A COLT TECHNOLOGY SERVICES WHITEPAPER

SOFTWARE DEFINED NETWORKING

# SDN:
# STILL DOES NOTHING?

## How the SDN revolution really will change your business.

**This whitepaper considers the wide ranging impact of SDN. How it will change network design and deployment. How it will impact network procurement, relationships with carriers and service level assurance.**

**And how, while we appreciate the changing needs and data-flows of our own businesses, and assume that someone, somewhere is sorting out networking - with SDN that someone is likely to be you….**

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# Part 1: Connected endeavours

**At the peak of the hype curve, Software Defined Networking (SDN) is, for many CIOs filed under PMF – 'pigs might fly' – with, they might imagine, every prospect that the folder can be reused in six months' time for the next idea.**

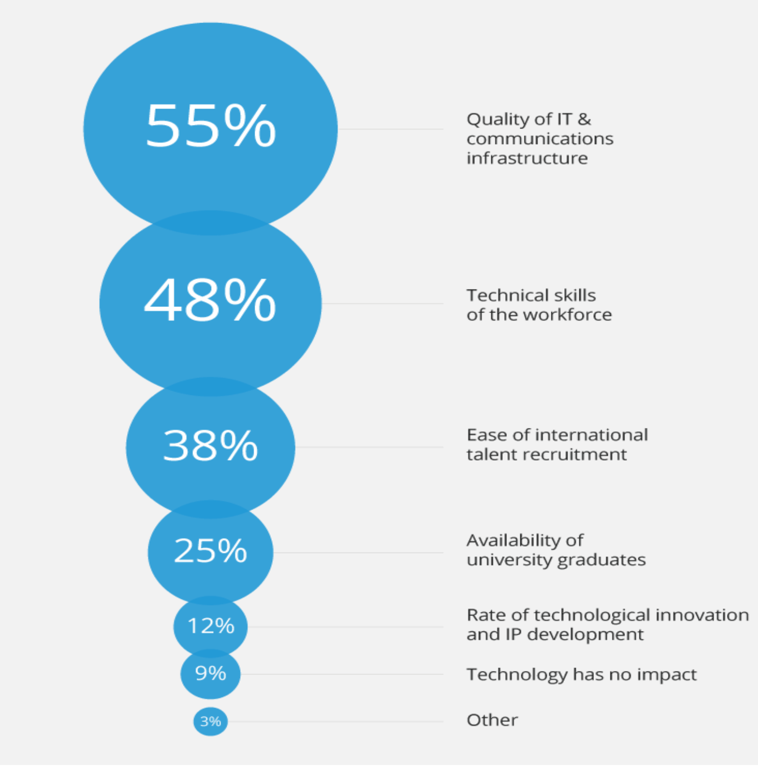
**But that can only be the view of those who have yet to realize the implications of changes that will shake the networking industry into 21st century shape.**

Many Enterprise CIOs take pride in their connectivity. A well networked organisation is more malleable, more manageable and moves faster. No one would dispute the notion that business life is altogether easier to manage if all of the enterprise outposts (and their 3rd party associates) can enjoy the collaborative advantages of quality communications.

The networking factor is so important that, according to research by the Economist Intelligence Unit, the quality of IT and Communications has, by some margin, the greatest influence on business location decisions. This concern for infrastructure beats even questions about the availability of talented people with well-honed skills.

But corporate networks do not magically appear overnight. They need to be designed. They must be matched to needs. Needs need to be understood and measured. The costs must be budgeted and approved. And then the procurement process can get underway. Sometime later, some connections are made. Most probably they'll arrive in time for the enterprise to change shape and render parts of the previous plan redundant. In this vital area for your enterprise, there's a lot of second-guessing going on. Your operational locations may be decided against untested 'perceptions' of connectivity performance. The mix of voice and data traffic may not yet be known. The costs? A mystery until tested. The provisioning times?

One of the great benefits of our digitized world (and probably the source of most disruption) is the elimination of that middle layer between theory and reality – or, at least, the removal or avoidance of the consequences of plan approximations without some real world experience and data.




*Technological factors which most impact your firm's decision to have regional headquarters* Source 'Economist Intelligence Unit 2015'

# Just another draft idea?

It will not be a surprise to find some resistance to the notion of flexibility. Perhaps there could even be resistance to the idea that senior IT people should now not be part of the network provisioning process. Is this career threatening or is it just that you have much better things to be getting on with instead of circuit provision chasing?

The freedoms that arrive with Software Defined Networking reduces the complexity and process of circuit provision to following flow charts and clicking on portals. The question for many will be, 'whose finger on the trigger?' – where is the governance?

What happens if the guys in the front line who need the service changed or network redesigned just get on and do it? Why go through layers of request and approval – with every chance that somewhere along the line the specification will be compromised? Why over-specify the requirements (and costs) just to cope with the unforeseen? How can your organization transition to Management sans Frontiers?

**"Managers are determined to manage."**
**"Determination is good."**
**"Things need to be bolted down."**
**"It seems unnatural to be indeterminate."**

Fortunately, SDN-driven enterprise-changing decisions are not mandatory, or even immediately available to some CIOs. But when SDN is available to companies located in the right regions and with immediate needs for agility – these pioneers are brilliantly demonstrating the capabilities that will become the norm.

The impending reworking of network capabilities will, in some part, be also dependent on the progress of national market regulators who will determine the promotion of the use of dark fibre as part of the networking mix. One need look no further than Sweden to see how multi-site businesses can benefit from a wholesale market in connectivity that is also lit by business owners.

The advent of dark fibre together with SDN and cloud resources will not just change the way enterprises organize their activities – these changes also herald a period of redefinition of what it is to be a telecoms provider. And we shall explore that dimension next in 'Whose line is it anyway?'

# Part 2: For telcos - whose line is it anyway?

For telcos and Network Providers the growth of Software Defined Networking will have an even greater impact than the Enterprise Empowerment noted in Part 1. For some, SDN heralds new service opportunities but for others it may seem like an existential crisis.

From a telco operational viewpoint much of the discussion has centred around the equipment that is being readied for SDN. Kit manufacturers have gone into overdrive in the race to develop Standards for Network Functions Virtualization (NFV) and a quest to extend those Standards in the hope of differentiating their products. That race may have led many to conclude that there might be little real progress until those standards have stabilised.

But that perspective overlooks the fact that the end goal is not greater equipment sales but delivery of software tools to enable customers to better manage their networks – and we really do mean 'their' – i.e. the 'customers' networks; not some borrowed facility still controlled by the lease provider.

It is not surprising that dominant providers have long resisted the introduction of 'dark fibre'. Allowing 'customers' to assume the status of Network Operators – even if for application solely within their own enterprise boundaries – would seriously weaken, they assume, their Telco market position. And yet they are long-used to operating in both retail and wholesale markets and selling circuits with IRU – Irrefutable Rights of Use.

The emergence of new wholesale players has, long before SDN, been demonstrated in Scandinavia and now the emergence of new SDN tools will make the provision and customization processes even slicker.

It may seem counter-intuitive to some that those new wholesale markets emerged from within the public sector but, like any enterprise, the duty to not waste resources, combined with the future-proofed capabilities of fibre connectivity, has led directly to new flexibilities in encouraging economic growth and inward investment.

That happy state has arisen simply because the localized islands of connectivity served by fully fibred networks have often been developed in close collaboration with municipal authorities.

With optical routes based on dark fibre between those fibre-blessed future-proofed communities, it is relatively easy for their owners (the municipal players) to find additional capacity (an extra wavelength, say) and cooperate to develop wholesale markets almost entirely independently of traditional operators. It is not surprising to find that any business thinking about location of a new plant, office location or operational centre will look first to locations served by that flexible market.

As in so many other industries Wholesale becomes the new Retail. Telcos wishing to retain a market edge have to search for new sources of differentiation. One way of doing that is to redefine customer experience and enhance customer capabilities – by, for example, adding in data centre capacity, resilience measures, higher management skills and greater customer intimacy. Another route to differentiation is to develop more-advanced perspectives on Quality of Service metrics and traffic analysis to help customers optimize their enterprise network designs.

There is no escaping the reality that the SDN genie is out of the bottle and cannot be recaptured – and everyone must look to the opportunities it brings.

## The end of the line?

It is tempting to project these ideas forward to embrace more than the current enterprise network markets.

How long, and in what infrastructural environments, might it be that the creation of these dedicated markets shifts beyond the obvious Enterprise targets to embrace wider coalitions of partners, suppliers and associates?

We need not conjure sci-fi scenarios to validate the trends. There is a view that SDN may well have unforeseen consequences and require very careful management. The impacts of SDN will, at best, fuel new creative energies and lead to even better services for customers.

On the other hand, negative reactions may simply lead to a determined defence of the current realm; long-established providers are, after all, well-practiced in the art of resistance, delay and capture.

But, to borrow from an English preacher and poet, no enterprise is an island sufficient unto itself – and telco's need not ask for whom the bell tolls.

To adapt to the advent of Software Defined Networking, the onus is on searching out the capabilities and capacities that the enterprise customers need to complement their own in-house capacities. Those capabilities might be in the form of faster and higher capacity network infrastructure, talented minds, local knowledge or greater global coverage, resilient services, and or better metrics for traffic analysis.

For those who do not adapt, it may simply be the end of the line.

**"For those who do not adapt, it may be the end of the line."**

# Part 3: It is *your* business

Businesses succeed by being very clear about their focus. They let nothing get in the way of delivering their core products and services to very clearly defined customer markets. Desks are cleared of all distractions. The activities that demand the greatest attention are described as 'core functions'. All else may be categorized as non-core activity and contracted out, 'spun off', or 'outsourced' to be managed by third parties.

This clarity of purpose and avoidance of distractions is a very valid approach to enterprise strategy. It makes great sense to not have highly-skilled and valuable management resources devoted to everyday stuff that can be delivered efficiently by other specialists who may find value in aggregating similar work from many enterprises.

And the theory is fine until those conventionally outsourced functions are transformed by technology to provide quite different and more relevant functions. Surely basic utilities would never have more than commodity value, and yet this is what is happening in the digital networking arena.

The arrival of three ground-breaking (market disrupting) capabilities – a combination of widespread availability of 'dark fibre', expandable fibre-optic bandwidths and easily managed tools for Software Defined Networks has the potential of changing the market landscape.

SDN is not, of course, entirely new but is now reaching a level of widespread market availability – particularly within Europe. And, not surprisingly, the dominant incumbents show about as much enthusiasm as when previously resisting the onset of Voice over IP.

**So everyone wants to be a telco?**

Seriously? That rather overstates the opportunity but already we can see business of all shapes and sizes exploring the newfound flexibilities. In truth, enterprise needs are rarely stable in the long term and, for some, are close to unpredictable in the immediate future.

You need not be a broadcast media operation or an international finance house to appreciate either the need for very rapid responses or the potential for cost recovery through use of spare resources.

So what may, to some, be a burden – the effort (and delay) involved in commissioning an extensive in-country or cross-border network – is set to become a valuable asset that can relatively easily be exploited either in terms of a new-found agility or as a cost-recovery operation or even a new line of business.

## The road to SDN

Stepping back for a moment, you may well imagine that the route from Legacy Network A to New Agility B is unlikely to be in a straight line. Here are just a few of the issues:

- Your existing contracts may still have time to run.
- Your in-house expertise may not yet have the capacity to remodel your network
- Your dependence on compliance and resilience might make choices (and insurance against failures) too risky to re-assign.
- National regulatory requirements may not yet allow such competitive opportunities.

But, despite all the reasons for caution, there is no doubt that there are new opportunities to be exploited from SDN – and these are emerging more rapidly than many realize. For businesses, the questions that arise are threefold.

1. How clear are we on the true costs and limitations of our existing networks?
2. In what ways might our business identify new value in enhanced network agility under our direct control?
3. Who, amongst the network supplier communities can we work with to guide us through this newfound land?

The market landscape has changed. The availability of dark fibre, ever increasing bandwidth and capacity, coupled with new agile tools for network configuration, measurement and management is shifting old utilities into new and creative sources of value-adding capability.

**Software Defined Networking is real, is happening now and is, potentially, very much your business.**

**For more on Colt's Software Defined Networking and On Demand services**

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