



Choosing between Notes 9.0 and Outlook 2013

IBM Software Group Competitive Project Office

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Table of Contents

Table of Contents	2
Executive Summary	3
The State of Mail	4
Scenarios	6
Working with email	6
Creating and managing meetings	8
Resolving time-critical issues	8
Discovering information, contacts, and linkages	10
Locating the right people and information.....	11
Sharing and collaborating with documents.....	12
Coordinating work.....	13
Staying up to date with what is going on	14
Working productively in context.....	17
Working in a shared environment or remotely without an email client.....	19
Working on the go using a mobile device	22
Under the Hood	24
Replication	24
Security.....	24
Extensible architecture.....	26
Multiplatform nature	28
Customizability.....	28
Resiliency	29
Product comparison chart.....	30

Executive Summary

Both IBM and Microsoft are poised to ship the latest versions of their venerable email clients: Notes 9.0 Social Edition from IBM, and Outlook 2013 from Microsoft. Over the years, these two companies have been the largest suppliers in the corporate email client market landscape. Although email is not considered a “sexy” technology, it is nevertheless an indispensable part of the knowledge worker’s daily life. While new social technologies are increasingly used as collaboration tools, email volumes continue to grow and many of these social technologies continue to rely on email as a notification mechanism. One study showed that office workers spend half their time¹ on email. This is why the email client is so important; it is the central hub, so to speak, for the average office worker today. Since office workers spend so much time in their email client, every little productivity gain eventually adds up, especially when measured over time and across the entire workforce.

For the most part, both IBM Notes and Microsoft Outlook perform well when handling typical email, calendaring, and contact management tasks. But when we step beyond those standard Personal Information Management (PIM) tasks, IBM Notes really starts to shine. It all starts with Notes’ renowned security, customizability, and distributed architecture. Combine that with the Eclipse framework and the result is a flexible, extensible, multi-platform application that offers significant functionality beyond what Outlook provides.

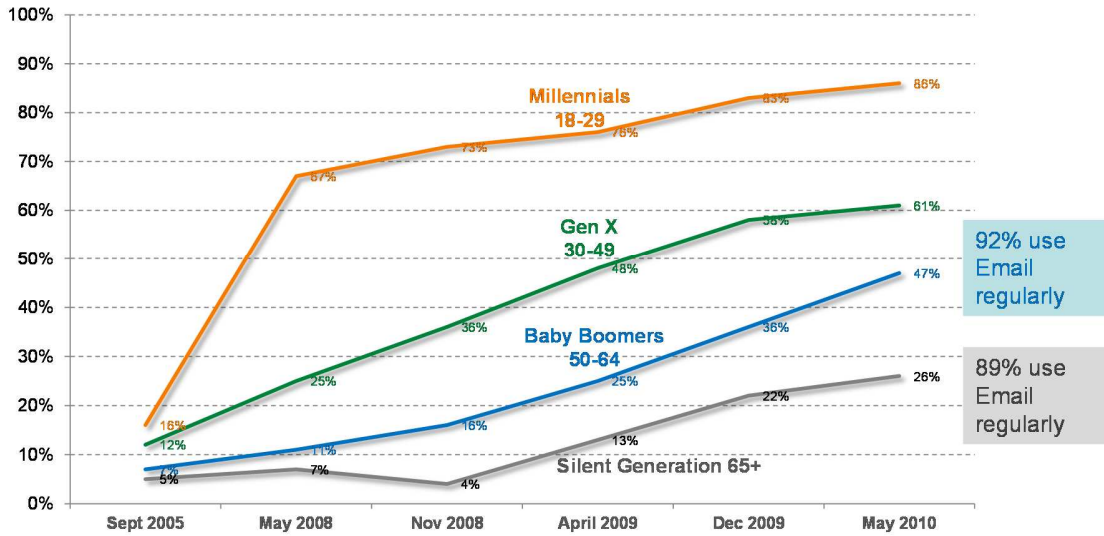
The extensibility allows IBM to tightly integrate instant messaging, presence awareness, social discovery, social file sharing, and team task management natively into the Notes client. While some elements of these are present in Outlook, they typically are not as functional, or take more steps than the equivalent task in Notes.

¹ <http://www.inc.com/news/articles/201103/workers-spend-half-day-being-unproductive.html>

The State of Mail

In recent years some industry pundits breathlessly predicted the death of email in the face of social technologies. This may be due to a generational divide with younger users gravitating toward social technologies whereas older users prefer email as this Pew Research survey indicates.

Percentage of adult users who use social technologies



Source: Pew Research Center's Internet & American Life Project Surveys, September 2005 – May 2010. <http://pewinternet.org/Reports/2010/Older-Adults-and-Social-Media/Report.aspx?view=all>

Figure 1 - Usage of social technologies by age group

However, reports of email demise are greatly exaggerated. Email remains the undisputed dominant form of communications:

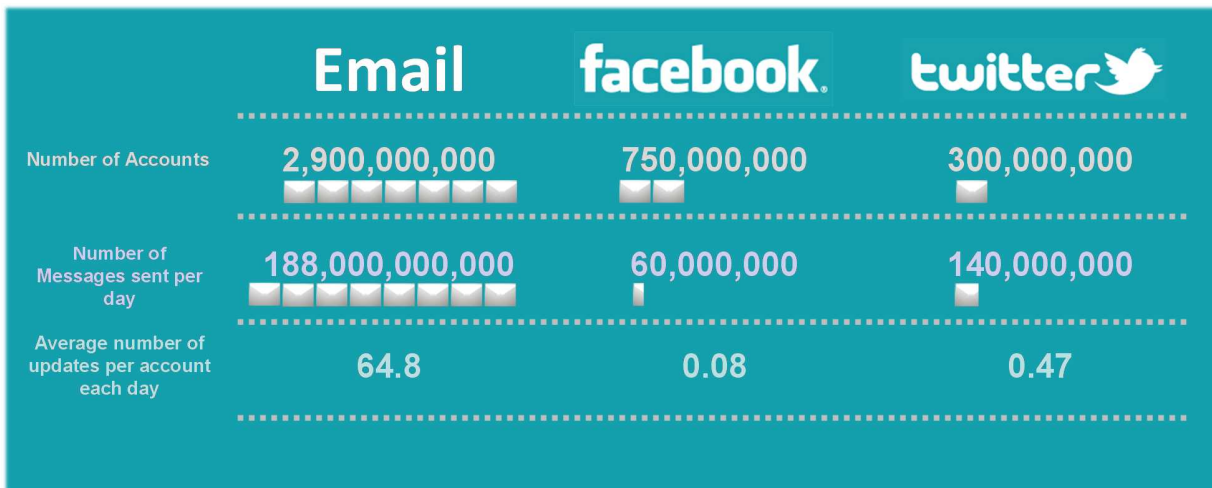


Figure 2 - Email, Facebook, and Twitter volumes

Source: <http://blogs.smartertools.com/2011/08/29/> and Radicati Group "Email Statistics Report 2011"

There is no reason however to consider social technologies and email to be mutually exclusive. IBM is taking the best of both approaches and blurring the line between email and social. We call this hybrid “social mail experiences.” The analysts seem to agree with IBM’s approach:

“Very soon, you won't be able to see email and social networking separate. Email will not die, it will in fact have more flavor and will be more integrated²” **Neha Gupta, Senior Research Analyst, Gartner**

So what is a social mail experience? The easiest way to understand the social mail experience is to contrast it with the traditional email experience:






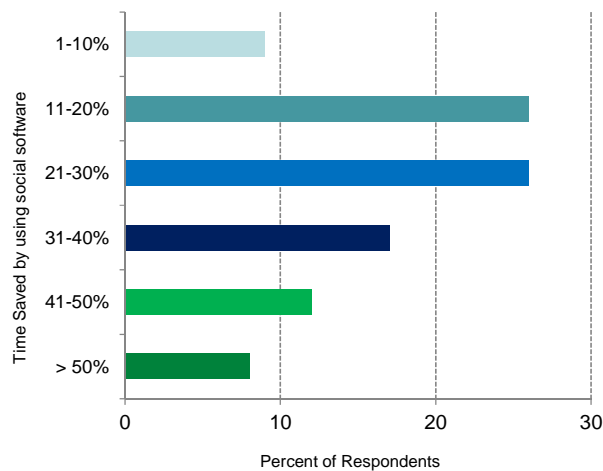
Traditional Mail		Social Mail Experience
Individual emails		Managed conversations threads that incorporate forums posts, microblog status updates, and activity streams
Static email attachments		Integrated social file sharing
Standalone email address books		Dynamic social profiles and networks
Standalone personal calendar		Shared group and social calendaring
Excessive and disruptive switching between multiple, standalone, communications tools		Seamless, integrated environments with email, instant messaging, social sharing, voice, and video

Figure 3 - Evolving from traditional to social mail experiences

IBM Notes 9.0 sports the Social Edition moniker expressly because it personifies a social mail experience client. It is no longer just about email, but incorporates social elements so as to make it both familiar to longtime email users yet compelling for users who grew up on social networks. This will allow Notes to appeal to users across the demographic spectrum. Our goal is not to change the way you work, but to make you more effective at what you do. Research from IDC has shown that incorporating social elements into the mail experience does indeed result in productivity benefits for users across the whole spectrum of the workforce.

² Source: http://articles.economictimes.indiatimes.com/2011-01-13/news/28424479_1_email-providers-social-networking-email-users



Source: IDC's social business survey 4Q2010.
http://ftp.software.ibm.com/software/lotus/pub/lotusweb/232546_IDC_Future_of_Mail_is_Social.pdf

Figure 4 - Productivity improvements by using social software

Microsoft Outlook 2013 on the other hand is still primarily a standalone email / PIM (Personal Information Manager) client. It does email, calendaring, contacts, and tasks very well but its social capabilities feel like they are tacked on as an afterthought.

Scenarios

In order to provide the most relevant competitive comparison we have divided the following content into sections that are focused on specific usage scenarios:

Working with email

Above all else, an email client must provide the necessary tools to easily triage, read, compose, and reply to email. In this respect both Notes and Outlook perform admirably.

Triage. Both Notes and Outlook allow you to easily see at glance unread emails. Both allow you to open a preview pane either at the bottom of the page or on the right (to take advantage of those widescreen displays).

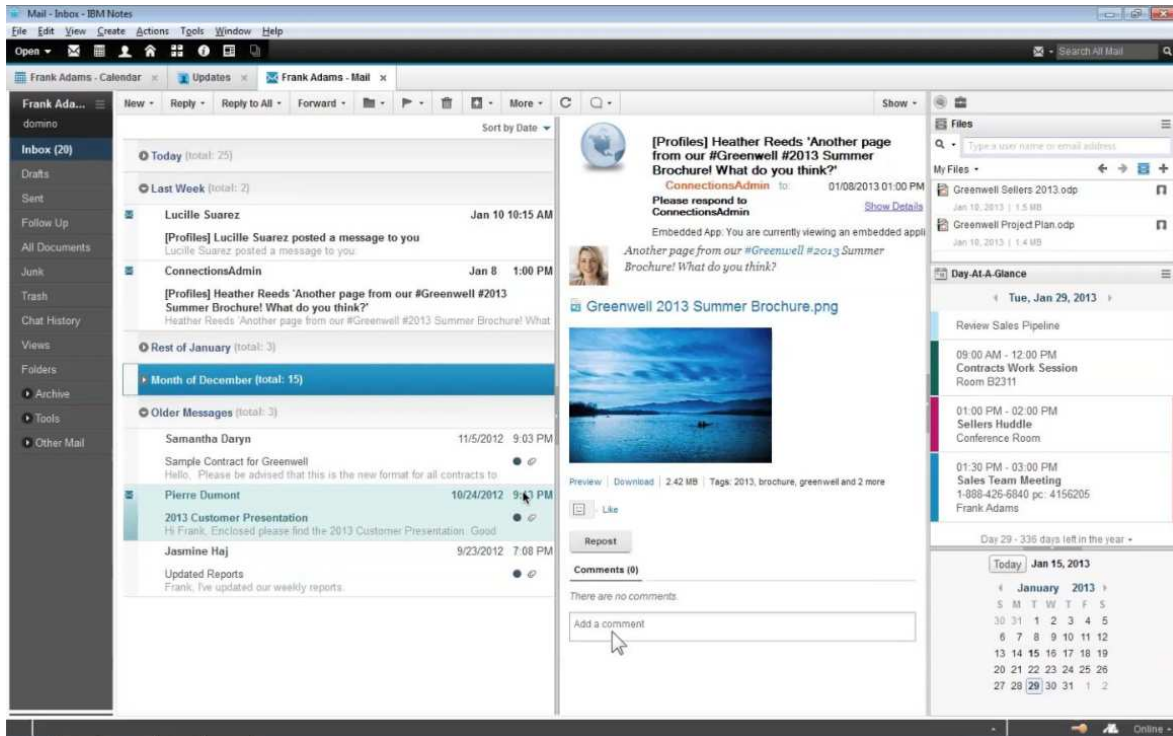


Figure 5 - IBM Notes 9.0 client

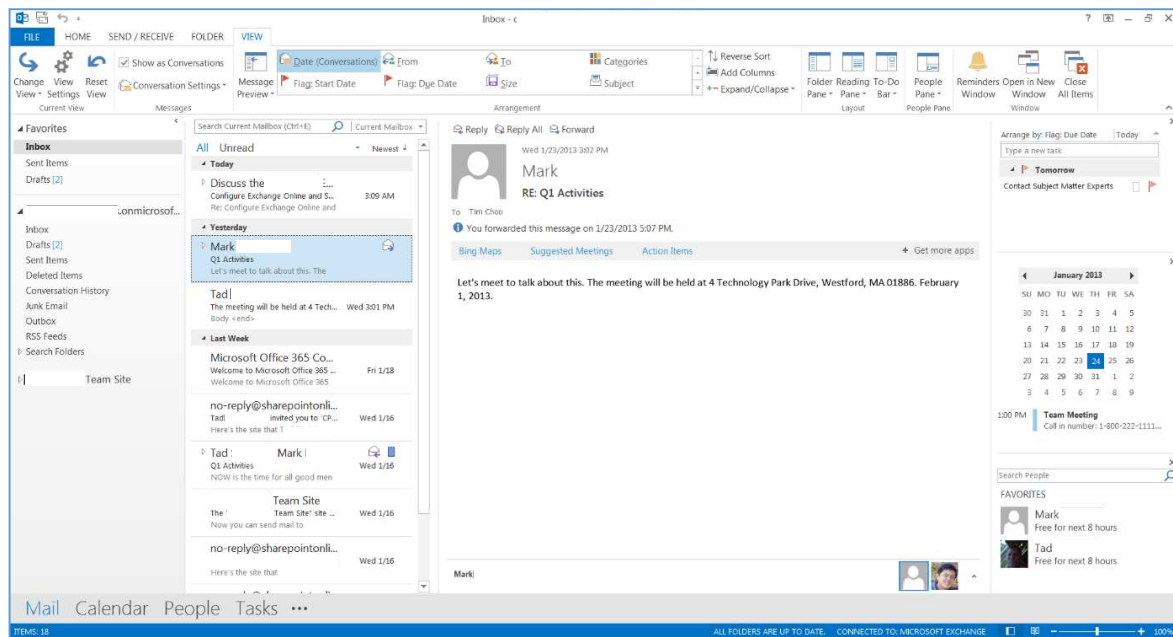


Figure 6 - Microsoft Outlook 2013

Both also allow you to mark mails as read when they are viewed in the preview pane. Notes provides indicators to help you determine how important a message is: The attention indicator displays a little “Harvey Ball-like” icon to let you know if you are the only recipient, one of a few recipients, or just part a large mailing list. Generally emails sent to only you tend to be more important.

Outlook does not provide these triage indicators, however Outlook does allow you to view a few lines from the body of the message in the inbox so that you can determine whether the message might be important.

Read. Both Notes and Outlook allow you to customize your inbox view by add/removing columns, sorting, grouping by date, and grouping by conversations. While Outlook opens each email as a new window, Notes allows users to choose between opening emails as tabs, grouped tabs, or in a new window.

Compose. Both Notes and Outlook provide comprehensive rich text editing and formatting options when composing emails. You have the ability to specify fonts, styles, paragraph formatting, insert tables, insert images, insert hyperlinks, and attach files. Both email clients also allow you to perform a spellcheck and request delivery receipts.

Reply. Notes provides you with numerous Reply options right from a button in the mailbox: Reply, Reply with History Only, Reply with History and Attachments. This allows you to quickly select the option you want, preventing email conversations (and by that same virtue mail servers) from becoming clogged with quoted text and file attachments. While Outlook does allow you to change reply options, they are buried in the File->Options menu. As a result, if the user does not wish to include the original message they first have to click on File->Options->Mail Options->Scroll Down->Select “Do not include original message”->Click Ok->Go back to the message->Click Reply. It is probably safe to say that few users will bother and will most likely leave the settings at their default, clogging up inboxes and mail databases with unnecessary data.

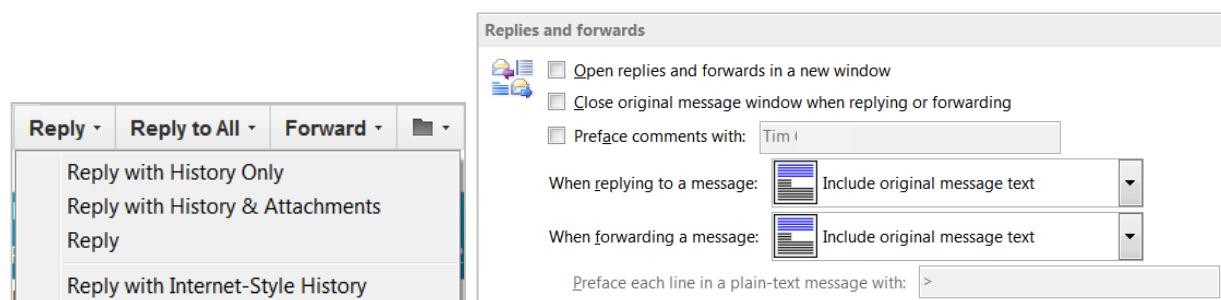


Figure 7 - Reply options in IBM Notes (left) and Outlook (right)

Creating and managing meetings

After email, the second most important role of an email client is managing meetings and the calendar. Here again, both email clients offer multiple calendar views: daily, various weekly, and monthly views. Both Notes and Outlook also allow you to add other calendars and group calendars to the view. When it comes to creating new calendar entries, both allow you to create appointments or meetings. Meeting invitations in both clients let you find available times for the attendees, reserve rooms, setup a corresponding web meeting, and then subsequently track responses.

Resolving time-critical issues

Certain time critical situations call for an immediate response. In these situations, email with its store and forward mechanism has too much latency. A real time communications channel is what is needed and the tool to accomplish that is frequently instant messaging. Both IBM and Microsoft have their own instant messaging tools, Sametime for IBM and Lync for Microsoft. However, there are key differences in the way instant messaging is integrated with the respective email clients.

Sametime is embedded directly into the Notes client using the Eclipse plug-in model (see [Extensible architecture](#) later in this document for more details). This allows the Sametime client to run within Notes. This provides you with

a full Sametime buddy list in the sidebar of the Notes client. The user has access to all the functionality of Sametime including the ability to search for contacts, manage their contact list, alter their status, change their location, initiate a chat session, invite participants to an instant sharing session, etc. They can also see a list of all their contacts who are online from the sidebar.

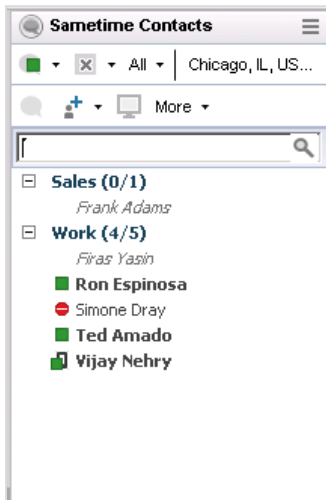


Figure 8 - Integrated Sametime client in IBM Notes

In addition, Sametime is integrated into the inbox view so that you can see which senders are online. This is visible across all the senders in the inbox.



Figure 9 - Sametime presence awareness visible in inbox view

Outlook takes a very different approach to integration with its instant messaging - Lync. Since both Outlook and Lync are standalone monolithic Windows executables, the integration takes place on a superficial level. In order to view presence awareness in Outlook, the Lync Windows client must be running on the workstation. Even then, the only contacts that are permanently visible from within Outlook are those in your Lync Favorites group. To see a full list of who is online you would have to Alt-Tab to the Lync client and bring it to the foreground. Neither does Outlook display presence awareness indicators in the inbox view. In order to determine if someone is online within Outlook, you would have to click on an email and open it. Presence awareness indicators are only visible in the currently selected (and opened) email. This is a long list of obstacles to overcome just to determine if an individual is online and available to chat.

The advantage of having an always visible and accessible list of online contacts like you find in Notes is obvious: it allows you to scan your inbox and quickly fire off an instant message to senders who need a timely response. Or, you might be responding to an email and realize that someone else needs to be notified about an issue or needs to take immediate action. Instead of drafting a new email, you simply glance over at your sidebar, click on the individual and send them an instant message. It allows business to be conducted at a much more rapid cadence than with just email. Having presence awareness only in the current email window which is Outlook's approach is only helpful in

one scenario: where you need to quickly contact the sender of the email to clarify a question or respond to their inquiry.

Discovering information, contacts, and linkages

With traditional email systems, when you receive emails from individuals you don't recognize by name, you would have to spend time deciphering who they are in order to best respond to their request. On the one hand, you would not want to anger a senior executive by denying his request, but neither do you want to waste time chasing down a potentially time consuming task for a low-level employee. Unless the sender embedded their title in the email signature line, the only way to find out their identity would be to engage the old school social network: walking over to coworkers' cubicles and asking them if they knew the identity of the sender. With the advent of corporate directories and embedded instant messaging clients this has changed. Not only does the embedded instant messaging client provide presence awareness, it also offers a handy pop-up contact card. This contact card contains a plethora of information about the sender: name, title, telephone number, office location, etc. Both Notes and Outlook display contact cards, and both allow customization, so that organizations can decide what is displayed.

The main difference between Notes and Outlook contact cards may seem subtle at first, but once you start using it, you will begin appreciate how much it allows you to turbocharge your journey of discovery.

With Outlook, other than basic contact information you have links to the individual's LinkedIn or Facebook profiles (if they have set it up). A LinkedIn profile can be fairly helpful in providing some background information about the person's previous work history, but a Facebook profile often lacks useful business-related information.

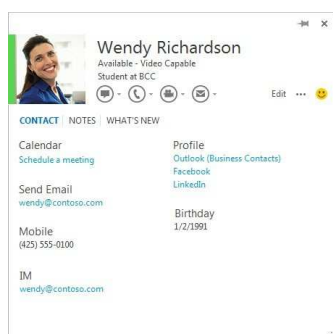


Figure 70 - Microsoft Outlook contact card

In contrast, the lower portion of the Notes contact card contains links to the individual's enterprise social history. These links are the result of the tight integration between Notes and IBM Connections which acts as the social content repository for the enterprise. With these links, if you want to find out more about the person who sent that email, you can open up their corporate profile page as well as check out what blogs they contribute to, what forum postings they have made, what files they have shared, and what communities they belong to. As you do so you gain a much broader perspective of who that person is. For example, it would be fairly simple to establish that this person is a subject matter expert in a topic by virtue of their blog posts on a subject. In addition, as you browse their social content you may discover related blogs, articles, files, or communities that interest you. At this point you can subscribe to this content to be kept up to date on new developments. What started out as a mission to find out who someone is could end up with you discovering whole new areas of development that you were previously unaware of. This is especially true in a large organization where there is just so much going on you would never be able to keep track otherwise.



Figure 81 - IBM Notes / Sametime contact card

This sort of person-centric discovery is also very useful when you are assembling a team or performing internal hiring. It allows you to obtain a 360 degree view of the individual as well as determine if the both of you share common contacts in the company. You could then reach out to these common contacts to ask them about their opinion of this potential team member or hire.

Locating the right people and information

When you have thousands of emails it is very important to be able to search for and locate specific emails based on a string of text, sender, subject, etc. Both Notes and Outlook have this capability. Where they differ is when you want to expand your search beyond emails, calendar entries, and contacts. For example, if you receive an email with a question about a specific issue, you might want to search blogs or communities in the enterprise social platform to see if anyone else has encountered this same issue. Notes provides you with the ability to do so right from the universal search bar. For example, a search for blog entries about Apple returned a long list of postings:

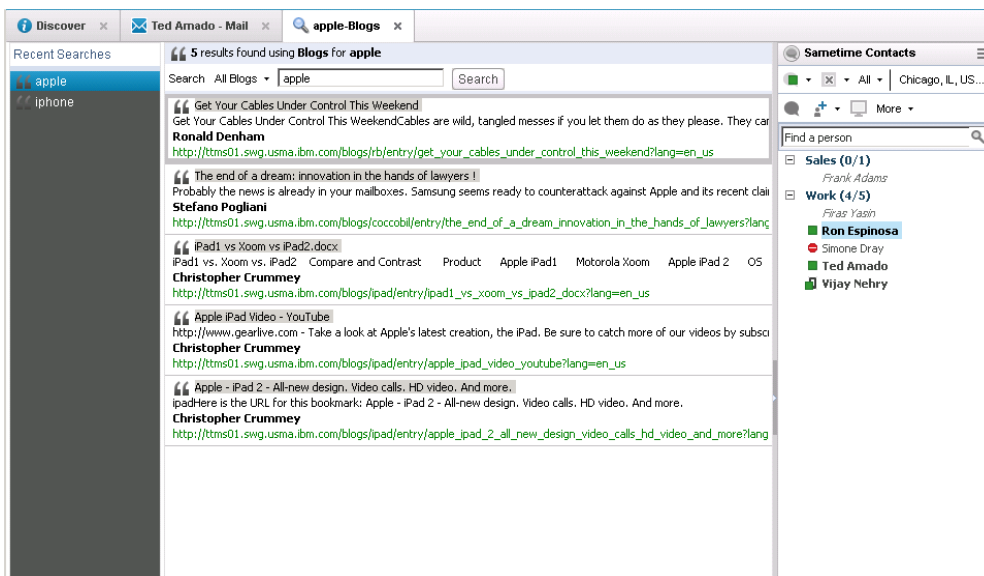


Figure 92 - Blog search in IBM Notes

If you were using Outlook you would have to stop what you were doing, launch a browser, navigate to SharePoint, then conduct a search to see if there is anything that matches that search term. Once again, while it is possible to perform this task with Microsoft's applications, it just takes more steps and requires a change of context. Users typically avoid performing tasks when it is inconvenient and requires multiple clicks. If they avoid performing the search they could be losing out on some pertinent information that could help them with resolving the situation.

Sharing and collaborating with documents

Besides email, the second most common form of collaboration is document sharing. Typically the workflow is as follows:

1. Someone authors a document (1 copy)
2. They email it a coworker (2nd copy in sent folder)
3. Coworker receives document in inbox (3rd copy)
4. Coworker saves document to hard disk for editing (4th copy)
5. Coworker emails changes back to original author (5th copy in send folder)
6. Original author receives edited document in inbox (6th copy)
7. Original author saves edited document as a separate copy to prevent overwriting original (7th copy)

In one simple interaction between just two individuals, seven copies of the document were created and scattered all over individual hard disks and mail servers. The mail server itself becomes a document server. Obviously, this is not an ideal situation. Not only does it waste disk space and network bandwidth, it also causes version confusion. No one can be certain that they have the latest reference copy. Companies have tried to solve this issue for years with document management systems (DMS). The first generation DMS's were client-server systems that were resource hungry and complex. Users hated storing and accessing documents in the DMS because it was so difficult to do so. Vendors then began layering a browser-based interface on top of their DMS's. These browser-based user interfaces were easier to navigate, but they did not solve the fundamental issue of context switching derived from the necessity to switch between the email client and a browser to perform any document-oriented tasks. There are a few primary usage scenarios for document collaboration within the email client:

1. **Receive a document attachment in an email and save it directly to the DMS without having to save to hard disk, then open a browser and upload the file.** Both Notes and Outlook allow you to save an email attachment to the DMS through drag and drop gestures. Notes users drag the attachment to the Files sidebar plug-in, and Outlook users drag the attachment to the Site Mailbox Documents folder. Note that a Connections Files license entitlement is included with a Domino license, however the Site Mailbox requires SharePoint 2013 which must be licensed separately from Exchange.
2. **Receive an email with a link to a document in the DMS.** Click on the link to open/edit the document. Save the changes back to the source. Both Notes and Outlook let you click on a document link in an email and open the document in an associated editor. Once editing is complete, the document can be saved back to the library. Notes uses the Connections plug-in for Windows Explorer, and Outlook makes use of the SharePoint links in Microsoft Office.
3. **Send a document in the DMS as a link instead of as an attachment.** Both Notes and Outlook allow you to drag and drop files into an email to be added as links. However the Notes link is more attractive and functional. The Outlook link looks positively primitive in comparison.

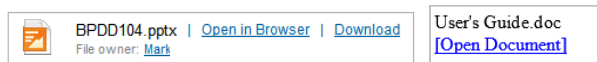


Figure 103 - Document links in IBM Notes (left) and Microsoft Outlook (right)

4. **Manage and browse files in the DMS.** Notes provides a sidebar plug-in that allows you to browse and manipulate your personal files as well as files stored in communities. The Files plug-in in Notes allows you to perform many more operations than the equivalent Site Mailboxes or Document Libraries in Outlook. For

instance, you can upload a new file from your workstation, or upload a newly updated version of a document. The Notes plug-in also makes it easy to share the document with anyone using a pop-up sharing dialog box. In Outlook, when you right click on a file, all you see are email-centric actions. The only file-related action is “Delete”. The Notes plug-in not only allows you to work with files in your personal file repository, you can also easily search for files shared by your coworkers, files in communities that you belong to, and even files within public communities. Your personal and team files in SharePoint do not automatically appear in Outlook unless you manually establish the link between Outlook and the SharePoint Site Mailbox or Document Library. Even after the link has been established, each Site Mailbox and/or document library displays its files in a separate navigation tree. Locating a file from within Outlook is a manual browsing affair since Outlook does not provide a means to search for a file from within the email client.

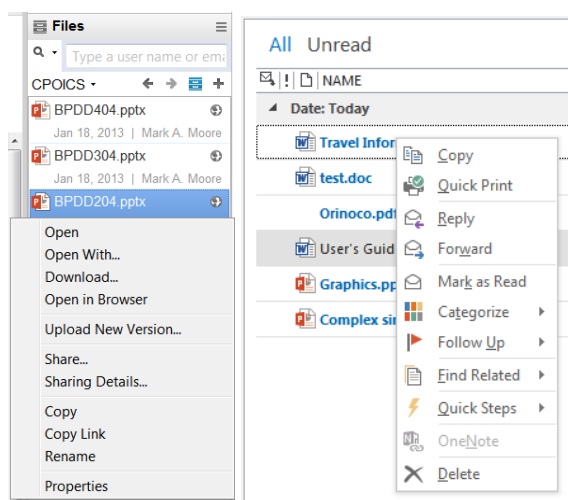


Figure 114 - Document management in IBM Notes (left) and Microsoft Outlook (right)

Coordinating work

All too often, the latest tools purport to enhance the sharing of ideas through collaboration. However, at some point these ideas need to actually get implemented. In fact, getting work done via social task management³ has been identified by analysts as the next big thing in social software systems. Several recent acquisitions, such as Jive’s purchase of Producteev, highlight this growing trend.

IBM is far ahead of the curve in this respect, having included Activities in Connections since 2007. IBM recognized early on that after all the meetings ended, someone had to roll up their sleeves and get the work done. This is why Activities is centered around the idea of tasks, each of which is assigned to one or more individuals. The tasks can be embellished with additional information to provide details about what needs to be done. Sections can be added to provide structure and entries can be added to provide background information. These entries are forms that have fully customizable fields so that you can specify what kind of data to input/capture. Attachments can also be added to provide more supporting data. At the end of the day as a task is completed, it is checked off.

³ <http://www.alanlepofsky.net/alepofsky/alanblog.nsf/dx/new-report-getting-work-done-via-social-task-management>

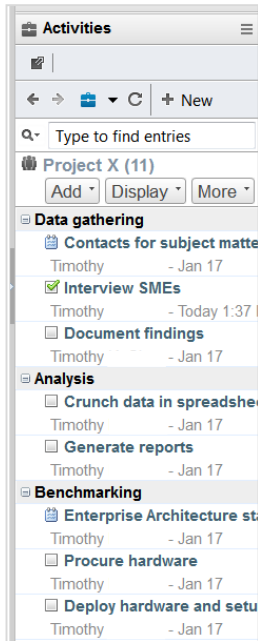


Figure 125 - Activity / Task management with IBM Notes

Everyone who is part of the activity can see the status in real time. This provides excellent visibility into the progress of a piece of work. There is no longer any dispute about who is supposed to do a task and when it is supposed to be complete.

Outlook 2013 is supposed to be able to sync tasks with SharePoint 2013 / Office 365. However, at present this feature does not appear to be not functioning between Outlook and the backend Office 365 infrastructure⁴. We, as well as other parties, were unable to get it work despite trying several suggestions by Microsoft support staff.

Staying up to date with what is going on

One of the key defining characteristics of a social system is the feature it provides to its users to update their status on a “wall”, stream, or feed. This form of communication is known as microblogging for its brevity as compared to a traditional blog post. Status updates are typically short snippets that convey a change of state, or a broadcast notification to a broad audience. Notes’ tight integration with IBM Connections means that you can easily post status updates from a sidebar plug-in (see below).

⁴ <http://community.office365.com/en-us/preview/forums/715/t/79312.aspx>

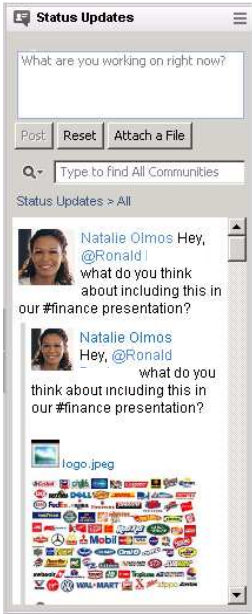


Figure 136 - Post and view status updates from the IBM Notes' sidebar

If you wish to expand your reach to multiple social networks, a third party plug-in called Wildfire lets you post to Connections, Facebook, Twitter, LinkedIn, Bebo, Tumblr, and GTalk in one fell swoop.

Notes also allows you to see everything that is taking place in your various social networks without leaving the email client. Third parties can post updates to the activity stream as well. The activity stream is displayed using an OpenSocial widget:

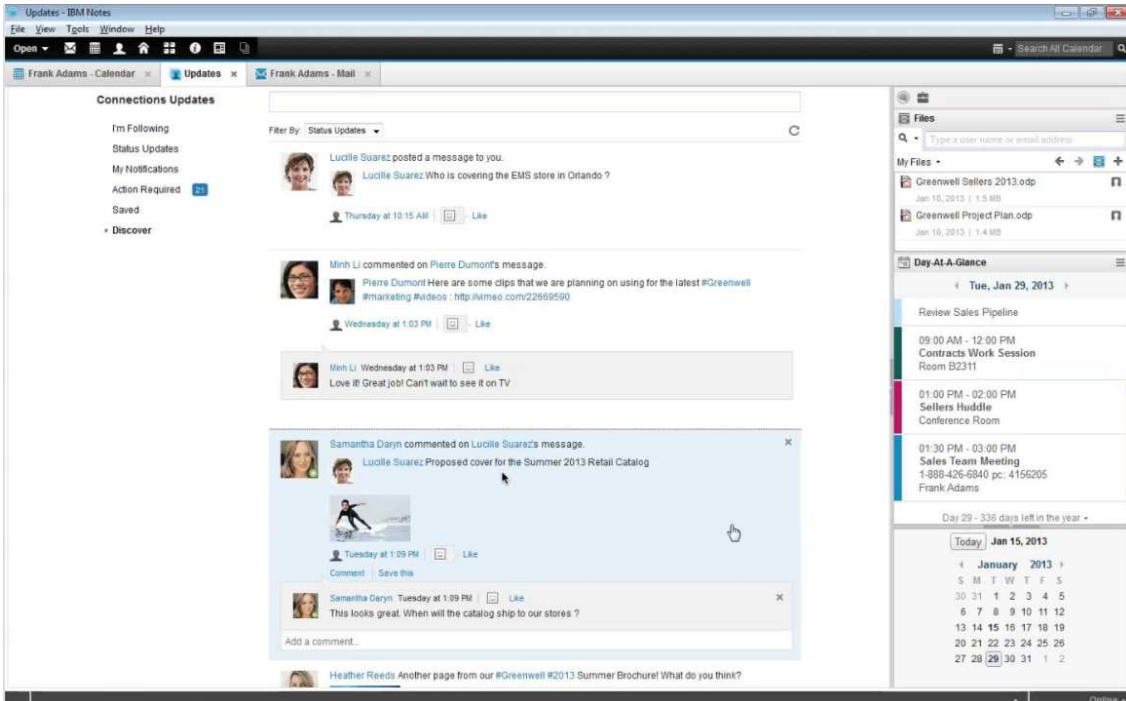


Figure 147 - View social activity stream from within IBM Notes

Outlook does not allow you to update your microblog status from within the email client. To make things worse, Microsoft has a disjointed microblogging strategy. Microsoft users have three choices when it comes to microblogging: SharePoint, Yammer, or Lync. Each platform keeps its own list of status updates, they are not integrated in any way.

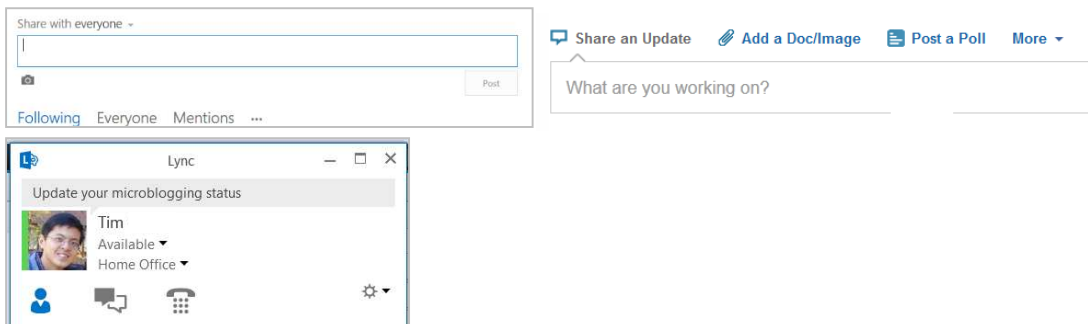


Figure 158 - Do you update status in SharePoint, Yammer, or Lync?

Neither of these platforms allow you to input your status from Outlook. In my own experience, I noticed I posted far less updates when I had to switch to the browser, navigate to the appropriate page, and then enter my status.

When it comes to viewing status updates, Outlook restricts the view to a single person at a time. This is because the status updates display in the Person panel below the body of the email. This person panel shows you the status updates for the sender of that email only.

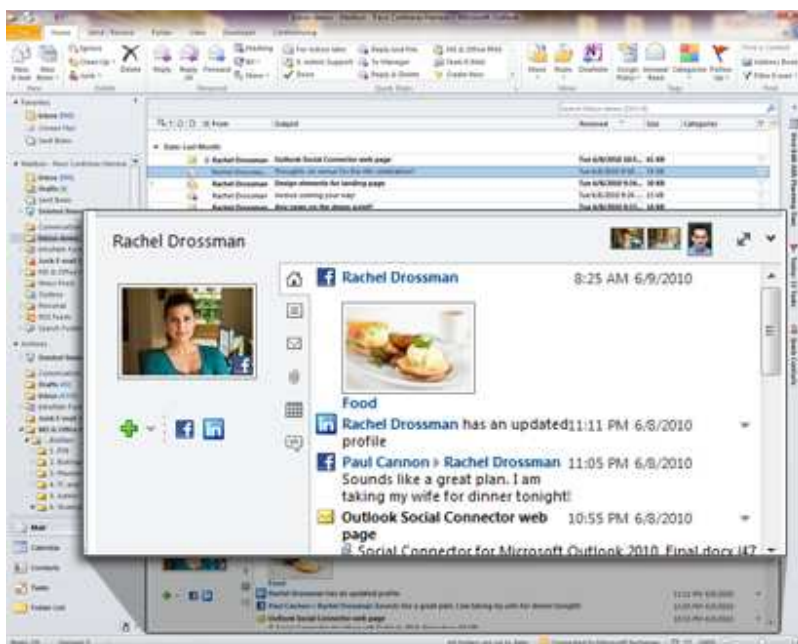


Figure 19 - Only status for the sender of the currently selected mail is visible

(Image credit: <http://office.microsoft.com/en-us/outlook/social-connector-for-microsoft-outlook-HA101794273.aspx>)

By default, SharePoint status updates are displayed, and if you have configured accounts for Facebook and LinkedIn, updates in those networks by the sender are also displayed. In a corporate setting the value of displaying Facebook and LinkedIn status updates is questionable. Only being able to see status updates for the sender of an email is also very limiting. What if you want to see all the status updates from your team or department? In order to view those,

you have to launch a browser and navigate to your SharePoint Newsfeed page. Requiring users to switch contexts to a browser just to view status updates means that most users will probably not bother doing so and will probably miss out on potentially useful information.

While the Notes plug-ins and Activity Stream updates page are fully customizable, Outlook’s Social Connector architecture is very rigid. You cannot change the behavior or look and feel of the built-in connectors to Facebook or LinkedIn. Furthermore, the Social Connector provider API is read-only, so the data can only be displayed but not modified. This is likely the reason why you cannot update your status from within Outlook.

Working productively in context

Currently, email is used primarily as a notification mechanism. Applications such as workflow, CRM, and HRIS generate emails with embedded links. When a user receives the email, he/she clicks on the link to launch another application to act on the task. When the task is complete, they switch back to the email client. This constant back and forth leads to an unproductive user experience. IBM has been working to reduce and even eliminate that kind of context switching through the use of a technology called OpenSocial. Notes is designed to be an OpenSocial widget container. These widgets allow Notes to render rich, interactive emails with active content. The OpenSocial specification is essentially HTML + Javascript objects so they are easy to develop and deploy. This technology allows Notes emails to contain buttons, editing areas, controls, and dynamic views. No longer does the user need to click on a link in the email, launch a browser or third party application, then interact with the data. They can work with the data right from within the email itself. This is what IBM calls “embedded experiences”. In this example, file update notifications are not just a link: recipients can add comments from within the email, they can share it with additional editors, “like” the file, or stop receiving notifications. All of this can be done without opening up a separate browser, logging in and then clicking on an action. Each of these little productivity savings adds up throughout the day.

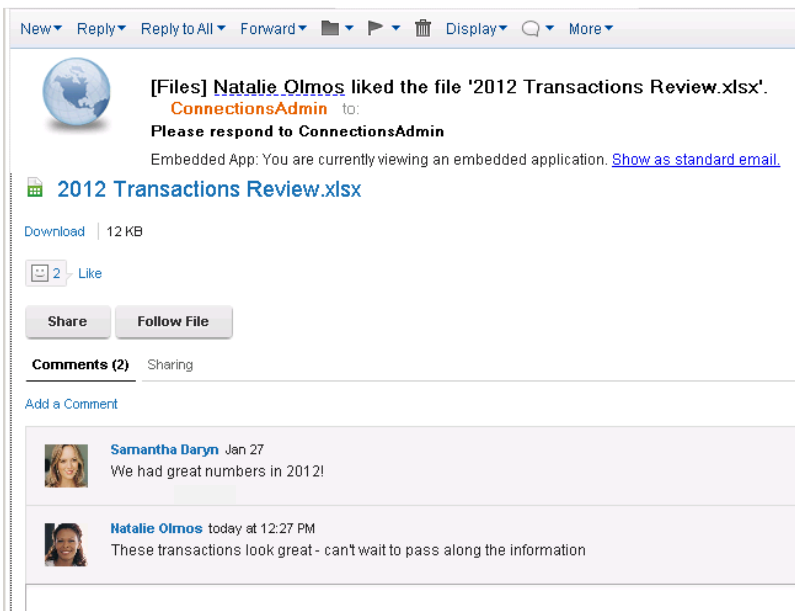


Figure 160 - File update embedded experience in IBM Notes

In the following example, we have embedded buttons to respond to invitations as well as suggest additional attendees directly into the email.

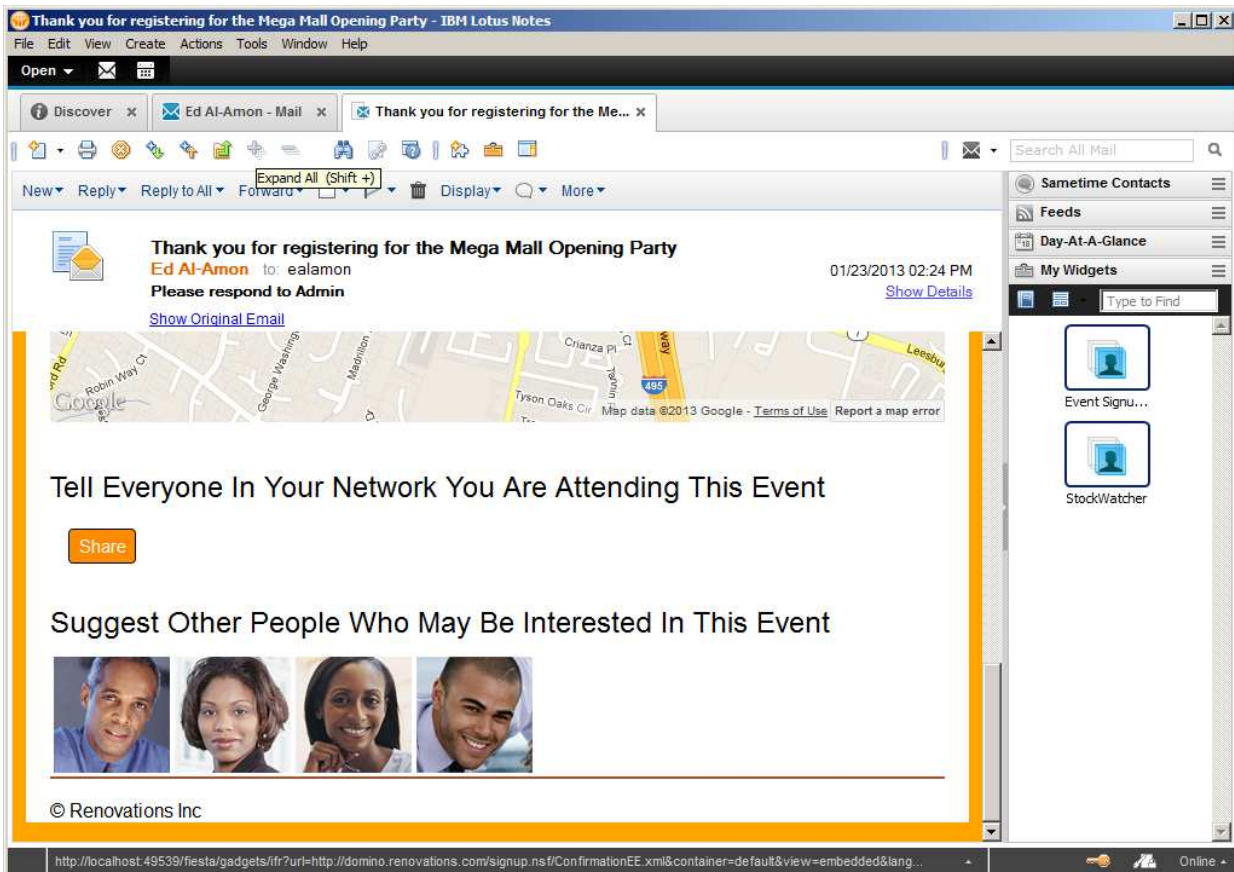


Figure 171 - Social recommendations embedded experience in IBM Notes

This is just a small taste of the power of OpenSocial widgets however. You could potentially take existing OpenSocial widgets used for displaying operational data in your portal and embed them in report emails. You are limited only by your imagination.

Outlook 2013 introduces a similar concept that Microsoft calls Mail Apps. Mail Apps are basically web pages that can be embedded in the body of an email.

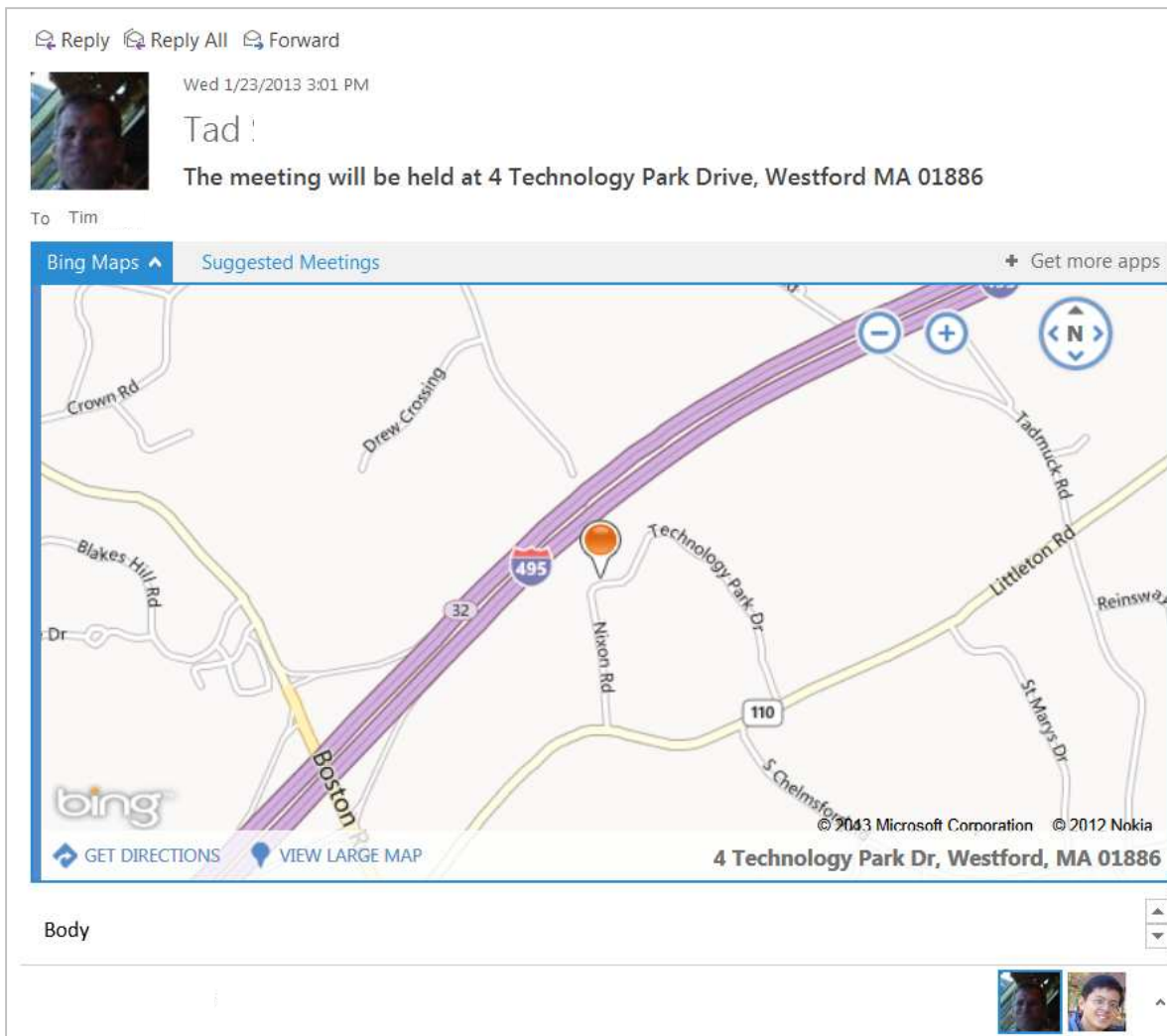


Figure 182 - Microsoft Outlook Mail Apps

The main difference between Mail Apps and OpenSocial widgets is industry standard adherence. Mail Apps are a proprietary Microsoft format. You cannot surface a Mail App in other applications such as your portal. Neither can you take a widget developed for your portal and embed it into Outlook. The OpenSocial standard provides these interoperability and reusability benefits that Mail Apps simply cannot match. Write the OpenSocial widget once, and you can use it across web sites, portals, and mail clients.

Working in a shared environment or remotely without an email client

Rich email clients work best when there is a ratio of one user to one workstation. If multiple users share a workstation, or the user is roaming away from their workstation, the most convenient way to access their email (assuming they do not receive email on their mobile device) is through a web browser. Notes' browser interface is known as iNotes. iNotes looks identical to the Notes client, so the user should be able to start using it immediately without any training.

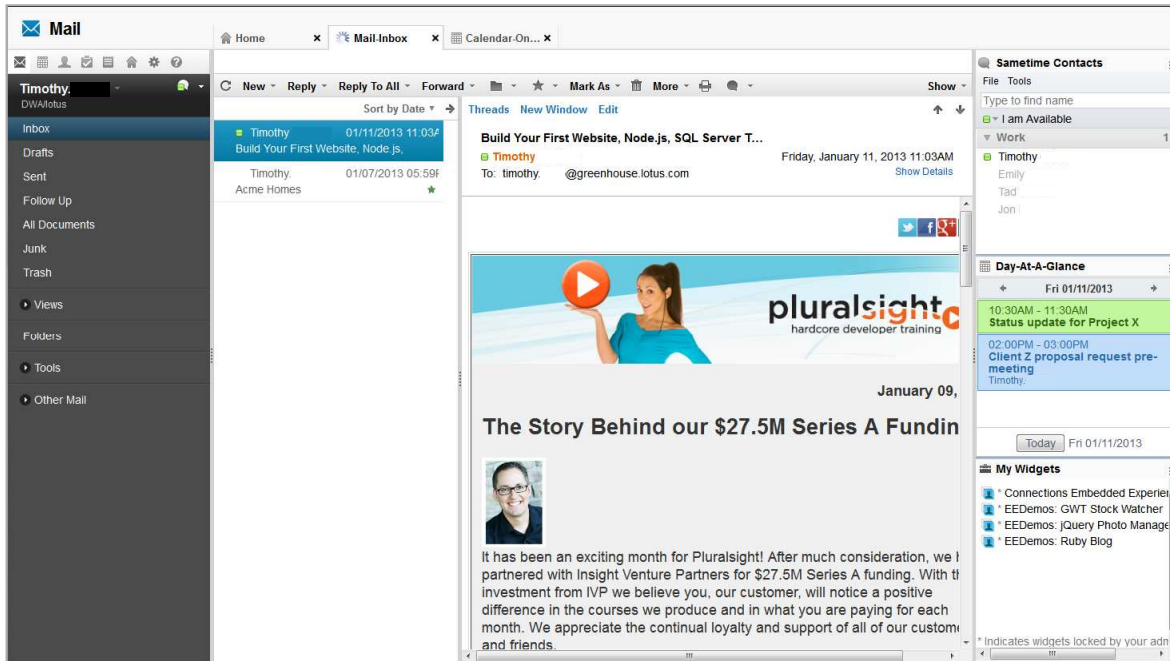


Figure 193 - iNotes Full mode

If the user is at a low bandwidth location, or on a resource constrained device, they can optionally switch from “Full” mode to “Lite” or “Ultralite” mode. “Lite” mode removes resource-intensive HTML/Javascript elements but still presents a full screen view of your email. “Ultralite” mode is for devices with limited screen real estate.

While Outlook Web App does possess several modes, users cannot manually switch between them like they can with iNotes. The Exchange server determines which one you get. Once again, IBM offers users a default option, but provides choice so that end users can choose which option suits them best.

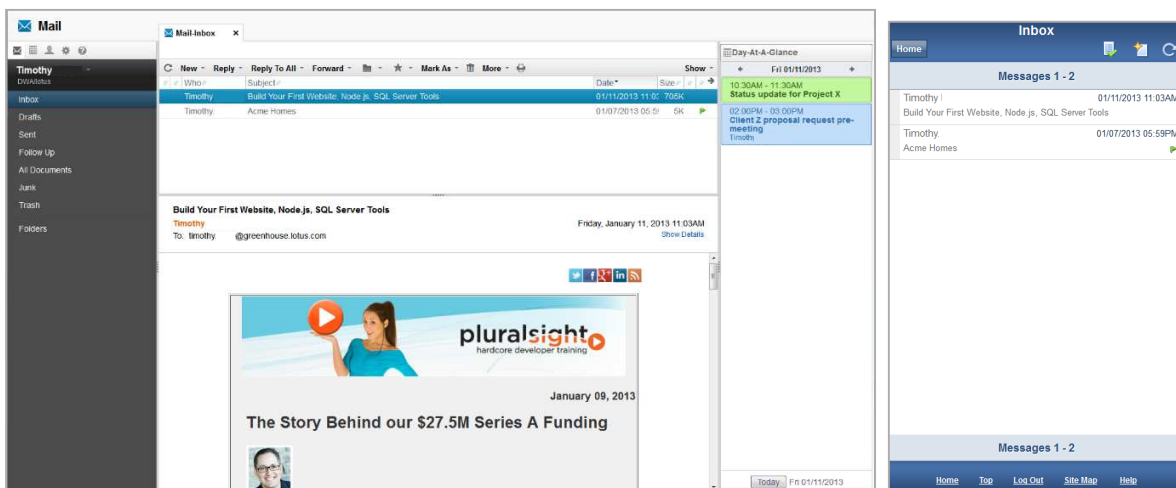


Figure 204 - iNotes Lite mode (left) and Ultralite mode (right)

The Outlook Web App in 2013 follows the same “Modern UI” interface as the rest of the Office family. The abundant use of white background color makes it difficult to identify buttons and borders.

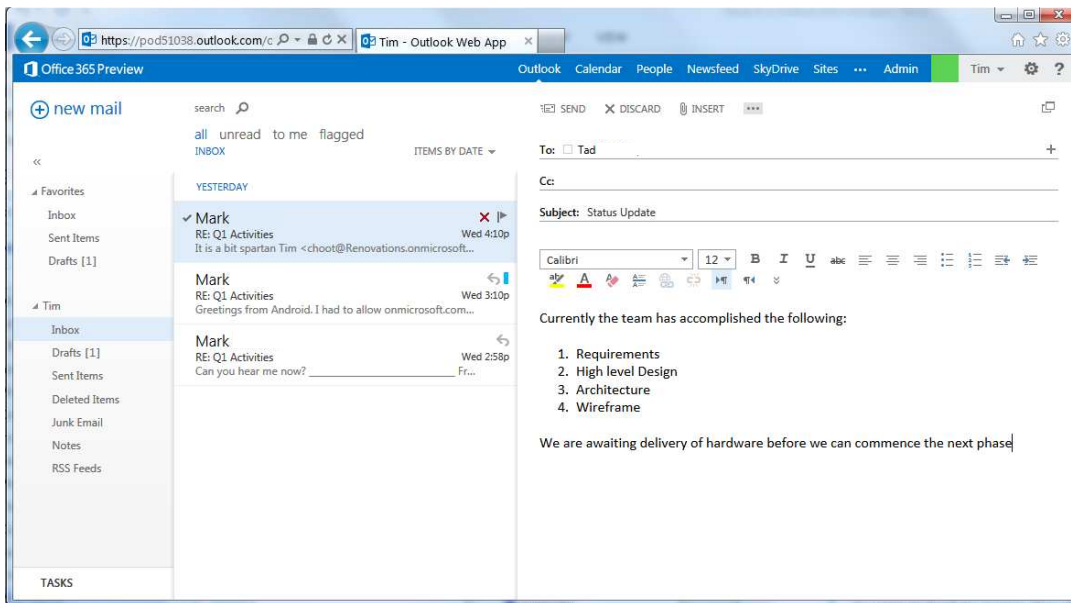


Figure 215 - Outlook Web App

It's not just the user interface that is "Spartan", however, functionality seems to be missing as well. For example, in Outlook Web App there are very limited rich text editing controls. You don't even have the ability to add tables to the body of your email. If you are a poor speller, there is no spell checker to make corrections for you. It can also be troublesome to work with multiple emails, say, if you needed to copy and paste content between them, since the emails don't open in multiple tabs. When you are ready to send your email, Outlook Web App does not allow you to digitally sign or encrypt the contents⁵. Without digital signatures non-repudiation is impossible as there is no way to verify that the email came from the indicated party. Without encryption the contents of a confidential memo could be read if it were intercepted on the way to the recipient. Fortunately, all of these essential security features are available in iNotes.

Another key advantage of iNotes is its integration with other social services. Sametime instant messaging is available from within iNotes. Presence awareness indicators are shown both in the inbox view as well as within the message itself unlike Outlook Web App which only displays presence within the currently viewed message. A full Sametime buddy list is also available through the sidebar which allows users to add new buddies, see who is online, and conduct chats with anyone in the organization. This is helpful in situations where an email may have reminded you or prompted you to take some action. You then turn to the Sametime buddy list, locate the person you had in mind through a name search, and start a chat session with them to get a task accomplished. Since Outlook Web App only displays the presence indicator for the current message, you would not be able to see whether other parties are online. Neither would you be able to initiate a chat with anyone who is not in the recipient/sender list of that email.

The sidebar is not limited to the Sametime buddy list however, it is also home to the Day At a Glance view and the Widgets. Widgets allow iNotes to render rich, interactive emails with active content. The widgets are based on the OpenSocial specification and are essentially HTML + Javascript embedded objects. This allows emails to contain buttons, editing areas, controls, and dynamic views. No longer does the user need to click on a link in the email, launch a browser or third party application, then interact with the data. They can work with the data right from within the email itself. Outlook Web App, like Outlook allows the use of embedded Mail Apps, but these Apps are

⁵ <http://community.office365.com/en-us/forums/170/t/67515.aspx>

based on a proprietary standard that only works with Office 2013 applications. OpenSocial, on the other hand, is an industry standard specification which allows you to use widgets from numerous sources.

iNotes integration also extends to social file sharing. In addition to being able to attach a file from your local file system, iNotes also allows you to attach a file from the IBM Connections Files repository. Clicking on 'Insert Links from Files' button brings up this dialog:

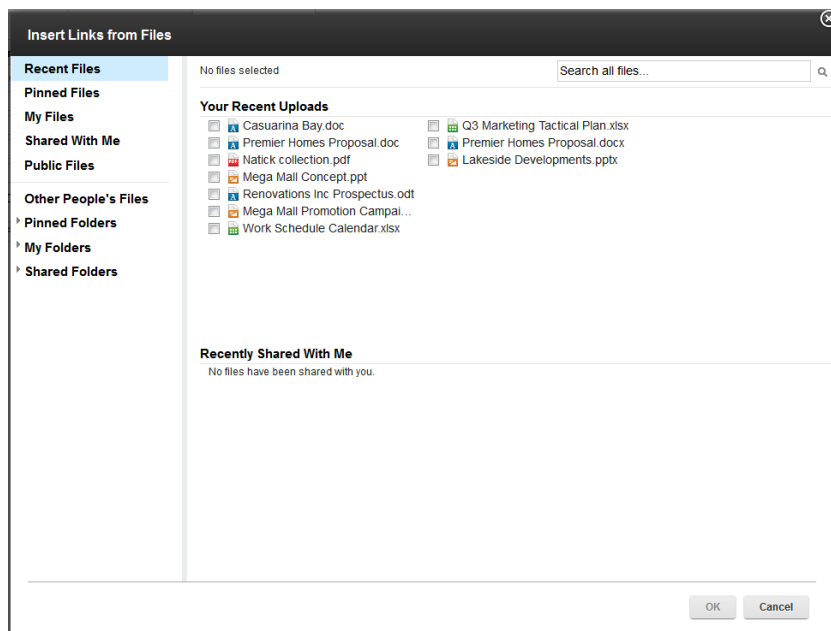


Figure 226 - Insert file attachment dialog in iNotes

From this dialog you can pick a document(s) which is then inserted into the body of your mail as a link. The links save space in both your mail file, the recipient's mail file, saves network bandwidth, and also helps to preserve document version consistency.



Figure 237 - Inserted file links in iNotes

Executives often have an assistant who manages their mail for them. iNotes allows you set delegation settings (who, how much they can access) from within the browser. This allows you to delegate mail handling responsibilities to your assistant when you are on vacation, or if you are not contactable for a period of time. Outlook Web App does not allow you to specify delegation settings, so if you forgot to set it up before leaving on vacation, you will either have to give your assistant the password to your account or handle the email yourself instead of relaxing on the beach.

Working on the go using a mobile device

IBM Notes supports numerous mobile devices through the Traveler component. Notes Traveler provides automatic push notifications, as well as two-way over-the-air syncing between Domino servers and wireless handheld devices running the ActiveSync protocol. Notes Traveler syncs email, calendar, to-do, address book, and journal data in real time. The Traveler component is installed as a server task on a standard Domino server. There is no additional charge

for Traveler for Notes/Domino licensees. Typically, Traveler is installed on a server in the DMZ between the Domino server and the mobile device.

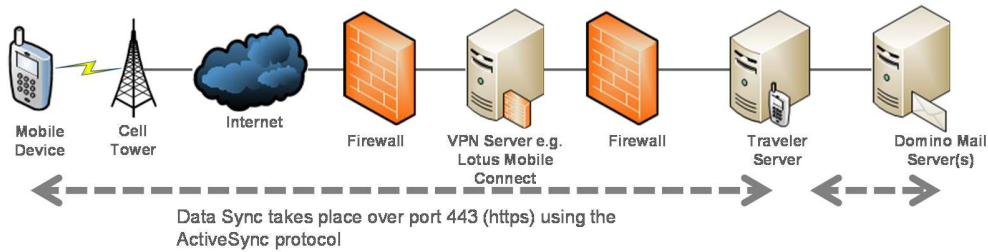


Figure 248 - Lotus Traveler architecture

Since Traveler utilizes the ActiveSync protocol, it works with a wide array of smartphones and tablets across a variety of mobile operating systems. Traveler is supported on iOS, Android, Symbian, and Window Mobile/Windows Phone. Tablets are also supported, specifically iPads and Android tablets. In general, Traveler mail, calendar, and contacts sync with the native apps on the device except for Android devices. Traveler provides its own mail, calendar, contacts application for Android devices because the Android specification does not mandate an email client. Hence Traveler cannot assume that one is available, and provides its own alternative. Various Android device manufacturers may have also included their own mail client which may or may not work with Traveler. By providing its own specific client, Traveler takes the burden off IT from having to ensure that all the Android devices in the organization meet the mail client pre-requisites. Traveler’s own client also allows users across all Android devices to have the same experience, which reduces the amount of training and support that IT has to provide. All in all, the Traveler Android client ensures supportability and consistency across all Android devices in the corporate environment.



Figure 29 - Traveler widget (left) and client (right) for Android

Microsoft Exchange servers also provide push mail and calendar/contact synchronization through ActiveSync. However, because they do not provide a client for Android, it is incumbent on IT to determine if the device has the necessary prerequisites to run in the corporate environment. This puts additional burden on IT to perform the certification.

In addition to Traveler, IBM also provides mobile clients for instant messaging, unified telephony, and enterprise social networking. These mobile clients cover the gamut of communications channels that are desired by users today. While Microsoft recently started shipping their Lync instant messaging mobile client, mobile support for enterprise social networking is limited to the Windows Phone platform for now. Given Windows Phone's 3% market share, this leaves the vast majority of mobile devices users with no native app to access SharePoint.

Under the Hood

Some functionality is not immediately visible to end users, but is nevertheless crucial to performance and security. These are sometimes referred to as non-functional specifications.

Replication

Notes mailboxes are stored in individual database files (with an .nsf suffix). For performance and offline access, mailboxes can be replicated to the local workstation. Notes provides extremely fine grained control over exactly what is replicated between the local and server mailboxes. For instance, it allows users to specify whether they receive each email in full, a partial section, or only a summary. Notes also allows you to specify keeping attachment downloads to a certain size or to just download the smallest emails first. Notes replication even lets you receive only emails in specific folders, or documents meeting certain criteria (specified using a formula language). Emails older than a certain number of days can also be purged. All this serves to minimize the amount of bandwidth and disk space required to maintain the local mailbox. If you are traveling and the wifi connection in your hotel is puttering along at a pitiful 30kb/sec, these settings can be extremely useful.

Like Notes, Outlook can operate in both online or what Microsoft refers to as Cached Exchange mode, where Outlook maintains a local cache of your mailbox (in an .ost file). Outlook is almost always configured to work in Cached mode⁶. The difference here, however, is that this .ost file is a full replica of your server mailbox, and end users typically do not have the ability to specify conditions for what to receive from the server. The only way to configure what is downloaded from the Exchange is by using the Office Customization Tool which is usually only available to administrators in a volume licensed environment. The typical user who is stuck in a remote location with a slow connection will simply have to wait patiently until all the email is downloaded from the Exchange server.

Security

The creators of the Great Wall of China and the Maginot Wall learned a very important lesson about security: the key to a successful defense is "defense in depth". With a long thin shell, a breach at any point compromises your entire security. This is why the best practices for IT security call for a layered model:

⁶ <http://technet.microsoft.com/en-us/library/jj683103.aspx>

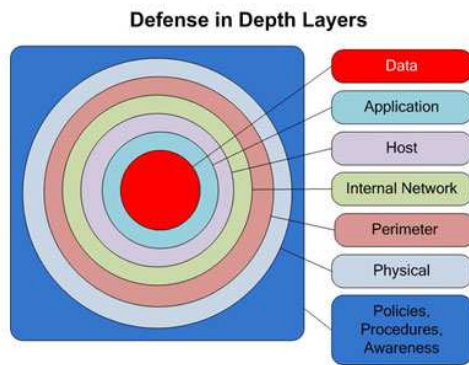


Figure 250 - Network defense in depth

With a layered model, if there is a breach on one level, the intruder will still have to penetrate additional layers before gaining access. A layered defensive model is exactly how Notes' security model is implemented. By providing granular security access controls, users who are either granted or have managed to gain access to one element in Notes are not allowed beyond that point. Notes' access control is augmented by encryption for fields, databases, and network traffic as well as a robust public key infrastructure (PKI). In fact, Notes is probably one of the first, if not the first large scale implementations of a PKI⁷.

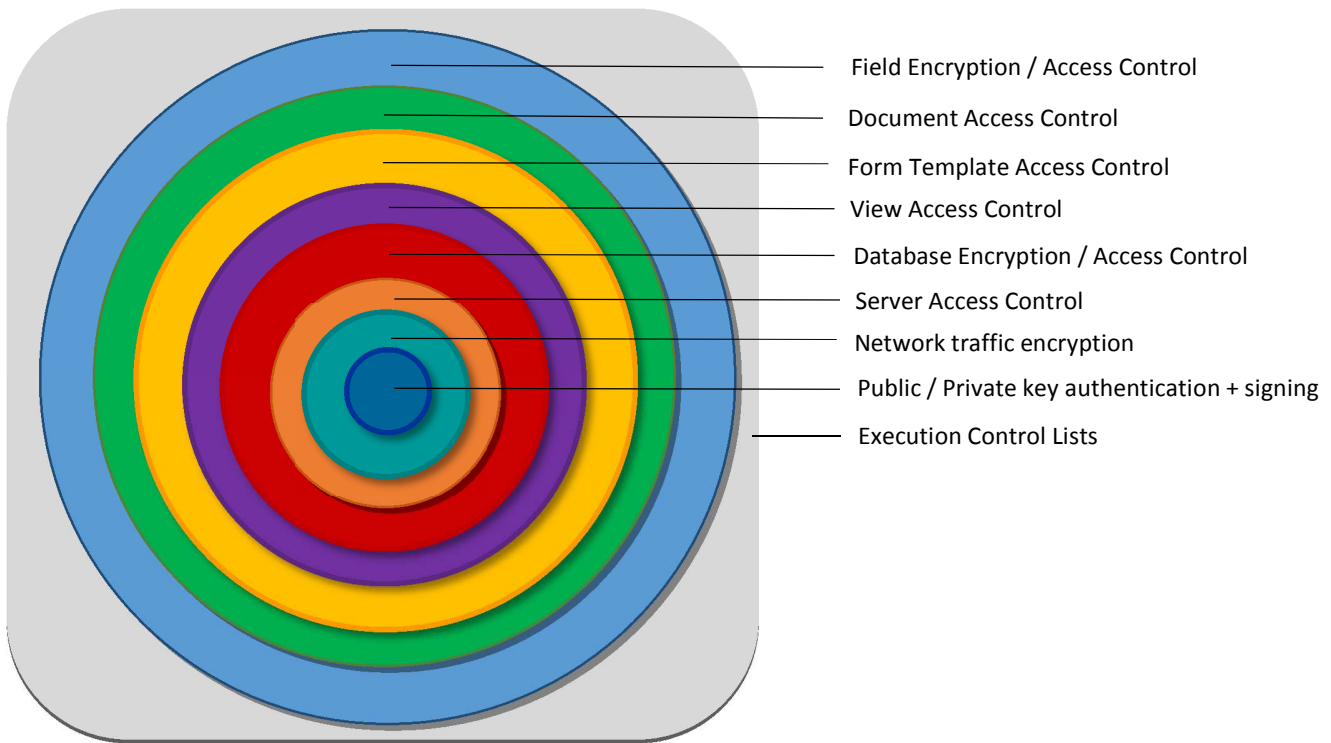


Figure 261 - Notes / Domino layered defense model

⁷ *Securing Applications with Public Key Infrastructure*
<ftp://service.boulder.ibm.com/software/lotus/pub/lotusweb/product/domino/whitepapers/security.pdf>

On top of that, Execution Control Lists provide users the ability to restrict what kind of code can be executed and what kind of resources can be accessed. For example, ECLs can be set up to only allow code signed by a particular certifier to access the local file system. ECLs add yet another layer of granularity to the security model.

Contrast this with Outlook with its permissive security model. This lack of granularity means that once you launch Outlook you have access to all the mails, calendars, contacts, as well as any document or file from SharePoint that is linked to your account. This lack of granularity extends to execution controls where the only options are to turn scripts on or off application-wide. This “all or nothing” approach often results in users choosing the lowest level of security, so as not to be inconvenienced.

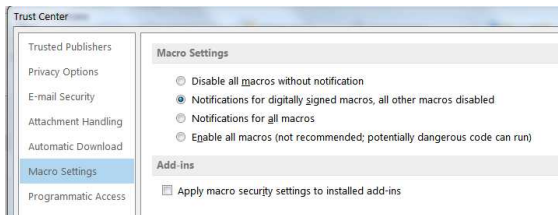


Figure 272 - Programmatic execution control in Microsoft Outlook

Extensible architecture

Since Notes is built on an Eclipse platform, it can be easily extended using Eclipse add-ons known as “features” or “plug-ins.”

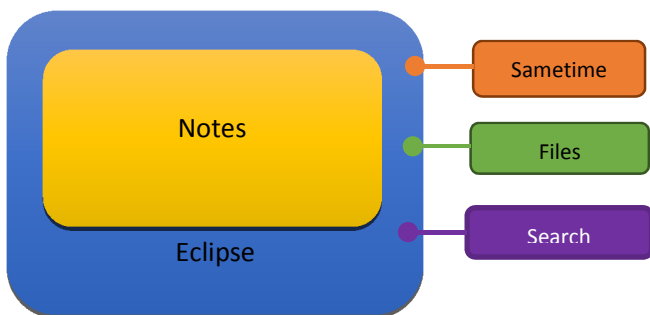


Figure 283 - Eclipse platform for Notes

These plug-ins allow third parties or organizations to build additional functionality into the Notes client. In fact much of Notes itself is written as plug-ins. A list of some of them are shown here:

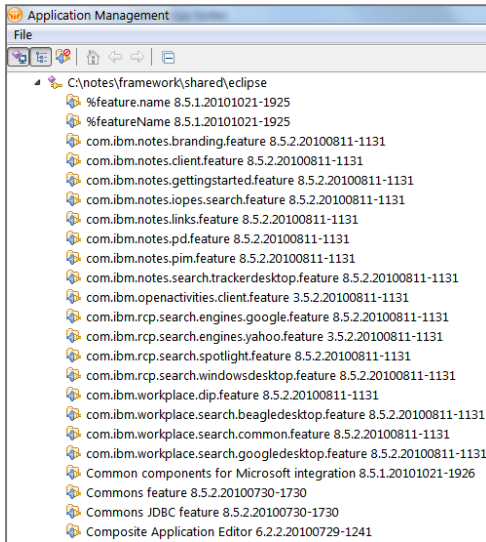


Figure 294 - Plug-ins in IBM Notes

Plug-ins are also commonly manifested through the Notes sidebar. For example, the Sametime instant messaging client integrated into Notes is a plug-in. The Connections Files sidebar component is also a plug-in. Third parties as well as IT departments can easily create their own sidebar plug-ins that publish as well as manipulate data from their own operational systems. This allows Notes to be not just an email client, but a fully extensible platform.

The [IBM Collaboration Solutions Catalog](#) contains a list of numerous plug-ins developed by both IBM and third parties for Notes:







Most Recent Most Popular Highest Rated			
Name	Updated	Rating	Downloads
 eProductivity™ for IBM Lotus Notes Submitted by Eric Mack Provided by ICA.COM, Inc. Tags: time, task, management, GTD, Productivity, Time_Management, email, eProductivity, Getting_Things_Done, David_Allen	Jan 14, 2010	★★★★★	459 downloads
 OpenSpan Windows Container for Lotus Submitted by David Brunner Tags: Productivity, OpenSpan, Automation, Desktop, Windows, Scripting, Container, Native, Powerbuilder, SAP, Siebel, Oracle, CRM, Java, Visual_Basic, Legacy, Personal, Workflow, Integration	Jan 29, 2010	★★★★★	133 downloads
 IBM Connections Desktop Plug-ins for Microsoft Windows Submitted by David Hatfield Provided by IBM Tags: connections, plug-in, windows, desktop, files, explorer, connector, microsoft, office, outlook, activities, blogs, bookmarks, communities, profiles, wikis	Dec 4, 2012	★★★★★	4247 downloads
 Department Calendar Submitted by David Beyer Provided by Logic Springs Technologies Tags: productivity, calendar, scheduling, meetings, meeting_scheduler, calendar_management, time_management, group_calendar, project_calendar, shared_calendar, team_calendar, planning_calendar, web_calendar, department_calendar	Oct 20, 2010	★★★★★	402 downloads
 IBM Connections Plug-ins for Lotus Notes Submitted by David Hatfield Provided by IBM Tags: Connections, Notes, plug-in, connector, status-updates, microblogging, profiles, files, activities, business-card	Dec 4, 2012	★★★★★	2311 downloads
 DC Time Off Submitted by David Beyer Provided by Logic Springs Technologies Tags: DC_Time_Off, time_off_management, automated, vacation, holiday, workflow, approval_workflow	Oct 20, 2010	★★★★★	24 downloads

Figure 305 - IBM Collaboration Solution Catalog

Outlook, on the other hand, is a monolithic Windows executable. There are two major types of APIs for Outlook:

1. MAPI provides direct access to the mail store, but it is data-centric rather than application-centric.
2. The Outlook object model is primarily for automating Outlook from external applications.

Neither of these APIs let you extend or customize Outlook the way Notes does. For many intents and purposes Outlook is a black box.

Multiplatform nature

Eclipse also allows Notes to run across multiple operating systems. Many companies are not homogenous pools of technology. Notes allows you to run the same application across Windows, Mac OS X, and Linux so that employees across the organization can access their email using the same interface and with full functionality. With Outlook, only Windows users would have the full experience, Mac users would have to use a completely different application, even though it is confusingly also called “Outlook”, and Linux users would have to settle for Outlook Web Access (browser client). Not only are the interfaces different across operating systems, but Mac and Linux users would have reduced functionality.

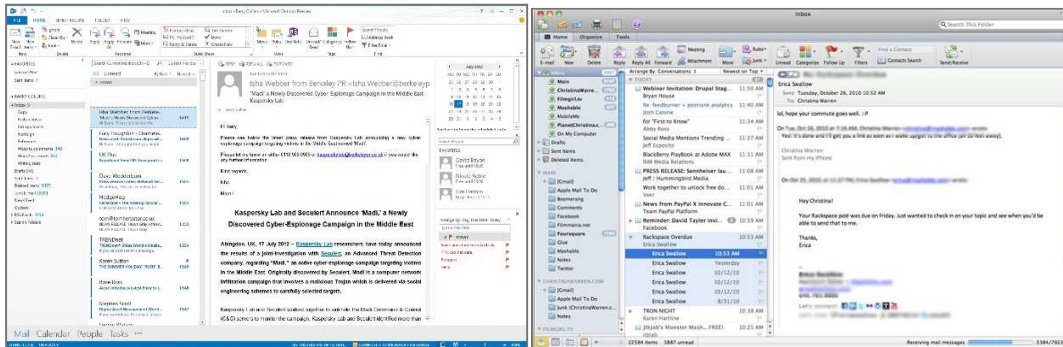


Figure 316 - Microsoft Outlook for Windows (left) and Mac OS X (right)

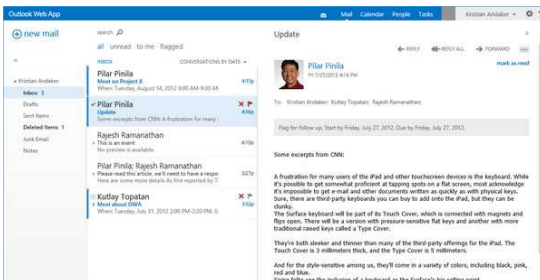


Figure 327 - Linux users will have to use Outlook Web App

Customizability

Not every enterprise has the same needs when it comes to email. A feature that is critical to one company may be useless to another. Some companies want to add their own branding to the inbox. Others want to restrict or even eliminate certain features. All this is possible with Notes because every user’s mailbox is a Domino database application. Organizations have complete control over the mail template that contains the functionality as well as look and feel of each mailbox. Once a change is made to the mail template it can be pushed to all the mailboxes or just a subset of mailboxes. Organizations can even add their own custom code into the mailbox to perform specific actions.

There is no way to customize Outlook to the extent that you can with Notes. Outlook customization is accomplished using the Office Customization Tool (OCT). OCT basically lets you specify where Outlook is installed on the hard disk, what kind of mail profile to install, whether to allow add-ins, contact card display, ActiveSync sync frequency, enable/disable mail tips, enable/disable weather bar, and enable/disable social connector.

Resiliency

Eventually, at some point hard disks fail, users accidentally delete important emails, and it becomes necessary to restore backed up mailboxes. In Notes, each user's mailbox is a separate file in the file system. As a result, it is trivial to backup and restore mailboxes that have become corrupt through disk degradation, or have been inadvertently deleted. Just go to your designated backup tool, select the mailbox .nsf file and restore it to the mail server. If only certain emails need to be restored, you can simply restore the .nsf file to an alternate location, open it in the Notes client, and copy the individual emails across. It couldn't be easier.

The same can't be said for Microsoft Exchange, since Exchange stores mailboxes together in a database(s). If the database gets corrupted, everyone is affected. In order to back up the mailboxes, the entire volume must be backed up⁸ (since the transaction logs must also be backed up). Similarly, when restoring mailboxes, the entire volume must be restored. To make things worse, only full backups can be taken⁷, differential backups are not supported with the default Windows Server backup mechanism. Depending on how many mailboxes you have, the backup process could take a long time. Having to run a full backup frequently is certainly inefficient and resource intensive. Prior to Exchange 2010 you could not easily restore or extract individual mailboxes or items in the mailbox. You would have to restore the backup to a separate location/server. Then connect an Outlook client to that server and manually copy & paste the required elements out of the mailbox in question. Exchange 2013 provides some new tools to extract individual mailboxes/items but they are not much of an improvement. Exchange 2013 introduces the concept of a recovery database. In order to recover specific mailboxes or items, one would have to: (1) create a recovery database, (2) restore the backup to a separate location, (3) copy the restored data to the recovery database folder location, then (4) put the restored databases in a clean shutdown state with eseutil/R. Only then, after completing this 4-step manual process, can you use the command line utilities to extract the mailbox or items from the recovery database. For example, to extract a single mailbox:

```
New-MailboxRestoreRequest -SourceDatabase DB1 -SourceStoreMailbox 1d20855f-fd54-4681-98e6-e249f7326ddd -TargetMailbox John Smith
```

Compared to Notes, this is an extremely cumbersome method of providing recovery that gobbles up precious administrator time. Based on this information, it would probably be safe to say that Notes users will likely see a restoration of their data more quickly than someone using Outlook.

⁸ <http://technet.microsoft.com/en-us/library/dd876851.aspx>

Product comparison chart

Based on our findings, the following chart shows how we have rated the various features and functionality of Notes and Outlook.

	IBM Notes 9 Social Edition	Microsoft Outlook 2013
Email Management	●●●●●	●●●●●
Calendaring	●●●●●	●●●●●
Instant Messaging	●●●●●	●●○○○
Social discovery of information	●●●●●	●●○○○
Search	●●●●●	●●●●○
File sharing	●●●●●	●●●●○
Work scheduling	●●●●○	Not working
Activity/Status updates	●●●●●	●●●○○
In-context work experiences	●●●●○	●●●○○
Web client	●●●●●	●●●○○
Mobile support	●●●●●	●●●●○
Local replication	●●●●●	●●●●○
Security	●●●●●	●●○○○
Extensibility	●●●●●	●●●○○
Multiplatform support	●●●●●	●●●○○
Customizability	●●●●●	●○○○○
Resiliency	●●●●●	●●○○○

Legend

Weak ○ ● ● ● ● Strong

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