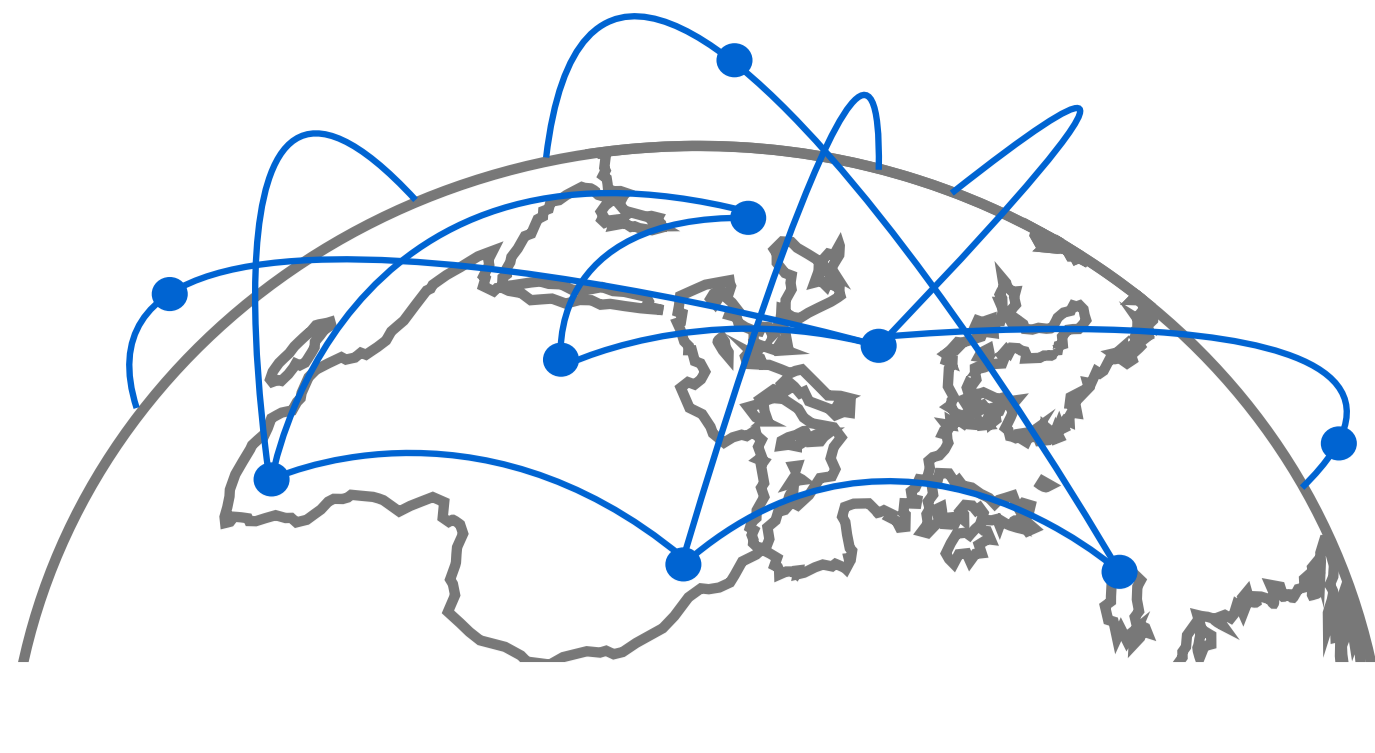


Managing Mangkhut

How Telstra kept its network running during 2018's most powerful storm



Telstra owns and operates one of the largest subsea networks in the Asia Pacific, a region rife with natural disasters, fishing and shipping activities. For OTT, wholesale service and cloud providers that run mission-critical applications, cable damage can result in severe service disruption and a loss of business.

In September 2018, parts of Asia were lashed by Typhoon Mangkhut, the most powerful storm recorded in the world that year. This infographic shows how Telstra worked to keep its subsea network up and running to help prevent outages during the typhoon.

Typhoon Mangkhut

At its peak, Mangkhut recorded sustained winds of **285km/h (180 mph)**, making landfall in the Philippines on September 15.

The typhoon also affected Taiwan, Hong Kong, Vietnam, the Mariana Islands, causing damage estimated at more than **US\$2.5bn**.

How Telstra Managed Typhoon Mangkhut

Week before

- Telstra reviews ongoing operational impacts, protection and resilience options.
- Resources for Network Operations Centres (NOCs) are arranged, ensuring available on-site provisions and staff.
- We warn equipment vendors to expect issues and notify them of additional support requirements.
- Telstra monitors ship positions and anchoring in relation to our marine cables.
- Commercial tanker/cargo ships are moved or sheltered.

2-3 days before

- Accommodation, food, and other rations arranged for Telstra staff working in the office during the typhoon.
- Satellite antennas are stowed.
- Third party network and data sites are contacted to maintain stability and uptime.
- Telstra incident response plans check:
 - Failover testing for cooling and power plants
 - Diesel fuel levels
 - Maintenance of windows and doors
 - Secure vehicle parking
 - Drainage is functional
 - CCTV is operational
- The team reviews additional network capacity needs and contacts large customers ahead of the typhoon.

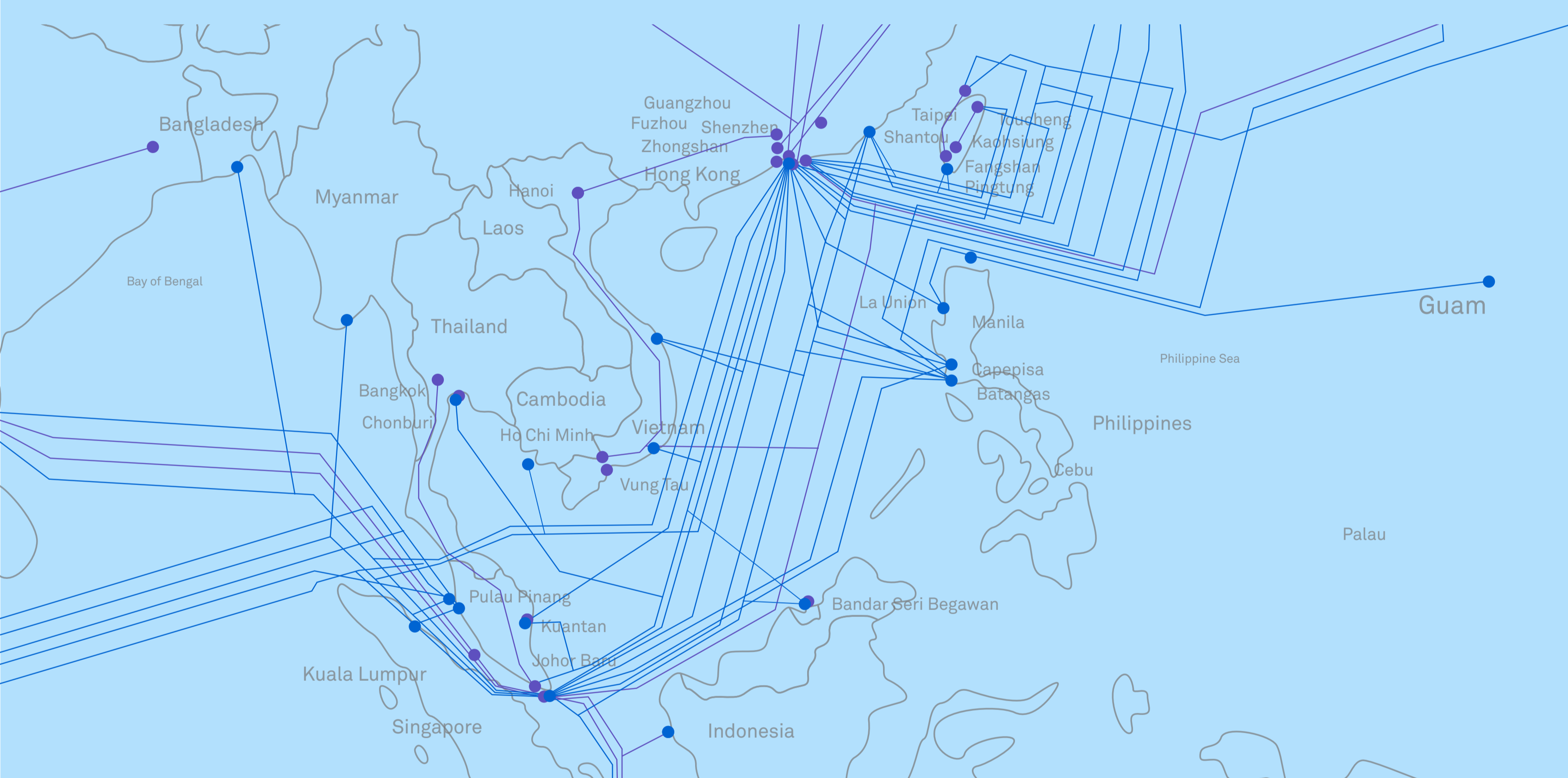
Landfall

- Telstra's Hong Kong NOC team monitor network issues throughout the typhoon, analysing additional capacity requirements.
- Storms can create underwater landslides called turbidity currents, that are regular causes of cable damage. However, there was minimal damage to key cables during the typhoon.
- An ongoing cable repair in Hong Kong is delayed, and the cable repair ship is sheltered.

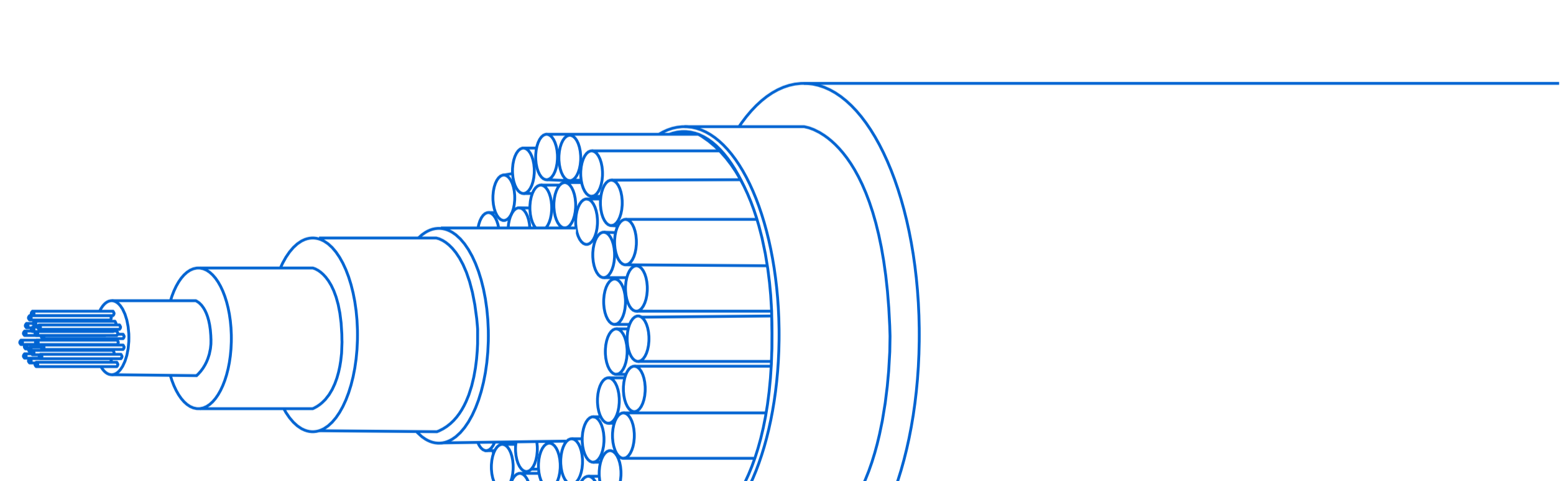
Post-typhoon

- Telstra's first key task is to verify safety of local teams.
- Customers are contacted to confirm their services are running.
- Telstra has restoration capacity within 24 hours for ad hoc restoration.
- For equipment problems, Telstra has a team to deliver additional capacity within 4 hours in every country where we own core equipment.
- Telstra sent its cable repair ship at sea back to Hong Kong to complete ongoing repairs, with just a two-day delay.

A vast subsea network with diversity and resiliency



Network leadership through scale and investment



Telstra's subsea network

- Largest intra-Asia subsea network serving more than 30% of regional active capacity.
- Core network of 400,000 km, including more than 68,000 km of fully-owned Asian submarine cable.
- Access to 250,000 sheath km of consortium capacity.
- Exceptional network diversity with more than 32 cable landing stations and multiple route options.

Protecting and investing in infrastructure



Telstra helps protect customers from service disruption by:

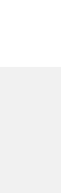
- Burying cables more than three metres deep to avoid anchors.
- Working with local fishing crews to monitor, avoid, and maintain our cables.
- Building an overland fibre network in Taiwan to avoid the earthquake-prone Luzon Strait.
- Having a dedicated ship on-call to carry out repairs to cables.
- Offering an 'always-on' bandwidth availability service level guarantee between Hong Kong, Singapore, and Japan.

Telstra is working with partners on the following network investments:

- Hong Kong Americas (HKA) cable
- Pacific Light Cable Network (PLCN)
- INDIGO cable system between Australia and South East Asia
- Southern Cross Cable Network (SCCN)

 Find out why Telstra received the highest scores for network performance in Asia Pacific

Find out more
Contact your Telstra account executive

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