



FrontRange Foundation Architecture

Overview Whitepaper

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Introduction

A real-time enterprise and the ability to have accurate and accessible information from your FrontRange solutions are desires expressed by IT managers and business users worldwide. Realizing this vision has its obvious advantages: operational inconsistencies are eliminated and users gain real-time access to accurate information to run your business. Bottom line, the entire enterprise becomes more responsive and competitive.

The challenge exists in creating an environment that can integrate information across all users and functional roles within an organization, as well as with legacy and third-party data sources. A complete 360-degree view of your external and internal customers and IT infrastructure for example, is a challenge faced by all organizations. Previously, such a feat would have required expensive, time-consuming services and custom software development, presenting a return on investment model that was hardly attractive to a typical organization.

FrontRange Solutions, a global leader in service management, client lifecycle management, CRM, and Voice Communications for the growing and distributed enterprise markets, has delivered a next-generation technology platform designed to help companies realize the vision of a totally integrated application platform. The FrontRange™ Foundation architecture, the result of extensive product design and refinement, provides companies with an integrated technology platform for a truly optimized solution suite.

Built on a Service Oriented Architecture, the FrontRange Foundation allows customers to receive maximum value through ease of integration, customization, deployment, administration and anywhere access. Applications delivered on the FrontRange Foundation will provide a wide range of end users with powerful services and applications that can be easily integrated with existing applications and data sources.

FrontRange Foundation Design Highlights

The FrontRange technology vision is straightforward: provide powerful, ready-to-deploy solutions that can be extended to meet the exact needs of our dynamic customers. The FrontRange Foundation makes good on the vision by providing a platform that is:

- Built on a common architecture supporting all FrontRange applications
- Flexible enough to be configured and supported by non-technical experts yet powerful enough to satisfy the most demanding enterprises
- Designed to integrate with third-party application business processes and data sources
- Built on industry standards
- Designed to be secure, scalable and extendable

FrontRange Foundation Architecture Overview

The FrontRange Foundation is a three-tiered architecture centered on a set of common business functions and a common data store. Built-in business rules cache, process and route information within the applications through a metadata-driven architecture. Third-party, external applications and services connect to the data store by a variety of connection methods and technology adapters. These adapters convert proprietary messages from external systems to the standards used within the FrontRange Foundation.

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The advantage of this architecture is that it delivers a real-time consolidated view of business by

- Integrating both data and business processes from across the enterprise to support real-time business functions
- Providing a business process-driven environment for accurate and consistent information handling
- Bringing new scalability and performance to the service desk
- Enabling users to create and extend new types of applications, based on real-time information and application integration

In order to provide customers with an enterprise-class platform with real-time information and anywhere access, the FrontRange Foundation depends on open standards, including SOAP, XML, LDAP, WMI, SNMP, and others. For that reason, the FrontRange Foundation runs on the Microsoft® .NET Framework, a platform proven to provide enterprises of all sizes with the performance, extensibility, scalability, and availability necessary for business-critical applications.

A Metadata-Driven Architecture

Unlike many enterprise applications, which often stand alone and require their own databases and logic engines, FrontRange Foundation applications are composite applications that leverage the common application services in the FrontRange Foundation to deliver rich functionality right out of the box and allow users to configure them to meet their exact requirements.

The configurable and flexible nature of the FrontRange Foundation is largely based on the metadata-driven architecture within the platform. This architecture creates an intelligent way to create and define fields, business rules, data definitions, validations, business object relationships and application attributes that can be easily pulled from the Foundation server and rendered on the client machine.

Powerful graphical application configuration and development tools that let customers modify applications are provided with the platform. The simple and intuitive nature of the supplied configuration tools allows customers to personalize their applications without coding or extensive development knowledge.

Business objects and their associated properties are stored as metadata and executed in a web and smart client application environment at runtime. Applications can be easily changed or extended by simply rearranging business objects and modifying business rules rather than having the business rules hard-coded within the application.

The advantages of a metadata-driven architecture include:

- Lower cost of deployment
- Application flexibility
- Ease of integration
- Built-in integration for all FrontRange applications
- Ease of building and deploying high-performance applications

Client Interface and Access

The FrontRange Foundation supports both a rich client environment (executables installed locally) and a web client environment, offering customers deployment and support flexibility. Users can access the full suite of FrontRange applications through a standard Web browser.

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To support customers utilizing the web client, the FrontRange Foundation uses standard Internet technologies, including HTTP, XML, Microsoft ActiveX, and HTML, to provide a robust client experience over the web. Customers who choose to deploy in a zero client environment and reduce the complexities and expenses associated with client installations can leverage the power of Microsoft Internet Information Services (IIS) web application server, which allows the FrontRange applications to be quickly deployed in a 100 percent server-based environment.

Integration and Messaging

The FrontRange Foundation integration and messaging engine provides robust integration between FrontRange applications and other 3rd party applications and data sources. Messaging transforms data and helps ensure its delivery across the different FrontRange modules and external systems.

The messaging engine is responsible for:

- Setting and managing alerts and notifications
- Processing messages from internal and external applications using MSMQ, HTTP POST, XML and SOAP
- Managing and distributing e-mail, pager and fax communications
- Integrating enterprise applications

Synchronous communication allows applications to publish messages in response to the invocation of business events within the platform. These messages are published in industry-standard XML and XSLT format and are delivered securely to subscribing systems via HTTP connections.

High-volume message handling is supported through message queues and can be delivered by multiple communication methods, including HTTP, Web services, SOAP, e-mail, FTP, as well as through multiple messaging engines (Microsoft® Message Queuing, MQSeries® and SwiftMQ®). Additional integration support is provided for Microsoft® Active Directory and LDAP components through XSLT transformation and LDAP listeners. Active Directory objects and users can be imported and maintained in the FrontRange Foundation using the administration tools provided.

Security

Strong security is a critical requirement for any solution platform. The challenge faced by many organizations is how to balance security requirements with the administrative cost and effort of creating and maintaining security profiles for hundreds or thousands of end users across multiple applications.

FrontRange Solutions simplifies system security by allowing customers to manage all their end-user security profiles in a centralized repository. User profiles can be imported from Active Directory or existing systems, and security is enforced through industry-standard authentication mechanisms, including NTLM, Kerberos and Basic. Support for internal authorization is also included in the security subsystem.

Authentication of a smart client user is handled directly by the Foundation security system. This can authenticate the user directly against an internal user database or against any authentication mechanism supported by the Active Directory Services Interface (ADSI). In the case of a login through the Web client, authentication is performed by the Foundation after any additional authentication enforced by IIS is passed. After initial authentication is performed by the Foundation security system, the web application enforces authorization for each request made to the server by ensuring that the correct rights are assigned to the current thread of execution. Transactional security is ensured through strong encryption and between physical tiers using either Secure Sockets Layer (SSL) encryption or methods employed as part of the WS-Security standard.

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Using the provided tools, administrators can create user groups to control access to modules and features, including business object and field-level security. By default the system promotes “least access” security, ensuring that only the minimum access necessary to perform an operation is granted, thus increasing data integrity by limiting access to the proper users.

Dashboard Reporting and Visualization

The FrontRange Foundation includes a powerful real-time reporting engine that is used to create customizable service views and give users of all levels roles-based views into the appropriate areas of the business.

Dashboard views consist of user-defined configurations of either system-supplied or custom Dashboard parts. A wide variety of dashboard components are included with each FrontRange module; however, customers can easily add or extend the included dashboard components to meet their specific needs.

Supported Dashboard components include:

Grid Controls - Internal or external application data can be presented in an easy-to- sort grid view to display lists of data.

Charts and Gauges - Graphical engine support for pie, bar and line graphs as well as needles and thermometers is included and can support data from internal and external systems. Business logic support ranges from simple queries and alerts all the way to complex analysis and trending over stated time periods.

Microsoft® Outlook Integration - Microsoft ®Outlook inbox and calendar controls are included in the standard list of dashboard components to allow users to create a personal information portal consisting of Outlook productivity and FrontRange applications.

Web Browser - Microsoft® Internet Explorer components can be embedded within a user’s dashboard to bring elements of the organization’s intranet or external Web sites into the FrontRange Dashboard.

Visualization

A key business benefit provided by the FrontRange Foundation is the ability to visualize critical information from within the database in a graphical format. FrontRange provides customers with the ability to create visual maps or diagrams with predefined or custom objects and manage their relationships in a way that is meaningful to their business. Systems or groups of related objects can easily be modeled or illustrated for dependencies to understand the business impact or relationship between objects. It also provides users with an intuitive drag-and-drop interface with illustrative icons and state indicator for quick analysis of events.

Business Process Engine

The FrontRange Foundation includes a powerful business process engine designed to help companies establish or enforce efficient processes across the enterprise. Based on industry standards, the business process engine powers the business logic and automation tasks across the entire FrontRange Solution Suite. Singular or sequential actions can be triggered based on record changes, user-defined thresholds, elapsed times and other internal and external events.

The Foundation business process engine is based on the open Business Process Modeling Language (BPML) standard, enabling the execution of complex processes. Processes defined for the engine may engage in synchronous and asynchronous communications not only with the FrontRange Foundation, but also with any other system supporting a web

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services interface. This allows complex processes spanning multiple business entities or applications to be easily constructed and deployed.

The construction of the BPML-compliant process is eased with the inclusion of a graphical process editor that allows the user to drag and drop process activities on a work space. The toolbox of available services is easily expandable by the importation of WSDL files, and any process can be exposed to the world as a web service. For further reading on BPML, please see the documentation at www.bpmi.org.

Conclusion

The FrontRange Foundation was designed specifically with the needs of our customers in mind. With over 1.2 million users worldwide, we understand the business challenges and opportunities that arise each business day. The new FrontRange Foundation enables you to achieve competitive advantage and keep pace with ever increasing demands on your business and IT resources, providing you with a foundation upon which to launch or expand your world-class organization.

The powerful, easy-to-deploy FrontRange Foundation leverages best-of-breed tools, powerful out-of-the-box applications, endless configuration options and simplified integration with your third-party applications to help ensure that your IT organization is always aligned with your strategic goals.

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About FrontRange Solutions

FrontRange Solutions develops award-winning software and solutions used by more than 130,000 companies and over 1.2 million users worldwide to manage a wide variety of business relationships and provide exceptional service. FrontRange product families, designed specifically for small-to-medium-enterprise (SME) and distributed enterprise organizations include: GoldMine® for business relationship management, team-based contact management and sales force automation solutions; IT Service Management with HEAT® and ITIL® standards-based modules for complete service management; Communication Management including IP Contact Center for reduced telephony costs and increased agent productivity, streamlined customer service and communications; and Infrastructure Management, which provides the ability to optimize the full lifecycle of a company's assets. Customers representing 44 percent of the Fortune 100 and 76 percent of the FTSE 100, include Coca-Cola, Shell Oil, Prudential Securities, Électricité de France, Mack Trucks, Campbell Soup, Avaya, Bechtel Corp, Bank of America, and Turner News Network.

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