Amdocs 5G Fast Catalog

Accelerating 5G rollouts with enhanced services and solutions
overview

5G is disrupting the network status quo. As service providers transition their networks to support this new reality, they require a strong 4G foundation that over time, can incorporate an increasing range of pivotal technologies. These include:

- 5G NR (New Radio), where the 5G node remains connected to the 4G network before becoming a standalone 5G network
- Small cells on high, mid or low bands to offload network strain through densification in large areas (transmitting signals around obstacles)
- Carrier aggregation to combine multiple carrier data streams to increase peak user data rates
- Massive MIMO to ensure better utilization of existing bandwidth

At the same time, the transition to 5G is challenging service providers to simplify and accelerate network deployments – something that requires a simplified infrastructure buildout process that ensures faster deployments in a more efficient manner.

introducing Amdocs 5G Fast

Amdocs 5G Fast portfolio supports today’s network densification and deployment projects to create a strong 4G foundation for 5G. During this crucial time when new technology must co-exist with the underlying 4G network, our services and solutions ensure your 5G rollout is faster, smoother and capable of meeting speed requirements – all while delivering the levels of network output you need to keep your customers happy.

Amdocs 5G Fast cost-efficiently provides the required capacity with a suite of automated design, planning and deployment solutions that enable faster site planning, integration and launch, automated alarm checks and automated acceptance reports to simplify and accelerate network rollout and densification projects.

Figure 1. Amdocs 5G Fast End-to-end Network Rollout solution
Network Rollout Solutions

For transitions to 5G that entail rolling out a greenfield network and/or capacity enhancement, Amdocs 5G Fast provides a suite of automated end-to-end rollout and deployment solutions that enable faster site planning, design, integration, optimization and launch to accelerate network rollout and densification projects.

Smart Capacity Planning Service

Anticipated 5G services, together with forecasted RAN and backhaul demands are forcing network operators to continually plan for capacity upgrades and expansions. This requires significant manual effort with many spreadsheets being passed around within different departments. Furthermore, this time-consuming process often lacks clear ownership and guidance across planning and optimization groups.

Our design and planning services provide initial network design and planning services to support the early decision-making phase of network deployment, ensuring high performance and reliable networks that are designed to meet today’s stringent service delivery needs.

Amdocs Smart Capacity Service ensures you make the right decisions by taking an optimization-first approach before investing. We do this by analyzing your various sites and differentiating between those that require optimization actions (such as traffic balancing etc.) and those where capacity infill sites are required – while at the same time, forecasting traffic trends for the future and providing solutions to maximize ROI, delay network CAPEX and accelerate capacity.

Design Services

Amdocs 5G Design Services lead the way in providing solutions that help build strong, seamless networks. This includes multi-RAT planning with 5G NR and 4G; low-, mid- and high-band design and propagation; model tuning; and traffic modeling. Amdocs offers a comprehensive end-to-end delivery process that includes initial project preparation, model tuning, link budget, predictions and design surveys, along with RF data fills and plumbing diagrams.

Model Tuning
- Planning tool calibration
- CW drive test
- Model acceptance test

RF Design & Site Planning
- RF coverage nominal planning
- Link budget analysis
- Multi-band design (low, mid and mm wave band)
- Multi-RAT planning (5G NR +LTE)

Capacity Planning
- Traffic modelling
- Number of sites
- Frequency/PSC/PCI/RSI planning
- Advanced bearer and service modelling

RF Configuration Data Fill
- Plumbing diagram for site build
- RF Design configuration
- Data fill for OSS scripting

Figure 2. Amdocs network planning process and service offerings
**Fiber Rollout**
Amdocs Fiber Rollout offers a comprehensive set of solutions and services to help service providers efficiently plan, manage and deliver on successful fiber strategies. With our rigorous quality assurance, use of best practices in our tool and process orchestration, we keep the number of designs that are ultimately rejected to an absolute minimum. Meanwhile, we significantly reduce the time to design and deploy fiber networks, using superior planning methodologies and employing specialized tools, expertise and abilities to scale fiber design plans. When combined with the Amdocs Network Rollout solution, thousands of processes can be automated and properly orchestrated, resulting in an end-to-end increase in efficiency and productivity of up to 25%.

**Network Provisioning and Assurance**
The challenging transition to 5G demands extensive expertise in network provisioning, faster assurance in terms of alarm clearing and change management in order to accelerate the densification and time to market for 5G sites.

Amdocs Integration and Commissioning Service
Amdocs Network Integration and Commissioning service delivers:
- New node and carrier integration and commissioning
- Spectrum management
- Re-farming and customized services, including RFDS design and data-fill
- Baseline audits and discrepancy management
- Migration, alarm report generation, mitigation and EME services
- Network modernization services

Figure 3. Amdocs Integration and Commissioning service
Amdocs has a spectrum of automation tools that are deployed during the integration and commissioning phase. These tools eliminate the need for qualified field technicians onsite, thereby helping to increase the efficiency of the deployment and alarm clearing process.

Once the site is integrated into the network, alarms are cleared according to priority, while tests are conducted to ensure the site is transmitting without issues.

Amdocs Network Assurance Service

This service delivers:
- Trained SMEs who are experts at integration and alarm clearing, and who ensure the new carrier or technology is seamlessly integrated in the network, alarm-free.
- Site validation
- Performance validation
- Pre/post checks
- Mobile app-based automated call testing and checks
- Analytics and reporting
- Web-based GUI for tracking issues along with streamlined, transparent reporting for both internal and external utilization

Amdocs Passive Intermodulation (PIM) Hunting and Mitigation Solution

Amdocs Passive Intermodulation (PIM) Hunting and Mitigation solution enables PIM identification through automated report generation, based on field and network data. As part of the solution, network testing ensures that noise levels are met for a seamless customer experience.

The solution delivers:
- Vendor-independent best practices, tools and approaches
- Experienced network experts who provide site support, with ability to quickly and precisely pinpoint sources of PIM in the network
- Automation-centric process, providing enhanced quality/process control, thereby lowering cost and reducing time to market

Amdocs Electromagnetic Emission (EME) Testing and Report Generation service

Amdocs Electromagnetic Emission (EME) Testing and Report Generation Service automates the EME process by introducing new tools for improved operational efficiency, accuracy and quality. In addition, it efficiently increases the project management for EME with minimal manual effort.

The service provides:
- RF emission analysis and reporting
- Annual evaluation RF compliance services
- Pre-installation RF compliance services
- Post-installation RF compliance services
**Acceptance and Optimization**

With a well-designed 5G network ready to launch, it is imperative to minimize risk, OPEX and CAPEX, while maximizing the user experience.

- **Amdocs Network Acceptance service**: With densification required for 5G where there would be a HetNet of macros, mini-macros, small cells, DAS and Wi-Fi system amongst others, readiness around turning up sites requires faster rollout and acceptance. Amdocs Network Acceptance Service provides this capability by leveraging automated reports that enable service providers to turn on new sites faster by validating their health, using go-no-go reports to verify any KPIs are gating their launch.

  Based on the gating KPIs, the service provider can further troubleshoot to ensure KPIs are being met. This provides a way of governing the sites that are being accepted, as well as the vendors who are responsible for launching them.

- **Amdocs Network Optimization service**: Takes a holistic approach to optimizing heterogenous networks by utilizing customer geo-located data and network KPI metrics to extract the maximum from current network assets. As a result, it enables you to minimize operating and capital expenditure, improve network performance and provide an enhanced customer experience. The solution addresses challenges around the co-existence of 5G NR and LTE, along with the introduction of active antenna systems (which introduces beam forming and beam steering to significantly increase network capacity), while ensuring a seamless network experience. Amdocs Network Optimization’s capabilities include:
  - Interference analysis
  - Feature and parameter audit
  - SINR (signal to noise and interference ratio optimization
  - Massive MIMO optimization
  - Beam fingerprinting and beam steering

**Testing**

Amdocs Network Testing Services provides a comprehensive portfolio of services for both physical and virtual network functions, including test scope and planning, equipment testing, interoperability testing, end-to-end testing, pilot testing and NFV testing. By combining core network expertise with proven results in managing large telecommunication projects, we can manage testing for new service introductions, network rollout and large-scale network transformation projects, helping you innovate without compromising service quality, timelines or performance.

**End-to-End Workflow Management**

Amdocs End-to-End Workflow Management provides comprehensive end-to-end project orchestration for planning, building and modernizing mobile and fixed networks. By uniquely combining automated technical design with dynamic project plan generation using reusable building blocks, the planning and project management process is completely automated, thereby maximizing rollout efficiency and streamlining. This result is workflow and project management that supports a variety of processes for a wide range of networks and technologies.
Driveless Acceptance and Optimization

Amdocs Driveless Acceptance and Optimization eliminates the need for drive testing by focusing on customer geo-located data and network KPI metrics to reduce OPEX and provide intelligent correlation from combined data sources.

Amdocs’ solution (ActixOne) is a unified, multi-vendor, multi-technology data platform. It provides an integrated workspace for automating an unparalleled breadth of optimization activities, in order to achieve effective network performance through analysis and optimization. An enterprise-grade, platform, it frees engineers from the constraints and challenges of managing huge amounts of data. With over 50 operators worldwide, ActixOne supports all key RAN data sources, embeds automated diagnostics and solution-finding algorithms, while delivering powerful visualization, analysis and optimization capabilities through its web-based interface.

ActixOne provides comprehensive analysis and visualization functionality at all levels, from network-wide to individual cells, thereby enabling problem root cause analysis and providing recommended corrective actions, including:

- Network-wide visualization: dashboards, reports and integrated views across all RAN data sources
- Drill-down analysis: configuration, alarms, performance events, traces
- Multi-dimensional approach: mobile agents, performance management, configuration management, fault management and call trace
In-building Services

Amdocs In-building and Outdoor Stadium services help service providers test and launch in-building and venue macros for sports venues, transportation hubs, universities and more. This includes providing holistic benchmarking and key performance indicator analysis for each venue, with the added bonus of pre- and post-launch optimization.

Amdocs In-building portfolio includes:

Initial design service
- Design site surveys, candidate vetting, search ring confirmation
- iBwave design for 5G-NR, LTE, LAA, CBRS, UMTS, CDMA, GSM technologies
- iDAS, oDAS, CRAN, DRAN, WiFi-6, Spider Cloud, Ericsson and Nokia small cell design
- Indoor and outdoor CW testing with model tuning
- Indoor and outdoor benchmark testing and analyses

Commissioning, integration and post-launch activities
- Project management and coordination
- Commissioning and integration
- Parameter audit and system performance verification
- Acceptance testing, alarm, PIM and VSWR troubleshooting
- Pre-post KPI validation

Optimization and customization services
- iDAS, oDAS, CRAN, DRAN, WiFi-6, Spider Cloud, Ericsson and Nokia small cell optimization
- Deep-dive DAS system troubleshooting and analyses for 5G, 4G, 3G and LAA technologies
- Parameter tuning, traffic balancing, footprint optimization
- Live event monitoring and optimization
- Atoll and iBwave data integrity and database audits
**Automated Small Cell Rollout**

Amdocs Automated Small Cell Rollout provides key capabilities for each step of the end-to-end small cell rollout process. The solution automates and accelerates each phase of the rollout, tracks thousands of parallel tasks and milestones, targets small cell coverage in the areas that matter the most, and provides oversight and visibility during operation across many vendors and technologies.

![Figure 7. Amdocs Automated Small Cell Rollout](image)

**Network Modernization**

Amdocs Network Modernization service enables you to deliver a comprehensive network change process. Our comprehensive tools provide the centralized governance, advanced automation and transparent unambiguous key performance indicators (KPIs) that are necessary to maximize ROI. By enforcing transparent and unambiguous KPIs, it ensures your network quality is independently verified prior to launch, thereby guaranteeing top performance from day one. To launch mobile services quickly and with better performance, we meet all your network change requirements, helping you ensure secure, smooth service and data migration.

As an FCC-approved SAS administrator, our SpectrumONE solution can help accelerate your capacity endeavors. Amdocs SpectrumONE delivers:

- Remote access to hosted SAS administration services
- CBSD registration services
- CBSD transmission grant services, incumbent and general interference services
- CBSD status services
- CBSD management and dashboarding services

To complement Amdocs SpectrumONE, we provide solutions that streamline the rollout and operation of the CBRS. Using vendor-independent advanced software solutions for network analysis and process automation, this enables us to improve the speed of network deployment, optimization, integration and acceptance activities by 30-40%.

**Private Networks**

The additional 150 MHz of spectrum provided through Citizens Broadband Radio Service (CBRS) provides an alternative option for enterprises and managed service providers to establish their own private network to support internet of things (IoT) devices. The Spectrum Access system (SAS) sits at the heart of the CBRS framework, dynamically controlling access to the spectrum across various geographic areas to enable multiple users to share the same band without radio interference.
Amdocs 5G Fast benefits

Amdocs 5G Fast helps service providers accelerate 5G now. It includes:

- Vendor-independent best-practices, tools and approaches
- Network planning that links engineering, finance and marketing in a single view
- Optimization first approach, before investing
- Automated forecasting linking traffic/capacity with revenue/ROI

Amdocs 5G Fast automation enablers

5G Fast is powered by ActixOne, Actix Analyzer, IMNOS, IMNOS Trace Mobile, TechInsights, Amdocs Network Rollout Solution (ANRS), Amdocs Mobile Backhaul, Amdocs Automatic Discrepancy Management (ADM), Amdocs Rollout 360 and proprietary integration tools.

ActixOne

ActixOne embeds multi-vendor network intelligent and analytics to enable delivery of optimal coverage and capacity in complex multi-vendor networks across 2G, 3G, 4G and 5G-NR, thereby providing a seamless quality of experience.

It does this by combining customer experience analytics, root cause analysis, smart capacity prioritization, drive test capabilities and proactive network optimization to simplify network management, maximize coverage and capacity, enable innovative optimization services, and allow for intelligent, targeted marketing to improve return on investment – all while reducing operational and capital expenditure.

ActixOne capabilities include:

- **Network Acceptance**: a powerful cross-vendor solution that minimizes risk, enabling you to maintain control of NEPs and network quality from day one. It does this by performing effective independent verification prior to launch by enforcing transparent and unambiguous KPIs and automating the network acceptance process to speed up network rollout and manage cost and complexity.

- **Automation-centric process providing improved quality/process control, lower failure rate, lower cost, faster time to market**

- **Drive/Drive-less based advanced optimization including massive MIMO, beamforming and 5G NR optimization**

- **Catalog-driven network rollout and change projects (modular tasks, reuse)**

- **Cross-domain project orchestration**

- **Benchmarking**: offers a robust benchmarking dashboard that provides insightful reports and detailed comparison views. It enables you to immediately exploit the full potential of data for maximum operational impact, in order to boost competitiveness and ensure customers receive the best possible experience.

- **Customer Experience Geo-Location**: enables you to leverage critical insights by combining real customer experiences, business data and analytics to provide visibility into the entire customer experience. It does this by automatically building accurate traffic and quality of experience (QoE) maps that enable identification of congestion hotspots, customer-impacting quality issues and network problems.

- **Smart Capacity**: automates the complex task of prioritizing and selecting the right network capacity investments to maximize customer impact and ROI. This includes support for multiple business scenarios from the ongoing capacity management of GSM/UMTS/LTE networks through to network densification to support 5G readiness.

- **Proactive Network Optimization**: proactively triggers autonomous network configuration changes to maximize the network potential of today’s complex cellular networks, thereby improving RAN engineering efficiency while accelerating analytics, optimization and configuration processes.
Actix Analyzer

Actix Analyzer is the industry’s leading desktop solution for drive and walk test data post-processing. It supports wireless network and device performance analysis, acceptance, benchmarking and optimization for 2G, 3G, 4G, 5G-NR, and Wi-Fi. The solution is designed to help operators assess network performance and identify issues that affect service quality and customer experience.

As service providers prepare their networks for 5G, Actix Analyzer supports License Assisted Access, one of the key eMBB-specific enhancements to LTE-Advanced-Pro. Actix Analyzer provides distributed network statistics based on drive survey measurement logs, which can also be correlated with vendor-based performance management counters and subscriber call trace measurements in ActixOne.

When deploying 5G-NR, service providers can use Actix Analyzer as a detailed analysis solution to verify new technologies, carriers and spectrum at the cluster level before deploying them nationally. With features such as one-to-one delta analysis, it enables you to analyze different transmit power levels. In addition, with the protocol stack browser, attach/detach procedures and new device performance can be analyzed at layers 1-3 as well as TCP/IP and application-level throughput and latency. With its multi-panel map, interference analyses in newly acquired spectrum or new carriers can also be compared, while the call flow viewer enables scrutinization of VoIP call event procedures. Furthermore, customer-specific KPIs can be designed using the event diagram and analysis manager (which is built into the standard analysis), and subsequently deployed in the ActixOne solutions.

IMNOS (Integrated Mobile Network Optimization Solutions)

IMNOS is a flexible web platform that enables operators to consolidate data sources and tool outputs into a single, efficient source of data visualization and drilldowns, making the viewing of multiple complex data sets simple, while drastically enhancing network operators’ daily operational efficiency. IMNOS enables organizations to see network configurations, KPIs, events and demographics as well as operator custom data (sales data, trouble-tickets, retail) within a single map and dashboard view, thereby providing network insights at the user’s fingertips at any location and on any device. With big data systems now prevalent in many organizations, such an ability to perform custom analytics maximizes employee efficiency as well as the utilization of information from these data sets.

IMNOS’ MapStash module takes an application store approach, integrating third-party and custom interfaces, map layers, reports, workspaces and widgets into IMNOS, allowing for data sharing across teams without cluttering the user’s work environment.

The solution:
• Enables network operators and OEMs to focus third-party and internal tools on delivering data and combining best-in-class approaches of various applications into a single web visualization platform
• Provides simplified views and information for quick actions and review
• Brings together various tools and datasets for national/regional and market-efficient processes
• Maximizes value of existing tools and their data, through advanced analytics and cross-tools correlation

Figure 8. IMNOS
IMNOS Mobile Trace
IMNOS Mobile Trace is a network measurement system designed to simplify field tests. It can be easily employed by any user who wants to measure their operator’s network performance, keep records of data and create reports. The solution comprises an Android mobile application and a web portal for data storage, sharing and reporting, with basic functionality provided free of charge.

The solution delivers:
• Speed test, call test, ping test, HTTP test
• Data reporting through customizable big data maps, charts and tables
• Advanced management for companies and/or groups to create and share reports and measurements
• Crowdsourcing data

TechInsights
TechInsights is a cloud-based software and multi-organization tracking system that enables organizations to deliver fully-fledged agile solutions, tailored to your specific needs, with full support for data management and reporting, within both mobile and web environments. The tool empowers organizations to automate their most challenging business processes with a robust set of tools that enables you to monitor and optimize your operations.

The solution delivers:
• Graded visibility to technicians, engineers, managers and clients
• Replacement of shared spreadsheets and email interchange through dynamic cards and automated, personalized notifications
• Notifications and reminders help avoid missing SLA obligations
• Guided processes and data forms, eliminating human errors on actions and data input accordingly
• Process and progress transparency by having the workflow visible with items shown in status empowering efficiency
• Zero time to create daily and weekly reports for both client and internal use
Other Enablers

**Amdocs Network Rollout Solution**

Amdocs Network Rollout Solution provides complete end-to-end project orchestration for planning, building, and modernizing mobile and fixed networks. It automates the planning and project management process by uniquely combining automated technical design with dynamic project plan generation using reusable building blocks. Leveraging the factory production line approach, Amdocs Network Rollout Solution uses multiple reusable components to roll out networks in the most efficient and streamlined manner. This enables it to provide a means for workflow and project management that supports demand planning, network and project planning, site acquisition, approvals, third-party management, network deployment and maintenance processes for a wide range of networks and technologies.

**Amdocs Automatic Discrepancy Management (ADM)**

Amdocs Automatic Discrepancy Management provides automatic detection and mitigation of parameter discrepancies in the network and gold standard parameter audits, as well as other parameter templates in full closed-loop mode. The solution also enables rule creation and template management for multiple carriers, bands, hardware configurations, layer management and different network topologies. Initial cell configuration for new site parameter management is also available. ADM may be scheduled or triggered based on performance changes to support special events and venues, as well as unexpected traffic changes.

**Amdocs Mobile Backhaul (MBH)**

With the advent of 5G, service providers have a renewed focus on fronthaul and backhaul performance. Amdocs Mobile Backhaul addresses this challenge through vendor-agnostic monitoring, which enables visibility of transport network performance, correlating transport network data with the radio access network, as well as categorizes and prioritizes the impact of transport network issues on the quality of service. The solution also supports active probes besides other data feeds from transport and RAN.

**Amdocs Rollout 360**

Amdocs Rollout 360 is a flexible end-to-end workflow management solution, whose ability to easily add and upgrade modular building blocks enables service providers to quickly accommodate new processes and requirements. And at the same time, it gives full visibility into the process flow, as well as the integration status across all functional groups.

The solution delivers:

- User-defined “tagging”. Flexibility to categorize a site in a project based on cluster/vendor/HW type/technology/region or any other way as per project need
- SLA tracking for each sub-task or sub-milestone as well user-defined weightage which gives higher accuracy for project progress and status
- Auto assignment of task done by the system with user pre-defined business rule and ownership
- User-friendly navigation which allow users to update/attach/comment in a faster way rather going into a project-site-task-sub task
- Real-time project update via R360 Mobile App

Figure 9. Amdocs Rollout 360
why amdocs for 5G

With over 35 years managing networks, Amdocs takes a holistic approach to maximizing coverage, capacity and performance of mobile networks. We are uniquely positioned in the market to enable open 5G architecture, which supports the creation of an agile and comprehensive ecosystem of capabilities that allow you to accelerate the rollout, efficient operation and rapid monetization of your 5G networks.

Our extensive pool of network consultants and subject matter experts are supported by regional competency hubs across the globe, delivering the technical solutions you need to realize cost efficiencies and meet business objectives.

Our global support and development centers in Brazil, Canada, Cyprus, India, Ireland, Israel, Mexico, the Philippines, the United Kingdom and the USA offer world-class capabilities to support our customers 24 hours a day, 7 days a week. We have a global footprint in more than 25 countries, 3 network engineering centers (USA, India, and Greece) and a new network functions virtualization (NFV) center of excellence in North America.

Accelerate your 5G network densification and rollout projects, contact Amdocs today!

For more information, visit Amdocs 5G Fast
about amdocs

Amdocs is a leading software and services provider to communications and media companies of all sizes, accelerating the industry’s dynamic and continuous digital transformation. With a rich set of innovative solutions, long-term business relationships with 350 communications and media providers, and technology and distribution ties to 600 content creators, Amdocs delivers business improvements to drive growth.

Amdocs and its 25,000 employees serve customers in over 85 countries. Listed on the NASDAQ Global Select Market, Amdocs had revenue of $4.0 billion in fiscal 2018.

For more information, visit Amdocs at www.amdocs.com