



HOW OPTIMIZED IS YOUR NETWORK

Customer Case Study



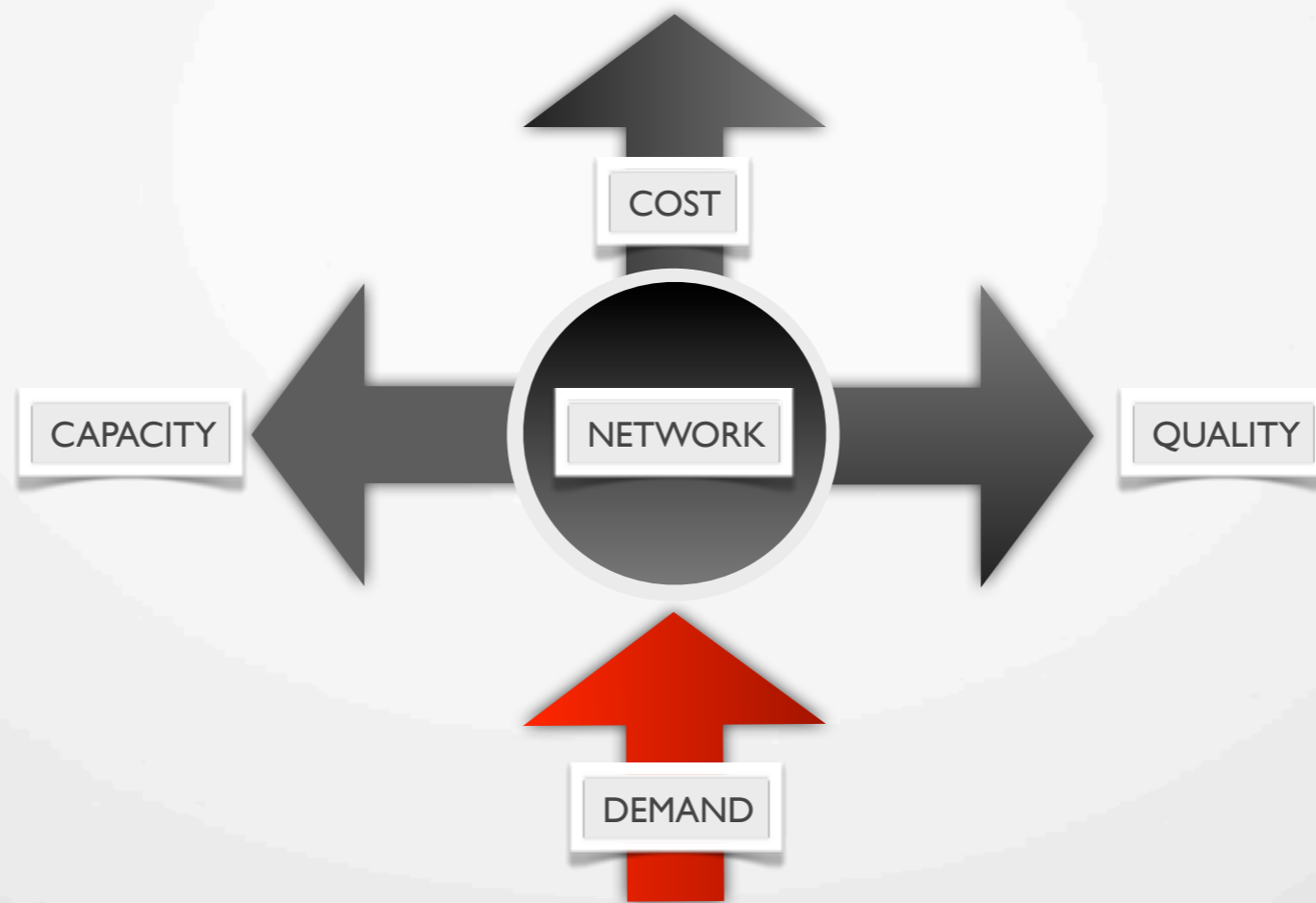
EXIT

CUSTOMER QUOTATIONS

- ❖ Network Director – “We hired Cerion to guarantee that Network would be able to handle the unprecedented traffic and protect our reputation as premier wireless service provider.”
- ❖ Corporate Technical Architect – “Without Cerion’s ongoing Technical Consulting throughout the entire engineering process, we probably would have just become very frustrated and given up on it.”
- ❖ RNC Design Manager – “I hired to Cerion to provide proactive designs that anticipate my UMTS expansion plans, so I would not have to carry out extensive re-work in a few weeks time.”

CURRENT **SITUATION**

To maximize profitability Mobile Operators need to use predictive modeling to forecast how Demand will impact the Network and accurately plan the tradeoffs between Capacity, Cost and Quality



NETWORK **PLANNING** CHALLENGES

❖ Minimize 2G spend:

- ❖ Increase utilization
- ❖ Optimally decommission equipment

❖ Deploy 3G and 4G efficiently:

- ❖ Keep pace with technology changes
- ❖ Address mobile broadband demand dynamics

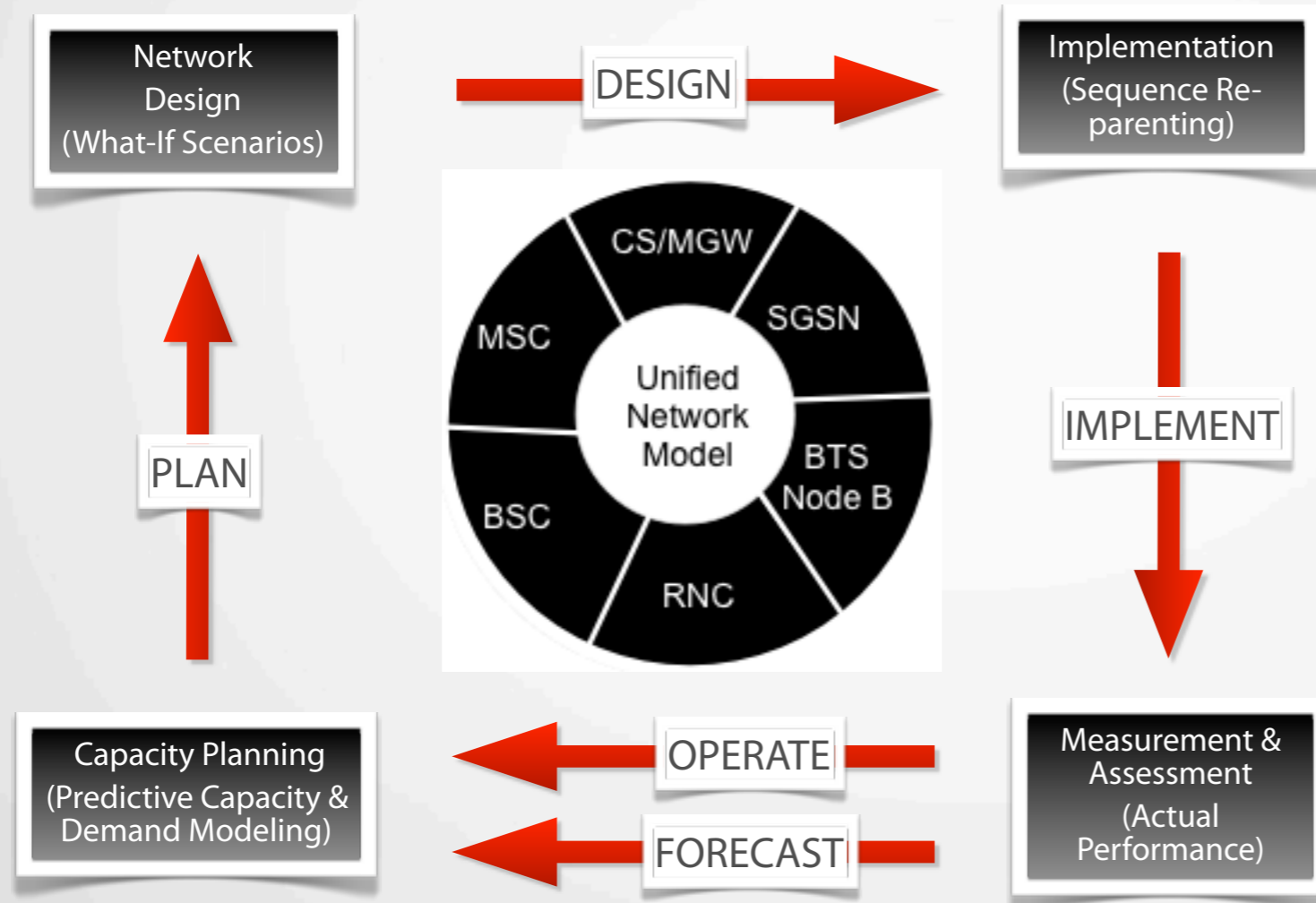
❖ Balance utilization of 2G, 3G and 4G assets:

- ❖ 2G/3G/4G traffic mix
- ❖ Mobility/handoff-related impacts

IMPACTS

- ❖ Increased Performance Risks
- ❖ Higher Network Costs
- ❖ More Changes and Network Disruption

OUR **END TO END** APPROACH



- ❖ Integrated approach removes planning dependencies
- ❖ Improves planning accuracy and time to market for new designs
- ❖ Closed-loop predictive modeling improves the accuracy of forecast demand
- ❖ Facilitates fast and accurate what-if scenario and impact analysis

CASE STUDY PACKET CORE PLANNING

This US client was able to accurately predict SGSN equipment requirements, avoiding performance issues and keeping capital spend to a minimum

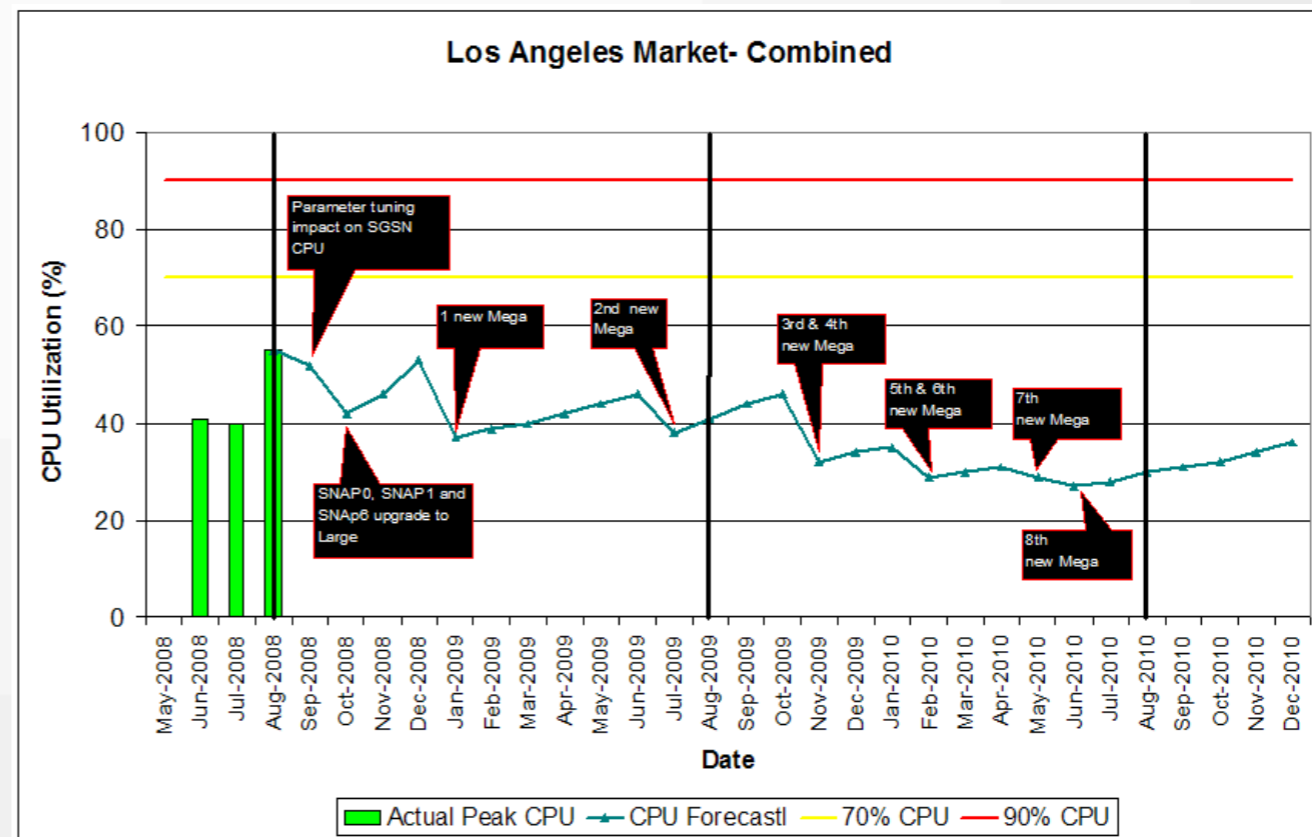
Problem:

Packet network capacity bottlenecks due to limited visibility of control plane CPU and signaling limits using traditional planning process.

Time Frame: 3 Months

Solution:

Cerion predictive modeling delivered a 2G/3G SGSN evolution plan that grew data throughput by greater than ten fold. This included an assessment of control plan transaction impacts



CASE STUDY MAJOR EVENT PLANNING

This US client was able to carry 100% more data traffic with zero network blocking, enabling them to maintain their reputation as a premier service provider

Problem:

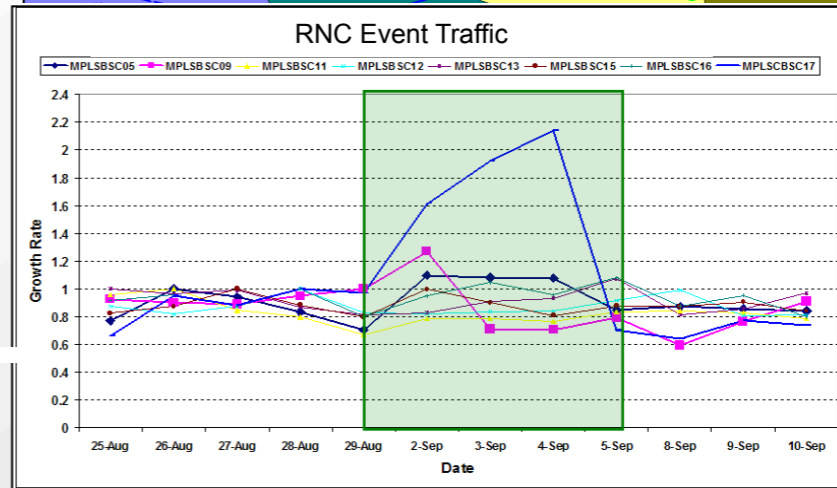
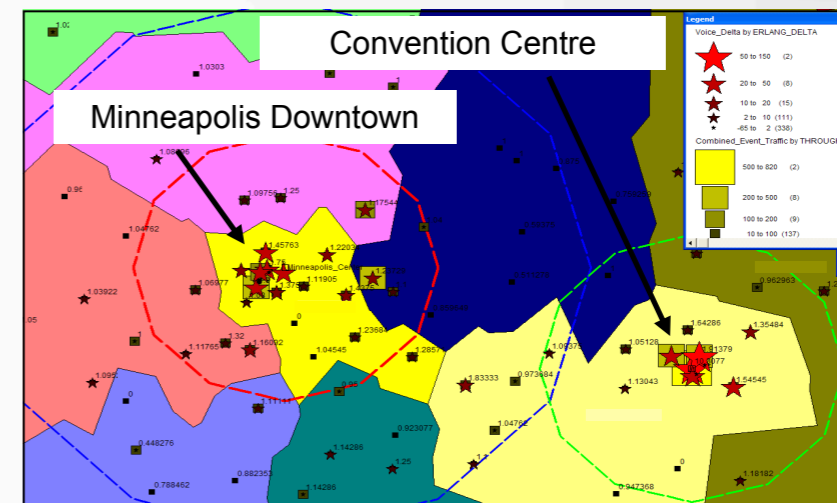
Operator expected >100% traffic increase for a high-profile convention.

Network needed to be accurately re-configured to accommodate event traffic.

Time Frame: 2 Months

Solution:

Cerion modeled network impacts and recommended reconfiguration and capacity upgrades to the RAN and UTRAN to ensure non-blocking



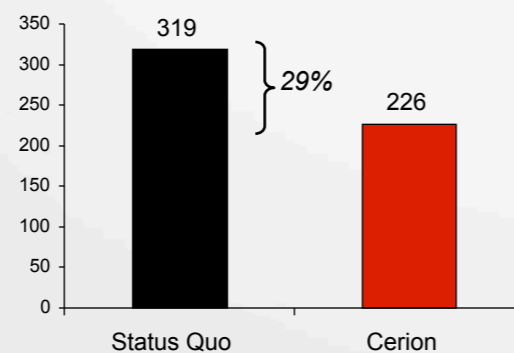
CASE STUDY

OPTIMIZED UMTS DEPLOYMENT

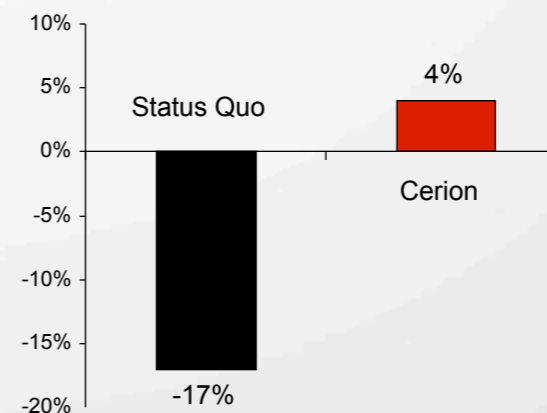
This US customer increased annual capacity by 21% while reducing costs by \$1.2M in 3G metropolitan network

- ❖ This was a Tier 1 market during the early deployment phase
- ❖ As traffic increased, RNC utilization outpaced capacity expectations
- ❖ Cerion efforts resulted in reduction of 1 RNC (approximately \$1M)

Number of Re-Homes Required



RNC Utilization

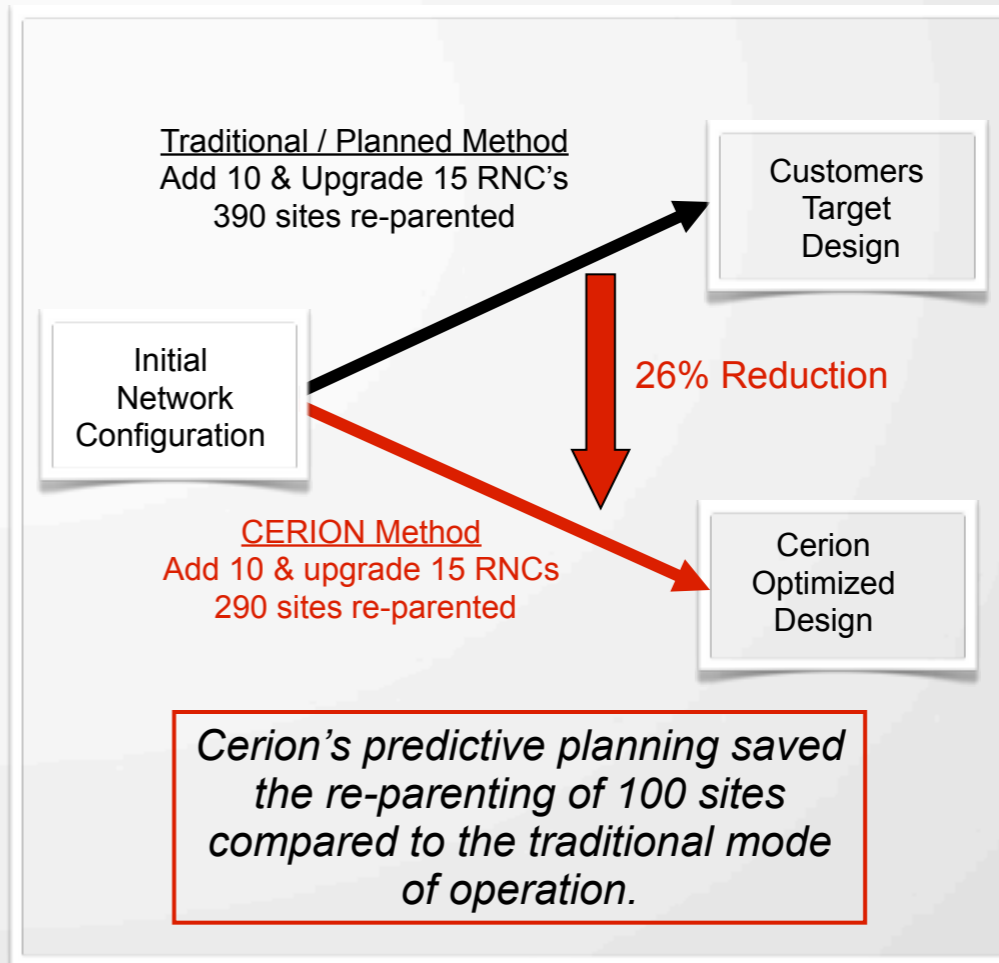


CASE STUDY

LESS NETWORK RE-PARENTING

This US customer reduced annual UMTS re-parenting requirements by 26%
Improving Network Quality and reducing OPEX by more than 15%

- ❖ Traditional manual process was more reactive than proactive
- ❖ Engineers did not have access to Node-B transaction data and were not able to predictively model demand and performance impacts
- ❖ Time required for manual data processing and analysis was excessive



CASE STUDY

PROCESS EFFICIENCY GAINS

This European customer reduced the time taken for a single network planning cycle by 87%

Engineering Activities	Initial Mode of Operation Using Excel Spreadsheets & MapInfo	Cerion Mode of Operation Using Cerion Optimiser™
Average Incremental Design Recursions	4	4
Engineering Activities		
Initial Design		
Process and Verify Data	32 hours	1 hours
What-If Design Analysis	8 hours	2 hours
Prepare Reports and Presentation	8 hours	½ hours
Hours Per Initial Design	48 hours	3 ½ hours
Design Recursion		
Re-Process and ReVerify Data	8 hours	1 hours
What-If Design Analysis	4 hours	1 hours
Prepare Modified Reports and Presentation	4 hours	½ hours
Hours per ReDesign	16 hours	2 ½ hours
Total Man Hours Per Market Design	112 Hours	14 Hours





CASE STUDY

E///RNC SHELF BALANCING

This US customer reduced annual 3G re-parenting requirements by 75%,
Created additional headroom for growth and saving \$1M in OPEX

Problem:

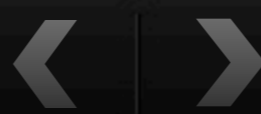
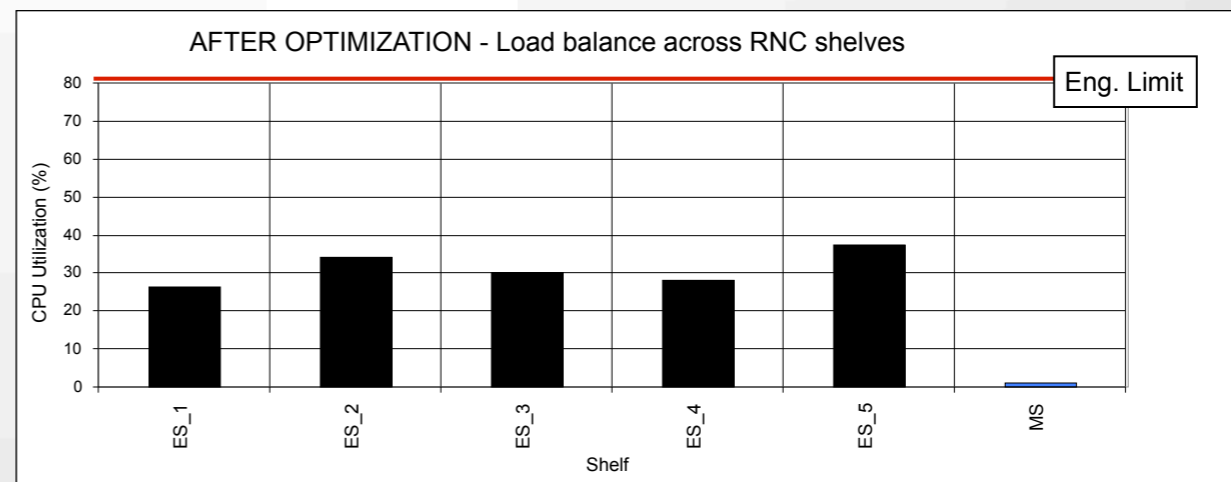
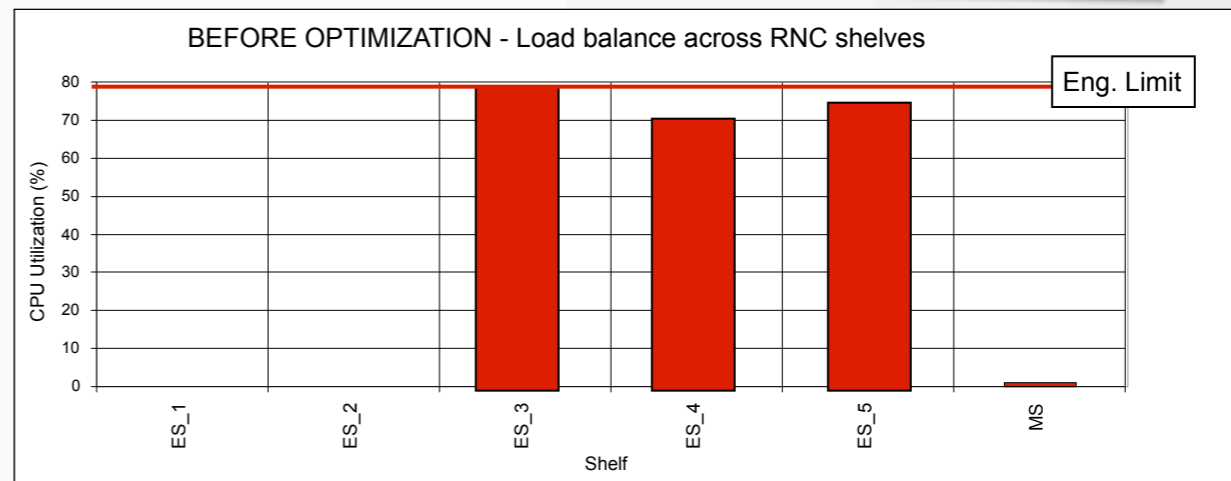
RNC Subscriber Denial of Service due to Shelf-Level CPU imbalance.

Lack of predictive modeling resulted in Operator continuously re-homing shelves resulting in further QOS degradation.

Time Frame: 3 Months

Solution:

Leverage Cerion Border Optimization methodology to predict RAN growth, reduce blocking and proactively improve QOS



CASE STUDY

LOWER ANNUAL CAPITAL SPEND

Capital spend in this 2G London network was reduced by £1.7m – Or 35% annually

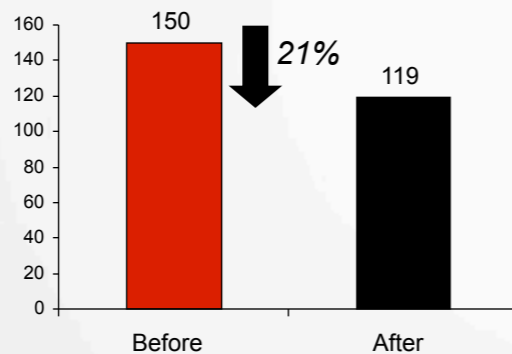
CAPEX / OPEX Type	Planned				Proposed			
	Equipment	Quantity	Cost per Unit	Total Cost	Equipment	Quantity	Cost per Unit	Total Cost
New	BSC 3i 440 TRX	11	x	x	BSC 3i 440 TRX	6	x	X
New	BSC 3i 660 TRX	0	x	x	BSC 3i 660 TRX	0	x	x
New	BSC 3i 330 TRX	0	X	x	BSC 3i 330 TRX	0	x	x
Upgrades	TRX 110	4	x	x	TRX 110	8	x	x
Upgrades	PCU	63	x	x	PCU	42	x	x
Upgrades	E1	5	x	X	E1	5	x	x
Total				£4,873,076				£3,157,487

CASE STUDY

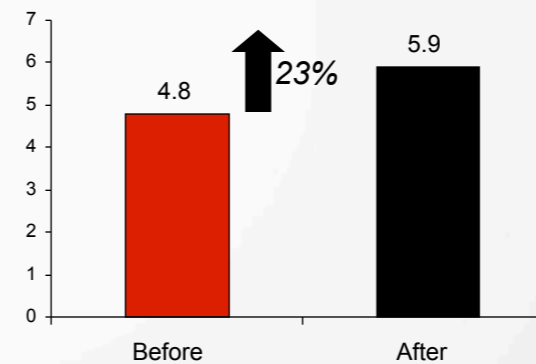
MINIMIZING 2G INVESTMENT

This US customer reduced annual 2G capital expenditure by more than \$30 million.

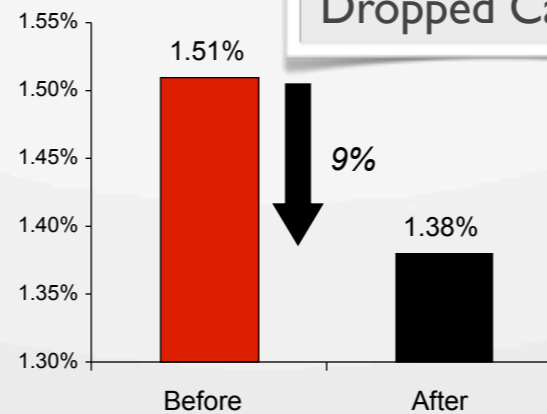
Forecasted BSC Counts



Overall Subscriber Capacity (in millions)



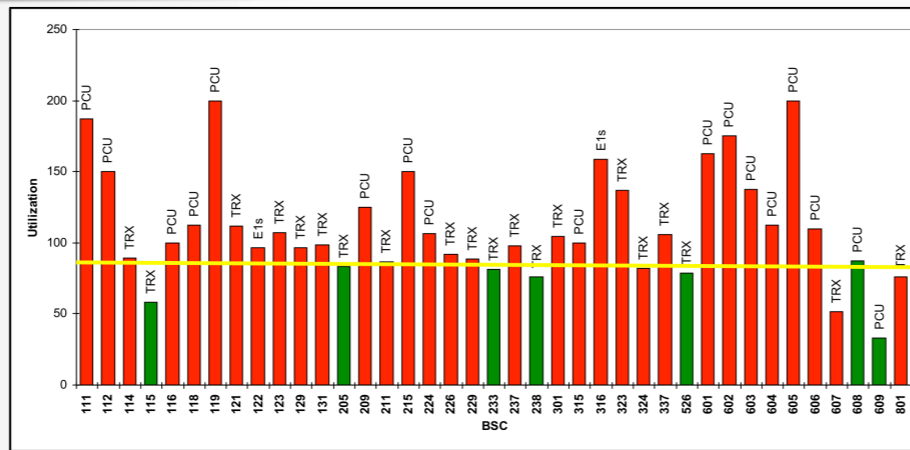
Dropped Call Rate



CASE STUDY RUN LEANER & HOTTER NETWORK

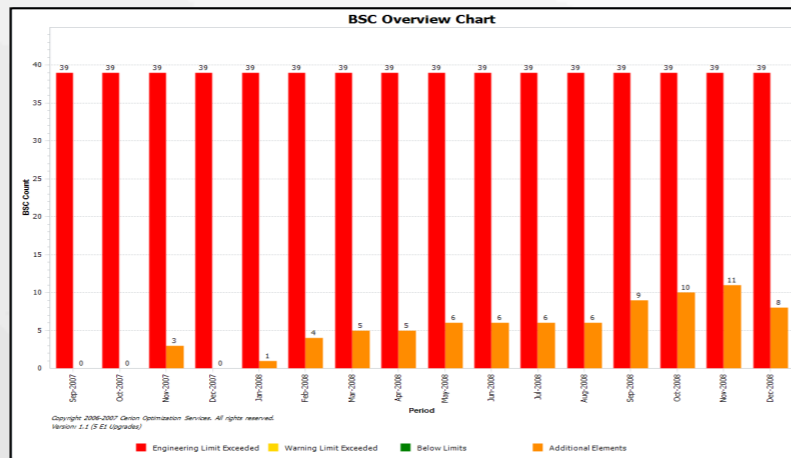
Predictive modeling of element constraints enabled this customer to increase engineering limits – Reducing annual capital requirements by 35%.

BEFORE



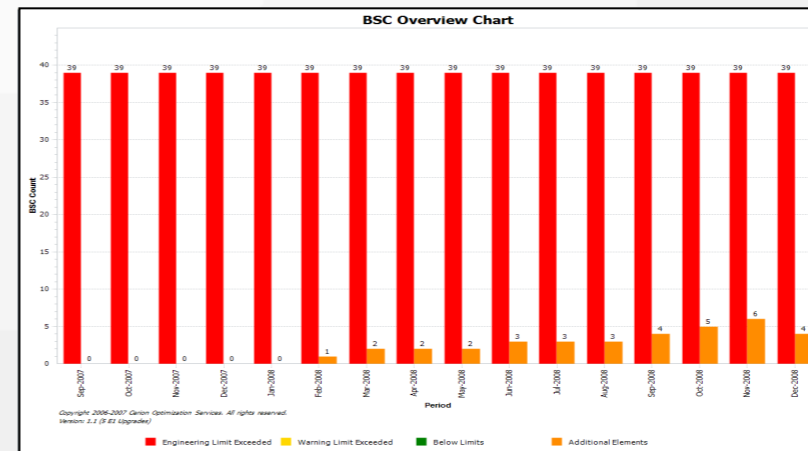
Projected demand on network drives most BSCs over 100% utilization on at least one constraint.

AFTER



11 new BSCs planned at 70% engineering limit

AFTER



Cerion recommended 5 new BSCs at 80% engineering limit



SUMMARY

Cerion predictive capacity modeling helps to improve your competitive edge

- ❖ Reduce capital spend and legacy investment
- ❖ Improve Quality of Service and reduce churn
- ❖ Improve operational efficiency and reduce costs
- ❖ Optimize deployment of new technology
- ❖ Run the network hotter and leaner
- ❖ Proactively address CPU bottlenecks

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