BUILDING THE CLASSROOMS OF TOMORROW
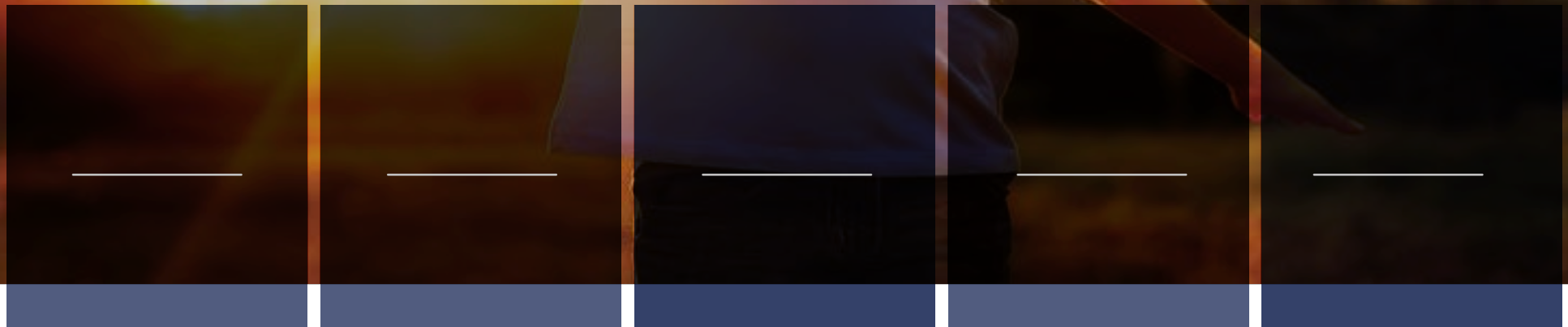
Digital Transformation in Education

SIFY SERVICES

REIMAGINING YOUR BUSINESS
FOR A DIGITAL FUTURE

Given the impact of education on society, it is critical for educational institutions to leverage emerging technologies for digitization of content creation and delivery, enabling personalized learning experiences. Big data and predictive analytics, connected devices, mobile applications and platforms along with Hybrid IT ecosystem can achieve anytime-anywhere-any device immersive learning experiences.

TRADITIONAL

BUSINESS MODEL

- Institutionalized teaching, classroom oriented
- Coaching centers/ private tutoring

LEARNING PEDAGOGY

- One-size-fits-all
- Just-in-case- learning (JICL) with an excessive overload of information in a one-location-one-time-instruction format
- Static linear content

STUDENT ENGAGEMENT

- Textbook-based learning
- Chalk and talk/ classroom oriented lectures
- Pen and paper assessment model

EDUCATIONAL ECOSYSTEM

- Multiple education governing boards, lacking globally accepted benchmarks to grade students
- Passive information consumption in silos
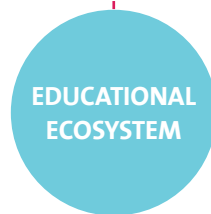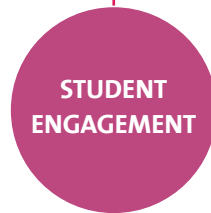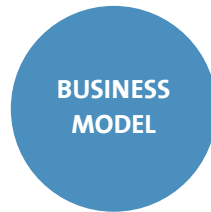
FUTURE STATE

- Smart classroom with digital ready courseware
- Virtual classrooms
- Mobile platforms / apps for learning and development with digital content for deep learning
- Self-paced online education for anytime, anywhere learning across devices with elements of virtual lecture
- Personalized content leveraging deep learning technologies including virtual reality, 2D graphics, gamification, video, e-books etc.

- Personalized content and learning experience
- Just-in-time learning (JITL) by getting the necessary information anytime, anywhere to solve real-world problems
- Increased adoption of re-skilling programs /skill enhancement with certifications
- Crowd sourced content in dynamic form
- Adaptive and blended learning
- Experiential, simulation-based learning
- Mobile, on-the-go learning
- Collaboration platform for students and teachers to co-create solutions and make learning more real and relevant

- Integrated student lifecycle management systems for a holistic education experience including application, selection, onboarding, course design, feedback, after-school support, day-to-day administration
- Edutainment oriented educational materials with entertaining and interactive designs, virtual reality, 2D graphics, gamification
- Digital assessments
- Smart and secure interconnected campuses, virtual class-rooms
- Connected labs and research centers
- Wi-Fi enabled transportation

- Real-time access to data from multiple systems with minimal manual intervention
- Advanced systems for fraud detection

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BUSINESS TRANSFORMATION IMPERATIVES TODAY

Ensure institutional transparency
for adherence to education board guideliness

Develop experiential learning pedagogy
to accelerate student learning

Build connected campus to enable students collaborate and communicate
with an agile and flexible technology landscape

Create an integrated digital education ecosystem
to provide the best of learning resources to students and educators

Build an engaging student learning platform
to effectively create micro-learning self-learning opportunities

Empower educators
by integrating digital in classrooms to enable intelligent delivery

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It is critical for educational institutions to leverage emerging technologies for digitization of content creation and delivery, enabling personalized learning experiences. Big data and predictive analytics, connected devices, mobile applications and platforms along with hybrid IT ecosystem can achieve anytime-anywhere-any-device immersive learning experiences.

TECHNOLOGY TRENDS TRANSFORMING THE INDUSTRY

Cloud

Network

Security
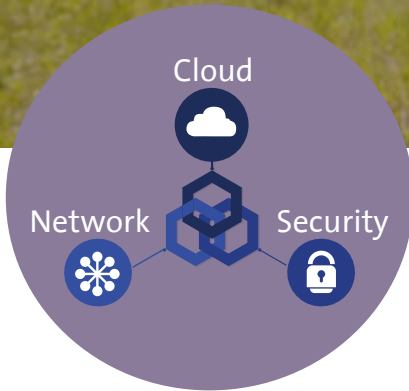
Hybrid IT as backbone

Key elements of a hybrid IT infrastructure acting as the building blocks of enabling the implementation of emerging technologies

Big Data Analytics
- Learning analytics to drive curriculum design
- Availability of data for academic research purposes
- Integrate data into the decision making processes to drive student success outcomes at each stage of the lifecycle

Internet of Things (IoT)
- Connected campus
- IoT enabled, gesture-based learning for students with special needs
- Real-time location tracking of transport to ensure student safety

Artificial Intelligence/ Machine Learning (AI/ML)
- AI-driven virtual chat-bots to address student queries
- Adaptive learning
- Automated AI enabled grading for all testing formats

Virtual Reality (VR) and 3D Simulation
- Virtual classrooms to deliver an immersive learning experience
- Delivering deeper engagement with 3D simulaation of real world environments for experiential learning
- Gamified content, evaluation and grading by implementing an experience points system

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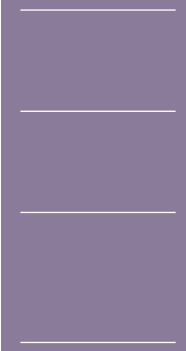
SIFY AS AN ENABLER
OF DIGITAL TRANSFORMATION

SIFY'S CLOUD AND DATA CENTER TRANSFORMATION SERVICES

MAKE DATA STORAGE AND ACCESS MECHANISMS MORE EFFICIENT AND RELIABLE
Improved teaching pedagogy through dynamic curriculum design will be driven by student data analytics which requires resilient, robust, high-availability infrastructure

SIFY'S APPLICATION AND PLATFORM SERVICES

ACHIEVE PROCESS EFFICIENCY AND COST OPTIMIZATION WITH STREAMLINING ADMINISTRATIVE PROCESSES
Enable setting up the infrastructure & platform environment to meet your staff (teaching aids, collaboration, adaptive assessments) and student (learning materials, online courses) requirements

SIFY'S TECHNOLOGY INTEGRATION SERVICES

INTEGRATE LEGACY SYSTEMS
Augmentation and automation of ancillary processes in the education industry shall be driven by AI, which will require integration of data from multiple sources

SIFY'S NETWORK TRANSFORMATION SOLUTIONS

BUILD A CONNECTED CAMPUS AND CROSS-INSTITUTIONAL ECOSYSTEM IN A SEAMLESS MANNER
The network is uniquely positioned to support the requirements of connectivity, power, scalability, compute and manageability

SIFY'S MANAGED SECURITY SERVICES

REAL-TIME MONITORING AND MANAGEMENT
Preventive, detective and corrective mechanisms to combat emerging cyber security threats

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SIFY MOVES UP
IN GARTNER MAGIC QUADRANT FOR HYBRID CLOUD

Magic Quadrant for Managed Hybrid Cloud Hosting, Asia/Pacific

CHALLENGERS	LEADERS

Fujitsu, IIJ, Rackspace, NTT Communications, Telstra, CenturyLink, Sify Technologies, Ctrl8 Datacenters, NxtGen, Dataplpe, Orange Business Services, BT, IBM, Tata Communications

ABILITY TO EXECUTE

NICHE PLAYERS	VISIONARIES

COMPLETENESS OF VISION — As of October 2017   © Gartner, Inc

Source: Gartner (October 2017)

Sify has emerged **a challenger in providing managed hybrid cloud hosting services** with unique proposition combining infrastructure, public cloud, connectivity and consistent service delivery.

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DIGITAL TRANSFORMATION GOALS

Goal
Engage students to transform learning experience

- Develop multiple channels for student-teacher interaction and collaboration
- Greater mobility for students by creating personalized content
- Develop flexible learning programs with multiple entry and exit points

Technology enablers

IOT
Integrated platforms
Data analytics

Sify services
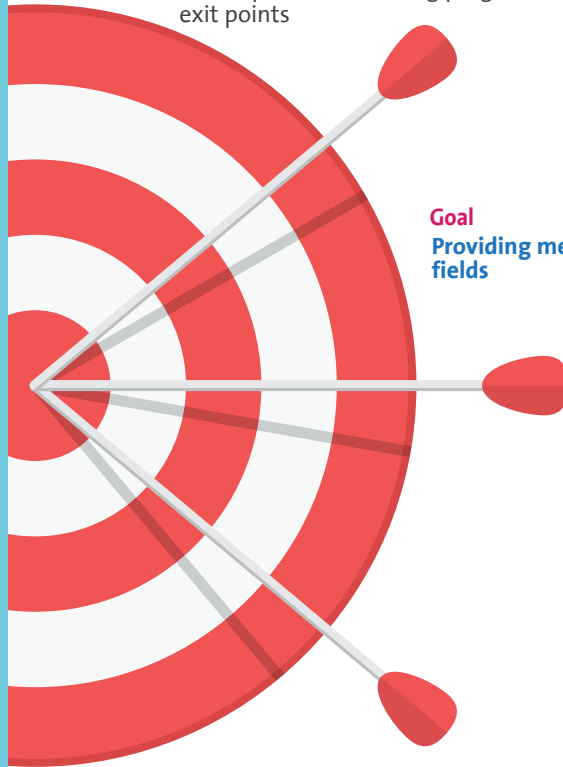
Goal
Providing mentorship from experts in various fields

- Adaptive, smart interventions based on assessment feedback
- Develop research platforms to propagate quick findings
- Develop multi-disciplinary and applied research capabilities through adjunct and industry faculty tracks

Augmented reality
Artificial intelligence
Gamification

Goal
Drive efficiency by optimizing institutions & re-aligning workflows

- Enhance flexibility in institutional process and bring down administrative costs
- Automated re-calibration of program offerings to remain relevant

Integrated platforms
Analytics
Automation

Data Centre Transformation (Cloud) and Infrastructure Services

Application and Platform Services

Technology Integration Services

Network Transformation and Connectivity Services

Managed Security Services

Internet of Things

SIFY SERVICES

DIGITAL TRANSFORMATION GOALS

Technology enablers

Sify services

Goal

Transform learning pedagogy for immtersive learning

- Design curriculum with strong linkages and exposure to real world problems
- Create in-person and virtual learning opportunities
- Deep insight into learning gaps, enabling a tailored approach

Artificial intelligence
Blockchain
Data analytics

Goal

Cross-institutional collaboration with a connected ecosystem

- Global reach and personalized customization of content
- Build a connected campus to enable anytime-anywhere access to open education resources(OER)
- Promote dynamic exchanges and participation amongst educators, students and parents

Integrated platforms
Automation
Data analytics

Goal

Technology transformation enabling value based education

- Data-interoperability across educational platforms
- Modular and agile infrastructure
- On-demand scalable IT landscape

Cloud
Seamless connectivity
Modular IT architecture
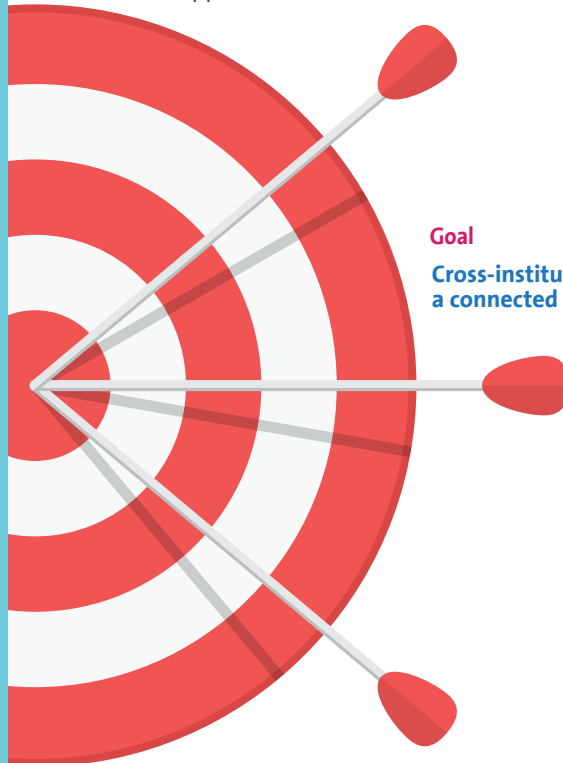
Data Centre Transformation (Cloud) and Infrastructure Services

Application and Platform Services

Technology Integration Services

Network Transformation and Connectivity Services

Managed Security Services

Internet of Things

SIFY'S EVOLUTION
AS A DIGITAL TRANSFORMATION PARTNER

2020 — **Application Centric Digital Transformation Partner**
- Software Defined DC & Network
- IoT integration

Empowering new collaborated teaching models through Blockchain technology

2017 — **Converged ICT Services Provider (Cloud@Core)**
- Hybrid IT
- IoT & Managed Wi-Fi
- Data Center Transformation, Platform & Application Services
- Oracle & Microsoft

Real-time data through connected devices

Virtual assistants to automate query resolution

2013 — **Data Center, Cloud & Network Services Provider**
- Public Cloud
- Security-as-a-Service

Cross-institutional collaboration

Adaptive assessment across multiple locations

2010 — **Managed DC & Network Services Provider**
- Managed Services
- Security Services

Improved content delivery across multi-channel environment

2007 — **Network & DC Hosting Provider**
- VPN Services
- Data Center Hosting

24x7 availability & accessibility to core platform

SIFY SERVICES

CLOUD@CORE

CLOUD ENABLING

CLOUD DATA CENTERS

HYPER REACH / HYPER SCALE TRANSPORT
AWS DIRECTCONNECT | XPRESSROUTE

SOFTWARE DEFINED NETWORK SERVICES

CLOUD BUILD
PRIVATE | HYPERCONVERGED | ENTERPRISE

SECURITY SERVICES FOR CLOUD

CLOUD INSPIRED

MANAGED WIRELESS PLATFORM

ORACLE CLOUD SERVICES
EXADATA-AS-SERVICE

PRIVATE CLOUD FOR SAP/S4HANA

SIFY CLOUDINFINIT
GOINFINIT PRIVATE | GOINFINIT BACKUP | GOINFINIT ACCELERATE | GOINFINIT VPE

UNIFIED COMMUNICATIONS ON CLOUD

CLOUD ENHANCED

INTERNET OF THINGS (IOT)

INDUSTRY SOLUTION-AS-A-SERVICE (BUSINESS OUTCOME BASED)
PAY PER BILL |PAY PER PATIENT |PAY PER STUDENT | PAY PER TRANSACTION)

SIFY APPLICATIONS ON CLOUD
FORUM NXT | ITEST |E-LEARNING

CLOUD PURE

HYPERSCALE CLOUD SERVICES
AWS | AZURE

HYBRID CLOUD SERVICES

Cloud@core

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CLOUD AND CO-LOCATION
TO ENABLE BORDERLESS IT

BUSINESS DRIVERS FOR ADOPTION OF THE NEW ENTERPRISE DATA CENTER

- Build digital systems of engagement to enable learner and teacher interaction
- Ensure institutional transparency and adherence to regulatory requirements
- Multi-cloud IT capability to leverage best of breed IT platforms for faster and scalable IT
- Accelerate the process across value chain from content creation to consumption
- Real-time and deeper end-user insights to create differential experience across the value chain
- Digital learning platform for extended reach, self-paced learning and convenience to students
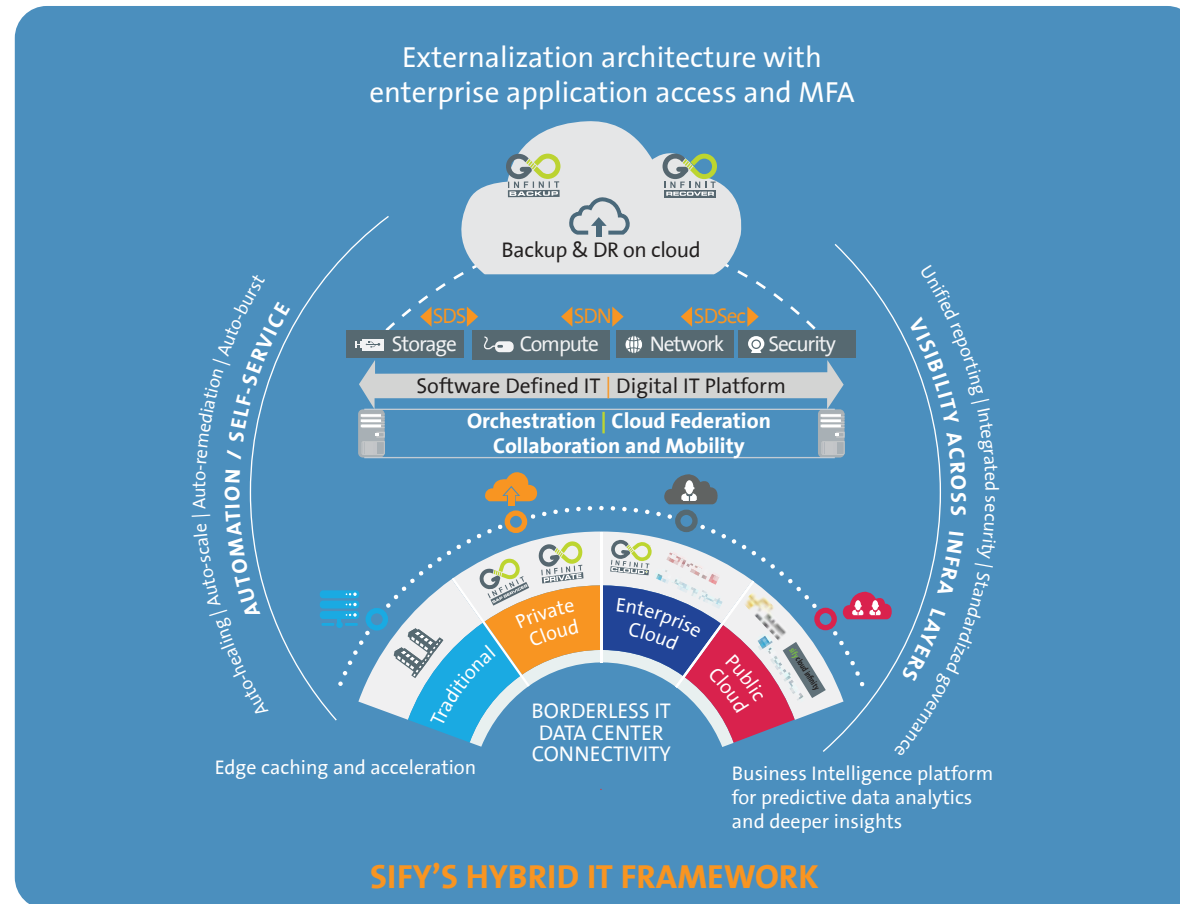
Service-led view of data center transformation and cloud solutions

- Hybrid IT solution across public, private and enterprise cloud to enable right-fit IT
- Public cloud choices across AWS, Microsoft Azure and Sify enterprise cloud
- Future-ready IT leveraging software-defined network, security, storage and hyper-automation
- Application-centric IT architecture for mission critical apps such as SAP, Oracle, Forum NXT, etc.
- Cloud security framework across endpoints, infrastructure, platform and applications
- Unified, integrated reporting for predictive analytics, business intelligence and AI
- Content acceleration along with cloud security for best-in-class e-learning experience
- IT platform to enable scalable, high performance content and learning collaboration

SIFY SERVICES

CLOUD AND CO-LOCATION
TO ENABLE BORDERLESS IT

Externalization architecture with enterprise application access and MFA

Backup & DR on cloud

SDS — SDN — SDSec

Storage | Compute | Network | Security

Software Defined IT | Digital IT Platform

Orchestration | Cloud Federation
Collaboration and Mobility

AUTOMATION / SELF-SERVICE
Auto-healing | Auto-scale | Auto-remediation | Auto-burst

VISIBILITY ACROSS INFRA LAYERS
Unified reporting | Integrated security | Standardized governance

Traditional | Private Cloud | Enterprise Cloud | Public Cloud

BORDERLESS IT
DATA CENTER
CONNECTIVITY

Edge caching and acceleration

Business Intelligence platform
for predictive data analytics
and deeper insights

SIFY'S HYBRID IT FRAMEWORK

Service highlights

- Integrated play across network, data center, IT & security
- Solution choices across dedicated, public or hybrid models
- Aggregation partner across OEM stack, private / public cloud
- 10 public and private cloud service providers at 30+ global locations
- On-demand provisioning & simplified management – add on to MPLS network
- Premium performance / high resiliency

NETWORK TRANSFORMATION AND CONNECTIVITY
BACKBONE OF DIGITAL TRANSFORMATION

Business drivers for adoption of integrated networking platform

Scale

With advent of technologies such as Internet of Things (IoT), cloud and mobility the scale of the network and the endpoints has grown exponentially

Complexity

Non-converged voice and data networks over multiple service providers

Agility and Speed

Constant need to support change in the application landscape and ensure continuous service assurance in a global market

Security

Risk of security gaps and absence of uniform security cover across multiple platforms

Service-led view of network transformation

- Service-oriented network architecture to ensure reliable enterprise-grade 24x7 connectivity
- Multi-location VPN and Internet services to build a highly reliable WAN setup
- Pro-active network and security monitoring and management through an integrated network operations center (NOC) & security operations center (SOC)
- Global connectivity across cloud nodes for clustered applications, storage replication and disaster recovery services
- Deep expertise across cutting-edge network and security technologies
- SDN (Software Defined Network) CoE (Center of Excellence) to develop world-class SDN centric solutions

NETWORK TRANSFORMATION AND CONNECTIVITY
BACKBONE OF DIGITAL TRANSFORMATION

Sify's network transformation framework

SIFY SERVICES
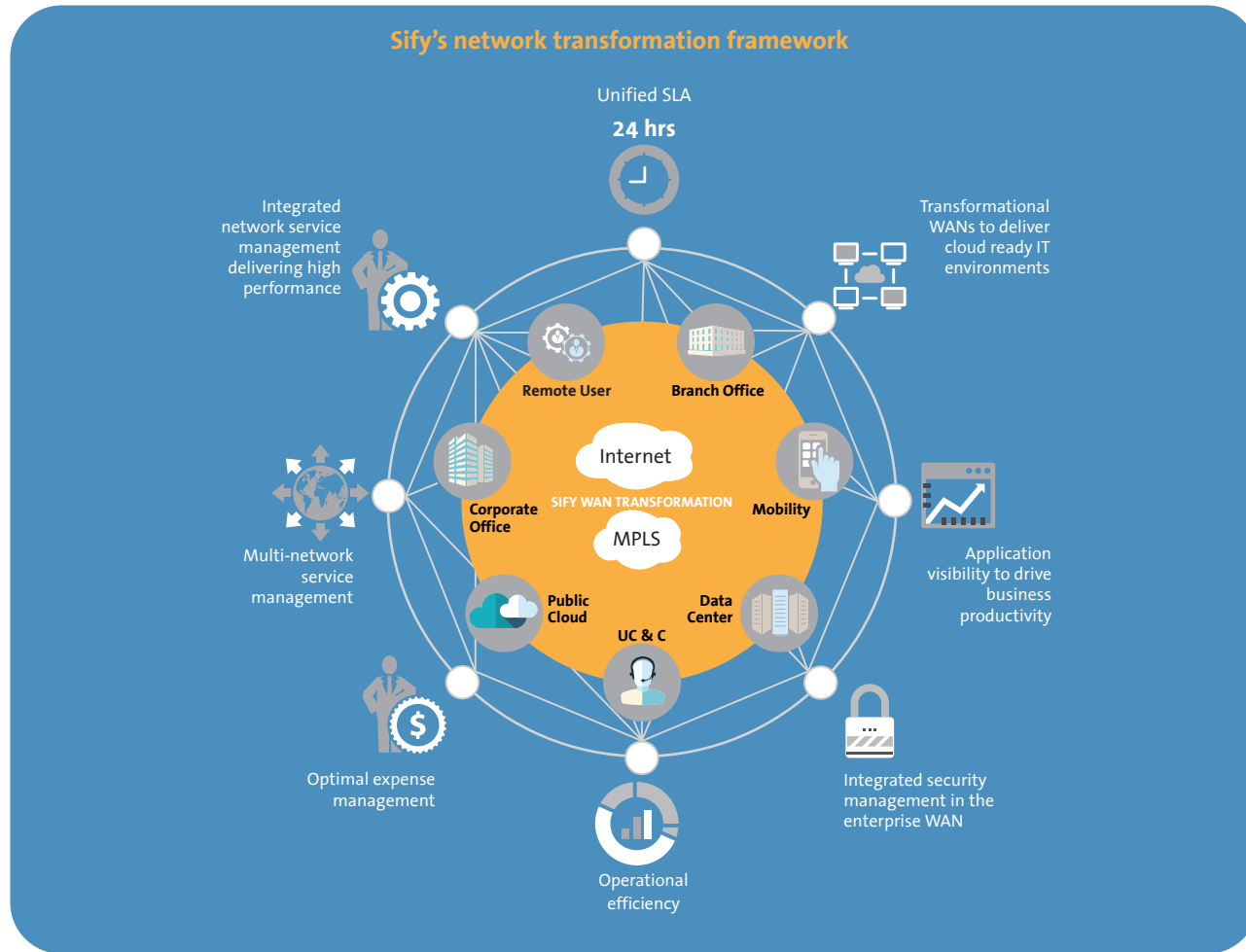
Service highlights

- **Extensive reach across over 1500+ cities**
- **Global service coverage in over 130+ countries**
- **100G ready DCI and cloud interconnect network in 6 cities**
- **Integrated ITIL based NOC and SOC**
- **Deep skill sets around network and security domain**
- **Cloud enabled services on a consumption model**

UNIFIED SECURITY MONITORING AND MANAGEMENT
ACROSS INTERNAL AND PARTNER SYSTEMS

Business drivers for securing IT environment

- Advanced data breaches using sophisticated techniques

- Increasing guidance and frameworks from industry organizations

- Increased exposure to hacktivism due to integration of new technologies

- Privacy and data protection regulations

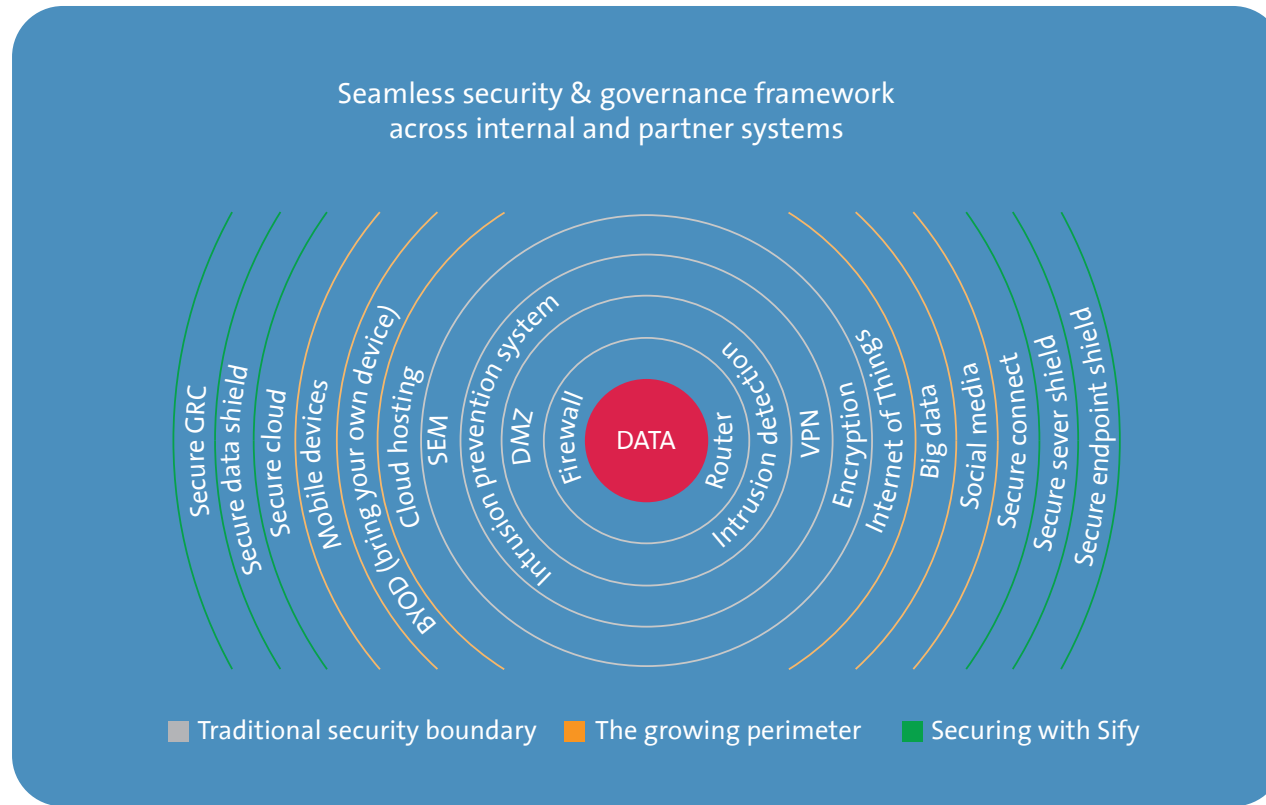### Service-led view of managed security services

- Mature threat intelligence and analytics framework with integration of hunting and deception platform
- Gartner's intelligence driven security operations centre
- Secure cloud implementation by building tiered protection layers around data that includes multiple perimeter rings of defense
- Secure Connect solution tracks and filters legitimate network connections with customized policies and granular access controls
- Secure Data Shield provides bidirectional protection against malicious sources and sophisticated attacks to ensure data integrity and confidentiality
- Secure Endpoint Shield stops targeted attacks and advanced persistent threats with intelligent security and layered protection
- Sify Assure team delivering audit and compliance around IRDA, IT security guidelines, best practices benchmarking, ISMS, VAPT, Web App, Mobile App testing services
- Unified dashboard portal based security service delivery

SIFY SERVICES

UNIFIED SECURITY MONITORING AND MANAGEMENT
ACROSS INTERNAL AND PARTNER SYSTEMS

Seamless security & governance framework across internal and partner systems

Labels (outer to inner, left side): Secure GRC, Secure data shield, Secure cloud, Mobile devices, BYOD (bring your own device), Cloud hosting, SEM, Intrusion prevention system, DMZ, Firewall

Center: DATA

Labels (inner to outer, right side): Router, Intrusion detection, VPN, Encryption, Internet of Things, Big data, Social media, Secure connect, Secure sever shield, Secure endpoint shield

Legend:
- � Traditional security boundary
- ▮ The growing perimeter
- ▮ Securing with Sify

Service highlights

- Comprehensive framework of applicable IRDAI and other cyber requirements
- Security transformation capability including design, deploy and managed services
- Threat intelligence to reduce risk from unknown vulnerabilities and threats
- First provider of cyber threat intelligence based security operations
- Partnerships with all leading security OEMs and distributors
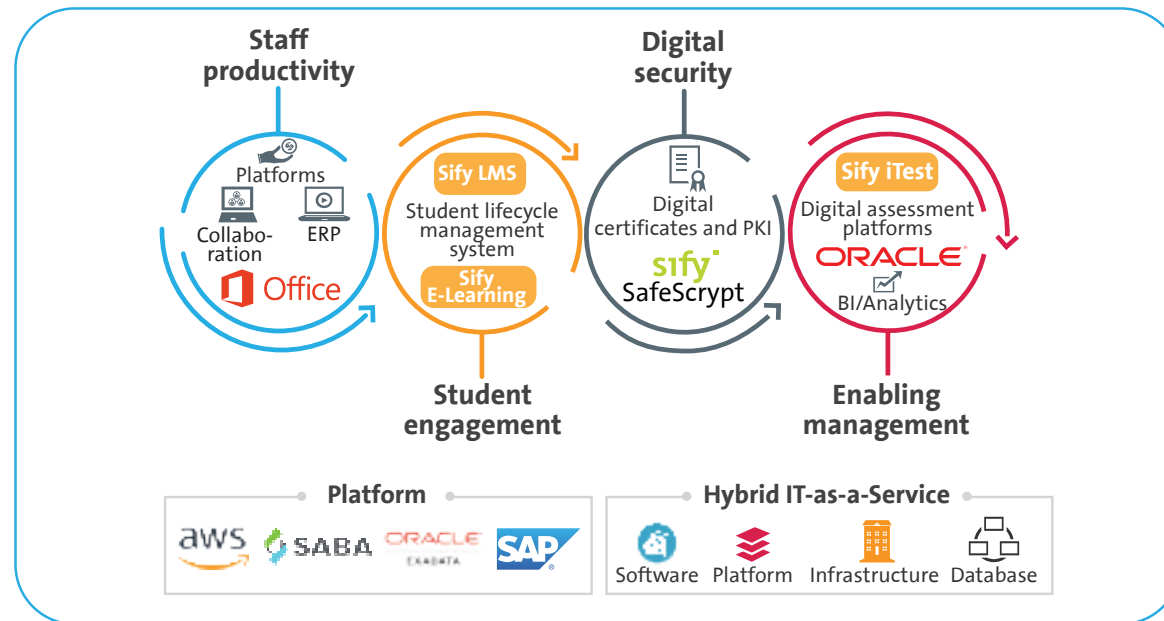- Automation driven security incident alerting and ticketing

BUILD A HIGH-QUOTIENT
DIGITAL WORKFORCE TO DRIVE PROCESS EFFICIENCIES

Business drivers for streamlined processes

- Achieve faster time-to-market products within a complex multi-vendor environment
- Cost-optimization through reduction in hardware and resource costs for system management
- Cloud-based solutions with scalable and elastic capabilities
- Improved transparency and visibility within the organization through resilient platforms

Service-led view of application and platform services

Staff productivity

Platforms

Collabo-ration   ERP

Office

Sify LMS
Student lifecycle management system
Sify E-Learning

Student engagement

Digital security

Digital certificates and PKI

sify SafeScrypt

Sify iTest
Digital assessment platforms
ORACLE
BI/Analytics

Enabling management

Platform
aws   SABA   ORACLE EXADATA   SAP

Hybrid IT-as-a-Service
Software   Platform   Infrastructure   Database

Service highlights

- SAP: Application maintenance, implementation services, GST enablement
- Oracle: On-premise and on-public cloud implementation
- Microsoft: Application and platform services on MS Azure, MS Dynamics and MS Office
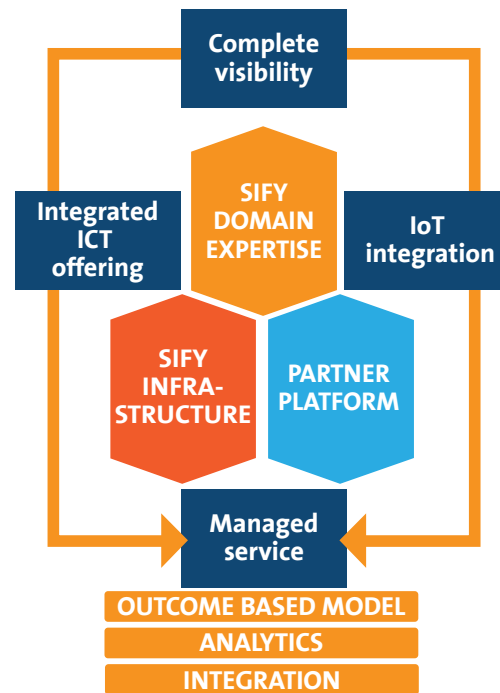
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IoT TO BUILD A CONNECTED CAMPUS
TO ENABLE ANYTHING-ANYWHERE ACCESS TO EDUCATIONAL RESOURCES

Business drivers for creating a connected ecosystem

- Creation of an agile, responsive, automated and business-aligned IT environment
- Accelerate product development to stay current and relevant
- Turn real-time data into insight, action and new business models through ubiquitous connectivity
- Build a more efficient workforce and transform underlying process by connecting people with data

Service-led view of turnkey IoT solutions

Complete visibility

Integrated ICT offering

SIFY DOMAIN EXPERTISE

IoT integration

SIFY INFRA-STRUCTURE

PARTNER PLATFORM

Managed service

OUTCOME BASED MODEL

ANALYTICS

INTEGRATION

IoT in Education

- School bus tracking solution
- Surveillance & video analytics
- Building energy management

Service highlights

- Fit solution for management of BYOD platform and other mobile engagement solutions
- Specialized partners to deliver converged IoT solutions
- Scalable solution with rapid addition of WLAN nodes

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ENGAGEMENT MODEL

Less hardware, less people and less license

Assets + services systems
Owned by the client and annuity
based payout for services

Outcome-based
Client engagement is
based on defined
business outcome
generated by
IT solutions and
services

PLATFORM

Usage-based
No upfront
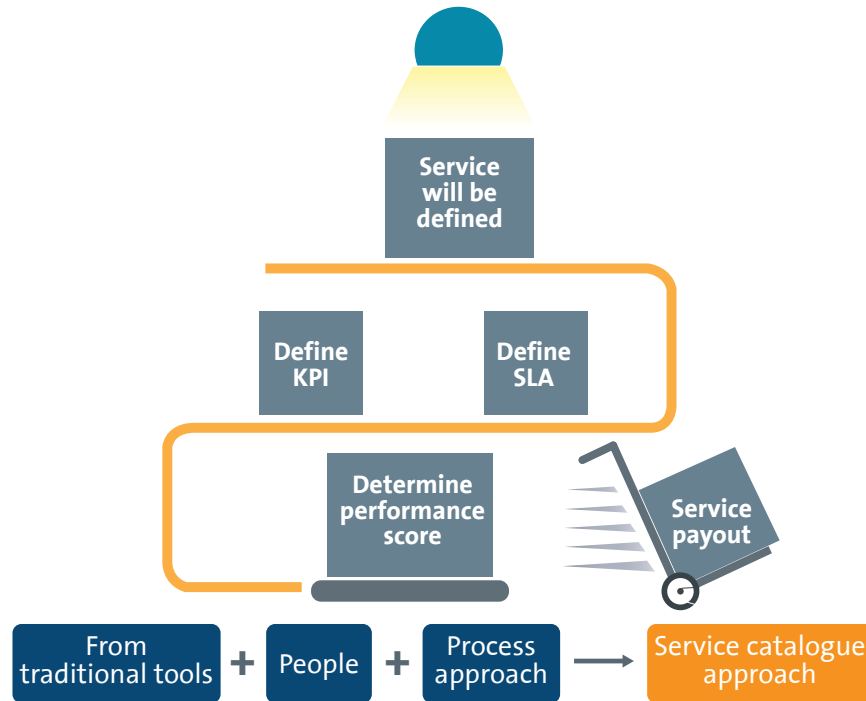investment by client
and payout is based
on consumption

Component-based
Reduced upfront investment as client
subscribes to infrastructure owned by Sify, as
part of their overall infrastructure requirement
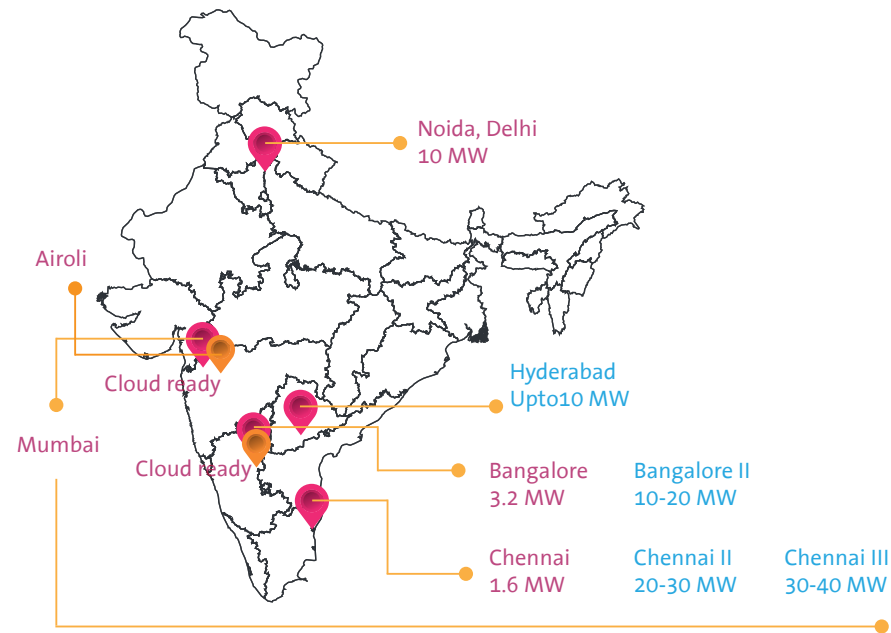
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ENGAGEMENT APPROACH

Service catalogue based managed services framework

| Service will be defined |
| Define KPI | Define SLA |
| Determine performance score | Service payout |

| From traditional tools | + | People | + | Process approach | → | Service catalogue approach |

Elements of service catalogue – illustrative
Service catalogue
Service catalogue based payout
Critical SLA metrics
Operational metrics
SLA reporting

Elements of service catalogue – illustrative	Total service charges	Perfor-mance score	Payout eligible
Asset management related service			
Backup, restore and archival related services			
IT operations			
Email and directory related services			
End-user system related services			
Security related services			
Service desk related services			
Vendor management related services			
Website management related services			
Service delivery management (vendor's tool cost will be included here as tools enable the service delivery and management.)			
Total payout			

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OUR MAJOR DATA CENTERS
AND CLOUD CENTERS FOOTPRINT

Noida, Delhi
10 MW

Airoli

Cloud ready

Mumbai

Cloud ready

Hyderabad
Upto10 MW

Bangalore
3.2 MW

Bangalore II
10-20 MW

Chennai
1.6 MW

Chennai II
20-30 MW

Chennai III
30-40 MW

RABALE
MUMBAI
20 MW

RABALE
MUMBAI II
10-12 MW

RABALE
MUMBAI III
20-40 MW

VASHI
MUMBAI III
1.6 MW

AIROLI
MUMBAI
10 MW

■ Existing   ■ Upcoming   ■ Cloud ready

Location	Existing in sq ft	Future in sq ft	Readiness
Mumbai	120,000	250,000	June 18
Chennai	12,000	70,000	June 19
Hyderabad	-	30,000	Dec 18
Delhi	55,000	55,000	Available
Bangalore	16,000	50,000	Available

Total capacity of 455,000 sq. ft. of server farm

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OUR NETWORK FOOTPRINT

1550+ Cities coverage

Concurrently-maintainable
Hierarchical topology for better scalability

90000+
Enterprise circuits

10G Access metro rings in 10 cities

2200+ Network nodes across India

International PoPs

Cable Routes

130+ Countries

London

India

Los Angeles

Marseille

Dubai

Mumba

Hong Kong

3000+ Cities

Chennai

New York 60 Hudson

Singa

APCN2 +RNAL	TGN-A	SEAMEWE			EAC	APCN2+RNAL
	TGN-A	Europe – India Gateway	SMW4		APCN2	
	APOLLO	GULF BRIDGE International	I2I+TIC		LACS	

OUR CLIENTS

Rama Medical College	National Institute of Mental Health and Neuro Sciences	Central Institute of Plastics Engineering and Technology	Rustomjee Cambridge International School	R. P Sharma Institute of Technology
Think and learn	The Institute of chartered Accountants of India	Rajiv Gandhi University of Health Sciences	Xavier institute of polytechnic and technology	Prananath College
Birla Institute of Technology	Rabindranath Tagore international institute of cardiac sciences	Amruta Institute of Engineering and Management Sciences	St. Johns Public School	Cochin university
Indira Education	KCC Institute on Technology and Management	Sunbeam Women's College	Sri Venkateswara college of engineering and technology	S S I M
APL Global School	Indian Public School	Indian Institute of Health Management Research	National Education Foundation	XLRI
The Institution of Engineers	C K College of Engineering and Technology	Dr. Agarwal's Eye Hospital	B.M.S College of Engineering	CSI Institute of Technology

SIFY SERVICES

OUR PARTNERS

Technology Partners

Hewlett Packard Enterprise · CISCO · DELL EMC · servicenow · commvault · actifio Radically Simple · riverbed · IBM · bmcsoftware · ca technologies

Cloud & Acceleration Partners

amazon web services · Windows Azure · vmware · NUTANIX · Akamai

Application Partners

SAP · Microsoft · ORACLE E-BUSINESS SUITE · LIVEWIRE · SABA · sumtotal · Litmos

Security Partners

TREND MICRO · McAfee · Symantec · Check Point · FORTINET

AWARDS AND ACCOLADES

**Managed
Network Solutions**

**Integrated
Data Centre
Solutions**

**Sify is a
Business
Super Brand**

**Most Promising
Brand by WCRC**

**National Award for Best
Technology for Social Case for
Department of Post by Cyber
Media**

**CIO Review
recognized Sify in the
Cloud Managed
Service Vertical**

SIFY SERVICES

![sify keeping you ahead]

Our end-to-end ICT solutions

- Data Center Transformation (Cloud) and Infrastructure services
- Network Transformation and Connectivity services
- Technology Integration services
- Application and Platform services
- Managed Security services
- Internet of Things

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