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COURSE BROCHURE

AI Network Fault Prediction and Capacity Planning Training Course

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Registered in the United Kingdom and Saudi Arabia

AI Network Fault Prediction and Capacity Planning Training Course

AI Network Fault Prediction and Capacity Planning is a 1-week training course for telecom network planning and operations engineers who keep broadband networks running and sized for demand, ending with a network foresight plan. Traffic grows unevenly and outages cost subscribers, so operators that react to alarms and buy capacity by rule of thumb fall behind. Jupiter Prime Training treats AI Network Fault Prediction and Capacity Planning from the network operations centre outward.

Why AI Network Fault Prediction and Capacity Planning Matters Now

Three forces shape the subject. Video and home working move traffic peaks faster than annual planning cycles; operations centres face alarm floods from fibre, radio and transport layers at once; and finance asks for proof before each capacity upgrade. Operators that predict faults early and forecast node load protect quality of experience and defer spend; others chase tickets and overbuild. Where models trigger network changes, the course draws on the NIST AI Risk Management Framework NIST AI RMF for testing, monitoring and human oversight.

Who Gains Most from AI Network Fault Prediction and Capacity Planning

- Engineers who size fibre nodes, cells and backhaul links for future demand
- Operations staff who triage alarms and dispatch field repairs
- Specialists who tune radio parameters and access network settings
- Analysts who build traffic and performance reports from network counters
- Service assurance owners who track customer experience and outage targets

A broadband operator gains most when its planning, operations centre and radio optimisation leads attend together.

AI Network Fault Prediction and Capacity Planning Capabilities

Participants turn counters, alarms and probe data into early warnings and upgrade schedules.

- Build busy-hour traffic forecasting per node from counter history — capacity investment boards
- Design fault prediction models from alarm, optical power and equipment telemetry — operations centre leads
- Apply alarm correlation to collapse floods into root-cause tickets — field dispatch managers
- Specify closed-loop automation guardrails for self-optimising network actions — radio optimisation teams
- Calculate capacity exhaustion dates and upgrade options for each site — planning engineers and finance partners
- Communicate quality of experience impact of faults and congestion — service assurance and customer teams

Key AI Network Fault Prediction and Capacity Planning Terms

- Busy hour — the period of the day when traffic on a link, node or cell reaches its peak.
- Predictive maintenance — repairing or replacing equipment when models show rising failure risk rather than on a fixed cycle.
- Alarm correlation — grouping related network alarms to identify the single fault that caused them.
- Self-organising network SON — software that configures, optimises and heals radio networks with little manual input.
- Closed-loop automation — a cycle where monitoring detects a condition and an automated action corrects it, then verifies the result.
- Quality of experience QoE — how subscribers perceive service, such as video stalls, latency and page load times.

AI Network Fault Prediction and Capacity Planning Day by Day

Day 1: Broadband Network Data and Operating Pressures

- Fibre and Radio Access Counters — Which Signals Predict Trouble
- Alarm and Ticket History Extraction — Model-Ready Fault Records
- Traffic Growth Drivers by Service — Where Peaks Are Moving
- Network Inventory and Topology Data — Linking Faults to Sites
- Model Risk Framing Under NIST AI RMF — Safe Automated Network Changes

Day 2: Forecasting Traffic and Capacity

- Busy-Hour Traffic Forecasting per Node — Upgrade Timing
- Seasonal and Event Demand Modelling — Temporary Capacity Choices
- Capacity Exhaustion Projection — Site Upgrade Priority List
- Upgrade Option Comparison — Split, Densify or Reroute
- Forecast Accuracy Tracking — When to Retrain Planning Models

Day 3: Predicting and Correlating Faults

- Optical Power Degradation Models — Fibre Repair Before Outage
- Equipment Failure Prediction From Telemetry — Spares and Dispatch Planning
- Alarm Correlation and Root-Cause Grouping — Ticket Volume Reduction
- Anomaly Detection on Performance Counters — Silent Failure Discovery
- Prediction Explanation for Engineers — Trust in Model Alerts

Day 4: Self-Optimising Networks and Closed-Loop Automation

- SON Use Cases for Radio Access — Load Balancing and Coverage
- Closed-Loop Workflow Design — Detect, Act and Verify Steps
- Automation Guardrails and Rollback Rules — Human Approval Thresholds
- QoE Measurement From Probes and Apps — Customer Impact Scoring
- Network Health Dashboard — Faults, Congestion and Model Drift

Day 5: Practising the Network Foresight Plan

- Traffic Forecasts Applied to a Fibre Operator's Nodes — Upgrade Queue
- Fault Prediction Applied to a Mobile Operator's Cells — Dispatch Changes
- Closed-Loop Pilot Design for a Utility Telecom Network — Guardrails Tested
- Investment Case Briefing — Questions From Finance and Engineering Heads
- Network Foresight Plan Assembly — Forecasts, Fault Models, Automation and Owners

Applying AI Network Fault Prediction and Capacity Planning After the Course

- Forecast busy-hour load for the twenty most congested nodes and compare exhaustion dates with the upgrade list.
- Run alarm correlation on one month of operations centre data and measure how many tickets collapse into shared root causes.

AI Network Fault Prediction and Capacity Planning Questions FAQ

What is AI network fault prediction and capacity planning, and why does it matter now?

It is the use of models on network data to foresee faults and size capacity before demand arrives. It matters now because traffic shifts quickly and alarm floods overwhelm manual triage.

Which roles gain most from AI network fault prediction and capacity planning?

Network planning and operations engineers gain most. Radio optimisation specialists, performance analysts and service assurance owners also benefit, because they tune cells, report counters and answer for customer experience.

How does AI network fault prediction and capacity planning differ from a network design course?

It works on live operating data rather than new architecture. A design course selects topologies and equipment, while this one forecasts load, predicts failures and automates corrections on a network already in service.

What do you bring back from AI network fault prediction and capacity planning training?

You bring back a plan for your own network. It holds traffic forecast methods, fault prediction model designs, alarm correlation rules, automation guardrails, an upgrade priority list and named owners.

AI Network Fault Prediction and Capacity Planning: The Way Forward

The network foresight plan first informs which sites join next quarter's upgrade queue and which faults trigger proactive dispatch. Planning leads use it to brief finance. After its first cycle, revisit the automation guardrails: actions that never needed reversal may run without approval, while new traffic patterns often call for retrained forecasts.