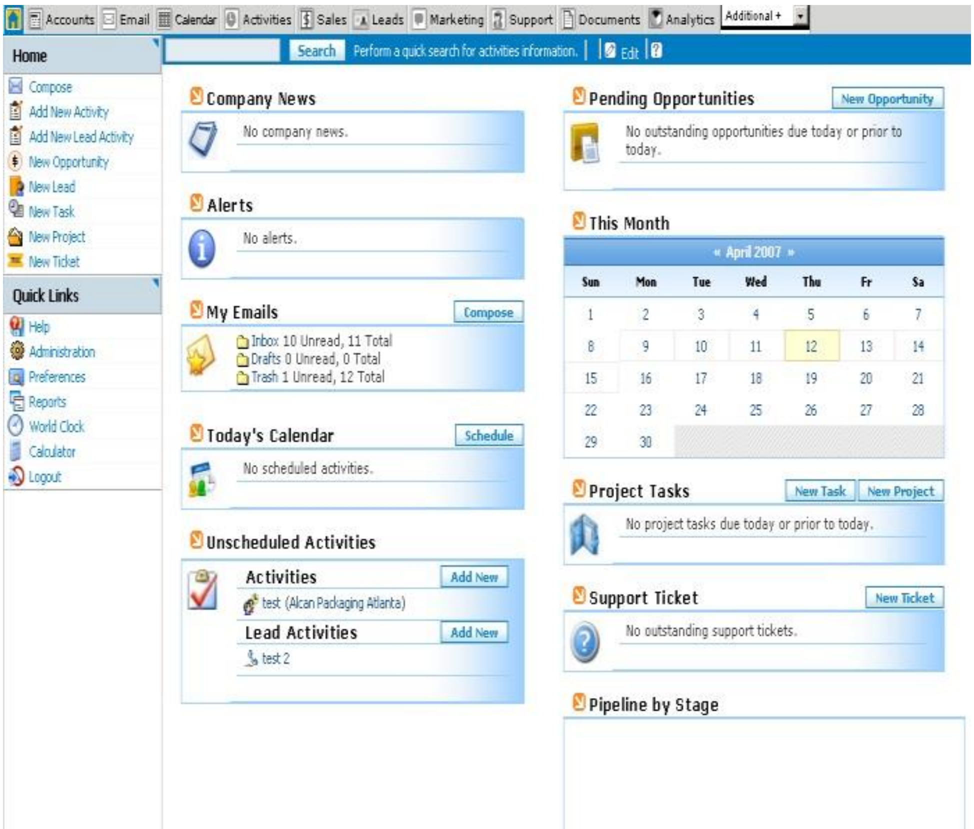
Cloud Based Enterprise Crm

The Client is a leading Customer Relationship Management (CRM) products company from New Jersey, USA offering hosted as well as client/server based CRM products in enterprise J2EE and Microsoft Windows Technologies for more than two decades. The CRM products are targeted at medium- to large-enterprises and the clientele include fortune 100 companies.

The Vision

The Client's vision was to add a Hosted Enterprise CRM product to their portfolio in addition to already existing client/server CRM products to allow an option of Software as a Service (SaaS) to customers using enterprise J2EE technologies.



End Users

Top Executives and Users of Sales, Marketing, Customer Care Departments of customers' organization.

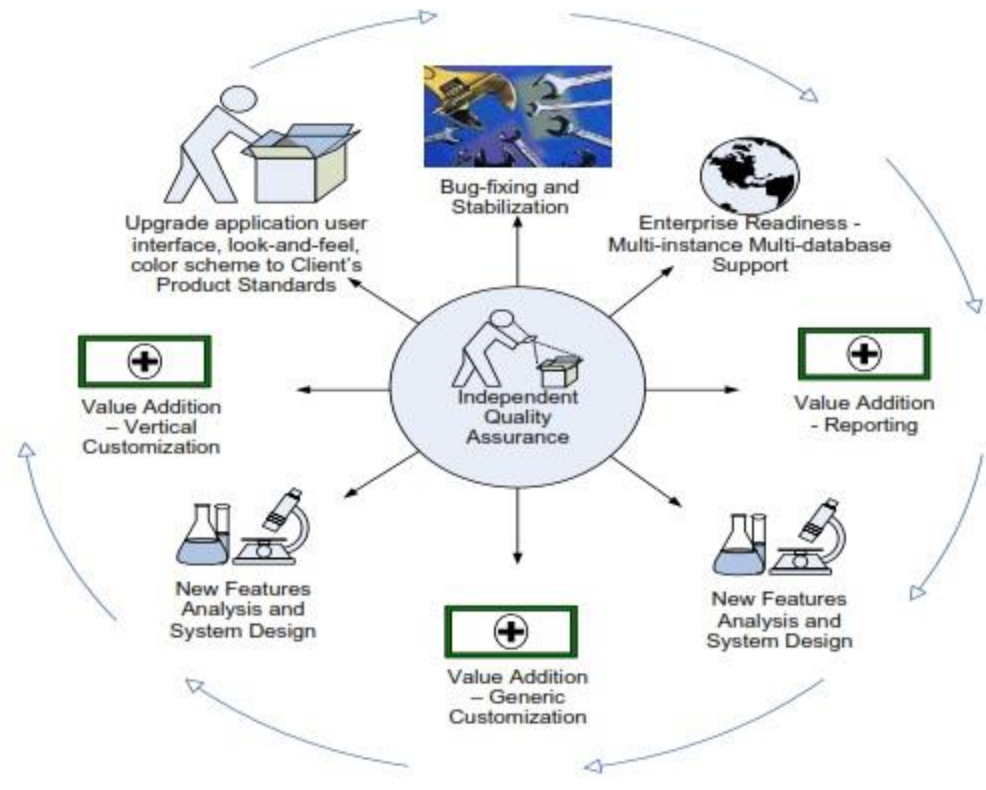
Business Model

This project was started on a pilot basis to change the look-and-feel of the existing J2EE product acquired by the client to make it in line with the client's standards followed in their other CRM products. After this initial pilot project and evaluation, subsequent phases involved stabilization of the product and addition of new features and functionalities to support enterprise level clients and catch up with market expectations. The project followed an onsite-offshore global delivery model whereby e-Zest's Project Manager visited clients' premises during key stages of planning and release support.

Project Lifecycle

From the pilot phase of the project that the involved overhaul of the user interface as per client's UI standards, the product was gradually evolved in subsequent phases to make it Enterprise Ready and saleable to fortune 500 clients. Many value additions in the form of graphical reporting capabilities, custom reporting, application customization to support addition of custom forms and modules linked with other modules of the application, and industry-specific customizations were done in the product to increase the customer base in a highly competitive market. The whole lifecycle was supported by an independent Testing and Quality Assurance team using automated test scripts, and ongoing product support was provided by client for need-based tasks like server maintenance, database management, cleaning up of temporary files and old logs, creating and deploying new instances, and similar other adhoc activities.

Further roadmap includes integration with third party products like Quotewerks, Quickbooks, and the client's other CRM products, a web services interface to allow other integration of web-based CRM with other custom applications and products developed by independent vendors, database migration to MySQL 5.0, support for other databases like Oracle and SQL Server, Multi-lingual support, and Multi-skin support. The figure below depicts the completed lifecycle of this project at e-Zest.

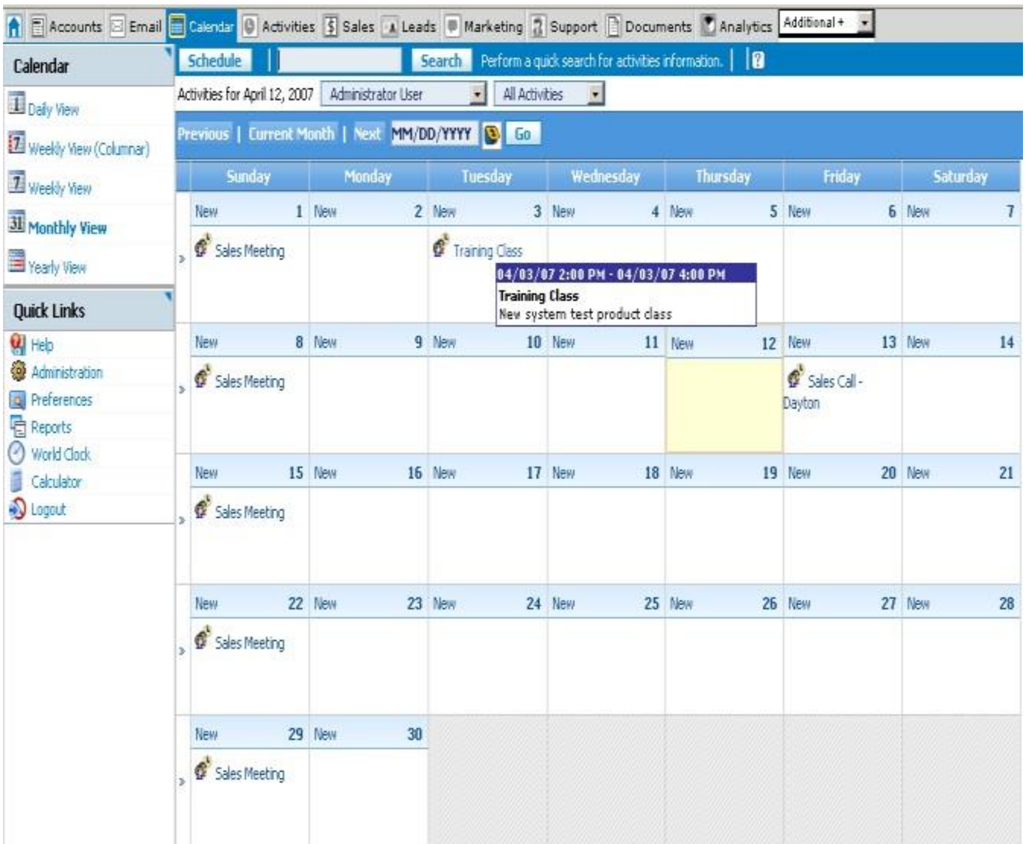


Hosted Enterprise CRM Project Life Cycle

Key Functions

Key modules of the application are:

- **Accounts**: Managing customer accounts, related account history, summarizing data from all other modules for that account, audit trail, contact persons, and collaborative teams to meet specific needs of that customer.
- **Email**: Full featured e-mail feature for easy and quick collaboration between CRM users.
- **Calendar**: Full featured calendar for managing appointments, sales calls, literature and demo requests, next actions, tasks and other to dos with the flexibility of setting individual preferences



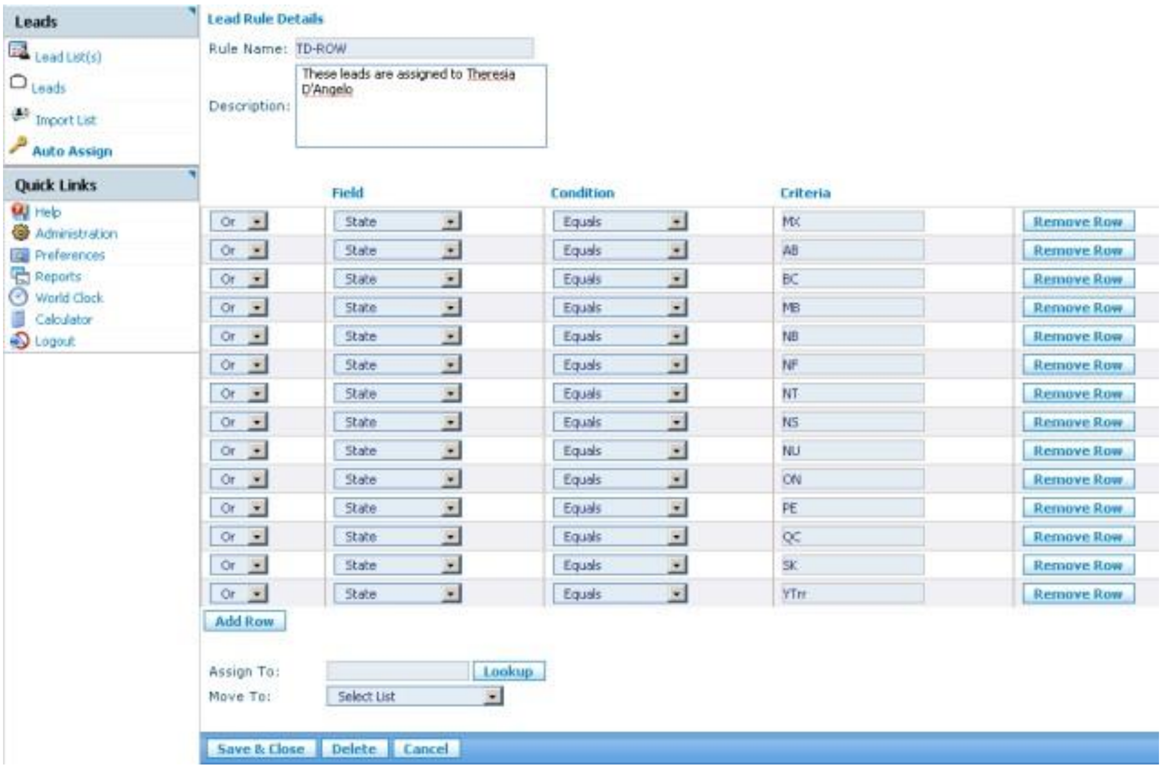
- **Activities**: Managing activities and assignment of activities to other users in the team with the ability to attach reminders and automatically show them in concerned users' calendar
- **Sales**: Managing Opportunities, Quotations, and Sales Analytics
- **Leads**: Managing new leads created by marketing initiatives and assigning them to sales personnel for next action to convert the lead to opportunity
- **Marketing**: Management of marketing campaigns and promotional activities integrated with activities and calendar modules, literature fulfillment, marketing events and trade shows management, mass-campaigning integrated with Contacts Module using mail merge features. The module also includes marketing analytics and reporting.
- **Support**: This module enables ongoing customer support by means of Trouble Tickets management, FAQs and Knowledgebase for troubleshooting.
- **Documents**: CRM specific document management system with support for document sharing, exchanging notes and comments.
- **Analytics**: An independent graphical reporting module integrated with all other modules to support analysis for strategy formulation. Fifteen different analytical components are pre-built into the application. Users can add or remove analytical components from their default view.

- **Project**: CRM specific project management system to create new CRM projects, adding tasks related to projects, assigning tasks to other team members and tracking the status of tasks along with time entries and slippage analysis.
- **Accounting**: Managing financial accounting related to Orders, Invoices, Payments, Expenses, Purchase Orders, Items, Inventory, and Vendors with the ability to view historical information and the audit trail of each accounting entity.
- **HR**: The HR module supports basic employee management, their time entries for the purpose of commission calculations, managing global documents like different expense claim forms, policy handbooks etc, and HR improvement support by means of online suggestion box.
- **Reports**: An independent module integrated with all other modules providing non-analytical reporting capabilities including custom reports creation.
- **Administration**: This module is accessible only by application administrator and provides facilities for –
    - Managing users and their security profiles
    - Global application configuration like time zone, working hours etc
    - E-Mail settings
    - License Management
    - Data Administration with support for archiving and purging old data, and global data replacements
    - Viewing system wide audit trail
    - Organization wide settings for every module
    - Template Management with the ability to create new templates for Print Formatting, e-Mails, Tickets and Proposals
    - Data Import and Export
- **Preferences**: Individual preferences of users without over-riding global preferences set by the administrator
- **Help**: Detailed online user manual

Differentiating Features

The following features of the applications were developed as key differentiators from other CRM products:

- Customizable dashboard to show bird's eye view of users activities, tasks, reminders, alerts, e-mails, tickets, and key reports
- Uniform tabular listing in each module with column sorting, filtering, and full text search of all fields



- Uniform detail page layout for each module showing detailed data with related information from other modules optimized for no-scroll in 1024×768 pixels layout
- Customizable views and user interface preferences
- Always-on quick links section and module tabs
- Frequently used tools and utilities like world clock and calculator integrated with Dashboard
- Integrated with Companion Link software which is used to export and import data from Outlook Express and Outlook to Hosted Enterprise CRM
- Ability to export and import data from palm devices using Companion Link software

Challenges and Solutions

Challenges	Solutions
No technical documentation of acquired product	Onsite Knowledge Acquisition sessions; ongoing document base creation
Difficulties in code understanding due to lack of inline comments	Development of key features in teams of two or more developers to ensure better understanding of code level intricacies
Time to Market constraints for generating product awareness	Time crunched GUI overhaul to bring the product up to branding standards used by client in their other products
Time to Market constraints for making the application saleable	Priority based bug fixing and tracking using web-based bug tracking tools like bugnet
Time to Market constraints for selling the product to enterprise customers	Priority based implementation of multi-instance and multi-database support making best use of supporting features offered by JBoss application server
Building in new features and functionalities while retaining core application architecture	Reverse engineering of architecture so that its extensibility is not compromised when building new features with special emphasis on reusability for uniform low-coupled implementation
Frequent releases keeping in view the end customers' interest	Definition of a customized release process to support dynamic development scenario where production and development went on side by side. The release process involved weekly internal releases for independent testing and monthly staging release in production environment. In this manner product updates were made available in monthly cycles.

Tools and Technologies

- Supported Platforms – Windows 2000, Windows 2003, Redhat Linux 9.0, Fedora Core 5
- Supported Browsers – Internet Explorer 5.5, Firefox 1.5
- Production Site: Redhat Linux 9.0 using MySQL 4.0.24 as backend
- Development Site: Development in windows environment with independent testing in near-production environment using Fedora Core 5
- JavaScript – Web scripting language for client side validation
- Presentation Layer – Java Server Pages (JSP), JSP Standard Tag Library (JSTL)
- Controller Layer – Struts 1.2 Object Oriented Framework based on Model-View-Controller design pattern
- Business Logic – Enterprise Java Beans (EJB)
- Data Access Layer – JDBC

- Database – MySQL 4.0.24
- Application Server – JBoss 3.0.8 web container for J2EE and EJB technologies.
- Web Server – Apache Tomcat 4.1.24 integrated with JBoss
- Web Services Framework – Apache Axis
- Build Tool – ANT
- Development IDE – Eclipse 3.0
- Third Party Tools – FCKEditor 2.1, Fusion Charts, TestComplete 4.0
- Source Control – SourceOffSite integrated with Visual SourceSafe
- Project Management – DotProject
- Bug Tracking – Bugnet

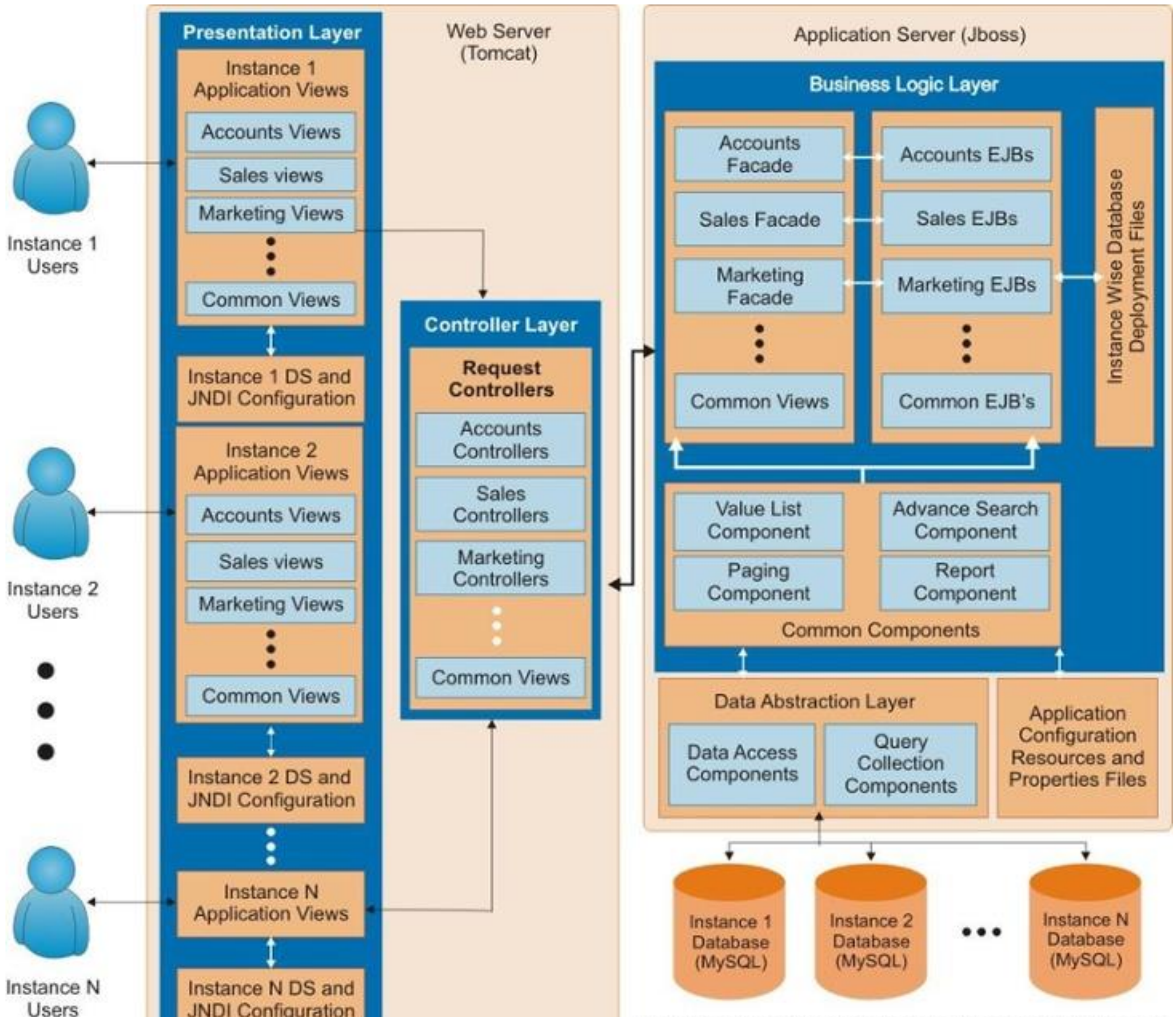
Design Patterns Used

- Struts 1.2 MVC pattern in combination with EJB was used to implement model (Core Business Logic) using EJB, Struts framework for controller implementation, and JSP using JSTL to implement the Views.
- Facade Design Pattern in between Controller and Model Layer for higher level abstraction of complex and granular business logic components and easy development of client side components.

Technical Architecture

The Hosted Enterprise CRM project follows a multi-instance, multi-database and multi-tier architecture that can be deployed in a distributed environment. Multi-instance and multi-database support was built into the original application in order to allow the client to scale up their user base to enterprise level customers. This architecture allows a separate instance deployment for each enterprise customer with their own dedicated database instance. Five-tier architecture of the application was uniformly adopted in new modules that were developed to sustain extensibility and maintainability while a distributed deployment ensured performance tuning can be done easily.

For each instance, only the presentation layer was separated out to multiple instances by using multiple web archives (war files). Each instance was given the intelligence to identify the right database using its JNDI configuration. All web archives utilized a single controller instance which in turn could call the business objects using a façade layer that provided a level of abstraction to the controller for business objects. The data abstraction component could connect to the right database using the database identification parameter that flows from the presentation layer to the data abstraction layer. Manual database instance configuration was done in JBoss using instance-wise database deployment files. Application level configuration, resource and property files were separated out to facilitate centralized application maintenance. The figure below depicts the technical architecture of Hosted Enterprise CRM.



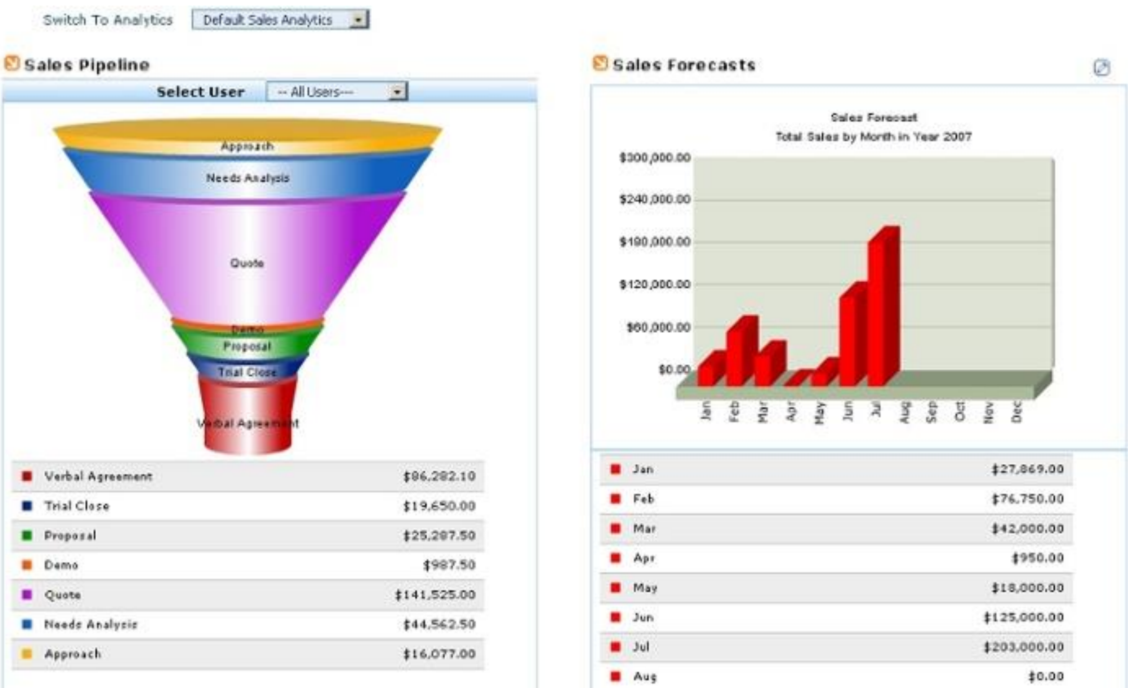
Hosted Enterprise CRM Multi-Instance Multi-Database Multi Tier Distributed System Architecture

e-Zest Strengths

- High competency in J2EE.
- Successful implementation of multi-instance and multi-database support even though there was no inherent support for this in original application
- Highly streamlined release process that enabled customers to receive monthly application updates and benefited the development team and as well as the client¡¦s business representatives.
- Exhaustive test libraries and test cases that improved unit testing
- Automated testing using TestComplete 4.0 to reduce regression testing efforts and shrink monthly release time frame

Customer Benefits

- Flexible business model which involved a combination of fixed cost approach for core development and Time & Materials approach for ongoing application maintenance and production environment management.
- Monthly releases
- Team upsizing on short notice to address business side of client's requirements
- Team retention to ensure knowledge growth and stability in outsourcing model
- Dedicated project manager for smooth progress of separate but dependent core development, testing, and maintenance projects



Bottom Line

Enterprise level product development with in-depth understanding of client's business focus, needs and constraints, supported by flexible business models and complete sense of ownership of the project by each team member. This resulted in a mutually profitable and constantly growing relationship ensuring business stability to both the client as well as e-Zest.