

Technical Corner

Paths to the Enterprise

As I write this, I usher my children out the door to begin a fresh, new school term. Thinking about the decisions they have to make each day that will decide the paths they will follow, I begin to wonder: “Is there only one path available for them to reach their goals of success?” Certainly not. There are several paths they can take to reach whatever goals they set for themselves.

Parallel that to our technical world of LON: systems integrators too have several paths as options when it comes to moving information from one place to another for their end-user clients. This edition of the Technical Corner is for the systems integrators, designers, and facilities owners/maintainers. It’s a roadmap to reaching the enterprise level from the device level through several paths.

LonTalk Through and Through

Many years ago, LONMARK embarked on a mission to educate the general controls community on the dangers of gateways being used as the foundation of their controls strategy. Don’t misinterpret; gateways have their place in an overall strategy, they just shouldn’t be the foundation of an interoperable system – regardless of the protocol chosen for a system. There is just too much dependence that is placed upon their always being up-and-running. They also, typically, require customization and maintenance of their internal translation tables – a situation that can tie the end-user into a long-term,

sole-supplier scenario. LONMARK’s answer? Maintain your single, controls-networking protocol (LON) throughout the installation.

But what happens when you want to interface to an enterprise resource management system; when you want to aggregate information for the accounting office; when you need to interface to a remote maintenance centre? Ideally, you would specify that those systems be installed with LON drivers – to handle the LON information through DDE, ActiveX, etc. and you would plug-in a LON network-interface adapter. Is it impossible? It may seem that way but if the information is important to those systems, it may be less insurmountable than we imagine. After all, those systems are constantly updated with software patches, drivers, and upgrades today. It’s not like the UNIX, DOS, and VMS systems of the past, where running machines were left unmodified for years. Today’s systems are constantly being upgraded to refine everything from performance to features to security. Therefore, in this ideal world, you could string your controls network from the devices to the enterprise machines (see figure 1).

Ubiquitous Points of Presence

But is it ideal to run dedicated controls cabling to the enterprise systems in all cases? And is it really that easy to get approval to insert or plug hardware into those machines’ limited slots/ports? Fortunately, the omnipresence of IP-based intranets has given us the

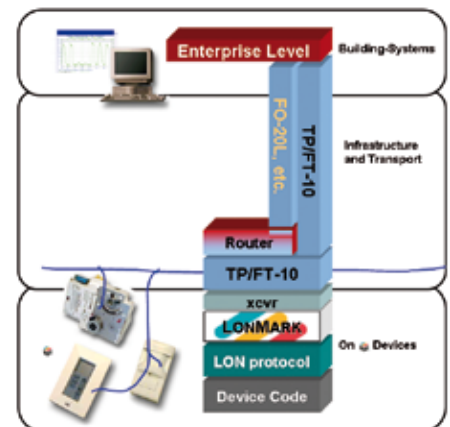


Figure 1

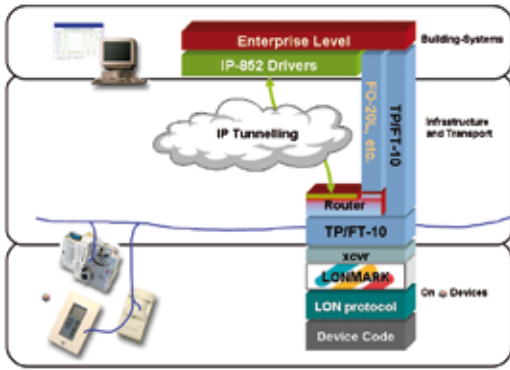


Figure 2

pipe we need to bridge the distance between enterprise and control: Using IP-852 (ANSI/CEA-852, EN14908-4, GB/Z20177.4), or the coming IP-852.1, controls data can be tunneled from a router on the device network straight to software drivers on the enterprise PCs. This solves the hardware issues on the enterprise systems but introduces a router on the controls network – which is arguably easier for a systems integrator to both maintain and to get initially installed in a

facility (see figure 2). But if you were switching from a lower-speed media to a higher-speed backbone anyway, you would already have the need for a router.

Ring-Ring, the Chiller is Calling

What can be done if you are unable to install software on the enterprise system, or if you need data on a device for which no LON or IP-852 drivers are available today (like a mobile-phone PDA)? Here you're looking at where a gateway can serve as a component in your overall controls network. However, it would be wise to choose a gateway that allows for IP-savvy conversion. Yes, I've said it many times before – enter from stage left: XML. XML Web Services and their equivalents offer standardised methods of shuffling data from point A to point B (see figure 3). The OASIS group's oBIX effort (open Building Information eXchange) can serve as the gateway's translation table and carrier format

for point data. Translation of data can cause bi-directional issues with conversion, however (e.g., Fahrenheit-to-Celsius-to-Fahrenheit conversion may cause rounding errors). Additionally, data that describe the data (metadata) must be sent with the data (i.e., scaling, resolution, units, etc.), which also means that interpretation must occur in two places: at the gateway and in the Web Services interpreter software. In most cases, the latter will be simple but the interface for humans to →

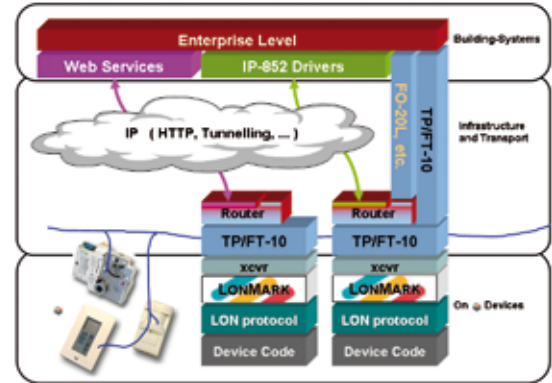


Figure 3

understand the data may entail some additional customisation. Alternatively, the data types could be defined on both ends to a standard – much in the way SNVTs are interpreted in the LON world. What is gained with XML, however, is the ability to aggregate or view data without special drivers – if XML interpreters are already on the systems/telephones/

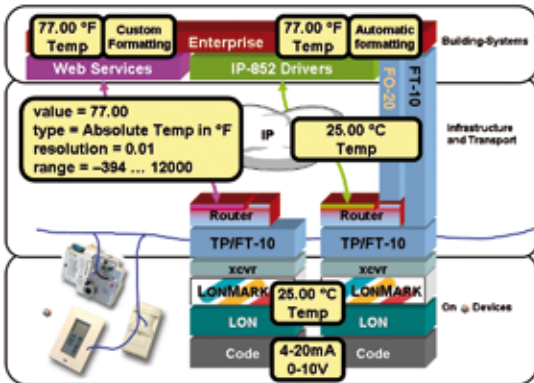


Figure 4

PDAs. And if they are not on those systems? There is one other form you might consider for transferring data: as Web-savvy elements served from a Web page. In this case, the data being served are interpreted, formatted, and displayed in regular, old HTML from either dynamically generated pages or from dynamic content itself (like an ASP page that delivers formatted text but not a whole page). There are many variants of this last set of solutions but in general: while you gain portability, you lose flexibility unless you increase the customisation on the interpreters' end (see figure 4).

Each method has its pros and cons. The nice thing is, just like children who can become involved in music, arts, sports, and academia to reach their goals and along the way become well-rounded adults, so too, can LON systems have multiple paths to reach the enterprise goal whilst providing a well-rounded system that can expand and scale as the needs of the facility and the owners change.

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