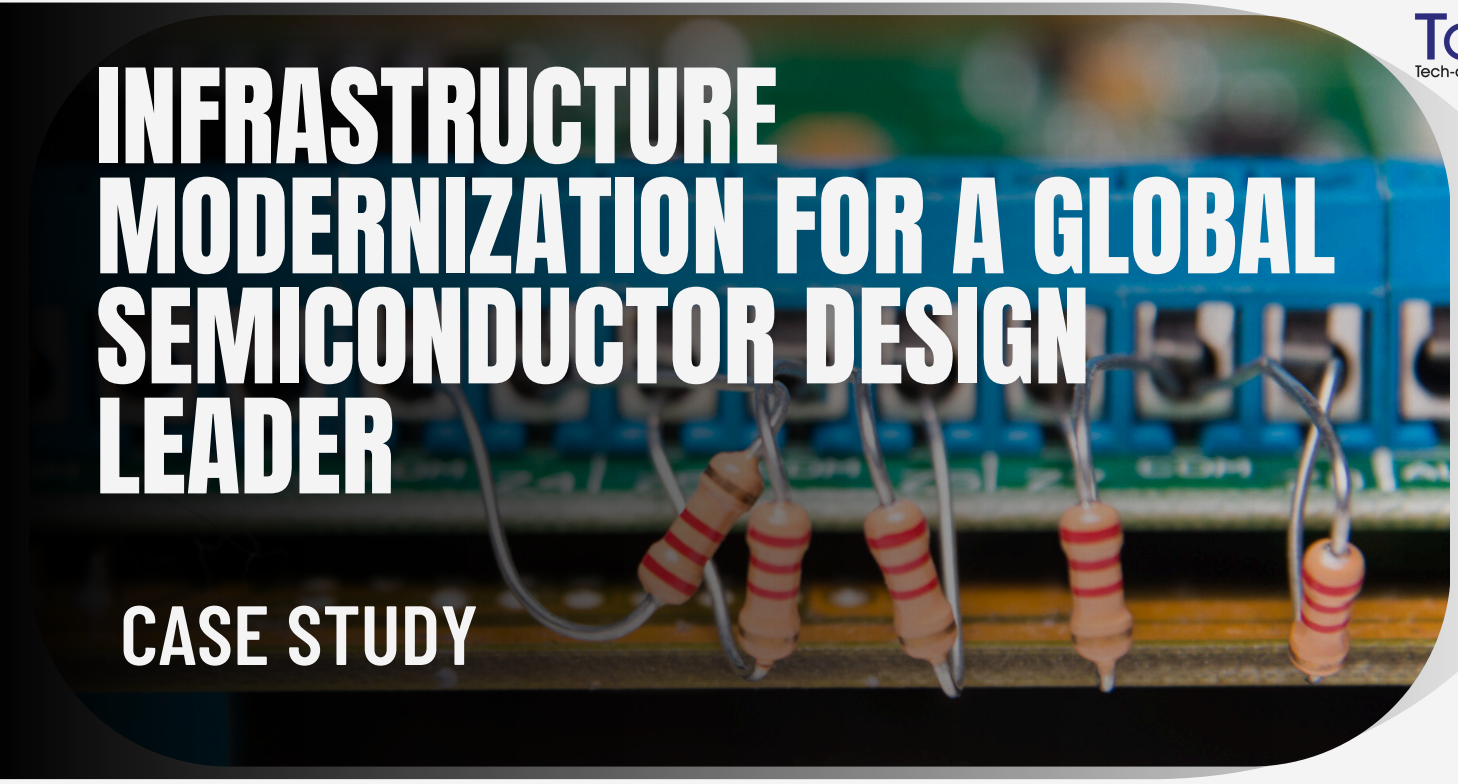
INFRASTRUCTURE MODERNIZATION FOR A GLOBAL SEMICONDUCTOR DESIGN LEADER



CASE STUDY

COMPANY OVERVIEW

The client, a specialized semiconductor design services firm founded in 2013 and headquartered in Silicon Valley, provides engineering solutions in ASIC design, FPGA design, and systems/software development. With additional design centers in India and Malaysia, the company supports several Fortune 100 enterprises and high-profile technology startups.

In 2021, the firm was acquired by a global IT and consulting leader known for its extensive VLSI design and product engineering capabilities. Following this acquisition, the organization required a modern, scalable, and secure infrastructure to support complex engineering workloads while maintaining operational excellence across global teams.

CHALLENGE

The client faced multiple critical infrastructure and operational issues:

- **Scalability Issues:** Recurring power outages and resource constraints disrupted data center operations, affecting production and simulation workflows.
- **Infrastructure Maintenance Complexity**: Routine hardware upgrades, software updates, and security patching were irregular, complicating day-to-day operations.
- **Disaster Recovery Limitations:** Critical systems lacked integrated disaster recovery, making production environments vulnerable to downtime.
- **Security and Compliance Deficiencies:** No systematic vulnerability scanning or patch management existed, leading to potential exposure of sensitive design systems.
- **Operational Impact:** The absence of structured processes and ticketing tools led to inefficient troubleshooting, recurring issues, and elevated operational costs.

GOALS & EXPECTATIONS

Short-term (1-6 months):

- Reduce infrastructure complexity.
- Remedy root causes of operational problems.
- Enhance computing capacity and scalability.

Long-term (6+ months):

- Implement ITIL processes and educate end users.
- Achieve compliance with industry standards.
- Migrate legacy systems to modern platforms:
  - Storage migration to ZFS-based NAS.
  - User authentication migration to LDAP with SAML.
  - Active Directory migration from on-premises to Azure.
  - Regular kernel upgrades and VM migrations.

CLIENT EXPECTATIONS

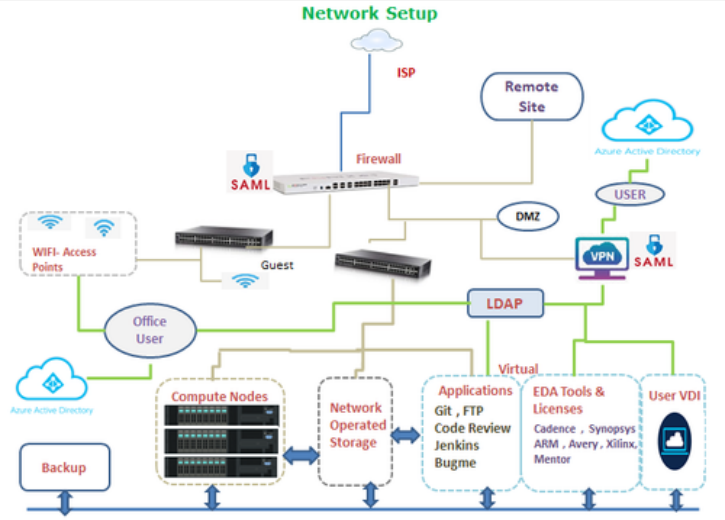
- 95% SLA for onsite and remote support tasks.
- Seamless implementation with minimal disruption to ongoing operations.

CASE STUDY (CONTD.)

WHY TAAS?

The client chose TAAS for its expertise in large-scale infrastructure modernization and IT service management, with a focus on engineering-driven, results-oriented solutions. Key differentiators included:

- **Advanced Infrastructure Optimization:** Experience with high-performance computing, ZFS storage, VLAN networking, and LDAP/AD migrations.
- **Cloud-Native and Security Expertise:** Deep knowledge of Azure AD, SAML authentication, firewall hardening, and server hardening.
- **Operational Efficiency and ITIL Implementation:** Ability to implement monitoring, ticketing, and automation without disrupting ongoing production.



SOLUTION

TAAS designed a comprehensive infrastructure modernization strategy:

Compute and Storage Modernization:

- High-capacity hardware with ZFS-supported NAS for simulation workloads.
- Network upgrades using VLANs for enhanced data throughput.

Authentication and Access Management:

- LDAP migration from legacy user/group systems.
- AD migration from on-premises to Azure with SAML authentication.

Security Enhancements:

- Firewall HA setup.
- Vulnerability scanning, server hardening, and periodic compliance audits

Automation and Monitoring:

- Shell scripts for EDA license monitoring, workspace utilization, and Jenkins job tracking.
- Infrastructure monitoring and alerting with Zabbix.
- Automated ticket creation with Freshdesk integration.

Disaster Recovery and High Availability:

- Dedicated backup systems for fast recovery.
- HA configuration for critical components like firewalls.

ITIL Process Implementation:

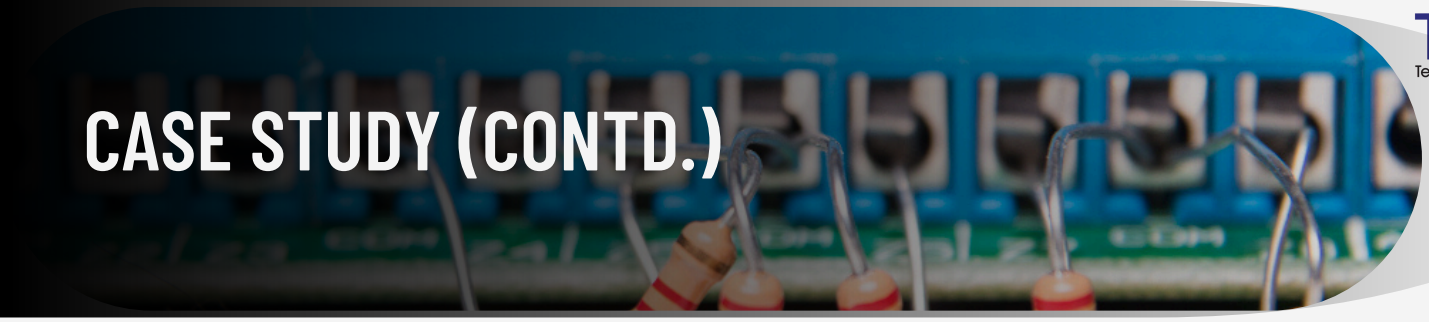
- Structured processes for incident management, change management, and problem resolution.
- End-user training for process compliance.

KEY COMPONENTS

- Firewall HA, NAS Storage, LDAP, Zabbix, Freshdesk, Azure AD.
- Automated alerting, monitoring, and reporting tools.
- Linux-based VDI solution for secure and cost-efficient end-user access.

IMPLEMENTATION & EXECUTION

- Conducted infrastructure audit and risk assessment.
- Planned strategy sessions with client stakeholders.
- Deployed upgraded hardware, storage, and network components.
- Migrated authentication systems to LDAP and Azure AD.
- Implemented HA and backup systems, along with monitoring tools.
- Deployed automation scripts, ITIL processes, and user training.
- Performed extensive testing, QA, and final handover.



CASE STUDY (CONTD.)

BUSINESS RESULTS

Quantitative Results:

- Improved data processing speeds up to 80 Mbps.
- Operational cost reduction through automation, process optimization, and infrastructure modernization.

Qualitative Results:

- Enhanced team collaboration and productivity.
- Improved compliance and security posture.
- Strengthened production reliability and client trust.

KEY DIFFERENTIATORS

- Use of specialized tools: Zabbix, Freshdesk, EDA License Watcher.
- Tailored ITIL-based operational methodology.
- 24x7 customer support and Agile task prioritization.
- Proactive monitoring and automation to prevent recurring issues.
- Strong technical expertise enabling seamless migration and infrastructure modernization.

Infrastructure Component	Before	After
Storage	Legacy Systems	ZFS-Supported NAS
Firewall	Single Unit	HA Firewall Setup
Networking	Basic Setup	VLAN Optimized Network
Authentication	Legacy Systems	LDAP + Azure AD with SAML
Monitoring	None	Zabbix + Automated Alerts
Ticketing	Manual	Freshdesk Automation
Backup/DR	Minimal	Dedicated Backup + HA Setup
Security	Ad-hoc	Systematic security & Compliance

"TAAS transformed our IT infrastructure into a secure, scalable, and highly efficient platform. Their hands-on approach in LDAP and AD migrations, ZFS storage deployment, and HA setup significantly improved uptime and operational efficiency. The team's technical expertise and proactive monitoring minimized disruptions while boosting productivity."
— Chief Executive Officer, Semiconductor Engineering Services Company