

FAQ: Converged Application Score

If Cat 6 and 6A are standards, why can't I purchase any Cat 6 or 6A and have satisfactory performance?

When standards are developed, the industry and all manufacturers participating have to agree to the minimum performance required for various electrical parameters. Therefore, standards are essentially the result of the lowest common denominator, or a minimum requirement. When you consider the fact that the Cat 6 standard was developed more than 15 years ago, you can start to understand why just meeting the minimum might not be enough anymore. Back when the Cat 6 standards were developed, transmitting data from computer to computer was the norm. Today, file sizes are exponentially larger and we are starting to transmit a lot more voice, data, video, and even power simultaneously to many different IP devices.

How is the Converged Application Score (CA Score) calculated?

The CA Score is calculated by using the results of **application-based** testing done in a four-conductor, 100-meter channel. The test is unique because VoIP, Data, Video, and Power are transmitted simultaneously through a channel installed in simulated hot pathway spaces with nearby power cables exhibiting Electrical Fast Transient (EFT) voltage spikes. All of this is done to replicate real-world conditions as closely as possible.

We take the results of the VoIP call quality as measured by the Mean Opinion Score (MOS), the data integrity as measured by Frame Error Rate (FER), and video quality as measured by Media Loss Rate (MLR), as well as factors such as total channel bandwidth, 5Gbps and 10Gbps Ethernet reach and SNR, and enter the results into an algorithm that weights the results according to how sensitive the IP traffic is to each measurement. For example, VoIP and video IP traffic are weighted heavily because they usually use protocols such as UDP or RTP where packets with errors are dropped. Due to the real time nature of these applications, there is no resend and lost packets negatively affect the user experience. Conversely, office data traffic typically uses a protocol like TCP/IP which isn't as time sensitive, so resend requests are allowed. Therefore, FER test results for these applications are not weighted as heavily as the results for MLR for video and MOS for Voice over IP. Additionally, temperature rise results from a separate high-power PoE test are used in the calculation. The PoE test determines how efficient the cabling is in dissipating/minimizing temperature rise.

What does a high CA Score like 25.6 actually mean?

The CA Score provides an indication of what the actual user experience will be when using the Nexans channel in a

real-world environment and multiple applications converge, such as IP video, VoIP, Data, and PoE. The better protected your IP traffic is from the stress of multiple simultaneous applications, noise, and heat, the better the score will be. A CA Score of 25.6 means that your IP infrastructure performance is outstanding, resulting in near flawless application performance, and that there is relatively low heat rise under the strain of high power PoE. Conversely, a low CA Score such as 3.6 would mean the user could expect to see and hear flaws (errors) and encounter frustrating transmission delays. For example, VoIP calls would usually sound choppy, streaming video would check line spacing.

Why is the CA Score algorithm proprietary to Nexans?

Nexans has invested millions of euros in R&D to develop products that will support current and future demands on network infrastructure. Developing the CA Score was an investment in itself, and it was created to measure the results of our superior materials, unique designs, and tightly controlled processes. Therefore, we are happy to explain the testing we do and the inputs used to calculate the CA Score. However, the exact calculations used are proprietary to Nexans in order to protect the investments we have made to develop them.

How can I compare other manufacturers' CA Scores?

Currently, the only way to compare another manufacturer's CA Score is for the Nexans TEK Center to conduct the testing and report the results. The TEK Center has tested several other manufacturers' channels, and those results are available upon request. As a policy, the TEK Center does not report other competitor results by name. Its intent is to report results in a neutral format.

I have a small office of <50 employees. Do I really need Category 6A for my WAPs?

It depends on what you want out of your network over its anticipated lifetime. If you determine that your wireless network will be "fast enough" for your business needs over the next "X" number of years using 1Gbps technology, then the answer is no. However, if you need a wireless network that remains both fast and responsive over the years for your employees, customers, and guests, then you should invest in Cat 6A, regardless of the size of your business. If you have a small business, you will need fewer access points and less cabling than a larger office. However, investing in Cat 6A is the only way you can realize the full potential of each access point that is equipped with 802.11ac wireless technology.

FAQ: Converged Application Score

Does the CA score include evaluation of the newest 2.5G and 5GBase-T technology?

Yes, as a member of the IEEE committee that developed the requirements for these new data rates, Nexans applied what we learned from the IEEE's technical meetings and has modeled our channel performance with this technology, including it in the CA Score. We are also at the forefront of testing and evaluating the first releases of 2.5G and 5GBase-T transmission technology, confirming the validity of our channel models.

I have a separate network for my VoIP phones, my IP Video, and my Data. Why would I care about converging applications when I keep separate networks?

In a lot of cases, customers plug a VoIP phone to a wall outlet and another patch cord from the VoIP phone to the computer. In this case, your network could be carrying voice, data, video, and power simultaneously. But even if you are just connecting a VoIP phone, you can be (or could be at some point in the future) using the VoIP phone for live video conferencing where you would be transmitting voice, power, and video at the same time. If you are connecting only video screens or digital signage, at some point in the near future, you will be able to power those screens and transmit video (and audio) to them simultaneously. This will require a lot of power, and at some point in the pathway, the cabling will likely be grouped into larger bundles also carrying power. No matter how you slice it, everything is going IP, and network applications are converging while we connect and power through the network infrastructure.

Will the CA Score automatically be higher if a higher grade of cable is used, for example a Cat 6 cable versus an "Enhanced" Cat 6 cable?

Not necessarily. The CA Score is blind to the product that is used during testing. It is completely dependent on the test results used in calculating the score. That being said, the superior noise cancellation and bandwidth capabilities associated with a Cat 6A system contribute to a CA Score that is significantly higher than any Cat 6 cable.

What does TEK Center Certified mean?

TEK Center certification means that the testing and/or technical information presented was prepared and reviewed by technical personnel who have years of specialized training and industry experience. This is your assurance that the testing was done according to industry accepted guidelines and reviewed for complete accuracy.



This stamp certifies that all testing was performed, reviewed, and approved by highly trained, experienced engineers dedicated to studying and developing solutions for future network infrastructures.