

# BELDEN

SENDING ALL THE RIGHT SIGNALS

## Carnival Cruise Line

Technology doesn't escape Carnival Cruise Line just because most of its business happens on the water – Belden provides cable and connectivity to support immersive guest experiences, wireless connectivity and system convergence onto ship networks.



Our End-to-End Expertise  
Your End-to-End Solution



# Customer

Headquartered in Miami, Carnival Cruise Line takes guests on three-day to 16-day voyages, departing from every U.S. coast, plus Canada, Puerto Rico, Europe and Barbados.

The company is best known for its Caribbean cruises, but the ships set sail to other destinations as well, such as Alaska, the Bahamas, Cuba, Hawaii, the Mediterranean and Mexico.

Carnival Cruise Line operates 26 ships that are broken up into different classes based on the amenities they provide. Just as people expect connectivity at home, work and on the go – they also expect it on vacation. On some of its newest ships, Carnival Cruise Line is able to accommodate approximately 4,700 active devices, including those of guests and crew members.

Technology doesn't escape Carnival Cruise Line just because most of its business happens on the water. Connectivity demands are just as high on a cruise ship as anywhere else – but with the added complexity of being at sea. The company's standard

is to provide wireless access points in every room moving forward.

Each ship also has its own data center; for redundancy purposes, two of the newest ships boast two data centers separated by fire zones, with connectivity in between. If something happens to the power, cooling or network equipment in one data center, guests and employees will notice minimal impact. "On all new builds, two data centers will be mandatory. This allows one data center to go completely offline; the other data center will then pick up and provide the same level of service to our guests," says Paul Whitney, IT director for Carnival Cruise Line.

From the ships' navigation systems to their on-board breweries, systems are converging and riding on one network. "We need to have resiliency and redundancy in place to provide a good level of service," says Whitney.







## Challenge

The biggest challenge for Carnival Cruise Line is keeping the guest experience consistent across all 26 ships in the fleet. “We try to bring that ‘home experience’ to each ship,” explains Whitney. “It’s very difficult to do with so many people concentrated in one area. For example, we have to plan accordingly to make sure we provide enough wireless service on board, as well as enough bandwidth.”

When new technology infrastructure needs to be added to a ship, the work is done during a dry dock (where workers and contractors have access to a ship’s hull and other areas that are typically underwater). It takes three years to rotate through the entire fleet of 26 ships; so, during these periods, a lot of work must be done in a very limited amount of time.

Whitney and his team have to thoroughly plan ahead of time regarding necessary projects and upgrades, deciding on cabling and connectivity technology a year (or longer) in advance before it is actually deployed.







# Discovery

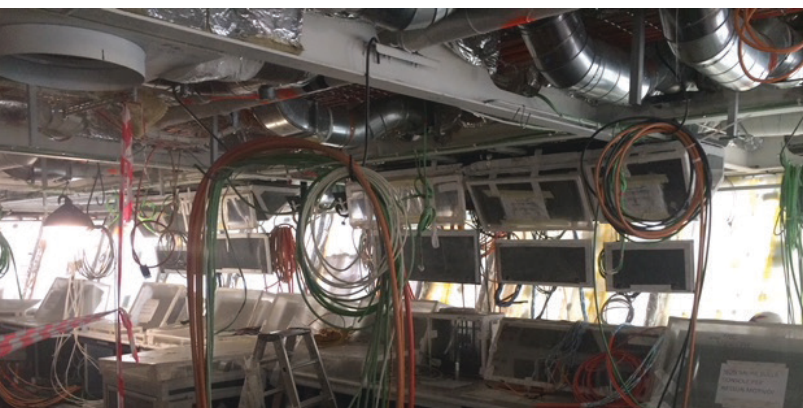
To keep up with the fast pace of the cruise industry, Carnival Cruise Line needed a cabling and infrastructure partner that could provide large amounts of waterproof cabling and connectivity products quickly – and connect the company with reliable, trained and certified installers that are comfortable working in such a quick-turnaround environment.

During dry dock periods, a ship could be getting new carpet, updated pool tiles and a refreshed paint job – not to mention the infrastructure work that needs to be done. “It’s a significant effort that has to occur within a 17-day window,” says Whitney. “Once those days are up, the ship sails whether the work is done or not.”

For this reason, there can be no delays in product availability or delivery, and the installers need to be trained to work quickly and efficiently – with little room for error or rework. If a subcontractor needs to make cabin modifications to install a wireless access point, there’s likely other work going on inside the cabin as well. Proper planning is crucial to make sure progress on other work isn’t hindered while technology infrastructure systems are being updated or added.

Carnival Cruise Line was familiar with Belden and its end-to-end connectivity solutions; after spending some time with Belden staff and getting to know some of its products, a trustworthy partnership was formed. Carnival Cruise Line knew it could rely on Belden to meet its demands. “We need a partner that reflects our commitment to the guests on board to provide the highest level of service we can,” says Whitney.

**“We need a partner that reflects our commitment to the guests on board to provide the highest level of service we can.”** - Paul Whitney, IT Director for Carnival Cruise Lines





## Solution



Carnival Cruise Line has embraced the idea of a “digital ship” – and needed partners that could keep up. Belden worked closely with Carnival Cruise Line to identify and train installers that could handle cable and connectivity work in this type of environment.

Once a ship is in dry dock, the installer comes on board and brings all of the material with them. Belden works hand in hand with the installer so they know what – and how much – product to bring on board. “I’m 100% relying on them to bring the right amount of resources with them and resolve any challenges that arise on board,” says Whitney. “It’s very coordinated. Thanks to Belden, we’ve got some great subcontractors to work with. They know what we’re doing and make sure to plan accordingly.”

By taking the Carnival Cruise Line installers through the PartnerAlliance certification process, Belden ensures that they’re trained according to the latest, most relevant industry technology and standards. Through continuing education, they’re kept up to date on changes as they occur. The installers are also able to offer a 25-Year Product Warranty and Lifetime Application Assurance. This combination ensures that the installed cabling system will meet or exceed industry standards for 25 years, as well as support future standards and protocols.

In addition, Belden works closely with the certified installers to make sure they know when new technology or installation practices are available to streamline processes. For example, the new REVConnect Connectivity System is currently being





examined by Carnival Cruise Line and its cable installers as a way to reduce installation time during dry dock. “I rely on Belden to work with us and look at the way installers are working, but also offer enhanced ways of completing the installation so things can keep moving quickly and efficiently,” says Whitney.

Carnival Cruise Line has named Belden its standard provider for copper cabling and connectivity solutions. Solutions like Belden 10GX Category 6A cable provide the infrastructure needed to support wireless access points in all cabins and public spaces, as well as the thousands of active devices brought on board each time the ships sail. Belden copper cables and connectivity also ensure reliable, high-performance connectivity to the Carnival Hub App, where guests can book dining reservations and short excursions, view and upload photos, and chat with other on-board guests.

Based on their success with Belden copper solutions – and after finding out that Carnival Cruise Line was experiencing trouble with long lead times from its fiber provider – Belden encouraged the team to try Belden fiber distribution cables - such as OM4 cable in six-, 12- and 24-count - as well. “With any product we bring in, we do our own testing and come up with our own results,” says Whitney. “So we tested it with our competitor’s side by side fairly thoroughly. Since then, we’ve been using Belden fiber.”





# Results

“Belden truly helps Carnival simplify project management and protect the company’s investment. As a single infrastructure partner, Belden provides proven products and certified installers that we depend on.”

- Paul Whitney, IT Director for Carnival Cruise Line

With reliable, futureproof cabling and connectivity solutions in place, Carnival Cruise Line can be confident in knowing that its ships have the capability to support increasing numbers of active devices on board, as well as new technology that provides better guest experiences and the integration of many systems onto ship networks.

“Making a cable is one thing. But when you look at the quality behind it - ensuring that the product is consistent - that’s the real value. With Belden, I know I’m getting a good product that is going to meet my expectations right out of the box without a doubt. That’s the real value,” says Whitney.



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