



**dimension
data**

**accelerate
your ambition**

Case study

ALMA | Americas | Other | Digital infrastructure

ALMA Helps Scientists Uncover the *Mysteries of the Universe*

At a glance

Which services?

- Professional Services
- Digital Infrastructure
- Managed Network Services
- Cybersecurity

Which technologies?

- Cisco (switching)

Which partners?

Cisco

‘Our goal is to provide the best data possible back to the scientific community and Dimension Data helped us to achieve our goal.’

Christian Saldías, ALMA IT Manager

Why ALMA needs to connect its remote site to the world

The Atacama Large Millimeter/submillimeter Array (ALMA) observatory needs to relay massive amounts of data generated by the telescope to scientists probing the mysteries of the universe from one of the most remote locations on the planet.

[Read more](#)

How a network provides the backbone for scientific discovery

The managed network provided to ALMA delivered a 24/7 connection between the telescope and the world’s scientific community. This was achieved through a virtualisation solution using Cisco switches with virtual routing and LAN capabilities.

[Read more](#)

What a high-availability, high speed network means for ALMA

The infrastructure managed for ALMA ensures that the data is available 24/7 and as the demand for access grows so does the partnership between Dimension Data and ALMA.

[Read more](#)

Case study

'In the future when I am retired and I see ALMA still producing data, I will know that [I was] a big part of what is there.'

Christian Saldías, IT Manager, ALMA

Why ALMA needs to connect its remote site to the world

The Atacama Large Millimeter/submillimeter Array (ALMA) observatory needs to relay massive amounts of data generated by the telescope to scientists probing the mysteries of the universe from one of the most remote locations on the planet.

ALMA is one of the most powerful scientific instruments in the world. The nature of the radio waves the telescope receives means that it needs to be located high up in the dry air of the Atacama Desert in Chile.

The thin air at 5000m above sea level, where the Array Operations Site is located, means that it is too high for people to work there on a continuous basis. To cater for this the Operations Support Facility is located 2,000m lower and 30km away from the main array.

These facilities are connected via a high-speed fibre connection and the Operations Support Facility is in turn connected to ALMA's Santiago Central Office. The entire network is responsible for delivering the massive amounts of data generated by the observatory to scientists across the world for analysis. With only a small IT team this environment created a unique set of challenges.

How a network provides the backbone for scientific discovery

The managed network provided to ALMA delivered a 24/7 connection between the telescope and the world's scientific community. This was achieved through a virtualisation solution using Cisco switches with virtual routing and LAN capabilities.

Because the IT team at ALMA is small, they did not have the capability to manage a network of this scale. In order to deliver this, we deployed a virtualisation solution allowing us to provide ALMA with a fully-managed service.

The remote location of the site and its altitude posed a unique challenge as we had never worked in this kind of environment before.

In addition to the inhospitable environment, ALMA needed 24/7 availability to keep delivering the data generated by the array back to the supercomputer at the operations centre.

Beyond the operations centre the network has a critical role in supporting the work being done at the support centre in Santiago.

What a high-availability, high speed network means for ALMA

The infrastructure managed for ALMA ensures that the data is available 24/7 and as the demand for access grows so does the partnership between Dimension Data and ALMA.

ALMA is the benchmark in the next wave of networking and big data, and the work done on this project enables scientists to have reliable access to the scarce resource.

The operations centre runs a fully virtualised network connecting the different sites, as well as powering the data centre consisting of 102 Cisco UCS blade servers in 12 chassis, all of it managed by us.

The success of the partnership has been solidified over the seven years that we have been working together. The team at ALMA relies on our team to assist them in not just keeping the existing operations running smoothly, but also planning for future upgrades, including planning for the continuing growth in storage requirements.

Technology accelerates digital business

Helping ALMA create a reliable digital network has meant that the scientific community now has real-time access to information, enabling them to study how galaxies are formed and peer deeper into the history of the Universe.