How Cisco IT Personalizes Content Recommendations for Sellers with Intercloud Solution

API-based architecture makes cloud solution simpler, flexible, and more secure.

EXECUTIVE SUMMARY
CHALLENGE
• Free up sellers' time by making it easier to find relevant, trusted content
• Develop an application architecture that makes it easy to add new capabilities
SOLUTION
• Content as a service: recommendations based on persona and sales opportunity
• Services-based architecture, using open APIs
RESULTS
• Shrank time to find five documents from 17 to 3 minutes
• Attracted 14,000 users in first six months—18 percent of the sales force
LESSONS LEARNED
• Make the user experience the guiding principle in application design
NEXT STEPS
• Build a desktop application with the same simple experience as the mobile application
• Use API-based architecture for other applications
• Add collaboration as a service, data as a service, and analytics as a service

Background

Cisco IT is embracing a new model that we call Fast IT. It's about making IT infrastructure simpler, more flexible, and more secure. A big step on our path to Fast IT is an API-based application architecture. Using API calls allows us to combine content and services from multiple clouds. This case study describes the architecture and the first platform built atop that architecture. The platform, called SalesConnect, is helping Cisco sellers and partners more quickly find the content they need to close deals.

Challenge

Many Cisco business applications were built before the cloud, mobility, and the Internet of Everything. A web interface connected to a back-end database. Each application had its own code for authorizing users.

In the cloud era, this model is outdated. "Even after we added single sign-on for Cisco applications, users still had to separately sign on to cloud applications like Salesforce," says Dave deMilo, Cisco IT architect and Cisco Distinguished Engineer. "There are better ways for them to spend their time."

We wanted to make the cloud user experience simpler, smarter, and more secure. This would require shared application services, such as a common identity layer and a single source of truth for content.

An opportunity to try out the services-based architecture arrived when the Cisco Sales Enablement Team asked for a better way for Cisco sellers and partners to find product information. "Trying to find the right content in our vast stores of white papers, presentations, proposal templates, training materials, and demos was taking too much time from the seller's day," says Sunil Chandra, chief architect for Cisco Commerce and SalesConnect.

We decided to make it easier for sellers to find the content they use during the sales cycle. "A seller looking for five pieces of sales or marketing content typically spent 17 minutes searching," says Christine Wong, SalesConnect program capabilities lead. "And they often gave up before finding everything, which meant they spent more time recreating content that already existed."

What sellers needed were personalized content recommendations. The most useful recommendations take into account the seller's role (Cisco employee or partner), the technology (data center, wireless, and so on), and the

phase of the sales cycle. At the beginning of the sales cycle, sellers working on a wireless deal need training materials and demos. Later they need presentations, case studies, and white papers. Near the close they need proposal templates and configuration information.

But brilliant recommendations alone would not be enough. Unless we also provided an appealing user experience, sellers would continue using Google and the cisco.com search tool, or asking coworkers for content recommendations. "Today's workers expect a great user experience like the one they have with NetFlix and Amazon," says Wong.

So Cisco IT set to work developing our own content recommendation solution. Requirements included:

- A "single source of truth" so that sellers could trust that they were seeing up-to-date content.
- Personalized content, based on the seller's role and opportunity.
- Basing recommendations on the user's opportunities. These would come from Cisco Commerce Workspace (CCW) for partners, and Salesforce for Cisco sellers.
- Fast search results.

## Solution: Content as a Service and Data as a Service

The SalesConnect platform is Cisco IT's first platform to be built exclusively on an API-based architecture. Partners began using it in April 2014, and all other Cisco sellers joined them August 2014. Sellers enthusiastically adopted SalesConnect, and by October 2014 it had attracted 14,000 users. "SalesConnect was designed for the sellers by the sellers, which has made it the fastest adopted enablement application in Cisco history," says Jim Blum, vice president of business operations for Cisco. "We have captured their attention with a high value add, elegantly designed user experience that keeps them coming back over and over again."

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SalesConnect is an example of an intercloud application, with components in multiple private and public clouds (Figure 1). Sellers access SalesConnect using a mobile app for iPhones, iPads, and Android devices. Later they will also be able to use it from within CCW and other applications.

Figure 1.   SalesConnect Brings Together Content and Services from Multiple Clouds
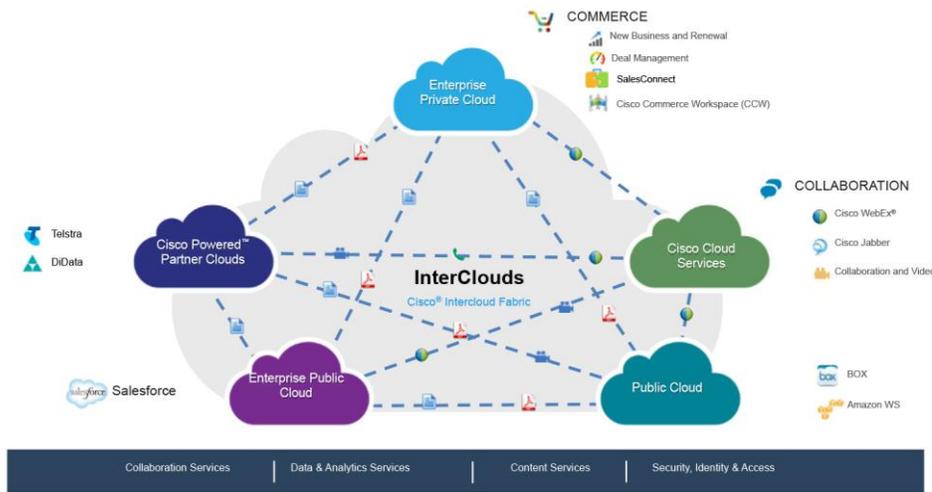
Imagine it's the start of the workday. A partner opens SalesConnect to check out the day's top deals and opportunities. When the partner's phone rings with a last-minute invitation to present to a customer at lunchtime, she doesn't need to scramble to find or create content. Instead, a simple search for the solution brings up a curated kit containing a business-oriented presentation, technical presentation, and a white paper and case studies to leave behind. One click saves the content to a briefcase that the partner can access when offline.

On the other side of the city, a Cisco seller is preparing a proposal. He opens SalesConnect and on the first screen sees recommended content for the last opportunity he viewed in Salesforce. Another click sends the materials to the seller's team members or the customer.

Shared Services Architecture

SalesConnect is based on open-source tools and shared services (Figure 2). It retrieves data from back-end systems using API calls. As a result, we can very quickly add new capabilities as business needs and user expectations change. For example, we plan to add one-click connection to experts, with instant message, voice, or a Cisco Web session. "An API-based architecture makes it easier to change the presentation layer," deMilo says. "With APIs, applications are no longer hard-wired to specific database schemas and network topologies. Any application, on any type of device, can consume data through the same simple APIs, anywhere on the Internet."

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Figure 2.   Adaptive Architecture for SalesConnect – Target State
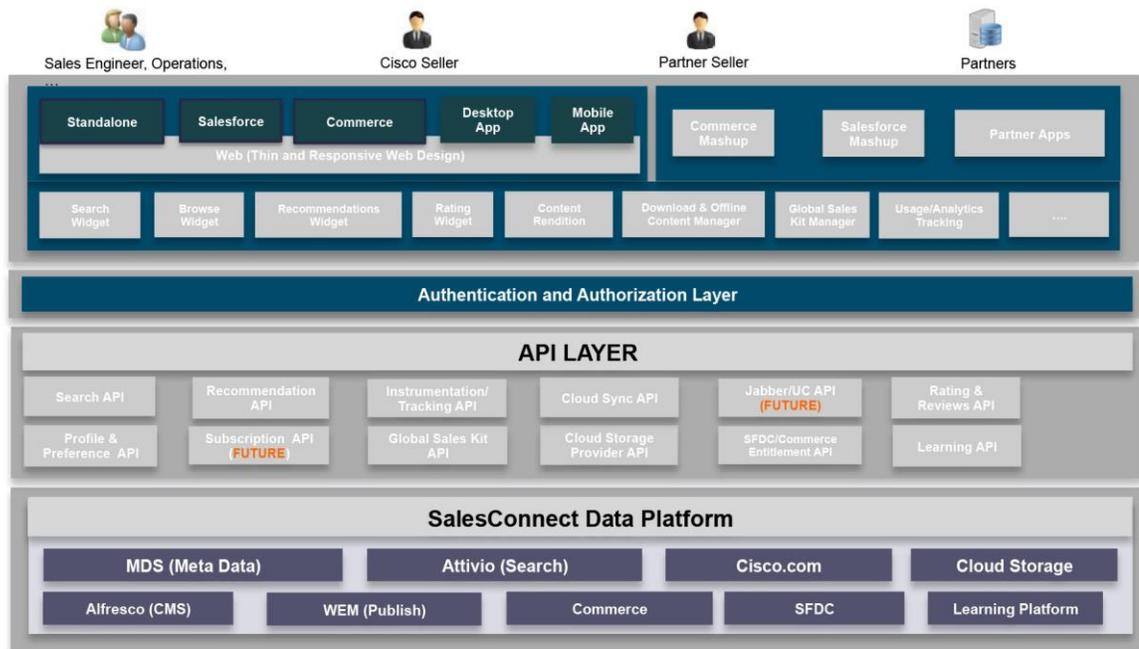
Content as a Service

When sales content is scattered in different repositories, sellers do not necessarily trust they've found the latest version. SalesConnect serves up trusted content from a centralized, open-source content management system called Alfresco. "The entire sales process, from lead to quote, is connected to a single source of truth," says Chandra.

Content recommendations are based on:

- Metadata tags. Content owners provide these when content is published. A white paper about BYOD in government, for example, might be tagged with "BYOD," "mobility," "Identity Services Engine," and "government."
- Popularity.
- User ratings, 1-5 stars.
- Requests from Cisco teams to promote certain content based on company priorities.
- User identity. Cisco sellers see all content, while partners see a subset.

Identity as a Service and Entitlement as a Service

Sellers wouldn't want to use SalesConnect if they had to log in separately to each cloud it brings together. "Federated identity is central to cloud computing," says deMilo. "You can't have a useful hybrid cloud service without it."

We took a step toward federated identity when we implemented single sign on a few years ago. But single sign on isn't enough in an intercloud environment. "For intercloud services to be useful, the various cloud applications need to be able to trust each other to authenticate and authorize users," says deMilo.

We now support single sign-on across most of our applications. In addition, we are working on a consistent way to authorize users based on company affiliations, roles, and personal preferences. SalesConnect connects to the authentication and authorization layer using REST APIs. Cisco Enterprise Policy Manager applies access policy

based on the user's role—for example, buyer, seller, or service provider. "Applying access policies in one place is more secure," deMilo says.

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> —David deMilo, Cisco IT Architect

When role-based authorization is fully implemented, every application will connect to the authorization layer to look for the user's employer and role. "In this way, we can provide a consistent, personalized user experience on mobile and web applications, and consistently control access to applications in one or more clouds," says deMilo.

Taking an architectural approach to identity services provides important benefits:

- Better user experience.
- Less time and cost for application development because the application doesn't need code for authorizing users: Instead, applications only need a small amount of code to manage entitlements, or privileges. For example, a return merchandise authorization (RMA) application would need to validate whether the partner was entitled to overnight shipment.
- Better governance for protecting data: Instead of managing access in every application, we can manage it centrally, in the identity layer. We'll use Cisco Enterprise Policy Manager.
- Less time to add new products to seller applications: In the past, we had to specify who could access information about the new product in pre-sales applications, Salesforce, and the Technical Assistance Center (TAC). Moving from application-based access policies to role-based access policies shrank the time to update seller applications by more than half, from 2-3 quarters to 1 quarter.

Data as a Service
The same API-based architecture behind SalesConnect also provides data as a service. After logging into CCW, sellers and partners see an opportunity dashboard that is fed by install base information stored in our private cloud.

To keep databases from becoming overloaded with requests, we cache data in memory. This makes it faster to retrieve data, accelerating application performance and page loads. "And because the APIs connect data that's housed in multiple databases, application developers don't have to know how data is organized at the source," deMilo says. "They can get it much more simply through API calls."

We use two complementary technologies to provide data as a service. An open-source caching solution called Elasticsearch provides high-speed search. When we need to virtualize data from multiple sources, we use Cisco Composite Software in conjunction with Elasticsearch. We've completed a successful proof of concept for a unified data layer (Figure 3).

Figure 3.   Unified Data Layer

Results

SalesConnect makes it easier to sell Cisco solutions. And the underlying architecture is moving us further along in our journey toward Fast IT.

More Productive Sellers

Sales people can now find relevant, personalized content in less time. "Without SalesConnect, sellers needed 17 minutes to look for five pieces of content," Wong says. "On average, they gave up after finding three. Today, sellers need just three minutes in the SalesConnect mobile app to find what they need. On average, they view, share, or download 1.2 pieces of content per visit."

High User Satisfaction

As of October 2014, 14,000 Cisco sellers and partners from 130 countries had used SalesConnect at least once. Each week, approximately 700 people log in to SalesConnect, including both partners and internal sellers. Here's what they're saying:

- "We had a conversation about Cisco Unified Communications compared to a competitor, and towards the end of the conversation, the customer asked, 'You got any whitepapers?' I went straight into SalesConnect, searched on the competitor, found a white paper, and sent it to the customer. While still in the meeting. It's brilliant! It's the best search app that I've seen Cisco produce." – *Cisco Regional Manager in Asia Pacific region*
- "As far as I can see, the tool is the best of its kind with all the information from Cisco's huge knowledge base." – *Cisco Partner in India*
- "The app is truly a help for daily work. You can find data faster than on Cisco.com" – *Cisco Partner in Switzerland*

Next Steps

Now we're adding new capabilities to SalesConnect and preparing to use the architecture for other xRM applications. Figure 4 shows the next steps in the journey.

Figure 4.   SalesConnect Journey

Future plans include:

- Building a desktop application with the same simple experience as the mobile application.

- Refining content recommendations: The engine will consider the seller's geography, spoken language, competitors, and potential services opportunities. "Using APIs helps us add new capabilities very quickly," Wong says.

- Adding predictive analytics: After signing in, sellers will see recommended sales strategies. Recommendations will be based on content that other sellers with the same kinds of opportunities are viewing.

- Accelerating the search function: We're using search indexes and graph databases, such as Cassandra and Neo4J.

- Adding new services, such as:

    - Collaboration as a service: For quick answers, sellers will click to engage with experts from anywhere in SalesConnect. They can send an instant message, start a voice call, or start a WebEx session. "Getting right answers the first time helps sellers and close more deals, faster," Chandra says.

    - Data as a service: Sellers will query the install base to see opportunities to renew services contracts.

    - Analytics as a service: SalesConnect will analyze historical data to recommend just the right discount to win the deal. Sellers will be able to apply the discount to the quote with a few clicks. SalesConnect will also recommend cross-selling and upselling opportunities.

Lessons Learned

If you're planning your own personalized content solution, we suggest:

- Plan the user experience before doing anything else. "We focused on human factors when we designed the SalesConnect experience," Chandra says. "Our concern was services and people, not devices and users."

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- Design the application architecture around the user experience. Do not focus on the way back-office systems structure and manage data. "Too often in IT, conversations start with 'Where is the data?' rather than 'What task is the user trying to accomplish, and what information is needed?'" deMilo says. "Data as a service allows you to deliver that data in exactly the right chunks, for a given task, without being constrained by way back-office systems are designed."

PRODUCT LIST

Cisco Solutions
- Cisco Enterprise Policy Manager
- Cisco Composite Software

Open-Source Solutions
- PingFederate federation server
- Alfresco content-management system

For More Information

To watch a 4-minute video on SalesConnect, click here.

To read additional Cisco IT case studies on a variety of business solutions, visit Cisco on Cisco: Inside Cisco IT.

Note

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