

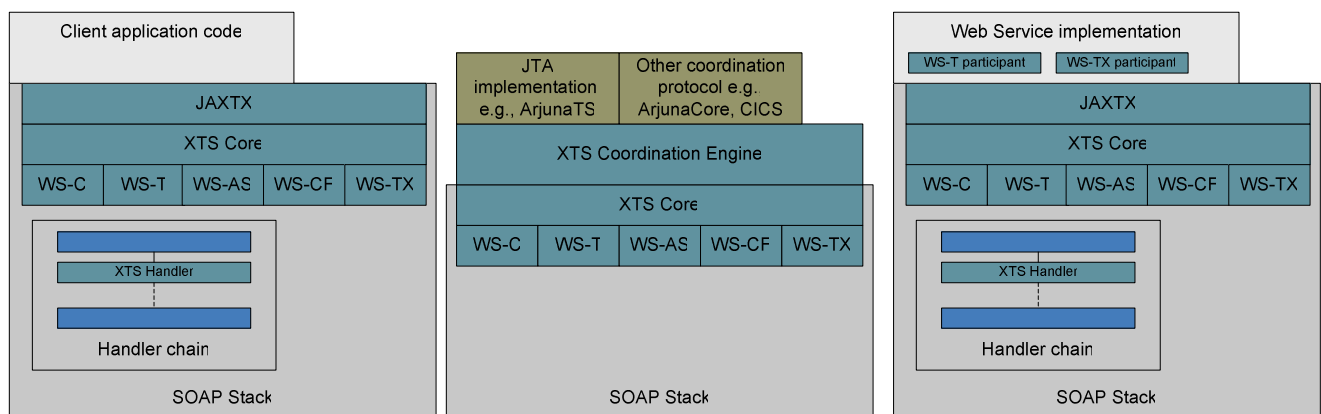
Transaction processing is at the core of commerce. All businesses have the concept of a transaction, but realize the concept using various architectures. Some transactions are very simple, such as purchasing a book or transferring funds, and can be processed immediately. Other transactions are more complex, such as fulfilling a purchase order or completing an insurance claim, and may take days or weeks to process. Transaction processing forms the core of enterprise information systems and often drives the business. Once developed and proven, successful TP systems stay in place for decades.

As Web services have evolved as a means to integrate processes and applications at an inter-enterprise level, traditional transaction semantics and protocols have proven to be inadequate. Web services-based transactions (business transactions) differ from traditional transactions in that they execute over long periods, they require commitments to the transaction to be “negotiated” at runtime, and isolation levels have to be relaxed. Therefore a strong requirement exists for defining a multi-level framework capable of supporting varied transaction processing approaches, with an emphasis on interoperability to preserve existing investments.

The Arjuna XML Transaction Service (ArjunaXTS) is the first second generation transaction service for Web services. It is based on the experiences of the Arjuna Technologies team who developed the world’s first Web services transactions product, Hewlett-Packard Web Services Transactions (HP-WST) 1.0.

Although the first generation Web services transactions product HP-WST was based on the OASIS Business Transactions Protocol (BTP), which ATL members helped to design, recent developments by IBM and Microsoft have effectively side-lined this protocol. Therefore, ArjunaXTS is compliant with the evolving Web Services Coordination (WS-C) and Web Services Transactions (WS-T) specifications from IBM and Microsoft.

However, this area is still changing and other specifications and protocols are likely to be released. Therefore, ArjunaXTS has been designed to support existing and evolving protocols, such as BTP: applications constructed using ArjunaXTS can be isolated from the underlying differences in these protocols, allowing users to concentrate on developing their services rather than on which protocol to use. ArjunaXTS can help to future-proof transactional Web services and applications.



Some of the key features of ArjunaXTS are illustrated in the diagram and outlined below:

- The core transaction engine that ships with ArjunaXTS is the same engine at the heart of all of Arjuna Technologies transactions products: ArjunaCore. This engine has been developed and deployed over the past 15 years and is proven, reliable technology.
- The coordination engine at the heart of ArjunaXTS allows other coordination or transaction implementations to be plugged in. As such, ArjunaXTS can either sit beside or within existing coordination infrastructures such as the CICS transaction monitor or the JBoss, WebSphere or WebLogic application servers with their native transaction managers.
- The ArjunaXTS API is based on the evolving Java API for XML Transactions JSR (JAXTX or JSR 156). Arjuna Technologies are leading this JSR.
- ArjunaXTS is currently deployed into JBoss 3.2.0, but has been designed to be deployable into other application servers or SOAP server environments.
- By default ArjunaXTS utilises Java Transaction API (JTA) transaction service implementations for coordination. Therefore, ArjunaXTS can be closely integrated with J2EE, allowing Web services transactions to span heterogeneous J2EE environments and implementations, resulting in true application server interoperability at the transaction level. J2EE transactions can seamlessly and transparently span application servers using ArjunaXTS.
- Based on valuable user experiences from HP-WST, the ArjunaXTS deployment comes with a considerable tool infrastructure, particularly in the area of participant design, development and deployment. Participants are the entities that take part in the coordination protocol and are typically specific to the transactional service being used, or the specific method being invoked on the service. ArjunaXTS simplifies the development of these participants and gives a service deployer control over specifying which participants are registered with specific transactions.
- Managing transactions, especially distributed transactions, is an inherently difficult and important task. Arjuna Technologies distributed transaction systems have been used for many years and the feedback from users has helped form the current management tools available throughout the product set, and in particular for ArjunaXTS.
- One area of transaction processing, and particularly distributed transactions, that is often overlooked by implementations, is failure recovery. ArjunaXTS builds on the proven transaction recovery techniques used in Arjuna Technologies other products to provide automatic distributed failure recovery. Only in extreme situations need a system administrator intervene in transaction recovery. Without failure recovery, enterprise level applications are vulnerable to data corruption and loss.

ArjunaXTS represents a new level of Web Services product by raising the implementation expectations for other vendors: it provides a uniform programming paradigm to users that breaks down the specification barrier and removes vendor lock-in. Interoperability and portability are important keywords in the ArjunaXTS vocabulary and Arjuna Technologies is committed to supporting and developing open standards in conjunction with other vendors are partners.

Although ArjunaXTS can leverage existing enterprise transaction systems from other vendors, it also works in conjunction with Arjuna Technologies products, in particular the Arjuna Transaction Service. Using ArjunaXTS, users no longer have to worry about replacing existing infrastructures, commitments and investments, whether based on Web Services or on the more traditional closely-coupled transaction systems: ArjunaXTS provides interoperability across different vendor implementations, providing a new lease of life for corporate IT investments or an important first step into the evolving world of e-commerce.

ArjunaXTS can be deployed into existing infrastructures, whether based on popular application server technology or stand-alone SOAP servers. Starting with the initial BTP product, Arjuna Technologies has been committed to supporting portability and interoperability across deployment environments both statically (at compile time) and dynamically (at run time). Importantly, Arjuna Technologies has committed significant resources to obtaining experience in different deployment environments and has developed ArjunaXTS to leverage this experience. This removes the deployment barrier, allowing customers to change their underlying deployment infrastructure without adversely affecting the investment at higher levels.