AS2 or FTP: What’s Best for Your Company

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Family Feud: AS2 Versus the FTP Clan
Selecting the Right Option for Your B2B Needs
Agenda

- AS2 vs FTP
  - Review of basics
  - How do they work?
  - How to choose the best one?

- GXS Solutions for Connectivity
  - Options available
  - Additional services

- Q&A
What Is a Protocol?

To illustrate the basics of a communication protocol, let’s buy some furniture…
IKEA Protocol for Furniture Transfer
IKEA Protocol for Furniture Transfer

Server

Client
IKEA Protocol for Furniture Transfer

Server → Channel → Client
IKEA Protocol for Furniture Transfer

Synchronous Request/Response
(You go to the store, find it, put it on a cart, buy it, and drive it home.)
N.C. Furniture Protocol
N.C. Furniture Protocol

Server

Client
N.C. Furniture Protocol

Server

Channel

Request

Response

Client

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Understanding a Comms Protocol

- Clients are requesting data (in the B2B scenario) or services
- Servers are providing the data or services
- The Channel is how the request and data move (may be combined or discrete)
- Client/Server is a role – a given system may be both depending on the situation (AS2)
Looking at the Protocol Families
A Shared “Family Tree”

Internet Protocol (IP)
A Shared “Family Tree”

- Transport Control Protocol (TCP)
- Internet Protocol (IP)
- (UDP)
A Shared “Family Tree”

TCP/IP

- Transport Control Protocol (TCP)
- (UDP)
- Internet Protocol (IP)
A Shared “Family Tree”

TCP/IP

File Transfer Protocol (FTP)

Transport Control Protocol (TCP)

Internet Protocol (IP)

Hyper-text Transfer Protocol (HTTP)

(UDP)
A Shared “Family Tree”

TCP/IP

- Internet Protocol (IP)
- Transport Control Protocol (TCP)
- Hyper-text Transfer Protocol (HTTP)
  - HTTP over SSL (HTTPS)
  - FTP Secure or FTP-SSL (FTPS)
- File Transfer Protocol (FTP)

(UDP)
A Shared “Family Tree”

TCP/IP

- Internet Protocol (IP)
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- Applicability Statement 3 (AS3)
- Applicability Statement 2 (AS2)
A Shared “Family Tree”

TCP/IP

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- Applicability Statement 2 (AS2)
- Applicability Statement 3 (AS3)
A Shared “Family Tree”

TCP/IP

Internet Protocol (IP)

Transport Control Protocol (TCP)

Applicability Statement 3 (AS3)

FTP Secure or FTP-SSL (FTPS)*

File Transfer Protocol (FTP)

Applicability Statement 2 (AS2)

HTTP over SSL (HTTPS)

Hyper-text Transfer Protocol (HTTP)

FTP Secure or FTP-SSL (FTPS)*

Applicability Statement 3 (AS3)

HTTP over SSL (HTTPS)

Hyper-text Transfer Protocol (HTTP)
The Extended Family

EDIIINT

AS3  AS2  AS4  AS1

SOAP

FTPS  HTTPS

FTP  HTTP  SMTP

The Internet

Transport Control Protocol (TCP)

Internet Protocol (IP)
How FTP Works (Active Mode)

FTP Client

Command Channel

Random port above 1023

Port 21

FTP Server

Server

Server
How FTP Works (Active Mode)

FTP Client → FTP Server
- Command Channel
  - Random port above 1023
  - Port 21

FTP Server → FTP Client
- Data Channel
  - Random port +1 (1024)
  - Port 20
How FTP Works (Active Mode) Challenge

- **FTP Client**
  - Random port above 1023 to FTP Server
  - Command Channel

- **FTP Server**
  - Port 21
  - Port 20
  - Firewall that HATES inbound connections
How FTP Works (Passive Mode)

- FTP Client
- Command Channel
- Random port above 1023
- Port 21
- FTP Server
How FTP Works (Passive Mode)

FTP Client

Command Channel

Random port above 1023

Port 21

Server opens a port in the firewall for the client to use for data (>1023)

FTP Server
How FTP Works (Passive Mode)

FTP Client

Command Channel

Random port above 1023

Data Channel

Random port +1 (1024)

Server opens a port in the firewall for the client to use for data (>1023)

Port 21

Server
How FTP Works (Passive Mode)

Challenge

FTP Client

Server

FTP Server

Command Channel

Data Channel

Random port above 1023

Port 21

Random port +1 (1024)

Network Admin that HATES inbound connections

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Securing FTP

- **VPN**
  - Creates a secure “tunnel”
  - Can be used with any protocol, not just FTP
  - Some standards (especially server-to-server), but may require client install

- **FTPS**
  - 2 types
    - Explicit
    - Implicit
  - Uses TLS/SSL to encrypt one or both channels
Virtual Private Network (VPN)
Virtual Private Network (VPN)
Virtual Private Network (VPN)
Explicit FTPS

FTP Client

Server

Command Channel

Data Channel

FTP Server

Server
Explicit FTPS

FTP Client

Server

Command Channel

Data Channel

FTP Server

AUTH SSL
Explicit FTPS

FTP Client

Command Channel

AUTH SSL

Data Channel

FTP Server

Server

Server
Explicit FTPS is usually used so that non FTPS clients can still connect.
Explicit FTPS is usually used so that non FTPS clients can still connect.
Implicit FTPS

FTP Client

Command Channel

FTP Server

Server

Server
Implicit FTPS

FTP Client

Command Channel

Data Channel

FTP Server

Server
Implicit FTPS always uses secured channels, but the software must support it to connect.
AS2 Provides Value-Added Capabilities

- **Security**
  - Data is encrypted and signed
  - Data is secured at all points
  - Digital signatures allow non-repudiation

- **Message Management**
  - Usage of “receipts” (called MDNs)
  - Defined service levels

- **Interoperability**
  - Extensive interoperability testing
  - Certification by Drummond assures products work together
How Does AS2 Work?

Public Internet or Other TCP/IP Network

Partner A

Sender

Receiver

Partner B
How Does AS2 Work?

Partner A

Sender
• Sign

Receiver

Partner B

Public Internet or Other TCP/IP Network
How Does AS2 Work?

Partner A

- Sender
  - Sign
  - Encrypt

Public Internet or Other TCP/IP Network

Partner B
How Does AS2 Work?

**Sender**
- Sign
- Encrypt
- Send

**Receiver**
- Receive

**Public Internet or Other TCP/IP Network**

**HTTP**
How Does AS2 Work?

**Sender**
- Sign
- Encrypt
- Send

**Receiver**
- Receive
- Decrypt

**Public Internet or Other TCP/IP Network**

**HTTP**

Partner A

Partner B
How Does AS2 Work?

**Sender**
- Sign
- Encrypt
- Send

**Receiver**
- Receive
- Decrypt
- Verify Signature

Public Internet or Other TCP/IP Network

HTTP
How Does AS2 Work?

Sender
- Sign
- Encrypt
- Send

Receiver
- Receive
- Decrypt
- Verify Signature
- Send MDN

Public Internet or Other TCP/IP Network

HTTP
How Does AS2 Work?

**Sender**
- Sign
- Encrypt
- Send
- Verify MDN

**Receiver**
- Receive
- Decrypt
- Verify Signature
- Send MDN

Public Internet or Other TCP/IP Network

HTTP
A Quick Comparison – Pluses

**AS2 – Ready for Business**

- Purpose built for B2B
- Interoperable security
- Interoperable non-repudiation
- Built-in business grade transaction management
- Proxy/firewall friendly
- Interoperability testing process
- Widely adopted in many communities
- (opt) Re-start
## A Quick Comparison – Pluses

<table>
<thead>
<tr>
<th>AS2 – Ready for Business</th>
<th>FTP – I’m Already Here</th>
<th>FTPS – Privacy Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose built for B2B</td>
<td>Ubiquitous, on basically every computer</td>
<td>Channel encryption</td>
</tr>
<tr>
<td>Interoperable security</td>
<td>Widely used in almost every community</td>
<td>Low administrative overhead</td>
</tr>
<tr>
<td>Interoperable non-repudiation</td>
<td>Vast amounts of experience</td>
<td>Relatively simple</td>
</tr>
<tr>
<td>Built-in business grade transaction management</td>
<td>Nearly instant setup</td>
<td></td>
</tr>
<tr>
<td>Proxy/firewall friendly</td>
<td>Low administrative overhead</td>
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<tr>
<td>Interoperability testing process</td>
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*low administrative overhead
A Quick Comparison – Minuses

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<td>Requires special software</td>
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<tr>
<td>Certificate administration</td>
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<td>Higher processing overhead (for encryption and digital signature)</td>
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### A Quick Comparison – Minuses

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<th><strong>AS2 – Specialist</strong></th>
<th><strong>FTP – Master of None</strong></th>
<th><strong>FTPS</strong></th>
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<tr>
<td>Requires special software</td>
<td>What security?</td>
<td>All the minuses of FTP</td>
</tr>
<tr>
<td>Certificate administration</td>
<td>No standard guaranteed delivery</td>
<td>Not as ubiquitous as FTP</td>
</tr>
<tr>
<td>Higher processing overhead (for encryption and digital signature)</td>
<td>No interoperability testing</td>
<td></td>
</tr>
<tr>
<td>More keys/IDs to manage</td>
<td>No standardized document tracking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requires two network connections</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be difficult (or impossible) to traverse some networks (NAT)</td>
<td></td>
</tr>
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And the Winner Is…

GXS Top Choice Award 2011

Applicability Statement 2 (AS2)
A Hybrid Community to Mediate Protocols

Partners using same protocol

Partners that use a different protocol

FTP or AS2 Gateway
GXS Communications Portfolio
Your B2B Communications Decisions

Which protocol? How to connect?
AS2 and FTP/VPN

Most Popular Protocols for New GXS Clients

Protocols Selected by New GXS Clients 2008-2010

- AS2
- FTP/VPN
- SFTP
- FTPS
- Other
Global, Flexible Connectivity Options

Enabling Businesses to Make Technology Decisions Independent of Their Partners

Legacy Protocols
- Async / Bisync & SNA
- X.25
- X400
- MQ Series

Other Services
- VAN Interconnect
- Private IP Networks (e.g., ANX, ENX)
- Frame Relay
- Web Forms
- EDI-to-Fax

Internet Protocols
- FTP/VPN, S/FTP and FTP/S
- SOAP & HTTPS
- AS1, AS2, AS3
- OFTP

Trading Grid®
Full Portfolio of AS2 Options on GXS Trading Grid

Your Company

AS2

Internet

GXS Trading Grid®

AS2 Direct Trading Partners

Trading Partners
Full Portfolio of AS2 Options on GXS Trading Grid

- Real-time, efficient communications with your entire community
- One implementation with GXS, GXS manages community
- All the value-added transaction management services
- Leverages AS2 software already in place
- Reduce risk of failed connectivity
Full Portfolio of AS2 Options on GXS Trading Grid

- Real-time, efficient communications with your entire community
- One implementation with GXS, GXS manages community
- All the value-added transaction management services
- Leverages AS2 software already in place
- Reduce risk of failed connectivity

Additional AS2 Services:
- **AS2 Contingency**
  - Back-up access if your AS2 server goes down
- **AS2 Outsourcing**
  - Comply with AS2 mandates without adding infrastructure, expense, and expertise
Full Portfolio of Secure FTP Solutions

Your Company

Secure FTP

Internet

Trading Partners

Multiple FTP options:
- FTP over VPN
- SFTP (SSH FTP)
- FTPS (FTP/SSL)

- Easy to implement
- Standards based
- Wide range of client software support
- Multiple security options
GXS BizManager® Software

Behind-the-Firewall Connectivity Software for Every Type of User

Functionality

BizManager BizLink
unlimited connections

BizManager400
unlimited connections

BizManager BizConnect
Up to 25 connections

Community Size

Windows, Red Hat and SUSE Linux, Solaris, AIX, HP-UX

AS400

Windows, Red Hat and SUSE Linux
And More—GXS Is the Largest Integration Cloud for B2B
Thank You for Your Participation!

For More Information:

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