DYNAMIC MARKETS

SDN

Expectations

Independent Market Research
Commissioned by

AVAYA

February 2015

Executive Summary:

- Service configuration (83%), application performance (82%) and network management (63%) are the Top 3 problem areas for companies.
- These areas are also where most people expect SDN to provide solutions.
- 97% expect SDN to solve at least 1 of their specific network problems.
- 94% are at the very least currently researching SDN.
- 29% already have SDN in production on part (21%) or across all of their network (8%).
- 70% of C- / VP-level respondents think it is extremely important that SDN models are able to extend beyond the data centre.
- 93% of people feel today's SDN models are actually limited in this respect, including 81% of those who have put it in production across their entire network.
- 88% expect to fully deploy SDN into production at some stage - on average, this will be in 1.6 years' time.
- 80% say SDN programming has to be simple if they are to adopt - but 1 in 4 (25%) is being held back from adoption because SDN is too complicated.

Key Findings

Background and introduction:

This research set out to investigate opinions among IT professionals around the world about SDN technology and its future in their organisation. It explores the network problems companies experience and their expectations of SDN to solve them. It also looks at the current adoption status for SDN and what is holding companies back from adoption.

The findings show that adoption levels are already quite high, although many companies are still at the exploratory or research stage. It also shows that network problems are common and expectations are high for SDN to solve them. However, among those who have already adopted SDN, problems persist.

Adoption of SDN

Current status:

The research shows that SDN is a very hot topic; in 94% of large companies around the world, IT professionals are at the very least currently researching SDN [Chart 1]. In fact, close to 1 in 3 (29%) already have SDN in production, with 1 in 5 (21%) having rolled it out on part of their network and 8% saying they have it in production across their entire network. Another 42% are at the research stage and 23% are testing this technology in their laboratories or on part of their network. Indeed, this means that together 52% are either actively testing SDN or have already adopted it at least on some part of their network.

China has the highest levels of SDN adoption in terms of having it in production across their entire network (15%). Indeed, China (47%) and, to a lesser degree, Australia (39%) stand out in that more companies have SDN in production on part or all of their network, and this also applies to quite high proportions (roughly 1 in 3) of those in the US (35%), Russia (32%) and Mexico (31%). The relative laggards are French corporations, where 10% have it in production in part of the network and 7% have it in production across the entire network.

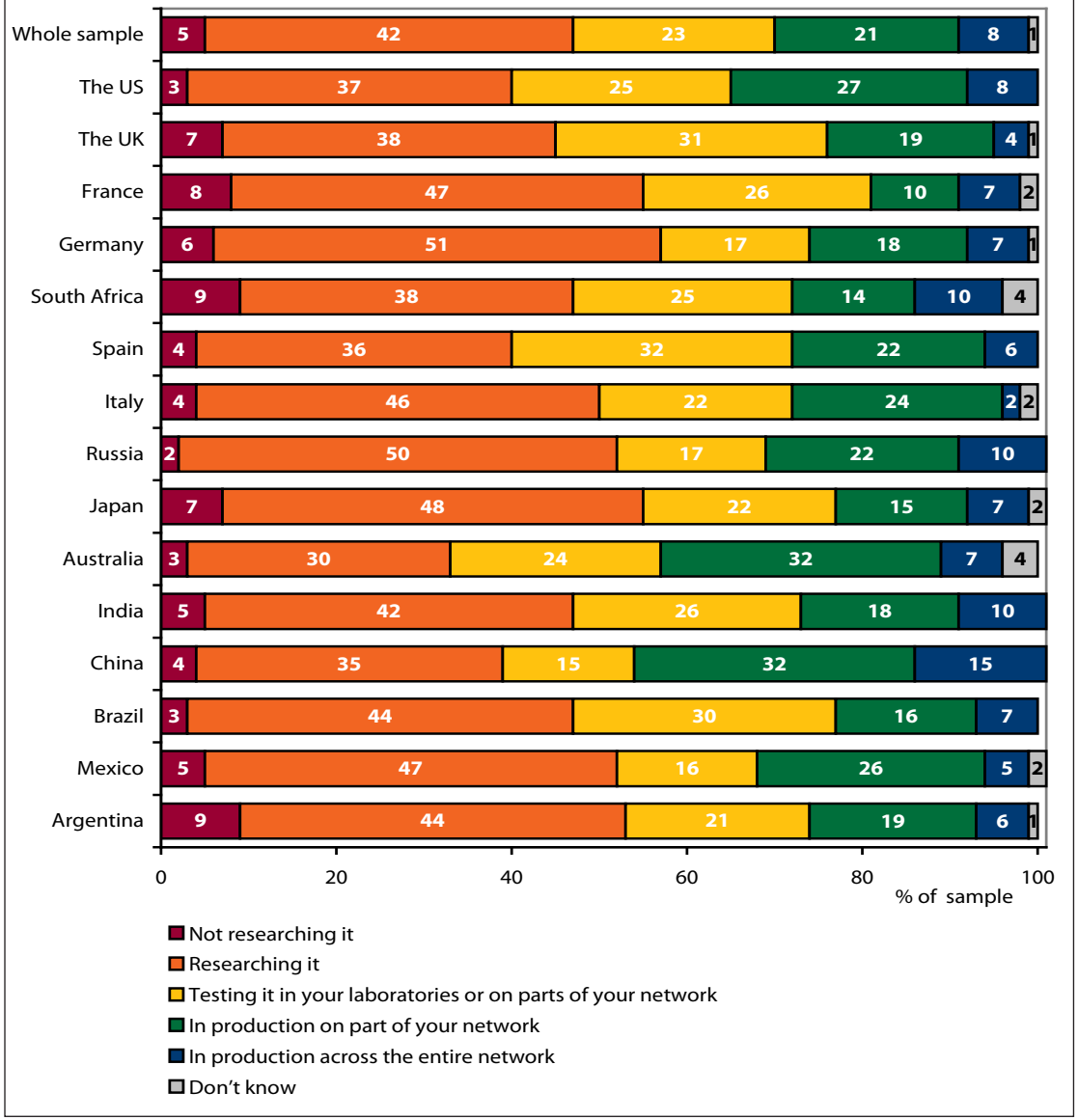
Limitations?

Almost all IT professionals in large companies (99%) think it is important to some degree that SDN models are able to extend SDN capabilities beyond the data centre and across the entire enterprise. Indeed, 46% believe this to be extremely important, and the more senior the IT respondent, the more important they feel it is, with 70% of C- / VP-level respondents describing it as extremely important. This opinion is also more common in the US (63%), India (64%) and Brazil (59%), but this compares to just 21% for Spain.

32% of C- / VP-level respondents feel the current SDN models are extremely limited

However, despite the importance IT professionals place on this criteria, 93% feel today's SDN models are actually limited in this respect. Interestingly, C- / VP-level respondents feel more strongly about this, with 32% describing the models as extremely limited, compared to people less senior than this (11-12%). The US (32%), Australia (32%) and India (26%) also stand out with more IT professionals there believing today's SDN models are extremely limited, compared to just 17% in France.

Chart 1: Global SDN adoption status



What can we learn from those who are already living with SDN? The research shows that 83% of those who have put SDN into production across their entire network have it in production in places other than the data centre. Yet 81% of these people feel that today's SDN models are limited in their ability to extend SDN capabilities outside of the data centre.

This hints at the possibility that such implementations have not been easy or that they have discovered the capabilities are indeed limited in some way now that they have deployed SDN across their network.

However, the research also shows that more of those who have not put SDN into production (94%) think today's SDN models are limited, compared to those who already have it in production (on part or all of the network) (88%), suggesting perception is slightly worse than the reality, but that the reality is far from perfect.

Problems

Top network problems & expectations:

The research shows that at the moment service configuration (83%), application performance (82%) and network management (63%) are the leading areas where companies are having problems. It also shows that these problem areas are the ones most people expect SDN to be able to solve [Table 1].

In more detail, 83% say they have issues to do with service configuration, and this includes: dealing with the complexity of configuring services and applications; manual configuration of servers and switches; making virtual machine moves between data centres; poor integration of physical and virtual systems; requirement for maintenance windows; limited or complicated access control (including BYOD); and complexity of Spanning Tree and multiple network protocols.

82% of companies complain about their application performance, and this includes: a lack of integration between network and applications; the complexity of running multicast applications; poor east-west traffic flow; slow network performance for real-time applications; and an inability to manage individual application flows and requirements.

Also, 63% suffer from network management challenges, including: having complicated or silo-like network management; separate wired and wireless management; and complex wireless management.

61% say they suffer from network availability issues, including: slow network failover time; and downtime caused by human error. While 1 in 2 (47%) says they have network security issues, including: complex or inadequate security segmentation; and difficult network segmentation for multi-tenancy. Open networking is an issue for 45%, which includes: a lack of vendor interoperability; and a lack of integrated orchestration between network, storage and compute resources.

Those who have SDN in production across their entire network have just as many problems as those who have not yet started down the SDN route

When examining this extra level of detail, at a more granular level a detailed list of the Top 5 problems companies are havinge emerges [Table 2]. Also a list of the Top 5 problems IT professionals are expecting SDN to solve emerges [Table 3].

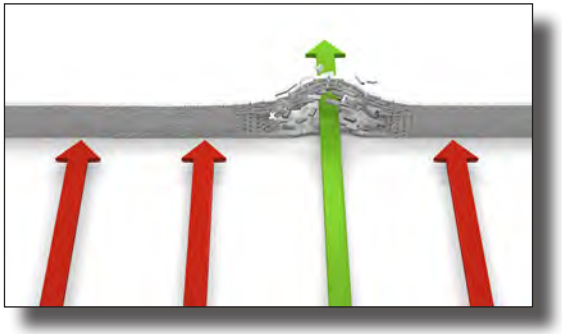


Table 1: Problems and expectations:

Problem area:	Got the problem	Expect SDN to solve
Service configuration	83%	83%
Application performance	82%	81%
Network management	63%	65%
Network availability	61%	56%
Security	47%	51%
Open networking	45%	45%
Complicated or poor troubleshooting tools	30%	32%
Complicated or poor policy control	28%	27%

Table 2: Problems companies have:

Rank:	Problems:	%
1	Downtime caused by human error	38
=2	Complexity of configuring services and applications across the network	37
=2	Slow network failover time	37
=3	Slow network performance for real-time applications	33
=3	Complex wireless management	33
=4	Complex or inadequate security segmentation	31
=4	Separate wired and wireless management	31
5	Complicated or poor troubleshooting tools	30

Table 3: Problems people expect SDN to solve:

Rank:	Problems:	%
1	Slow network failover time	37
2	Complexity of configuring services and applications across the network	36
3	Complex wireless management	35
4	Slow network performance for real-time applications	34
=5	Downtime caused by human error	33
=5	Complex or inadequate security segmentation	33

Indeed, overall, 97% of people expect SDN to solve at least 1 of the network problems their company has. However, the research shows that those who have SDN in production across their entire network have just as many problems at the moment as those who have not yet started down the SDN route [Chart 2].

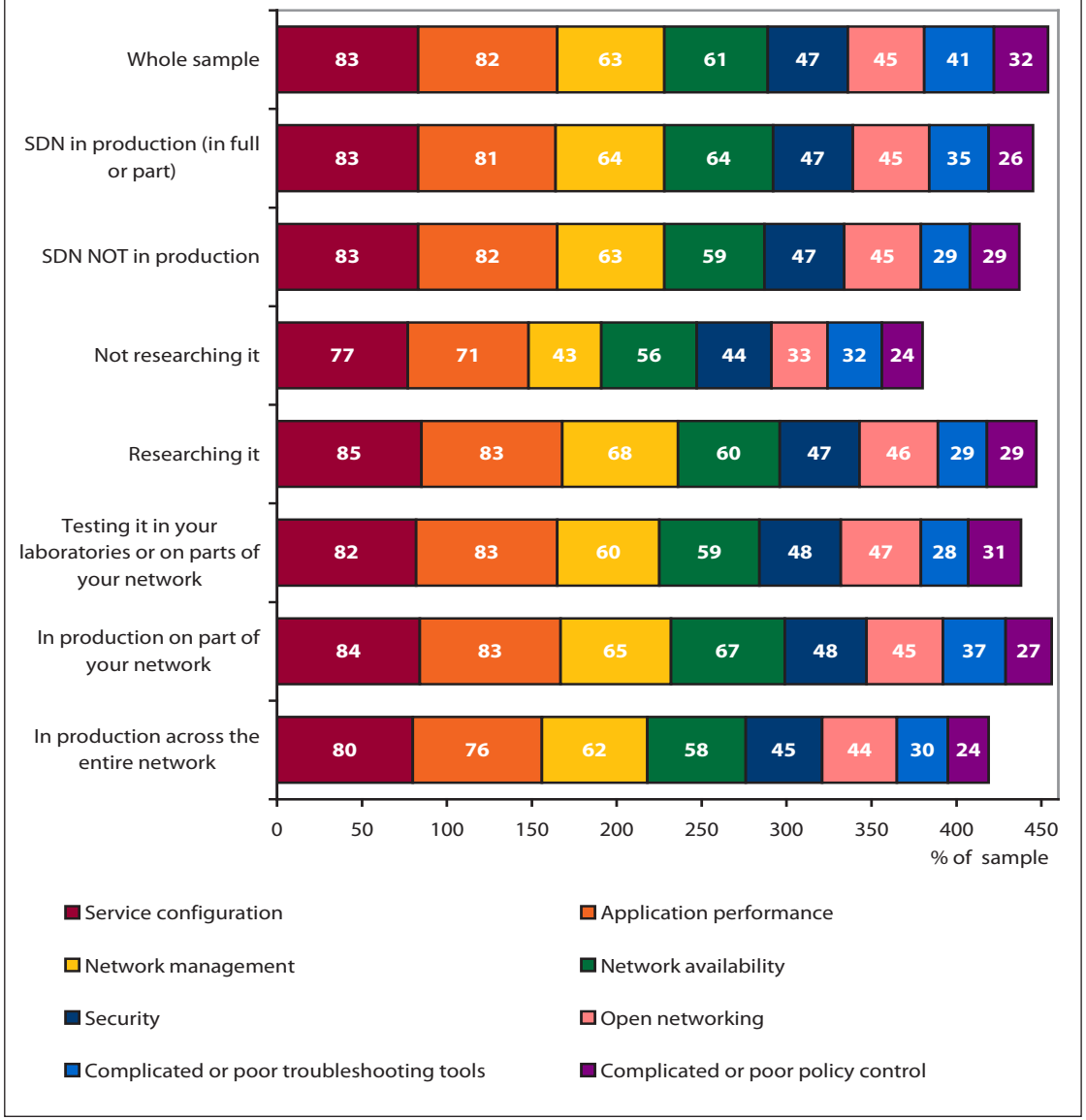
The future

Plans for adoption:

Despite the perceived limitations and the problems the early adopters are still experiencing, the future looks very bright for SDN. Indeed, among those who have not put SDN into production across their entire network, 88% expect to fully deploy SDN at some stage in the future. On average, this is expected to be in 1.6 years' time. However, a significant 45% admit they do not know exactly when SDN will be deployed by their company, but say it will at some point in the future.

Even 61% of those who are not currently researching SDN think their organisation will deploy it at some point going forward, but figures are much higher for those who are actively researching it (91%), testing it (86%) or who have already put it into production on part of their network (93%). Indeed, on average, those who have at least begun researching SDN plan to deploy it in 1.5-1.6 years' time, whereas those who are not currently researching it say they will implement it in 2.3 years' time, on average.

Chart 2: Problems experienced according to SDN adoption status



Overall, adoption levels look set to be highest in Brazil, where 97% say they will deploy SDN at some point, whereas figures are lowest for the UK (79%) and Japan (77%). Indeed, 12% of those in Japan say they will never implement SDN. Nevertheless, companies in France look like they will move more quickly than other countries (in 0.7 years on average), whereas the US (2.3 years), South Africa (2.0 years) and Australia (2.2 years) look set to be the slowest to adopt SDN fully across their corporate networks.

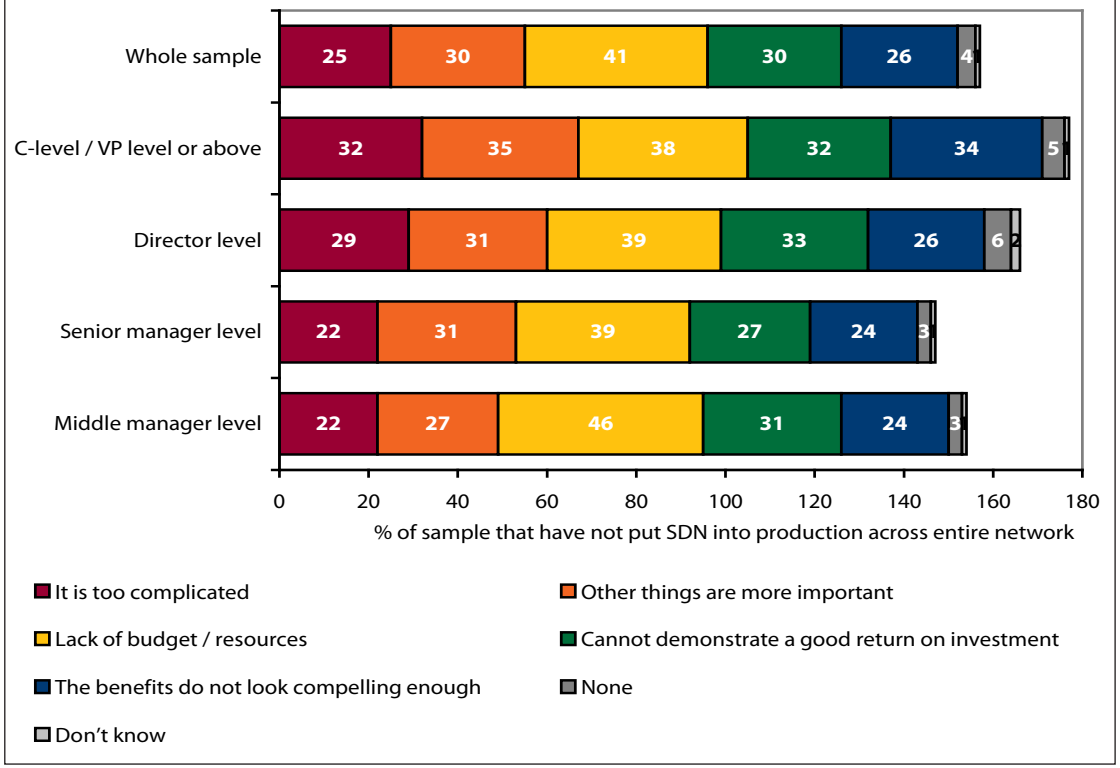
Barriers:

What if anything is holding companies back from taking on SDN? The findings show that among those who have not yet put SDN into production across their entire network, the biggest barrier seems to be a lack of budget / resources (41%) [Chart 3]. However, 30% say other things are more important for their organisation at the moment, and this applies to 35% of C- / VP-level respondents. Another 30% of the sample say they cannot demonstrate a good return on investment and this is holding them back from full deployment. 1 in 4 (26%) says the benefits do not look compelling enough, while 25% say SDN is too complicated.

> 89% of C- / VP-level respondents say SDN programming has to be simple for their organisation to adopt

There is very little difference according to a company's adoption status and what is holding them back from proceeding with full SDN deployment. However, the research shows that more people in China relate to these barriers, compared to France and Spain. Indeed, across the countries, the top reason given in most cases is a lack of budget, but the exceptions are France and Germany where most people say other things are more important at the moment; and in India and Argentina more people point the finger at not being able to demonstrate a good return on investment.

Chart 3: Barriers to full adoption of SDN



SDN preferences

Simplicity:

Simplicity of SDN programming seems to be key, with 80% of respondents saying this would have to be the case in order for their organisation to adopt this technology. In fact, 89% of C- / VP-level respondents say this is a must for them, as do 84% of those who spend all of their time on networking issues for their company.

Simplicity is also absolutely key to adoption in Italy (96%) and Mexico (93%), compared to the UK (74%), Germany (72%), Russia (72%), Japan (67%) and China (70%), but all these figures are high.

Deployment location:

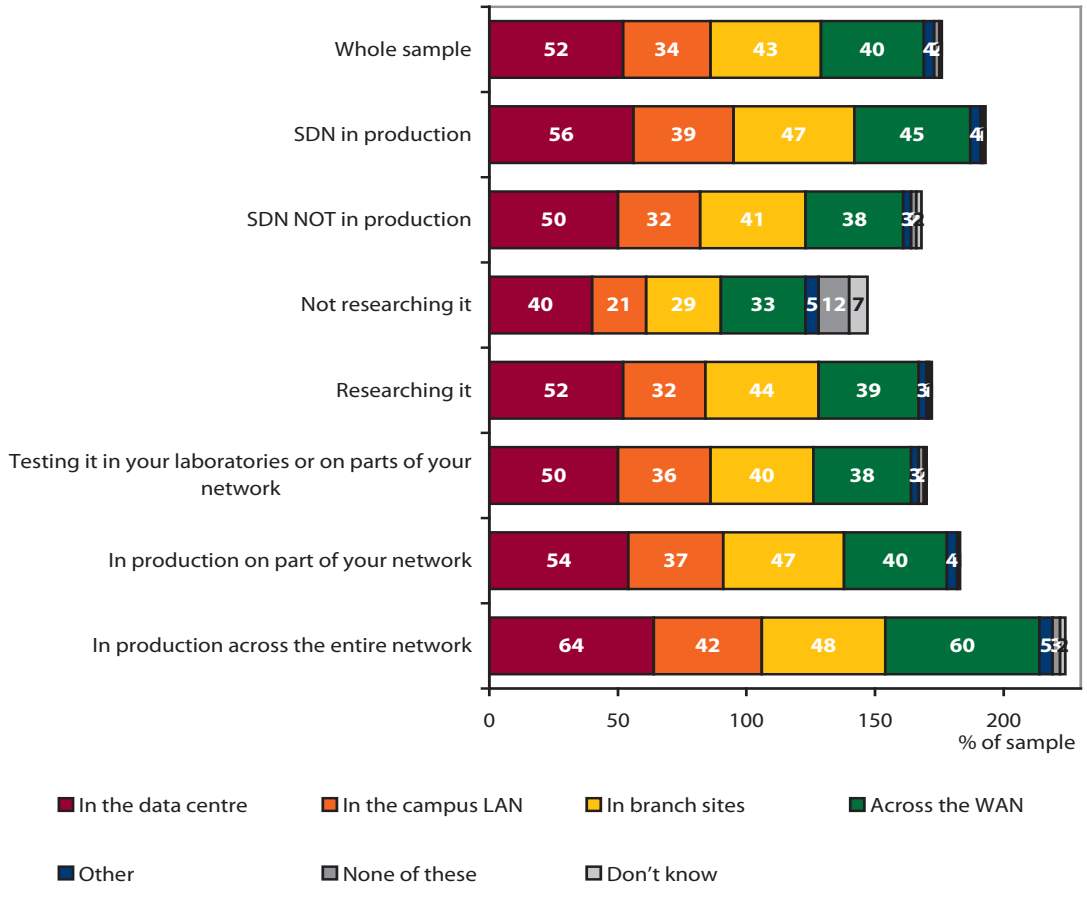
It is perhaps no surprise to find that the most common area of the network that will see SDN eventually deployed is in the data centre (52%). However, this is by no means the only location in which these global companies plan to deploy this technology; 43% will deploy it in branch sites, while 40% will use it across the WAN and 34% will implement it on the campus LAN [Chart 4]. Indeed, 81%

have or would deploy SDN in locations across the network other than the data centre.

However, figures are much lower for those who are not currently researching SDN, but even for this group, the data centre is where SDN would most commonly be deployed and 65% will look to deploy SDN outside of the data centre.

The US, India and China have or will deploy SDN in a wider variety of network locations. Indeed, the countries most likely to deploy SDN outside of the data centre are the US (84%), South Africa (86%), Italy (90%), Australia (89%), India (88%) and China (92%). The least likely are France (67%) and Spain (68%), but figures here are still high.

Chart 4: Where SDN would be or has been deployed



Route to agility:

When trying to create a more agile network for applications and services, 64% of companies would prefer to automate their forwarding layer to simplify configuration, as opposed to creating an overlay forwarding layer via tunnels (33%).

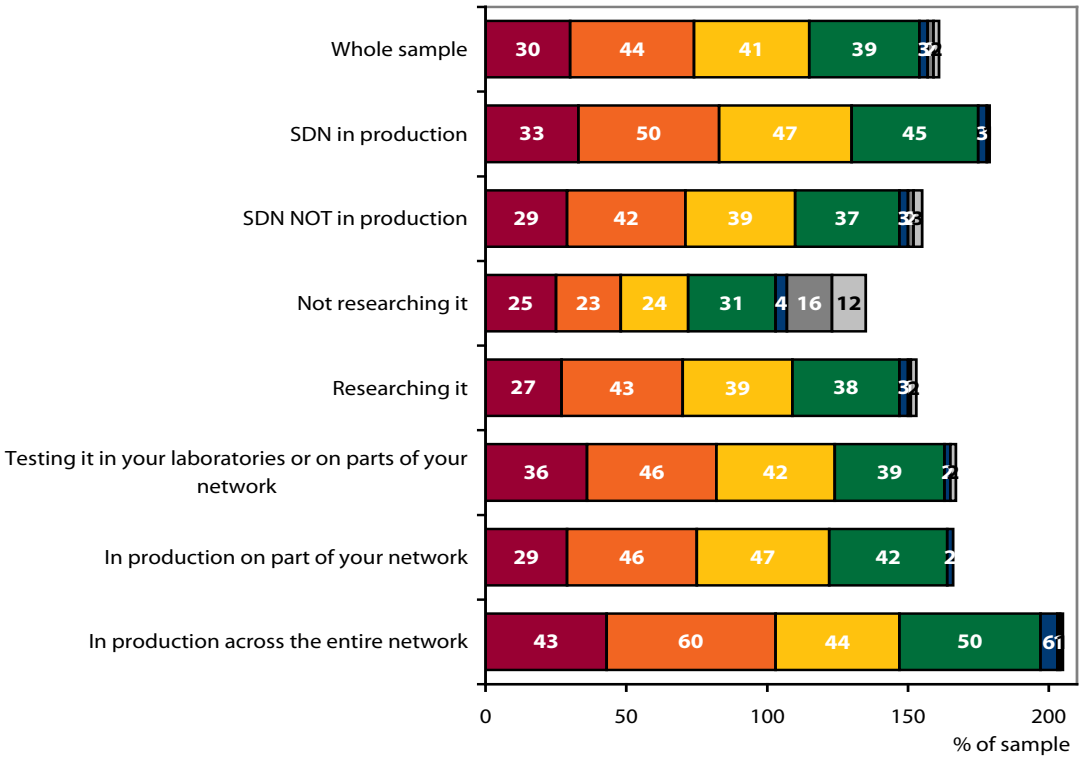
C- / VP-level respondents as a group are much more definite about this (75%), compared to respondents who are less senior than this (59-63%); as are those who spend all of their time on networking issues for their company (71%), compared to those who have the network as just part of their responsibilities (58%).

Those in Russia too seem more definite about this approach (79%), whereas overlay forwarding layer via tunnels is generally most popular in France (45%), South Africa (47%) and India (43%), although all these figures are still below 50%.

Deployment models:

The most popular model companies would choose to implement SDN on is a virtualised network layer over the top of a standard network in the data centre, and integrated into virtualised compute and storage (44%) [Chart 5].

Chart 5: Deployment models that have or would be used for SDN implementation



However, this is followed by a model that is an evolution to an existing network with a controller of the same brand to allow programmability of existing functions (41%). Another 39% will have automation built into the network layer with SDN control for programmability. The least common model is to have white box hardware with open-source software, OpenFlow and open-source controller(s) (30%).

The more a company has explored and experienced SDN, the wider variety of network models they have chosen or would choose to implement SDN on. Indeed, among those who have deployed SDN on their entire network, the most common model that has been used is a virtualised network layer over the top of a standard network in the data centre (60%).

This model is also the top choice for those in the US, the UK, Germany, Australia, India and Brazil. In contrast, a model based on an evolution to an existing network with a controller of the same brand is the top choice for France, Spain, Italy, Mexico and Argentina. Fewer put the model of automation built into the network layer as their top choice, but this applies to South Africa, Russia, Japan and China.

Methodology:

This report was commissioned by Avaya and details quantitative research across 15 countries with 1,421 IT professionals in large companies. The countries covered by this report are the US, the UK, France, Germany, South Africa, Spain, Italy, Russia, Japan, Australia, India, China, Brazil, Mexico and Argentina.

All respondents confirmed prior to interview that, as part of their job, they are actively involved in dealing with networking issues for their company (45%) or who have responsibility for the corporate network (55%). They also confirmed that they operate at middle manager level and above, and 70% operate at senior manager level or above, which includes 22% who are at director level and 15% who are at C- / VP-level or above.

Respondents also confirmed that in total their organisation has at least 250 employees and 18% have 10,000 or more. Also, 11% of the sample have turnovers higher than £1 billion, and 27% turn over more than £500 million. All country samples each have close to 100 respondents, except Spain and Italy which each have 50. The sample covers a wide variety of industry sectors, with all the main ones well represented.

The findings of the survey have been analysed and compared according to numerous parameters, including country, respondent role, seniority and SDN adoption status (among other things). Where any differences exist that are significant at a 95% confidence level and are relevant to the overall findings, they are described accordingly in this report.

Interviews were conducted during January 2015 using an online panel. Before and during the interviews, respondents were not aware that Avaya had commissioned the research.

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