



# technology focus

Light Bytes: More Than a Mouthful | By Richard Cadena

*“As lighting rigs continue to grow in size and complexity, the need for lighting techs and electricians who understand how to set up, test, and troubleshoot Ethernet networks will continue to grow.”*



I'm not telling how long I've been in the lighting industry, but the first cue I remember hearing was, “let there be light,” and it came from above in a booming voice. As long as I've been in the industry, I've managed to avoid knowing a lot about Art-Net or sACN - I accidentally learned just enough to get by. That all changed in 2016. That's when I started getting a lot of calls and questions about the Ethernet-based protocols. So I went searching for answers.

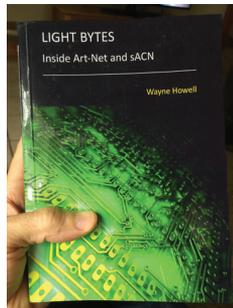
There is a lot of information out there about Ethernet and networking, and since Art-Net and sACN both transport DMX over an Ethernet network, a lot of the same information about Ethernet applies to Art-Net and sACN. The problem is, there's a lot of information out there about Ethernet and networking. How do you make sense of it all? It's a real challenge.

A few months ago, I thought it would be a great idea to learn WireShark. It's a software tool that can capture and analyse Ethernet packets, and it seemed like it would be great for basic troubleshooting - like figuring out whether or not a console is even spitting out an Art-Net signal. But if you've ever looked at the software, then you will back me up on this: it's daunting. I didn't even know where to start.

There are plenty of online resources to learn WireShark, but they are primarily aimed at experienced IT professionals, and there are so many that you can spend all your time looking for the right instructions instead of learning how to use it. That was the first time, but not the last, that I really wished I had a single resource to help guide me through the ins and outs of this rapidly growing technology.

Several weeks later, my wish was granted in the form of a book called *Light Bytes: Inside Art-Net and sACN*, by Wayne Howell (published by Singularity UK Ltd). You might recognise the author's name from his association with Artistic Licence, the company he founded and CEOs. Or you might recognise his name from the other two books he authored, *Rock Solid Ethernet* (3rd Edition), and *Control Freak*. *Rock Solid Ethernet* was my networking guiding light when it was first published in 2004. (You can buy a new copy of the original edition on Amazon.com for a mere \$1,480 (£1212) or, if you want to save some money you can get a used copy for \$1,136 (£930). That's not a typo, and it's not an exaggeration. Those are real numbers on the real Amazon website. There is also the Kindle version available for \$28, but it's pretty outdated, so pop for the £24 to get the latest version, the 3rd edition, at Entertainment Technology Press.)

*Rock Solid Ethernet* came on my radar just in time with all of the right information. And now *Light Bytes* is doing the same thing. It covers a broad spectrum of information that well suits the needs of today's professional lighting technicians and electricians. It starts with a network primer, which covers some of the same material in *Rock Solid Ethernet*. But since networking technology is moving



so fast, the information in *Light Bytes* is more up-to-date. It also lays the foundation for the material that follows. The book then describes Art-Net and sACN in just the right amount of detail before diving into the 'real world' of pitfalls like broadcast storm protection, synchronisation, and security. About two-thirds of the way through the 428-page book, about 60 pages are devoted to WireShark and other software analysis tools like DMX-Workshop (from Artistic Licence), Art-Route, and Bandwidth Tester. WireShark isn't covered in as much detail as DMX-Workshop, but there is enough information to help familiarise yourself with some great tools for troubleshooting. The last couple of chapters are devoted

to material that would be of interest to Art-Net and sACN developers.

I only had to read the first couple of chapters to know that this book will be of great value to me and anyone else in the industry who is trying to stay abreast of the rapidly developing area of control systems and protocols. I predict it will be my go-to resource for networking issues and that the pages will be dog-eared in short order.

Unless you have a degree in information technology, learning about networking technology comes with a steep learning curve. If you really want to understand how this stuff works, you need resources like *Light Bytes* and *Rock Solid Ethernet*. Without them, learning about entertainment networks and Ethernet-based protocols would be a much more difficult task. It was Howell and the folks at Artistic Licence who developed Art-Net, so who better to explain the technology than the guy who invented it (along with his company)?

Over the course of researching the topic, I learned that Art-Net 4 was to be launched at PLASA in September. Although Wayne was very busy preparing for the show and his presentations there, he was kind enough to provide some information about Art-Net 4 ahead of the launch. The most interesting part of it, at least from where I sit, is that it will allow you to use sACN to control your DMX devices but use Art-Net to discover and manage devices using RDM, which sACN does not do. It will also allow a gateway to have up to 1000 DMX ports without having multiple IP addresses. Previous versions could only have four DMX ports with a single IP address.

Art-Net is free for anyone to use with the proper attribution (Artistic Licence), and almost every modern-day automated lighting console outputs it. As lighting rigs continue to grow in size and complexity, the need for lighting techs and electricians who understand how to set up, test, and troubleshoot Ethernet networks will continue to grow. If your job is related to setting up or using automated or LED lighting, whether you know it or not, if you want a future in this industry, you need to know what's in this book.

The £29.95 price tag of *Light Bytes* is an investment that will pay dividends in your career. Get your copy now at [www.bit.ly/LightBytes](http://www.bit.ly/LightBytes), and do it before it sets a new high price record on Amazon.

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For Richard Cadena, the road to authoring books and magazine articles ran through High End Systems and Martin, took a left turn at designer, tech, and electrician, and is still under construction.