HCL

SENSUS

Charting the future of software defined **Networking**
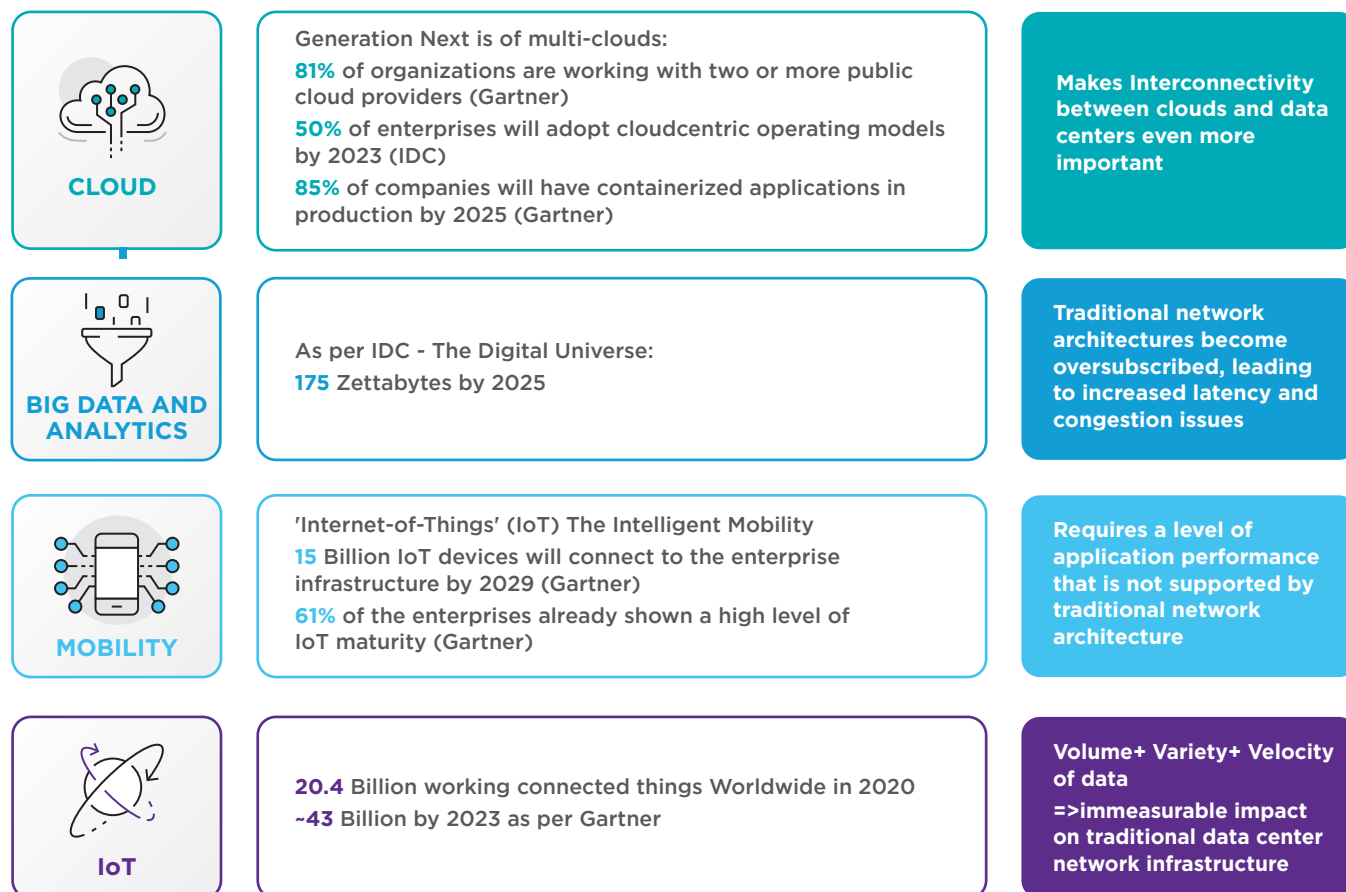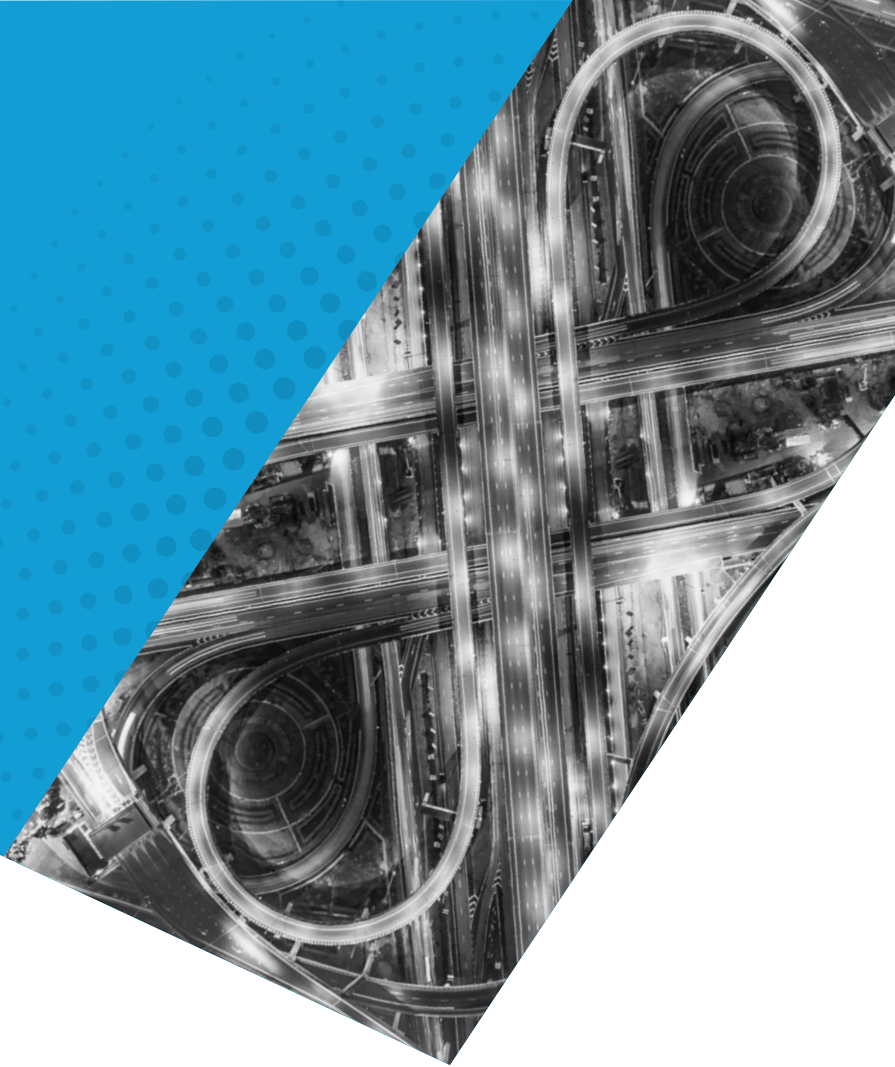
Why
Next-Gen Networks?

The rapid and large scale adoption of new age disruptive digital technologies has resulted in astronomical growth of data. Additionally, experience based, virtual and IoT applications are setting up the network to become high performing, sophisticated and self-aware. Conventional networks can't provide the necessary flexibility for these new age business requirements because of proprietary hardware dependency and manual network deployment. Thus, traditional networks impede overall data center agility. Network Infrastructure solutions, therefore, must go beyond the traditional data center to cope up with the business rising requirements.

The diagram below highlights the impact of digital transformation:

CLOUD	Generation Next is of multi-clouds: **81%** of organizations are working with two or more public cloud providers (Gartner) **50%** of enterprises will adopt cloudcentric operating models by 2023 (IDC) **85%** of companies will have containerized applications in production by 2025 (Gartner)	**Makes Interconnectivity between clouds and data centers even more important**
BIG DATA AND ANALYTICS	As per IDC - The Digital Universe: **175** Zettabytes by 2025	**Traditional network architectures become oversubscribed, leading to increased latency and congestion issues**
MOBILITY	'Internet-of-Things' (IoT) The Intelligent Mobility **15** Billion IoT devices will connect to the enterprise infrastructure by 2029 (Gartner) **61%** of the enterprises already shown a high level of IoT maturity (Gartner)	**Requires a level of application performance that is not supported by traditional network architecture**
IoT	**20.4** Billion working connected things Worldwide in 2020 **~43** Billion by 2023 as per Gartner	**Volume+ Variety+ Velocity of data** **=>immeasurable impact on traditional data center network infrastructure**

Paving the roadmap for SDN 2.0:

Software Defined Networks (SDN) coupled with Network Functional Virtualization (NFV) has been a disruptive formula. Both NFV and SDN deliver agility, flexibility and programmability that align closely with the needs of increasingly critical applications. Despite these remarkable capabilities, SDN has seen limited adoption.

Arguably, some of the major roadblocks are attributed to:

ARCHITECTURAL COMPLEXITY	**VENDOR RESTRICTIONS**	**TROUBLESOME MIGRATION**	**CULTURAL OBSTRUCTIONS**
APPLICATION MOBILITY CONSTRAINTS	**MULTI-TENANT ANALYTICS**	**DEVOPS COLLABORATION**	**STATIC NETWORK MANAGEMENT AND INSIGHTS**

The SDN architecture needs to be reengineered to address the following dynamics:

Investment Protection

- Leveraging existing underlay or Greenfield Deployment
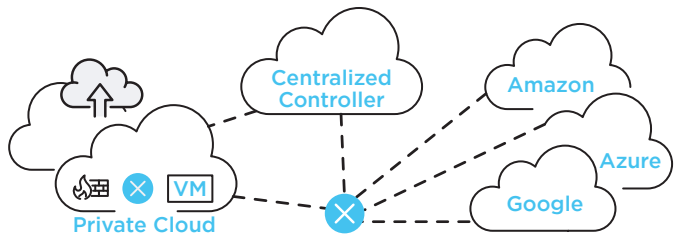- Complexity with Vendor Lock-In
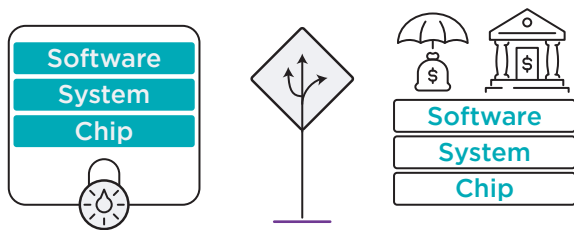
Vendor Specific Hardware
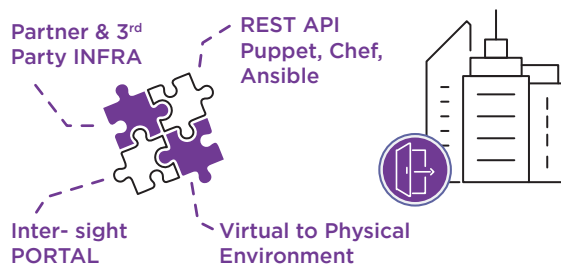*Vendor Specific Software*
Green/Grey
Network Abstraction

Multi-Cloud Hybrid NW Collaboration

- Application Mapping & Real Time NW – Discovery & Topology View
- Capability & **Roadmap**

Advanced Integration

- **Multi Tower Strategy (Discrete vs Hyper converged)**
- Multi Tenant; Open API; Traffic Profiling

Partner & 3rd Party INFRA
REST API Puppet, Chef, Ansible
Inter- sight PORTAL
Virtual to Physical Environment
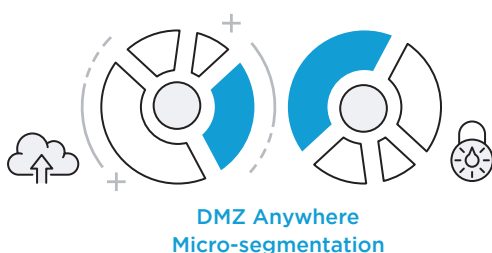
Migration & Workload Portability

- 'As a Service' levels of Abstraction
- Software Defined Visibility
- Intelligent Traffic Flow
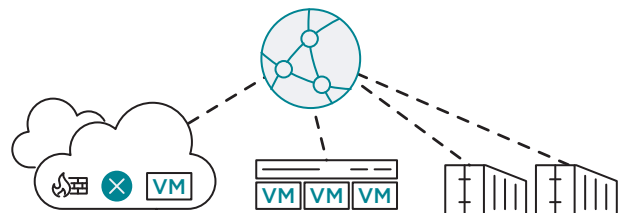
*Unified Provisioning – Physical, Virtual, Tenants in Seconds?*

Risk Averse and Secure

- Security Groups; Firewalls & NGFWs
- Unified Security Policy
- Security Automation & Compliance

DMZ Anywhere Micro-segmentation

True Automation & Orchestration

- ML and NLP based automation
- Auto – Optimize, Self Aware

Proactive and preventative business improvement

Analytic Engine
NetBot
Script Library
User Defined Workflows
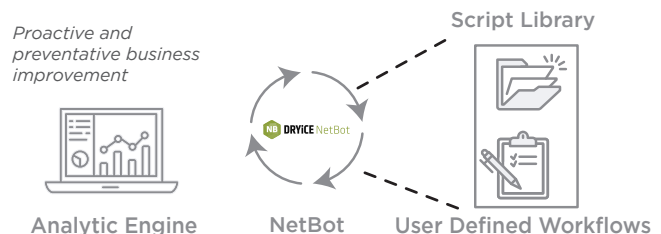
What is Sensus?

Sensus is HCL's Software-Defined Network (SDN) framework that covers end-to-end transformation of data center's network infrastructure.

It takes into consideration a broad range of engineering and architecture parameters in defining the right SDN strategy. The framework takes a holistic view of the network environment considering transformational benefits of software based control and API-driven agility. It integrates programmability to network infrastructure so as to make it virtualized, automated and readily adaptable to changing workload needs and hybrid ecosystem. It uses a vendor-neutral approach to stitch the right solution forming a seamless fit for the overall multi tower strategy.

SENSUS enhances network agility, security and operational efficiency

Some of its key business and IT benefits include:

Greater Network Agility
Network programmability and virtualization dynamically adjust the network-wide traffic flow based on workload demands
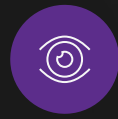
Improved Operational Efficiency
Single plane of glass for all change management and policy needs, including automated provisioning, configuration and control

Faster Time-to-Market
Quick design and deployment of applications through network virtualization and policy based automation

Pervasive Visibility and Analytics
Real time monitoring and analytics for the entire network infrastructure through machine learning and behaviour analysis based techniques

Hybrid Interconnect
On-Demand and highly reliable interconnect between on-premises and multi-cloud DC setup, that facilitates seamless application mobility, workload portability, and hybrid network consolidation

Real Time Topology Mapping
Dynamic mapping of application and network infrastructure, flows, and dependencies across physical, virtual and cloud based infrastructure
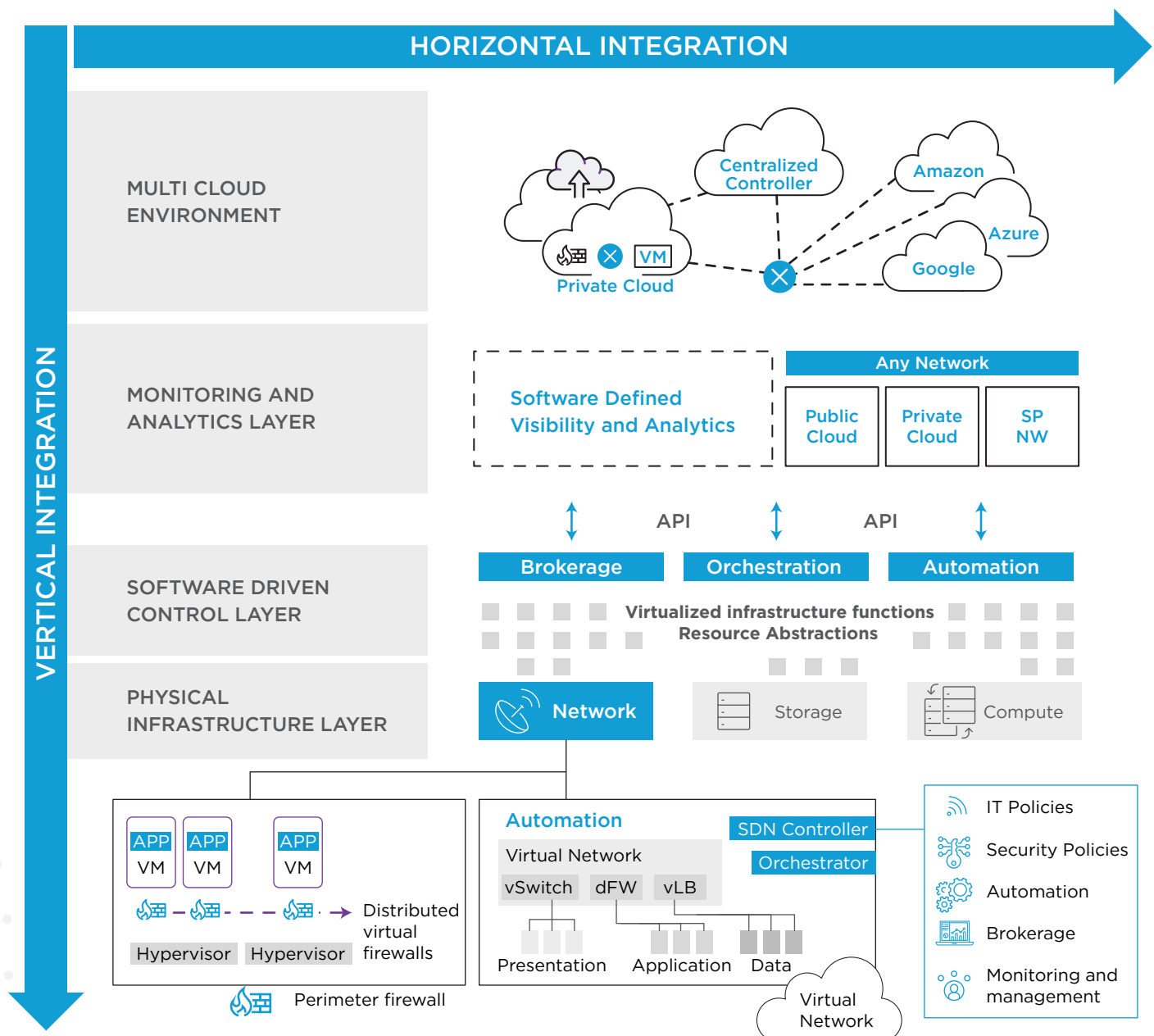
Improved Security
Unprecedented security for applications and network endpoints through Micro-segmentation and Zero-Trust-based Security model

Platform and Vendor Agnostic
Vendor-neutral approach allows seamless integration with third party and complimenting tools through an Open API architecture

HORIZONTAL INTEGRATION

VERTICAL INTEGRATION

MULTI CLOUD ENVIRONMENT

Centralized Controller

Amazon

Azure

Google

Private Cloud

VM

MONITORING AND ANALYTICS LAYER

Software Defined Visibility and Analytics

Any Network

Public Cloud

Private Cloud

SP NW

API

API

SOFTWARE DRIVEN CONTROL LAYER

Brokerage

Orchestration

Automation

Virtualized infrastructure functions
Resource Abstractions

PHYSICAL INFRASTRUCTURE LAYER

Network

Storage

Compute

APP VM

APP VM

APP VM

Distributed virtual firewalls

Hypervisor

Hypervisor

Perimeter firewall

Automation

Virtual Network

vSwitch   dFW   vLB

Presentation   Application   Data

Virtual Network

SDN Controller

Orchestrator

IT Policies

Security Policies

Automation

Brokerage

Monitoring and management

VERTICAL INTEGRATION

- Mapping and Integration of Applications; Align network functions instantly to match application requirements

- Hardware independence of Virtual Network Functions

- Automatic Deployment; Deploy workloads and network functions together

- Hybrid Interconnect; Enabling application mobility and workload portability

- Elasticity and lifecycle management

HORIZONTAL INTEGRATION

- Fully Programmable; Creating agility for rapid app innovation

- Orchestration of physical and virtual networks with systems and storage

- Network functions chaining and Bimodal support

- Centralized management and monitoring

- Improving visibility and governance

Success
Stories

Reimagining Data Center Network For A Leading Manufacturing Firm

A leading European manufacturing company struggled with restrained business scalability and agility due to huge obsolescent legacy network infrastructure. With a multitude of other challenges, costs, time and errors increased while overall productivity and operational efficiency suffered.

HCL Sensus reduced **CAPEX and OPEX by 30%** and introduced scalable multi-tenancy with greater network agility.

For more details, download the case study by clicking here.

Enabling Business Agility Through Data Center Network Overhaul

A leading medical MNC was challenged by a massive fragmented physical infrastructure with outmoded legacy systems, vendor lock-ins, poor network visibility, error prone and time and effort consuming configuration and change management activities.

Our solution, **Sensus**, led to increased network agility, faster GTM, reduced capex, and improved efficiency, network monitoring and troubleshooting.

For more details, please download the case study by clicking here.

For more information or any queries about how HCL's Infrastructure Management Services can help you simplify IT complexity and support your business' digital initiatives
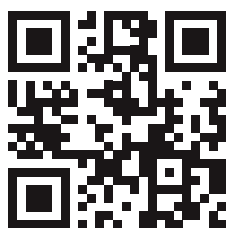
please contact us at ***Contact.NGN@hcl.com***

HCL

HCL Technologies (HCL) empowers global enterprises with technology for the next decade today. HCL's Mode 1-2-3 strategy, through its deep-domain industry expertise, customer-centricity and entrepreneurial culture of ideapreneurship™ enables businesses to transform into next-gen enterprises.

HCL offers its services and products through three lines of business - IT and Business Services (ITBS), Engineering and R&D Services (ERS), and Products & Platforms (P&P). ITBS enables global enterprises to transform their businesses through offerings in areas of Applications, Infrastructure, Digital Process Operations, and next generation digital transformation solutions. ERS offers engineering services and solutions in all aspects of product development and platform engineering while under P&P. HCL provides modernized software products to global clients for their technology and industry specific requirements. Through its cutting-edge co-innovation labs, global delivery capabilities, and broad global network, HCL delivers holistic services in various industry verticals, categorized under Financial Services, Manufacturing, Technology & Services, Telecom & Media, Retail & CPG, Life Sciences, and Healthcare and Public Services.

As a leading global technology company, HCL takes pride in its diversity, social responsibility, sustainability, and education initiatives. As of June 30, 2021, HCL Enterprise generates annual revenues of US$ 10.5 billion and has 176,000 employees operating out of 50 countries. For more information, visit www.hcltech.com

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