

Technical Director, Technology Leader, SME (Telecom / Networks) – Proficiency in English & French

WAQQAS AKHTAR

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OBJECTIVE

To manage, guide, inspire skillful professionals towards forward-thinking solutions, scalable architectures and sustainable synergies in communications technologies, systems and networks; all the while aiming for constructive collaborations, cross-domain knowledge-sharing, and productive partnerships; so as to play a beneficial role in enriching future technology innovations, specifications, operations and business opportunities.

WORK EXPERIENCE

Cumulative Duration: 18+ years

2017 - Present (6 years) **Nokia** — Technical Director (RAN, Transmission, OSS, Core) **Asnières-sur-Seine, France**
Projects: *Network Modernizations (SFR France, 3-UK, 3-Ireland, O2)*

- **Define, Develop, Direct:** Project scopes, targets, deliverables, timelines, risks, gaps
- **Full Spectrum:** Nokia RAN (4G/LTE-Adv/5G/loT); RF product line and antenna systems; Nokia transmission (Packet Optical Transport, DWDM, Optical MultiService, Smart Ethernet Aggregation, IP-MPLS); Nokia BSS & OSS; Nokia Core, EVO-controllers and NFV datacenters; Nokia power backup solutions
- **Network Projects:** Project technical life-cycle planning and execution for large-scale deployments, roll-outs, modernizations, expansions, swaps, mergers, new service launches, system-wide upgrades, principal performance enhancements, comprehensive fixes
- **Network Modernization:** Technical solutions design for upgrades, radio features enhancements, new network optimizations, new services roll-out for access networks and transmission
- **Network Expansion:** Technical architecture proposals, procedures and planning for new node dimensioning, installation, commissioning, integration and acceptance testing
- **Network Dimensioning:** Solution design for capacity and configuration modifications, cluster re-hostings, load-balancing strategies, connectivity matrices densification, re-dimensioning of core datacenters by adding OSS clusters, storage arrays, routers and switches, physical and virtual nodes (Nokia NetAct, iOMS, HLR-FE, HSS, One-EIR, One-MNP, One-NDS, AirFrame)
- **Network Testing:** Verification, testing and customizations for customer network readiness, features introduction (RAN/OSS), counter setups, KPI formulations in test-bed environment, setting-up of on-premises test-beds for customized solutions, penetration testing
- **Network Management:** Solutions for auditing, analyzing and improving customer's routine processes: network operations, proactive/preventive maintenance, fault troubleshooting, site and data storage integrity checks, configuration backups
- **Network Performance:** Enhancement proposals through study and analysis of customer network parameters, for installation and setup of new monitoring nodes (deep packet inspection technologies), new features introduction (RAN/OSS), new counter setups, new KPIs setup
- **Network Service Quality:** Solution design for network QoS/QoE mapping; introduction (deployment, commissioning, activation) of network probes and Layer-3 protocol analyzers
- **Network Intelligence:** Proposals for business intelligence solutions, big-data performance analysis dashboards, post-processing tools, network capacity and performance statistics (in-depth and high-level aggregates), visualization and reporting systems
- **Network Security:** Solutions for cybersecurity policies to prevent, detect and monitor unauthorized access, misuse, or compromise of network-accessible resources: switches, routers, IP configurations, authentication tables, rules and filters, cryptographic key management
- **Knowledge Sharing:** Customer briefings and product launch presentations (engineering teams, project management and C-level management), steering-committee meetings, discussion sessions on Nokia-Resolve Cases, knowledge transfer, software/firmware upgrade roadmaps
- **Resource Planning:** cross-functional teams (50+ members), service providers, 3rd party sub-contractors, specialist contractors
- **Financial Tracking:** Budget, cost, expenses, forecasts and schedules
- **Reporting:** progress dashboard statistics, technical scale-ups, milestones, deliverables, SWOT & SWIFT analysis, site-intervention aggregates, performance metrics, probability/consequence matrices, decision trees

Certifications, Trainings, Workshops:

- Nokia AirScale CloudRAN Resource-Efficient Dimensioning Workshop
- Nokia AirFrame CloudOSS Infrastructure Design Workshop
- VMware ESXi, vSAN, vSphere 6.x Configuration Training

2015 - 2016 (2 years)	Everything Everywhere — Network Modernization Manager Project: <i>RAN Unification (Orange & T-Mobile)</i>	Bristol, United Kingdom
	<ul style="list-style-type: none"> • Delivery of architecture, design and planning for services, tools and systems interoperability in the wake of merger of two mobile operators • Managed activities: Radio network design, planning and parameter homogenization, L1/L2/L3 protocol layer design and implementation in a multi-RAN (Nokia-RAN & Huawei-RAN) environment • Planning: Upgrades of multi-technology, multi-vendor network element management systems and OSS nodes (see attached diagram) • Analysis of end-to-end impact on OSS capacity, architecture and design, for introduction of innovative projects, services, tools and features (e.g. IOT Emergency Response layer, decentralized SON feature, Geo-location mapping service) • Performance management tools and systems re-alignment project: Analysis of vendor-specific (radio, transmission and core network) counters, KPIs and algorithms for unification across platforms • Integration of transport network service routers (SR775x), firewall configurations (VLANs, NAT) • Review of regression test-cases for Switching Network and RAN nodes after software upgrades, review of respective lab test reports; troubleshooting and bug fixes • Analysis of end-to-end impact on network capacity, architecture and design for introduction of innovative projects, services, tools and features (decentralized SON, Geo-location mapping, IoT Emergency Response) • Responsibility for design and architecture documentation: HLD (High-Level Design), LLD (Low-Level Design), CMD (Connectivity Matrix Design), DFD (Data Flow Design), Technical Whitepapers, etc. 	
	Certifications, Trainings, Workshops:	
	<ul style="list-style-type: none"> • Network Management Systems: Architecture Design & Advanced DataFlow (Certification) 	
2010 - 2014 (4 years)	Ericsson — Manager Network Design (2G/3G Swap, LTE-Intro.) Project: <i>Orange France — RAN Swap, Expansion & Modernization</i>	Massy, France
	Phase I:	
	<ul style="list-style-type: none"> • Solution, design & dimensioning propositions preparation for CAM (Customer Account Management) • Transmission network design & architecture for customer's ATM/IP optical backbone • Solution preparation: ATM to Ethernet (IP transmission) migration scenarios for packet traffic • Architecture & Design for packet optical transport platform (SPO 1400 Family) • DWDM Multiservice Platform for Edge / Metro / Core Network Applications (Marconi MHL 3000) • Optical MultiService Transport Platform for SDH, PDH and Ethernet Traffic (Marconi OMS) • Smart Ethernet Aggregation Platform (Ericsson SEA 10/20 Family) • Customer briefings, knowledge-transfer presentations, solution propositions and readiness (RFC) coordination 	
	Phase II:	
	<ul style="list-style-type: none"> • Delivery of network roll-out designs containing RNC and RBS node dimensioning, capacity planning and site transmission solutions • Field deployment of Ericsson's Multi-Standard RBS (radio base stations), Macro/Micro/Pico Solutions, Main-Remote Solutions, Indoor-Solutions and Transmission Product Line • Manage PS performance optimization, L12/L13 features introduction, impact, dependencies, network upgrades (hardware / software basic-package), software licenses • Responsible for network hardware upgrades, product replacements, phase out planning, features introduction, impact, dependencies, software licenses, HW activation codes • Focus on simplification of troubleshooting processes, standardization, process-based thinking and scalability of methods to ensure quality, cost efficiency and resource optimization 	
	Certifications, Trainings, Workshops:	
	<ul style="list-style-type: none"> • Ericsson Mobile Network & Business Evolution Strategy – <i>Brand Ambassador Program</i> • Ericsson Multi-Radio Base Station: Installation & Commissioning (1550 LZU 103 1001 R1A) • Ericsson RBS6000 Digital Baseband Dimensioning & Configuration (1550 LZU 105 1001) • Ericsson BSS Performance Counters and KPIs – Workshop (1550 LZT 103 1007 R2A) • Ericsson LTE Evolution, Feature and Applications – Workshop (1550 LZT 108 7714 R2A) • Ericsson RAN LTE/4G E-UTRAN Dimensioning & Optimization (1550 LZU 108 9110 R1A) • Ericsson Optical Transport Technology Overview (ECA 241.9 OTN REL 1.09) • Ericsson Optical Transport Networks Planning (ECA 241.9 OTN REL 4.28) 	
2010 - 2010 (6 months)	Nokia Siemens Networks — Network Upgrade Operations Manager Project: <i>SFR – Network Monitoring, Upgrade & Optimization</i>	Lyon, France
	<ul style="list-style-type: none"> • Manage BSC (3i) and RNC (RN 5.0) upgrades: pre/post upgrade verifications • Supervise radio-interface measurements (TEMS, Anite Nemo Suite, Amdocs Actix Analyzer) 	

- UMTS (R99) and HSPA counter set-up, KPI measurements & analysis, parameter optimization
- 2G (GSM) & 3G (UMTS WCDMA) radio re-engineering, RF re-planning, network optimization
- Oversee network replanning, reconfiguration (Forsk Atoll AFP, Amdocs ActixOne, Aircorn Asset)
- Implement GIS tools (Mapinfo Pro, ESRI ArcView, ESRI ArcGIS)
- Manage network performance monitoring (ATDI ICS Telecom Suite, Westell Optima)

Certifications, Trainings, Workshops:

- Mobile Networks Architecture & Evolution: GSM–5G. Professional Course, Gemalto.

2006 - 2010
(3½ years) **Alcatel-Lucent** — Research & Innovation Expert **Paris, France**
Project: *Convergence technologies for Hybrid-Fiber-Radio Systems*
Collaboration Partners: *France Telecom (Orange), ParisTech and Alcatel-Lucent*

- Design, dimensioning & planning of converged optical-radio network architectures
- Planning, development & testing of techniques and protocols for hybrid fiber-optic systems [2].
- Simulation, modeling and implementation of radio-over-fiber signal generation techniques
- Mathematical parametric analysis of optical communication link budgets for single-mode and multi-mode fiber optic cables
- Familiarity with fiber cleavers, fiber fusion-splicers, spectrum analyzers, oscilloscopes, optical amplifiers, optical attenuators, optical circulators, Rayleigh-backscatter reflectometers
- Calibration of NTC (Negative Temperature Coefficient) Thermistors
- Technical evaluation of semiconductor laser transmitters such as VCSELs (Vertical-Cavity Surface-Emitting Lasers), Fabry–Pérot and DFB (Distributed Feed Back) lasers
- Test-bench set up of radio-over-fiber transmission techniques and RF signal generation via intensity-modulation, direct-detection, optical-heterodyning and optical FM-filtering
- Study of Mach–Zehnder interferometers in electro-optic modulators
- Experimental exploration of master-slave operation for dual-mode lasers, optical injection-locking (OIL), optical frequency lock-loops (O-FLL) and optical phased lock-loops (O-PLL) [3].
- Wavelength detuning of semi-conductor lasers
- Comparative analysis of optical harmonic generation and sub-carrier multiplexing (SCM)
- Exploration of novel RoF architectures: WDM Metropolitan Networks, SCM over WDM, OCDMA over WDM
- Conception of fiber distributed antenna systems (F-DAS) for radio-of-fiber applications, especially for picocellular mobile broadband coverage

Certifications, Trainings, Workshops:

- Programming Data Structures with C++. Institut Universitaire de Technologie (IUT), Paris-VII
- Optical Amplifiers: Principles, Applications, Characterization of EDFA. ParisTech COM390
- Optical Receivers: Principles, Applications, Avalanche-Photodectors. ParisTech COM391
- Optical-Injection Phase Modulation in OptiWave OptiSystem. Tech-lab. ParisTech COM399

2006 - 2006
(6 months) **France Telecom (R&D center)** — Network Solutions Engineer **Issy les Moulineaux, France**
Job function: *Research & Development at Mobile Network Architecture group (MNA)*

- Programming up-gradation of a Network Simulation System for L1/L2/L3 BSS/RAN access
- Formulation of models for Voice over Internet Protocol (VoIP) service for UMTS
- Analysis and evaluation of data Header Compression techniques, including RoHC
- Implementation of High Speed Download Packet Access functions into the simulator
- Evaluation of an end-to-end VoIP strategy for 3G/3G+ migration

2004 - 2005
(9 months) **Nokia Siemens Networks** — Project Lead-Engineer **Pakistan & Dubai**
Project: *Telenor Mobile Network — New Roll-out & Deployment*

- Design, Dimensioning and Planning for BSS/RAN nodes; GPRS and EDGE implementation
- Radio network planning, design & dimensioning; capacity & coverage planning;
- Evaluation of customer requirements, technology roadmaps and forecasts, upgrade proposals
- Interaction with sales, marketing and logistics teams concerning new solutions introduction
- Management of a team of technicians for deployment, testing & commissioning
- Installation and configuration of optical nodes, OADM's, ROADM's and Cross-Connects for metro and inter-regional (DWDM-based) optical fiber backbone links
- Development and maintenance of a SDH/PDH/E1 Circuits Management Tool in MS Access

2004 - 2004
(8 months) **ZhongXing Telecom Corporation (ZTE)** — Network Engineer **Islamabad, Pakistan**
Project: *Paktel Fixed-Line Telephone Network Deployment*

- Customer engagement: pre-sales bid preparations, product presentations, negotiations, solution evaluation, identification of risks, possibilities, opportunities
- Design & dimensioning of an international gateway exchange for fixed-line telephone network
- Solution Architecture for broadband service optical fiber network (Ethernet/SDH/SONET)
- Installation, commissioning and maintenance of ZTE WDM & OTN Systems

- Software and hardware upgrades and maintenance of ZTE PABX systems, VOIP systems, ECN products.
- Product life-cycle monitoring and evaluation study for up-gradation paths and scenarios
- Preparation of documentation for planned upgrades and customer requested network-wide tests, and training and coordination of operational support teams
- Ticket handling, prioritization and follow-up of customer observations, reservations and issues

Certifications, Trainings, Workshops:

- ZXJ10 Large-Scale SPC Switching System: Installation & Commissioning (ZP010 1050 4242J)
- ZXR10 2900E Metropolitan Network Ethernet Switching System: OAM (ZP020 1310 2900R)
- ZXR10 8900X MPLS Routing Switches: OAM (ZP020 1310 8900R)
- ZXONE 8000 WDM & OTN Switching System: Configuration (ZP070 1490 8000N)

EDUCATION

Cumulative Duration: ~ 19 years

2012-2012	Certification — <i>Technical Workshop</i> — <i>LTE/4G: E-UTRAN Dimensioning & Optimization</i> Ericsson Global Learning Center	Massy, France
2011-2011	Certification — <i>Technical Workshop</i> — <i>WCDMA/3G: RNC, BSC, NodeB</i> Ericsson Global Learning Center	Massy, France
2007-2010	PhD. — <i>Hybrid Fiber-Radio Systems (ongoing)</i> Ecole Nationale Supérieure des Télécommunications (Telecom ParisTech)	Paris, France
2008-2008	Management Certification — <i>Innovation Management</i> Ecole Nationale des Ponts et Chaussées (ENPC-MBA Paris)	Paris, France
2005-2006	MS. — <i>Radiocommunications</i> Ecole Supérieure d'Electricité (Supélec)	Gif-sur-Yvette, France
1999-2003	Bachelors of Engineering — <i>Telecommunications</i> National University of Sciences and Technology (NUST)	Islamabad, Pakistan

LANGUAGE SKILLS

English, Advanced level (Academics) — **French**, Fluent level (11 years)

TECHNICAL EXPERTISE

Tech Tools and Suites: C/C++, Visual Basic, POSIX (Bash Unix Shell, Perl, SQL Scripting, Windows Batch Scripting), VMWare, Matlab, Optiwave Optisystem, Synopsis RSoft OptSim, AutoCAD, EDraw Max, Origin Point, PSpice, True Image, Siemens PathLoss, IPplan, Amdocs Cramer Suite (Cramer Resource-Manager, Cramer SyncEngine, Cramer Dimension for SDH Inventory), Amdocs-Comverse Kenan, ArcFM Circuit Manager, ArcFM Fiber Manager, ArcFM Connection Manager, Comsof FiberPlanIT Designer, Cisco Optical Transport Planner, Schema Transport Network Optimization (TNO) Suite, ITS-NetDesign (AutoCAD Extension), CircuitVision, Alcatel COMET (Ethernet Traffic Optimization), GL Comm MAPS (Signaling Protocol Emulator), Cisco IOS, JDS Uniphase, Mentus Planet, Tektronix Newfield TrueCall GeoAnalytics, Aircom Asset, Aircom Optima, Aircom Connect, Forsk Atoll (AFP, ACP, ASP), Orange CrossWave for Atoll, ATDI ICS Telecom Suite, Westell Optima, ESRI ArcView, ESRI ArcGIS, QGIS (OpenSource), PitneyBowes Mapinfo Pro, Amdocs ActixOne, Amdocs Actix Analyzer, Amdocs BSS DNA (Digital-to-Network Automation) Solution, Amdocs CES20 BSS Suite, AmdocsONE (DigitalONE, CatalogONE, RevenueONE), Amdocs Microservices360, Accuver XCAL/XCAP, GIS Odeon, SFR-WIPRO Ocean, SFR-WIPRO RRCAP, Xeus Pro for GPEH Analysis, Solarwinds Orion NPM, Anite Nemo Suite, Anite Nemo Commander, Ericsson TEMS, Ericsson ECP, Ericsson Verdi, Ericsson QBuild, Ericsson ELIS, Ericsson ESTER, Ericsson RBS 6000 Series OMT, Ericsson IP Probe, Ericsson Optical Network Planner (ONP), Ericsson OSS-RC, Nemesis Site-Info, Nemesis Spectrum, JDSU Geo-Location Tool, Nokia NetAct, Nokia NAdM, Nokia Traffica, Nokia/EMC Networker, Nokia MegaMon, Nokia MegaPlexer, Nokia Emil, Huawei iManager M2000 / U2000, Huawei OSMU, Huawei OSSCAT, Huawei PRS, Huawei Trace-Server, Huawei Nastar, HPSIM, HPOA, IBM Netcool, Eriteic Monolith, EMC Greenplum, ADC Metrica, Metricell (NETcare, NETfix, NETview, NETwatch), MBNL Blarney, EMC Unisphere (VNX-Array), Wireshark (Ethereal), PSIA, Network Packet Analyzer CAPSA, UPnP PortMapper, Comm Operator, STermPro, SCADA, PTC Thingworx Suite 8.4 (Composer, Models, Value Streams, Mashups), FraudBuster SIMBuster, FraudBuster SpOTter.

Test & Measurement Tools and Systems: Texas Instruments TI-nSpire CAS Grapher, Fluke 787/789 Process Meter, Fluke 1587 Insulation Tester, Cisco Catalyst 3850 10GbE L2/L3 Switch, Rohde&Schwarz CMW500 Wideband Radio Communication Tester, Rohde&Schwarz CMWrun Sequencer, Rohde&Schwarz FSW85 Signal & Spectrum Analyzer, Rohde&Schwarz ZVA110 Vector Network Analyzer, Tektronix MSO72004C Mixed-Signal Oscilloscope, Tektronix BSX320 BertScope Bit-Error Rate Tester, Tektronix PPG4000 Multi-Channel Pattern Generator, Tektronix PED4000 Channel Error Detector, Tektronix LE320 Linear Equalizer, Keysight Agilent UXG Signal Generator, Keysight Agilent M8195 Arbitrary Waveform Generator, Keysight Agilent M8197 Multi-Channel Synchronizer, Anritsu CMA5 Optical Power Meter, Anritsu CMA5 Optical Loss Tester, Anritsu MT9083 Optical Time-Domain Reflectometer (OTDR), Sumitomo Electric Lightwave FC-6RM-C Fiber Cleaver, Fujikura FSM-100M Fiber Fusion Splicer, EXFO FLS-2800 ITLA Tunable Light Source, EXFO FVA-3800 Optical Variable Attenuator, EXFO PSO-200 Optical Modulation Analyzer, EXFO FTB-5245 Optical Spectrum Analyzer (OSA), EXFO TKS-CAL-OPM1U Optical Component Callibrator, EXFO IQS-610P-HS Sonet/SDH Multiservice Tester, EXFO SyncWatch-110 Synchronization Tester.

Protocols (Signaling, Compression, Routing): UDP, TCP, RTP, IP (IPv4, IPv6), DiffServ, IPSec, SIP, VoIP, RoHC, IPoE, PPPoE, MPLS/GMPLS, EoMPLS, L2TP, GRE, BGP, Routing (RIP, OSPF, IS-IS, SRRP), Megaco (H.248), SS7-Suite (MAP, CAP, INAP, TCAP, SCCP, ISUP, MTP), Sigtran-Suite (ISUP, TCAP, SCCP, MTP, M2UA, SCTP), GTP, SNMP, IMAP, MIB, IKE (Cryptographic), Quantum-Key Distribution (QKD), ETSI Quantum-Safe Cryptography (QSC) TR-103-xxx, CyberSecurity Frameworks, Transport / Access Network Security Frameworks, NIST Directives TX-103-xxx, NIST Framework 800-X, ITU-T X.805 Security Architecture, ITU-T X.10xx Series, ISO/IEC 2700X Series, 3GPP System Architecture Evolution (SAE) Security Architecture TS 33.4xx.

Cellular networks: 2G, GSM, GSM-R, GPRS, EDGE, 3G, IMT-2000, UMTS, WCDMA, HSDPA, HSPA+, OFDMA, WiMAX, 4G, LTE, LTE-Advanced, LTE-MTC, IMS, VoLTE, VoWiFi, ViLTE, ODA/ODF, NFV, SDN, NB-IoT, LoRa, Sigfox, 5G-IoT.

Technologies, Standards and Releases: PSTN, PABX, ISDN, T1/E1, xDSL, ATM, Frame Relay, SONET/SDH, PDH, Gigabit Ethernet, PoE, GPON, WDM, DWDM, OTN (G.709) FTTH, VPN, VPLS, VPRN, IEC, ITU, ETSI, 3GPP, 3GPP2.

Management, Productivity and Creativity: Microsoft Project, OneNote, LiveCycle, Microsoft Visio, Microsoft Access, Microsoft Excel, Microsoft Publisher, Microsoft Sharepoint, Microsoft Dynamics NAV, OpenOffice, Pivot Tables, Microsoft Lync, Clarivate Analytics (Thomson Reuters) EndNote, GitHub, Ericsson EriDoc, Ericsson EriColl, Nokia NOLS, Huawei Hedex, SAP P12, SAP One, SAP BusinessObjects, SAP Crystal Reports, SAP Xcelsius, Oracle MySQL, Citrix XenApp, Nokia Ramses Sentry, Nokia Junos, Nokia RAS, Google Sketch-Up, Google QuickDraw, Adobe Premiere (H.264/MPEG/XviD/DivX), SoundForge, Sony Vegas, Canvas, Illustrator, CorelDraw, Photoshop, CaptureOne, InDesign, Nik Collection, Adobe Flash, Google Swiffy, Action Script 3.0, WordPress, Google Analytics, Google Trends, Microsoft Expression Studio, (x)html, css, Scaleway InfluxDB (Chronograf, Grafana), Microsoft Azure (IOT Edge, IOT Hub).

INTERESTS & LEISURE

Travel, Photography, Graphic Design, Architecture, Sky-diving, Football (university team), Floor-Hockey (FFFL division II), Philately.