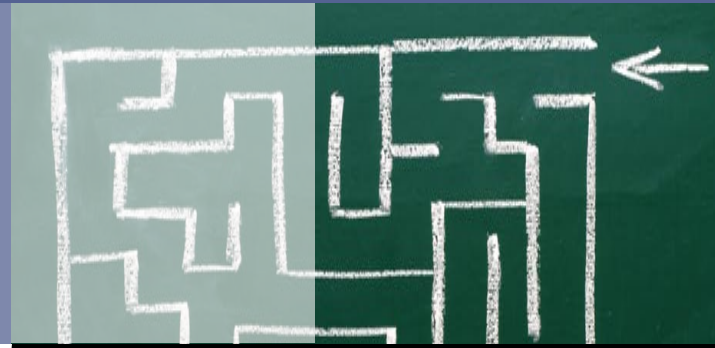


Précis

Thoughts on IT in Business



Navigating Bandwidth

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Navigating Bandwidth

The age of any place, any time, any device connection to any information is here.

With IT strategies such as virtualisation and consolidation now mainstream and the uptake of software-as-a-service (SaaS) and Cloud models increasing, more and more users are accessing information from afar.

Bandwidth – or the lack of it – is fast becoming a focal point for IT and for business.

In this issue of Précis we consider the converged network that today must carry data, voice and video. We debunk the myths of managing network performance, look at the role of bandwidth in emerging markets, and explore the rapid rise of mobile Internet. Our case study and executive interview with Anthony Christie of Global Crossing explore managing bandwidth across geographies.

We conclude that organisations must address both “house-keeping” and longer-range business strategy – and that having a plan and partnerships are critical. As Andy Cocks, Solutions Director for Asia, advises: “Get advice. It’s cheaper than having your network fail.”

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Editors



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Now more than ever, enterprise networks combine data, voice and video, and are becoming increasingly more dynamic with the expansion of mobile devices. As legacy networks carrying traditional data applications collide with new wireless and IP networks carrying real-time, bandwidth-hungry voice and video applications, network availability and performance are increasingly in jeopardy. With so much at stake, proper planning and robust network management can no longer be an afterthought.

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Most mobile operators were set up for voice traffic. So the exponential increase in demand for mobile bandwidth that is being driven by end point devices such as Blackberries and iPhones – means that there are indeed problems of one sort or another related to mobile broadband access in most countries. The underlying issue, however, is not so much the availability of bandwidth or the performance of networks as it is the ability of organisations to commercialise mobile Internet usage correctly.

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The challenges of managing bandwidth in emerging economies, as they embark on levels of Internet activity considered impossible even a year ago, will be business rather than technical ones. Networks globally are under pressure for one reason or another – sometimes regulatory, sometimes technical, and often financial. There are, however, always ways to make things work.

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Lack of high speed WAN access may be technical (lack of cables) or regulatory in origin. Latency issues and problems with the performance of a network may be technical in origin. But, in all cases, they are also business problems which can be resolved through innovative thinking – or, at least, by a willingness to look at the issues positively. Datacraft Asia's recent upgrade of its own WAN is a case in point.

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The Perfect Storm

Mastering the Challenges of the Converged Network

Now more than ever, enterprise networks combine data, voice, and video – and are becoming increasingly more dynamic with the expansion of mobile devices.

As legacy networks carrying traditional data applications collide with new wireless and IP networks carrying real-time, bandwidth-hungry voice and video applications, network availability and performance are increasingly in jeopardy. Forward-thinking CIOs need to be mindful that just as an optimally functioning network can prove the life force of a business – driving increased sales and improving efficiencies and customer satisfaction – a malfunctioning one can seriously impair it.

With so much at stake, proper planning and robust network management can no longer be an afterthought.

Why today's networks are working harder

Convergence means that today, enterprises are putting more and more mission-critical data on their infrastructure. In the past, there weren't issues from the reliability standpoint. When one was just dealing with data, the challenges were fewer as protocols worked at making sure it all arrived at the right place at the right time, but once one adds voice and

video into the mix, reliability and quality issues in the form of delays and latency quickly come to the fore.

The advent of Cloud computing, while opening the door to cost savings (as companies can avoid capital expenditure on hardware, software, and other peripheral services, paying the provider for only those utilities they use) can in fact represent a double-edged sword. As Dimension Data solutions director, for Asia, Andy Cocks, points out, Cloud computing is changing the entire architecture not just of the network, but of computing as a whole, leading to business changes in general. "At the computing level, for instance, desktop virtualisation and data centre consolidation are serving business needs by cutting costs and improving security and productivity. But they're also adding pressure to the network," he explains.

Video is becoming increasingly democratised. In emerging economies, for instance, more people watch television on their cell phones than on television sets. Webcams are proliferating in organisations nearly as fast as they are in domestic situations. And Telepresence is becoming an executive must-have. Entire organisations, Cisco being one, have restructured their culture away from business travel to video conferencing – and are saving millions in the process. Clearly, video – and the WAN that carries it – is becoming a strategic tool. It allows for a new approach to business.

It is also making more demands on the WAN than most were designed for.



The fact that social networking facilities such as Facebook are being accessed via the corporate network by employees through their desktop and mobile devices is further adding to the network burden – as is homeworking. Yet, retention of talent makes it necessary to make the network work harder.

Bandwidth is not necessarily the issue

Given the escalating demand for video in organisational communications and the proliferation of end devices capable of receiving and transmitting voice, data, and video, one might be forgiven for assuming that bandwidth is the major challenge of the converged network.

Actually, the challenge is more complex, the point being that, when it comes to the ‘perfect storm’ of demands on bandwidth that appears to be engulfing converged networks at the moment, an organisation’s focus should be on the architecture of the network and astute management of traffic, rather than simply the bandwidth that is or isn’t available.

The issue of bandwidth is, in essence, one of cost rather than operations. In the end, like most challenges that confront a business, bandwidth is a commercial problem. It’s up to the business to address it in ways that make most sense to the business – rather than seeing it purely as a technical obstacle.

Yes, there certainly are situations in which the availability of bandwidth is prescribed, sometimes because of short-sighted regulatory circumstances and sometimes because there are just not enough cables or satellite links in a given region. And, sometimes, cost can, for all sorts of reasons, be prohibitive. However, in most developed countries and among all the global telecoms suppliers, there has been an oversupply of bandwidth for the best part of ten years. For organisations wanting to access more bandwidth, therefore, it is a buyer’s market. More bandwidth really shouldn’t cost more money – because every telco is desperate to light up the dark fibre that it has had lying around for years. It’s a matter simply of being a determined customer.

Where bandwidth does become an issue is in intra-country or intra-organisational situations. An organisation might have

Bottlenecks are an inevitable component of networks. And that’s where management of the network becomes a crucial factor.

large pipes coming into its own premises, but its customers and suppliers may have far smaller pipes themselves or in the regions in which they operate. For this reason, bottlenecks are an inevitable component of networks. And that’s where management of the network becomes a crucial factor.

Do what businesses do: make a plan

When it comes to mastering the challenges of the converged network, the importance of proactive planning cannot be underestimated. As Dimension Data chief technology officer for Europe, Neil Louw, says: “If bottlenecks in networks are inevitable, then it’s possible to plan for them. To some extent, that planning comes down to a trade off between network performance and network cost but, achieving an optimised network that fulfils the needs of most users most of the time is about using the right tools in the right circumstances. It’s about knowing, for example, when to use a virtual private network (VPN) or when to commit your operations to the Internet.”

Planning is not something that the IT team can do in isolation. Today’s corporate network is a strategic resource. It’s what enables organisations to operate – at many different levels. It is also, therefore, an organisation’s first point of failure. As

a consequence, it must be architected to ensure that it is capable not just of delivering data and voice and video – but also, and primarily, the organisation’s business objectives. So, the CIO has to go beyond technology to business strategy. Indeed, successfully harnessing the power of the converged network and its applications will only be achieved if the organisation’s business goals are clearly identified and understood by the CIO and his team. It involves the business and IT working much more closely together to understand what the business wants to do that will generate traffic over the network. The CIO then has to plan the architecture appropriately and manage the network proactively.

For many CIOs, however, working with the business to plan for network traffic has been made more challenging with the advent of Cloud computing. Software as a service (SaaS), particularly, makes it possible for, say, a marketing department to buy its software requirements from a Cloud provider without consulting the CIO. In doing so, it changes the type and volume of traffic running across the network, without the CIO necessarily having been informed of the changes.

“The bandwidth access and performance issues that are created, however, do become the CIO’s usually very urgent business,” Louw says. “So it makes sense for the CIO to take the initiative and stay ahead of the business in terms of Cloud and other computing trends so as to be in a position to recommend courses of action that would both help the business and be beneficial to the network.

“This puts the CIO in a position to plan more accurately the architecture that will be most relevant for the organisation – ensuring that is flexible and robust enough to accommodate whatever changes are necessitated by new technologies the business might require.”

There are, of course, also tactical interim steps that can be taken at any stage in the process of building the optimal network for the organisation – including load balancing, wide area network (WAN) optimisation with technologies from companies like Riverbed and Blue Coat, and moving

voice traffic from the WAN to the Internet using Cisco’s new Intercompany Media Engine (IME).

Throughout the process, it’s essential to regularly check in with one’s business stakeholders to make sure the design of the converged network is meeting their requirements... and will continue to do so going forward.

The rise of intelligent networks

The good news for CIOs grappling with the innumerable challenges associated with convergence is that more and more of what used to be end-point functionality is being embedded into the network. Technologies, such as caching, WAN optimisation, and load balancing, that currently sit on top of the network are becoming part of the operating system of intelligent networks.

“In the end, video functionality will become an integral part of networks, with users needing only end point devices to access it,” Cocks says. “Organisations won’t need to have their own video facilities running on top of their own WANs.

“Before that ideal end state arrives, though, the best option is to take a phased approach – optimising the network that you have for the traffic that you want it to carry. To do that, you may need to make an interim price / performance trade off. Do the obvious things, first, but keep an eye on where you want your network to take you in the medium and long term and make sure that your network architecture is refined over time so that it can get there easily and cost effectively. Network management is a well-understood discipline among systems integrators and vendors and there are some very good skills out there. Get advice. It’s cheaper than having your network fail.”

Steering for the future

The power of a converged network is indisputable. Convergence of communications technologies is letting businesses respond to opportunities in the marketplace in real time and with greater flexibility. Transforming your enterprise into a seamlessly converged network won’t

happen overnight, but your business will quickly reap its benefits in the form of more productive users and greater responsiveness to customers' needs – if it's done right. Ultimately, successfully mastering the challenges of the converged network is not a point solution. It involves the business and IT working much more closely together to understand business needs, rigorous planning to ensure an architecture that can support these needs and astute and ongoing network management.

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successfully
mastering the
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the converged
network is not a
point solution.

Is your network up to the challenge?

A Spotlight on Intercompany Communication

Cisco's new Intercompany Media Engine (IME) is a new entrant to the converged network story. It aims to reduce bandwidth requirements while increasing productivity.

The main functionality of IME is that it provides between organisations all the Internet Protocol (IP) driven telephony and video facilities, such as Presence, that organisations currently have within their own environments. This includes features that enable people working for organisations that use Cisco's IP telephony or video end-points to see whether the person to whom they want to speak is on the phone and set their own phone to alert them when the person is off the current call.

IME makes such communications enhancements possible outside of the business, provided that the company being contacted also uses Cisco's IME or is part of a 'federated' set-up in which multiple organisations agree to be linked to one another for the purposes of gaining IME-type advantages.

IME works across the Internet, obviating the need for organisations' internal IP telephony systems to inter-operate with traditional PSTN networks in order to reach others in their federated system. A PSTN link in

the chain would, of course, cause the callers to lose the IP facilities – and not be able to see each other's status on the system.

As Dimension Data chief technology officer for Australia, Gerard Florian, points out, there are no quality of service guarantees on the Internet. "So if the IME-based call quality drops off for any reason, IME automatically ensures that the call is re-routed via traditional PSTN networks and the callers can continue to talk even though they temporarily lose the ability to see IP-based call status and use IP-based call management tools.

"An additional advantage of IME using the Internet is that inter-organisational calls can be made at the cost of a local call. So, using IME gives organisations richness of information about connectivity that enhances productivity and also reduces the cost of achieving that extra productivity."

Because many IP handsets now come with built-in cameras, IME gives federated organisations the means to use video connectivity.

"In short, what IME does is enable a Skype-like experience within the enterprise," Florian says.



Approaches to Optimising your WAN Connectivity

80% of your WAN Problems are Performance Related

Precis is designed to get to the heart of the burning ICT issues confronting organisations and, consequently, acts as a kind of ICT mythbuster.

Which is why, in other articles in this edition, we have highlighted the fact that the real problems with converged networks have less to do with access to or availability of bandwidth than appropriate commercialisation of services and relevant management of the network.

In this discussion, we bust the myth that wide area network (WAN) optimisation is about finding and correcting faults on the network.

“In a recent survey we conducted on network support environments, we found that only 20% of the tickets logged had anything to do with faults on the network,” says Dexter Wee, Dimension Data’s head of performance optimisation in Asia. “All the rest (80%) of the issues were about network performance.

“Yet, the focus of the support environment is almost 100% on faults. So, both human and financial resources are being expended on the smallest part of the WAN optimisation discipline and organisations continue to struggle with network performance. In effect, all the time, money, and effort being spent on faults aren’t making things better.”

Who cares?

Wee believes that the reason organisations don’t focus on proactive performance optimisation is that when faults occur, they’re glaringly obvious and disrupt the entire organisation. Performance issues, on the other hand, tend to manifest as collections of niggles in pockets in the organisation.

Nonetheless, less than superb network performance has a profound effect on organisational productivity.

Wee cites the example of an insurance company that used to be able to print one policy every 0.5 seconds. However, when the company consolidated its data centres into a single location, the extra demands made on the network and the distance of the data centre from the end-users created

All the time, money, and effort being spent on faults aren’t making things better.

latency problems of such an order that printing slowed down to one policy every one second. The result is a 50% drop in productivity.

This resulted in the organisation not being able to complete its policy prints overnight – and forced it to reverse the consolidation of its data centres.

“The business disruption of inadequate network performance coupled with the cost of having to back track on data centres consolidation could so easily have been avoided, had the organisation been focused on proactive management of network performance instead of faults,” Wee says.

Think before you consolidate

In general, the global trend towards consolidation of data centres with the objective of reducing duplication of resources, reducing costs, and increasing security, synergies, and efficiencies, means a significant trade-off against network performance.

As Wee says, “consolidating applications in one place always increases the latency between the application and the end-user. If the end-user was transacting at half a second per screen page, that meant that in a minute she could do 120 pages. If you slow her down to one page every two seconds, then her productivity drops to 30 pages in a minute – a four-fold drop in productivity. That’s huge loss for that one employee. Multiply that across all your employees and you’ll be able to calculate very accurately the negative impact on service levels and productivity.

“Proactively managing WAN performance, as distinct from an exclusive focus on faults, is a business imperative as much as it is a technological necessity.”

Wryly, Wee points out that consolidated data centres often lead to latency of a much more subtle but very important kind. “Data centres are usually consolidated close to corporate headquarters – where only some 20% of customer facing business is conducted. It’s the branches that own the

Incorrectly planned Windows 7 upgrades can also sneak up on networks, using so much bandwidth that they become an accidental distributed denial of service (DDOS) attack.

customer and where 80% of the revenue is generated. The irony is that, with network latency, the CEO has the best response times from the network and the branches have the worst!”

Unexpected problems

A common mistake is consolidation of ‘low hanging fruit’ such as Microsoft Exchange and SharePoint without consideration of the resultant increasing expenditure on bandwidth.

“The only way to address the fact that accessing Exchange over a WAN link slows the network to a crawl and makes SharePoint unusable, is to use optimisation technologies to remove up to 70% of traffic,” Wee says.

Incorrectly planned Windows 7 upgrades can also sneak up on networks, using so much bandwidth that they become an accidental distributed denial of service (DDOS) attack.

Virtualisation disasters

Virtualisation as applied in disaster recovery is another area that impacts network performance. According to Wee, organisations tend not to think about what would happen if a virtualised data centre went down and data had to be migrated to another data centre to continue service.

“Often, when services are restored – at the failover data centre – response times that used to be, say, 0.5 seconds per screen per transaction have become 5 seconds.”

Another scenario could be, in a 24x7 continuous operation, that data centre 1 fails over to data centre 2 and the user has to establish a new session with data centre 2.

“This is not acceptable,” Wee says. “It’s vital, therefore, to have complementary virtualisation technology running on virtual machines, so that any switching among data centres does not deny users access or drop performance.”

A proactive approach to WAN performance doesn’t necessarily have to entail a complete rework of existing helpdesks and internal support infrastructures – because reliable, cost effective managed WAN services are now available.

“The point about managed WAN optimisation services is that they address the steady state – that is, what currently exists in the organisation,” Wee says. “They achieve this by cutting costs associated with the WAN, particularly but not exclusively in the area of performance. They also enable organisations to optimise their WAN performance instead of having to buy extra bandwidth.”

What WAN optimisation should give you

The best managed WAN optimisation solutions enable clients to adopt advanced technologies quickly with minimal upfront investment. Lower upfront investment, of course, generates a faster ROI and frees up cash flow for other purposes.

A managed service should also give organisations additional options for deploying the technology as it best suits their needs and scale the technology as the organisation grows, without necessitating the installation and management of new equipment.

It should also free up internal IT resources for more organisation-specific requirements. Crucially, it allows for a single point of contact for many key network services.

Components of a managed service typically include outsourced installation, management, monitoring, and maintenance of WAN optimisation devices. Some provides include such a managed managed service as part of a broader portfolio of network consulting and design services.

Choosing the right managed WAN optimisation service provider is not difficult. By definition, WANs extend over multiple geographies, multiple branch offices, and, often, over extended value or supply chains.

The right managed WAN optimisation service provider is the one that has a wide geographical footprint and can, therefore, assist local offices or regions with their specific problems while ensuring that what is done locally integrates with and enhances the rest of network.

A proactive approach to WAN performance doesn't necessarily have to entail a complete rework of existing helpdesks and internal support infrastructures.

You'll Get More Out of Microsoft if You Optimise Your WAN

A large proportion of Microsoft applications or infrastructure enable or provide collaboration scenarios and, to be able to fully exploit their ability to boost productivity in the organisation, it's vital that the enterprise WAN is optimised. Or, put more bluntly, why have collaboration applications if they're going to be limited by an under-performing WAN?

Microsoft software is everywhere. Windows and Windows Server are deployed in more than 95% of all enterprises. Exchange is deployed in upwards of 65% of all large enterprise organisations. SharePoint is the fastest growing Microsoft server application of all time. Because these platforms provide file serving, directory applications, email and collaboration workloads, they are at the core of what many organisations do with IT.

SharePoint is inherently a centralised platform. Most organisations deploy a central SharePoint farm to provide collaboration and content services, enterprise search, social networking, and business insight services. SharePoint is commonly used for the enterprise intranet, acting as the hub for content and supporting team and department collaboration. It is invariably deployed in the data centre.

Enhancements and improvements to Exchange and Outlook over the years have made consolidation and centralisation a standard trend. Many organisations have significantly reduced the number of their Exchange servers by consolidating them to their core data centres and leveraging features like Outlook cached mode to access email over the WAN.

Consolidation and centralisation for basic Windows functions like file serving (CIFS) have also followed the consolidation and centralisation trend, which is consistent with the current global trend towards consolidating data centres in general.

This combination of core applications and workloads with centralisation in the data centre has made performance over the network vital, not only from the IT perspective of managing and optimising traffic and access but also, and possibly more importantly, from an end-user experience aspect. Slow or variable access to assets like SharePoint inhibits or stalls user adoption and, therefore, the business value of the assets.

In addition, the volume and importance of the data managed by the Microsoft platforms continues to grow as new formats like video are added and enterprise content management systems are migrated to SharePoint.



Rapid Ramp up of Mobile Internet Usage

Mobile Services Need to be Properly Commercialised

Most mobile operators were set up for voice traffic. So the exponential increase in demand for mobile bandwidth that is being driven by end point devices such as Blackberries and iPhones – that have more computing power than most desktop computers had ten years ago and are used mostly for data interaction – is putting immense pressure on mobile providers' bandwidth.



That, in turn, means that there are indeed problems of one sort or another related to mobile broadband access in most countries – even where there has been an oversupply of bandwidth for many years.

The underlying issue, however, is not so much the availability of bandwidth or the performance of networks as it is the ability of organisations, whether they are telcos, enterprises, or governments, to commercialise mobile Internet usage correctly. Inherent in that ability is having the correct network architecture.

Over supplied, under managed

In the Netherlands, for instance, broadband penetration is one of the highest in the world because of large-scale government and municipal investment in broadband infrastructure. The country has comprehensive DSL and cable networks, and has expanded both ADSL2+ and Ethernet capabilities to provide data rates to manage burgeoning customer demand for triple play services. In addition, the

number of significant fibre deployments represents one of the most extensive and cost-effective fibre infrastructures in Europe.

Some two years ago, the government gave the market free licensed mobile spectrum to drive broadband and competition in the business market. This eliminated the need for business users to have two telephones, one on the desk and one mobile – and gave businesses more choices in terms of doing business without a wire.

However, today Dutch mobile service providers are struggling to guarantee live voice connections between mobile callers, with most voice calls ending in voice mail. Subscribers are being given two months' free subscriptions to ameliorate their connectivity frustrations.

Why? Because although there's more than enough bandwidth, the networks are not smart enough.

Albert Lentink, Dimension Data business development manager for IP Multimedia Subsystems (IMS) in the Netherlands, says that the problem will be exacerbated when enterprises begin to equip all their employees with smart phones, pushing data requirements of mobile networks to unprecedented levels.

“Simply acquiring more bandwidth isn’t the answer. The demands on networks are going to continue to increase. It makes no sense, therefore, to keep adding bandwidth indefinitely – driving up costs and making you less competitive.

“Far better to optimise and better manage whatever bandwidth you have, so that increasing demands on the network don’t necessarily always result in having to acquire more bandwidth.”

Optimising isn’t differentiating

Dimension Data CTO, Middle East and Africa, Mayan Mathen, says that part of the process of optimising the network is, of course, of a technical nature. Caching, backhaul optimisation, intelligent routing, and load balancing are all ways of improving the performance of a network.

“Those are givens, however, housekeeping, if you like. The technicalities don’t help you differentiate your offering as consumers are locked into your network through their contracts even though they might experience connectivity problems. Nor, indeed, do they help you meet the specific needs of your target market. So you have to go back to business basics and make sure that you are commercialising your products and services in the most appropriate way to enable you to make a profit from customers that love what you do for them.”

Parallel markets

According to Mathen, mobile broadband is having a significant but different economic impact on two parallel markets.

Simply acquiring more bandwidth isn’t the answer. The demands on networks are going to continue to increase. It makes no sense, therefore, to keep adding bandwidth indefinitely – driving up costs and making you less competitive.

In emerging markets, more people access the Internet and various commercial services (and even television programmes) via their cell phones than is the case in developed markets. In developed markets, traditionally, most broadband Internet access took place via desktop computers. This is changing, with broadband access, driven by the demand for richer media, now taking place via next generation devices such as Internet television sets.

“A telling fact is that it has taken far less time to arrive at one billion mobile Internet users than it took to arrive at 100 million desktop Internet users,” Mathen says.

“The economic implications are clear. In emerging markets, mobile broadband is the primary tool whereby ordinary

people who could not otherwise have done so are obtaining information and being empowered to become economically active.

“By contrast, in developed markets, the impact is being felt at the business level. Mobile broadband is an operational differentiator, particularly in terms of business to customer communications.

“Either way, the ability to provide mobile Internet coverage of the most pertinent sort is what will distinguish the winners from the losers in not only the service provider space but also in the enterprise space, where employees have expectations of corporate connectivity based on their personal connectivity habits.

“The key to becoming a winner is to understand that convergence is happening at more levels than simply voice and data, with a bit of video thrown in. Entire industries are converging. The lines between telecommunications operators, television broadcasters, and Internet service

Either way, the ability to provide mobile Internet coverage of the most pertinent sort is what will distinguish the winners from the losers in not only the service provider space but also in the enterprise space.

providers are blurring. In emerging economies, more people view new media on their mobile phones than on televisions sets. Apart from smarter devices, with broadband becoming more accessible to a larger audience, the displays are getting so much better that it is easier for companies to advertise on new media than traditional media.

“At the same time, personal and professional lifestyles are converging. It’s very difficult to separate out which usage by employees of Wi-Fi hotspots, Voice over IP facilities, collaboration services, and social networking functionality is for work or for play.”

Latency in the network = latency in the market

In the midst of this commercial flux and lifestyle complexity, there is also the small matter of the physics of communication. According to Shannon’s theorem – which gives an upper bound to the capacity of a link, in bits per second (bps), as a function of the available bandwidth and the signal-to-noise ratio of the link – and in line with the physical laws governing the speed of light, a signal sent from Africa to Asia will simply take as long as it takes to get there, even with no man-made obstructions in the way. Throwing extra bandwidth at the problem doesn’t solve it. Latency is a fact of any connectivity, but more obviously so in mobile connectivity.

Who has the answers?

How, then, in the midst of all this flux and complexity, does an enterprise choose the right mobile services provider? Indeed, are there any service providers out there that have the ‘right’ solution?

Francis Lee, Dimension Data Telecommunications and Media solutions head for Asia, believes that there is currently no ‘one-size-fits-all’ offering.

“It’s very hard to master triple-play (voice, data, and video) services because, in all likelihood, you’re asking your network architecture for more than it was designed to deal with. In fact, most mobile networks need to be re-engineered.

“At the same time, for those mobile service providers who provide the services but not the network itself – and for the enterprises that use their services – there is the issue of lack of control of the underlying network. There is no way to guarantee quality of service, much less adequate security.

“In addition, from the network operator’s point of view, you can have the fastest network in the world, but if you lack the technical skills to support the back-end and the business skills to put in place those processes most appropriate for giving the user what he or she wants, your network will fail.

“What mobile broadband connectivity boils down to, for the provider, is being able to construct and then deliver the products for the target market you’ve selected. That’s a business problem. It starts with knowing what sells and who’s buying it. Only at that point can you decide how to deliver what you are selling to whoever is buying it.

“For the enterprise, mobile broadband connectivity boils down to being able to select the provider that can consistently, reliably, robustly deliver the services that you want.”

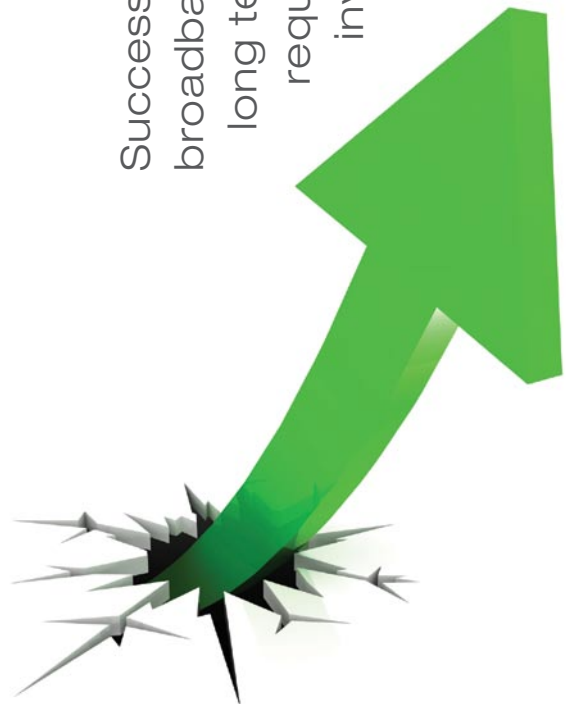
In it for the long backhaul

In making that choice, Mathen believes that it’s worth bearing in mind that successful networks – mobile, broadband, or otherwise – are long term commitments requiring vast financial investment. “Most traditional telcos take their time launching new services, because they research them in-depth, work out what the business model needs to be, and then dig deep, financially, to implement them in a way that integrates them with existing services.

“Contrast that with providers who try to put something together just in time to catch a user wave of interest, investing just enough to make it work. To whom would you rather entrust your mission critical voice, video, and data?

“Of course, not every new player is a ‘fly-by-night’. But, when you’re acquiring or deploying mobile broadband, it saves money and time to consult with organisations that understand the full range of implications – business, social, technical, and financial – for your network architecture and can, therefore, help you arrive at commercially beneficial decisions.”

Successful networks – mobile,
broadband, or otherwise – are
long term commitments
requiring vast financial
investment.





Ultimately, predictability of the experience is equally as important as quality of the experience.

Managing Partnerships

Précis recently spoke with Anthony Christie, Chief Technology and Information Officer at Global Crossing, for his insights and advice regarding the challenges of navigating bandwidth.

Could you provide an overview of Global Crossing and some insights on your role within the organisation?

Global Crossing is a USD 2.8 billion global converged IP services provider. Our organisation provides managed solutions including hosting to enterprise, government and carrier customers around the globe. My remit as Chief Technology and Information Officer includes taking responsibility for the classic IT function, the forward-looking technology design and assessment function as well as the ongoing management and improvement of our customers' experience.

With quad-play (voice, data, wireless and video) moving into the mainstream, and bandwidth-hungry

visual communications everywhere, what do you see as the key challenges facing CIOs in the enterprise arena from a bandwidth point of view?

There's no question that the advancements in immersive teleconferencing and collaboration that we've seen in recent years are inherently changing the way that businesses operate and causing the underlying business processes to be redrawn. The first key challenge that businesses face as a result of these developments relates to control. Bandwidth does not come free of charge, both from a network and equipment perspective, so businesses need to find a balance between the 'want' and the 'need' from a budgeting point of view.

Another major challenge relates to the fact that any of these network-based, multi-point services are only as good as the weakest link in the chain. If you need to communicate between six or seven different branch offices and one or two of them happen to be located in geographies where the infrastructure is not well developed, the overall experience will suffer. So predictability of service experience is – and will continue to be – a significant challenge for CIOs. Ultimately, predictability of the experience is equally as important as quality of the experience. As a service provider, if you are aware that there are weak points in your network, you obviously need to make ongoing efforts to strengthen them, but it's also important to ensure that you communicate these to your customers. Customers don't expect 100% uptime ... but they do expect you, firstly, to alert them of the existence of potential problems that could impact negatively on their service experience and, secondly, to proactively manage these issues.

What specific challenges do these developments create for carriers and telco operators? Could you provide some insights into what steps these organisations are taking to address them?

There are a number of different components that make up an end-to-end customer experience. As a managed services provider, our responsibility is to ensure that all these components work together seamlessly. Our customers expect us to pre-empt problems that can affect the connection by leveraging the tools and technology available to us, in the event that something goes wrong. To achieve this predictability of service requires that you ensure you have a hardened business process and are realistic about what physical infrastructure is available in developing markets, (for example local loops). It's also important to always be on the lookout for alternatives in the event that there is an outage, and, last but not least, to work very closely with your equipment providers. So essentially, success requires a highly collaborative approach across the entire infrastructure chain.

I don't think that any one player has the capabilities in this day and age – or ever will – to do everything on its own. Yes,

the world is getting smaller but it is still logistically a very large place. There are different norms, customs and degrees of development and regulatory freedom that enable you to 'get things done' or alternatively inhibit you, depending on where you are in the world. That's why it is essential that organisations establish a solid partnership network. Look for partners that you trust, who have an established track record and, importantly, who have an understanding of the local market. There also needs to be tight integration between all parties at a process level. Cultural fit between an organisation and its partners is also critical, but is often overlooked. When there is common ground in terms of how to behave, how to treat customers and which markets to target, problems are far easier to overcome when they arise. If, on the other hand, there is cultural misalignment, it doesn't matter how good your technology and processes are, the relationship is bound to falter and you're likely to miss the mark in terms of delivery.

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who have an established track
record and importantly, who
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local market.

What would you say are the most critical bandwidth and connectivity-related challenges faced by organisations looking to expand into emerging markets? And how can these be mitigated and addressed?

The key challenges associated with operating in emerging markets from a service provider's perspective are price, availability and terms. From a price perspective, there are a number of markets in the Middle East and Africa, northern and southern Asia and parts of China where price can be prohibitive. Problems relating to availability come into play where there are perhaps just one or two local providers in the game. In other geographies you may have a wider choice of providers but the levels of service and support being offered simply don't come close to what is considered acceptable in more developed markets.

As service providers, our role is to make sure that our customers understand the challenges in these markets and that we use our vendor management capabilities to constantly improve upon service levels that are below par. For example, if there is a lack of local infrastructure in a geography where a customer is located, we draw upon our pool of access managers, who will in turn manage the existing network of access providers and constantly seek out alternatives. We'll also look to our managed services partners in the supply chain to do the same.

How are telcos responding to the opportunities that exist in emerging markets?

The opportunities that exist in emerging markets are many and, over time, the challenges associated with doing business in these geographies will lessen as a function of time and investment. It is also important to bear in mind that it is not always in the best interests of local providers in emerging markets to try to move too fast. Often, the desire for expansion and growth is not strong enough, especially if you are dealing with a single operator who has little incentive to change.

In our experience, collaborating with the customer can go a long way to mitigating the challenges associated with operating in emerging markets and effectively managing the local provider. And, as with any business relationship, the importance of effective communication and expectation management cannot be underestimated.

Looking ahead, where do you see us being three to five years from now? How will technology 'rise to the occasion' to meet the ever-increasing demand for bandwidth?

One of the most significant trends in the telecommunications domain is the move to Cloud services. At Global Crossing, we view Cloud services as much more than just computing. We see it as a new way of consuming networked technologies and the next logical step in the journey to convergence. Looking ahead, we anticipate taking our existing products and migrating them to Cloud services that can be provided to customers as a utility with elasticity of usage and variable pricing. These 'network-centric Cloud services', as we call them, represent a major focus area for our organisation at present.

Do you have any advice for organisations as they continue their efforts to master the challenge of navigating bandwidth?

My first piece of advice would be to remember that the challenges you are dealing with today will soon be solved thanks to advancements in technology and the maturation of the given processes. And before long there will be a new set of challenges to tackle. That's what makes our industry an exciting one to be in.

I would also advise leaders not to forget the people factor: constantly ensure that your team knows what its mission is. If your team is strong, committed and motivated your chances of not only understanding forward-looking challenges but also overcoming them on behalf of your customers will be much stronger.



Navigating Bandwidth Challenges in Emerging Markets

Access to Broadband will Accelerate Entry to the Global Economy by Emerging Economies

The balance of economic power is shifting from the west to the east and from developed economies to developing markets. In the past ten years, Brazil, Russia, India, and China (the so-called BRIC countries) have contributed over a third of world GDP growth and grew from one-sixth of the world economy to almost a quarter (in purchasing power parity (PPP) terms).

In June 2010, HSBC group chief executive, Michael Geoghegan, said that, this year, emerging countries could grow at three times the rate of developed countries – and that they were the real drivers of the global economic recovery. Geoghegan’s focus, however, was not on the BRICs countries but on what he called the CIVETS - Colombia, Indonesia, Vietnam, Egypt, Turkey, and South Africa.

Speaking in Hong Kong, he said that “any enterprise with global ambitions should be active in these markets now. One can’t afford to sit and wait for business – one must go where business is.”

HSBC recently decided to move its head office from London to Hong Kong.

Interestingly enough, it’s the emerging economies that are investing in other emerging regions. China, for instance, has taken over from America, Japan, Germany, and the United Kingdom to become South Africa’s largest trading partner. (South Africa is Africa’s largest economy.) Bilateral trade between China and South Africa is now worth USD14.7 billion.

But, according to the Economist Corporate Network, developed countries are also beginning to take Africa seriously as a market in which they should not only have a presence but be actively looking to enter or create markets. In large measure, they are being driven to that conclusion by the fact many multinationals are prospering there. Africa is one of Coca Cola’s most profitable markets. Guinness sells more stout in Nigeria than it does in Ireland.

So, as both a cause and consequence of Africa's internal reforms and more attractive economic growth trajectory, inward foreign direct investment into Africa has increased five-fold from USD14 billion in 2002 to USD87.6 billion in 2008.

Human will – not technology – is the trigger

Dimension Data CTO for the Middle East and Africa, Mayan Mathen, says that it's worth noting that all of this development of Africa in particular and many other economically emergent regions in general has happened without pervasive availability of broadband connectivity, much less converged communications capability.

"In other words, the will and the initiative for development are what's key. Lack of infrastructure has not been the economic inhibitor developed countries would have had us believe.

"However, within the next several months, there will be a submarine cable running down both the west and the east side of the African continent, bringing bandwidth and, therefore, access to the Internet economy, to a region ready and ripe to do business.

"We're predicting an explosion of economic activity – and unprecedented consumption of bandwidth – as a result. Consumption of bandwidth in most developed markets is growing at a lower rate than in Africa, where both international and intra-country growth is seeing a steady rise. But first, the backhaul facilities from the submarine cables have to be put in place."

The money is there

Suveer Ramdhani, head of product strategy at Seacom* believes that the building of backhaul facilities will be rapid. "In resolving one step in the connectivity chain, you enable capital to be diverted to tackling the next issue. With the submarine cables in place, investment focus can now move to getting the terrestrial cables laid.

* Seacom is a privately funded venture which built, owns, and operates a submarine fibre-optic cable connecting communication carriers in south and east Africa. Seacom sells wholesale international capacity to global networks via India and Europe.

The will and the initiative for development are what's key. Lack of infrastructure has not been the economic inhibitor developed countries would have had us believe.

"Most telco operators are not waiting for external investors to help them fund the building of their terrestrial infrastructure. They're using a self-funding mechanism, by offering the revenue they're generating as justification for further investment. There is no shortage of capital for African broadband infrastructure."

It would seem, then, that the challenge for both enterprises and the broadband service providers that exist now and will, no doubt, spring up in the short to medium term, will be to use the bandwidth in ways that make the most commercial sense.

Business first

Neville Cousins, Dimension Data's technology director for unified communications solutions, believes that Africa's

new access to broadband will follow the route taken in most emerging economies that have joined the Internet economy. Most Asian and South American countries, for instance, have had high broadband availability for some years now.

“Connectivity providers tend to talk in terms of ‘clean’ and ‘dirty’ bandwidth, with clean bandwidth being that which is sold to large enterprises, who use it to improve their access to their markets and value chains. Dirty bandwidth refers to difficult to quality control and deliver functionality such as video on cell phones. It’s bandwidth for the masses. The operational costs of it are generally high, but the impact on economies can be significant.

“Clearly, providers would rather be operating in the clean bandwidth space for a while before they move into dirty bandwidth. However, their markets will be dictated to a very large extent by how quickly countries and investors are able to put in place the connections from the submarine cables to major cities, and from there to businesses and homes – followed by how quickly relevant services will attract higher bandwidth usage users.”

Chicken and egg: services or infrastructure?

The flip side of the bandwidth coin, of course, is the content that runs on it. Bandwidth usage is driven by the services

available. While there is no doubt that emerging markets use a great deal of content originated by developed markets, the revolution in economic power triggered by the BRIC and so-called CIVETS countries might feed better off locally developed content and services. Certainly, intra-regional and intra-country communication may depend on – or drive – locally relevant broadband content and services.

The Economist Corporate Network says that, in Africa, for instance, there is far more collaboration amongst organisations working on the continent than has been evident in other emerging markets, simply because the cost of doing business in Africa is still so high. Companies are prepared, therefore, to pool resources simply to gain access to markets.

“The communication opportunities in emerging markets are huge simply because the business opportunities are,” Mathen says. “All the more reason, therefore, for organisations wanting to provide content and services to think their business cases through extremely thoroughly and carefully – and to consult with systems integrators and other technology specialists who understand what works best in connectivity and what doesn’t.

Providers would rather be operating in the clean bandwidth space for a while before they move into dirty bandwidth.



“This is one of those times when re-inventing the wheel is going to be disastrous. By the same token, it’s one of those times when fresh thinking is going to be the only way to grab market share. Finding the right balance between the two is going to be the real broadband challenge.”

There is always a way

Martin Dove, Dimension Data’s managing director for customer interactive solutions says that offshoring is likely to be one of the biggest business opportunities for Africa, as it has proved to be for emerging markets that got broadband access some years ago. “Until the backhaul from the submarine cables is in place, however, organisations are still going to have fight for their right to survive by focusing on providing a quality service at a good price.

“At the time when Dimension Data was setting up its outsourced call centre operations in South Africa, broadband access was both limited and extremely expensive. However, instead of focusing on cost, we focused on quality of service – in the belief that our clients would pay for reliable, robust communications. History has proven us right.

“We also discovered that if we drove efficiencies throughout our operations, the cost of the bandwidth amounted to only 10% of our overall operational costs. A 20% reduction in the cost of bandwidth, when it came, resulted in only a 2% reduction in our operating costs.

“The challenges of managing bandwidth in emerging economies – and in Africa particularly, as it embarks on levels of Internet activity considered impossible even a year ago – will be business rather than technical ones.

“Networks globally are under pressure for one reason or another – sometimes regulatory, sometimes technical, and often financial. There are, however, always ways to make things work. The Datacraft WAN in Asia is a case in point*. It’s up to the business to innovate with what it’s got.”

Mathen agrees. “Having access to extra bandwidth is great, but how you realise and facilitate it still costs money. It’s not an open model or a free for all. What you do with your bandwidth must be based on economic principles. In our experience, services drive revenue, revenue drives infrastructure, and infrastructure drives more services.”

The challenges of managing bandwidth in emerging economies – and in Africa particularly, as it embarks on levels of Internet activity considered impossible even a year ago – will be business rather than technical ones.

* See our case study on the next page for more information.

Case Study

Datacraft Asia Proactively Manages Network and Expectations

As a company specialising in networks, Datacraft Asia, a subsidiary of Dimension Data, recently undertook the renovation and optimisation of its wide area network (WAN) itself – in a situation that came down to putting your money where your mouth is!

Company overview

Datacraft Asia pte is a wholly owned subsidiary of Dimension Data plc. Datacraft operates in 55 offices across 13 Asian Pacific countries, helping clients plan, build, support, manage, improve, and innovate their IT infrastructures.

Business challenge

In 2006, Datacraft was operating on a legacy WAN comprised of a range different technologies functioning in a hub and spoke topology. The company was using IP telephony throughout all its regional offices and experiencing significant voice quality problems. It was aware that it would have to make the WAN more adaptable, robust, and resilient in order not only to eliminate the voice quality problems but also accommodate new mobile technologies that were being brought to market. The WAN also needed to be able to carry video.

Barriers to the achievement of consistent quality of service included the fact that the region comprises a mix of developed and emerging countries, with accordingly varying levels of technological sophistication. What's more, high-speed WAN access was not pervasively available at reasonable costs and different countries had unique regulations governing the deployment of and access to WAN technologies.

In addition, telecommunications industries in many parts of Asia are not fully deregulated. There are many national

Quick Overview

- **Industry:** IT Solutions and Services
- **Country:** Asia Pacific
- **Challenge:** The company was using IP telephony on a legacy wide area network (WAN) comprised of multiple different technologies for communication among 35 offices in 12 countries. Many of the offices were separated by oceans and all by long distances. The system suffered from serious voice quality problems. The company wanted a network that was resilient and flexible enough to carry voice, data, and, eventually, video.
- **Results:** Datacraft Asia went back to basics – planning the configuration of the converged network and setting end-to-end QoS up front so that each part of the network would carry optimally the traffic allocated to it. Datacraft also proactively managed user expectations of the reconfigured network.

operators – which creates monopolistic environments. “The cost of bandwidth in those countries was significantly higher than in others, which impacted the economics of what we wanted to implement,” says Sean Lawrence, Datacraft’s chief information officer. “As a general rule, therefore, we’ve run smaller pipes than would be the norm in Europe and the United States.

“The fact that many of the countries to which our WAN extends are separated by oceans and extremely long distances presented further challenges. This pushed up bandwidth costs and made it more difficult for us to simply increase our bandwidth whenever new applications came along. Many new applications are designed for markets with cheaper bandwidth and lower latency such as the United States and Europe, so we had to find ways to do more with less and squeeze every last drop out of the bandwidth we could afford.”

The solution

Datacraft specialists went back to basics to ensure that the configuration of the WAN and the bandwidth allocations at all points would cope with what would be asked of the network. By 2007, Datacraft had migrated to a consistent and carefully designed multiprotocol label switching (MPLS) network in which the use of two different carriers and end-to-end quality of service (QoS) between the two ‘Clouds’ effectively eliminated the voice quality problems. The QoS was then tested rigorously to make sure that the carriers and the WAN in its entirety were honouring the QoS from end-to-end.

When it came to carriage, Datacraft elected to partner with two global players, as it enabled the company to add direct access from each WAN location to applications hosted in London and the United States (previously access had to be routed through Singapore) and also obtain guarantees as to performance and availability across 35 locations in 12 countries.

“It also meant that we weren’t putting all our eggs in one carrier basket,” Lawrence says.

Value added

Today, Datacraft has IP video running across its operations throughout Asia and Telepresence in Japan and Singapore. Both are seamlessly integrated into the larger Dimension Data network.

In late 2009, the company was able to integrate video – the final piece of the puzzle – into its network. “At first glance, achieving this seemed tricky, as there was insufficient bandwidth to carry video without impacting the other traffic,” Lawrence says. “But, thanks to modest spot upgrades and appropriate configuration of the video systems and network coupled with rigorous application of QoS, we were successful in our quest to add converged video to our services. In those few cases where the WAN can’t accommodate video, we’re using the Internet – albeit without picture quality guarantees.”

So what are the key learnings that other organisations can take out of Datacraft’s successful convergence experience? Lack of high speed WAN access may be technical (lack of cables) or regulatory in origin. Latency issues and problems with the performance of a network may be technical in origin. But, in all cases, they are also business problems which can be resolved through innovative thinking – or, at least, by a willingness to look at the issues positively.

Lawrence believes that the secret to overcoming bandwidth and performance challenges is careful design and implementation, coupled with proactive management of the network. “For instance, by configuring the network, servers, and endpoints carefully, we were able to systematically limit the number of concurrent voice and video sessions to what we can afford and, thereby, guarantee quality of experience.

“Ultimately, whatever the nature of your business, converging your network should be a priority, because it allows you to offer so many new and integrated services to your users (and, as a consequence, improve their and your company’s productivity).

“And, last but not least, it’s worth remembering that at least part of managing network services is managing user expectations.”

Research Notes

LEADING ANALYST FIRM PROFILES DIMENSION DATA IN A SWOT ANALYSIS FOR COMMUNICATIONS OUTSOURCING AND PROFESSIONAL SERVICES, WORLDWIDE

Dimension Data recently announced it is the focus of a strengths, weaknesses, opportunities, and threat (SWOT) analysis¹ by Gartner, Inc., regarding its communications outsourcing and professional services (COPS) capabilities.

Compiled by Gartner analysts, the SWOT examines the strengths, weaknesses, opportunities and threats that Gartner expects to have the greatest impact on an organisation's strategy and market position over the next 12 months. "We are pleased Gartner chose to evaluate Dimension Data in a SWOT analysis as it provides independent recognition of our

status in the COPS marketplace," said Dimension Data CEO Brett Dawson. "We are excited to be recognised by Gartner for our many strengths. In addition, many of the noted opportunities, weaknesses and threats are already being addressed through our corporate strategy and vision."

"In short, we believe this SWOT analysis has helped to confirm that our strategy and focus areas are on target as they are in line with Gartner's assessment," Dawson said.

In addition to the SWOT analysis, Dimension Data was recently positioned by Gartner in the Challengers Quadrant of the Communications Outsourcing and Professional Services (COPS) Magic Quadrant, Worldwide report.²

For more information, and to view our new webcast, please visit www.dimensiondata.com/gartnermagicquadrant

CISCO VISUAL NETWORKING INDEX FORECAST PREDICTS CONTINUED MOBILE DATA TRAFFIC SURGE

More Mobile-Ready Devices and Mobile Video to Fuel 39-Fold Global Growth from 2009-2014

Cisco recently published the results of the Cisco Visual Networking Index (VNI) Global Mobile Data Forecast for 2009-2014. The research projects that annual global mobile data traffic will reach 3.6 exabytes per month or an annual run rate of 40 exabytes by 2014. Such a figure equates to a 39-fold increase from 2009 to 2014, or a compound annual growth rate (CAGR) of 108 percent.

Two major global trends are driving this increase – the proliferation of mobile-ready devices and widespread mobile video content consumption. By 2014, there could be over 5 billion personal devices connecting to mobile networks – and billions more machine-to-machine nodes.

Facts:

- Global mobile data traffic has increased by 160 percent over the past year to 90 petabytes per month, or the equivalent of 23 million DVDs.
- Global mobile data traffic today is growing today 2.4 times faster than global fixed broadband data traffic.
- Smart phones and laptop air cards are expected to drive more than 90 percent of global mobile traffic by 2014.
- By 2014, more than 400 million of the world's Internet users could access the network solely through a mobile connection.
- Today, the average mobile broadband connection generates 1.3 gigabytes of traffic per month-which is equivalent to about 650 MP3 music files. By 2014, the average mobile broadband connection is projected to generate 7 gigabytes of traffic per month-which is equivalent to about 3,500 MP3 music files.

For more information about this report please visit http://newsroom.cisco.com/dlls/2010/prod_020910b.html

¹ Gartner, Inc. SWOT: Dimension Data, Communications Outsourcing and Professional Services, Worldwide, 2010, Christine Tenneson, Daniel O'Connell, Katja Ruud, June 25, 2010.

² Gartner "Magic Quadrant for Communications Outsourcing and Professional Services Magic Quadrant, Worldwide" by Eric Goodness. 3 March 2010.

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