

Great News: You are about to become the smartest Office 365 network and security person in the room!

The business wants Office 365 to save money and raise productivity.

You want it to do that and so much more, with:

1 BEST USER EXPERIENCE, KEEPING THE DREAM ALIVE

As the business transitions to Office 365, user experience is the #1 measurement that will be seen by all. Is it fast? Can we prove it? And do we know it will stay that way at all times?

You can just imagine the stress placed on the CIO, having approved the deployment of Office 365, to have the users in pain or perhaps even revolt as the deployment grows or other forces come into play that put things in reverse.

2 LOWEST COST, WITHOUT SURPRISES DOWN THE ROAD

If there's one thing executives hate, it's surprises, especially when it comes to increased spending. It does no good for the business to save a dollar, euro, pound, etc., on a program only to have to come back and spend more than that on the infrastructure to support it.

It's time to openly discuss all the options, making sure that there are no surprises!

3 VISIBILITY, PROACTIVE CLOUD MANAGEMENT AT ITS VERY BEST

As cloud adoption grows with Office 365 and beyond, the Internet itself needs to be managed. And this is not a function of the ISP, but rather the enterprise. It starts with visibility and ends with control. How will you see all the cloud service traffic, and how effective will you be at managing those flows in order to maintain the best user experience at the lowest cost possible?

4 RAPID DEPLOYMENT, BECAUSE MOVING TO THE CLOUD SHOULD BE LIGHTNING FAST

The first organizations to roll out Office 365 did so years ago, so it's reasonable for any organization these days to expect the rollout to go just as fast as it possibly can. Mature offering + cloud-based = fast deployment. That's certainly a reasonable assumption and expectation to be placed upon IT, which is why it's essential. Just as the user experience is the #1 requirement in the eyes of the users, a rapid deployment is what the business leadership expects to see from the IT organization. Anything less, regardless of the reasons, is going to have the business asking if IT is really fully behind the program and working to make it 100% successful.

HEY, WHAT ABOUT SECURITY?

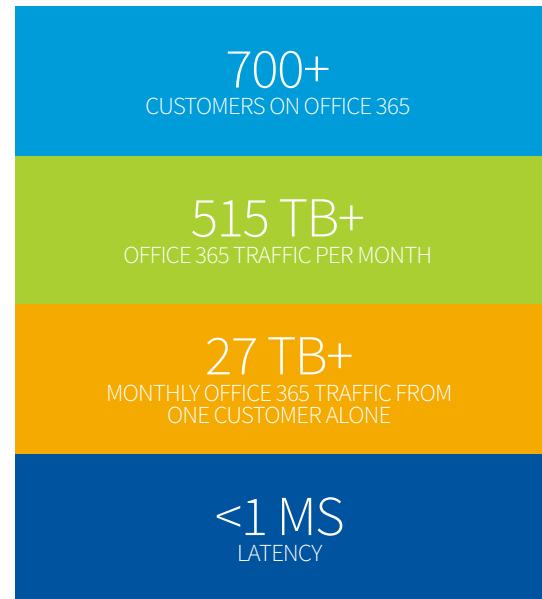
If you thought a company that generally leads with cloud security would have gone with “security” rather than “visibility,” you are indeed wise. It’s something that we at Zscaler have struggled with quite a bit ourselves. But, after over 700 Office 365 deployments (and growing) and processing an already incredible amount of Office 365 traffic, the deeper insight is that visibility and management round out the top three priorities, not security itself.

👏 Office 365 traffic now represents 40% of our network traffic. And for the first time, Office 365 has surpassed YouTube. 🗨️

— Kelly Services

Of course, security is part of the discussion, albeit largely in the context of availability, so that will be our focus. So let the security professionals rejoice, as their/your jobs just got a bit easier simply by virtue of adopting Office 365. It’s a critical piece though, as failing to respect visibility and management means that costs will almost surely rise, user experience will be negatively impacted, and the users will then start migrating to less secure options.

To be more direct, by not properly transitioning to the cloud, the Office 365 rollout would be seen as less of a success than was promised. And it is unlikely that the blame would ultimately settle on Microsoft as the culprit. Instead, the far more likely outcome is the executive judgment that the IT organization did not properly adapt both the network and security practices to fully embrace cloud models, instead just treating Office 365 as though it were for more casual use, such as YouTube.



DID YOU KNOW...

Microsoft gives away Office 365 to students for free?

Takeaway: You can bet your high energy, go-getter Millennial and Generation Z employees that will surely help drive the next big wave of your business will be sending fewer attachments through email and collaborating more via real-time cloud tools than any generation before.

They increasingly have gigabit connections to their college dorm rooms and those who do quite seldom know what a bad cloud experience feels like.

Entering the workforce should not be their rude introduction to legacy IT.

👏 MICROSOFT RECOMMENDS BYPASSING PROXIES WHEREVER POSSIBLE WITH OFFICE 365 AND HERE ARE THE REASONS YOU SHOULD DO THIS...

- All content is encrypted so no traffic analysis can be performed
- As content is encrypted, no caching can be utilized to increase performance
- A minimum of two connections for Outlook and five for Lync are required per user, which can increase if shared or delegated mailboxes are accessed; this can put a massive strain on existing proxy servers when migrating to Office 365 from an on-premises messaging system
- As the TCP connections to Office 365 are persistent, any issue that may cause your proxy to restart will disconnect the Outlook/Lync connection of every user. 🗨️

— Microsoft Messaging User Group

WHY IS OFFICE 365 A NETWORK AND SECURITY CHALLENGE?

Infrastructure Upgrade Costs

Surprise costs, especially with firewalls and bandwidth. For example, firewalls experience very high port usage in the range of 12-20 persistent connections per user! This, of course, depletes the resources within the firewalls and all-too-often forces sudden and very much unplanned upgrades.

Increased Network Complexity

The Internet is no longer just where things go when they leave your network — it is your network! But it's simply not going to work the same as before, which is why Microsoft came out with Express Route and why Zscaler, too, has stepped in to help with the inevitable network redesign.

Consider: Microsoft recommends no more than 2,000 users behind each public IP address. They also recommend bypassing Office 365 traffic through your proxies.

So yes, things have become more complex for many, but for many others actually simpler.

Seeking a Great User Experience

The branch offices, which are typically joined to the network via MPLS circuits, find that they are now very much second or even third-class citizens when it comes to their user experience. Network congestion is generally called out as the culprit. But in reality, it's just bad design, as everyone should have seen that coming and addressed it the right way—with the cloud in mind.

Throwing more hardware (firewalls) and bandwidth at the problem isn't the answer, either. Maybe some capacity adjustments here and there are ultimately required, but only after factoring in the benefits of local breakouts, bandwidth management, and generally building the network to address the needs of all the rich and wonderful cloud-based applications, not just Office 365.

New Operational Management Headaches

Managing proxy bypass rules is not fun. Not fun at all. In fact, it's a downright headache. At least it is when you have to do it all yourself. But when your service provider does that for you and everyone else all at the same time, things are incredibly simple.

In one period alone (January - August of 2014), Zscaler counted 200+ changes to IP address ranges and URLs.

All Those Darn Blind Spots

Since Office 365 best practices state that proxies need to be bypassed, specifically because they don't work well with both PAC files and SSL interception, there's a great deal of traffic that won't get the standard security control treatment.

Aside from the obvious policy exceptions and determining what needs to be addressed by way of data loss prevention (DLP) and malware that might be sneaking in, there's a fair amount of attention that must be placed on seeing peripherally. In other words, if malware does come in through a file via OneDrive and then quickly starts trying to make an outbound command-and-control callout, can you see that event occurring, address it before it becomes a full incident, then forensically determine where it came from, with very little effort or delay?



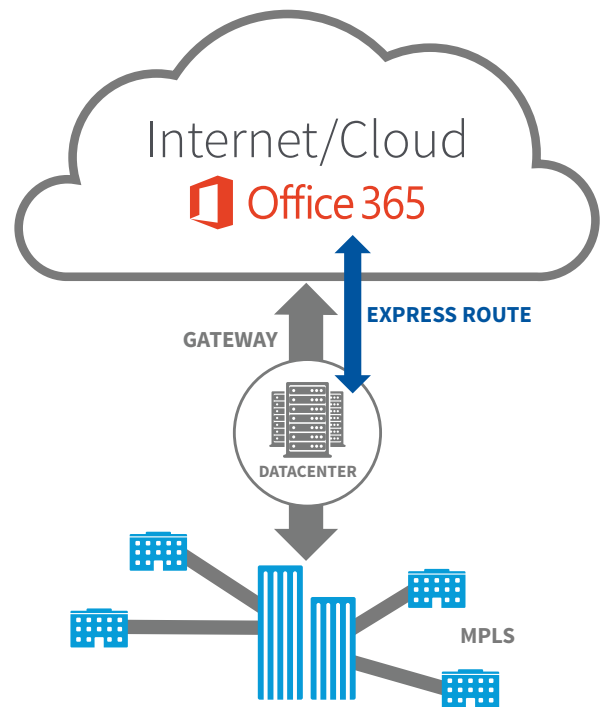
Executive Overview

As Office 365 matured, the need for better networking became obvious to all, at which point Microsoft answered with a booming solution: Express Route!

We won't be able to cover the entire Express Route value proposition here, but at a high level it is really just a private high-speed circuit with low latency. And, as luck would have it, it's available through most major ISPs.

Pretty simple, right? Actually it is. A simple solution to a simple problem. Organizations feel that nagging pressure around user experience to get the traffic to/from Office 365, and Express Route looks like it can do the trick. But as we explore it in more detail, we find some caveats.

The bottom line is that Express Route does have value and is a near certainty for any large Office 365 deployment, primarily because it is Microsoft's baseline recommendation for network enhancement. But at the same time, it isn't the end of the story.



To see who will benefit in terms of user experience, you need to look no further than where Express Route terminates, which is almost always the primary datacenter (HQ users rejoice, your first class user experience relative to remote users is preserved!). This, of course, means that branch office users will have to shuttle all their traffic back through MPLS connections, while remote users will have to VPN back in to receive any advantage here, hopefully to the very same datacenter where Express Route sits.

As you might imagine, there are many things that can go wrong in this scenario, such as MPLS and VPN congestion, significantly added latency, and a lot of finger pointing.



Everyone is likely going to tell you to use Express Route. Independent analysts likely will. Microsoft generally will. And you can bet the Internet providers all will. And by now it should be obvious as to why each would make these recommendations. Even those of us here at Zscaler will recommend Express Route, where it is obvious that the connection adds value to that specific site, specifically for Office 365 traffic (note that Express Route is also positioned for Azure traffic, which is out of scope for this discussion).

Just how much your costs go up will depend on many factors, including MPLS backhaul and firewall upgrades.



Z NERDY DETAILS: EXPRESS ROUTE

Call these factoids or just deep knowledge, they are the things that many end up missing during their pilot rollouts – things that come back to bite them when O365 really starts ramping up.

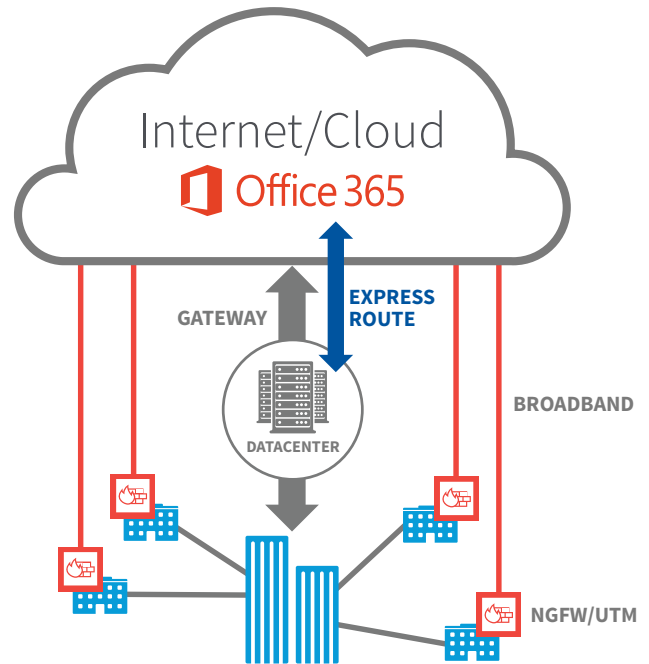
TECHNICAL CHALLENGES	NEW REQUIREMENTS
IP Address Limitations	ExpressRoute has a limitation of 2K users behind each IP address.
MPLS Budget Growth	Gone are the days when the Internet was a casual 10% of your WAN traffic. Now it's not uncommon to see organizations struggling with that number as high as 90%, while >70% is far more typical. And now with ExpressRoute all that Office 365 traffic will be consuming even more MPLS traffic, just to get it to that fast dedicated connection for the last mile to Microsoft. Rest assured, the CFO will notice.
More Hardware or Less Visibility	That ExpressRoute connection is going to need to be secured, the same as any business partner connection. So now it's time to buy more firewalls, web gateways, or just bypass security.

THE APPLIANCE WAY

Executive Overview

Though many will try to simply use the old HQ-centric hub and spoke model with the cloud, it will eventually fail to deliver. Because, while hub and spoke architectures do work quite well, they have to take into account where the data center is at all times, not where it was in the days of yesteryear. And now, the data center is the cloud, which means the spokes must now point directly there, rather than taking an indirect and rather costly route through back to HQ.

What this means is that, no matter how hard you try to avoid it, you will end up spending more on appliances (both CapEx and OpEx), year after year. After all, as Office 365 is surely not the only cloud-based traffic, it becomes clear that every branch office is just yearning, even demanding, to get the same great experience enjoyed by the folks at HQ, which then requires the same security stack at each location.



As the users will all be going out to the Internet via local breakouts rather than backhauling over MPLS, their user experience while at the office should be quite good, provided those circuits are not negatively impacted by the likes of YouTube and the security stack is sized to fit. But, remote users who are forced to VPN back in to HQ in order to access Office 365 will suffer from the overall VPN experience, especially if the VPN appliances are not directly adjacent to the Express Route connection (more on that later).

The bottom line is that user experience will be highly dependent on just how you decide to route the traffic and what controls you have in place to properly manage it, such as bandwidth management and oversizing the appliances to address both capacity growth and regular surges.



As businesses select Office 365 as a better, less expensive, and more promising means of delivering IT services, they don't want to realize next year that it is actually costing them more than if they had just left things alone. This is especially true when their competitors are actually seeing a much greater return on the investment. Perhaps even more painful than the cost factor is the reality that adding more and more security appliances and then having to manage them all is 180 degrees in the opposite direction of why they selected the cloud option in the first place.

Moving to the cloud is all about business transformation, not IT transformation. While IT is transformed in this process, it is only as a result of the business changes. So if the costs start to go up, the business will be forced to consider whether IT is truly aligned with the business, or perhaps their own desires and agenda.



Z NERDY DETAILS: APPLIANCES

Call these factoids or just deep knowledge, they are the things that many end up missing during their pilot rollouts — things that come back to bite them when O365 really starts ramping up.

TECHNICAL CHALLENGES	NEW REQUIREMENTS
<p>Hardware Expansion & Upgrades</p>	<p>In order to deliver the now required first-class user experience, more appliances will be needed to keep up with increased traffic flows. This includes perhaps everything the HQ facility enjoys, including next-generation firewalls, data loss prevention, SSL inspection, bandwidth management, and outbound proxies.</p>
<p>Policy Changes</p>	<p>As mentioned earlier, Microsoft’s best practices require that proxies be bypassed. This means that proxy bypass rules will need to be fully understood and managed at all times, anywhere there is an Internet connection that is servicing Office 365 traffic. This is ongoing maintenance that can quickly become a real burden.</p>
<p>Firewall Port Exhaustion</p>	<p>Firewall appliances have limited port mapping and Office 365 will require far more than just Internet browsing. The primary symptom of this is that some users will see Outlook in a disconnected state, while other applications will also suffer.</p> <p>Additionally, roughly 4,000 clients can safely be supported by a single public IP address, which stems from the ports available to connect to Office 365.</p>

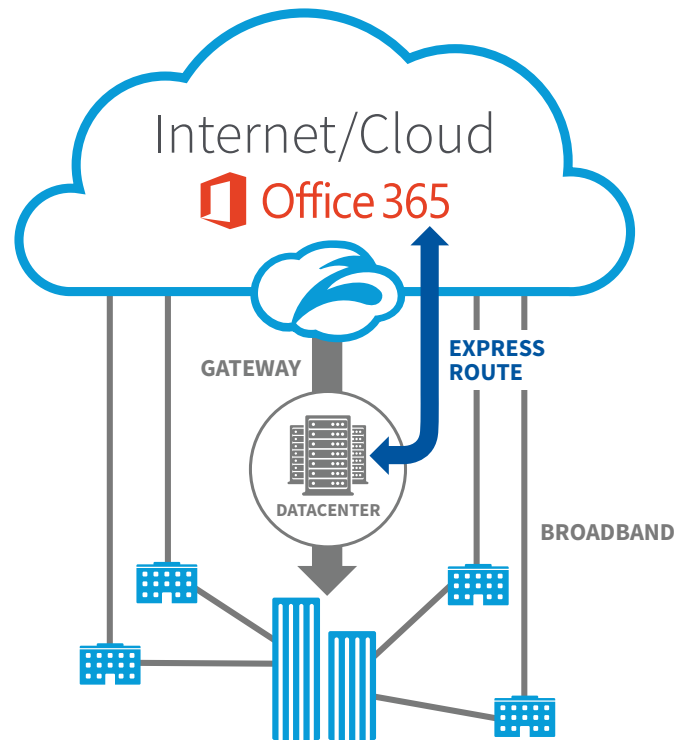
THE CLOUD WAY

Executive Overview

Every Office 365 customer of reasonably large size is going to adopt the cloud way. There is really no doubt or debate about this, save for those increasingly rare behind-the-scenes IT conversations where someone just really refuses to believe the cloud is anything but a fad.

We know this because all the evidence out there shows that CTOs and CIOs increasingly demand that their Internet traffic goes via the lowest cost and essentially of MPLS. They have been evangelizing this change for years and can now safely move in that direction.

This is not to say that Express Route will not be used here and there, as it often will be, especially for the larger HQ sites. But for all those remote and branch office users who need the full first-class experience, going indirect with a backhaul link just to get a direct route for the last mile connection is going to be a tough sell.



There's simply nothing better than going direct, especially when sufficient bandwidth exists and the network is properly managed. With Zscaler, customers can apply the right mixture of bandwidth control to cloud applications and general-purpose Internet traffic. Combine this ability with seamless user authentication and a clean Internet pipe, and they get a great user experience along with further protection from malware.

Administrators also have a great user experience, thanks to the entire best-of-breed Office 365 features.



Cloud-direct organizations, especially those with Zscaler, save large sums of money. We obviously can't prove that in a single paragraph, but our customers are out there evangelizing the savings through more and more case studies and testimonial videos that are always available on the Zscaler YouTube channel. We encourage you to view them, because when you see and hear other leading organizations talking about how their security increased, incidents decreased, user experience improved, and costs plummeted, then the benefits of business transformation become clear.



Z NERDY DETAILS: THE CLOUD

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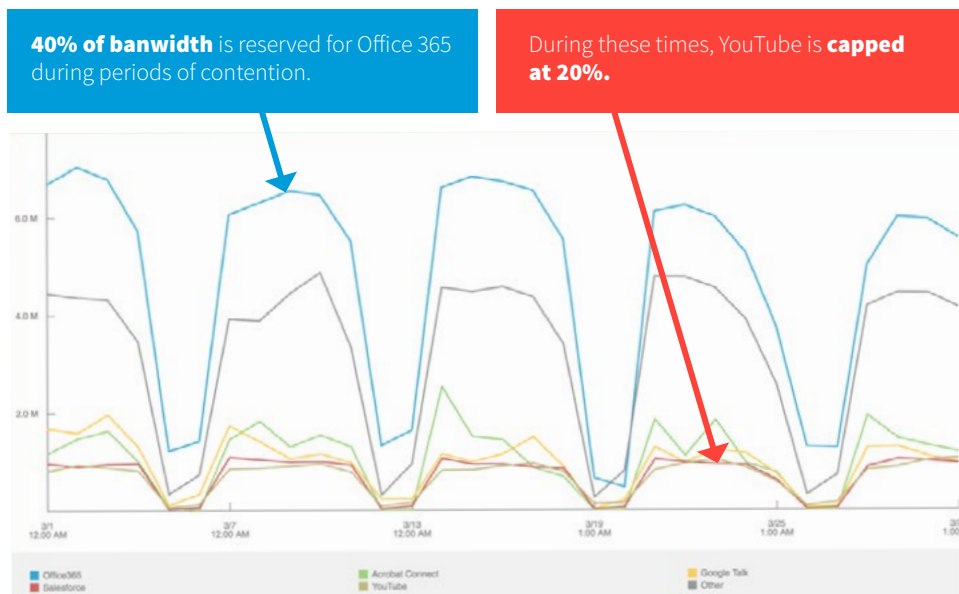
TECHNICAL CHALLENGES	NEW REQUIREMENTS
Local breakouts	Each branch and HQ office will now have their own Internet connection, which of course means that they will go directly to the Internet, completely bypassing MPLS. So all of these lines will need to be ordered, provisioned, then configured for outbound GRE or IPsec tunnels to Zscaler.
QoS implementation	Office 365 customers will want to apply bandwidth management to the Internet traffic, ensuring a great user experience for business-by essential applications. This will be applied per site or even by sub-location.
Implement Office 365 reporting	As with many cloud-based applications, the business leaders will want to see reports on Office 365. It's time to dazzle them.
Deploy Zscaler App to Workstations	Zscaler App uses cookie-less authentication to authenticate users, meaning there's no need to bypass proxy controls for roaming users (traditional proxies need to deploy complex PAC files to be maintained to bypass Office 365 and may fail-closed if the first connection to them is HTTPs).
No port exhaustion	Unlike the aforementioned appliance-based limitations around port exhaustion on firewalls (4K per IP address), Zscaler, by virtue of its architecture, can handle 8 million+ connections per cloud enforcement node. So, you don't have anything to do here...we just thought you would like to see another data point on how far advanced we are over appliances.
One click deployment	You will need to go into the Zscaler Admin UI and flip the switch for Office 365. Under the covers, this is enabling the appropriate authentication and SSL bypasses, though you may still have to add auto-discover URL(s) to the SSL bypass manually (autodiscover.companyname.com).

BONUS: What it Looks Like to Actually Manage Office 365 Traffic

There will come a time when you will have no choice but to manage bandwidth for cloud-based applications, or at least wish you could. We know, because we see this playing out all the time.

Here's what it looks like. As just one example, employees may get restricted from using music streaming sites while at work, and quickly discover that they can just access YouTube, find the Vevo music video links, then endlessly play the videos while the browser window is minimized. The result is, of course, a ridiculous amount of bandwidth being consumed, choking out the traffic for real business applications.

The great news is that the problem is quite simple to resolve. In the image below you can see what one customer did, which was to reserve bandwidth specifically for Office 365, capping YouTube as well. And you can see all of that in the chart. As for the users, they still have access to YouTube, just likely not with the ability to get access to the high-definition video feeds.



Ahhh...Happiness!

- The CIO is happy, as the user experience for the most visible and essential business applications is preserved.
- The CFO is happy, as bandwidth costs are impressively managed, if not declining.
- The users are happy, as they have a consistent user experience that allows them to get their jobs done while at the office, rather than having to perhaps go where bandwidth is in ample supply.

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