



WHITEPAPER

**Driving Business Performance**  
with Managed SD-WAN  
Connectivity in Hybrid IT

F R O S T  S U L L I V A N

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# Network Transformation: A Necessity for Enterprises in This Digital Environment

## Digital Transformation: A Paradigm Shift to Digital Enterprise Era

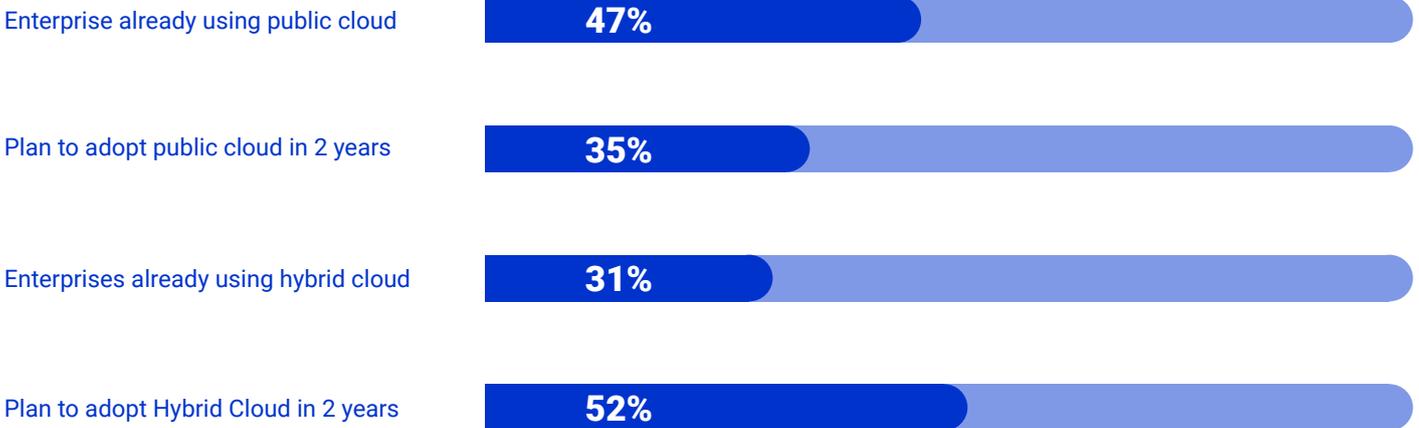
Digital transformation has already become an imperative for enterprises to gain a competitive edge. Enterprises, ahead in the digital transformation curve, are driving business transformation and innovation through adoption of digital technologies such as cloud computing, Internet of Things, Mobility, Analytics etc. In the quest to become a digital enterprise, Cloud has become a major pillar of digital transformation for enterprises. Enterprises, irrespective of their size, are moving their workloads onto the cloud for flexibility and economies of scale. They are adopting dynamic hybrid cloud/multi-cloud environments to boost their business growth and operational efficiency.

## Need for Network Transformation Due to Adoption of Cloud and Other Digital Technologies

With the growing adoption of hybrid cloud, heavy applications and other digital technologies, there is an exponential rise in data traffic flowing through enterprise networks.

This data explosion is putting immense pressure on traditional/legacy networks and enterprise are finding it difficult to cope with increasing network complexities. Therefore, enterprises are demanding more sophisticated and service-rich network environments to cope with the agility and speed of dynamic hybrid IT environments.

### Adoption Hybrid Cloud and IT environment: Primary Driver for Network transformation



**Results are based on F&S end-user survey 2018:**

F&S annually performs a demand side survey on cloud service involving more than 400+ enterprises in India across verticals. Close to 60% of them are large enterprises and 40% of them are SMBs

## Major Trends Leading to The Re-Invention of Enterprise Networks

Enterprises across the globe are migrating their workloads and applications onto the cloud to achieve operational efficiency, business agility and economies of scale. Organizations are going for a variety of cloud models such as private, public and hybrid to deploy and access their applications.

This rapid migration to the cloud is exponentially increasing enterprise traffic on and through the cloud, ultimately leading to dynamic networking flows and putting immense pressure on traditional networks. Therefore, network performance and efficiency is becoming an issue for enterprises.

### Major Trends leading to the Change in Enterprise Network

#### Migration To The Cloud

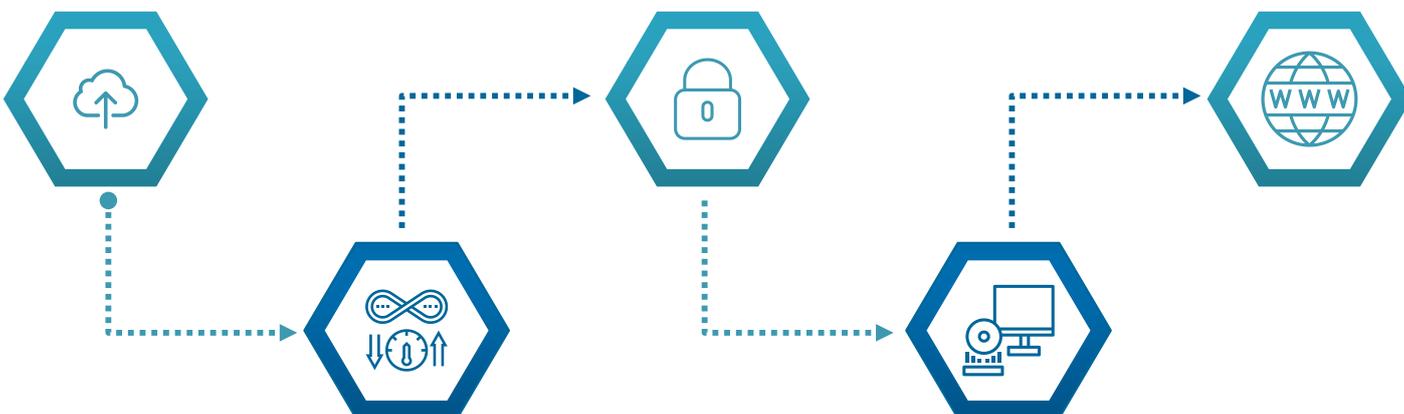
60-70% of applications would be on cloud by 2024 leading to an exponential increase in cloud traffic

#### Multi-Layer Security

62% enterprises believe that security issues are hindering their digital journey and cloud adoption; Enterprises want security at all layers such as network, cloud, and application

#### Rise Of Hybrid And Multi-Technology Networks

Enterprises are already working on multi-technology links such as MPLS/ Internet/4G etc.



#### Exponential Rise In Bandwidth Consumption

Heavy cloud applications, Video consumption, BYOD and multiple other digital initiatives exponentially increasing bandwidth consumption; Traffic is doubling every 2.5 years

#### Increasing Virtualization Of Network

Above 48% of enterprises plan to have virtualized and software defined networks in next 2 years; 18% have already implemented it to a certain extent

**Note:** Percentages/numbers used above are based on the Frost & Sullivan's 2018 end-user survey

## Major Networking Challenges of Indian Enterprises

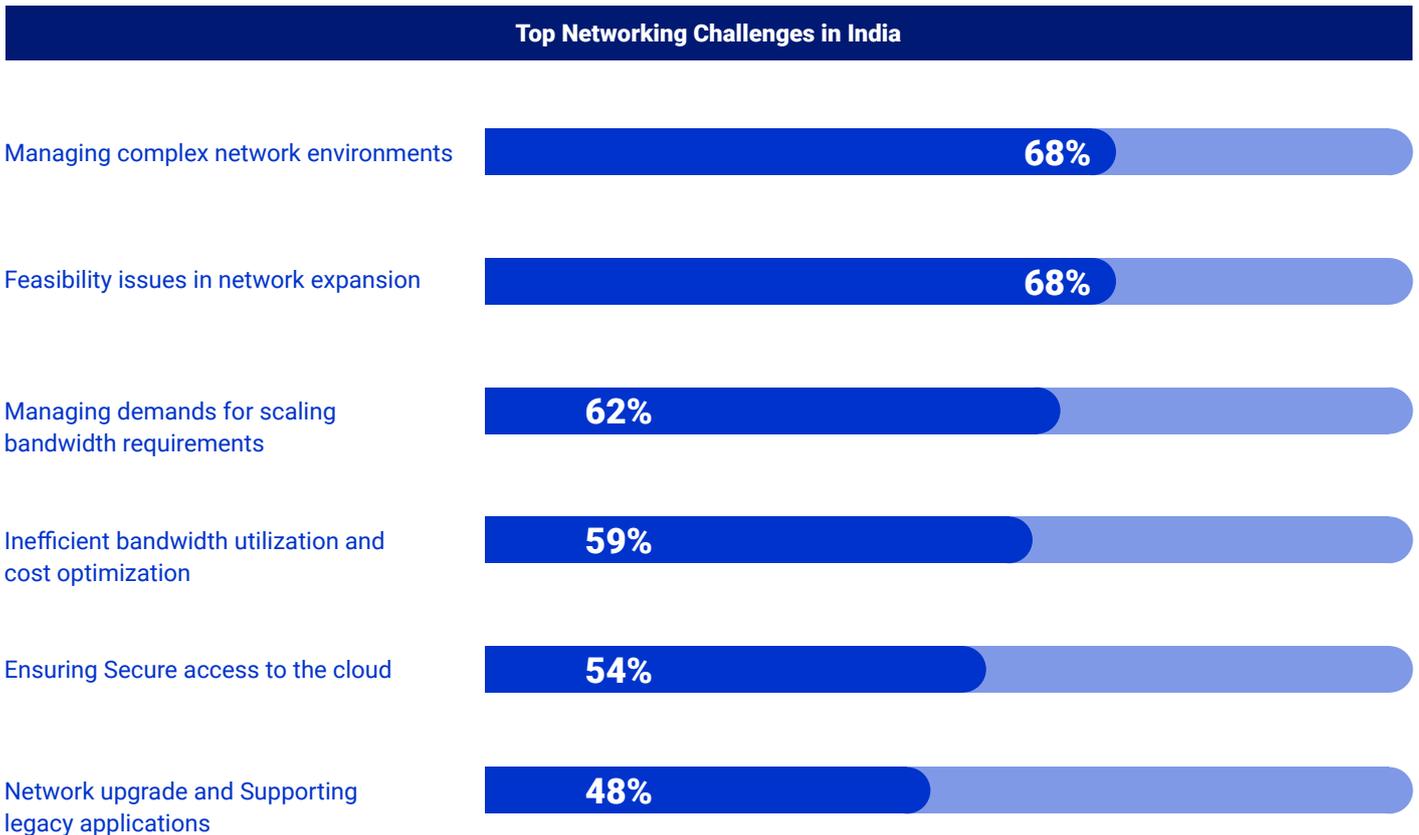
As per an enterprise survey conducted by Frost & Sullivan, majority of enterprises in India are facing difficulty in managing a hybrid networking environment that has multi-technology links such as Ethernet, MPLS, Internet, 4G etc.

The hybrid approach has congested networks and is difficult to manage. About 68% of enterprises also said that robust network reach/availability in India is still a major problem that creates many feasibility issues when they expand their presence. There is no single service provider that can provide service everywhere.

About **59% of enterprises have considered the continuously increasing total cost of enterprise WAN with inefficient utilization of bandwidth' as a significant challenge.**

As shown in the figure, **enterprise in India are facing several other challenges in their enterprise networking environment and exploring options to address these challenges effectively. That is where, SD-WAN comes into the relevance having the potential to solve all the major networking challenges for enterprise.**

SD-WAN could help enterprise not only in overcoming these challenges but also in building next generation enterprise networks.



**Results are based on F&S end-user survey 2018:**

*F&S performs a demand side survey for all the product segments involving more than 400+ enterprises in India across verticals. Close to 60% of them are large enterprises and 40% of them are SMBs where Large enterprises are the companies with 250+ Cr revenue.*



# Software Defined WAN: Key Enabler for Network Transformation

## Introduction to SD-WAN and its Capabilities

A Software-defined Wide Area Network (SD-WAN) is a virtualized WAN architecture that allows enterprises to leverage any combination of transport services – including MPLS, Internet leased line, Ethernet, LTE and broadband internet services – to securely connect users to applications. It uses a centralized controller that securely and intelligently directs traffic across the multiple WAN links as per the policies configured.

### Major SD-WAN Capabilities and Benefits

#### Centralized orchestration:

SD-WAN creates an overlay network over traditional WAN through centralized orchestration platform that helps in easy management of hybrid networking environment.

#### Zero touch provisioning:

Configurations and policies are programmed once and pushed to all branch locations without having to manually program each device individually.

#### Automated and dynamic bandwidth allocation:

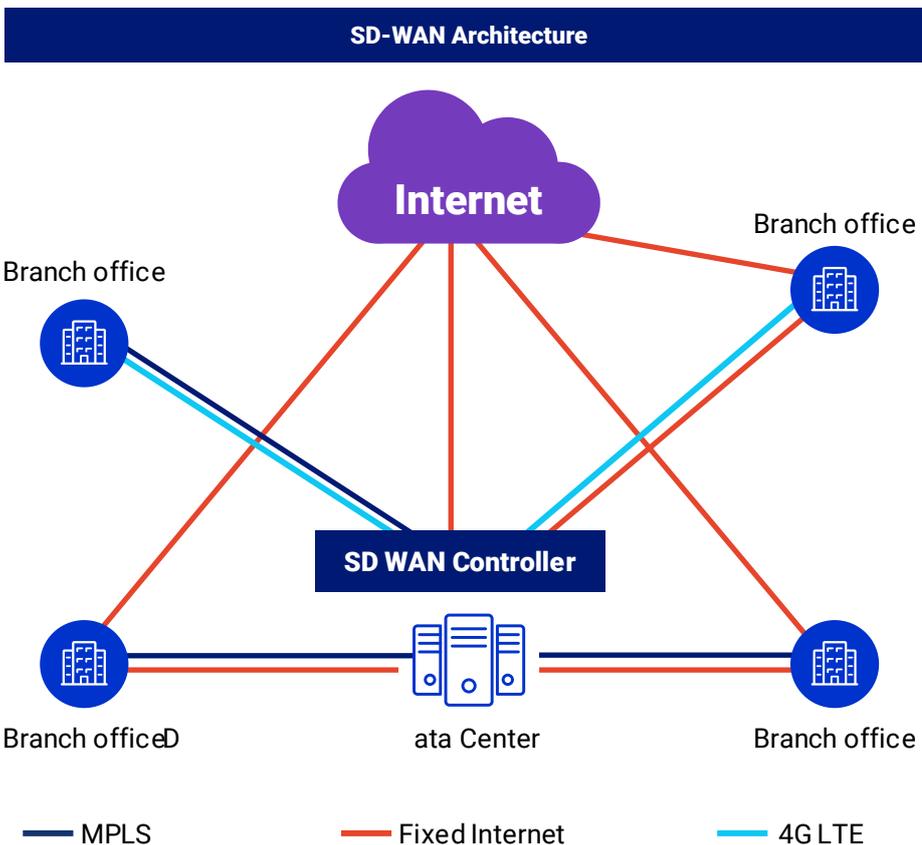
SD-WAN prioritizes WAN traffic as per configured policies and adjusts on the fly to fluctuating demands.

#### Edge-To-Edge Security:

Enables 256-bit encrypted tunnels between every site. This provides internet with the security of a VPN, but without the complexity of provisioning and configuring a VPN.

“We have plans to deploy SD-WAN in some of our sites and delivery centers shortly. The solution would help us built a centralized network environment to an extent to support seamless integration between our cloud environments and traditional systems and get centralized control.”

**Achal Kataria,**  
**Global Head of Technology,**  
**EXL Services**



## SD-WAN Adoption Trends in India

In India, 2018-19 is the breakthrough duration for SD-WAN, as Indian enterprises have gradually started to realize the actual business benefits of SD-WAN, which is much more than the networking cost advantage. At an overall level, enterprises in India are now very keen to deploy SD-WAN within their organizations.

As per a **survey conducted by Frost & Sullivan among more than 400 enterprises** in India, about 44% of them want to deploy SD-WAN in their organizations within next two years and about 18% of them intend to deploy SD-WAN in 2-5 years. Therefore, the market picture for SD-WAN is very optimistic as of now.

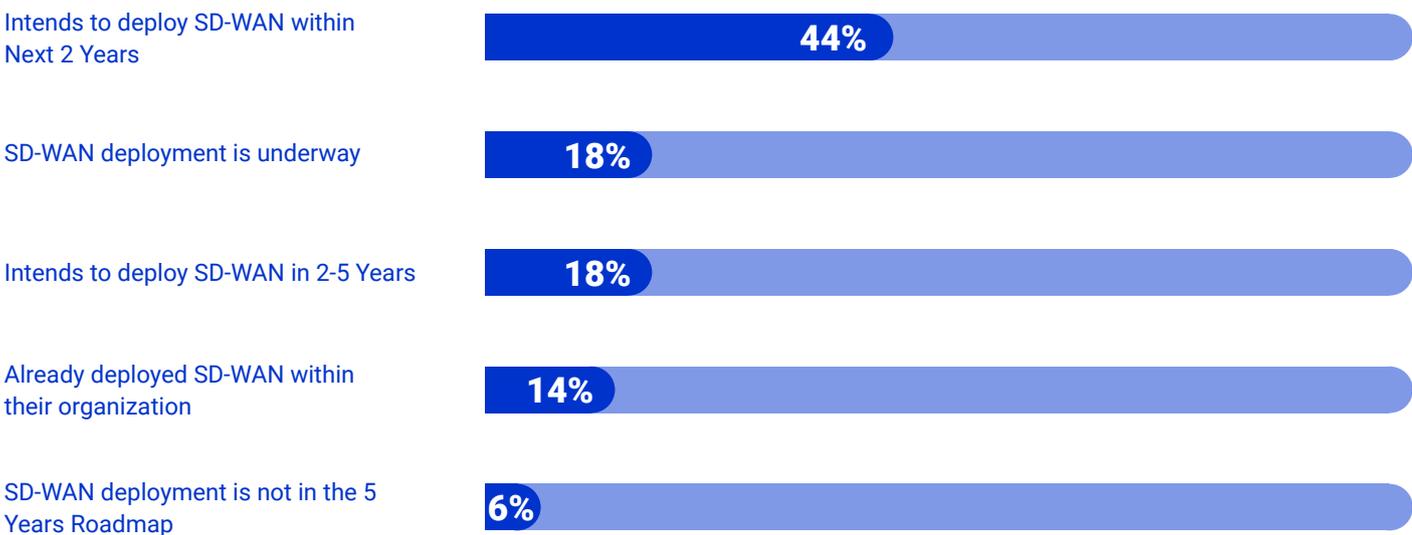
Although, **current status of SD-WAN deployment is very measured** in India as many enterprises are waiting for vendor solutions to evolve before they take a plunge.

Hence, the enterprise are following a slow and steady approach with initial deployment at a few sites before gradually scaling up.

**Around 18%** of the enterprises said that their SD-WAN deployment is underway and they are **running SD-WAN POCs on a few sites as of now.**

About 14% of the enterprises said that they have already deployed SD-WAN within their organizations.

### Adoption Hybrid Cloud and IT environment: Primary Driver for Network transformation



#### Results are based on F&S end-user survey 2018

F&S annually performs a demand side survey for all the product segments involving more than 400+ enterprises in India across verticals. Close to 60% of them are large enterprises and 40% of them are SMBs where Large enterprises are the companies with 250+ Cr revenue.

#### Enterprises Prefer Fully Managed SD-WAN

While SD-WAN is still evolving, the major challenge that enterprises face is implementation and management of SD-WAN. Enterprises may face a dilemma to decide on whether to deploy and manage SD-WAN by self-expertise to ensure more control over the entire migration or to take SD-WAN as a managed service option where the service provider acts as single point of contact for the complete SD-WAN solution, including the appliance, software license, WAN, SLAs and managed services.

Frost & Sullivan conducted a survey among Indian enterprises to know their preferred option to deploy and manage SD-WAN (number of companies surveyed = 400).

The survey results indicate that about half (49%) of the Indian enterprises prefer a **fully managed SD-WAN**. The managed SD-WAN provider could be a network service provider, managed service provider, system integrator or Technology vendor.

The survey results also show that 26% of the respondents prefer the Do It Yourself **(DIY) approach**. SD-WAN does offer

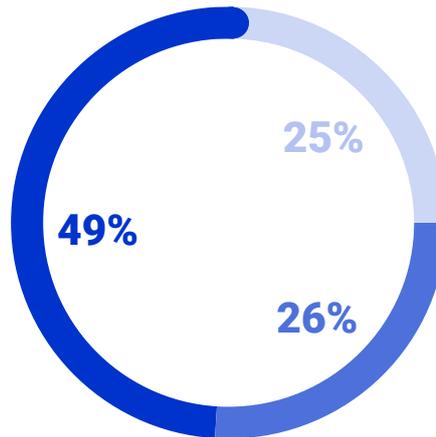
the freedom and control that some business segments want for their WAN. These are enterprises that have the IT staff necessary to deploy and manage the solution themselves versus relying on a service provider.

**Co-managed** is also considered by about a quarter of the enterprises. These enterprises look for a balanced approach wherein they outsource management for complex process while retaining sufficient control over the migration and solution.

**Customer Preference for SD-WAN deployment**

**FULLY MANAGED**

Buy SD-WAN service from a service provider that deploys and manages the SD-WAN solution and related network services



**DO IT YOURSELF**

Procure SD-WAN hardware (and software) directly from the vendor and have the internal network/ IT team deploy and manage it

**CO-MANAGED**

Buy SD-WAN service from a service provider that deploys the SD-WAN solution and related network services, and co-manage the solution along with internal IT team/s

**Why enterprises prefer managed SD-WAN from network service provider?**

WAN management is a complex process and requires expertise on the enterprise end for network managers to run and operate a global WAN. The process can be daunting when it involves multiple transport and access providers from across the globe. Since most organizations are reducing their network/IT staff, to control costs, while putting pressure on existing staff to achieve operation efficiency, SD-WAN management can add to the burden.

That is where managed SD-WAN can help, as managed service providers have the expertise and technology to integrate disparate operations and management systems across various access providers, presenting a unified view for enterprise network teams.

- 52%** Unified and Centralised Management Of All Network Services – Access, Data, Voice, Security
- 48%** Service Provider To Aggregate And Manage Multiple Access Providers
- 39%** Service Providers can Troubleshoot And Restore Services Quicker Than Internal It Team/S
- 52%** Network Service Provider Provide an integrated SLA for SD-WAN Service with Managed Services
- 44%** Allows Redeployment Of Existing Resources To Focus On Strategic Projects
- 32%** Flexibility To Buy And Pay For Services as a Monthly Recurring Charge Instead Of Making Capex Investments

Source: F&S SD-WAN End User Survey 2018; No. of enterprises = 400

## Various Approaches to Sell/Market SD-WAN

SD-WAN market has a very optimistic picture in India in the next couple of years. Enterprises have now started to implement SD-WAN within their organizations and have started to move from POCs to full-fledged commercial deployments. Significant numbers of enterprises in India are expected to deploy SD-WAN within the next 2 years. Therefore, a variety of SD-WAN players such as large technology vendors, SD-WAN start-ups and network service providers are competing to tap the high potential SD-WAN market. Different type of players are going to the market with different value propositions and positioning that is aligned to their core strengths.

Legacy and incumbent technology vendors are also following the inorganic path by acquiring pure-play SD-WAN start-ups to develop pure SD-WAN capabilities.

“We are investing new age IT systems to further transform ourselves digitally. As part of it, We have plans for SD-WAN as we believe it could improve integration of our lab network and corporate network. There are some option that we are exploring which could also help us with smooth transition and management of the entire infrastructure without any hassle.”

**Munender Soperna,  
CIO, Dr. Lal Path Labs**

	LEGACY TECHNOLOGY VENDORS and SIs	SD-WAN START-UPS	NETWORK SERVICE PROVIDERS
Approach	<ul style="list-style-type: none"> <li>Deploys SD-WAN solution (primarily SD-WAN box and software platform) on the customers network with option of managed or unmanaged service</li> </ul>	<ul style="list-style-type: none"> <li>Deploys SD-WAN solution (primarily SD-WAN box and software platform) on the customers network with option of managed or unmanaged service</li> </ul>	<ul style="list-style-type: none"> <li>Deploys SD-WAN solution (primarily SD-WAN box and software platform) on the customers network with option of managed or unmanaged service</li> </ul>
PROS	<ul style="list-style-type: none"> <li>Solution may not be the pure SD-WAN solution as majorly the SD-WAN stack is developed from integration of core competencies such as WAN optimization, routing, security etc.)</li> <li>Do not own network underlay, therefore lack control on SLAs</li> </ul>	<ul style="list-style-type: none"> <li>Lack financial strength that raises concerns on future availability</li> <li>Lacks in terms of SD-WAN equipment capabilities</li> <li>Do not own network underlay, therefore lacks control on SLAs</li> </ul>	<ul style="list-style-type: none"> <li>Need to partner with technology vendor to develop SD-WAN capabilities</li> </ul>
CONS	<ul style="list-style-type: none"> <li>Strong Managed Service Capabilities</li> <li>Suitable for hybrid approach where replacing legacy hardware is not feasible</li> </ul>	<ul style="list-style-type: none"> <li>Pure play SD-WAN solution with most of SD-WAN benefits</li> <li>Competitive pricing</li> </ul>	<ul style="list-style-type: none"> <li>Own the underlay network and controls the network SLAs</li> <li>One-stop-shop for SD-WAN solution for the enterprise</li> <li>Very Strong Managed Service capabilities</li> <li>Expertise in dealing with WAN challenges</li> </ul>

# NTT'S SD-WAN portfolio and capabilities

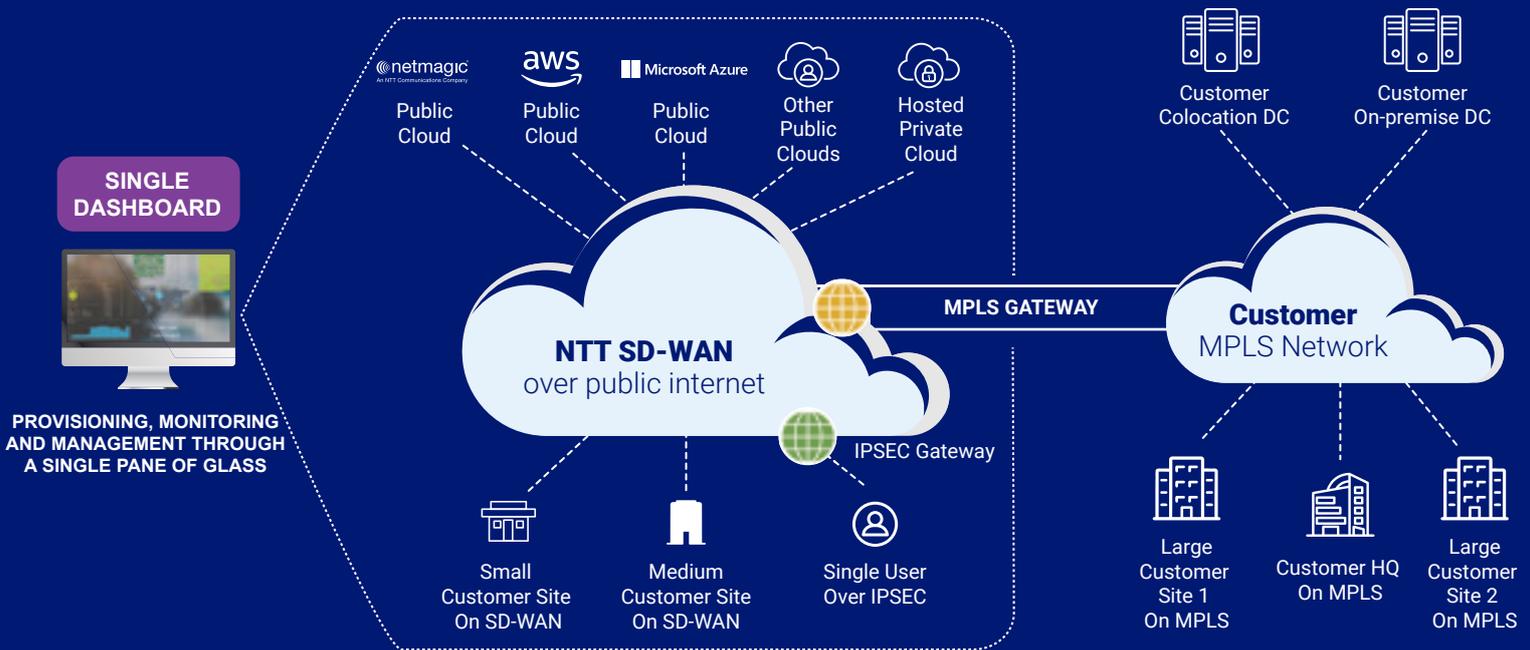
## A brief snapshot of managed SD-WAN portfolio and service model

NTT provides a SD-WAN service that brings forth the next-generation WAN connectivity solution for Indian enterprises in today's cloud centric environment where agility, flexibility and ease of management of entire network from a single user interface are paramount, and all this is delivered by reducing the overall cost of the entire network. The SD-WAN service is independent of the type of network – wireless, wire-line

networks or the public internet – or, whether the applications are hosted in datacenters or on public clouds.

SD-WAN service enables a customer to seamlessly integrate and connect variety of branches (critical and non-critical), corporate office, data centers, public cloud and remote users through variety of WAN links such as Internet, MPLS, Broadband, 4G etc. into a one secure corporate network.

NTT-Netmagic's SD-WAN Service Model



\*Software-Defined DC + Software-Defined WAN + Managed Services

## SD-WAN Services – differentiators and customer benefits

A robust SD-WAN platform integrated with NTT Communications network capabilities and strong carrier network partnership in India is the solid base of NTT-Netmagic's

SD-WAN capabilities. On top of that, company has been able to build a strong SD-WAN solution with the following differentiator and Benefits for the customers.



### Transport/Underlay Agnostic Network

SD-WAN can be deployed over any kind of underlay network such as MPLS, Lease Line, Broadband, 4G etc. It intelligently routes traffic to the various underlay links as per the policies set by customers on the centralized software.



### Self-Manageability Through Portal

NTT-Netmagic has built a digital portal which enables provisioning, monitoring and management of hybrid network through a single interface. It provides customers more control and visibility of their network resources.



### Managed Services

NTT-Netmagic offers a comprehensive suite of managed services for SD-WAN implementation and management that includes network design, migration, data security, last mile connectivity and filed support etc.



### End-To-End Network Security and Availability

NTT-Netmagic has a strong security capabilities integrated with Managed SD-WAN solution wherein it provides edge to edge encryption along with network security services such as Firewall. It also ensures standard SLAs through own network and carrier partnerships



### One-Stop-Shop for ICT Services

NTT-Netmagic has a broad portfolio of ICT services such cloud, datacenter, hosting, Network services along with managed service option. Therefore, The company can act as a one-stop-shop solution for the enterprise



### Cloud Connect Through SD-WAN

NTT-Netmagic provides option to deploy SD-WAN over internet based cloud interconnect network so that enterprise can access public clouds such as AWS securely over Internet as well.

With NTT's SD-WAN, enterprise can get agile and flexible network along with ease of management of entire network from a single user interface, and all this is delivered by reducing the overall TCO of the entire network. Managed services from NTT-

Netmagic is the major differentiator as it enables customers to get the most out of SD-WAN solution as per their business requirement.

## SD-WAN Service Options Based on Customer Requirements

NTT-Netmagic has clearly understood the variety of requirements that the enterprises of different type have in terms of SD-WAN. Therefore, the company has developed three different models/approaches to deliver SD-WAN service as per the requirement of the customer. Depending on the

organizational presence, network requirement and managed service requirement, Enterprises can choose the best suitable option as per their business needs. The three variants of NTT's SD-WAN portfolio are as follows:

Network as A Service Model	Hybrid Cloud	SD-WAN Overlay
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**Model:**

<p>SD-WAN as a service model wherein end-to-end services including appliance, deployment, underlay network and managed services will be provided by NTT-Net magic. End-to-end service management would be taken care by NTT-Netmagic. The company would act as a one-stop-shop for all the SD-WAN requirement to the customer.</p>	<p>NTT-Netmagic would provide entire SD-WAN overlay solution including SD-WAN appliance, deployment, portal and service management.</p> <p>The customer would retain the underlay network contract. NTT-Netmagic would manage all the networks from different providers on behalf of the customer and will provide a consolidated view.</p>	<p>NTT would provide SD-WAN overlay solution that includes SD-WAN deployment over the existing underlay networks of the customer which would be from other network providers.</p> <p>Customer will have to manage the underlay network perimeters with existing network service providers. NTT would be responsible for SD-WAN capabilities.</p>
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**Target Customer type:**

<p>This model is suitable for the organizations who want one single vendor as one stop solution provider.</p> <p>The enterprises who are willing to completely overhaul their network and do not have much dependence on legacy networks would go for Network-as-a-service model.</p>	<p>It is suitable for the organizations who have existing legacy network at several locations from variety of providers.</p> <p>Therefore, along with SD-WAN capability, they want consolidated management of their entire network.</p>	<p>This approach is suitable for organizations who want to take advantage of SD WAN, but do not want to change their current network as they are able to manage them effectively.</p>
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## NTT'S SD-WAN with Managed Services

NTT-Netmagic provides a comprehensive suite of managed services with its SD-WAN solution to enable a one-stop shop for customer to procure SD-WAN solution and supporting services to manage the service end-to-end and provide business benefits such as agility, lower TCO, optimized bandwidth utilization, easy management etc. The managed and supporting services are as follows:

	Managed Service approach	Business benefits
<b>SD-WAN-as-a-Service</b>	End-to-end service would be provided to the customer on the subscription based model; the platform would be hosted at NTT-Netmagic's DCs	<ul style="list-style-type: none"> <li>• Low capital expenditure</li> <li>• Peace of mind as the customer need not to worry about management of its network</li> </ul>
<b>Field Support</b>	Provides comprehensive field support for pan India locations with centralized help desk; Entire network is managed by NTT-Netmagic	<ul style="list-style-type: none"> <li>• Peace of mind as the customer need not to worry about any kind of on-field network issues</li> </ul>
<b>Manage Service Customer Portal</b>	Provides Unified customer portal that enables to analyze, provision, monitor and manage network resources through a single user interface	<ul style="list-style-type: none"> <li>• More visibility and control of Network resources</li> </ul>
<b>Network Service - Underlay transport</b>	Provides underlay transport such as MPLS and internet in addition to SD-WAN overlay; Uses NTT's network license and carrier network partnerships	<ul style="list-style-type: none"> <li>• Reduce total networking cost by enabling customer to expand/add new location through cheaper links such as Internet and integrating it through MPLS gateway</li> <li>• Ensure service availability through standard underlay SLAs</li> </ul>
<b>Manage Service Deliverable</b>	Provides traditional managed service deliverable such as status reports, monitoring, ticketing, incident calls, performance status for entire network (Overlay as well as underlay)	<ul style="list-style-type: none"> <li>• Easy management of complex hybrid networks</li> </ul>
<b>One stop Solution for Wan and ICT Requirement</b>	Provides end-to-end ICT portfolio that includes cloud & hosting, data center, security and network service including SD-WAN	<ul style="list-style-type: none"> <li>• Customers need not to manage multiple service provider for variety of service</li> <li>• Seamless integration and compatibility of newer services</li> </ul>



NODE 01

NODE 04

NODE 05

NODE 02

NODE 06

BLOCK 01

BLOCK 01

NODE 01

NODE 02

NODE

BLOCK 02

## SD-WAN Use-Cases

### Major SD-WAN use-cases in India (1/3)

#### Hybrid WAN – Suitable to Larger Enterprises with Multiple Critical sites

Large and Mid-sized enterprises in India now have the requirement of different types of connectivity to fulfill the organizational connectivity needs such as data center connectivity, branch office connectivity and remote site connectivity, cloud connectivity etc. Therefore, enterprises are deploying various types of network links such as MPLS, Ethernet, Internet Leased Line, broadband and 4G. But, it has become very difficult for enterprise to manage this complex network environment.

**Network availability and performance** at all the units have become concerns for the enterprises. **Network segmentation between supplier partner and business unit is also an issue.**

Apart from that, complex networking environment is leading to

lack in flexibility, in-effective cost optimization and higher time-to-market.

Integrated and Managed SD-WAN service is the **suitable solution for the enterprise facing all of the above discussed issues.**

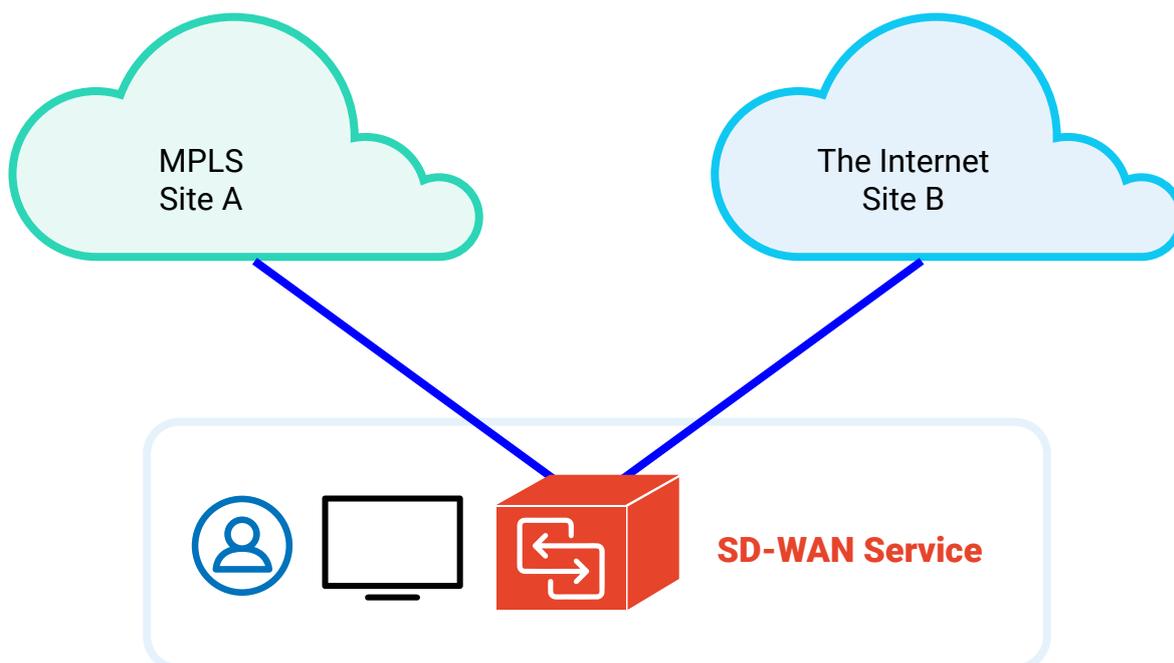
SD-WAN solution has **Single Network and management console with Multi-carrier approach** and is able to isolate network segments based on process, business unit or department.

With the adoption of Managed SD-WAN solution, enterprises are able to achieve multiple business benefits and organizational objectives.

Enterprise **network would no longer depend on specific Service provider feasibility** and enterprise can leverage best of the transport technology solution available at branch.

#### Use Case 1: Hybrid WAN

#### Customer Site A on MPLS and Site B on Internet

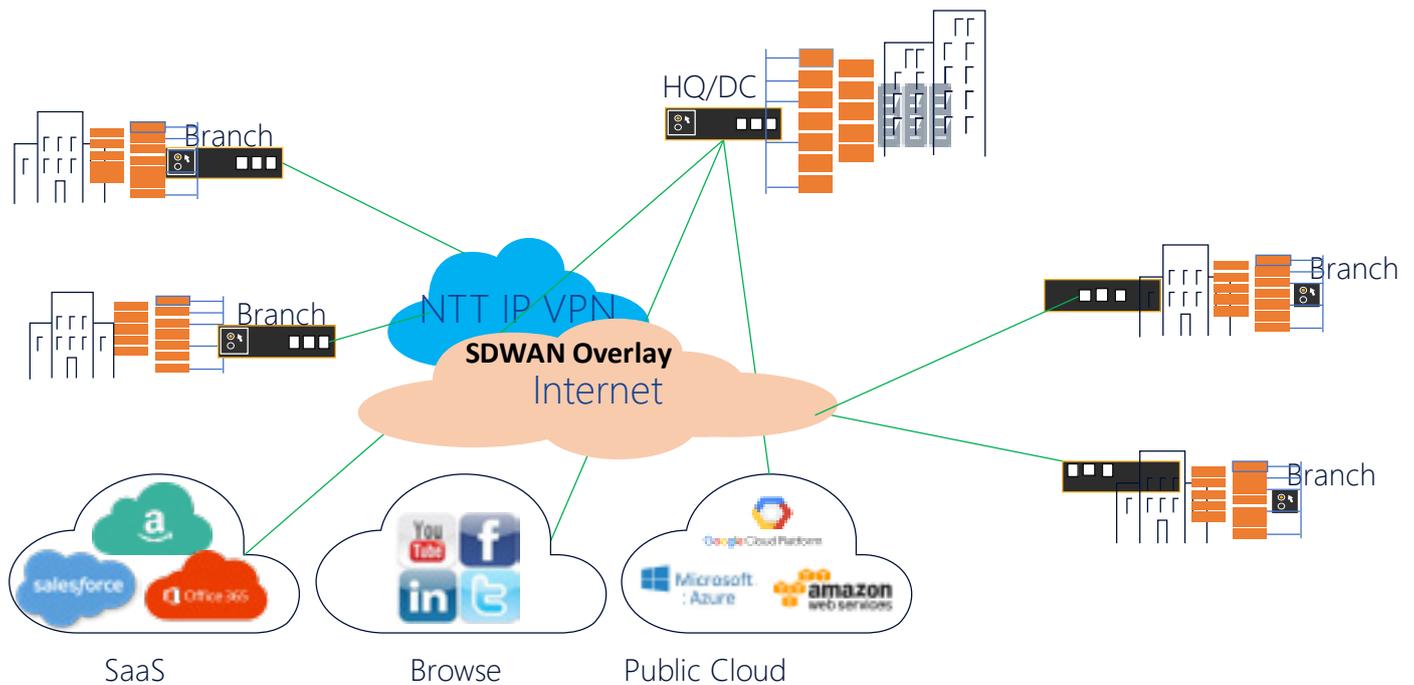


## Major SD-WAN use-cases in India (2/3)

### SD-WAN over Internet/Broadband – Suitable for organizations who have large number of sites to connect but does not require high level of security and robustness

Many organization in India, specifically in Automobile, retail, hospitality, and healthcare industry, have multiple sites (owned as well as partner sites) to connect for their seamless business operations, but they do not require high capacity connectivity options such as MPLS, Ethernet. These organizations can use low cost connectivity options such as broadband and can deploy SD-WAN over broadband to rapidly expand their reach and seamlessly connect and manage all the sites through a single pane of glass.

#### Use Case 2: Large number of Sites Over Internet/MPS

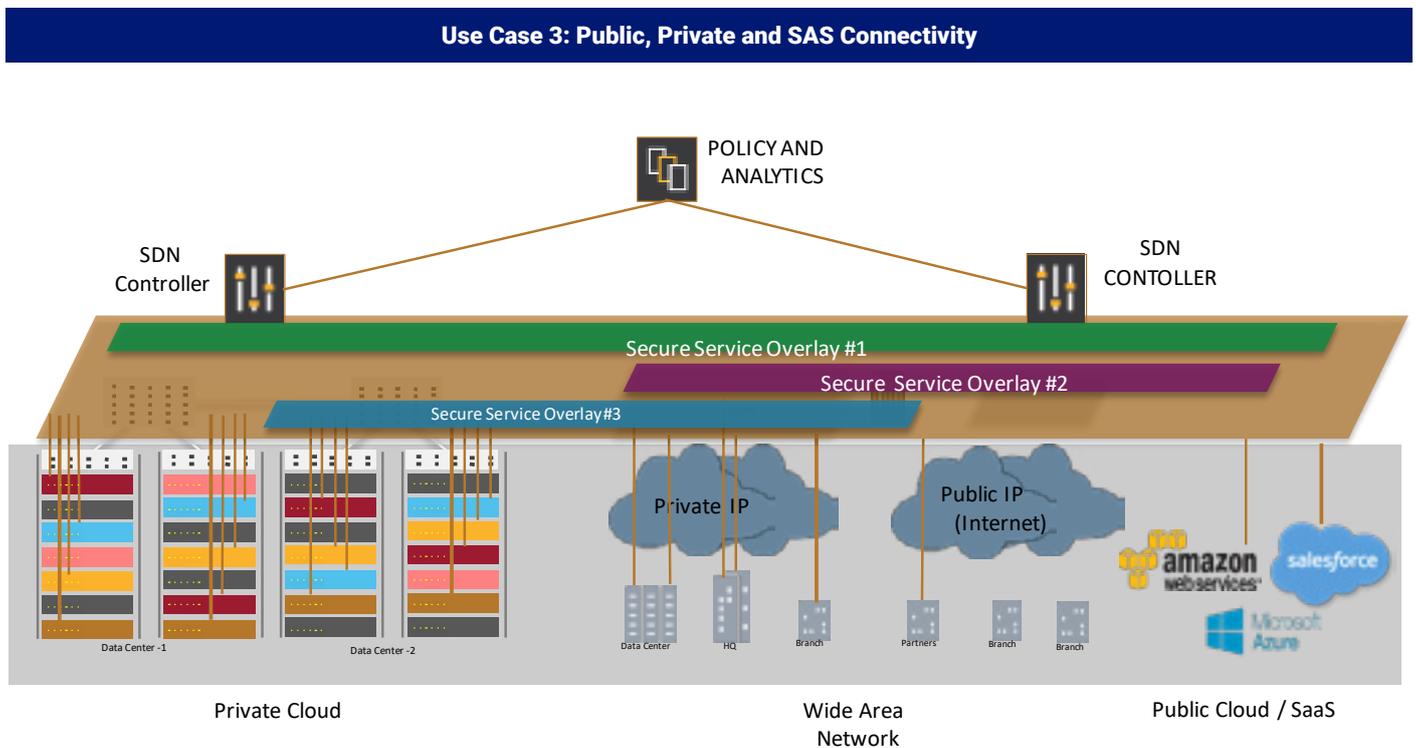


## Major SD-WAN use-cases in India (3/3)

### SD-WAN for Private, Public Cloud and SaaS Connectivity

Enterprises in India are moving their workloads and applications to the cloud such as SaaS (O365, Salesforce and Gdocs) and IaaS/PaaS for in-house Apps using public cloud offerings such as AWS, Microsoft Azure and Google Cloud. Therefore, enterprise are exploring multiple option for secure access and connectivity to public clouds such as AWS, Azure or Google cloud as well as private cloud. They are facing various challenges such as passiveness of network to understand the workloads that are distributed between private, public cloud and SaaS.

SD-WAN can be a suitable solution to above mentioned cloud connectivity challenges as it can seamlessly extend WAN into private or public cloud compute through NSG VM instance in cloud environment e.g. AWS, Azure and Google Cloud etc.



## Conclusion and Outlook

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As we have seen that, SD-WAN market in India is at an initial stage as of yet with only 18% adoption among enterprises (including POCs). But, the market picture for near future is very optimistic with more than 44% of enterprises wanting to implement SD-WAN within next 2 years. With this optimistic picture, a variety of SD-WAN players such as large technology vendors, SD-WAN start-ups and network

service providers are competing to tap the high potential SD-WAN market. Different type of players (OEMs, Service providers, Security companies etc.) are going to the market with different value propositions and positioning that is aligned to their core strengths. The market is expected to evolve with a rapid pace. Therefore, dynamic changes in the market would lead to following trends in near future:

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### **Fully managed SD-WAN service as a preferred choice for enterprises**

Our end-user survey suggested that, about 49% of the enterprises would prefer fully managed SD-WAN offering at the moment. With increasing awareness about SD-WAN and its business benefits, percentage of enterprises opting for fully managed services is going to increase further.

### **Evolved SD-WAN solution with capabilities such as service chaining**

Vendors and service providers have plans to integrate third party virtual network Functions in SD-WAN solution. Service chaining is the future that would provide catalogs of connected services that enable the use of a single network connection for many services, with different characteristics.

### **Integration of software defined security perimeters**

With migration of the enterprise workloads to the cloud, security is becoming paramount to the enterprise. With increasing maturity next generation network services such as SD-WAN, traditional security solution would not be optimal to use.

### **Lifecycle service orchestration with SDN/NFV**

Lifecycle Service orchestration enables real-time automation, monitoring, and service assurance for a wide range of network-based services. Integration of LSO with software-based models such as SDN/NFV is expected in near future to provide enhanced visibility and automation to network services.

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#### **About NTT Ltd.**

NTT Ltd. is a leading global technology services company bringing together 28 brands including NTT Communications, Dimension Data, and NTT Security. We partner with organizations around the world to shape and achieve outcomes through intelligent technology solutions. For us, intelligent means data driven, connected, digital, and secure. As a global ICT provider, we employ more than 40,000 people in a diverse and dynamic workplace that spans 57 countries and regions, trades in 73 countries and regions, and delivers services in over 200 countries and regions. Together we enable the connected future. Visit us at our new website <https://hello.global.ntt>

#### **About NTT-Netmagic**

NTT-Netmagic, a wholly-owned subsidiary of NTT, is India's leading Managed Hosting and Multi-Cloud Hybrid IT solution provider serving more than 2000 enterprises globally. Headquartered in Mumbai, NTT-Netmagic also delivers Remote Infrastructure Management (RIM) services to various enterprise customers globally across Americas, Europe and Asia-Pacific region. The Company was the first in India to launch services – Cloud Computing, Managed Security, Disaster Recovery-as-a-Service (DRaaS) and Software-Defined Storage. NTT-Netmagic has been recognized with 8 awards at the CIO Choice 2020, and 2 awards at the Datacenter Dynamics India 2019. To learn more, visit us at: [www.netmagicsolutions.com](http://www.netmagicsolutions.com)

#### **About Frost & Sullivan**

Frost & Sullivan, the Growth Partnership Company, works in collaboration with clients to leverage visionary innovation that addresses the global challenges and related growth opportunities that will make or break today's market participants. For more than 50 years, we have been developing growth strategies for the Global 1000, emerging businesses, the public sector and the investment community. Is your organization prepared for the next profound wave of industry convergence, disruptive technologies, increasing competitive intensity, Mega Trends, breakthrough best practices, changing customer dynamics and emerging economies.

**Together we do great things**

**NTT-Netmagic**

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