

Open
System | Architecture



What is Open System Architecture?

If you are installing a Category 5e, 6 or 6A infrastructure, there is a sizeable selection of well know products available. What makes one product a wiser choice than another? Which one offers maximum performance, while also providing the best value? Should you buy the heavily marketed closed brand solution that touts unmatched performance or should you pick and choose the products that best meet your specific needs? If you do the latter, what kind of performance can you expect to get? The closed solutions appear to offer the best performance. But, they are also asking a premium for that performance. If you own this project, you want the best value possible. You want high performance, without the high price.

The purpose of this paper is to illustrate why open system architecture, a standards based network solution approach, is a viable alternative to those closed solutions. This paper will also provide examples of the exceptional performance delivered by an open system architecture solution that includes HCA™ brand Category 6 cable from Hitachi Cable America.

Open System Architecture vs Closed Solutions

In network infrastructure, the term open system architecture refers to the practice of using virtually any combination of standards-compliant cable and connective hardware in the design of the network. The standard, ANSI/TIA-568-C.1, dictates the performance requirements of the network components to ensure that they will accommodate the applications that were designed to operate over them. By employing the open system architecture philosophy, the end user has the freedom to choose the products that best meet their specific needs. They can then be confident that the solution they chose will support all applications designed to operate over that solution. Just like a standard light bulb will fit into any lamp and work when you flip the switch, so will the network perform when you use components that meet or exceed the standards.

Of course there are also different levels of quality and performance to choose from in the market place. Certainly a wise choice, especially when it comes to cable for the open system architecture, is to select a company that offers guaranteed performance, a substantial warranty, such as a lifetime warranty, and has sufficient personnel, both internally and externally, to properly support the customer. If an issue arises, it's good to have quick and easy access to the manufacturer. Other items that can contribute to confidence in a product's selection are if it is manufactured in the U.S. and if the company makes its facility accessible to visitors. Generally, companies that build a quality product are proud to show customers how they do it. Since a network infrastructure can be a significant investment, typically in the thousands or even millions of dollars, knowing the origin of the products and being familiar with their manufacturers could very likely influence your decision when selecting components.

Closed solutions, ones in which a specific cable and connectivity manufacturer must be used in order to obtain a warranty, are typically marketed as providing better performance than standards-based solutions. This may or may not be the case. These closed solutions may involve the components from two companies or a single company. Often, a connectivity manufacturer aligns with a cable manufacturer. In some instances all materials come from one company, or at least, have one company's name printed on them. Few companies actually make both the cable and connective hardware themselves.

Closed solutions offered by a single company or from a collaborative effort between companies are not new. They have been around for a number of years. And, virtually all of them tout some advantage that its solution offers over the others. But, how can you really tell which one is the best? How much is fact and how much is hype? In fact, just recently, two solutions, each comprised of a connectivity manufacturer and a cable manufacturer, broke off their long-term relationships and switched partners. Was this done to provide a better product to the customer? Was it done because of a new corporate sales strategy? Regardless, when two companies market a closed solution jointly, it may have more to do with their sales channels than their quest for higher performance. These are just some of the items to consider when choosing materials.

At Hitachi Cable America, we believe the best method for selecting the appropriate products for an infrastructure is to evaluate the performance, warranty and overall value that the individual components offer. With that information, you can then build the best infrastructure for your company. **An open system architecture solution offers users the freedom to chose the materials that best meet their needs.**





Warranty

Every end-user wants to be certain that the products they have chosen will be backed by a meaningful warranty. Most closed solutions offer a warranty carried by one of the companies in the solution, usually the connectivity manufacturer, and it covers the entire solution. The length of these warranties may be 15 or 25 years. These warranties are only available through certified installers. So, in order to receive a warranty, the installation must be performed by an installer that has been certified by the solution manufacturer(s). This ensures that the work is done in an acceptable manner. This is, unquestionably, a good practice. Hitachi Cable America offers a lifetime warranty through its network of certified installers. This warranty lasts as long as the owner occupies the facility. Hitachi Cable America, however, also permits the warranty to be transferred to a new owner. Testing of the network is required, but the ability to transfer the warranty can be of great value to a company that may choose to lease out their current space.

The closed solution warranties can be comprehensive, but they can also be very restrictive. Virtually all closed solution warranties restrict future moves, adds and changes to the network in ways that are not always in the best interest of the end user. For example, representatives from some of the closed solution companies have been known to threaten end-users by telling them that if they integrate non-solution products into their solution, they could place the warranty for the entire infrastructure in jeopardy. One could argue that this restriction helps keep inferior products and or installers from interacting with the warranted products. It can also help exclude competition and ensure that the end user only buys products from their solution.

Also, as part of their installer certification process, some companies, such as Hitachi Cable America, offer training programs that can be very educational. Hitachi Cable America's training programs are accredited by BICSI (Building Industry Consultant Services International), so those who require credits to maintain a BICSI certification can receive them by attending Hitachi Cable America's training programs. Hitachi Cable America's facility is located in Manchester, New Hampshire. All copper premise and fiber optic cables are manufactured there and facility tours are available. If you need direct support from the manufacturer, it's available directly from Hitachi Cable America. If you have questions about Hitachi Cable America products or our Lifetime warranty, you can call Hitachi Cable America directly.

When it comes to a warranty, no company offers a warranty more comprehensive than Hitachi Cable America's Lifetime Warranty.

Performance

Is performance of the network infrastructure important? You bet it is. Studies have indicated that approximately 50% of network throughput problems are related to the network infrastructure. So, when trying to obtain the best value for the investment, it is very important to select high quality, high performance products. The purveyors of closed solutions contend that only their solutions can provide exceptional performance. The performance they offer may be good, but is it measurably better than that which can be obtained by combining a leading cable manufacturer and a leading connectivity brand? Recently, Hitachi Cable America obtained third-party testing of its HCA™ Category 6 PLUS™ cable (30025-8) and the connectivity provided by eight well-known manufacturers. The data (right) indicates that when the PLUS™ cable is mated to the connectivity shown, the resulting permanent link (a circuit including cable and connectors at each end) provides performance in excess of the parameters established in the ANSI /TIA-568-C.1 standard. For example, both ACRN and PSACRN, identified in the yellow boxes, demonstrate that there is significant margin over the limits in the Category 6 standard. ACRN (Attenuation-to-Crosstalk Ratio Near-end) is the relationship between a signal on a conductor and associated noise emanating from an adjacent conductor. Near-end indicates it is at the tester end of the link being tested. ACR is calculated from attenuation and NEXT (crosstalk) measurements. PSACRN is the difference between a twisted pair's attenuation and combined crosstalk from adjacent pairs. Both ACRN and PSACRN are key performance indicators in a permanent link.



If noise overcomes a signal on a conductor, it will corrupt it. Higher ACRN and PSACRN values are desirable. Therefore, if you chose an open system architecture solution that includes the PLUS™ Category 6 cable from Hitachi Cable America, you will have a solution that will support all applications intended for Category 6.

So, if you are seeking the best value for your infrastructure investment, it is clear that an open system architecture solution featuring cables from Hitachi Cable America will perform as well as if not better than closed solutions, offer a better warranty, and be backed by a company with over a quarter century experience making communication cables. Open system architecture solutions can be a better value and offer equal or better electrical performance than closed solutions.

Hubbell & Hitachi PLUS™ Category 6 Cable		HellermanTyton & Hitachi PLUS™ Category 6 Cable	
ACR-N (dB)	11.2	ACR-N (dB)	9.1
Frequency (MHz)	75.0	Frequency (MHz)	162.9
Limit (dB)	28.0	Limit (dB)	15.3
PS ACR-N (dB)	11.9	PS ACR-N (dB)	10.4
Frequency (MHz)	29.0	Frequency (MHz)	94.3
Limit (dB)	38.5	Limit (dB)	23.5
Leviton & Hitachi PLUS™ Category 6 Cable		OCC & Hitachi PLUS™ Category 6 Cable	
ACR-N (dB)	13.8	ACR-N (dB)	7.8
Frequency (MHz)	181.2	Frequency (MHz)	71.2
Limit (dB)	11.7	Limit (dB)	30.0
PS ACR-N (dB)	13.1	PS ACR-N (dB)	9.8
Frequency (MHz)	240.0	Frequency (MHz)	71.2
Limit (dB)	2.6	Limit (dB)	28.0
Panduit & Hitachi PLUS™ Category 6 Cable		AMP & Hitachi PLUS™ Category 6 Cable	
ACR-N (dB)	7.9	ACR-N (dB)	8.7
Frequency (MHz)	18.8	Frequency (MHz)	14.8
Limit (dB)	45.9	Limit (dB)	48.4
PS ACR-N (dB)	10.1	PS ACR-N (dB)	10.1
Frequency (MHz)	18.8	Frequency (MHz)	14.8
Limit (dB)	43.5	Limit (dB)	46.0
Ortonics & Hitachi PLUS™ Category 6 Cable		Systimax & Hitachi PLUS™ Category 6 Cable	
ACR-N (dB)	11.0	ACR-N (dB)	11.6
Frequency (MHz)	57.5	Frequency (MHz)	24.3
Limit (dB)	32.0	Limit (dB)	43.0
PS ACR-N (dB)	12.8	PS ACR-N (dB)	13.3
Frequency (MHz)	57.5	Frequency (MHz)	24.3
Limit (dB)	29.5	Limit (dB)	40.6

About Hitachi Cable America



For over 25-years, Hitachi Cable America has been designing and building advanced communication cables for the telecommunications industry.

Located in Manchester, New Hampshire, our 300,000 square foot (91,440 sq. m.) facility produces over 4,000 different cables. Products manufactured include HCA™ brand high performance copper and fiber optic communication cables, as well as flat and round electronics cables, custom cables and cable assemblies. Hitachi Cable America products are used worldwide across a wide spectrum of industries, including medical, financial, manufacturing, educational, government and military.

At Hitachi Cable America, maximum cable performance is our top priority. Our on-site drawing mills provide greater control of conductor diameters and the use of only high-quality insulation and jacket materials ensure optimum electrical performance as well as long-term reliability. Whether it is cable for industrial Ethernet or Infiniband, VOIP or POE+, our cables are designed to deliver maximum throughput regardless of the environment. So if you are considering Category 6A CMP cable for a data center or need an OM4 fiber link between buildings on campus, chose cables from Hitachi Cable America.

Hitachi Cable America Inc.

Other Products from Hitachi Cable America:

Copper Category 3, 5e, 6, 6A, 7 & 7A Cables
Fiber Optic Cables (indoor, outdoor & armored)
NanoCore™ Fiber Optic Cables & Assemblies
Industrial Ethernet Cables
Coaxial & Mini-coaxial Cables
ECOFLEX™ Cabling System
Round & Ribbon Electronic Cables
Active Optical HDMI Assembly

For more information about Open System Architecture or any of the products we manufacture, please contact us.

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