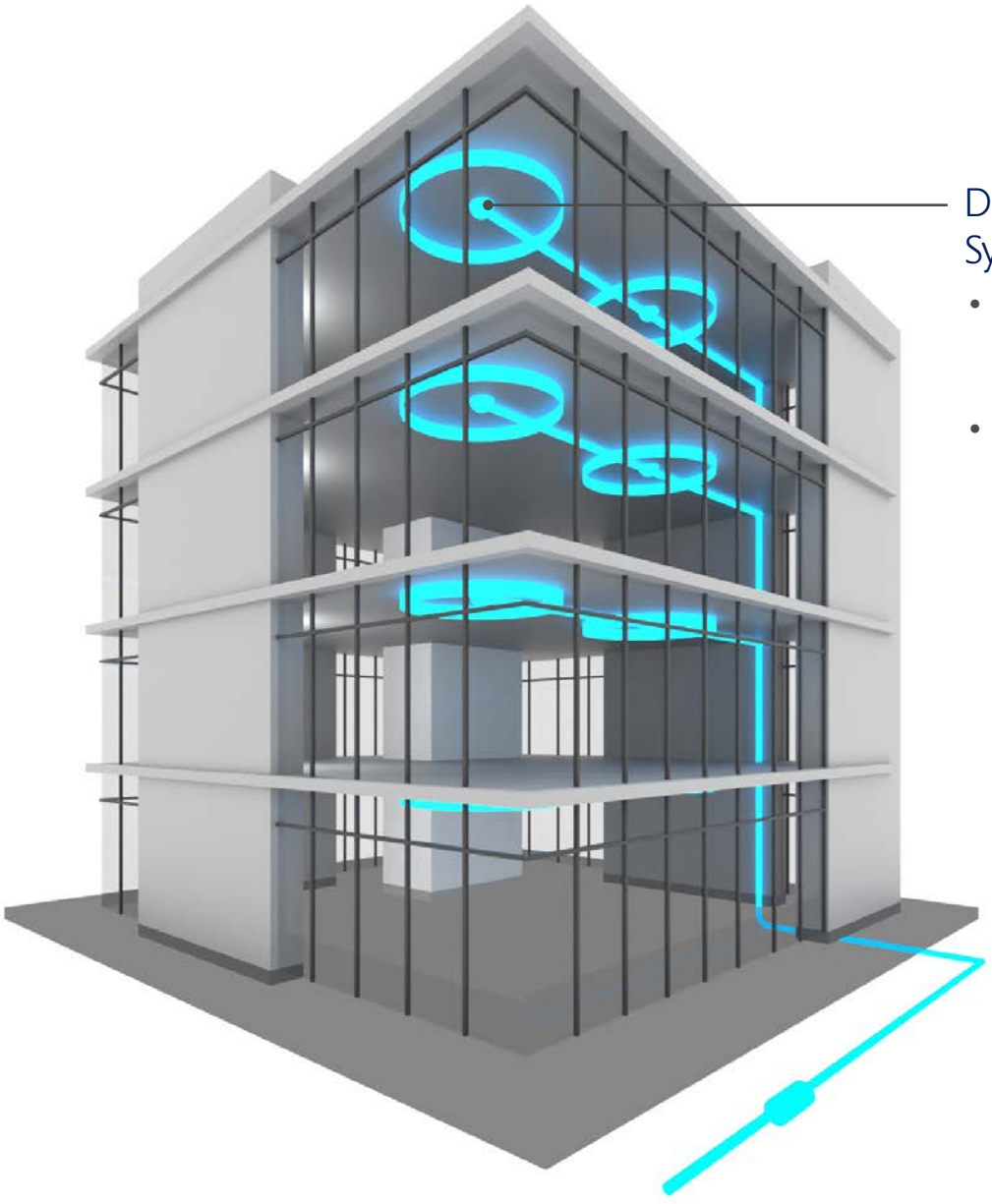
PON PROJECTS

We specialise in the design, installation, and maintenance of **Distributed Antenna Systems.**



Distributed Antenna Systems (DAS)

- Ensure occupants have robust wireless connections throughout your building
- Reduce your dependency on overcapacity mobile towers for signal strength

Why Choose Us

Less risk – Our experienced technical designers make certain your DAS is compliant to the Australian MCF 2018 DAS Design Standard.

Peace of mind – We work closely with all telecommunications carriers to ensure your design is approved before it gets built.

Confidence – Comtex (our parent company) and PON Projects offer a complete DAS solution that includes design, approvals, installation, testing, commissioning, and final handover to your preferred network carrier.

The Problem

Poor indoor mobile phone reception

A problem for many buildings designed today is that mobile phone signals cannot penetrate to the centre of the building. The thick steel, concrete and glass walls prevent cellular signals from reaching occupants' mobile phones.

This is why you find mobile phone reception intermittent in buildings, especially large commercial buildings, hospitals, and aged care facilities.

Wireless tower limitations

Another cause of poor mobile phone reception is overcapacity. If there are too many people in a relatively small space, such as sporting events, the local mobile towers often do not have the capacity to cater for the high signal volume.

One mobile phone – always on

Not too long ago, mobile phones were just a convenient communication alternative for when you were outdoors, or away from a building with a landline.

Now, over 70 percent of mobile phone usage takes place indoors. Landlines are becoming obsolete.

Mobile users want to stay connected at all times, whether they are inside or outside.

The Solution

Installation of a DAS

A DAS provides building occupants with reliable mobile phone coverage.

Ideal users of a DAS solution include Aged Care Homes, Hospitals, Casinos, Convention Centres, Office Buildings, Stadiums and Universities.

Any location where people want the convenience and safety of reliable communication is a candidate for DAS.

What is a DAS?

DAS stands for Distributed Antenna System, which is a system that allows for the use of mobile phones in areas that do not have direct access to a cell / mobile phone tower.

DAS works by receiving power from a radio frequency (RF) source, and distributing it over a system of cables and antennas so that the signal reaches throughout a building or space.

A DAS can use a combination of coaxial cabling as well as fibre optic cabling. These systems can support radio over fibre (RoF) technology for distributing the wireless signals to the positioned antennas.

The DAS system reduces power consumption and increases reliability.

There are two types of Distributed Antenna Systems:

Passive DAS Solution

Passive DAS solutions provide a boosted 3G and 4G LTE cellular coverage for areas up to 100 square meters.

A Passive DAS Solution is our most common DAS system. Built using coaxial cable, splitters, taps and couplers, passive DAS solutions are useful for distributing signals within certain building sizes and types.

The further away an antenna is from the source or amplifiers, the more loss there can be in the power broadcast. Longer cable runs can be difficult with passive systems, and it is important to calculate precise links to ensure maximum performance.

Passive DAS provides benefits such as easier management and generally lower costs.

Active DAS Solution

Active DAS solutions provide a stronger 3G and 4G LTE cellular signal for buildings over 500 square meters .

Used for converting analogue radio frequency transmissions from the source to a digital signal for distribution, Active DAS solutions are expandable and pose no limits to cable run lengths.

A master unit is installed to perform the analogue to digital conversions and can support signals from single or multiple carriers. After being converted, the DAS system transmits the digital signal across cabling (either fibre optic or ethernet) to remote radio units that then convert it back to analogue.

Whilst more expensive than Passive DAS, Active DAS can share ethernet / fibre optic cabling with other infrastructure.

The Basic Components of a DAS Solution

Whether a passive, active, or hybrid solution, each DAS system will consist of certain basic components.

The first component is the donor antenna, which is usually located outdoors and above the tree line to directly receive RF signals from a cell tower or signal source.

The donor antenna can receive multiple frequencies to meet emergency and large capacity needs. Once the signals are received by the donor antenna, they are transported to the head-end equipment room via coax cabling.

If the donor antenna is the eyes and ears of the DAS solution, the head-end equipment room is like the brain of the system.

This is where the repeater, or bidirectional amplifier, collects the RF signals for redistribution. The bidirectional amplifier is a very important component in a DAS solution. Without it, the RF signals would continue to grow weaker as they travelled a farther distance from the donor antenna.

With the bidirectional amplifier, the signal is increased, or amplified, as it travels, so the RF signal stays strong throughout the system and site.

Depending on the type of system, the signals are transported via coax or fiber optic cables to remote antennas.

These remote antennas are compact, and can be placed discretely in an indoor environment. Sometimes called antenna nodes, these antennas are the redistribution points of the DAS network.

With the aid of the remote antennas, the RF signals are distributed to places they could not directly reach without the distributed antenna system.

The Process of Implementing a DAS Solution

Step 1
The first requirement is to perform a site survey to gather preliminary information about the location and specific coverage needs.

The site survey includes floor plan details and identifies the initial requirements of coverage.

The DAS design team will gather information regarding the building's construction materials (windows, concrete, metal, etc.) which may affect a signal's ability to penetrate the site.

This initial budget is then presented to the client.

*Important note: This is not a detailed DAS design.

If the budget is accepted by the client, we then proceed to step 2.

Step 2
Once agreed on the scope of works, the client places a purchase order for the detailed DAS design.

We then proceed to step 3.

Step 3
The DAS design team provides detailed RF designs for all areas. This determines the locations for each component of the system and cable routes.

Performing a detailed site survey will ensure that each component of the system is chosen and placed for successful communication in all of the required areas.

The detailed DAS design can be up to 200 pages of RF designs and normally takes two weeks to complete.

This RF DAS design is then presented to the client.

We then proceed to step 4

Step 4
The DAS contractor at this stage speaks to the client's carrier provider to confirm the DAS design.

We then proceed to step 5.

Step 5
At step 5, the client will have the DAS design the DAS budget and the DAS RF design – at this point this information is provided to the carrier of choice, for sign off.

Once DAS design sign off has occurred, we then proceed to step 6.

Step 6
The client formally engages the DAS contractor to install the approved DAS solution.

Once DAS solution has been installed, we then proceed to step 7.

Step 7
The client discusses the carrier connection requirements and connects to their carrier of choice.

The DAS project is then complete!

Our DAS Projects

We have installed passive and active DAS solutions for:

St George Hospital

Work Scope: Supply and installation of DAS for a 1-sector Active System that has 23 4G SISO Omnidirectional/Panel Antennas. The design covers the whole 4-storey building, and the minimum signal level was referred to the MCF specification. The design was approved by the lead carrier, Telstra, for this IBC DAS project.

Royal North Shore Hospital

Work Scope: Design, supply, and installation of DAS for a 3-sector Passive System. It is mixed MIMO and SISO solution, wherein MIMO caters the offices and meeting room from UG to L9, while the SISO covers the Basement level and Plant Room areas. The high tech facility at 1 Reserve Road, St Leonards consolidates 10 NSW Health agencies into one location with streamlined ICT systems. The 2,700 staff members will be supported by the Connect IT team, a group of ICT experts from the state's digital health agency eHealth NSW.

Sydney Cricket Ground

Work Scope: Supply and installation of an 8-sector Active DAS that has 17 High Power Remote Units and 156 4G MIMO capable, Omnidirectional/Panel/Gantry Antennas. All cabling and passive DAS components were installed for future MIMO DAS upgrade.

Melbourne Cricket Ground

Work Scope: Supply and installation of Hybrid DAS upgrade. Project comprises 14 sectors. The Southern stand has a total of 8 sectors and wholly Passive DAS with 104 antennas, and the Northern stand is a 6 sector Active DAS with 209 antennas.

Bellerive Cricket Oval (Tasmania)

Work Scope: Supply and installation of DAS for a 5-sector Active System that has 5 High Power Remote Units and 71 4G MIMO capable Omnidirectional/Panel/Gantry Antennas.

Hisense Tennis Centre

Work Scope: Supply and installation of DAS for a 4-sector Active System that has 74 4G MIMO Omnidirectional/Panel/Gantry Antennas.

PON PROJECTS

We specialise in the design and construction of GPON infrastructure, DAS solutions, and communications services for Aged Care, Hotels, and Residential Estates.

Unit 36C, 1-3 Endeavour Road, Caringbah, NSW 2229 Australia
T 1300 669 440

NSW: 77 638 893 384 | QLD: 79 638 893 393 | ABN 92 123 456 789