

# Technology Infrastructure

## Butler Group Subscription Services

# Integration Technologies

## TECHNOLOGY AUDIT

### Fiorano

#### Fiorano ESB 3.7

**Abstract** *Fiorano Enterprise Service Bus is a distributed Peer-to-Peer (P2P) integration platform that supports rapid integration between existing applications as well as the development of composite applications in multiple languages. Integration has proved one of the biggest management headaches of recent years, as different applications need to integrate with each other in order to support business processes that cover a range of different application silos. Fiorano ESB takes an incremental approach to integration, and its P2P approach avoids the bottlenecks of traditional hub-and-spoke architectures without losing management control of the network. Limited legacy application support makes this more suitable for organisations that have significant J2EE investments. Fiorano ESB can be downloaded from the company's Web site for a 45-day evaluation.*

#### KEY FINDINGS

✓	High-performance integration solution.	✓	Supports both event-driven and service-oriented integration approaches.
i	Limited Business Activity Monitoring capability.	✓	Brokered P2P approach gives good scalability.
X	Resources cannot currently be shared between multiple adapters (next release).	X	Currently uses own process management tools (BPEL support in next release).

**Key:** ✓ Product Strength X Product Weakness i Point of Information

#### LOOK AHEAD

Further development on process management and Web services standards due in the upcoming release will add more flexibility to this solution.

## ► FUNCTIONALITY

**Product Overview** Integration is undoubtedly a major problem for many organisations today, together with the need to look to the future of business applications and avoid repetition of the problems of past infrastructure decisions. The key issues around integration tend to involve complexity and cost. While point-to-point integration may solve tactical problems it is not efficient once a number of applications need to be integrated, but to date, the more complicated integration broker technologies have proved time-consuming to deploy, and practitioners need to be highly skilled in order to get the most out of such tools. In addition, many of the existing Enterprise Application Integration (EAI) solutions have commanded a hefty price tag, which has meant that many organisations have put off integration projects that cannot be justified on a project-by-project basis. Integration should always be done because of a genuine business need, for example, to ensure that a single view of a customer can be provided from multiple applications that include customer data.

Fiorano Enterprise Service Bus (ESB) has been developed to provide a standards-based foundation for integrating applications, supporting event-based, distributed integration via asynchronous messaging. It offers its own messaging capability (Fiorano MQ) but can also be layered on top of competing JMS-compatible messaging products. Fiorano's ESB is based on a brokered, distributed Peer-to-Peer (P2P) architecture; where data flows directly between several peer servers providing performance, but a central event broker is used to monitor and control services. Fiorano ESB is offered both standalone, and as an element of the Fiorano Business Integration Suite, which adds wider functionality such as process composition capability.

The components of Fiorano ESB can be broadly categorised into infrastructure elements and tools, and aims to provide sufficient capability to develop and orchestrate complex processes. The infrastructure components are the Fiorano Enterprise Server, one or more Fiorano Peer Servers, and Fiorano MQ, the company's own messaging solution. Alternative messaging products can be used in conjunction with Fiorano ESB.

The Fiorano Enterprise Server acts as a central point of control for both composite and distributed processes that can be made up of a range of different applications. Fiorano Peers Servers are essentially 'thin' servers that actually run the services, and they act as gateways for connection of business services to the overall network. Management features are built into the peer servers, and an admin panel provides information on what services are running where, and what threads are in use etc. This can then be made available in standard systems management packages such as HP OpenView, etc. via SNMP. In addition, a range of tools is provided – see Product Operation below.

Fiorano ESB is available as a separate packaged product but is also sold as part of the company's Business Integration Suite, reviewed by Butler Group in December 2003.

The benefits that Fiorano claims to bring with Fiorano ESB is that it can reduce the time to deliver integration projects by up to 80%, in particular by using what is called Business Component Architecture (BCA); enabling existing business logic and processes to be assembled to produce flexible applications, regardless of where the current business logic is on the enterprise network. Fiorano ESB supports both services oriented and event-driven models, and provides tools to develop and deploy complex business applications, together with common tools for security and administration.

Fiorano ESB has a relatively low initial cost in comparison to some integration offerings (licences are typically between US\$100K and US\$200K, with relatively low training and services costs), with implementation timescales usually in a matter of weeks, enabling rapid ROI.

Fiorano ESB also includes its own versioning capability for services, providing configuration management of labelled services that then supports controlled deployment across network end points.

## Product Analysis

The overall architecture of Fiorano ESB is a brokered, P2P system architecture, which the company also refers to as a 'super peer' architecture. This combines the management benefits of centralised control and management together with the performance benefits of fully distributed P2P systems, but avoids most of their disadvantages. The diagram below illustrates this architectural approach.

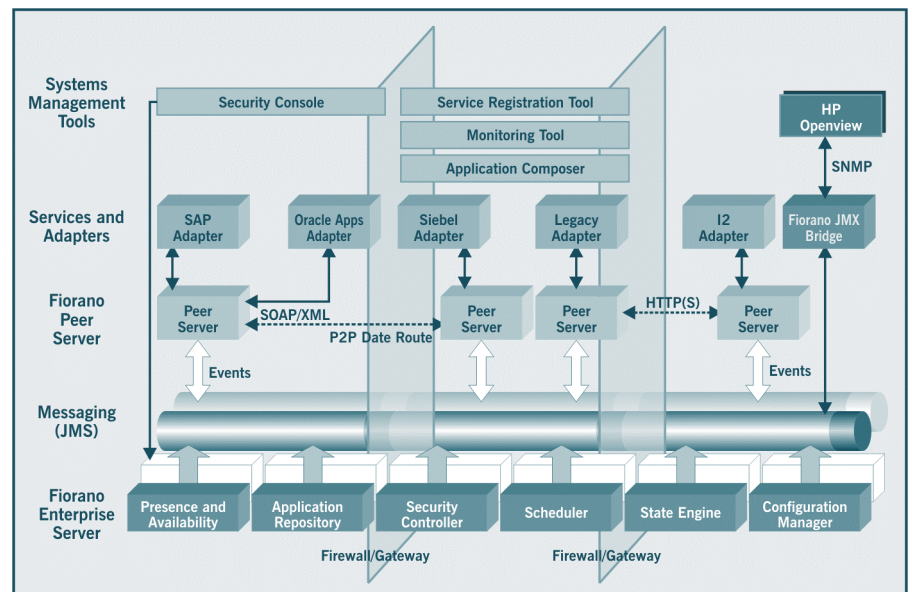


Figure 1 – Fiorano ESB Architecture

The architecture of Fiorano's ESB differs from a number of other ESB providers in the concept of several peer servers that can be distributed across a network. Documents are transported between different Business Components, using native JMS, which may or may not be XML-based. As already mentioned, Fiorano MQ or an alternative messaging product may be used, although Fiorano MQ is included in the ESB.

Within Fiorano ESB, scalability is provided by supporting parallel data flows between distributed services, with built-in service categorisation and message prioritisation on the data flow routes. Applications can be modified and extended at run time, providing control over individual service instances, and supporting different classes of service and prioritisation as needed. Resources can be dynamically and incrementally added at infrastructure and application/service level, even at runtime, without disrupting existing services.

Fiorano ESB has repositories for both business integration applications as well as for the individual services, or Business Components. These components are automatically deployed to the distributed set of nodes when a business integration application is deployed. These resources can be shared for efficiency improvements, and, for example, database connection resources can be shared when the services are running from within a single JVM on a single server. At present, such resources cannot be shared across a distributed set of nodes, but in the next main release of Fiorano ESB (version 4.0) advanced support for resource sharing (such as database connections) using a standard JCA container model for service execution will be added.

Fiorano ESB includes its own Event Manager console that provides logging and monitoring of messages, which are persisted to a repository. If a third-party Business Activity Monitoring tool was already in place this could then interrogate this repository if desired.

## Product Operation

Fiorano ESB has a number of usability and productivity tools available as part of the package. These include:

**Fiorano ESB Administrator** – This supports the administration and management of a Fiorano Network, including starting and stopping services.

**Fiorano Event Process Orchestrator** – This is a design and development environment for business processes, which uses a graphical interface to allow components to be assembled. Event flows between different, distributed, services can be dynamically set up, mapping the logical design to the physical services, regardless of where they reside.

**Fiorano Services and Security Manager** – Provides authentication and security.

**Fiorano Services Development Studio** – This is an Integrated Development Environment (IDE) that is used for custom adapter development. It supports Java natively, and APIs or runtime libraries are also available for developing custom adapters for packages or legacy applications in C, C++, C#, and Visual Basic. It supports Apache Ant and version control systems.

**Fiorano Event Manager** – A monitoring console that provides logging, auditing, and monitoring of messages, documents, and services.

**Fiorano Mapper** – A graphical data transformation tool which supports complex data manipulation. XSLT and Xquery are supported out-of-the-box, and the transformation engine does not preclude the use of other transformation options, such as IBM MQSI, TIBCO, or webMethods, if so desired; existing mapping engines can be wrapped within the overall solution, and treated as services.

**Fiorano Deployment Manager** – A tool for deploying services across the ESB infrastructure from any centralised location. Individual services can be configured, managed, updated, and then redeployed without affecting other services.

**Fiorano Worklist Manager** – Fiorano WorkList Manager can be used to administer WorkList Components that are participating in different event processes across a Fiorano network. It allows a user to browse through the various documents in a WorkList. Using this tool, the user can also release, delete, and modify documents in a WorkList, providing some degree of manual intervention in an automated workflow.

A range of some 60 application and protocol adapters is available, including those for common packaged applications such as SAP and Siebel. Some of these are provided by third parties. Fiorano ESB supports development in a range of programming languages.

Fiorano has its own internal mechanism for controlling the versioning of services, and since the repository is held on the file system of an enterprise server, it is possible to externally control this using third-party tools such as CVS or VSS, but there is no tight integration with these tools, which could be a useful consideration for future developments of the solution.

Fiorano supports a wide range of message formats and protocols, including J2EE standards such as JMS 1.1, JCA 1.0, JDBC 2.0, JNDI 1.2, EJB 1.1/2.0, and RMI over IIOP; as well as support for ASP.NET, Visual Studio .NET, and .NET Web services.

The solution supports all the basic Web services standards, but the company needs to make sure that the more recent proposed extensions to these (often referred to as the WS-\* standards) are adhered to once they are ratified. Although there is a workflow element to the solution for human handling of exceptions within more automated cross-application processes, there is room for improvement if this solution is going to compete longer term with other suite solutions which offer higher-level process management capabilities – we understand that BPEL 1.1 support will be in the next release of the product.

From a security perspective, Fiorano ESB supports standards-based security such as LDAP and SSL, ensuring that services can only be accessed by other authorised services.

Fiorano ESB provides a high level of availability, with full failover support for peer servers. Services can be configured so that if a peer server fails, services automatically failover to the next available peer, depending on how the environment has been configured. This failover is managed by the ESB Enterprise Server, which also manages the state and configuration of all the services, applications, and peers in the network. Peer servers provide an in-built 'store and forward' mechanism that is used to persist messages where network connections fail – once connections are restored such messages can then be recovered using the Queue Manager tool. If required, two Enterprise Services can be configured as primary and secondary servers enabling full back-up capability. The repository is automatically synchronised between two such servers enabling seamless failover. If Fiorano MQ is in use, this can be configured for high availability, such that the Fiorano MQ server then acts as a broker for control events between the enterprise and peer server.

## Product Emphasis

Fiorano's approach towards integration is very much one of supporting the development of composite applications in the future as well as providing standards-based integration capability today, including tools for document tracking, adapter development, transformation, and content-based routing. Distributed systems and applications can be integrated using a modular business component approach, where components can be rapidly configured to suit changing business situations.

This focus on composite applications differentiates it from some of the other ESB solutions on the market, that focus much more on 'lightweight' and simple integration, although Fiorano ESB can also offer this capability.

## ► DEPLOYMENT

Fiorano ESB can be deployed on a range of platforms including Microsoft Windows NT, 2000, XP, and 2003 server; Sun Solaris, Linux, IBM iSeries and OS390 mainframes, and Macintosh. A variety of databases can be accessed including Microsoft SQL Server 7.0 and onwards, Oracle 7.0 onwards, MySQL, Btrieve, Microsoft Access, Sybase, and DB2, as well as ODBC-compliant databases. Application servers such as IBM WebSphere, BEA WebLogic, and Sun are also supported.

Application protocols supported include XML, CSV, and EDI (Edifact and X12 are currently supported).

Fiorano ESB has been designed to be user-friendly, and can be used by business managers and solution architects in conjunction with more technical developers in order to design and deploy processes. Deployment of Fiorano ESB thus requires both developer and business management participants, and potentially third-party systems integrator support – the need for this will depend on the technical expertise available at the client site.

Following deployment, management of the solution is minimal, and requires basic administration and monitoring, although this is likely to require at least one technical resource. Remote administration is available for physically distributed organisations.

The company maintains a professional services team to provide support during implementation, and can then offer post-implementation support if necessary, although it is more common for standard support and maintenance contracts to come into play following deployment.

It is hard to indicate average implementation times because this is likely to depend on a range of factors such as, the number of applications involved, and how similar or different those applications are, as well as the hardware infrastructure in place. Fiorano states that times can vary between two days and two months typically.

Fiorano ESB can be deployed in a modular manner, both in infrastructure and application terms. The infrastructure can be extended by adding more peer servers at the end points of the network (this allows parallel event flows to ensure that there are no bottlenecks). As new business components are created, existing applications can be extended.

Fiorano provides support and training either directly where it has offices, or through its partners. Training is available for application developers, architects, process managers, and senior management personnel, and covers concepts as well as technical details. Level 1 training is a five-day on-site course including detailed product training, and pre-requisite is a technical understanding of Java, XML, Web services, and JMS, although programming experience is not mandatory. Level 2 is a two-day on-site course covering custom adapters and the development of services, and is more geared to programmers with suitable XML and middleware experience. Customised courses are available on request.

Support is available on a 24x7 basis, via the company's offices in the US, UK, Italy, China, Japan, and India, enabling full 'follow the sun' support; supplemented by phone, e-mail, fax, and Web-based support. Web conference and on-site visits are also available if necessary. Premium support includes access to engineers on a 24x7 basis, complete with mobile phone/pager contact details.

Fiorano states that the solution is not dependent on any third-party offerings, although it supports a range of application servers and databases.

As with any integration solution, there is likely to be an impact on existing business procedures as applications start to more fully support business processes. Because Fiorano supports a loosely coupled style of connectivity between applications, there is unlikely to be a negative impact on processes unless tight integration is already in place that might force this.

The only potential area of risk that Butler Group can foresee with the use of a tool such as Fiorano ESB is that the organisation may have difficulty in understanding and designing services at the right level to take full advantage of the capability of the toolset. The architecture of the solution itself is unlikely to put a project at risk because of its sophisticated scaling and failover capability.

## ► PRODUCT STRATEGY

Fiorano's aim is to provide the infrastructure tooling for organisations to build composite applications based on existing business logic, and deployed on an ESB architecture. As such the solution is aimed at both vertical and horizontal markets. For example, it can provide a framework for integrating existing applications within a particular sector, such as manufacturing, where separate best-of-breed applications can then be integrated together.

Horizontally, Fiorano ESB provides an infrastructure layer to enable a wide range of organisations to integrate in a layered approach enabling better Business Intelligence or Business Activity Monitoring, by enabling a common interface with heterogeneous applications and databases, and supporting the cleansing and transformation of such data sources in real time.

Fiorano targets both smaller and larger organisations, with an emphasis on organisations with sales of US\$100million to US\$1billion, which it sees as a key market. At present the company does not specifically target any particular vertical market, unlike some other integration vendors. Whilst this may enable it to support a wide range of customers it may mean that it lacks vertical expertise, but Butler Group would expect its partners to make up for this.

The company has offices around the world and sells directly into markets in the US, UK, and Asia-Pacific regions; via resellers and business partners in Japan, EMEA, Australia, Africa, and Latin America; and via System Integrators, OEMs, ISVs, and VARs worldwide. A number of ISVs are starting to use Fiorano's platform to construct composite applications.

Fiorano has a number of business partnerships worldwide, including Edenbrook, EDS, Obligate, and BT Syntegra (UK); Tier1Innovations, Partners Consulting Services, and Visual Integrator Consulting (US); JVL (France), Goodwin Solutions (The Netherlands); Toshiba IT Solutions (Japan); Coexl Technologies (Australia); Nuri Solutions (Korea); and Convergent Technologies (India).

Technology partners include Chordiant Software, Anite Public Sector (UK), Triant Software, Hit Software, Octanewave, Infokall, Clarity Integration, and 37degrees.

Fiorano unusually offers different licence periods for development (annual licence) and for production (a three-year ESB licence, renewable at a percentage of the original licence fee). Licences are per CPU for the Enterprise and Peer Server(s), and most adapters are separately priced, again per CPU. The associated tools are licensed separately per user or per seat. Project values will depend on the configuration of the solution, but for a medium-sized integration project the total cost varies between US\$100K and US\$250K, and for a large project the implementation costs are likely to be in the vicinity of US\$1 million. On average, the licence cost is 75% of an overall project, with services taking around 25%.

Maintenance and support is available at 20% of the licence cost for standard, office hours support (where maintenance includes all minor releases and bug fixes). Premium support (24x7) is available at a charge of U\$1500 per day.

Fiorano has a roadmap for future developments of the product, with version 4 due in the first quarter of 2005 and version 5 planned for the third quarter of the year (at which point FioranoMQ 9G will also be released, which supports a grid architecture). In general there are one major, and two minor, releases per year.

Fiorano ESB 4 will integrate JCA-based connectors for applications such as SAP by directly including third-party adapters, and will implement a BPEL 1.1-compliant business process engine. It will also support connection and resource sharing between multiple adapters. The autumn release of Fiorano is likely to add further enhancements to JMX-based management and high availability improvements, as well as native support for hierarchical topic subscription.

Fiorano tends to compete with vendors such as TIBCO, webMethods, SeeBeyond, Sonic, Vitria, and PolarLake, as well as companies such as IBM and Microsoft which offer architectural approaches that offer similar functionality. Although Fiorano is larger than some of its competitors it is still a relatively small player in an integration market that has seen much consolidation over recent years and less stellar growth than in the late 1990s.

It will need to continue to drive features into its products as well as ensuring that its customers continue to remain satisfied with their implementations, and may need to work harder through its business partners to deliver this, as well as potentially growing its partner base.

## ► COMPANY PROFILE

Fiorano Software Inc. is a privately held company based in Los Gatos, in California's Silicon Valley, and with offices in the UK, Italy, Germany, France, Netherlands, China, Japan, and India. Founded in 1995 by Atul Saini, who is still the Chief Executive Officer and Chief Technology Officer, the company provides middleware integration solutions.

It claims a number of leading companies amongst its clients, including HireRight (US), Norwegian Cruise Lines (US), North California Power Agency (US), Business Travel International (Canada), The Sports Authority (US), Anite (UK), Misys (UK), and the Korean steel company, POSCO. The company has over 400 customers in all, with around 25 using Fiorano ESB.

Fiorano has a development centre in India, and business partners in over 20 countries in the major world regions. With around 90 employees, Fiorano is becoming an established player in the integration market. Over half of the employees are involved in Engineering and R&D, which shows strong commitment to product development, with 20% in sales, 15% in support and services, and 10% in administration. Around 70% of the staff are based in the Asia-Pacific region, 20% in the US, and 10% in Europe. The company plans to increase the number of staff by around 50% by the end of 2005.

As a privately held company, financial figures are not available, but Butler Group has been assured that revenues are in double digits (millions of US\$), and that the company is profitable. Around 25% of the company's revenue comes from the UK, although the majority is from the US.

Fiorano is a founding member of the EAI Industry Consortium, now known as the Integration Consortium; an independent body that represents both developers and users of integration tools. It is also a member of the Business Process Management Initiative, BPMI.org.

## ► SUMMARY

The integration market is somewhat confused at present, with the more traditional EAI vendors still seeing slow growth (although it is now growth rather than decline in general). In such a market, Fiorano will need to market its solutions more widely if it is to compete with the better-known players. From a product perspective, Fiorano ESB is well-designed and contains some sophisticated functionality that will support organisations in solving today's integration problems while remaining open to future possibilities such as service-oriented architectures and composite application development. Butler Group believes that Fiorano ESB offers good provision for integration support, and is well on the way to providing an infrastructure for composite application development.



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