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SiT's JOURNEY TO THE CLOUD

SiT's Background

Established in 2009 and became an autonomous university in March 2014, Singapore Institute of Technology (SIT) is Singapore's university of applied learning

Our users have grown from just around *500* users to over *9,000* students and over *1,200* faculty & staff in all 6 sites.

Urgent Need to expand SiT's IT Services

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❖ Key Drivers

- ➢ Cost Effective of all services as a whole
- ➢ Independent to SIT's Physical Location
- ➢ Highly Available & Scalable Infrastructure

❖ Challenges

- ➢ Existing Physical Data Centre not able to accommodate the number of servers and DR requirements
- ➢ Operational overhead on maintenance for both hardware and data centre
- ➢ Quick turnaround on provisioning of servers and storage
- ➢ High expectations on IT Services availability
- ➢ Scalability & Tech refresh

SiT's Options

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1. Traditional / Physical Servers
2. Server Virtualization
3. Cloud Computing

Cloud Computing

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- Greatly improved service availability
  - ✓ Zone level HA
  - ✓ Regional level HA
  - ✓ Global level HA
- Greatly improved scalability
  - ✓ Unlimited low-end to super high-end servers
  - ✓ Unlimited storage
  - ✓ Scalable network services performance
- Wide range of “managed” services (IaaS, PaaS, SaaS)
  - ✓ “Serverless” compute services
  - ✓ Analytic, smart DNS
  - ✓ DB, AI, Machine Learning, IOT
  - ✓ etc

SiT's Consideration on Cloud Service Providers

- ❑ SIT Data Security & Privacy Requirements
  - Multi-Tier Cloud Security (MTCS) Singapore Standard (SS) 584
  - ISO 27001 and SSAE16 or SOC2 certifications
- ❑ SIT Systems & Technical Requirements
- ❑ Acceptable Service Level Agreement
  - Service Availability / Business Continuity
  - Service Support
  - Performance
- ❑ Track record & cost

Measures to Safeguard SiT Systems and Data

➢Cloud Console/Resource Access

- Multi-Factor Authentication
- Access Policy
- Role-Based Access

➢System & Data Security

- Encryption up to DB level
- Privileged Access Management

➢Network Security

- Virtual Private Cloud *(VPC)* Architecture
- Site-to-Site VPN
- Web Application Firewall

Measures to Improve System Availability

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➢ High-Availability

- Deploy Application Systems to Multiple Zones
- Network Load Balancer
- Application/DB Cluster

➢ Data Protection

- Storage Snapshot for quick backup and recovery
- Offsite Backup

Cloud Adoption Approach

- **New Systems**
  - Cloud-First Deployment Approach
- **Existing Legacy Systems**
  - Migrate or Replace with New Systems in the Cloud
  - Keep soon-to-be-retired systems