

Migration of Forex Trading Application from Cloud to Physical
Servers

Project Plan

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Executive Summary

Objective

This project migrates the Forex trading application from a cloud-based infrastructure to a dedicated on-premises server environment to achieve:

- Enhanced Security: Full control over data sovereignty and compliance with financial regulations (e.g., PBI, GDPR).
- Performance Optimization: Reduced latency for high-frequency trading via physical server proximity and dedicated resources.
- Cost Efficiency: Elimination of recurring cloud subscription fees, targeting 20% reduction in annual operational costs.

Scope

- Infrastructure: Deployment of 8 high-availability servers (4 web/app, 2 database, 2 [SAN/NAS] with 36TB storage and redundant 1 Gbps/500 Mbps network paths).
- Data Migration: Seamless transfer of 150,000 user accounts (100k active traders, 50k light users) and 14-day transactional history with zero downtime.
- Compliance: Implementation of end-to-end encryption, UTM firewalls, and audit trails to meet financial authority requirements.
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Key Metrics

- Budget: Rp 4.7 billion (CapEx: Rp 3.8B for infrastructure, OpEx: Rp 0.9B for personnel).
- Timeline: 6 months (phased rollout with bi-weekly feature updates).
- Success Criteria:
 1. 99.99% uptime post-migration.
 2. Transaction processing latency <10ms (vs. 25ms on cloud).
 3. Full regulatory compliance validated by third-party audit.

Executive Summary

Business Value

- Risk Mitigation:** On-premises control reduces dependency on cloud providers, minimizing exposure to vendor lock-in and external breaches.
- Scalability:** Modular server design allows future expansion (e.g., hybrid cloud integration for peak loads).
- User Trust:** Transparent data handling strengthens trader confidence and platform reputation.

Stakeholder Impact

- Traders: Faster execution and real-time analytics.
- IT Team: Streamlined troubleshooting and custom hardware optimization.
- Management: Cost predictability and compliance assurance.

Why This Works

- Balanced Detail:** Combines technical specs (hardware, network) with business outcomes (cost savings, compliance).
- Structured Flow:** Groups information into purpose, execution, and results for easy skimming.
- Jargon Handling:** Explains terms like "SAN/NAS" and "UTM" implicitly through context (e.g., "centralized storage" for [SAN/NAS]).

Project Overview



General Description

This project aims to migrate the Forex trading application from the cloud to physical servers to enhance control, performance, and security of the application. The application is designed to support real-time trading activities, prioritizing transaction speed and data security.

KEY FEATURES OF THE APPLICATION:

- Real-time market data for forex transactions
- Transaction security with data encryption
- Analytics features to assist users in monitoring their trades
- User-friendly interface for both mobile and web platforms

Project Overview



Feature Updates:

Feature Updates Every 14 Days:
The application is planned to receive regular feature updates every 14 days to improve functionality, security, and user experience.

USE CASE:

- **Active Users:** The application is expected to have 100,000 active users who engage in regular trading activities, constantly accessing market data and executing high-volume transactions.
- **Light Users:** There will also be an estimated 50,000 light users who access the application infrequently, performing occasional transactions or market monitoring.
- **Data Access Frequency:** Active users are expected to access data and make trades daily, while light users may access the app a few times a month.

Project Overview

Application Storage

Requirements:

To support the growing demands of the Forex trading application, optimal storage capacity is required to handle large transaction volumes, logs, and historical market data. The storage requirements for the physical servers:

Component	Storage Requirement	Amount	Description
Web/App Servers	2 TB per server	4 servers	Stores application data and transaction logs for active and light users.
Database Servers	4 TB per server	2 servers	Stores transaction databases, historical market data, and transaction processing.
Storage Servers (SAN/NAS)	10 TB per server	2 servers	Centralized storage for logs, backups, and historical data.

Total Storage Needed: 36 TB

Required Infrastructure

Physical Servers

To support the Forex trading application with a primary bandwidth of 1 Gbps and a 500 Mbps backup, the following physical servers are required:

Component	Quantity	Description
Web/App Servers	4 Servers	<ul style="list-style-type: none">- Dual Processor, 128 GB RAM, 2 TB SSD Storage (RAID)- Xeon or AMD EPYC processors, 1 Gbps Network Interface
Database Servers	2 Servers	<ul style="list-style-type: none">- Dual Processor, 256 GB RAM, 4 TB SSD Storage (RAID)- Xeon or AMD EPYC processors, 1 Gbps Network Interface
Storage Servers [SAN/NAS]	2 Servers	<ul style="list-style-type: none">- Dual Processor, 128 GB RAM, 10 TB Storage (RAID-6)- 1 Gbps Network Interface, RAID for data redundancy

Required Infrastructure

Network Infrastructure

Component	Quantity	Specification
Core Router	1 Unit	Router Enterprise-Class, 10/1 Gbps support, dual PSU, BGP, OSPF, failover
Core Switch	2 Units	Layer 3 Switch, minimum 24 Port, 1/10 Gbps support, VLAN, STP, LACP
Backup Switch	1 Unit	Layer 2/3 manageable, 500 Mbps – 1 Gbps redundancy path
Firewall	1 Unit	Unified Threat Management (UTM), VPN, DPI, up to 2 Gbps throughput
Rack & Cabling	1 Set	42U Rack, dual PDU, UPS 3000VA x2

Required Infrastructure

Network Connectivity

- Primary Bandwidth: 1 Gbps for the connection between the servers and the internet.
- Backup Bandwidth: 500 Mbps for failover in case the main connection experiences issues.

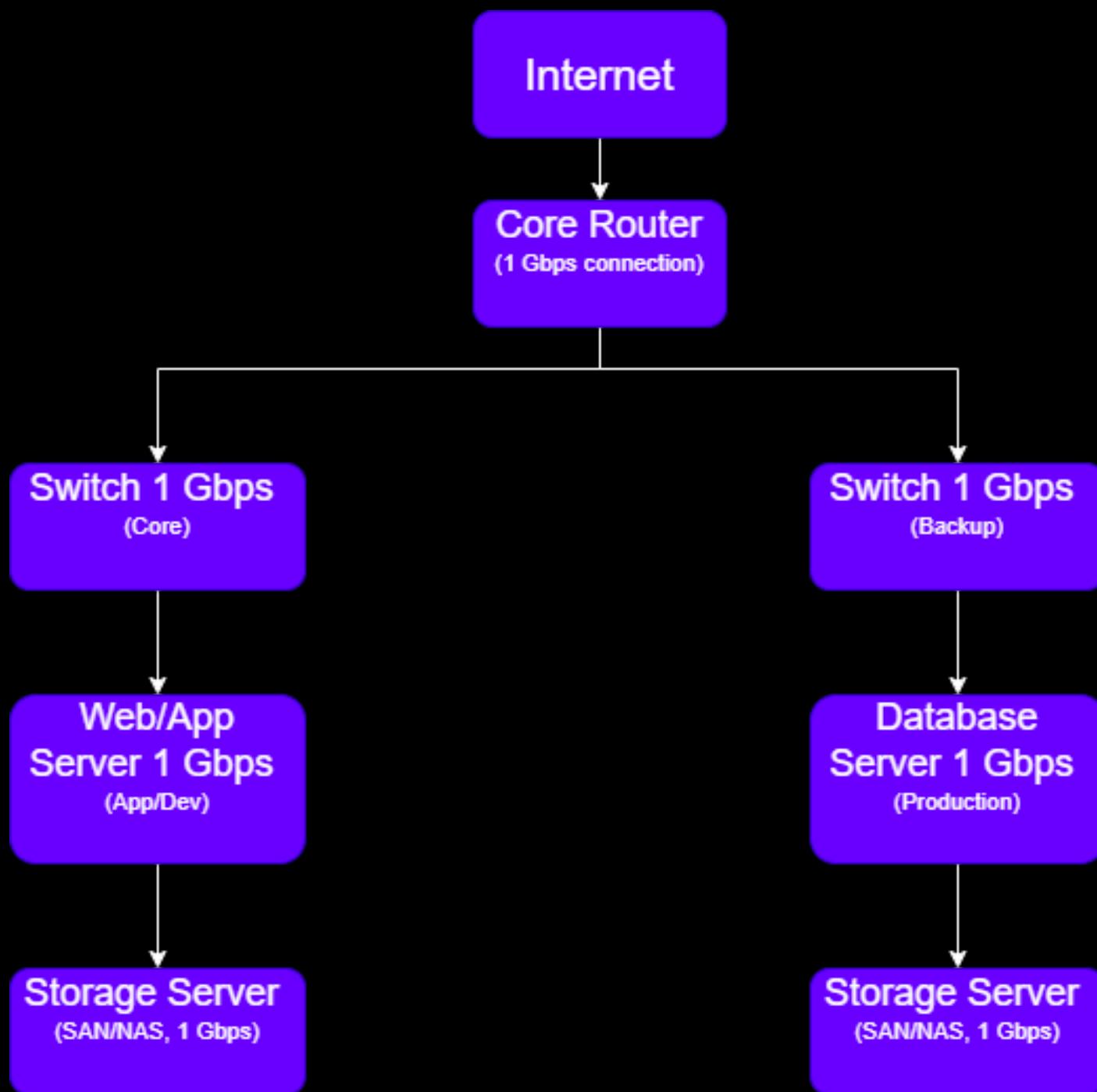
Network Equipment [Switches & Routers]

- Core Router (1 Gbps) for connectivity between servers and the internet.
- Core Switch (1 Gbps) and Backup Switch (500 Mbps) for data distribution and redundancy.

Redundancy and Security

- Redundant systems for power supply, network switches, and routers.
- Scheduled backups to secure user data and transactions.

Network Topology Plan



Topology Description:

1. Internet: Connects the application to external users (trading data, requests, etc.).
2. Core Router: Connects the entire company network to the internet and between servers, with a 1 Gbps bandwidth to handle transaction traffic and user requests.
3. Core Switch (1 Gbps): Connects all devices in the network at 1 Gbps, distributing data traffic to servers and storage.
4. Backup Switch (500 Mbps): Used for redundancy and failover if the primary core switch fails.
5. Web/App Server (1 Gbps): Handles the Forex trading application, web services, and API requests using a 1 Gbps connection to manage data volume and user requests.
6. Database Server (1 Gbps): Manages transaction databases, historical data, and market data with a 1 Gbps connection for fast transaction processing and data access.
7. Storage Server (1 Gbps): Data storage system used for storing logs, historical data, and backups, connected with a 1 Gbps interface (SAN/NAS).

Estimated Infrastructure Costs

Item	Quantity	Estimated Cost [Rp]	Total [Rp]
Web/App Servers	4 Unit	366.000.000	1.464.000.000
Database Servers	2 Unit	366.000.000	732.000.000
Storage Servers [SAN/NAS]	2 Unit	388.500.000	777.000.000
Core Router	1 Unit	120.000.000	120.000.000
Core Switch	1 Unit	90.000.000	90.000.000
Backup Switch	1 Unit	25.000.000	25.000.000
Firewall	1 Unit	150.000.000	150.000.000
Primary Bandwidth (1 Gbps)	12 Months	20.000.000	240.000.000
Backup Bandwidth (500 Mbps)	12 Months	12.500.000	150.000.000
Setup Fee	1 Time	70.000.000	70.000.000

Total Estimated Infrastructure Cost (Year 1) = Rp 3.818.000.000

Personnel and Operational Costs

Personnel Requirements

To ensure the smooth migration and operation of the Forex trading application, the following personnel with the required qualifications will be needed:

A. Professional Staff

Position	Rate/Month[Rp]	Total[Rp]
Project Manager	20.000.000	240.000.000
Systems Analyst	13.000.000	156.000.000
Database Administrator	15.000.000	180.000.000
Network Engineer	14.000.000	168.000.000
Security Specialist	17.000.000	204.000.000

Total Professional Staff Estimated Cost[1 Year]: Rp 948.000.000

Personnel and Operational Costs

B. Sub-professional Staff [Technicians/Analysts]

Position	Rate/Month [Rp]	Total [Rp]
System Administrator	13.000.000	156.000.000
Web Administrator	10.000.000	120.000.000
Database Operator	10.000.000	120.000.000
Network Technician	9.000.000	108.000.000
IT Support	7.000.000	84.000.000

Total Sub-Professional Staff Estimated Cost[1 Year] : Rp 588.000.000

Timeline

TASKS	MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6
Planning						
Infrastructure Setup						
Data Migration & Testing						
Application Migration & Testing						
Final Review & Optimization						
Documentation						

Risk Management

Risk	Impact Level	Likelihood	Mitigation Strategy
Server Failure	High	Medium	Redundant server setup, real-time monitoring, periodic hardware checks
Data Loss During Migration	High	Low	Comprehensive backup system, migration testing, disaster recovery plans
Network Outages	Medium	Medium	Redundant connections, backup bandwidth, monitoring tools
Security Breach	High	Low	Strong encryption, periodic security audits, firewall & IDS systems

Project Monitoring Plan

Project monitoring is essential to ensure that the migration of the Forex trading application from the cloud to physical servers is completed on time, within budget, and according to the specified quality standards. The monitoring process will focus on tracking progress, managing risks, and ensuring that any issues or deviations are addressed promptly.

Key Monitoring Aspects

- Progress Tracking: Regularly track project milestones and ensure the tasks are being completed as planned.
- Budget Monitoring: Ensure that the project stays within budget by monitoring costs, identifying potential overruns, and taking corrective actions.
- Risk Management: Continuously assess and mitigate risks that may affect the project timeline, quality, or budget.
- Quality Assurance: Ensure that the infrastructure and migration processes meet the required quality standards.

Monitoring Tools

- The project will use a combination of the following tools for effective monitoring:
- Project Management Software (e.g., Trello, Jira, Asana): To track project tasks, timelines, and milestones.
- Performance Monitoring Tools (e.g., Nagios, SolarWinds): For monitoring server performance, uptime, and network connectivity.
- Cost Tracking Tools (e.g., Microsoft Excel, Zoho Projects): For tracking expenses against the project budget.
- Risk Management Tools (e.g., Risk Register): To track identified risks, their impact, and the effectiveness of mitigation strategies.

Project Monitoring Plan

Monitoring Phases

1. Planning Phase [Month 1]

- Status Checkpoints: Review the project scope, objectives, and resources.
- Deliverables: Finalized project plan, timeline, and resource allocation.
- KPIs: Completion of all planning tasks, finalized budget, and infrastructure requirements.

2. Infrastructure Setup Phase [Month 2]

- Status Checkpoints: Track the installation and configuration of servers, network components, and storage.
- Deliverables: Set up of physical servers and network infrastructure.
- KPIs: Successful installation of servers, network equipment, and storage systems with no major issues.

3. Data Migration & Testing Phase [Month 3]

- Status Checkpoints: Monitor data migration activities, validate data integrity, and perform initial testing.
- Deliverables: Completed migration of user data, application data, and testing of data integrity.
- KPIs: Data migration without significant data loss, successful completion of preliminary tests.

4. Application Migration & Testing Phase [Month 4]

- Status Checkpoints: Monitor the migration of the Forex trading application to the physical servers, test application performance, and functionality.
- Deliverables: Successful migration of the application and complete end-to-end testing.
- KPIs: Application performance on physical servers meets or exceeds cloud performance, with minimal downtime.

5. Final Review & Optimization Phase [Month 5]

- Status Checkpoints: Final optimization and fine-tuning of infrastructure and application performance.
- Deliverables: Optimized servers, storage, and application for maximum efficiency and performance.
- KPIs: Full system optimization, improved application speed and reliability, and no critical issues post-migration.

Project Monitoring Plan

Role	Responsibility
Project Manager	Oversees the entire project, ensures progress, budget adherence, and quality standards are met.
Infrastructure Manager	Monitors server setup, configuration, and performance.
Database Administrator	Tracks database migration, data integrity, and performance.
Network Engineer	Monitors network performance, bandwidth utilization, and connectivity.
Quality Assurance Specialist	Ensures that all migration steps meet the required quality standards, conducts tests.
Risk Manager	Identifies, tracks, and mitigates project risks.
Finance Officer	Monitors budget adherence and provides cost analysis reports.

Project Monitoring Plan

Reporting & Communication

- Weekly Status Reports: A project status report will be shared every week with the team and stakeholders to provide updates on progress, challenges, and any deviations from the plan.
- Monthly Review Meetings: A formal review meeting with the project stakeholders will take place every month to discuss project progress, risks, and adjustments.
- Incident Reports: If any critical issues occur, incident reports will be generated to analyze the problem, its impact, and the corrective actions taken.

Key Performance Indicators (KPIs)

The following KPIs will be used to monitor the project's success:

1. Schedule Adherence: Percentage of project tasks completed on time.
2. Budget Adherence: Percentage of the budget used compared to the planned budget.
3. Data Migration Success Rate: Percentage of data successfully migrated without loss or corruption.
4. Application Performance: Speed and stability of the Forex trading application on physical servers compared to its previous cloud performance.
5. Uptime and Downtime: Amount of downtime during migration and post-migration, aiming for zero downtime during business hours.
6. Risk Resolution Rate: Percentage of identified risks mitigated or resolved effectively.

Contingency Plan

In case of unforeseen issues, the following contingency plans will be in place:



DELAYED TIMELINES

If project timelines are delayed, additional resources (e.g., more staff or overtime work) will be allocated, and the timeline will be adjusted to ensure all deliverables are met.

BUDGET OVERRUN

If the project exceeds the budget, the scope will be revisited to identify areas where costs can be reduced, or additional funds will be allocated with the approval of stakeholders.

DATA MIGRATION ISSUES

In case of data migration failures, we will revert to the most recent backup and reattempt the migration, with further testing for data integrity.

Conclusion



By implementing a comprehensive monitoring plan, this project will maintain transparency, ensure that all tasks are completed on time, and manage risks effectively. Monitoring the progress, quality, and budget will allow for prompt corrective actions, ensuring the successful migration of the Forex trading application from the cloud to physical servers.

The selection of infrastructure components—such as server specifications, network devices, and bandwidth requirements—as well as the estimation of manpower costs, was based on thorough research and benchmarking across multiple reliable sources. These include market price surveys, vendor catalogs, and industry standards, ensuring all decisions are technically sound and cost-effective.

It is important to note that the manpower cost estimates are based on mid-level professionals across all roles. These figures provide a balanced view of capability and budget. However, the cost may vary significantly if senior-level experts are required, depending on the complexity and strategic importance of each project phase.

Attachments

1. Web/App Servers [4 Unit]

Product: Gigabyte Server R263-Z33

Specification:

- Processor: **AMD EPYC™ 9634 [84 Core / 168 Thread, 2.25 GHz, L3 Cache 384MB]**
- Memory: **128 GB DDR5**
- Storage: **2 TB SSD (RAID)**
- Network Connection: **1 Gbps**
- Price per Unit: **Rp366.000.000 Total 4 Unit: Rp1.464.000.000**



Attachments

2. Database Servers [2 Unit]

Product: Gigabyte Server R263-Z32

Specification:

- Processor: AMD EPYC™ 9634 [84 Core / 168 Thread, 2.25 GHz, L3 Cache 384MB]
- Memory: 128 GB DDR5
- Storage: 2 TB SSD (RAID)
- Network Connection: 1 Gbps
- Price per Unit: Rp366.000.000 Total 4 Unit: Rp1.464.000.000



Attachments

3. Storage Servers [SAN/NAS] [2 Unit]

Product: Gigabyte Server R163-Z30

Specification:

- **Processor:** AMD EPYC™ 9654 [96 Core / 192 Thread, 2.40 GHz, L3 Cache 384MB]
- **Memory:** 128 GB DDR5
- **Storage:** 10 TB HDD (RAID-6)
- **Network Connection :** 1 Gbps
- **Price per Unit:** Rp388.500.000 **Total 2 Unit:**
Rp777.000.000



Attachments

4. Core Router [1 Unit]

Product: MikroTik CCR2216

Specification:

- **16-core ARM CPU, 12x 25G SFP28, 2x 100G QSFP28, 1x 1G RJ45**
- **16 GB RAM, dual PSU, routing hardware acceleration, BGP/OSPF/MPLS ready**
- **Price per Unit: Rp120.000.000 Total 1 Unit: Rp120.000.000**



Attachments

5. Core Switch[1 Unit]

Product: Cisco Catalyst C9300-24T-E

Specification:

- **24-port Gigabit Ethernet, Layer 3, modular uplinks, Cisco StackWise, advanced QoS, support hingga 1/10 Gbps, Enterprise-class reliability**
- **Price per Unit: Rp90.000.000 Total 1 Unit: Rp90.000.000**



Attachments

6. Backup Switch[1 Unit]

Product: Aruba Instant On 1930 24G 1SFP+

Specification:

- **24-port Gigabit Ethernet, Layer 3, modular uplinks, Cisco StackWise, advanced QoS, support upto 1/10 Gbps, Enterprise-class reliability**
- **Price per Unit: Rp25.000.000 Total 1 Unit: Rp25.000.000**



Attachments

7. Firewall (1 Unit)

Product: Fortinet FortiGate 100F

Specification:

- **Next-Gen Firewall, Throughput up to 20 Gbps (Firewall), 1.2 Gbps (NGFW), VPN, IPS, UTM, 10x GE RJ45 + 2x SFP+, FortiOS Secure SD-WAN**
- **Price per Unit: Rp150.000.000 Total 1 Unit: Rp150.000.000**



Attachments

8. Rack & Power(1 Unit)

Product: Schneider Easy Rack 42U + UPS APC

Smart-UPS SRT3000VA RMXL

Specification:

- **42U Enclosure Rack, Dual PDU, APC SRT3000RMXLI UPS 3 kVA Online, NMC card for monitoring, stabilizer & automatic electrical backup**
- **Price per Unit: Rp120.000.000 Total 1 Unit: Rp120.000.000**



About Me



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Innovative Project Manager with a Strong IT & Education Background

A results-driven Project Manager with a background in Computer Science Education, blending technical expertise with leadership in software development, IT infrastructure, and project management. With over three years of experience, I have successfully led projects focusing on IT infrastructure, software development, and process optimization, ensuring efficiency and alignment with business goals.

Proficient in Software Development Life Cycle (SDLC), from analysis to deployment, I excel at strategic planning, risk management, and cross-functional collaboration. Passionate about leveraging technology to enhance learning experiences and drive innovation, I stay ahead of emerging trends and best practices in IT infrastructure and software development.

Skilled in stakeholder management, technical problem solving, and process improvement, I thrive in dynamic environments, ensuring seamless execution of complex projects while maintaining high standards of quality and efficiency.