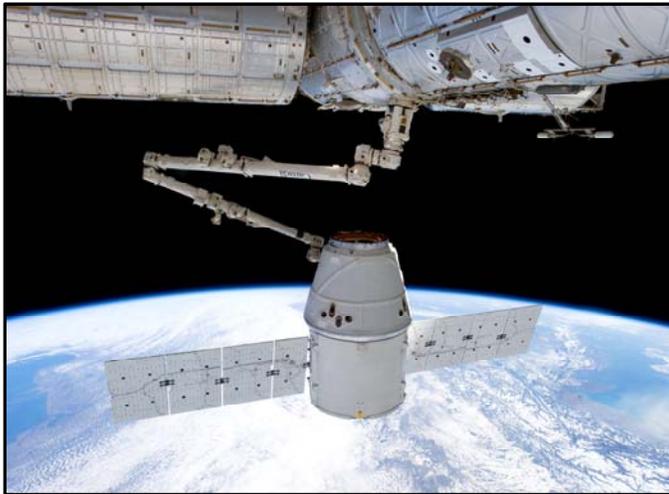


Private Company Makes History and Changes the Future of Space Travel with the Help of Intercom-over-IP

Clear-Com Concert equips Space Exploration Technologies Corp. (SpaceX) with ground-breaking communication capabilities that optimize teamwork and coordination during spaceflight activities while minimizing travel requirements.



SpaceX's Dragon Spacecraft

Background

Driven to transform space transportation and to one day enable people to live on other planets, SpaceX designs, manufactures, and launches the world's most advanced rockets and spacecraft. It is also the fastest-growing provider of launch services, performing commercial and government satellite launches as well as completing critical NASA missions to deliver cargo to the International Space Station.

In December 2010, SpaceX captured the attention of global audiences through its landmark achievement as the first commercial company to ever launch and recover a spacecraft from low-Earth orbit. By May of 2012, the company also made history as the world's first privately held company to send a cargo payload to the International Space Station. Since then, SpaceX has been awarded numerous contracts for launch services and is considered to be one of the most innovative

EXECUTIVE SUMMARY

CUSTOMER: SpaceX

- Space transportation
- 3000+ staff members
- Hawthorne, CA headquarters

BUSINESS CHALLENGES

- Maximizing productivity
- Enterprise-wide communication
- Rapid expansion

INTERCOM SOLUTION

- 200 Clear-Com Concert Licenses

BUSINESS RESULTS

- Enhanced enterprise-wide teamwork
- Achieved significant cost savings and performance
- Improved continuity of knowledge-sharing and operations
- Higher employee satisfaction and lower resource expenditure

NEXT STEPS

- Nearly 40 upcoming launches, including 10 cargo missions to the space station
- Carry crew to space on Dragon spacecraft

companies in the aerospace market.

SpaceX's business has grown tremendously, with operations spanning across four national sites and a contract backlog worth billions of dollars. To support this growth, SpaceX needed communication systems that worked across its multiple locations. SpaceX sought out a robust and scalable voice communication solution that was oriented for critical applications and would allow remote personnel to communicate within one integrated platform.

Business Challenges

Need for ubiquitous communication

SpaceX's remote voice communication solution had limited user capacity, making it difficult for personnel dispersed through multiple SpaceX facilities to stay tightly integrated within the communication loop, forcing them to rely on phones and other modes of communication, or requiring travel to a control room instead. SpaceX was seeking a single communications solution that would enable communications between staff at all SpaceX facilities as needed during launch and mission operations.

Rapid expansion

As SpaceX expands operations to new control centers and launch locations, relying solely on hard-wired intercom panels would have been cost-prohibitive cumbersome and time consuming and did not meet the multi-facility criteria. Thus, SpaceX explored integrating a cost effective soft-client solution.



SpaceX Falcon 9/Dragon Launch

Choosing Clear-Com

SpaceX was searching for an innovative partner with knowledge of how new technology can provide a solution to its communication problems.

The company worked together with several prominent manufacturers to assess various types of conferencing software. Clear-Com's Regional Sales Managers and Lead Engineer listened to SpaceX's challenges, learned how the business operated, and provided guidance on incorporating a viable system for its remote personnel to collaborate. When Clear-Com staff demonstrated its Clear-Com Concert, a revolutionary Intercom-over-IP software solution, SpaceX implemented a demonstration program to assess and verify that it was a good fit for coordinating its launch and

CLEAR-COM CONCERT PRODUCT INFORMATION

- Modes of communications: talk-and-listen, listen-only and text messaging
- Hold private one-on-one or group conferences
- Connect multiple external four-wire audio sources on the local server and on remote interface gateway servers
- Initiate ad-hoc parallel conferences or "whisper channels"
- Available in full pre-loaded server and software-only options
- Compatible with MAC OSX (Leopard or Snow Leopard) and Windows 7 or XP

mission operations. Concert delivered audio clarity, scalability and multi-user voice conferencing and intercom capabilities that were better than competing options.

SpaceX acquired multiple Concert licenses and fully integrated the software with its existing systems in the mission control room at its Hawthorne headquarters. Combined with additional deployments at the Vandenberg Air Force Base launch site, the McGregor, Texas Rocket Development Facility, and its Cape Canaveral launch site, Concert provides SpaceX staff with a high level of engagement to communicate fluidly and carry out their work at SpaceX facilities across different geographies and time zones.

Business Results



The Dragon spacecraft approaches the International Space Station.

Enhanced enterprise-wide teamwork

Unlike traditional voice-over-IP systems, Concert uses cutting-edge I.V. Core technology which routes only packets that contain actual voice data, mixing and encoding them just once at the client. As a result, the intercom-over-IP Concert solution consumes less processing power to permit more individual and group connections

Concert provided a greater-than-anticipated number of users and functionality. Every remote personnel that requires communication is connected via Concert, which is something that could not be done before. This supports important personal interaction between the SpaceX crew despite staff members being miles away. The system is

also highly scalable to link as few as two users to as many as a several hundred people in a single conference or in multiple, simultaneous conference sessions. The company currently operates with several conference sessions with plans to add more in the near future

Furthermore, the comprehensive features of Concert make it accommodating to SpaceX's complex and dynamic operations. Concert's grouping function, for instance, offers each remote user the flexibility to address specific departments and relevant sites with tailored messages, thereby, building a cohesive and industrious team environment.

Achieved significant cost savings and performance

Clear-Com Concert is an essential piece in the communication jigsaw, offering a more feasible and cost-effective solution over hard-wired intercom panels for the number of connected facilities and remote users. The ready-to-deploy intercom-over-IP solution can also be easily installed anywhere a company chooses, allowing each remote user to log in right away from any computer over a LAN, WAN or internet connection. In SpaceX's case, this was done within their existing secure network and facilities, and was only a fraction of the price of hard-wired panels.



Falcon9 rocket carries Dragon spacecraft from the SpaceX launch pad in Cape Canaveral FL.

Improved continuity of knowledge-sharing and operations

Supported by an ultra-wideband G.722 CODEC connection and built-in audio enhancement features, Concert ensures that every audio packet is instantly delivered. Concert also has built-in echo cancellation, built-in redundancy, pack loss reconstruction, recovery algorithms and jitter buffer optimization to provide capabilities that go above and beyond the team's needs. With every remote user on the same reliable platform, SpaceX minimized communication interruptions, accelerated decision-making and implementation, and maximized the team's output.

Higher employee satisfaction, lower resource expenditure

Even if Concert hasn't been accessed for an extended period of time, a user that logs back on the system will find that every established conference session is still working as perfectly as the last time it was in use. The implementation of Concert eliminated the hassle of troubleshooting and refreshing the conferencing software each time the user logs back in, resulting in increased staff satisfaction.

Each new user is also capable of setting up the system quickly and can easily administer the software without any prior training. An intuitive user interface facilitates ad-hoc communication and makes the user the conductor of his or her own audio conferences with simple drag-and-drop and point-and-click controls. Without involving extra staff members to teach personnel how to install and operate Concert, SpaceX realized additional savings in both time and money.

Next Steps

In October 2012, Concert was used to support the first operational resupply mission for SpaceX and NASA. In this monumental undertaking, the Dragon spacecraft delivered 1,000 pounds of cargo to the International Space Station.

As part of a \$1.6 billion contract with NASA, SpaceX plans to fly at least 10 more cargo supply missions to the International Space Station. In the near future, the company also intends to carry crew on the Dragon as well. SpaceX is also working to develop and launch reusable rockets as well as the Falcon Heavy, which will be the world's most powerful rocket.

Concert will continue to support SpaceX's conferencing needs by providing IP- based collaboration technology to improve communication and information-exchange between SpaceX's facilities as the company continues towards its long term goal of making human life multi-planetary.



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