AUTOMATION

Distributed Architecture

by Barbara Zollo, Etere

In conventional systems all software ran on the mainframe, a device able to handle hundreds of operations at the same time. This architecture is the one still used in television automation.

Normally there is a 'device controller' or 'machine controller' that handles all the requests of the system and drives the devices. This central 'thinking unit' is the heart of the system; all the operations are carried out by its hardware and software.

Some other kinds of architecture use an 'intelligent device controller' for each unit, but this does not really solve the problem, as device controllers are protocol converters and they still depend upon a central unit. If you use a PC as a terminal, this PC is intelligent but relies on a central processor in order to function. In the best of cases, the device controller controls all devices, therefore if a controller of a multi-channel server fails you lose the whole server. A fault, as well as an upgrade of the central unit, is a nightmare; if it fails, everything fails. You can have a backup, but that means you need two complete systems with all the 'ports' to be sure of uninterrupted operation.

Amazingly, this mainframe-like approach is still sold as a new technology. A lot of marketing effort is made to convince you that the traditional – or prehistoric! – approach is the best; it's proven, is solid as a rock, and a lot of people use it. It is the same as telling you an impact printer is better than a laser one because it's traditional, heavy, time consuming, expensive, with low resolution, but a lot of people use it!

Now a new technology is available, derived from the internet, which does not require a central unit, but a number of independent 'tasks' that communicate with each other.

The first example of this new architecture, the On Air Controller, is a task that controls the 'on air' devices only; no other part of the system is under its control. (Figure 1) It's completely independent from other system operations like caching or manual recording. This example shows two recording processes on two different machines. But if one of the caching processes fails, what happens in a distributed environment? Nothing.

In the second example, the On Air system still runs, and all the other parts of the system are still functioning properly. (Figure 2) While someone repairs the defective elements, the operator reconfigures the system. This way all television operations and all devices are still running, but from a limited number of PCs. You can work as usual until the defective element is replaced.

A few words on scaleability. With distributed architecture scaleability is very simple; you can run a different process for each activity you need. Adding channels, devices or scheduling PCs does not involve any changes in the existing architecture. You can increase the number of tasks as you need. Let's not get confused! Task does not mean PC.

In your PC you can edit many texts at the same time running different copies of Word, or you can edit a text and a spreadsheet running Word and Excel at the same time. It is the same with Etere Automation distributed technology; you can run all TV activities in one PC or 100 PCs; it depends mainly on your station's needs.

The third example; Distributed Architecture also means distributed control – using off-the-shelf hardware Etere Automation virtualises the old RS422 controls. (Figure 3) As in this picture, many PCs are able to control one VTR without any direct connection to it. Each PC is able to control all the devices, without installing an interface or serial cabling. This means less serial cabling, fewer connection problems and maximum flexibility. All your automation needs run in a fault tolerant, standard, fast Ethernet network. Many 'serial hubs' are available on the market, and are widely used for industrial automation applications. These devices are proven and reliable. In a fault tolerant configuration two network cards can be installed on each PC. These two cards can be connected to a stackable Ethernet fault tolerant switch. If a fault occurs a switch takes place at Ethernet speed or, better, in the space of milliseconds.

This is an application of technologies developed for large internet connections. Many manufacturers, like Intel, offer a wide range of Ethernet fault tolerant solutions. These solutions are available off-the-shelf, and can be installed on any PC. With the same technology, and using 'serial hubs', RS422 devices can also be connected in a fault tolerant environment, with full protection from any single device failure.

Etere Automation System is a powerful, flexible and popular automation system. It offers the best value for money and more effective utilisation of resources. Etere Automation with Distributed Architecture is simply the most powerful, scaleable and reliable automation system available; from simple commercials automation to full station automation, or off-line operations, compilation and caching.
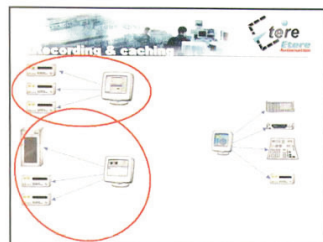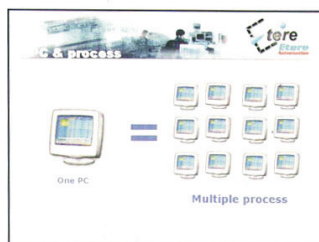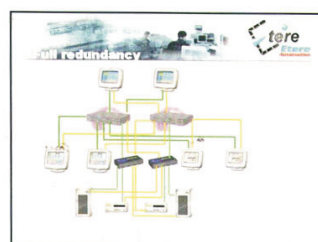
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Figure 1

Figure 2

Figure 3