



WHITE PAPER 

## AS4: What's in it for you?

4 ways the web services interoperability standard can modernize your IT infrastructure and speed digital transformation

AS4 is a state-of-the-art interoperability protocol that simplifies and standardizes the use of web services for B2B data exchange and integration. Adoption of the standard continues in large and diverse ecosystems such as the European gas industry and the Australian government.

How you integrate your applications and data flows with your suppliers, customers, partners, and regulators is more than an IT issue. It is also a critical business issue, since B2B processes (such as order fulfillment, delivery, invoicing, and payments) impact everything from revenue and expenses, to risk management and compliance, to growth strategies and multi-national M&A.

If your B2B and EDI infrastructure is disjointed and outdated, then it's basically a cost center that can do little to help your business expand, improve efficiency, or respond quickly to problems, regulatory changes, and windows of opportunity in the era of digital business. But if your infrastructure is modern, integrated, agile, and based on the latest standards, it can do all those things and more.

## AS4 ensures standardized interoperability for B2B web services

AS4 – an applicability statement implemented using web services and SOAP-based specifications – is a modern incarnation of previous applicability statements that were implemented using SMTP (AS1), HTTP (AS2) and FTP (AS3). AS4 represents the state-of-the-art for secure data exchange and interoperability with a simple mechanism of acknowledgment, non-repudiation of data origin, and non-repudiation of receipt – the central requirements for secure data exchange.

At a high level, the OASIS Standard defines AS4 as a combination of:

- Three primary conformance profiles (CPs) that define three subsets of ebMS 3.0 features:
  1. The AS4 ebHandler CP supports both Sending and Receiving roles, and for each role both message pushing and message pulling.
  2. The AS4 Light Client CP supports both Sending and Receiving roles, but only message pushing for Sending and message pulling for Receiving. In other words, it does not support incoming HTTP requests, and may have no fixed IP address.
  3. The AS4 Minimal Client CP does not support the push transport channel binding for the Receiving role and therefore does not require HTTP server capabilities. As its name indicates, this CP omits all but a minimal set of features.

The AS4 profile of the ebMS 3.0 specification brings continuity to the principles and simplicity that made AS2 successful, while adding better compliance to web services standards, and features such as message pulling capability and a built-in Receipt mechanism.

Using ebMS 3.0 as a base, a subset of functionality is defined along with implementation guidelines adopted based on the “just-enough” design principles and AS2 functional requirements to trim down ebMS 3.0 into a more simplified and AS2-like specification for web services B2B messaging. In addition to addressing EDIINT requirements, a Minimal Client conformance profile is provided that addresses lower-end exchange requirements<sup>1</sup>.

---

<sup>1</sup> AS4 Profile of ebMS 3.0 Version 1.0. 23 January 2013 OASIS Standard



- An optional complementary CP that specifies how to use AS4 endpoints with ebMS 3.0 intermediaries. This CP is based on a simplified subset of the multi-hop messaging feature defined in ebMS 3.0 Part 2, Advanced Features specification (ebMS3ADV).
- An AS4 usage profile that defines how the standard should be configured and used by a community of users to ensure best compatibility with business practices and interoperability. A usage profile usually points at required or compatible CPs.

## Here are 4 ways AS4 can modernize your IT infrastructure and speed digital transformation:

### 1 Industry mandates in your country or region

In 2013, the Australian government designated AS4 as the mandatory messaging standard for all B2G and B2B data exchange for its federal superannuation industry project, SuperStream. Also in 2013, ENTSOG (the European Network of Transmission System Operators for Gas) announced that it would use AS4 as the common data exchange protocol to facilitate and enhance cooperation between national gas transmission system operators across Europe.

Why are large entities like these choosing AS4 over more widely implemented alternatives like AS2, FTP, and general web services? Part of the answer is that AS4 both simplifies web services adoption for B2B interactions (by constraining the ebMS standard) and provides

new functionality, including the latest security algorithms, a message-pulling capability, a built-in receipt mechanism, and simplified profiles that enable organizations to implement only the features they require. But the other part of the answer, and perhaps the most important, is that AS4 paves the way for international interoperability for decades to come.

### AS4 is ready for the era of digital business

While older protocols are reaching the end of their useful lives or cannot comply with current security standards, AS4 is implemented using modern web services standards (WS-\*), including WS-Security. The standardized B2B web services profiles make it easier (and safer) to integrate internal services with external parties via web, cloud, mobile, and partner channels. So, rather than building on aging B2B/EDI infrastructure or hiring programmers to create custom web services profiles, organizations are seizing the opportunity to start with a clean slate and establish a new interoperability platform for B2B integration using forward-looking technology.

In addition to SuperStream and ENTSOG, other government bodies and industry communities are adopting the AS4 messaging standard:

- **Aerospace.** To connect more than 8,000 freight forwarders with large companies
- **EU e-government.** To enable cross-border data exchange among governments
- **Retail.** To connect suppliers, distributors, and stores

- **Building and construction.** To connect general contractors, plumbers, wholesalers, electricians, etc.
- **Electricity.** To connect distributors and suppliers across borders

## 2 Extend the reach of your internal SOA architecture to include customers and partners

Even if you aren't facing a current government regulation or industry mandate to comply with AS4, it probably won't be long before (a) at least some of your customers and partners make it a requirement and/or (b) you want to extend internal web services to your external trading community.

For example:

- Financial institutions are focused on improving the customer experience with new digital experiences and services, immediate payments, and straight-through processing
- Healthcare providers need to secure mobile health services

Companies that adopt AS4 can accomplish business objectives by using web services to seamlessly exchange information with customers and partners anywhere in the world. In addition to providing a simplified on-ramp to digital business, AS4 maximizes investments in new and existing web services with a standardized method for secure and document-agnostic exchange of B2B payloads.

- Pharmaceutical companies are required to implement collaborative track-and-trace capabilities to ensure regulatory compliance
- Supply chain organizations need to consolidate infrastructures to improve visibility and manage SLAs
- All kinds of enterprises are exploring ways to improve digital interactions using REST APIs for real-time request/response communications

And the list goes on and on.

For those already using web services for internal integration, AS4 for B2B integration will be a natural and immediate fit in the data center. It enables organizations to share their own internal services and applications beyond the firewall and allow all parties involved in a transaction to view and participate in digital business processes in unprecedented ways.

## 3 Guarantee interoperability for cloud-to-cloud information exchange

For inter-cloud integration, AS4 has real potential, because it complies perfectly with functional and non-functional requirements – including security. To put it simply: AS4 moves data between clouds like a champ. But what about interoperability? What happens when the data finally gets where it's going? This is when the benefits of standardized interoperability really kick in.

Companies don't want to go to the expense of implementing multiple interoperability approaches, one for each of the clouds they interact with.

---

**To put it simply: AS4 moves data between clouds like a champ. But what about interoperability? What happens when the data finally gets where it's going? This is when the benefits of standardized interoperability really kick in.**





They want to be more collaborative more quickly and reduce the number of protocols to a small set that provides the security and reliability they need without alienating their customers and partners. Fortunately, AS4 meets this challenge: It implements common security, reliability, and acknowledgment requirements while fully supporting robust interoperability.

More and more, users need to be able to exchange data between clouds. As more communities seek to enable interoperable data exchange with security and non-repudiation specifically for cloud environments, the need for inter-cloud data exchange will inevitably grow. And when it does, AS4's digital-business-quality security and reliability will be ready to power those interactions.

#### **4 Enable all partners with asynchronous “pull” data exchange patterns not available with AS2**

Clearinghouses, gateways, and large organizations will typically have the IT and financial resources to implement a high-end AS4 ebHandler profile that supports 24x7 pushing and pulling for both sending and receiving. But what about geographies with spotty Internet service, and small businesses that can't (or choose not to) keep a server continuously online?

This is one of the beauties of AS4: The Light Client conformance profile ensures that no one will be left behind. Businesses anywhere, of any size, can implement the profile to push data to partners just as with AS2, but they can also asynchronously pull data from a business partner's server when a connection is available.

In addition to the Light Client CP for pulling data, AS4 also includes the Minimal Client conformance profile for data exchanges that do not need the more advanced capabilities of AS2 and ebMS 3.0, such as support for multiple payloads, message receipts, and signing or encryption of messages and receipts.

#### **Modernize your IT infrastructure with AMPLIFY™ B2Bi**

AS4 can ensure interoperability with business partners, associations, regulators, financial institutions, networks, and exchange hubs. A low-risk modernization of your existing B2B information exchange infrastructure is a good approach for achieving AS4 compliance in the near term, while also gaining a comprehensive B2B platform for all external information exchanges and integrations going forward.

#### **A future-proof B2B gateway for out-of-the-box AS4 compliance**

AMPLIFY B2Bi is an advanced B2B gateway with integration capabilities that guarantees Drummond-Certified™ AS4 compliance right out of the box. It includes easy-to-use, wizard-driven implementation for both the ebHandler and Light Client conformance profiles and provides all the capabilities you need to establish connections and manage information flows between your internal applications and your B2B community – on premise, in the cloud, and in hybrid environments.

#### **Simplify, speed and lower the cost of integration**

AMPLIFY B2Bi provides a unique packaged integration approach that supports any type of business application and application integration pattern. With a single solution, you can implement pre-defined integration processes that support a rich variety of EDI, XML, and other B2B formats and messaging protocols out of the box, minimizing setup time and costs.

You can also reduce operating costs and business fragility by consolidating manual data exchanges, unmanaged FTP, and existing B2B gateways with a truly reliable B2B gateway, and use managed file transfer, message brokering, and direct application



connectivity to lower application integration costs, leverage existing investments, and extend any business application (such as Oracle, SAP, Lawson, and more) for B2B transactions.

### Full protocol and format compliance in a single platform

B2Bi provides rich mediation and B2B connectivity options – including B2B messaging protocols like AS4 and built-in B2B managed file transfer – so you can connect to any partner using any protocol, any format, and any application.

Reliable and secure integration enables you to orchestrate any multi-enterprise business process – such as order-to-cash, procure-to-pay, replenishment, planning and forecasting, transportation and logistics, provider-payers exchanges, and B2G and G2G exchanges.

Because many organizations that adopt AS4 will also need to continue using legacy protocols and formats with their existing partners, B2Bi also supports EDIINT AS1, AS2 and AS3, RosettaNet RNIF, OFTP, ebXML ebMS, and dozens of other standards and protocols.

### Audit compliance to avoid financial penalties and losses

Centralized support for detailed audit logging optimizes dispute-resolution processes while simplifying and lowering the cost of compliance with government regulations, such as GDPR, HITECH/HIPAA, GLBA, PCI, SOX and FISMA.

### Your expert partner for AS4

- Axway helped define and test AS4, just as we served as a major contributor/author for previous standards including AS2, OFTP2, and SSL
- We are one of the first vendors to earn Drummond certification for AS4 interoperability, and the only vendor today to be certified for compliance with both the ebHandler and Light Client profiles
- We implemented the SuperChoice intermediation platform for the Australian superannuation scheme – one of the first AS4-compliant platforms in the world
- We were at the heart of the interoperability proof-of-concept for ENTSOG
- We offer Drummond Certified™ AS4 compliance on-premise and in a cloud managed service
- We are European Union eSENS conformant and a certified vendor for AS4 solutions

### SLA compliance to improve partner relationships and brand image

Gain consolidated, real-time visibility into what is happening between all applications inside your enterprise and throughout your B2B ecosystem.

IT operations staff can monitor server activity and technical issues, line-of-business managers can view events involved in a business process from beginning to end, and both can troubleshoot exceptions to meet SLAs and avoid non-compliance penalties.

## Support new business opportunities

Use wizards to speed partner onboarding and capitalize on new business opportunities as they come in.

Increase the reach of your B2B integration by leveraging APIs to offer new experiences and capabilities to your partners.

## On premise, cloud, and managed service deployment options with full reversibility

If your organization has complex regulatory requirements, unpredictable processing loads, or intricate integration needs, you can maintain maximum flexibility by deploying B2Bi in your own data center.

You can also take advantage of our quality-certified (ISO and SSAE16), SLA-driven cloud offerings:

- Let Axway host your B2Bi deployment in a private cloud that meets your enterprise security requirements while minimizing hardware requirements.
- Choose the Axway Cloud B2B Managed Service and let our highly trained B2B integration service experts manage the environment and processes, while giving you the necessary visibility, notifications, alerts, and reporting. You get a single point of contact, 24/7 service and extensive reporting, alerting and monitoring capabilities that provide visibility and control.

## AS4 around the world

### Australia

SuperStream, the Australian government's groundbreaking program designed to automate the country's pension fund system and reduce costs by up to A\$1 billion per year, imposes the use of AS4/ebMS v3. Facing a strict timetable for compliance, SuperChoice chose AMPLIFY B2Bi and Axway visibility capabilities to get the job done.

**"We didn't have AS4. We needed to be able to support it, and we had to do it in a reliable, cost-effective way. We also had to upgrade our administration capabilities. We used bespoke administration, which had become very costly for us. Historically, we built everything ourselves."**

— Ian Gibson,  
Chief Information Officer, SuperChoice

SuperChoice provides Australian employers and pension funds with a cloud-based pension-fund management and clearinghouse service that automates the flow of pension fund transactions. In operation for more than 15 years, SuperChoice today serves over 100,000 employers, nearly 3 million employees, and thousands of pension funds.



## Japan

Global electronics and information technology production in Japan is estimated to reach \$3.6 billion in 2018, approximately 13% of total worldwide production. JEITA (Japan Electronics and Information Technology Industries Association) has a mission to standardize interactions between the country's electronics and technology companies. AS4 supports the ECALGA standards, (dictionaries, process standards, implementation standards) designed to improve business efficiency through seamless digital connections and inter-company business processes.

## European Union

The EU is building a Digital Single Market leveraging AS4 to support multiple initiatives:

- **ENTSOG** operates the Transparency Platform, where national gas transmission system operators (TSOs) provide technical and commercial data on the gas transmission systems and their interconnections. Having all TSO data available on one central platform and website facilitates transparent data sharing across Europe and allows for comparisons and quantitative analyses. By ensuring the secure, reliable and consistent exchange of data between TSOs, AS4 has taken ENTSOG a step closer to achieving its objective of enhanced cooperation between TSOs, and a fairer, more open, and more reliable internal market for gas.
- Equinor, formerly known as Statoil, is one of the largest natural gas suppliers in Europe. The company uses AMPLIFY B2Bi to connect its partners through the AS4 ENTSOG profile.
- **EU-CEG** (EU Common Entry Gate) is an IT tool designed to ensure uniform reporting of information on tobacco products and notification of information on electronic cigarettes and refill containers. The system-to-system solution for submitting notifications uses the AS4 protocol for document exchange.
- **EESI** (Electronic Exchange of Social Security Information) is an IT system that will help social security bodies across the EU exchange information more rapidly, accurately, and securely. Goals are faster and more efficient message exchange between social security institutions, more accurate data exchange between national authorities, and secure handling of personal data of more than 14 million EU citizens.
- The EU encourages industry and member states to adopt AS4 as an alternative to MQ and IATA type B transmission protocols when transferring passenger name record (**PNR**) data to member states.
- **eDelivery** helps public administrations exchange electronic data and documents with other public administrations, businesses, and citizens in an interoperable, secure, reliable and trusted way. One of the building blocks of the European Commission's Connecting Europe Facility (CEF), eDelivery is based on the AS4 messaging protocol. To ease adoption, it uses the AS4 implementation guidelines defined in the e-SENS Large Scale Pilot.

eDelivery is already used by the EU to support eProcurement (**PEPPOL**: Pan-European Public Procurement Online) and the e-Justice portal (**e-CODEX**: e-Justice Communication via Online Data Exchange). To leverage eDelivery, organizations must install an access point or use a service provider to exchange information with the AS4 messaging protocol. Axway passed the conformance testing according to the eDelivery AS4 profile.



[axway.com/en/casestudy/superchoice](http://axway.com/en/casestudy/superchoice)

Copyright © Axway 2018. All Rights Reserved.

axway\_WP\_AS4\_en\_071618