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Ricoh Differentiates Its Business by Integrating Cloud and On-Premises Information Systems
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Executive Overview

Deploying applications from the cloud is a popular way to reduce capital expenditures by adopting a subscription-based IT model for core business functions. However, many organizations don’t consider all the nuances of integrating cloud applications with their existing information systems. Although deploying a cloud-based application or subscribing to a cloud-based service may be relatively straightforward, how the new IT asset will fit in with the rest of the information enterprise must be addressed. How will it connect to on-premises systems and other cloud applications? Can you integrate mobile applications and social networks?

These questions were particularly relevant for Ricoh Americas Corporation, a subsidiary of Ricoh Company Ltd., a global technology company specializing in office imaging equipment, production print solutions, document management systems, and IT services.

This white paper examines how Ricoh used the middleware technology in the Oracle AppAdvantage program to connect its cloud and on-premises information systems. The Oracle AppAdvantage program is powered by Oracle Fusion Middleware and helps customers strengthen their investments in Oracle Applications. Oracle Cloud and on-premises integration technology is an important part of the program because it reduces the complexity of integrating point solutions through a unified, comprehensive, and service-oriented platform that seamlessly spans cloud, mobile, and on-premises applications.

Ricoh’s corporatewide integration effort included several initiatives.

- **Ricoh sales portal**: An enterprise sales portal called RFORCE delivers information about customers and prospects to the Ricoh sales team by integrating Salesforce.com with Oracle E-Business Suite applications for quoting.

- **Customer portal**: Customers use an online self-service portal called MyRicoh to manage their Ricoh equipment, place service requests, report technology issues, and order supplies. MyRicoh leverages Oracle iSupport and Oracle iStore and integrates with a global knowledgebase created using Oracle RightNow solutions. Ricoh also deployed mobile applications to enable self-service capabilities.
• **Dealer portal:** The MyRicoh portal can also be accessed by dealers to enable visibility into warehouse inventory.

• **Social collaboration:** Employees use a cloud-based social collaboration environment to interact with colleagues, create work teams, share documents, form subject matter groups, and participate in discussions.

Oracle SOA Suite is the foundation for Ricoh’s service integration, process orchestration, application integration, and data integration—regardless of where the applications are deployed. This middleware technology is certified to work with Ricoh’s Oracle E-Business Suite applications, integrating on-premises and cloud-based services through a single, cohesive software environment, with support for mobile and social applications as well.

**Introduction: Building a Flexible Integration Architecture**

Several years ago, after Ricoh acquired IKON Office Solutions, Inc., the company’s IT leaders faced the complex task of bringing together the information systems of two multibillion dollar organizations. Following the acquisition, Balaji Rangaswamy, chief information officer of Ricoh Americas Corporation, had to devise a long-term strategy to reduce the complexity of integration, eliminate redundancy, and create a scalable, sustainable IT environment. The primary business requirements included bringing together 27,000 employees, increasing operational efficiencies, and streamlining the infrastructure.

Using Oracle SOA Suite as a framework for cloud and on-premises integration, Ricoh was able to merge, rationalize, and streamline the infrastructure—and bring new efficiencies in sales productivity. Having a centralized integration platform minimized the complexity associated with managing APIs from Salesforce and other cloud vendors. It also simplified connections to mobile applications and social networks.

Tim Jennings, research fellow and chief analyst at Ovum, explains why middleware standards and frameworks are so important to cloud initiatives. “It’s crucial that you have standards-based middleware services so you can make use of your existing identity management framework, directory services, integration technologies, and so forth,” he said, in an interview with *Oracle Magazine.*

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same goes for social networking and mobile services. Does the provider utilize standards to ensure portability or are you locking yourself into a proprietary platform? What are the options for integrating other cloud services? How can you access your on-premises applications from your cloud applications? You need to think carefully about these issues.”

That’s why Ricoh chose Oracle SOA Suite to connect Oracle Applications with its front office, cloud-based CRM systems. Oracle SOA Suite simplifies integration and policy management among these enterprise applications through a unified framework of middleware components that can be used interchangeably among many types of technology assets. This versatile architecture makes it easier to develop policies for signing messages, encrypting data, authenticating users, and managing access to IT resources.

“We use cloud technology to deliver new application functionality to the business faster,” Rangaswamy says. “To fully utilize the cloud functionality, we have built a flexible architecture that integrates on-premises applications and cloud applications in a consistent way.”

Business Drivers

Enterprise applications are the backbone of Ricoh’s business. The company needs to be able to quickly, easily, and efficiently integrate applications of all types—hosted, on-premises, and cloud-based—to accommodate all types of interactions with customers and partners, as well as among its employees. Because the company operates in dynamic markets, the business requirements are always evolving, as is the infrastructure. Addressing this challenge without creating too many disparate, point-to-point integrations is an ongoing concern. To ensure that the infrastructure doesn’t have to change every time a new application is added, or any time business requirements change, Ricoh developed a shared integration service based on a service-oriented architecture (SOA). Continually changing business needs also require that critical business services, such as customer, inventory, order information, and other core functions that were previously only accessible via packaged applications, would be available via mobile interfaces on smartphones and tablets.

To achieve this level of agility Ricoh looked to the Oracle AppAdvantage program to enhance its enterprise IT investments. Leveraging Oracle solutions helped Ricoh build upon the core functionality in its application investments as the surrounding technology infrastructure evolves.

Ricoh’s integration philosophy is simple: It leverages Oracle SOA Suite to simplify applications by putting integration functionality into a middleware layer. This strategy has enabled Ricoh to build a consistent integration framework and services layer that spans multiple applications. Taking customizations out of the application later and putting new functionality into the middleware layer improves the IT environment and lowers the cost of operations. With Oracle AppAdvantage, Ricoh can meet its current business requirements while building a solid technology platform for the future.

“It’s all about collecting information and making it work for our employees, partners, and customers,” Rangaswamy says. “That’s what we’re focused on as an organization, that’s an essential part of our
culture, and that’s basically our theme for the next few years as an IT organization. We chose Oracle Fusion Middleware due to the flexibility that it provides.”

Technology Drivers

To streamline and simplify Ricoh’s IT environment, Rangaswamy and his team laid out a service-oriented architecture (SOA) road map. They wanted to establish a standard integration layer to orchestrate diverse business processes, simplify application monitoring, and encourage reusability. As the hub for this integration layer they chose Oracle SOA Suite, part of Oracle Fusion Middleware—a unified platform that accommodates all types of information systems and deployment models, anchored by a cohesive set of tools for development, management, security, and governance.

“For processes that need to change as conditions change, a service-oriented architecture allows you to bring value to market very quickly,” explains Rangaswamy. “When you look 12 to 18 months down the line, and you realize that there are several different systems that require similar information, it makes sense to build common services for all of them.”

Ricoh’s middleware architecture includes integration channels from Oracle, TIBCO, See Beyond, and DB Link, along with standard FTP connections and point-to-point interfaces. Eyeing the 18-month roadmap, the team also wanted to connect a variety of Oracle Applications (Oracle iStore, Oracle iSupport, Oracle Field Service, Oracle Transportation Management, and Oracle RightNow) to various cloud and on-premises applications (Salesforce.com, Concur, ADP, Jive, SharePoint, Marketo, and Avaya Speech Server). All would be governed by centralized identity management services to authorize users and control access to sensitive information.

Ricoh’s technology architecture includes the following components and metrics.

• More than a dozen applications
• More than 70 processes
• Approximately 10,000 transactions per day
• Approximately 20,000 messages per day
• Approximately 1,500 transaction per hour

The remainder of this paper examines how this architecture supports Ricoh’s major business initiatives. Ricoh now enjoys the advantages of having a standardized integration infrastructure that works across applications and channels—with mobile access and links to social networks. Oracle SOA Suite enables developers to build SOAP-based services, and it supports RESTful services within Oracle Service Bus. The IT team can immediately expose services for mobile, cloud, and future applications with this unified approach to software integration.
A Sales Portal That Combines Cloud and On-Premises Applications

RFORCE, Ricoh’s enterprise sales portal, is based on cloud applications from Salesforce and delivers information about customers and prospects to the sales team. Oracle SOA Suite handles connections between RFORCE and other applications. For example, invoice and pricing information from Oracle E-Business Suite applications is funneled into the sales portal, initiating an automated workflow to verify pricing, approve sales terms, generate invoices, and integrate key data elements with Ricoh’s ERP system.

End-to-end integration between Salesforce and Oracle E-Business Suite applications synchronizes these pricing and configuration activities, and ensures that opportunities from Salesforce flow to the order management system with all necessary connections, approvals, and escalations. Ricoh’s RQuote module, based on Oracle Quoting, unifies the sales experience. Oracle WebLogic Server provides the application server foundation for Ricoh’s integration architecture across multiple applications, ensuring extreme performance, availability, reliability, and scalability.

A Customer-Facing Portal for Service and Support

MyRicoh is the online portal that customers use to manage their equipment, place service requests, report technology issues, and order supplies such as paper, ink, and toner. Integrated chat capabilities
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enable agents to immediately respond to questions. Ricoh used Oracle SOA Suite to integrate the MyRicoh portal with Oracle iSupport and Oracle iStore. Oracle iSupport is a self-service application that allows service organizations to provide Web-based support for customers and employees. Oracle iStore is an e-commerce application that provides a personalized, comprehensive, and cost-effective internet sales channel.

Ricoh used Oracle SOA Suite to integrate these Oracle Applications with the Oracle RightNow knowledge management system, enabling employees to examine customer needs and requests, share information, leverage the Ricoh knowledgebase, and provide exceptional service to customers.

“SOA uses common elements to service multiple business applications and business needs,” explains Rangaswamy. “When we run into challenges, we can address them in one place for all the systems. For example, if we make a change once in one service, it impacts all the different applications that consume that service.”

The IT team also launched the MyRicoh mobile solution to allow customers to request service, order supplies, and read equipment meters via their iOS and Android devices. This mobile solution gives users the same functionality they are accustomed to on the MyRicoh website, plus speech recognition and barcode-scanning features.

Customers simply scan the barcode of a Ricoh product to obtain information from the knowledgebase about how to configure, troubleshoot, and upgrade their equipment. Ricoh’s Oracle E-Business Suite applications are seamlessly connected to the cloud-based sales automation solution and on-premises knowledgebase. Each scan triggers a real-time request for information. The back-end systems provide the equipment location, contact name, phone number, and service contract info specific to the device. This information is returned to the user for verification and then the user is prompted for a problem description that can be entered by speech or keyboard. Once the description is submitted, it is interpreted for keywords and matched to the Ricoh knowledgebase to determine if the problem can be resolved via self-help. If the problem is eligible for self-help, the link is provided so the customer can resolve the issue immediately. If the problem is not eligible for self-help, a service request is created and a service technician dispatched.

Ricoh extended MyRicoh to its dealers to deliver pertinent information about products, updates, company pricing, and upgrade options. Instant access to the online portal ensures that dealers always have up-to-date information about the products and services that they are selling. End-to-end integration between Oracle iStore, Oracle iSupport, and other enterprise applications allows information to flow seamlessly. The Oracle iStore and Oracle iSupport modules supply pricing and product details as well.
“All customers need to do is scan the barcode to report issues, survey information, or get updates,” Rangaswamy says. “The cloud and on-premises integration facilitated by Oracle SOA Suite ensures that the issues will be resolved or reported, and all appropriate actions assigned immediately.”

Activity on MyRicoh has steadily increased. Ricoh has experienced a greater than 35 percent penetration rate within the customer base. The site handles approximately 225,000 transactions per month, dramatically reducing phone requests in the call center. In addition, customers are now handling 5 percent of service issues themselves through MyRicoh’s self-help functionality.

**A Long-Term Vision for Mobile Computing**

Ricoh’s tagline acknowledges today’s mobile computing landscape: “Providing information on any device, anytime and anywhere.” Clearly this is a company that believes in enabling and empowering customers on the go. Oracle SOA Suite addresses all types of mobile integration challenges for applications that are on-premises or in the cloud. It empowers Ricoh’s developers to build SOAP-based services as well as newer mobile applications with REST/JSON services. They can easily accommodate mobile and cloud services with a unified approach to integration. As of this writing, the MyRicoh mobile apps have been downloaded more than 4,000 times.
“Our mobility roadmap initially involved mobile-enabling our CRM platform,” Rangaswamy explains. “Whether they use phones or tablets, authorized users can access the CRM app to retrieve information and collaborate with other employees and customers.”

A Cloud-Based Environment for Team Interaction

Rangaswamy also spearheaded the effort to create RWORLD, a cloud-based social collaboration environment that integrates with Ricoh’s cloud-based sales automation platform. Ricoh employees use RWORLD to interact with colleagues, create work teams, share documents, form subject matter groups, and participate in discussions. In addition, they can collaborate on proposals, share best practices, and quickly search for documentation or a subject matter expert—all from one location. This “ideation” platform helps teams develop new ideas for products, services, and solutions.

Ricoh worked with Infosys, an Oracle partner, to create the RWORLD environment. Many types of information, from HR data about employee benefits to client documents supporting the sales effort, are easily accessible from RWORLD. Authorized users can gather materials through a computer, smartphone, or tablet, thanks to tight integration with Ricoh’s enterprise applications and support for single sign-on. For example, a sales agent can develop leads in Ricoh’s Marketo system, convert them with Salesforce, and search RWORLD for information about specific customer challenges, all without switching applications.

According to Rangaswamy, Ricoh plans to expand RWORLD beyond the boundaries of the organization to facilitate collaboration with customers, dealers, and partners. “We want to have one platform where we can all collaborate,” he says. “It’s all about open discussions and helping people get answers quickly by identifying the right resources and facts.”

Business Impact

Leveraging Oracle SOA Suite to integrate its information systems has brought new efficiencies to Ricoh’s Sales, Service, Finance, Supply Chain, and HR departments. Ricoh now has a flexible architecture that improves business agility by reducing the overall time and cost of creating interfaces.

Thanks in part to these technical developments, Ricoh has been widely recognized for its leadership in innovation, marketing, and corporate sustainability. The company was named one of the 2012 Top 100 Global Innovators by Thomson Reuters, included in the 2012 and 2013 InformationWeek 500 list of top technology innovators, and listed on the Dow Jones Sustainability Index, which considers economic, environmental, and social accomplishments.²

² ricoh-usa.com/about/awards/Industry_Awards.aspx?alnv=awd&cpt=Industry%20Awards
Rangaswamy plans to use Oracle SOA Suite for additional integrations going forward, in conjunction with Oracle Service Bus and Oracle Business Activity Monitoring, to streamline interactions with Ricoh dealers. As with the previous integration projects, the goal is to improve automation and reduce cycle times. The middleware solutions in the Oracle AppAdvantage program enforce development and deployment standards among all enterprise applications. Oracle promotes an architecture that can adapt as business requirements change over time.

**Conclusion**

As cloud computing moves out of the early-adopter stage and into the mainstream of enterprise computing, many companies face challenges integrating cloud and on-premises information systems. In order to achieve the promised benefits of IT automation, such as greater flexibility and lower costs, a cohesive vision for unifying all types of information systems is highly recommended.

Ricoh realized significant advantages by using Oracle SOA Suite and other middleware technologies to integrate Oracle E-Business Suite and third-party applications. With comprehensive adapters readily available, connecting these applications was a straightforward process. Oracle AppAdvantage provides a set of proven middleware solutions that extends the value of Oracle Applications with a common development foundation that reduces risk and accelerates time to market. The middleware solutions in the Oracle AppAdvantage program allowed Ricoh to simplify its IT infrastructure, provide a competitive edge through increased business agility, and enable innovation by embracing new technology trends. As Balaji Rangaswamy’s team demonstrated, these middleware solutions help Ricoh differentiate its business and create innovative new experiences for customers, partners, and employers.

Contact Oracle to see how Oracle AppAdvantage can provide a unified view of your middleware technologies, infrastructure, and applications. Whether your company is extending its applications to mobile devices, building a self-service portal, or migrating applications to the cloud, you can isolate these capabilities from your applications and easily extend them by using Oracle Fusion Middleware technologies with Oracle Applications.

For more information on Oracle AppAdvantage, please visit: [oracle.com/appadvantage](http://oracle.com/appadvantage)

For more information on cloud and on-premise integration and Oracle’s service-oriented architecture solutions, visit [oracle.com/soa](http://oracle.com/soa)
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