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12th September 2007

Message Transmission Protocol
Common Data Network

Background Paper for:

CBP 2007-001/01 Message Transmission Protocol

CBP 2007-002/01 Common Data Network

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1   Contents

The purpose of this document is to provide background information for the following two Common Business Practices (CBPs):

- 2007/001/01 Message Transmission Protocol
- 2007/002/01 Common Data Communications Network

The first part of the document explains the business problem that these CBPs aim to address.   The subsequent sections detail the implications of adopting the CBPs.

It should be noted that both of the CBPs have been developed in parallel and are reliant on each other's adoption. The reason that two CBPs have been developed, rather than one combined CBP is largely historic. For the purpose of review and acceptance they should be regarded as a single entity.

2   Business Problem

EDIG@S has become the de facto electronic message standard for commercial messages between Traders & Shippers, TSOs, DSOs and Producers within the European Gas Supply Chain.   The EDIG@S standard specifies the business information and the way it must be formatted as an electronic document. However, it does not specify how the message must be transmitted between the sending and receiving organisations or the data networking protocol.

At present there is no common standard for the data network or the way in which EDIG@S messages are transmitted. This means that although it is possible to purchase applications that generate and translate EDIG@S documents, the way in which they must be sent or received depends on how the other party has implemented EDIG@S. This means that in practice it is not possible to implement a single EDIG@S gateway for an organisation as the choice of technology used is typically agreed on a bilateral basis.

Today EDIG@S messages are transmitted using X25, Dial-up ISDN and private data networks. Various transmission protocols are used including OFTP, FTP and AS2.

The aim of the CBPs is to:

- Enable organisations to implement a single EDIG@S gateway that can seamlessly communicate with all other organisations using EDIG@S.

- Reduce overall costs for the European Gas Industry by reducing the portfolio of technology that is needed to communicate with each other.

- Support the increased adoption of EDIG@S by simplifying the required technical architecture.

- Increase the security and reliability of EDIG@S messaging to meet current business needs.

- Support the transmission of EDIGAS messages in whatever file-based formats are defined in the prevailing EDIGAS standard.

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3 CBP Common Data Communications Network

This CBP proposes that the public internet is used as the data network for the transmission of EDIG@S Messages.

3.1 Public versus Private Networks

The IT Communications and Network Working Group (ITCN WG) started discussion and consultation on this topic in 2003. The key issue in the debate has been whether to recommend a private data network or to use the public internet.

A summary of the differences between private and public networks is described below:

Public Internet	It is not possible to get a network service provider to guarantee the availability of end-to-end connection between the two communicating organisations. It is possible to take practical steps to mitigate this risk (eg to contract with two separate internet service providers) but it is not possible to get a commercial agreement which contractually guarantees the connection. Also, the quality of service cannot be guaranteed as is subject to events on the wider internet.
Private Data Network	As long as all participants use the **same** private data network, the network service provider will contractually guarantee availability of the end-to-end connection between the two communicating organisations.

In order to better understand the views of the EASEE-gas membership, a questionnaire was issued and the results presented to the Executive Committee in March 2007. There were 15 responses to the questionnaire. The full results of the questionnaire can be found on the EASEE-gas website.

A summary of the results is as follows:

- There was a strong preference (72% of respondents rated this as HIGH) for a service level for end-to-end connectivity.

- Only 10% of respondents would take legal action against a network service provider if they failed to meet the service level.

- 64% of respondents believed that it was a commercial risk for the industry to contract with a single network service provider. This is required to provide a service level for end-to-end connectivity.

- 80% of respondents would not change their business continuity arrangements for the transmission EDIG@S message if there was no guaranteed service level for end-to-end connectivity.

The choice to select the public internet as the Common Data Network was based on the following rationale:

- Based on the results of the questionnaire, it is unlikely that it would be possible to get EASEE-gas members to contract with a single private data network provider.

- Although a significant majority of members indicated that they highly rated the need for a service level on the data network, an even larger majority would not change their existing business continuity arrangements if a service level wasn't available or take legal action if a service level was not met.

- Most organisations already use the public internet for business to business commercial transactions.

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- Using the public internet is significantly cheaper than using a private data network.

3.2 Security Implications

The public internet is inherently insecure. The decision to use the public internet means that the security of the EDIG@S messages must be handled by the chosen transmission protocol.

The CBP also stipulates that each organisation is responsible for ensuring appropriate security between their internal networks and the public internet.

4 CBP Message Transmission Protocol

This CBP proposes that Applicability Statement 2 (AS2) is used to transmit EDIG@S messages between organisations.

The purpose of the transmission protocol is to:

- Manage the sending and receipt of EDIG@S messages.

- Provide a centralised address book of all organisations that can communicate using EDIG@S.

- Ensure that messages cannot be tampered or intercepted during transmission, and that the receiver can confirm the authenticity of the message.

4.1 Selection of Protocol

The ITCN WG defined a number of business requirements that needed to be met by the chosen protocol for the transmission of EDIG@S messages.

A number of protocols (including FTP, sFTP, http, https, OFTP, SMTP, ebMS, AS1, AS2, AS3) were evaluated and scored. AS2 obtained the highest score and was therefore chosen.

4.2 Interoperability

AS2 has been defined by the Internet Engineering Task Force (IETF) and is a technical standard that is commonly used for business to business communications. AS2 gateways are commercially available from a number of software vendors.

To ensure that the AS2 gateways implemented by organisations are compatible, it is recommended that only those products that have been certified by the Drummond Group (www. drummondgroup.com) are used.

4.3 Administrative Requirements

To implement security it is necessary for digital certificates to be used. These are used to ensure that messages are encrypted and authenticate who the message is from.

The CBP proposes that the EASEE-gas General Manager is responsible for the issuing and renewal of digital certificates. In practice, it is expected that this role would be outsourced to an external agency (Certification Authority) that would operate this service on behalf of EASEE-gas.

As part of the implementation of this CBP, the ITCN WG will run a tender to select an appropriate Certification Authority and define the agreed business procedures.

In addition, the EASEE-gas General Manager would be responsible for maintaining an address book of all the EDIGAS gateways that can communicate using AS2 over the public internet. This means that there is no need for each organisation to maintain an address book.

The administrative activities related to the management of digital certificates and the address book have been presented to the EASEE-gas Board. The Board have indicated that in principle they have no objections to EASEE-gas taking on these extra administrative functions.

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5   Implementation Timetable

TSOs are key enablers to driving the implementation of the proposed CBPs.

The implementation timetable specifies that TSOs need to have the ability to send and receive EDIG@S messages using the technical specification detailed in the CBPs from the end of 2008 and that all other methods of transmission of EDIG@S messages are withdrawn at the end of 2009.

As TSOs act as a hub of electronic messaging in the gas supply chain, this will drive all segments of the industry to adopt the CBPs within the timetable.

When the CBPs are approved, this means that there will be a minimum of 18 months for organisations to prepare for their implementation, with a further 12 month transition period.