



Chile | Other

# ALMA connects researchers across the world to reveal the mysteries of the universe

## Client profile

The Atacama Large Millimeter/submillimeter Array (ALMA) is currently the largest radio telescope in the world. Composed of 66 high-precision antennas, its main array has fifty antennas which act together as a single telescope. The purpose of ALMA is to study star formation, molecular clouds and the early universe, closing in on their main objective: discovering our cosmic origins.

**'We're making a huge effort to unveil the mysteries of the universe, and you'll never know what you might find.'**

**Cristóbal Achermann,**  
IT Project Manager, ALMA

## Summary

The Atacama Large Millimeter/submillimeter Array (ALMA) observatory needed 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. 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 virtualization solution using Cisco switches with virtual routing and LAN capabilities. 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 NTT and ALMA.

## Vision

### Why ALMA needed to connect their remote site to the world

ALMA is one of the most powerful scientific instruments in the world. However, the nature of the radio waves the telescope receives, requires it to be located at altitude in the dry air of the Atacama Desert in Chile.

Located 5,000m above sea level, the thin air makes it hard for people to work at the Array Operations Site on a continual basis.

To cater for this, an Operations Support Facility is located 2,000m lower, yet 30km away from the main array.

The facilities are connected via a high-speed fiber connection, while the Operations Support Facility is connected to ALMA's Santiago Central Office. The entire network delivers huge quantities of data generated by the observatory, to scientists across the world for analysis.

With only a small IT team, this harsh environment creates a unique set of challenges.



**Which technologies?**

- Cisco (switching)

**Which services?**

- Managed Services
- Technology Infrastructure Services
- Managed Network Services

**Which partners?**

- Cisco

**'Our goal is to provide the best data possible back to the scientific community and NTT helped us to achieve our goal.'**

**Cristóbal Achermann,**  
IT Project Manager, ALMA

**Transformation****How a network provides the backbone for scientific discovery**

We deployed a managed network to ALMA, delivering 24/7 connectivity between the telescope and the world's scientific community. With a small IT team, ALMA doesn't have the capability to manage such a large-scale network.

So, we implemented a virtualization solution, using Cisco switches, with virtual routing and LAN capabilities. This provides ALMA with a fully managed service. Beyond the operations center, the network plays a critical role in supporting the work being done at the support center in Santiago.

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

The infrastructure managed for ALMA ensures data is available 24/7. As the demand for access grows, so does the partnership between ALMA and NTT. ALMA is the benchmark in the next wave of networking and big data. The works completed on this project gives scientists reliable access to this scarce resource.

The operations center runs a fully virtualized network connecting the different sites. It powers the data center, consisting of 102 Cisco UCS blade servers in 12 chassis, all managed by NTT. The partnership has strengthened further over the last seven years. The ALMA team relies on us to assist in planning for future upgrades and continuing growth in storage requirements.

Technology plays a crucial role in driving business outcomes, which is why 85% of the Fortune 500 companies come to us. Find out how our full range of capabilities will empower your people, strategy, operations and technology to achieve your business modernization and transformation goals.

[Explore our services](#)

