

'Ethernet at the heart of BT's 21st Century Network'

speech by

Matt Bross, BT Group chief technology officer

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Good morning, ladies and gentlemen.

My name is Matt Bross and I'm Chief Technology Officer for BT Group. I'd like to thank Lightreading for their kind invitation to address you here today.

I'm going to talk to you about BT's strategy to embed Ethernet – carrier class Ethernet – at the heart of our 21st century network, or 21CN.

I'm sure this meeting, which I believe is very timely indeed, will create lots of good discussion and debate on an important topic for our industry. I hope what I have to say will add to the range of the discussions.

But I'm also here to tell you that Ethernet isn't new for BT. We've been offering Ethernet services for almost twenty years and today, we're announcing two new Ethernet services for the market. I'll talk a little about these a little later.

Before I talk BT's 21st Century Ethernet strategy, I'd like to give you an overview of what our 21CN programme is. I suspect that everyone in the room today will have heard something about our plans.

And I hope that you will share the view that 21CN is the most complete, most compelling next generation transformation programme underway anywhere in our industry worldwide today.

We see 21CN as the enabling infrastructure for growth for BT and for the industry.

There are, we believe, real and significant growth opportunities in our industry. The convergence between fixed line services and mobility, and between traditional communications and IT services offer real opportunities for growth.

But capitalising on these opportunities requires transformation of the business, the adoption of new skills and of new ways of working. It also requires new infrastructure and significant capital investment.

Convergence, long talked about, is now gaining traction and we believe it will continue to build momentum.

Exploiting the opportunities that this converging landscape represents requires an underlying infrastructure that can support and deliver it efficiently. Building this enabling infrastructure is what our 21CN programme is all about.

In the converged world, customers want to gain access to communications services that improve their quality of life, that make their professional and personal lives easier and more productive.

Simplicity is the key. It's a multimedia world where the customer can access any communications service from any device from anywhere – at broadband speed. The traditional device and geographic barriers to seamless communications are being eroded and exciting new services are emerging.

All of us will communicate using the device we choose, whether that's a fixed or mobile handset, a PDA or laptop. In the 21st century, it doesn't matter.

We, the customer, will communicate from anywhere we choose - on the move or in the home or in the office - to access a range of exciting new services - voice, data, video, gaming or multimedia.

BT's 21CN transformation will accelerate and enable the arrival of this new world.

21CN is designed to deliver a world class customer experience from end end-to-end, from accessing and managing a range of services, to receiving the bill - with those services delivered at the same or better quality as that which our customers receive today - all enabled through innovation at BT and from various partners around the world.

21CN is world leading and will drive a radical simplification of BT's operations, including delivering significantly lower costs and the capability to launch new services to market faster than we can today.

21CN is a next generation network infrastructure, but it's much more than that. It's about supporting the next generation of services and revenues for BT – and BT's customers.

Think about the recent launch of BT Fusion, the new innovation from BT that's a cell phone when you're out and about and a fixed line phone – with the quality and cost advantages this offers, when you're at home or in the office.

Or BT Livetime, the new mobile service BT is trialling with Virgin Mobile at the moment to deliver digital broadcast content to mobile handsets over the digital audio broadcasting, or DAB, spectrum.

These are 21st century communications services and they're good examples, or indicative, of the types of service innovations 21CN will deliver to customers.

21CN will deliver services over a multi-service IP/MPLS network at the same or better quality as that which our customers receive today. It means that BT will be the first incumbent operator in the world to switch off its traditional PSTN network. It's radical.

21CN will drive a radical simplification of BT's operations, including delivering significantly lower costs and the capability to launch new services to market faster than we can today.

21CN is the enabling infrastructure for growth for BT and the industry and will provide a step change in the value that communications provides to UK plc and to our customers. And as the Group CTO in charge of the programme, I think I have the coolest job on the planet.

When I think of Ethernet in the context of our 21st Century Network, I don't consider it to be truly carrier class - not today.

But by the time BT has finished installing Ethernet in our 21CN, the new network will represent the largest installation of Ethernet in any network, anywhere in the world.

So, that means that BT's entire business ... a £20 billion business ... with 30 million lines, 20 million customers, 100,000 employees ... and a network on which the entire UK industry depends, will represent the largest installation of Ethernet in any network anywhere in the world.

We're taking out the PSTN, our the basis of our business for a century, and replacing our legacy platforms – all 16 of them ... with a single, end to end, all IP/MPLS core network with a multi-service access layer utilising Ethernet.

Oh, and we're investing £10 billion, or €15 billion of our shareholders money over the next five years to achieve it.

That should illustrate our confidence that Ethernet will be Carrier Class ... and we believe will get to that point in the relatively near future.

But what does Carrier Class Ethernet really mean?

Some think it means five 9s reliability and the availability of features such as end to end fault and performance monitoring, simple and quick error location and remote configuration.

So once we get that end to end capability, we'll be there. Ethernet will be Carrier Class. Right?

No doubt there are some of you in the audience saying 'hold on'.

We offer Ethernet services today ... and we provide our customers with that end to end functionality today. So Matt, what are you talking about.

Maybe it's possible if you take your Ethernet technology, the equipment, from a single, or a very limited range of suppliers.

But here's the issue.

In 21CN, and by the way, we believe the entire carrier industry will follow us , BT is taking a radical approach to creating the first truly multi-vendor, multi-service, vendor agnostic network ... with plug and play components. This means you can swap out a box from supplier X and replace it with one from supplier y. And you still have that same end to end capability.

That's truly carrier class Ethernet. It's not here today, which is why I say Ethernet is not yet Carrier Class.

So I think there's much more work to be done ... especially in the development of standards, in working with the equipment industry. We at BT are heavily involved in driving those discussions.

For BT, Ethernet is three things.

It's a physical service interface that delivers lower costs and enables the use of cheaper CPE whilst delivering bandwidth flexibility;

It forms the basis of a range of services, point to point Ethernet private line and private LAN services;

And it's also a transport medium in its own right.

It's all about customers, about delivering what they want at the price they want to pay. The economics of Ethernet as opposed to Leased Lines, are pretty compelling.

Our business customers all around the world are excited about Ethernet. It's reliable and cost efficient, they understand it – they've been using it in their LAN environments for a long time.

So we're building it into the heart of 21CN.

Let me walk you through some of the domains in the architecture for 21CN.

Starting with Access. The NTEs in 21CN will support native Ethernet and the delivery of a range of other services like TDM.

At the MSAN level, the multi-service access nodes, we're working with our equipment partners to embed a hi-capability Ethernet switch fabric, or a protocol-agnostic switch fabric.

Moving into the Metro space. We'll carry out service switching and selection at our metro nodes. We'll have the capability to offer point to point, point to multi-point and multipoint to multipoint Ethernet capability here.

We'll also offer Ethernet over WDM to provide Ethernet backhaul and support for hi-bandwidth low latency Ethernet services such as storage and data centre replication.

Ethernet will also be used in the metro domain to enable access to MPLS, supporting services like IP VPNs over MPLS to the RFC2547 standard. Today our International MPLS based IPVPN service already reaches some 1100 cities in 86 countries so we have already gained fantastic operational experience of large scale MPLS networks.

In the core of the network, you can't support features like timing and synchronisation across Ethernet today.

So we're driving standards in this area too. In fact, at the recent ITU meeting in Geneva, BT made 15 important contributions towards the development of the new standard proposing a way of carrying this information across Ethernet.

We're working, clearly with the ITU but also the MEF, the IEEE and Ethernet in the First Mile bodies to help develop and solidify the necessary Ethernet standards that BT, and the industry, require.

Then there's the i-Node, the intelligence level in the 21CN. Our i-Nodes, which will be supplied by Ericsson, will have Ethernet interfaces to ensure the Ethernet capability of the 21st Century Network is fully utilised.

And it goes without saying that the preferred suppliers we announced in April who will help us to build 21CN have the Ethernet capability.

So why is Ethernet so attractive to BT? We're going down the MPLS route, aren't we?

Industry says there's going to be a battleground between MPLS and Ethernet and there'll be big winner and a big loser.

Always happens in our industry. One standard always emerges as the winner. The only important question is which is doomed to become the New Betamax?

First of all, we're agnostic to that debate. We think that, for the foreseeable future, there's room in the market for both.

Longer term, one could dominate, perhaps, but I don't think I'll disclose the horse I'd place my bets on if I thought that we're to happen.

But Ethernet IS relatively simple, its low cost. It's uniquely flexible and resilient. It has an elasticity that is just incredible.

Just think about how far Ethernet has come since Robert Metcalf invented it almost thirty years ago.

Each time we ask more of it, it delivers.

Ethernet has been successfully stretched beyond the traditional LAN environment and is now entering the WAN environment.

It has surpassed Carrier Sense Multiple Access/Collision Detect (CSMA/CD) to provide full-duplex (bidirectional) connectivity.

Think about the development of the Interface speeds: 10 Mbit/s (Ethernet.); then 100 Mbit/s (Fast Ethernet.), then 1 Gbit/s (GbE) and now 10 Gbit/s (10GbE) with 40 Gbit Ethernet coming soon.

Throughput from 64 kbit/s up to 10Gbit/s and evolution from Point-to-point, to point-to-multipoint and now any-to-any connectivity.

Every time we ask more of Ethernet, it stretches.

Ethernet's enduring elasticity is a key part of the reason we're confident that it will stretch again and become truly carrier class in the 21st century network world.

We believe that the rapid advancement in Layer Two switching will mean that Layer Two will in time be able to offer the test, diagnostics and control today only capable with Layer three. Think about that. Layer three capability available to customers at the cost point of Layer two.

And it will happen, I believe, because pricing pressure for services expected by customers, and fuelled by competition, will drive economic change. It will make Ethernet a central requirement to delivering the longer term economic trends the industry requires.

If you look at the European economic trends, or forecasts, they show that we're witnessing the inexorable growth of IP VPN, Broadband and Ethernet and the corresponding decline of Frame Relay and ATM.

Customers request cost-effectiveness via technology refresh and the equipment vendors provide greater functionality at lower cost.

So what are the implications for the marketplace? ATM and frame relay will migrate to IP VPN & Ethernet VPN. Private Circuits will also migrate to Ethernet.

E1's will migrate to DSL or 10Mb/s Ethernet while E3's will migrate to 100Mb/s Ethernet and STM-1's to Gigabit Ethernet.

So, commercially, Ethernet in 21CN is a no brainer.

But as I said at the outset, Ethernet is something we do today and we already have a broad range of talent in the business with Ethernet skills.

In fact, at over 30,000 circuits, we in BT have the largest install base of Ethernet circuits of any network in the UK. Of course, we're the major network provider here in the UK, so that won't be all that surprising.

There's a schools project here in London that connects just under 3,000 schools over BT Ethernet.

Today I would like to announce the extension of our existing Ethernet product set. As I mentioned earlier BT has been delivering Ethernet connectivity for some 20 years. Today we are further extending that capability both in range, speed, functionality and bandwidth flexibility.

Next month, we launch BT GigeStream, a low cost, point to point Ethernet private circuit service. It will be available on a national level and offer flexible speeds of between 250Mbit/s and 1Gbit/s.

This product will be ideal for transporting large amounts of data the customers' business premises, it will interconnect with the LAN or WAN through 1 Gbit/s interfaces.

It's also designed to provide a natural migration path for BT's Megastream Ethernet customers that want to increase their network capacity or to effectively grow their network.

We're also launching BT Ethernet virtual VLAN or EVLAN, a VPLS based metro any to any Ethernet LAN service. This too, will be available from July this year.

And finally is an enhanced version of BT Enterprise Ethernet, a new low bandwidth version of its MegaStream product and that will offer many of the characteristics of a traditional private circuit, but with the benefit of a low cost Ethernet interface. The Enterprise Ethernet product will be available later this summer.

This product will be available in a point to aggregate configuration, where the aggregate end will always be a BT MegaStream Ethernet Access circuit.

The new Enterprise Ethernet product will enable customers to incorporate smaller sites that have bandwidth requirements of between 0.2 Mbit/s to 1.6Mbit/s into the same Private Ethernet network as their larger sites cost effectively.

So. To conclude.

BT is putting Ethernet at the heart of the world's most radical next generation network and when we do, Ethernet will be truly carrier class for the 21st century. But we're not there today, but we're getting there.

We've not being distracted by the debate over MPLS versus Ethernet. The market will support both.

And we're starting from a strong foundation in Ethernet. It's an evolutionary path for us.

Thank you.