

Cabin Connectivity

Getting Connected to High-Speed Data

BY DALE SMITH

Thanks to various manufacturers' abilities to complement state-of-the-art sophistication with broadband speeds and desktop ease-of-use, today's cabin communications electronics systems are turning business jet cabins literally into offices in the sky.



Turn back the clock some 25 or so years and the battle cry of the American teenager was, "I want my MTV!" Now, those same people have graduated off their parents' couches and into the cabins of their companies' business jets, and they've changed their collective mantra to: "I want my high-speed data connection." Just look at the proliferation of Wi-Fi "hotspots." Heck, you can even get "connected" at McDonald's.

So, it's no surprise the major airlines are getting into the global connection business. According to a recent report released by Connexion by Boeing, air travelers prefer airlines offering in-flight Internet connectivity and will even adjust their travel plans in favor of an airline offering the service.

What did the survey's nearly 3,200 participants do online at 35,000 feet? A whopping 90 percent of respondents said they access their work e-mail; 76 percent said they access their private e-mail; 69 percent said they surf the Internet; and 41 percent said they spend time engaging friends and family via instant-messaging or live-chat applications.

Another way to use this in-flight connectivity was demonstrated recently during a trans-continental flight when mobile

gamers hosted the first real-time competitive matches while in the air using the Connexion by Boeing network.

Of course, there's more to global connection than fun and games. When asked to name the key benefits of the Connexion by Boeing services, survey respondents called out the "ability to be productive" (44 percent); "stay in touch" (25 percent); and "access e-mail" (22 percent).

Business-Class Business Tool

If in-flight Internet connectivity has found a home in the business class of the Triple Seven, then it should come as no surprise the same capability has become an indispensable tool onboard a growing number of business jets. In fact, Connexion by Boeing recently signed a deal with Rockwell Collins to offer the service to Bombardier business jet operators via Collins' eXchange system.

Whether it's Inmarsat, Connexion by Boeing or whatever service an owner/pilot selects, the demand for in-flight Internet and other data communication services is growing at a rate directly proportionate to the increasing hours and distances today's business jets are flying.

A perfect example of getting the most out of the benefits this global connectivity offers is

Arthur "Art" Allen, president, CEO and single shareholder of ASG Software Solutions. Allen is one of those executives who believes whether serving existing clients or prospecting for new opportunities, you can go much further by doing business the "old-fashioned way" — face-to-face. One of his most powerful tools in maintaining that indispensable presence is his Gulfstream 550.

With its array of onboard systems, including state-of-the-art Satcom-based broadband multi-link high-speed Internet connectivity, Allen and his executive team can keep in real-time touch with their headquarters, regional offices and customers the world over. For Allen, business is as easily accomplished at 41,000 feet over Beijing, China, as it is from his desk in Naples, Fla.

ASG's team can be globe-hopping for four weeks or more at a time. So, the G550 is not only reliable and safe transportation, but the large cabin often is the place where the ASG team holds meetings or gives presentations to clients and prospects.

"It has totally changed the way we do business," Allen said.

Before You Get Wired

Not long ago, we thought having an air-to-ground phone in the cabin was the top-of-the-line communications solution. While phones certainly are a major part of any system, they are just a piece of an increasingly capable and complex communications solution.

With the rapid growth in high-speed data and cabin connectivity system sophistication and popularity, how can you get connected to the high-speed data communications system that's

right for you?

There are a few things to keep in mind when trying to create the best solution for your needs. The first thing is speed. Although hardware manufacturers have made significant strides in overall system speed, even the fastest still lag behind the broadband speeds you see from your home or office.

"When you say 'high-speed data,' right now anyway, you're talking about 64K," said Mark Wilken, director of avionics sales for Elliott Aviation.

That speed of 64K is about the same as the typical dial-up connection.

"Inmarsat currently does the Swift64, which is the 64K," Wilken said. "You can put two, three or four boxes together and get up to 256K, but that's going to get you to a quarter of a million dollars (for the equipment) pretty fast. And that's to just get 256K."

And the hardware is just the beginning — there's the ongoing cost of connection as well.

"Swift64 can do 64K, but my research shows it's an average of \$8 a minute (to access the network)," Wilken said. "If you do 128K, it's \$16 a minute. You can see how surfing the Internet can be pretty expensive."

Whoever coined the phrase, "If you have to ask how much it costs, you can't afford it," must have been thinking of high-speed data for business jets.

The Sum of Its Parts

Another thing to keep in mind is your cabin communications system is not a "one-size-fits-all" type of installation. Depending on the aircraft type, interior configuration and ultimately the kind

of capabilities you want, you can select from a variety of routers, LANs, connectors and controllers to enable any airborne service from simple laptop connections and cabin Wi-Fi to printers and more.

This type of sophistication doesn't come easily. First, you need a basic understanding of what these different components do. It will make it much easier when you start talking to whoever is going to help spec and install the new system.

The Components

- **Broadband:** Broadband refers to any telecommunication in which a wide band of frequencies is available to transmit information. This means many different frequencies or channels can be transmitted within the band concurrently, allowing more information to be transmitted in a given amount of time.

- **LAN:** A local area network (LAN) is a group of computers and associated devices that share a communications line or wireless link. A LAN typically shares the resources of a single processor or server within a small area (an aircraft's cabin). Usually, the server has applications and data storage that are shared by multiple users.

- **Router:** A router is a device, or in some cases software, in a computer that determines the next network point to which a packet of information should be forwarded toward its destination. Typically, a packet of information might travel through a number of network points with routers before it reaches its final destination.

- **ISDN:** Integrated services

Continued on following page...

CABIN CONNECTIVITY

Continued from page 45

digital network (ISDN) is a set of digital standards for data transmission over regular copper wire, as well as other media. It is primarily a way to integrate both analog and digital data over the same network lines.

- Ethernet: Generally, Ethernet uses coaxial cable or specific grades of twisted pair wires for connecting equipment and transmitting data throughout a network. Ethernet also is used in wireless LAN applications.

- Wi-Fi: Wi-Fi is the more popular name for the 802.11 wireless standard, which was developed by the Institute of Electrical and Electronic Engineers as the standard for wireless LANs operating in the 2.4 GHz spectrum with a bandwidth of 11 Mbps.

- Evil Twins: You can't talk about Wi-Fi without mentioning "Evil Twins" or "Wiphishing," a potential security threat to wireless equipment users. While they are problems predominantly in public hotspots, Evil Twins can be encountered when using Wi-Fi on an aircraft parked on the ramp. Hackers use these "rogue access points" to hijack data, such as personal passwords and account information, or to access the user's own company network.

A Little Help From Your Friends

Trying to visualize all an aircraft needs, such as equipment, cabling and other items, to create a high-speed network to keep your office interconnected, can be daunting. The good news is, you don't have to — and really shouldn't — go it alone. This is one area where the earlier you involve "professionals," the better off you will be.

"We work with our customers



all the time to help them decide which solution is best for their particular situation," said Howie Lewis, vice president of sales and marketing for Satcom Direct. "We work with all the major equipment suppliers and installation centers all the time, so people trust us. High-speed data isn't just a black box you put on your airplane.

"I had a Falcon 900EX pilot call me yesterday. His CEO wants high-speed data installed. His plane is in Wilmington and he wasn't getting a clear understanding from the shop of what he needed," Lewis said. "So, we talked about it and I sent him an e-mail on what we talked about. Now, he knows exactly what he needs."

Lewis said it all starts with the hardware and what the customer currently has installed.

"Do they have an existing Satcom system in the airplane?" Lewis said. "If they do, it's much easier to upgrade to high-speed data. No. 2 is, what kind of aircraft are they flying? I think the smallest type of aircraft flying with high-speed data is the Citation X.

"We get a lot of Citation Ultra or Hawker 800 customers wanting high-speed data, but the cost,

size and weight of the hardware, and the size of the antennas, make it prohibitive."

Owners/pilots also should consider where they are flying.

"A Citation V or similar model does not fly internationally very often; hence, it does not need the larger system required for international coverage," said Clark Gordon, account representative for corporate aviation for EMS Satcom. "On the other hand, a G550 or Global Express needs international coverage and it has the larger airframe to accommodate the larger, high-gain antenna."

Therefore, two of the most important considerations when planning a system are knowing what equipment you currently have and where you plan to fly.

"A lot of these airplanes came out of the factory with Satcom installed," said Terry Markovich, avionics manager for Duncan Aviation. "If they have a Collins' Satcom, the high-speed data solution from Collins is cheaper than pulling it out and putting in a stand-alone solution from someone else."

Markovich said an advantage of involving an experienced installation shop early on in the process is to help you from get-

ting boxed-in to a single solution.

“We usually give them several options,” he said. “We just did that with a Falcon 900 operator. We actually quoted five different variations of equipment and manufacturers.”

Another point Markovich stressed is the importance of getting a demonstration of how fast the solution you are looking at really is.

“I try to set up a demo with all our perspective customers so that they will know what kind of speeds they will get with what equipment — 64K isn’t as fast as people think it is,” Markovich said.

Speed is just one element of the high-speed data equation. Owners/pilots also need to determine where they do most of their flying. Different services are available in different parts of the world, so one solution may not fit all their needs.

“Coverage can be an issue for many operators,” said Tom Simon, manager of aftermarket marketing for Rockwell Collins. “Obviously, Iridium gives them low-cost voice but no high-speed data. Inmarsat is pretty much worldwide coverage, and it also gives you high-speed data capabilities.

“If they want safety of services for reporting points over the North Atlantic, they can use Inmarsat for that. Iridium, right now, has not achieved safety of services capabilities,” he said. “Some operators have two systems installed to meet their needs — Inmarsat with eXchange or Inmarsat with Swift64. Or they may use Inmarsat for upcoming SwiftBroadband high-speed data and Iridium for their voice.

It all depends on what they want to do.”

Make IT Part of Your Team

“Another huge recommendation is to get your IT (information technology) department involved in the planning of your installation as soon as possible,” Lewis said. “When the CEO sits on the airplane, it becomes an extension of his office. The only way that is going to happen is to get the IT folks involved early. This is especially important for flight departments with multiple airplanes with high-speed data.

“If the boss sits in the seat and he can’t get his e-mail after he’s invested all this money, my gosh, that’s not good.”

It’s a mistake many shops and companies have made — installing this great system, then bringing the IT guys to the hangar and saying, “Here it is. Now make it work with all your other equipment.”

Another reason to get IT involved is to find out if they have any objections to the type of system you are looking at, especially if you are considering a wireless Wi-Fi installation.

“There are a lot of corporate IT departments that really don’t want Wi-Fi used on the airplane,” Markovich said. “If they don’t use really good security, they can be sitting on a ramp at an FBO and someone can piggyback onto their signal. A lot of these systems tie directly into company networks — they don’t want the airplane’s hotspot open to anyone else.”

High Speed for Small Jets

While high-speed data is more common for larger cabin airplanes, if you’re flying a midsize or smaller cabin jet, it doesn’t

mean high-speed isn’t in your future.

“Two years from now, there’s going to be a lower cost hardware solution, and the cost of service will come way down,” Lewis predicted. “I’m a firm believer that the first manufacturer that comes out with a system for under \$100,000 will strike gold. When SwiftBroadband is introduced, that will become a reality.”

Simon said with the SwiftBroadband network, an owner/pilot could get some connectivity that is better than 64K per second.

“I can’t quote numbers, but I’ve been hearing speeds of 232 kilobits per second with a non-steerable type antenna,” Simon said.

And that reality may be so close at hand that midsize and smaller cabin aircraft owners should take steps today to install equipment compatible and/or upgradeable to the upcoming SwiftBroadband high-speed solution.

“If they have an airplane going in for an upgrade or major maintenance, they may want to go ahead and spend the money to install some spare wiring for their cabin network,” Markovich said. “That will save them money later on.”

New Technology

And what does the future hold for cabin connectivity?

“We’ve demonstrated a technology which will, if we proceed with it, give you the ability to do broadband over North America with a system that is a lot smaller, less expensive and easier to install than current broadband solutions,” said Bill Peltola, vice president of sales and market-

Continued on page 68...

CABIN CONNECTIVITY

Continued from page 47

ing for AirCell Inc. "We can't say more at this time, but the technology does exist."

Peltola said the "somewhat viscose state of broadband" is what lead the company to develop its Axxess line of communications products.

"It is a cabin system for wireless voice, networking, broadband, what have you, with the flexibility to plug-in and interface with systems as they become available," Peltola said. "In the meantime, it provides reliable high-quality voice solution with two-channels of Iridium radio that allows voice over low-speed data of the airplane and a high-level of functionality in the cabin, including PBX switching and calling features like voice mail, auto attendant and call-forwarding.

"It's a great solution in itself, even if the customer never puts broadband on their airplane," he said. "But when the new technologies are available, it will be a much more reasonable cost solution that will easily go on a midsize jet."

Tom Myers, director of marketing for AirCell Inc., said the company's Axxess system meets current and future needs.

"We just had a lead come in today from a Falcon operator," Myers said. "Their first question was they wanted to have something they could plug SwiftBroadband into later next year, but they also wanted something that will meet their needs now and their broadband needs later on. That's the Axxess system."

As an example of the growth-path built into many of today's leading systems, AirCell and EMS Satcom recently announced

a collaborative effort to ensure the compatibility of EMS Satcom's eNfusion HSD high-speed data terminals with the AirCell Axxess system. The Axxess system provides the fundamental in-cabin architecture, including voice and narrow-band data. When combined with the eNfusion HSD high-speed data terminal, operators can expect a comprehensive broadband communications solution via dual-channel or four-channel Swift64 Inmarsat datalinks.

Deal or No Deal?

With all the advancements on the horizon for high-speed data in the cabin, should you install a system now or wait a while?

"Some of the manufacturers are already delivering equipment that will make it easy to upgrade to SwiftBroadband later on," Lewis said. "Once again, like my Falcon 900 customer said, maybe he should wait two years for it to come out, but his CEO wants high-speed today. My suggestion to him is to go ahead and install a system now. It will be a little more expensive service-wise, but once SwiftBroadband comes on line in 2007, your upgrade path will already be established.

"Today's systems work and they're solid solutions," Lewis said. "Just make sure you install a system that is upgradeable. That's the key. Don't buy anything that will limit you. Know your upgrade path." ■