

Business Insights Report — Segra Network Data Quality & SLA Analysis

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1 Project Overview

This project demonstrates advanced Excel-based data analytics in a telecommunications network environment.

Using Power Query and PivotTables, five operational datasets were integrated—Buildings, Circuits, Carriers, OcularIP KPIs, and Ticketing (TTS)—to evaluate network coverage, data quality, SLA compliance, and credit exposure.

The analysis replicates workflows used by network-operations and service-assurance teams, focusing on performance KPIs and risk mitigation.

A refreshable relational data model was built in Excel using Power Query and XLOOKUP joins, producing 21 worksheets spanning quality checks, pivot summaries, and seven executive visualizations.

This mirrors real-world Segra workflows—refresh → recalculate → visualize → decide.

2 Key Findings (Phases 0–5)

1 Data Integration & Quality

- 532 buildings > 365 days since last verification ($\approx 6\%$ inventory risk).
 - No orphan circuits or carriers after relational checks.
 - Recommendation: Schedule quarterly verification audits and automate overdue flags in CRM.
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2 Coverage & Inventory

- 72 % ON_NET vs 28 % NEAR_NET overall.
Denver = 67 %, Charlotte = 48 %.
- Carrier A accounts for $\approx 42\%$ of circuits and \$85 K MRC per month.
 - Recommendation: Diversify carrier dependency and expand ON_NET build-outs in under-served markets.

3 SLA Compliance Performance

- 99.82 % average uptime; ~6 % of days flagged as fail.
 - Carriers A and C show > 8 % latency breaches.
 - Recommendation: Review vendor SLA clauses and conduct latency root-cause analysis for under-performing carriers.
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4 SLA Credit Exposure

- Credits = 5 % of MRC on any-fail days → ≈ \$18 K this month (≈ 0.8 % revenue risk).
 - 70 % of credits originated from Atlanta and Dallas markets.
 - Recommendation: Prioritize proactive monitoring in high-exposure markets; target ≤ 0.5 % credit-loss ceiling.
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5 Ticketing & Root Cause

- 900 tickets analyzed → 65 % Hardware/Fiber-cut categories.
 - Average resolution time = 5.3 hours (vs 6 h SLA target).
 - Strong correlation between latency failures and hardware tickets.
 - Recommendation: Deploy preventive maintenance alerts and spare-equipment staging to reduce resolution times.
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3 Executive Summary & Highlights

The network operates within SLA standards but faces moderate exposure across specific carriers and regions.

Data verification processes and latency management offer the highest ROI for improvement.

Overall uptime exceeds 99.8 %, credit risk remains under 1 % of revenue, and strong data governance correlates directly with reduced cost and better customer trust.

Highlights

- Dynamic Excel ETL pipeline replicating enterprise data flows.

- Network health \approx 99.9 % uptime with < 1 % revenue risk.
- Actionable KPIs linking carrier performance, credit risk, and ticket resolution.

4 Next Steps / Recommendations Summary

Area	Initiative	Expected Impact
Data Governance	Quarterly building verification	\uparrow Data trust & audit readiness
Network Ops	Latency root-cause program	\downarrow SLA breaches by ~ 2 pp
Finance	Credit-tracking dashboard	\downarrow Revenue risk from 0.8 \rightarrow 0.5 %
Service Desk	Predictive ticket prioritization	\downarrow Mean resolution time by 1 hour

(Future Enhancement \rightarrow Expand this Excel model to Power BI or Snowflake for automated monthly reporting.)

5 Deliverables

- Excel Workbook: Segra_Telecom_KPI_Analysis_FINAL.xlsx
- Business Insights PDF: (this document)
- GitHub Repository: Includes README, schema overview, and 7 visualization screenshots

6 Conclusion

This project establishes a repeatable, audit-ready Excel workflow for telecom network analysis.

By combining Power Query, PivotTables, and visual dashboards, the workbook delivers end-to-end visibility into data quality, SLA performance, and financial exposure.

The same structure scales seamlessly to Power BI or SQL-based pipelines, bridging operational reporting and data-driven decision-making.

Ultimately, it demonstrates how improving data accuracy and timely analysis directly enhances network profitability.