (Priority B) Failing the possibility of scheduling the work for Release 0300 of CAS (VME), it is recommended that it is scheduled as a change to Release 0360.

iii) (Priority B) In addition to the above, it is recommended that an alternative method, more congruent to the demands of audit integrity, for recreating a File Notification (CALL-REASON = 10) that has failed to pass across the interface, is agreed between CAPS and Pathway. Graham Lloyd (Pathway) will pursue this.

Action: GL

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7.3.2   ISSUE 20:
CAS (VME) USABILITY: REMOVING CONTROL LOG ENTRIES

7.3.2.1   Description of the Issue

When attempting to recover from a problem, it is often found necessary to delete a Control Log Entry. This allows a file to be re-sent, or it may be used just to tidy up after severe problems with the use of XPERT.

This deletion is currently executed manually, using SCLIO facilities in the VME operating system. The method is complicated, and prone to error. Something could be supplied in the current version of CAS (VME), Release 0300, to facilitate deletion.

7.3.2.2   Design Options

It was suggested that CAS_DELETE_CONTROL_LOG_ENTRY, which appears in later versions of CAS (VME), would provide the required facility. Therefore it should be issued as an enhancement to the live version of the product.

Arguments that apply to CAS-MEND and its use also apply to CAS_DELETE_ CONTROL_LOG_ENTRY.

7.3.2.3   Recommendations

i)   (Priority B) It is recommended that CAS_DELETE_CONTROL_LOG_ ENTRY in Release 0360 of CAS (VME) is reviewed for its conformity to the current requirements for visibility of use, in terms of informing the alert system and recording the event for audit purposes. Any shortcoming should be subject to a Pinicl and procedure updated. Richard Smith (ICLE / ESC) will pursue this.
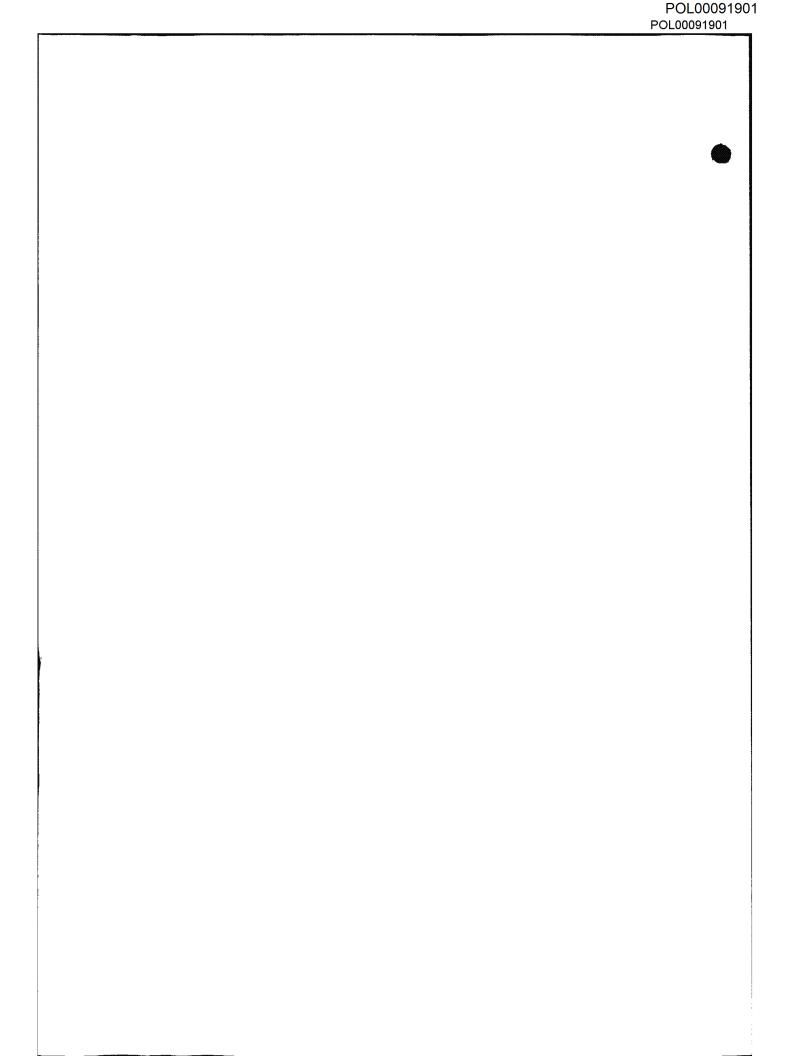
Action: RCS

ii)   (Priority B) It is recommended that, as soon as an adequate version of CAS_DELETE_ CONTROL_LOG_ENTRY is available, it should be brought forward to enhance Release 0300 of the CAS (VME) software. A Change Proposal is to be raised by Steve Parker (Pathway).

Action: SP

7.3.3   ISSUE 21
CAS (VME) USABILITY:
CLEARANCE OF CONTROL LOG STATUS ENTRY GROUPS

7.3.3.1   Description of the Issue

When attempting to recover from a problem, it is often found necessary to amend a Control Log Entry by removing the last status change for a data file. This is used, for example, to remove a Status Entry Group with STATUS = 64 (Invalid Format: Possible Duplicate Notification Received) from the entry for a data file, allowing processing to be restarted.

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This deletion is currently executed manually, using SCLIO facilities in the VME operating system. The method is complicated, and prone to error. Something could be supplied in the current version of CAS (VME), Release 0300, to facilitate deletion.

7.3.3.2 Design Options

It was suggested that a *variant* of CAS_DELETE_CONTROL_LOG_ENTRY, which appears in later versions of CAS (VME), would provide the required facility.

Arguments that apply to CAS-MEND and its use also apply to any variant of CAS_ DELETE_CONTROL_LOG_ENTRY. However, in this case, it was the eventual consensus of opinion that provision of such a utility would be unwise and would not be a proper use of development resources. The circumstances in which it would be employed imply a serious problem that needs to be investigated thoroughly so that the root cause can be determined and corrective and *preventive* action taken. The TDA for CAS, Graham Lloyd (Pathway) is of the strong opinion that provision of such a utility would significantly increase the risk of corrective action being taken and preventive action being given a low priority or, in the worst case, even being forgotten.

7.3.3.3 Recommendations

i)   It is recommended that *no* utility is to be supplied for the reasons given above.

ii)   (Priority B) It is recommended that the underlying problems are addressed on case by case basis, as they arise. Outstanding problems will be raised by Eithne O'Hare (ICL CFM).

Action: EO

7.3.4   ISSUE 30:
CAPS USABILITY:
EFFICIENT EXCEPTION HANDLING
(ITSA MEMO [10] "REQUIREMENT 3")

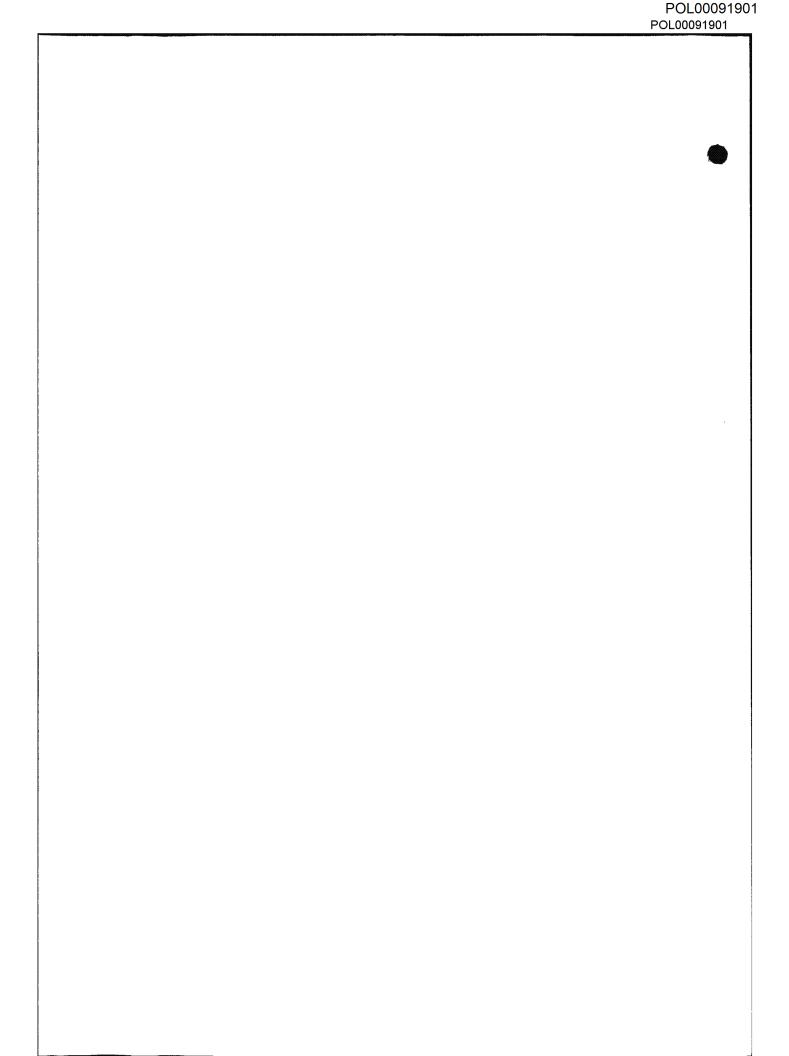### 7.3.4.1 Description of the Issue

"Where the end-to-end process has failed to work to specification, for whatever reason, a suitable range of tools/utilities should be available to allow the resending of full or partial files, even where these are recorded as successfully sent and received. Such tools should be appropriately audited, secure, and financially accountable" [10]

7.3.4.2 Design Options

"[CAPS] High Level Design are examining potential technical solutions for this requirement." [10] The eventual solution may be closely related to that for Issue 29.

7.3.4.3 Recommendations

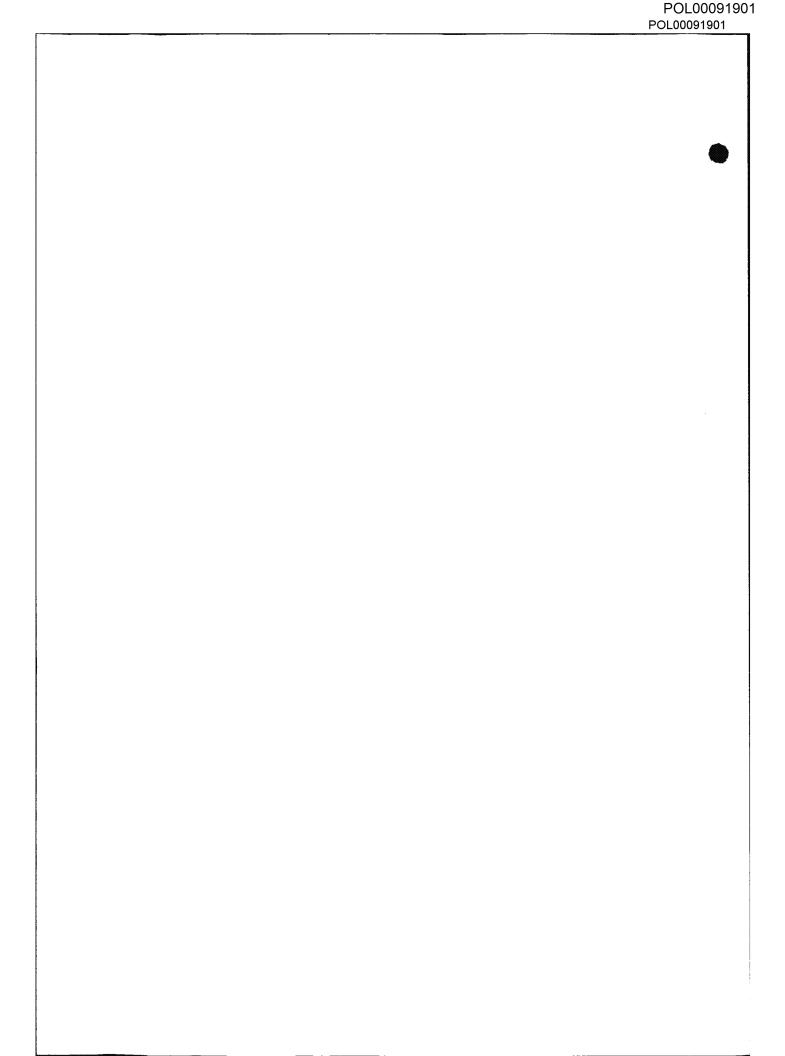(Priority B) It is recommended that a set of utilities as described is identified and implemented, at least in time for "Income Support volumes" [10]. Colin Tweddle (CAPS) will report the Change Request number(s).

COMMERCIAL IN-CONFIDENCE

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8. QUESTION 4: SERVICE AND SUPPORT LEVELS

8.1 STATEMENT OF THE QUESTION

"Can the interface be operated to the contracted service levels and what level of support may be required?"

8.2 BRIEF ANALYSIS OF THE QUESTION

This question covers two rather different topics:

"Can the interface be operated to the contracted service levels?"

Operating to the contracted service levels is something that must be measured against SLAs specified in contractual documents. In order to answer the question fully, the interface needs more exposure in the Live Service. However, specific issues raised under this heading need to be resolved.

"To operate the interface to the contracted service levels, what level of support is required?"

On the separate topic of "level of support", it is anticipated that a definition of the word "level" will emerge if relevant issues are identified. Related issues may be found in under other questions (See Issues 8, 12, and 14).
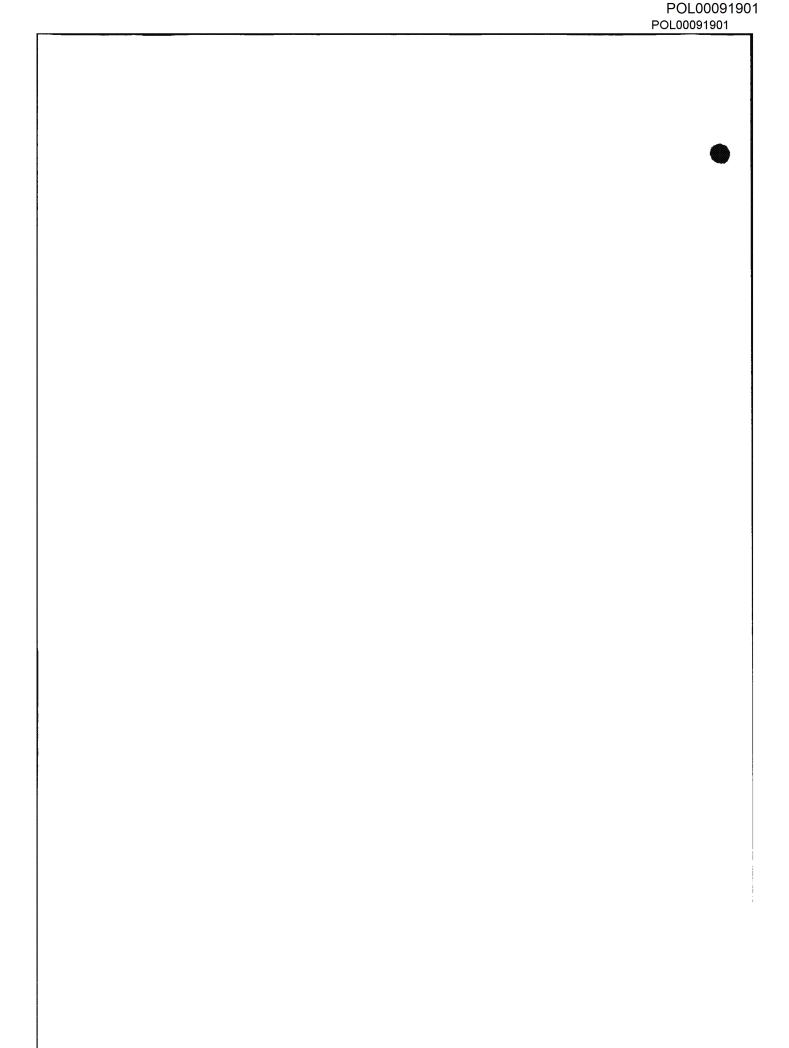
8.3 ISSUES

8.3.1 ISSUE 22:
CAS (VME) USABILITY
HOUSEKEEPING CONTENDING WITH NORMAL PROCESSING

8.3.1.1 Description of the Issue

When reorganising VME indexed sequential files, exclusive access is required. The Control Logs, the ICL and OCL, are indexed sequential files and CAS_HOUSEKEEPING reorganises them. CAS_HOUSEKEEPING has been written is such a way that it only has exclusive access to a Control Log during the brief time in which it copies the file out and then back in again, in order to reorganise it. Even so, it is scheduled to run when no activity is taking place on the Control Logs in order to eliminate the possibility of file contention. Scheduling has proven difficult and it will become even more so when the service becomes more heavily loaded.

8.3.1.2 Design Options

It was suggested that there is therefore a requirement to make CAS (VME) routines, in general, resilient to locking failures on the Control Log files. When a routine is denied access, it should wait until access becomes available, rather than simply fail. This would allow the housekeeping process to be run at any time.

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It was further suggested that it should be ensured that no lengthy process, e.g. CAS_HOUSEKEEPING, is granted exclusive access to the Control Logs for its duration, where this can possibly be avoided.

Anne Chambers (ICL Systems) has reported that the implementation of CAS_ HOUSEKEEPING does *not* have exclusive access for its duration, *only* for those processes that reorganise the Control Logs. She has recommended that, if running CAS_HOUSEKEEPING apparently results in file locking for more than a minute or so, an incident should be raised and evidence provided so that the matter can be properly investigated.

It has been suggested that it might be possible for XPERT to be temporarily inhibited from passing receipts from CAPS to Pathway immediately, while the housekeeping process reorganises a Control Log; the receipts would be delayed until the reorganisation is over. This is envisaged as being controlled automatically by signal from CAS_HOUSEKEEPING. EDS staff were of the opinion that this would require a significant change to XPERT, involving commensurate development work.

8.3.1.3   Recommendations

i)   (Priority B) Sheila Bamber (ICL Systems) has considered what would be required to implement the necessary changes to code. A check would have to be made of the response code whenever a attempt is made to assign a Control Log and, if the file is use, a WAIT procedure called before retrying. Changes could not be localised so extensive testing would be required. Many modules would be involved and so a new full release of Version 0300 of the Software would probably be sensible. Ten man/days is a very rough estimate of the required development work but implementation is strongly recommended. Richard Smith (ICLE / ESC) is to raise a change proposal.

Action: RCS

ii)   (Priority B) It is recommended that, if running CAS_HOUSEKEEPING apparently results in file locking for more than a minute or so, an incident should be raised and evidence provided so that the matter can be properly investigated.

8.3.2   ISSUE 23:
CAS (VME) USABILITY
SCANNING PROCESSES CONTENDING WITH ONE ANOTHER

8.3.2.1   Description of the Issue

Any of the scanning processes, CAS_SCAN_OCL, CAS_FIND_TRANSFERS, or CAS_LOG_AND_INVOKE_CAPS may run for longer than the interval allowed between runs. This means that multiple copies can be running simultaneously. This causes two problems:

> There is contention for resources between a first iteration of a process and an essentially redundant copy, which causes consequent delay.

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There is misleading duplication of alerts arising from the additional redundant processing.

It is the view of Anne Chambers (ICL Systems) that a scanning process is very unlikely to run duplicated in this way unless the scan interval is very short. She made the further point that, once a transfer has been initiated by CAS_FIND_TRANSFERS, a second copy of the same process cannot attempt to process the same file .

A significant contributory factor is that calls to NOTIFY_XPERT_SERVICE take longer than anticipated; ten minutes or more has been observed on occasion. In the case when CAS_FIND_TRANSFERS has 08 entries to be processed and the response by XPERT is slow, the transfer stage could be delayed until a second run of the process starts. This would pick up the same files for transfer and for 08 processing. Slow response by XPERT has a similar effect on CAS_LOG_AND_ INVOKE_CAPS but, in that case, there is consequent contention for outbound data files and / or Acceptance Files.

8.3.2.2   Design Options

Scheduling the processes can be tuned simply by increasing the interval between scans but this may have contractual implications since the expression "at least hourly" appears in the "High Level Design to Satisfy Contractual Obligations".

It was suggested that, in view of the processing time now known to be required by these scanning processes, the method of scheduling them should be reviewed and amended. The Polling UON controls when the scanning processes are run. A method suggested for avoiding the problem altogether would be to have the Polling UON updated by the process itself, at a point in its processing when contention is no longer a possibility. This would be true when it ends but could be earlier, e.g. in the case of CAS_FIND_TRANSFERS, when the transfers have been initiated. The Polling UON would then indicate that another initiation is allowed.
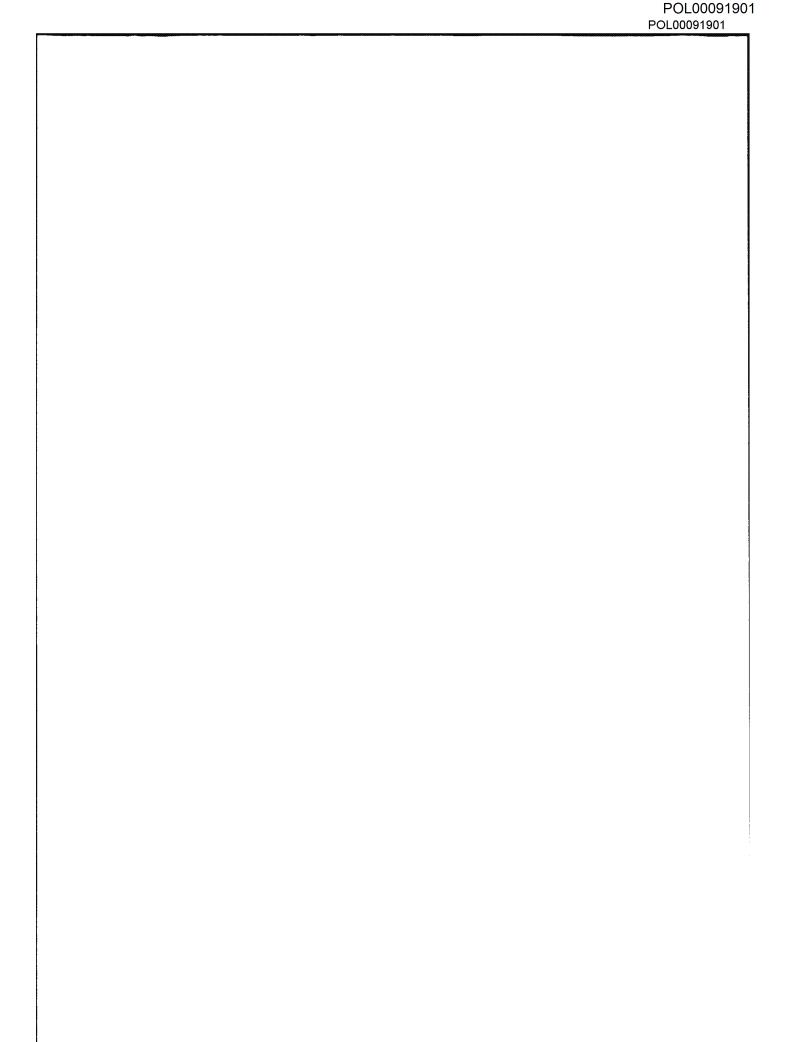
Elsewhere in this document (Issue 22) there is discussed the problem of potential file contention for Control Logs, caused by the housekeeping process. The solution to that problem may have a bearing on the this one.

It would be sensible for a check to be made that locks are not held on a Control Log at any point when NOTIFY_XPERT_SERVICE is called.

The known reasons for slow response time in XPERT have now been addressed successfully (see Issue 1 and Issue 2). While the current proximate causes of the problem have been solved, there is still the possibility of recurrence because of another problem with some part of the interface.

8.3.2.3   Recommendations

i)   (Priority B) It is recommended that the method of scheduling is amended so that a run of a scanning process cannot be started until the previous run has reset the Polling UON.

ii)   (Priority B) It is recommended that a check is made that locks are not held on a Control Log at any point when NOTIFY_XPERT_SERVICE is called.

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8.3.3 ISSUE 24:
CAS (VME) USABILITY:
CONTROLLING WHEN ERROR REPORT FILES ARE PURGED

8.3.3.1 Description of the Issue

It is occasionally necessary for Error Report Files to be purged more frequently than is currently allowed. In certain circumstances, when a common error is detected, such files can accumulate rapidly and cause storage problems.

8.3.3.2 Design Options

The purging of Error Report Files is *not* done by CAS_HOUSEKEEPING; currently it is performed by CAS_IDENTIFY_OUT_TRAY_FILE, which is called by CAS_LOG_AND_AND_INVOKE_CAPS. This automatically deletes files that are more than seven days old.

Potential Solutions:

1.   UON Controlled Deletion by CAS_IDENTIFY_OUT_TRAY_FILE:

   This is essentially introducing controlled variability into the present process by linking it to a value in an existing User Object Node, the System Parameters UON or alternatively the Polling Parameters UON. As well as the code changes to the purging process there would have to be code changes to the processes that access the UON in order to account for the addition of a new value. It would probably involve four or five man/days work.

2.   Parameter Controlled Deletion by CAS_HOUSEKEEPING:

   It was suggested that there needs to be a separate parameter supplied to CAS_HOUSEKEEPING to control the frequency. This is not entirely straightforward as the code would need to be shifted from where it is into the housekeeping process. It would probably involve four or five man/days work. It would have to be considered together with any work coming out of a review of CAS_HOUSEKEEPING.

   If the housekeeping process is set up as an automatic runjob, which is the intention, then changing a parameter value would require significant intervention on behalf of EDS operations staff. This is probably not acceptable.

3.   Error Report File Browser Utility:

   A utility could be provided which would operate like that which looks at journals. It would display all Error Report Files and give the caller the options of browsing and / or deleting. During software development, Anne Chamber (ICL Systems) wrote a utility called CAS_TIDY_OUT_TRAY. This can be used as the basis of a utility on the Live Service but will require significant work, say 5 man/days.

4.   Existing EDS File Browser Tool:

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Typically, operations staff develop useful tools in order to browse files for diagnostic purposes. EDS has revealed that the utility SMG_JMS_ RETRIEVE may be usable, if adapted.

8.3.3.3 Recommendations

i) (Priority B) ICL CFM should determine if SMG_JMS_RETRIEVE (see Issue 27) will answer as a browser tool, if adapted. Stephen Fowler (ICL CFM) will pursue this.

Action: SF

ii) (Priority C) Alternatively, if SMG_JMS_RETRIEVE will not do, it is recommended that an Error Report File Browser utility is developed that would display a list of files and permit browsing and deletion. In this case, Steve Parker (Pathway) will provide a specification of requirements.

Action: SP

iii) (Priority C) It is suggested as an option that the frequency of normal deletion be made controllable via a value in the System UON. Richard Smith (ICLE / ESC) will raise a Change Proposal.

Action: RCS

8.3.4 ISSUE 25:
CAS (VME) USABILITY
HOUSEKEEPING DEMAND FOR TIME AND RESOURCES

8.3.4.1 Description of the Issue

CAS_HOUSEKEEPING is currently perceived to be a large monolithic process that locks out other CAS (VME) processing and runs for a long time. Therefore, it has been questioned whether the housekeeping process really needs to do all that it does, every time that runs.

As stated elsewhere in this document, CAS_HOUSEKEEPING does not lock out any other processes from any files for the duration of its run. It does, however, lock out other processes from each of the Control Logs for the brief time in which it reorganises it. This problem is addressed elsewhere. Having said that, CAS_ HOUSEKEEPING does run for a long time and consume machine resources; one and a half hours has been recorded and it should be remembered that it is scheduled for a quiet time of the day. This poses a potential threat to meeting SLAs so it perfectly reasonable to question whether it needs to do all that it does, and on every occasion that it runs.

Currently the housekeeping process is designed to back up anything and everything, which is a good characterisation of the requirements specified in the source documentation; see e.g. the HLDSCO [5].

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8.3.4.2   Design Options

It was suggested that there is a need to review what the process does. The CAS Development Team can easily provide a list of what is backed up at each run of the process.

It was also suggested that more of its functions, particularly their frequency, could be made subject to parameter control.

If there is a requirement to vary the frequency of some items, it is strongly suggested that control by UON is adopted rather than adding parameters to the procedure call and so adding to the daily operations burden.

8.3.4.3   Recommendations

i) (Priority B) It is recommended that there is a review of the CAS (VME) housekeeping process, CAS_HOUSEKEEPING and the procedures that it calls. This would establish what is currently backed up and how frequently, and would recommend changes to made to relieve the daily burden. Then the changes would have to be implemented. Martin Riddell (Pathway) has agreed to review housekeeping, in consultation with the CAS (VME) Development Team.

Action: MR

ii) (Priority B) It is further recommended that, if the above review determines that the frequency of backing up certain types of files be made subject to control by operations staff, then the software is amended so that this is done by a VME UON.

8.3.5   ISSUE 26:
CAS (VME) USABILITY
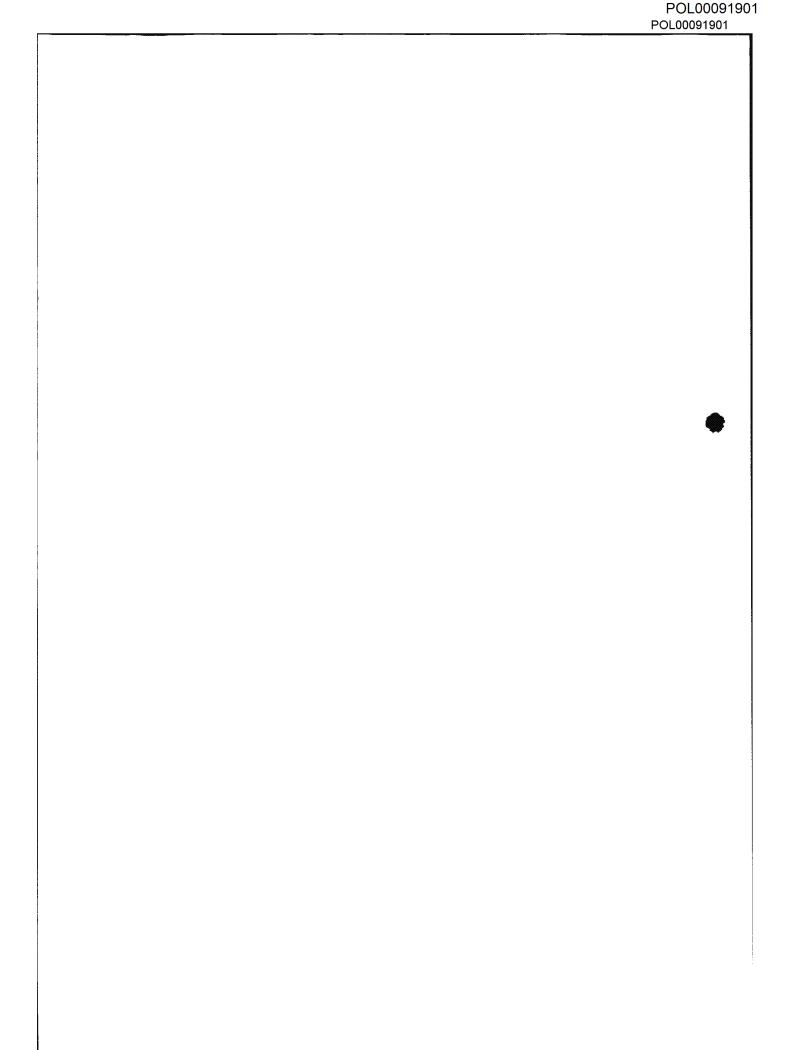### SIZING AND PERFORMANCE

8.3.5.1   Description of the Issue

Performance problems have already been encountered (see other issues herein). Volumes will increase significantly in the future. Also, experience has shown that when an error is encountered it is often as the result of a fault common to a process or file format and so appears many times when it does appear; i.e. there is not just one Alert and one Error Report File, there is a large number of identical items.

It is therefore questioned whether adequate provision has been made to accommodate the files that might be generated by the system, in all but extreme circumstances, or if certain processing methods in CAS (VME) are capable of dealing with the required throughput on the processor available.

8.3.5.2   Design Options

There is a need to review all components of the interface with respect to sizing and performance.

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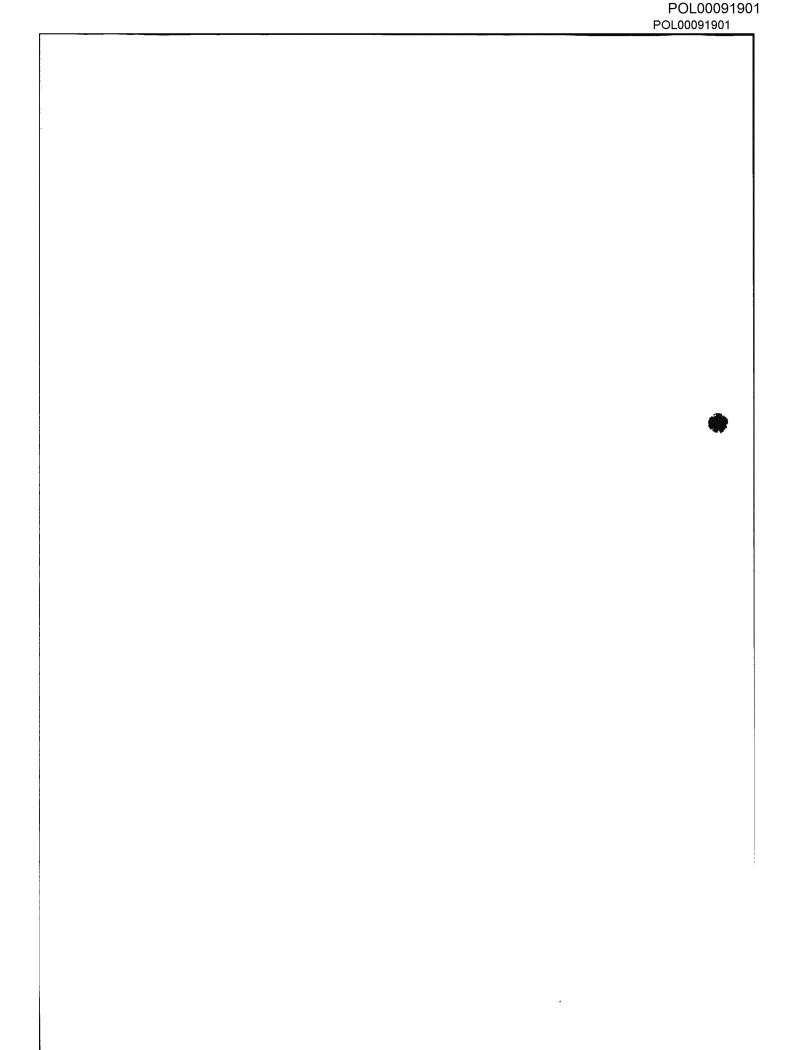Operational Review of the
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Version 0360 of the CAS (VME) product retains moribund Control Log for a period of grace. This will have an effect on sizing and performance. This and other changes to future versions of the product must be taken into account.

8.3.5.3 Recommendations

(Priority B) It is recommended that the components of the interface, e.g. CAS (VME) are made subject to a sizing and performance study, which would take into account current operational experience and predicted growth, in order to determine whether the those components can cope with the load on the given platforms. Special consideration should be given to exceptional circumstances, e.g. large quantities of failed files.

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9.   ANNEX 1: TERMS OF REFERENCE

... to be supplied.