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3rd Edition

By Brien M. Posey (Microsoft MVP, Commercial Scientist-Astronaut Candidate)

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Conversational File Transfers and Data Security

By Brien Posey

ConversationalGeek®

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All of the folks responsible for the creation of this book:

Author:	Brien Posey
Project/Copy Editor:	Steven Zimmerman
Content Reviewer:	J. Peter Bruzzese

Note from the Author

Greetings Earthlings!

When it comes to the world of IT, there are a few philosophies that seem to be universally true. No, I'm not talking about Moore's Law. I'm talking about simpler philosophies like "garbage in, garbage out" or PICNIC errors. For the uninitiated, PICNIC stands for "Problem in Chair, Not in Computer".

Putting all the jokes aside, one of the most fundamental truths learned over the last several decades, is that data is much more useful when it is shared. Think about it… If that statement wasn't true, then we wouldn't have social media sites like Facebook or collaborative platforms for business, like SharePoint.

The question is not do we want to share data (of course we do). The question is how we accomplish this task without compromising quality, security and a host of other file sharing worries. That is what this book will help to identify and answer.

I hope you enjoy it!

Brien Posey

The “Conversational” Method

We have two objectives when we create a “Conversational” book: First, to make sure it’s written in a conversational tone so it’s fun and easy to read. Second, to make sure you, the reader, can immediately take what you read and include it in your own conversations (personal or business-focused) with confidence.

These books are meant to increase your understanding of the subject. Terminology, conceptual ideas, trends in the market, and even fringe subject matter are brought together to ensure you can engage your customer, team, co-worker, friend and even the know-it-all Best Buy geek on a level playing field.

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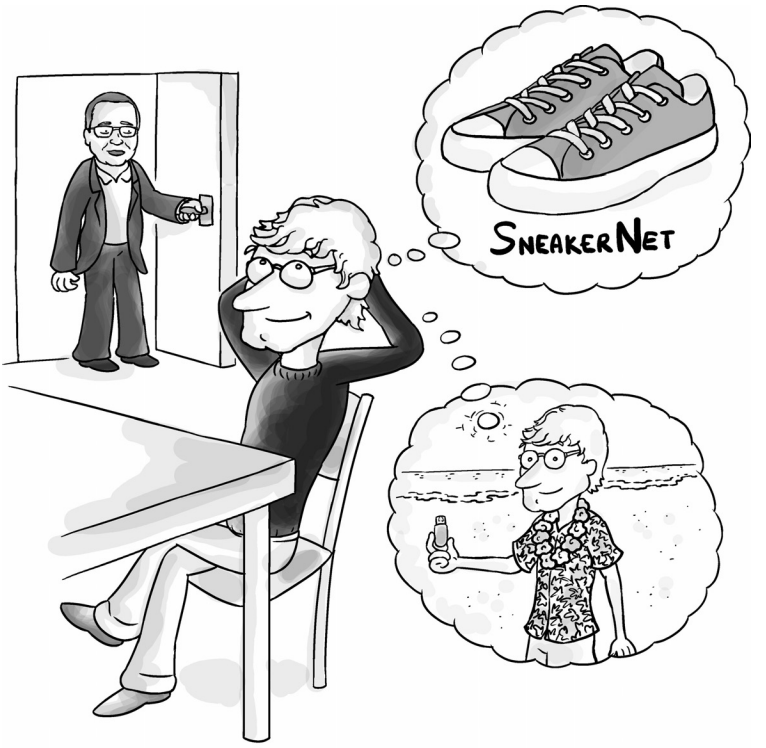
We infuse humor into our books through both cartoons and light banter from the author. When you see one of these boxes, it’s the author stepping outside the dialog to speak directly to you. It might be an anecdote, it might be a personal experience or gut reaction and analysis, it might just be a sarcastic quip, but these “geek in the mirror” boxes are not to be skipped.

Within these boxes I can share just about anything on the subject at hand. Read ’em!

File Sharing 101



"We need to send these files securely to Hawaii. How should we do it?"

Since there is obviously value in sharing data, then the next logical question becomes: *what is the best way to share data?* Of course, this seemingly simple question doesn't always have a simple answer. There are countless methods for sharing data, and each has its advantages and disadvantages. Let me give you an example. One of the simplest methods for sharing data is e-mail. However, e-mail isn't always the best choice; e-mail isn't always secure, mailboxes commonly have attachment size limits, the message may get blocked by spam filtering or attachment filtering, and e-mail doesn't really work for sharing structured (database) data.

The point is that e-mail works really well in certain situations, but there are other things that it just doesn't do very well. The same can be said for other methods of sharing data. Take social media for example. Most of my editors are on Facebook, but I'm not exactly inclined to get my next article to the editor by posting its content on Facebook. A more private medium is better suited to that particular task.

When I was a kid, my father used to tell me that it is always important to use the right tool for the job. Of course, at the time I was a MacGyver wannabe and was a lot more interested in improvising. As I have gotten older however, I have come to understand the wisdom of my father's advice and also realize that the concept of using the right tool for the job is vital to success in the world of IT.

Similarly, social media sites can sometimes take, shall we say, certain liberties with your data. Last week for example, I was in Canada flying a series of microgravity flights with the Canadian National Research Council. Since being weightless isn't something that most people do all the time, one of the guys that I was flying with compiled some of the video footage and posted it to one of the social media sites. The video was recorded in 4K and looked great. Once posted however, the site down sampled the video in an effort to reduce its file size. The end result was a grainy, somewhat distorted video with a low frame rate. The point is that if you are making data available to others, then you want the data that they receive to be identical to what you sent.

File Sharing Options (from 80's to today)

File transfers have been a part of computing since the very beginning. Even way back in the 1980s, there were file copy

tools baked into the Windows operating system. I vividly remember as a child using DOS functions such as the Copy command or Microsoft's DiskCopy tool. The point is that the need for transferring files from Point A to Point B has existed for decades (back then many file copies occurred offline, using removable media), and countless solutions exist for addressing this need. To this day, Microsoft still bakes file transfer tools into the Windows operating system, but there are also plenty of third-party tools, most of which have capabilities that far exceed those of the native OS tools.

I remember the first time I heard the term 'sneakernet' to describe the physical transfer of electronic information using (at that time) floppy disks. These days we have more sophisticated means (USB sticks) but the term still applies!

There are two main things that you need to know about third-party file transfer tools. First, there are many different ways of transferring files. As such, file transfer software can be categorized based on the file transfer method that is being used.

The other thing to understand is that each vendor has its own way of doing things. Even though two products might take the same basic approach to file transfers, at least some of each product's features are probably going to be unique. There may also be significant differences between otherwise similar products that have nothing to do with the feature set. For instance, Product A might use a more efficient transfer algorithm than Product B. Similarly, Product B might be more secure than product A. The point is that there can sometimes be major differences between seemingly similar file transfer tools.

For the purposes of this book, I am going to avoid doing any sort of head-to-head vendor comparison. There simply isn't enough space in a short book to objectively compare all of the leading file transfer products. So rather than get into a product specific discussion, I want instead to take the opportunity to discuss the various types of file transfer software that currently exist. As I do, I will make it a point to talk about what each type is good for, and not so good for.

Cloud-Based Sharing

One of the most common methods of getting a file from Point A to Point B is to use cloud storage as an intermediary. There are many such services available. Some of the more popular ones include Microsoft OneDrive, Google Drive, and Drop Box. Technically, cloud storage isn't the same thing as file transfer, but the two kind of go hand in hand.

Let's suppose for a moment that someone needs to send a large file to a friend. Rather than transferring the file directly, they could, instead, opt to upload the file to a cloud drive, and then share the file with their friend. The recipient of the file could then use the file's URL to download the file. So even though cloud storage isn't really the same thing as a file transfer, cloud storage does enable a two-step (upload and download) transfer.

Like anything else, using cloud storage to transfer files has its good points and its bad points. On the up side, many of the cloud storage providers will give users free storage space. For example, Microsoft gives OneDrive users 5 GB of free storage space.

Another benefit to using the public cloud as a mechanism for transferring files is that cloud storage providers support larger files than can generally be transferred through e-mail; many e-mail accounts have an attachment size limit of 25 MB, although some are far more restrictive. Cloud storage makes it easy to circumvent e-mail attachment size limits. Better still, because

cloud storage is often accessible through a Web interface, neither the sender nor the recipient is likely to need any special software beyond a Web browser.

Of course, cloud storage does have its limits. One disadvantage to using cloud storage is that free storage in the cloud may prove to be inadequate for transferring large files. Let me give you an example.

A moment ago, I mentioned that Microsoft will give OneDrive users 5 GB of free storage. Admittedly, that's plenty of space for transferring pictures, documents, and that sort of thing. It might however, be inadequate for those who need to transfer video.

As previously mentioned, I spent some time in Canada last week doing zero gravity research. Over the course of a week, I filled 24 memory cards with video. Those cards were 32 GB each. I thereby accumulated over 700 GB of video data. The sheer volume of the data completely ruled out any chance of using free cloud storage as a mechanism for sharing the data with others who wanted a copy. OneDrive's 5 GB limit would not even begin to accommodate the video data from a single camera, much less all 24.

If you are only transferring text, then the 5 GB limit might not initially seem like an issue. After all, many documents are less than 1 MB in size. Even this book, with images and all, only consumes about 5 MB of space. In spite of the modest amount of space required for storing documents, a 5 GB limit could quickly become problematic if you are transferring 1,000 records a day, or if you are sharing the 5 GB of space with all of your coworkers.

There are also privacy issues that must be considered. If you upload a sensitive document to a cloud portal, then anyone with access to the portal could conceivably download the document. A better solution is usually required for making sure

that sensitive or regulated data is only accessible by the intended recipient.

FTP

Another popular option for transferring files is FTP (File Transfer Protocol). It is a data transfer standard that is as old as the Internet itself. While it is easy to dismiss legacy technologies as irrelevant, FTP is still very much alive and well. In fact, when I wrote my last book, the publisher had me submit the manuscript, accompanying graphics, and some promotional videos via FTP.

Personally, I tend to think of the FTP protocol's age as one of its greatest assets. Because FTP has been around for so long, it is universally supported. Furthermore, the protocol has been proven over the course of several decades to be stable and reliable.

There are, however, a couple of disadvantages to transferring files by way of the FTP protocol. The biggest disadvantage is that FTP file transfers require a computer to act as an FTP server. This isn't a problem when data is shared as part of an ongoing, repeatable business process because the server provides the benefit of control, security, auditing, and data retention; all good things. These may be necessary for SLA's, compliance, and so forth. However, this may be an issue when the transfer is more *ad hoc*, or even frequent, but not scheduled and not subject to SLA's. Where things become problematic is if file transfer needs to occur between individuals. Let me explain.

When I was a kid growing up in the 80s, most people that I knew had never heard of the Internet. Those of us who spent time online did so by using modems to dial into remote hosts. Those hosts came in two different flavors – public and private. The public hosts were, at the time, referred to as Bulletin Board Services (BBSs). Imagine having to dial in directly to a Web site rather than dialing into the Internet and then

navigating to your Website of choice, and you can begin to get a feel for what it was like to use a BBS.

The other connectivity option was peer-to-peer. With a bit of pre-planning, it was possible to dial into a friend's computer and establish a private session. You could use these sessions to chat, or to transfer files. The client software that myself and my friends used back then supported FTP file transfers (among other standards). As such, it was relatively easy to send a file to a friend via FTP.

As previously mentioned, FTP is still widely used today. In most cases, however, the client component is just that – a client. The assumption is that the client will connect to a dedicated FTP server, like the one that my previously mentioned publisher uses. Most modern FTP clients do not support serverless, peer-to-peer file transfers.

The other disadvantage to FTP is that, because of the protocol's age, FTP is something of a no-frills protocol. FTP does a great job of copying data from Point A to Point B, but the protocol is lacking when it comes to security, audit logging, and that sort of thing. This isn't to say that an FTP session cannot be secured and audited, but rather that those types of functions tend not to be native to the FTP protocol. That being the case, auditing, security, and other functions are handled as functions of the FTP server software, the client software, or both. Just keep in mind that although FTP is a standard protocol, FTP servers and FTP clients can vary widely in terms of features and capabilities, so it is important to choose a solution that meets your requirements.

BitTorrents

Another option for transferring files is to use a BitTorrent. I have to be honest with you and tell you that I considered not writing about this particular technology because BitTorrents have gotten a really bad reputation in recent years. Even so, this reputation stems from how the technology is used rather

than from problems with the technology itself, so I decided to go ahead and include a section on BitTorrents.

A BitTorrent is a peer-to-peer file sharing protocol. The thing that makes a BitTorrent different from other forms of peer-to-peer file sharing is that this technology is designed to work across large numbers of computers. Generally speaking, each of these computers acts as both a client and a server.

Suppose for a moment that you wanted to download a particular file from a BitTorrent. You would first need to install a BitTorrent client, and then search for the file that you want to download. Unlike a "normal" peer-to-peer file sharing solution however, the file will typically exist in multiple locations. Some BitTorrent participants that act as seeders will have copies of the file, as will anyone who has previously downloaded a copy of the file. Depending on the client that you are using, you may have the ability to pick the source from which you want to download the file, or the software may download the file through a series of parallel data streams from the various sources. This approach keeps any one single computer from having to bear the burden of transferring the entire file.

So why have BitTorrents gotten such a bad rep? Well, there are a few different factors contributing to the BitTorrent's notoriety. First, file transfers can be somewhat unpredictable. Remember, files are commonly hosted on other user's personal computers, not on some massive cloud server. As such, you never know when a BitTorrent participant might turn off their computer, have a drop in available bandwidth, or even delete the file from their hard drive. As a general rule, popular files can be downloaded more reliably than less popular files, because by definition there are more copies of (and therefore more sources for downloading) popular files.

A second reason why BitTorrents have gotten a bad reputation is because they tend to be very loosely controlled, and have on occasion been used in the proliferation of malware. There have

also been instances in which hackers exploited BitTorrent clients to gain entry into BitTorrent participant's computers.

By far the biggest reason why BitTorrents have gained a bad reputation is because they are often used for illegal purposes. For many years, BitTorrents were the tool of choice (and in some cases still are) for those who wanted to download bootleg copies of music, movies, and software. Remember what happened to Napster back in 2001? Well, the software that Napster used back then worked very similarly to a BitTorrent.

One more disadvantage to BitTorrents is the general lack of privacy. Because BitTorrents distribute data across network peers, they are not usually suitable for transferring data that needs to remain private.

In addition, many BitTorrent clients expose a participant's IP address to those who are seeding or downloading data copies, which can pose a major security risk. In fact, it has become common for BitTorrent users to leverage VPN software in an effort to obscure their IP address.

E-mail

I think it's safe to say that the average person is well familiar with e-mail, so there is no need for me to explain what e-mail is and what it does. Even so, I do want to take a moment and briefly discuss e-mail as it related to file transfers.

As previously explained, e-mail can be thought of as an almost universal platform for file transfers because almost everyone has at least one e-mail account. However, e-mail does have three major limitations.

First, as I mentioned earlier, most mailboxes have an attachment size limit. The size limit is usually set by the administrator, except in the case of public messaging platforms such as Hotmail, Yahoo mail, and Gmail. Typically, the size limit

is about 25 MB, but the limit can be a lot lower. I have editors who I have trouble sending documents to, because their mailboxes have a 5 MB limit.

Even if you have a mailbox with no attachment size limit, using e-mail as a file transfer platform can still be tricky, because odds are that anyone you might be sending a message to will have an attachment size limit on their own mailbox.

A second limitation that can get in the way of using e-mail as a file transfer platform is the mailbox quota. All of those messages that get sent back and forth every day have to be stored somewhere and, if left unchecked, the mailbox database can grow to be so large that it exceeds the underlying physical storage capacity. As such, administrators often place quotas on mailboxes to keep those mailboxes from becoming too large. Even if storage space isn't an issue, some organizations use mailbox quotas to limit mailbox sizes in an effort to keep backups small and manageable.

There are a number of other reasons why mailbox quotas are sometimes used. The important thing to understand is that mailbox quotas regulate the mailbox size, not the attachment size. Therefore, if a mailbox quota exists, then it will limit the maximum size of any mailboxes to which it applies. This means that if someone sends you a file, then the message could be rejected as a result of a quota violation, even if the attachment itself is considerably smaller than the attachment size limit.

One more reason why e-mail is impractical for use as a file transfer platform is because e-mail is insecure. Really. Even though IT pros work really hard to secure mail servers and user mailboxes, messages are often sent across the Internet in an unencrypted format. Now there are obviously exceptions to the rule, but many mail systems do not encrypt e-mail messages sent across the Internet. This means that e-mail is a poor choice for sending messages containing sensitive attachments.

E-mail can be especially problematic for organizations that are subject to regulatory compliance. HIPAA for example, imposes severe penalties for the unauthorized disclosure of electronic protected patient health information. Sending personally identifiable medical data through e-mail risks unwanted data exposure. Not only might the message be intercepted in transit, but the recipient could conceivably forward the message to someone else. A good file transfer solution should ensure data security, and allow the data's owner to retain verifiable control (through access logs) over access to the data.

Modern File Transfer Solution Requirements

Moving from the past to the present (and possible future) for file sharing, let's look at next-gen file transfer software to help us go beyond the limits of FTP, BitTorrent, email and so forth. And let's also map out what kinds of requirements you might have and need for your current file transfer solution within your business.

Next-Generation File Transfer Software

As previously discussed, FTP works really well as a file transfer mechanism, but has its limitations. Because FTP was created several decades ago, it wasn't really designed to handle today's file transfer challenges. Some vendors have created FTP servers

and FTP clients that provide modern security and compliance beyond what is natively provided by the FTP protocol. Other vendors choose instead to base their file transfer tools around modern protocols and modern security and compliance standards.

Regardless of whether a file transfer application is based on FTP or some other protocol, there are some features that you should look for beyond the basic ability to move files from Point A to Point B.

Security and Compliance

First and foremost, the software needs to be able to transfer files securely. In many cases, however, the secure transfer of data is not enough by itself. This is especially true for those who work in regulated industries, where there may be severe consequences for the improper handling or unauthorized exposure of data. In fact, regulations commonly require organizations to be able to prove that file transfers happened securely. It may also be necessary for an organization to prove that a file was transferred by an authorized sender to an authorized recipient.

The only way to guarantee this level of regulatory compliance is through an audit trail. As such, the software needs to securely log information about the sender, recipient, and content of each transfer. The organization must be able to produce this data in the event of a compliance audit.

Although a software generated audit log should be considered to be an essential feature, the audit log may not be enough to ensure regulatory compliance by itself. Some sets of regulations have requirements for how the audit log is to be handled. At a minimum, the organization must usually ensure that the audit log remains secure and is not tampered with.

Depending on the regulations that your organization is subject to, there may be a requirement for an auditor to be able to

review the audit logs. In such situations, it is important for the file transfer software to provide secure, authenticated access to the logs through either a search engine or an eDiscovery portal.

Service Level Agreements

A file transfer requirement that tends to be easy to overlook is adherence to Service Level Agreements (SLAs). It's tempting to think of SLAs in terms of workload availability, but there may be other SLA requirements depending on the organization's operational requirements. For example, there may be an SLA requirement to transfer a file to a partner every morning by 8:00 AM.

Adherence to this type of SLA requires two things from a file transfer application. First, the file transfer software must maintain a log of any and all transfer operations. Having such a log is the only way to prove adherence to an SLA.

The other thing that is useful for maintaining compliance with a file transfer SLA is an automation engine. If there is a strict requirement for the organization to transfer a file to someone at a specific time, then the best way of meeting that requirement is to remove the potential for human error by scheduling the file transfer. Ideally, file transfer software should be able to support scheduled (or even scripted) uploads and downloads.

Universal Compatibility

Throughout this short book, I have talked about several different options for transferring files. Each of these options had its pros and cons, but there was one thing that all of the methods had in common: *none of them are truly universal*.

Now, admittedly, I stated earlier that "e-mail can be thought of as an almost universal platform for file transfers because almost everyone has at least one e-mail account." If we are defining a universal platform as being something that almost

everyone has access to, then yes, e-mail probably is the closest thing that there is to being a universal file transfer platform.

If you look at things another way, however, then there is nothing at all universal about e-mail. Think about it… You can't e-mail a file to an FTP server. A cloud storage provider isn't going to use the Simple Message Transfer Protocol (SMTP), the protocol used by e-mail servers, to transfer a file that you are about to download.

While it is true that e-mail is universal in the sense that most people have an e-mail address, e-mail is not universally compatible with other file transfer methods.

Believe it or not however, there are file transfer tools on the market that come close to being truly universal. I have seen consolidated file transfer tools that support FTP, e-mail, file servers, network shares, and more.

This "Swiss Army knife" approach to file transfers is undeniably convenient, but imagine how powerful this type of universal compatibility could be if it were to be combined with a scheduler or a scripting engine. The software could automatically transfer files on a scheduled basis, using the method that is preferred by the recipient. Think of it this way. I write books and articles for a living. Some of my editors prefer to receive manuscripts through e-mail. Others require me to submit my content to an FTP site. A tool that supports scheduled transfers and multiple transfer methods could help me to make sure that all of my content is submitted on time, and using the publisher's preferred transfer method, all with a minimal amount of effort on my part.

I could simply create folders corresponding to each of my publishers, and then schedule a task to upload the contents of each publisher's folder to the publisher on a scheduled basis. If for instance, a publisher required content to be submitted every Monday morning, I might set up a task to transfer the

contents of that publisher's folder on Sunday night. All I would have to do then is to write the content, and drop the file into the designated folder. The software would do the rest.

I'm guessing that most of you probably aren't dealing with publishers on a regular basis, and that's OK. The same basic concept applies to any organization that transfers files to external entities. Consider for example, an IT shop that is transferring files to outsourced providers such as a payment clearing house or perhaps to a business partner. Having a tool that accommodates all of these with a single transfer engine, automation tool and audit log can provide huge benefits.

As you can see, there are many different types of tools for transferring files. Each class of tools has its advantages and disadvantages. Regardless of how you decide to go about transferring files, the transfer should be secure, reliable, and it must adhere to any requirements that have been established for the organization.

Ultimately, to have a solid methodology for sharing data you need to map out a few key points. These may not all apply in your case but they will for most.

Establishing Criteria for Success

As previously noted, there are countless techniques for sharing data. Since it is impossible to explore every conceivable method, let's narrow down the discussion and talk about file transfers. Let's assume that unstructured file data needs to be copied from Point A to Point B, and define some requirements for the process.

The Software Must Be Reliable

It might sound a bit cliché, but the first requirement is that the software just has to work. File transfer software must be able to reliably copy data from Point A to Point B, without the software crashing mid-stream, and without the data becoming corrupted in transit. Saying that the software needs to be reliable is such an obvious thing, that it almost goes without saying. Even so, reliability is of such paramount importance that it is worth including in the established criteria for success. For many organizations, file transfers are key operational processes related to business functions such as billing or customer service. If the software does not work, then the business suffers.

Supportability Is an Absolute Requirement

A second, almost equally important requirement is that the software needs to be supported. This requirement needs a bit of explaining, so stick with me for a moment.

Over the years, I have used some really great open source, freeware file transfer tools. These tools tend to be feature-rich, and you definitely can't argue with the price. Even so, I don't use those tools because they tend not to be supported.

Many years ago, I adopted a policy of never running unsupported software in production. At the time, I had a corporate job and so this practice was a matter of self-preservation. I never wanted to find myself in the position of having to explain to the boss that we couldn't get tech support on a piece of software because I had decided to use freeware.

Although the concept of free software is undeniably appealing, I think that it is better to spend a few bucks to have the assurance that help will be available if you ever need it. To this day I still make it a point to never run unsupported software in production, even though I work for myself.

The Software Should Be Feature-Rich, but Affordable and Easy to Use

OK, this one is a tough one. Ideally the file transfer software that you decide to use should be feature-rich, but is should also be easy to use. Affordability doesn't hurt either. The problem is that feature richness, affordability, and ease of use are often at odds with one another. To show you what I mean, let's forget about file transfer software for a second, and just talk about software in general.

As someone who writes about enterprise IT for a living, I get to test drive a lot of different enterprise grade applications. In almost every case, these applications are jam-packed with features, but the features come at a cost; usually a very high cost. Enterprise IT software does not exactly have a reputation for being cheap.

Many of the enterprise-grade applications that I have used over the years have also been overly complicated to use. I have often wondered if vendors purposely make their applications overly complex either as a way of justifying the application's cost, or as a way of selling support contracts.

Of course, not every organization is the size of a large enterprise, and there are vendors that make software that is targeted toward smaller organizations. Often times, this software is simply a watered down, "light" version of the vendor's enterprise solution.

Admittedly, these trends can make it tough for SMB-sized organizations to find quality software. On one hand, spending ten million dollars for an application, taking a year to implement that application, and shipping the IT staff off to special training isn't going to be a realistic option for smaller shops. On the other hand, the "light" version of an application may be lacking, to the point that it does not really meet an organization's requirements.

The point is that a file transfer tool should ideally be affordable and easy to use, but without compromising essential features in the name of price. Needless to say, this is a tall order, but there are vendors who do a decent job of meeting all three objectives.

The Software Must Keep the Data Secure

Another essential requirement for file transfer software is that it must ensure privacy for the data that is being shared. Now I will be the first to admit that not every file contains sensitive data. Yesterday for example, I sent someone a copy of the PowerPoint deck from one of my recent speeches. The speech was open to the public, and the content was therefore also suitable for public distribution. Even so, I am still a big believer in keeping every file transfer private.

My reason for wanting to ensure privacy for every file transfer is really simple. It is easier and less risky to make a file transfer secure by default than it is to pick and choose whether or not a particular file transfer really needs to be kept private. It is way too easy to forget that an otherwise benign document contains that one piece of sensitive information. It's better to simply encrypt everything than to risk accidentally compromising sensitive information. This is especially true when you consider that a large portion of the data transferred by many organizations is proprietary or otherwise sensitive in nature.

The Software Must Maintain Regulatory Compliance

Over 135 countries enforce strict regulations protection personal information from the EU's General Data Protection Regulation (GDPR), to numerous countries' Personal Information Protection Acts (PIPAs), to the US's HIPAA. If your organization is subject to one or more of these regulations, then it is absolutely essential that your file transfer software be able to move data in a way that adheres to regulatory requirements.

So, what does that really mean? Well, the exact requirements vary depending on the nature of the data that is being transferred and on the regulations that the organization must adhere to. Generally speaking, however, regulatory requirements are designed to ensure that there are no data breaches and that sensitive data is not improperly disclosed. It is important to keep in mind that technology changes more quickly than regulations, and because new exploits are discovered regularly, it is theoretically possible for an organization to be compliant without being secure.

For the sake of illustration, consider what regulatory compliance means for healthcare organizations. In the United States, healthcare organizations are subject to HIPAA, which imposes stiff penalties for the improper disclosure of personally identifiable health data. In other words, if medical data (such as a diagnosis, test results, etc.) contains the patient's name or any data that could be used to figure out the patient's identity, then that data is considered to be personally identifiable and is therefore protected by law.

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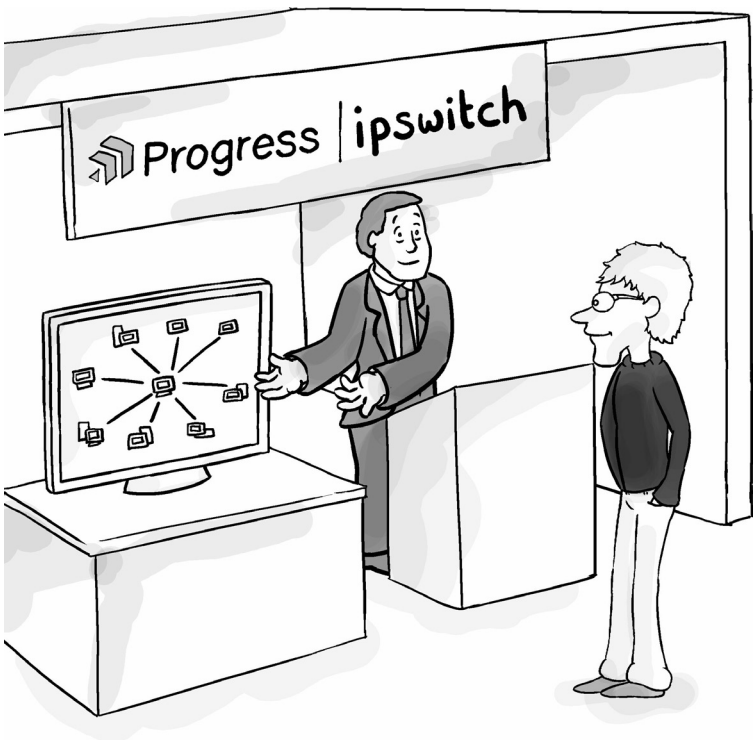


Some organizations, like yours, require sensitive data to move outside the perimeter of the company network simply as part of doing business. For example, banks send out checks to be imaged, and hospitals take care of billing through clearinghouses using patient records and charge data. No matter the industry or data set, the very idea of insecurely sending out sensitive information over the Internet is both dangerous and irresponsible.

When sharing information like this as part of business operations, it needs to be locked down as part of an established process. Organizations largely use one of three types of tools to get the job done; FTP, cloud sharing, or managed file transfer. Each are viable options to get data

moved from Point A to Point B (each with their own pros and cons), but at the core of your file transfer needs, the solution used must meet three requirements:

1) The data needs to only be accessible by the intended recipient
2) You must be certain the data got there
3) You must be certain the data hasn't been modified *en route*

Neither basic FTP nor consumer-based cloud sharing truly ensure any of these requirements are met. To achieve true security around the transmission, access, and integrity of your data, Progress offers managed file transfer solutions to meet even the most demanding customer needs.

At their core, Progress' secure and managed file transfer solutions aim to secure the transfer of your organization's most sensitive files by providing you with visibility into data movement, while retaining complete control.

Progress' *Secure Information and File Transfer* solution offering is made up of 6 different products, providing additional functionality and control over data based on their award-winning *MOVEit* Transfer.

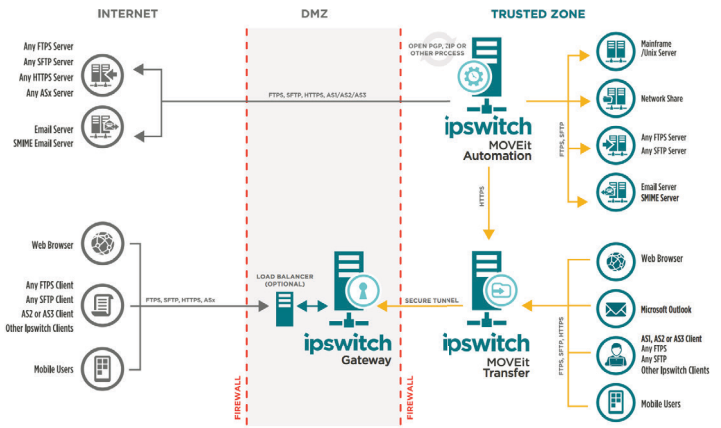
MOVEit® Transfer

Organizations reliant on file transfer activities need a way for IT to maintain complete visibility and control over file transfer activities between users, systems, partners, and customers, while allowing those involved to initiate transfers without the help of IT. MOVEit Transfer provides organizations with the ability to define what file transfer activity is allowed, who can perform the transfers, when, and how it can occur. Using a centralized, multi-tenant architecture – designed with multi-

company data transfer in mind – MOVEit Transfer facilitates secure transfers that adhere to company policy at any time.

Supporting a wide range of clients going well beyond just FTP applications, MOVEit Transfer allows for users to continue to utilize the applications they already know and love while containing the actual transfers. MOVEit Transfer performs the actual transfer, parsing requests through its policy engine to ensure transfers are allowed, establishes FIPS 140-2 validated AES-256 encryption over the secure channel, and generates an audit trail for each and every file transfer. Logs are stored in a tamper-evident database, helping organizations to be in compliance with a variety of data privacy regulations including HIPAA, PCI, GDPR, and more.

Part of a family of products that work together, MOVEit Transfer's base functionality is augmented to include a gateway that proxies inbound connections to further enhance security, automation and API support to integrate MOVEit into existing business processes, and even Outlook, web, and mobile clients to allow users to share files similarly to consumer-based solutions, but with the security and integrity of MOVEit Transfer. MOVEit Transfer also has a Mulesoft Connector that lets it easily integrate with any other solution connected to Mulesoft's iPaaS.



MOVEit® Cloud

For those organizations wanting the functionality found in MOVEit Transfer, but are committed to using cloud-based services and solutions, Progress offers MOVEit Cloud – a flexible and scalable cloud-based secure and managed file transfer service. Secured using the latest security updates and layers of defense including FIPS 140-2 certified cryptography, access control, integrity checking, penetration testing and more, MOVEit Cloud provides the full functionality of MOVEit with the convenience of cloud-based deployment.

Despite its home in the cloud, MOVEit Cloud meets the same strict data privacy compliance requirements as its on-premises counterpart - including GDPR.

Which One's Right for You?

Like most solutions that have a cloud-based offering, MOVEit Cloud provides some of the expected advantages, such as rapid deployment, predictable costs, and reliability with 99.9% uptime. Where choosing gets a bit more challenging is when you find out that the majority of the functionality found in MOVEit Transfer is also standard in MOVEit Cloud. So, this may come down to more a choice of CapEx vs OpEx, or comfort level with having potentially sensitive data in the cloud.

Secure Files in Transit and at Rest with MOVEit

Whatever your file transfer need – whether infrequent transfers by only a few people, or data constantly in motion by countless users – MOVEit Transfer and MOVEit Cloud both provide organizations with complete visibility and absolute control over your file transfers, ensuring secure and compliant data movement for organizations of any size and vertical.

Easily “converse” about file transfers and data security in any setting.

Sharing data is certainly the key driving force behind solutions like email, doc sharing sites and so forth. However, how do we accomplish the task of sharing without compromising quality, security, and a host of other worries? That is the question that will be answered within the pages of this book. Starting with a walk through historical tools for file sharing and looking at what we currently have and need for secure file sharing, this book will take you on the journey.

About Brien M. Posey

Brien Posey is an 18 time Microsoft MVP and an internationally published author and conference speaker with over two decades of IT experience. In addition to his technology work, Posey is also a Commercial Scientist-Astronaut Candidate. (http://www.brienposey.com/space) Follow him on Twitter @BrienPosey

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