

amdocs in-building and DAS services

As the smartphone-driven demand for data across the globe accelerates, your subscribers increasingly expect you to provide coverage where and when they want it. But for high-traffic locations such as sports venues, transportation hubs, malls and university campuses, delivering on those expectations presents a far greater challenge.

While the increasing demand for data provides many welcome benefits for service providers, this is countered by the need to ensure a seamless customer experience. Many are responding by proactively adopting a variety of densification approaches – such as Femto cells, repeaters, small cells, Wi-Fi and DAS (distributed antenna systems), which allow them to increase network coverage and capacity.

It's the ability to host voice calls on public and private Wi-Fi networks specifically that has proved to be the most efficient offload mechanism to relieve the capacity burden in high-concentration hot spots. Such an ability can be further bolstered by coverage and capacity-enhancing DAS solutions. The advantage of such solutions lies in being able to be deployed both indoors and outdoors, thereby providing seamless connectivity within buildings and other difficult coverage areas.

Amdocs Design Services

Amdocs Design Services addresses the challenges of meeting your customers' current and predictive demands for a seamless network experience. Our methodology comprises three steps:



Plan Information Collection

- No. of subscribers
- Traffic per sub
- Distribution
- Grade of service
- Floor plans
- Equipment vendor
- Passive elements
- Existing service footprints
- Expectations in improvement



Design Preliminary DAS Design

- Onsite survey
- No. of zones (sectors)
- No. of antennas and locations
- Design tool set up
- Cable routing
- Combiners/splitters
- Coverage predictions
- Coverage criteria
- Expectation alignment



Develop Radio Network Proposal

- Detailed DAS design
- Plumbing diagrams
- EME compliance report
- Bill of material and costing
- Design submission
- Review with client
- Changes if needed
- Final design

We provide all the tools necessary to create an optimal network design that meets your coverage and capacity objectives.

Amdocs Commissioning Services

Commissioning is one of the most critical steps in the in-building network lifecycle, as it ensures you achieve maximum return on your network investment. Our commissioning processes provide verification of construction completion in accordance with the approved design, while certifying that the distributed antennae systems (DAS) are completely functional and alarm-free. Furthermore, our resources ecosystem is certified for all major DAS OEMs in the industry.

The commissioning process typically includes four major steps:

- Uplink noise floor measurement
- RF continuity validation
- Uplink noise calibration (using attenuation settings to achieve optimal signal levels at the BTS referenced to Baseline Noise Floor measurements)
- Integration of DAS/RAN equipment and basic call testing



Validation & Optimization Service

To ensure both accuracy and the required network quality upon network activation, real measured data is used as part of the validation testing process. In addition, testing gear is used to analyze the voice and data quality. This is done using a tablet connected via Bluetooth, which provides a snapshot of the current customer experience. Once the data is post-processed, it is further optimized to meet the required accepted thresholds. A detailed walk

test is then performed inside and outside the venue to ensure the best network quality and seamless interaction for ingress-egress traffic.

Our optimization process ensures performance is properly defined for current environment and traffic situations. In addition, our support for live event monitoring at sporting and high capacity venues enables changes to be implemented with close-loop monitoring in real time, thereby ensuring an optimal customer experience.



Commissioning

- Baseline noise floor measurement
- RF continuity and loss measurement – (CW Testing)
- Calibrate UL noise
- Integration of DAS/RAN equipment



RF Validation

- Drive test or walk test on geo-coded floor plans
- LTE, VoLTE and mmWave band testing along with scanning for all bands
- Major issues identified onsite and resolved
- Detailed recommendations based on data collection



Optimization

- GS audit and alignment
- Parameter tuning, KPI monitoring, live event monitoring
- DL/UL attenuation adjustments

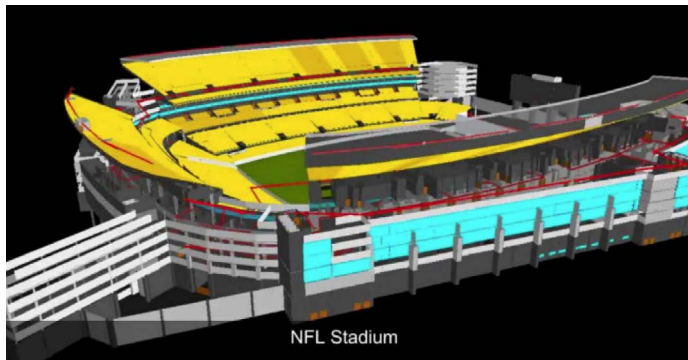
Amdocs's differentiator: 3D Modelling Services

In addition to traditional zoning based on RF surveys, 3D modelling is an essential step in the design process for multi-level heterogeneous RF environments (especially sports venues), where an open line of vision exists between the majority of spectators.

We have identified the key issues that can be tackled via 3D modelling and which by doing so, maximally improves

the quality of design and performance of the DAS network. This is done by incorporating 3D propagation modelling behavior that correctly simulates:

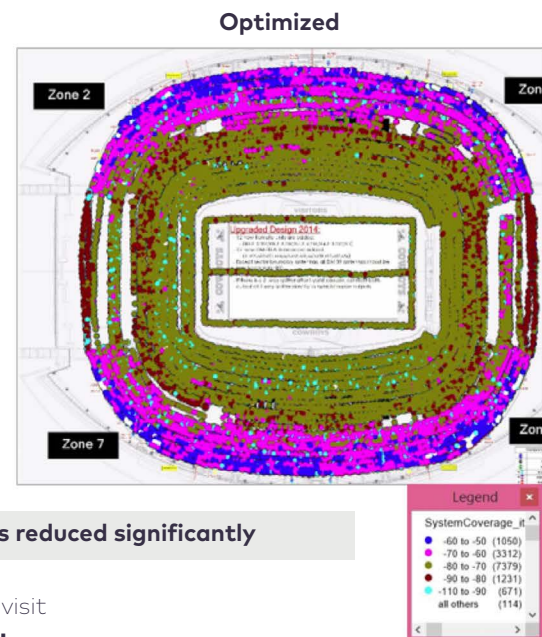
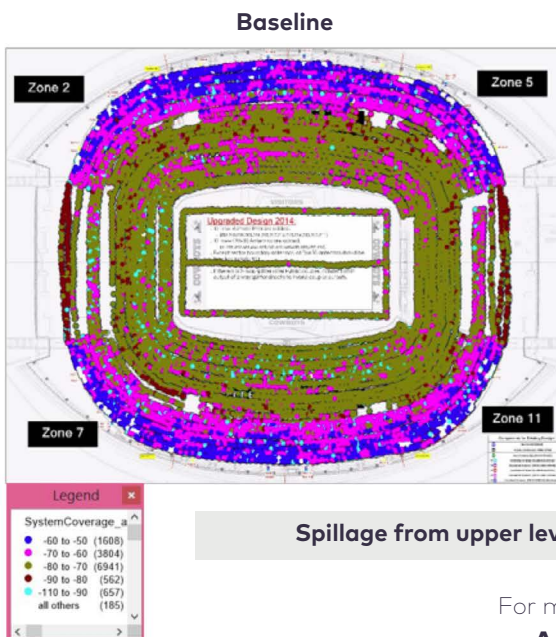
- inclined surfaces
- the way line of sight (LOS) and non-line of sight (NLOS) signals are directed at each other at almost identical levels from multiple antenna locations.



Optimized NFL stadium: an Amdocs success story

Due to the unsatisfactory customer experience suffered by spectators at an NFL stadium, caused by poor network coverage during live football games, a North American Tier-1 service provider commissioned Amdocs to optimize network coverage at that location. Our initial walk test results revealed significant spillage/

overshooting from upper to lower levels, resulting in severe quality degradation in the lower seating areas. With our Validation and Optimization service leveraging RF expertise and advanced 3D modelling techniques, we successfully reduced spillage by 19% and subsequently, as a result of contained coverage and further RAN parameters optimization, achieved continuous game-over-game improvement of the customer experience.



Spillage from upper levels to lower levels reduced significantly

For more information, visit [Amdocs 5G Fast](#)