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Case Study

Enterprise Rights Management in Practice at Continental Airlines

Business units drive enterprise solutions for managing rights and protecting email, documents and compliance processes

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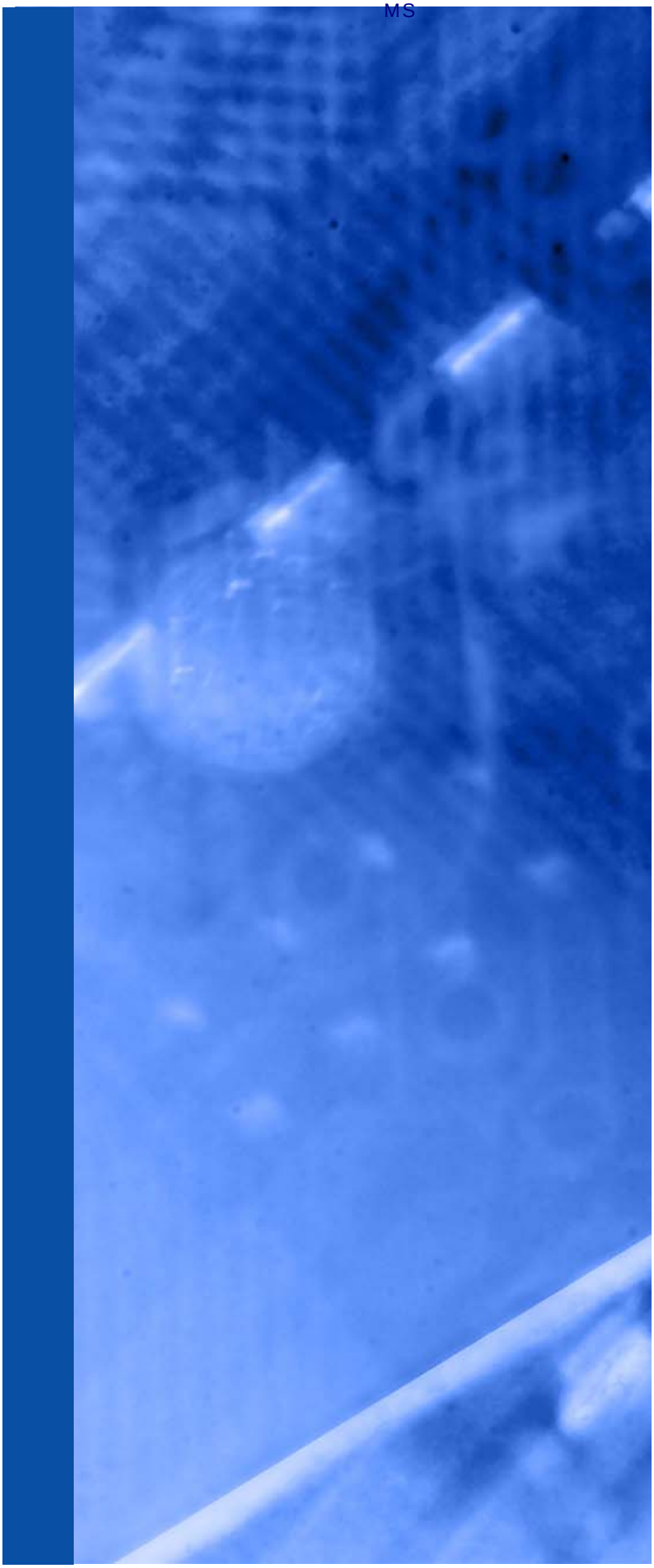

THE GILBANE GROUP

Business Unit Needs Drive Enterprise Rights Management Architecture

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Abstract

In the last year or so, some of the business units within Continental Airlines began to see a need to protect and control certain kinds of content, but early solutions proved too limited to apply to the enterprise at large. When the Technical Unit in charge of enterprise-wide information technology architecture sought a better solution, they found one already largely in place, within the Microsoft Windows Servers and Office productivity applications. With modest efforts and very little additional cost, Continental Airlines is developing an enterprise rights management solution that can address the wide range of rights-oriented business requirements, through familiar platforms and interfaces that make adoption from the bottom up far more likely.

> *The Microsoft Server and Office infrastructure already in place at Continental Airlines yields effective enterprise-wide solutions for business requirements for managing rights and protection for email, documents, and compliance processes.*

ERM as a Grass-Roots Movement

We all know that business decisions are supposed to be handled logically, especially Information Technology (IT) choices. That's one of the main reasons for the existence of Continental Airlines' Technology Unit, at the giant airline's headquarters, in Houston, Texas. Jason Foster, System Architect for Servers and Senior Manager of Technology at Continental Airlines, knows this better than most.

And then there's the way business decisions often get made in the real world, which many times have little to do with centralized rational planning, but everything to do with addressing a sudden but pressing problem. As is often the case, the IT business unit gets asked for help after key decisions have been made. At the start of 2007, for example, Continental Airlines' Financial Business Unit realized that certain documents needed to have rights management applied to them, and specifically, for documents that get distributed to often widely-dispersed members of the Board of Directors and high-stakes executives who need to know essential proprietary information and sensitive financial numbers, such as earnings and revenue data. The Financial Unit looked to Adobe PDF and the Technology Unit was brought in, *fait accompli*, to implement a PDF-centric solution.

Foster, as server architect for the Technology Unit, was on the front line when the Financial Unit went to Continental Airline's Enterprise Project Office with the new project for rights management of financial documents. "All projects for the enterprise go through the engineering team for review and approval and we didn't have a rights management answer in place at that time. The Financial Unit had already looked at Adobe, and so we took the first stab with the Adobe Policy Server (APS)," Foster remarks.

One immediate limitation was that it was a standalone implementation of rights management that only handled the PDF document platform. According to Foster, another problem that soon became apparent was that it was pretty expensive to take into the rest of Continental Airlines. The Technology Unit took a deeper look at the Financial Unit's business requirement for protecting and tracking documents, but at the same time looked to the other business units, to learn if there was any value to having an ERM (enterprise rights management) system.

The Starting Point: Existing Infrastructure

Continental Airlines already had widespread Microsoft solutions, including Microsoft Exchange and SharePoint servers, and enterprise implementation of Microsoft Office 2003 and (in some units) Microsoft Office 2007. "Continental has an enterprise agreement with Microsoft for our desktops, already has the Office 2007 and the entire suite license, and in that suite there was rights management as well," says Foster. "When we looked at what we have, to be diligent with corporate assets and software—in this case the licensing of Office is one of those assets—we took the original requirement of the Financial Unit to the HR and Legal Units and found that they too were very interested in a rights management solution." With Microsoft, given Continental Airlines' existing IT infrastructure, Foster could argue for using

Microsoft's Windows Rights Management Services (RMS) on a favorable cost basis, too, since the corporation had already paid for the technology.

Overall cost includes implementation, and that sort of cost was on Foster's mind as the first quarter of 2007 passed and the difficulties with implementing the previous solution became clear. Foster noted that the Technical Unit at Continental is "more familiar with the Microsoft products, the wizard-based installs, minimum configuration, understanding the interoperability between all the other application stacks that we have on our desktops."

With the significant infrastructure investment in Microsoft already in place, Foster looked at RMS in Microsoft Windows Server 2008. He developed a high level design and set it up in the lab environment. "When we brought the RMS product in, we were already in the Windows Server 2008 TAP [technology adoption program], and we had previewed the beds and had the support we needed for a proof of concept implementation. It was like night and day on the implementation side, and this was with a beta product," Foster notes.

From the start, the engineering side of the RMS implementation was smooth, which has a major impact on the total cost of ownership, since engineering time can quickly add up. "We always look at the cost of implementing a project year over year, since that is one of the key costs, along with operational considerations," says Foster, "and implementation costs for RMS were significantly less." One of the key benefits with RMS was out-of-the-box integration with Active Directory (AD), a necessity since applying rights-based policies relies on AD users and groups. The Technology Unit was able to take advantage of the high availability configuration of their domain controllers and not introduce any single point of failure. "As an engineer I try to design solutions that don't have those types of operational requirements or relationships, but rather I want to decouple operations as much as possible, so that when I have an operational issue, it doesn't impact my line of business applications," says Foster.

The Technology Unit at Continental Airlines undertook the RMS Server project in the early part of summer 2007, at which time the HR and Legal Units bought in. By August, the proof of concept had turned into a pilot implementation with much more of an enterprise scope with a hundred users mixed across four business units. The RMS solution from Microsoft Windows Server 2008 performs much better in regard to the operational aspects of Active Directory because RMS doesn't tie to one Active Directory, but to the entire domain and/or forest of servers within which it is implemented. "When I talk about total cost of ownership," Foster explains, "the more transparent and robust connection between AD and the servers is another cost example of administration and communication costs being held in check."

Going Enterprise-Wide

"In the first quarter of 2008, we're doing the production deployment with a scope of 500 users initially," says Foster, "but we all understand that as soon as this gets out it is going to be one of those snowball-type technologies where

the word spreads socially—at lunch time you're talking about it, someone catches you in the hallway, or you get a document that has rights management applied to it and you've never used it before, and become an adopter." Foster predicts that within a year RMS is going to go to every desktop across Continental. "Every user that opens an email, every user that writes any type of document, whether it's an Excel document or a Word document or Visio, or as a PDF," he says, will expand the use of RMS. The Technology Unit is looking at third party solutions that work closely with Microsoft to provide PDF rights management through the RMS solution, so that the initial impetus for rights management will be covered.

Continental Airlines has nearly 200 Active Directory domain controllers across the specifically for rights management they are using Microsoft clustering services with the database for rights management in a cluster to provide high availability. On the front end of operations, Continental Airlines has redundant RMS servers split out into three different roles, with those roles segmented into multiple physical servers.

The Technology Unit is also looking at implementing RMS license pre-fetching with Microsoft Exchange 2007 to provide improved performance for rights protected email. "Understanding how the RMS design works is instrumental in putting together an architecture that is globally flexible without causing negative impact to the user," notes Foster, "and that's where the Exchange caching-type solutions come in. As part of this we are implementing a migration from Exchange 2003 to Exchange 2007 that will precede the global implementation of RMS."

Part of the global rollout of RMS means looking for wider application of the technology among the business units. "We've gone to 90% of our business units with RMS," says Foster. "One example is the business unit that handles the maintenance of aircraft, called the Technology Operations Unit. This unit has a FAA bulletin process that requires the mechanic to sign off on specific documents, which we have to track, noting that the mechanic reads it, and so forth, in a specific chain of custody of the document." The existing solution for this business unit is Documentum-based, which has been doing "chain of custody"-type management. But the Technical Unit wonders about the consequences of the momentum RMS is expected to gain when it goes enterprise-wide. "As the passion spreads about what RMS does and how it works and what it can do for you, then it is going to result in reverse adoptions," believes Foster. "Instead of us going to them, it will be them coming to us, saying we can use this enterprise solution instead of our current business unit solution for the bulletins from the FAA and the bulletins from Boeing around parts and maintenance changes, all that kind of thing." Foster's team also went to the Flight Operations business unit that deals with pilots and flight attendants, where pilots, for example, have to go through a certain amount of training and need to show that they've completed it.

Part of the Technical Unit's discussion with the Legal Unit involves the issue of compliance, whether in terms of Sarbanes-Oxley (SOX), or Payment Card Industry Data Security (PCI), or the many other corporate standards that have to be met and audited against. Since one result of RMS is the ability to show not only who can open a document but also who actually has opened

that document—what is often called usage tracking—RMS is seen as supplying the means to meet those requirements.

The Technical Unit hasn't kept itself out of the RMS discussions. They use a Microsoft SharePoint portal through which all architecture-type documents and projects are stored and shared in the process of reviewing and approving their efforts. "One of the values that RMS brings our own business unit is in terms of review," Foster says, "with the idea that if I'm creating a document on a design proposal, what RMS allows us to do is to designate the specific people in my peer review circle who should be looking at the document, but also to create an accountability, where I can know who specifically went to the document and reviewed the document because I see a tracking." Furthermore, once the document has gone through this peer review process and been approved, the document's originator or manager will know whether the document has been changed and who did edits. While some of this sort of thing can be done with Active Directory today, with RMS there can be more sophisticated control and tracking of documents, changes, and usage.

"This is going to be a watershed technology," says Foster, who likens RMS to other key business technologies like email, universally adopted throughout the years, or like the ubiquitous use of the Web browser by business today. "I believe that RMS is going to be another fundamental technology that everyone uses, and not thought of as a separate application. It is like Active Directory—it is just there and everyone uses it," claims Foster. "I don't need to know what server I just got my tickets from and all the details of the technology, but only that its there, it works. That is what RMS is going to become."

The User Experience with Microsoft RMS

Having a robust architecture for managing and serving rights is all well and good, but what can be done with it depends, in the end, on people setting policies and assigning rights. How do the managers find setting policies and assigning rights with the Microsoft RMS solution? The answer, for Continental Airlines' Technical Unit, is to provide a flexible design that is able to give different capabilities to business units that may have different requirements or even styles of management. Within the current pilot implementation, for example, the Financial Unit is concerned with a relatively small set of documents, and has one person who decides on and assigns document rights, while over at HR everybody in that business unit assigns rights to documents. The flexibility comes through security groups in Active Directory and thereby offers the ability to apply rights across an entire business unit or through individual assignments of rights. "I don't want to spend a whole lot of time understanding your specific business requirements in order to enable you to use RMS," notes Foster. "If you have additional requirements, you come to us and we can look at ways of helping you understand the architecture so that you'll know how to implement it on a group level, or on a business unit level."

A core factor in the RMS implementation's flexibility is Continental Airlines' synchronizing their HR database with Active Directory. Every night, the HR system is tied directly to Active Directory, so that every employee and the

particular business unit they are in, along with lots of other information, is updated. “The beauty of this,” says Foster, “is if people move within the Continental framework or they leave the company, come into the company, or whatever happens from an employment perspective, all of that is captured in our Active Directory. We can then easily apply policy and/or rights based on who you report to, what business unit you report to, and your cost center information,” which at Continental Airlines links funding, cost entries, and accounts to individuals and business units, with these links also stored in Active Directory.

In practice, this means that if rights are applied to a document that permits access only to HR employees, then the day an HR employee switches to a different business unit, the change is noted and automatically the employee no longer has HR-related rights. For Foster, it is the concept of the living document that comes into play, where today one may have a specific set of rights, but if those rights assignments change—say with a transfer to a different business unit—so changes the access to the document. “This was the sort of thing that HR was very interested in,” Foster notes.

Being able to meet requirements is, of course, not necessarily the same thing as being easy to use or transparent to the end-user. Much of the discussion of both consumer- and enterprise-oriented digital rights management (DRM) has rightly focused on DRM’s impact on the end user. “Any time enterprise engineering adopts a technology,” reports Foster, “we have accountability to the enterprise to provide operational guidance, and we have responsibility toward the users for guidance.” What the Technical Unit does is create a document for the help desk that outlines the functions and processes, so that if a user calls the help desk, the user gets help. In addition, the Technical Unit is in the process of writing a user communication that informs recipients about having specific rights, the abilities these rights provide, and the requirement of the recipient relevant to certain document types. These user communications also include a “how-to” tutorial in the form of screen shots and point and click guides that show exactly what to do to apply the rights, or to forward or edit the document, or whatever else may be specified with RMS. “We’re working closely with the business units to create these how-to documents,” says Foster, but in addition to this support, some of the business units are also producing official communications that get sent to everyone in the business unit about RMS and what is expected with RMS. Continental Airlines’ Technical Unit is basically adding technical documentation, help functions, and rights policy documentation support so that from the line of business point of view, the RMS implementation is that much easier.

The concern about the interface for policy makers and end-users of RMS may be easily overstated, according to Foster. “From a policy perspective,” he says, “you will see a subset of users who will define RMS policy, and a small subset of actual users who will create the policies for any particular business unit or division.” The majority of end users behave no differently than their colleagues, applying policy to their own specific documents not based on a policy from their business unit, but simply on the way they control who can read the email, print the document, or other “on-the-fly” requirements chosen. “What you’re going to see is four or five business unit policies that they’ll have to apply,” says Foster. “But what is likely is that the end user will

apply some policy to documents every day, once RMS is made available. It is like an email—you address it specifically every time you send an email, and I think that it will become every time you send an email, you are not only going to say who you want it to go to, but now also who you don't want it to go to." In terms of rights policies, only a few are likely to define them, but from the end-user perspective, RMS is going to get used a lot, Foster believes. "I really think that the enabling of the end user for rights is going to be just as native as defining the 'TO:' field in email."

One reason for Foster's view on ease of use is that RMS is integrated within the user interface in Microsoft Office 2007 as point-and-click pull-down menu options on virtually every desktop within Continental Airlines. "RMS is right there in the title bar, and there is no launching of a third-party tool," he notes. With RMS integrated into MS Office, barriers to adoption are less likely, Foster argues, because "the end user is enabled now, and we're taking the power and capabilities of this rights concept and we're pushing it all the way down to the people who are actually opening and saving files, creating the intellectual property at Continental Airlines."

Conclusion: Unexpected Value

RMS implementation within Continental Airlines is still in early stages, just coming out of pilot program and there hasn't been a lot of "water cooler talk" about it yet. "I'll tell you this," Foster admits, "if RMS wasn't meeting the core business requirements, I would know about that. The fact is that 'no news is good news' applies, but within another three or four months we'll be getting the water cool talk and the little stories here and there about how this technology brings us additional value that we didn't even see initially."