

題目：Learning from Global Manufacturing Leaders

演講人：Mr. John Buten, Senior Industry Marketing Manager, Akamai Technologies

午安，你好！

Pardon my Chinese is not very good.

I will try to speak slowly for everyone and make sure to address everything for everyone.

I am the Industry Marketing Manager for our enterprise business, which is a relatively new business for Akamai, we've been doing it for only six years out of our twelve-year history.

My role is to evangelize Akamai to enterprise and to help enterprise customers be able to use Internet better and lastly get feedback from customers and companies from enterprise space so we can develop better solutions. I run our customer advisory board with manufacturers like General Motors, banks like Standard Chartered and Citibank, to try to understand the needs of large enterprises. Today, Joint Force Technology was good to invite me to come to share some of my experiences as I travel around the world talking with manufacturers about what their needs are and how they are using the Internet.

To follow on Yuan, we (Akamai) don't say we are the Internet but we make Internet work as you heard 25% of the traffic on the Internet runs over Akamai. The reason why Akamai exists is that the Internet is not very optimized for business. Internet has a lot of challenges for it. It was created for resiliency, which is much more a military concept than a business concept. The performance is not optimized, the availability is poor, and unlike corporate IT where we all used to work in a wide area network where things are predictable, we know what's connected to the network. In this case we don't. We don't know how many people are connected, what the load will be. It's open and open to attack.

Internet is increasingly complex. As Yuan was mentioning that we have lots of different browsers connecting, lots of Java runtime environments. We have, on the video side, lots of complexity of different video players. And now even the basic protocol, TCP/IP, we are seeing the transition from IPv4 to IPv6. Lots of changes in the environment. Our goal in the manufacturing space is to help manufacturers realize the promise of the Internet. The Internet has transformed many industries and there's lots of hope to transform manufacturing, helping you reach customers and reach market faster, improve speed and also it's an opportunity to create the direct connection with the customers. We'll talk a little bit of that as well.

As you heard from Yuan, we now have run 90000 servers and it's continuously growing. We are delivering 4 terabytes data at peak every second, 3.5 terabytes per second on average. The interesting thing about this is that we talked about complexity and scale and outsourcing. Akamai is a large platform, 90000 is a big number but more important to our design is that it's distributed. They are in 1700 locations in 1000 different networks. This gives you the reach around the globe. That's the center point of design of Akamai's network, which meets the needs of global enterprise today.

I won't go too much into our technology but just want to give you a quick review of what it is we do to help explore some of the cases.

Specifically in Asia, we are delivering 300 GBs per second, 25 GBs per second in Taiwan on an average day. That peak though is up to 50 GBs we've seen so far in Taiwan so on a heavy day for consumption we see double amount of traffic. The interesting thing for us in enterprise is that all these statistics are mostly about the consumer Internet.

When we look at all the size of traffic, it's the downloads of music, the downloads of virus software, the downloads of Microsoft patches. All of those are coming from Akamai platform and a lot of videos as well, most of them are sports video or video networks like Skype etc. When we are talking about enterprise, only about 10% of the traffic is on enterprise, but increasingly about 15% of Akamai's business and customer base is in enterprise space. So much smaller amount of traffic but much more important to your business. Many people understand this consumer Internet and see Akamai as a CDN(Content Delivery Network).

We started at that space but both of our business now (consumer Internet and enterprise Internet) is moving into dynamic solutions. I will talk about how we do that and what that means. So when you are accessing your bank account or a server's record or a CAD/CAM file, you don't want that data cached of a server and being stored there in the same way you would a LadyGAGA song. Instead that has to be delivered just to you. So we help those kinds of companies and banks and manufacturers be able to deliver dynamic applications across the Web. On the one hand you have application server, on the other hand you have your customers. You integrated with Akamai very simply through the DNS system and that allows you to access this big network of 90000 servers that sits on top of public Internet.

So you can access that portion of Internet by working with Akamai. When you do that, what you (enterprise) access is a server that's very close to wherever it is your origin and datacenter is and when customers come to you, they access an Akamai server that's very close to them, usually right in their ISP. So to them (customers), they feel like they are connected to you in that local datacenter right in their local ISP, even if your datacenter is all the way across the globe. This is where the magic happens. In between the two Akamai servers on Akamai platform, rather than just pulling static data out off the servers, we've been offering dynamic web acceleration service which brings content dynamically across the Internet.

It makes it look like we have a MPLS private pipe connection but that would be too expensive. Instead, we are using public network and just make that public network work like it's supposed to with performance. We have three different technologies we use to do that. The first is SureRoute. We route the traffic to a different path, 80% of the time we would pick a different path than public Internet would choose. The routing algorithms of the public Internet are designed by the ISPs and designed to reduce cost. If the cheaper way to get you from here to Europe is through Canada, it will go that way. But if the faster way is directly through middle east, then we will route that way.

The second is Akamai protocol, the TCP/IP protocol of Internet is very inefficient and was designed to make sure the connection could happen but not they can happen as fast as possible. So Akamai has developed a technology to kind of cheat TCP/IP and make things happen much faster with fewer route trip times in the middle mile. Lastly Pre-fetching, these are application-layer optimizations, so

when you are web browser calls, within that web browser there will be 30 different objects, little service calls, usually the browser will ask for 3 or 4 objects at a time. Instead, when Akamai gets the page back, at first time it will ask all thirty of them. So it feels very responsible.

That's a little bit of background about how Akamai does dynamic applications. I am going with some case studies now about what we see people in manufacturing doing. I thought this was important so that we can upfront answering questions about how does Akamai do it and how does Akamai do that securely and how do they do that so my data is sitting in Akamai's network. Those are very common questions and important concerns, especially when you have real enterprise business running over Internet. The way I thought I would talk about what I have seen from Akamai and manufacturing space, what our customers are doing is talk a little bit about timeline about how manufacturers use Internet has evolved over time.

We start back in 1996. How many people were using Internet in 1996? Maybe you were on telnet system, people might have been using AOL or another dial-up service, which was very popular in 1996. In 1996, one of my first jobs was doing marketing and technology with Chrysler, I was put in charge as a young person who knew technology to run our advertising on AOL, so we had graphic banner ad. It wasn't 7k, it had to be limited to 700 bytes.

It was kind of experiment at the time, what is interesting is when you look back, some of the new things we are doing now, we were already present there. Web 2.0 for example, listening to customers, it was very new and interesting. In this case, one of our most successful campaigns is we did one for mini vent users. We had a contest to ask people to design the mini-vent and asked for different features, this was all open on a bulletin board. This created lots of questions in Chrysler like what if somebody posted something that's obscene.

All these questions we have doubted is now understood. You can do Web 2.0 but you need somebody to monitor it. In the end we got great feedback, the winner of that idea had been put in production, which was to be able to remove the cigarette lighter from mini vent. So you can order it as non-smoking mini vent and you didn't need to worry about kids sticking their fingers in the cigarette lighter. It showed the company was listening to its audience, which were mothers. So branding and marketing are certainly evolving globally. We have many manufacturers, automobile companies in particular, are hosting their brand websites globally on the Internet from one single location, much of their content is static so they can spread it around the globe across Akamai platform. There are other elements that are dynamic, but they can put a lot of application logic out on the Akamai server, make very thin server costs and still have great performance.

The evolution from static brand site was customer portal, where people were building web application to access either their catalog, getting rid of paper catalog, CD ROM and moving things online. Another example was having customer service portals where you can track your order & see your account status was. One of our corner stone case studies is HP which is both the manufacturer of printer devices & also a technology software company & also a consumer company. They have been doing software download, drivers & a lot their marketing site all over the world on Akamai. But then they were evolving & looking at dynamic application in particular on the developer portal. So being a software provider, being a services company, having access to software development kits, to training, to knowledge base, all these were really mission critical & they built & invested heavily to a service portal.

Problem was all the developer in Asia cannot access the portal & ask for file to be send offline. HP came to Akamai for help & we showed them 60% performance improvement in Europe & Asia. In the ROI study, it would cost them upward of 2M dollar every year to be able to maintain data centers in Europe & Asia. Instead they were able to have ok performance in North America, not so good in Europe & not working in Asia & Akamai were able to bring the Asia performance to the similar comfort as in USA.

A great success & they were able to save lots of money from building out their own data center. Another example that is more hardware then software, SKF is a manufacturer of a bearing components for other manufacture which is an ODM mode of operating. For them to be able to sell they needed to help other manufacturers put their components into their designs.

However again poor performance in Asia from their headquarter in Sweden hence they too explore building their own data center in Asia but resisted due to cost. Akamai improve their page load by 4 folds & page download worldwide improved from 9sec to 3sec & in Asia even greater improvement. The end result was more people using the portal & that also people would access more file on average per visit. This was a very good improvement to them.

The next evolution we saw was the movement online of more package application. Building a dynamic customer portal gets very challenging & integrating to data is very challenging so everyone was very excited as SAP come out with Netweaver, Oracle bought DEA & starting integrating of having a web front end to these former client server application, being able to take these application & put them into a portal environment.

In 2005 is when people started turning these from WAN from internal audience accessing things over a browser to pushing it out into the public Internet. Unfortunately, this is when Akamai gets to say "it looks like the Internet is not working". Akamai would receive calls to say we put this application into Internet but Internet is not working. Such as Supply Chain Management, in this case SAP or Ariba. We have at least half dozen customer running Ariba over the Internet on Akamai . There is a big push in manufacturing especially to reduce cost & use the supply chain software to have better negotiation & common procurement around the world.

The issue then was that poor performance was casing poor adoption especially in Asia & this big effort from the CEO to reduce cost was not able to have the performance & adoption they hoped to. In one particular case, Akamai were able to improve performance by 6 folds into APAC & increased adoption & reduce cost.

Another example is Product Life Cycle Management. Here is something close to home, we see a number of customer on SAP especially in the apparel space & footwear space where they are trying to deliver CAD file & design file into factories particularly in China.

These files are their intellectual property & they don't want them to spread out. They were creating private line connection to individual factories to maintain that access. The problem was keeping intellectual property is one goal, but of course just in time manufacturing, finding the best supplier, finding new sources of supply is another goal & they saw that it takes at least 2 months often as much as 6 months to run new MPLS line to new factory. They shifted their goal & starting exploring can we use the public Internet to be able to reach these factories. In this one case, we studied with them on a trial of running SAP portal on public Internet on MPLS & on public Internet with Akamai.

In this case this is before using WAN optimization controller. Using WAN optimization we would expect MPLS to be pretty comparable to Akamai's service. But without it Akamai service was a performance because some of the application optimization, because we are able to bring files & make files appeared to come from closer than a MPLS server which is just bringing the all the files across the entire distance. So we were able to improve performance by 50% & really improved speed. Also another benefit was improving business continuity. One thing that they found was that MPLS can be unreliable in China & the Internet just doesn't work.

Lastly talking about Project & Portfolio Management, we see one of our flagship there is Windchill where PPM their SAAS version is on Akamai & lots of customers use that. We also see a lot of people doing round the clock engineering with custom application especially in the semiconductor space. Those files can be gone over the public Internet or Internet in general because they are somewhere between 10MB or 10GB in size. They tend to be using secure FTP or using other software using SSL VPN. One of the problem is that can be really slow. It can take up to an hour or more to load those files. With Akamai we are able to bring those time down to 5 - 10 minutes which is still pretty uncomfortable but was a major benefits to these organization.

One of the examples we have is customer who found some of their employee was getting frustrated with their service & uploading their CAD/CAM file to Dropbox because deadline was approaching & Dropbox was not a secure location where you should be putting your semiconductor products on. I think Yuan touched on this, when we deliver these applications, right now they are delivered from datacenters, but looking forward, we see these applications increasingly over the cloud, especially things like Ariba.that are commodity applications, they aren't going to really differentiate your business.

You are going to see those delivery on the cloud, which is great cost saving, we are increasingly seeing people wanting to deliver those on the cloud. The issue then becomes access, that's fine for your road warrior Internet users if it's sales automation or CRM. But if you have a WAN user who is accessing that, in particularly if it's a chatty application like collaboration on Lotus, it will totally crowd the WAN, or you will have backhaul issue. We have customers that are accessing s SaaS application, the user is in Europe, the SaaS application is in Europe. When they are home it works great, when they coming to the office, the traffic goes all the way to San Francisco, then goes out through the firewall, then comes back to Europe on every single transaction. That's pretty common also.

So Akamai is evolving its platform, we are in all over the ISPs, we can accelerate the Internet version of these cloud applications. The next step for us is what we call hybrid cloud. We are pushing the Akamai servers into the private WANs, we just announced a partnership with riverbed, to put our servers in the WAN, and also announced a partnership with Websphere Datapower. When somebody in the WAN is accessing an application in the cloud, we can do some of acceleration not just to this point (Internet) but all the way here (Private WAN), even be able to pre-fetch and cache content locally.

Let me move a little quickly to online platforms. Manufacturers now have a couple of customer portals, a couple of customer applications, two or three packaged applications. The next step we see is a lot of people are moving to create platforms, build infrastructure around delivering applications on the web. The example I want to share is GM. GM moved their dealer application from proprietary client-server app that work for satellite connections onto the Internet in around 2002. It's called dealer net. They then though took all the other applications that they were doing and realized let's try to consolidate and focus on specific platform.

There are over 40 applications they are running on this new GM global connect, everything from your OnStar to serious satellite , one of the most recent ones they added was a Chevy Volt electric car, they need to create a wait list for that so that the dealer are able to take wait list more online and be able to manage wait list. Customer service people on the phone are able to access that application too. The benefit is they were able to do authorization and access once, they can take the same infrastructure and process for managing access in users across all these applications. They can set standards about which web tools they use, how they use Flash, how they do web services, create standards on that for all different departments and divisions' application developers. They can do monitoring, reporting and auditing at scale and do it well. They are offering better service to their internal customers building apps. It helps them bring those apps much faster by having all this infrastructure.

Lastly connected device that Yuan related, which I think it's really important for all the device manufactures in Taiwan. We've seen this for a while that the Apple model has revolutionized the business where manufacturers seek access not just selling the device once but selling the services on top of the device. Right now Apple's ecosystem is almost entirely private, where they are bringing specific content providers onto their store and their platform. As we see the industry evolving, that proprietary, vertically-integrated model just doesn't scale to all the uses that consumers want to make of it. There's room for more than Apple in this market. One of our goals is to help participate in making that possible, even though Apple is one of our largest customers. To look at the opportunity, you are the device manufacturers, your products go to Bestbuy to get to the consumers. In the past, they then just used that how they will. But now, with embedded technology in the device, you have that direct relationship with customers. You are the portal for running the access from software publishers, games, content providers, and the Internet providers.

The device is the distribution channel. The device manufacturer is in a great position to be able to strike relationship and be able to claim the loyalty on those media sales. Some of the challenges, here I will focus on video, look at this from content producer side. Think about this from a movie studio or gaming provider, when I want to take my content and get it ready for the devices, and I see that device market is going to count for 100 billion dollars for the sales, I want to take advantage of that. But to do that, I need to take my video and run it in four different bitrates, I need to do it in different formats (flash, silverlights ), I need to do it for different security schemes, for each different device environment. It's way too much complexity to be able to manage. Akamai is in the middle right now, between Internet connected devices and all of our customers who are content providers, we are trying to create the solutions. We already have HD Network which is really focused on delivery, being the outsource provider of delivering that video content, and also being able to create reporting analytics back. The next step for us is our Media Cloud Services, which will allow us to do in our cloud, take in one file, re-encode it in different bitrates, packages it for different environments and different encryption and security.

Those are all focused for producers. On the device side, we just announced an initiative earlier this year to have an open-source connected device specification, so we want to work with connected device manufacturers, we are already working with Apple and some of the game platforms, but we want to invite everybody in this room to start a dialogue to create a standard around how to communicate what the playback rates and rates switching that are supported on different devices, what security models are supported, what reporting and beaconing are supported on different devices. We can do that and create standards, it will be much easier for everybody to gain access to all the content and monetize it.

Connected Devices we think, are mostly our smartphones and our tablets. But for all the manufacturers here, we should think about other outlets too. Here's one example, again back to GM. OnStar has made cars connected devices. Today they are squeezing out phone services providers, they are also competing with GPS service providers. In the future, they want to see the movies that kids watched in a mini vents come to the OnStar system. Another example, Kamatsu, who makes backhoes and bulldozers, backhoe and bulldozer are connected devices (hopefully they are not watching movies). Kamatsu has a new portal called Contracts, those devices upload data to this portal, which provides location information on all those figures and also service information with a goal in the future to be able to do managed service plans for their customers, also start doing applications in those devices, such as timesheets for people who are using these devices. Lots of opportunities for everything from large to small.

Quickly on security, by making that connections with customers, we used not to worry that much about security in the manufacturing environment. Things like DDoS were really for the consumer world. But what we do see is that the criminals and bad guys follow the news. This is one of the examples that a DDoS attack against connected device manufacturers, the bad guys targeted its e-commerce portal and their account management portal and also their device portal too. They were targeting to bring down the access of these devices back at home. This was old-fashioned protection wrecked for security services. We have seen more dangerous one. We all know the story of Sony. We are seeing increasingly DDoS as a front-door attack to be able to make people vulnerable to other attacks to do really dangerous things like steal data. As we get closer to customers, the other side is we need to be more responsible for managing security. Rather than talking about our solutions, let me just wrap up.

Just to conclude, by making Internet work for manufacturers, our goal as I said, is to help you leverage the power of Internet. We see Internet being a very transformative technology, that's why we are in it, and I think that's why you are IT because it changes business. We've seen it changed the newspaper and publishing industry, music industry, travel industry. I think we are in this room because we want to be part of changing the manufacturing industry, changing it while we control it, instead of waiting for it to change on us. With that, we have some time for questions.

Q :大多數的台灣製造業IT都是decentralized的狀況，Local有自己的政策和管理人員，以Akamai的經驗，企業如何克服這樣的困難，讓IT的建構與管理更集中化？

A : That is a very good question. The question was, as I understand it, how do you centralize IT and overcome the organizational barriers. The examples I gave were where an organization said we are delivering to Asia and we found a way not to build datacenters. It's very different when you have a group in Asia and you have somebody already in the datacenters. You ask everybody in every country, and they will all say our customers are very different from corporate customers. They are right, but they also, is usually when you dig into it, have a lot more in common. One of the things we've seen being very successful is that you can fight it with disciplines, or you can try coats it with incentives. It depends on the organization, some do disciplines very well, some do incentives very well. One example is GM, by creating lots of infrastructure and tools, they created incentives to move their technology into central IT office. A lot of those application centers would have been in different stovepipe around supplies, around

channels, around consumer marketing, then being able to provide additional tools from that central location, then they will be able to overcome it. Also, centralizing doesn't mean bringing it to headquarters always, we see lots of organizations that have regional centers of excellence. Some of the banks, such as Standard Chartered, which has institutional in London and retail in Hong Kong and Singapore. They are able to manage their balance and find the role for everyone to do very well.