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“What was needed was a way for the VS to talk to the Linux shell”

Connecting the Bits

By Larry Khirallah, Senior Developer, TransVirtual Systems

The TVS product is a hardware abstraction layer (HAL) written above a Linux kernel. While developing and testing their product, TVS realized that there was a simple, easy, almost elegant upgrade they could make to the system. Even better, It could be made without changing any of the things about the VS that users of the system were used to. One of the benefits of implementing the TVS product as a HAL was the abundance of software, open source and commercial, available under Linux; Apache, Python, sendmail, perl and its CPAN module libraries, Oracle and more. A vast array of functionality was readily available.

The problem was that this functionality was available in Linux, not in the VS. What was needed was a way for the VS to talk to the Linux shell, a bridge that could be used to communicate between the two environments.

First we made a wish list of characteristics we wanted this hypothetical bridge to have; robustness, queue management, task management, memory management and error handling. As we progressed we realized that we were talking about an I/O device. It was decided that what we needed to develop was a “virtual device”, one which presented itself to the VS code as an I/O device, but which actually interfaced to a Linux program.

The Virtual I/O Device has been developed to allow the following:

- Application programs running in the VS environment are able to access data held in Linux application databases and execute Linux shell commands in the Linux server software.
- Application programs running in the Linux environment are able to access VS files, databases and volumes.

The Virtual I/O Device uses two cooperating processes called VDR (Virtual Device Requestor) and VDD (Virtual Device Dispatcher). The VDR runs in the VS environment and communicates with VS application programs. The VDD runs within the Linux environment and communicates with Linux programs. Within the VS environment, Virtual Device Access Routines provided by TVS, are linked to individual VS programs and called whenever virtual device access is needed.

The VDD is a daemon on Linux that interacts with the VDR. It communicates with Linux applications to process VS application requests and to transfer data into the VS environment. Within the Linux environment, application programs/servers utilize the virtual I/O device by using socket level TCP/IP connections to establish communication with the Linux VDD process.

While a full discussion of the VDR is obviously beyond the scope of this newsletter, extensive documentation is being developed and onsite training is available. Here we can simply say that, the uses for the Virtual I/O Device are

practically limitless. the shining example being the ability to finally provide a bridge between VS and commercial databases such as Oracle. In one implementation, over 700 VS users have connected to an Oracle database *simultaneously*. That about sums it up.

If there are any questions or comments about the Virtual I/O device, please contact: vsinfo@transvirtualsystems.com

A Conversation with...

...Dan Sark, the IT Coordinator, Troyer Foods, INC., Goshen, Indiana

This month Keeping Pace sat down with Dan Sark, IT Coordinator for Troyer Foods (www.troyers.com). Troyer foods is an independent food distributor and wholesaler and has over 200 million dollars in sales and 300 employees. It distributes food and equipment, using state of the art shipping methods and facilities, to customers within 300 miles of their headquarters in Goshen, Indiana.

Shipping food products is a particularly time sensitive service and Troyer runs a 24 hour operation. They take the orders during the day, load the trucks during the early part of the evening and make deliveries from the evening through the early morning hours. Computers control every part of this process, and since 1980 they've used their Wang VS to do it. "In the years since Troyer installed the Wang VS platform, shipping 6 days a week, They have never missed a shipping day because of the computer." Dan said. "It's amazing."



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A company like Troyer's tells what could almost be called the typical course of a Wang based system. Twenty seven years after its installation and after programming its own custom solutions on the Wang VS, coded in COBOL and updated several times, Troyers was slowly becoming stuck. "The hardware was getting older and it was increasingly difficult to find spare parts." And when they did locate what they needed, "the quality of the parts was decreasing" Dan recalled. "We also needed more horsepower, and that was going to be expensive to do with Wang hardware."

Dan says it was chance that he hit on Tom Junker's website in early 2005. It detailed the solution to the most common problem companies running legacy Wang hardware eventually have. Dan initiated a discussion with Tom which continued over the course of nearly a year and a half. "I kept calling every few months, very eager for the testing to be done," Dan said. He was unhappy that it was too big a risk for a company of his size to take. Dan liked the solution but couldn't be the first user.

Dan's enthusiasm for the product was evident in our entire conversation. When he was asked if he would consider the TVS product for an IT operation building from the ground up, he said it definitely would be on the table. "You can't do it on a cheaper or a better platform".

Before Dan found Tom Junker's website, Troyer's had made some of their own strides in staying on top of their hardware. Dan said, "we had already moved all users from Wang workstations to Lightspeed and all printing from serial printers to Lightspeed printers." They also added external systems that were needed for specific jobs such as tracking their trucks during their deliveries.

These solutions help to illustrate Troyer's dedication and commitment to their Wang VS. The VS did everything they needed, did it easily and did it without fuss.

"Moving over was painless." Dan said. He'd reviewed the process with Tom so many times that "it was almost like we had already done it." On the day of the test, Dan simply "walked the tape across the room", loaded it and hit the virtual start button. Troyer "only tested it for three days," they could tell immediately that the new system was working perfectly. "Being custom coders, we know the three or four things that were the most critical and the most involved, we tested those right away and when those worked we knew everything was going work." Finally, in the early hours of March 6, 2006, during Troyer's few hours of down time, they went live. "The performance improvement was immediately apparent" Dan explained, "We were extremely happy with the move."

Life since the upgrade has held "no 'real' issues" for Dan and Troyer foods," we're pleased with everything." Now they're spending time learning the boundaries of their new hardware. "On the original Wang hardware we knew what not to run together." Currently they're not running their new system at its fullest capacity, but are instead trying to determine how to get the most out of it at the speed and license level they purchased. So far it surpasses anything the older hardware could achieve.

"We'll continue to update and enhance our custom-written solution." Dan said. They are pleased with their current operation and with no plans to move off the VS. "As the company grows we can simply move up a license level if needed to get more speed."

Keeping Pace would like to share your upgrade story with the VS community. Let us know about your experience at vsinfo@transvirtualsystems.com.

Tips & Techniques

Q: What about Lightspeed? I like Lightspeed, it has just the right bells and whistles.

What do you want to know about it? The short answer is that it's still there, still doing everything you need it to do. The longer answer requires going back to the Gateway PC. When Lightspeed was moved onto the TVS platform we kept the product intact except for one thing. We turned the physical gateway PC into a virtual gateway PC. At its conception, the gateway PC was something that solved a lot of problems and added flexibility to the VS environment. It was also a solution that was sorely needed because, without it, Lightspeed and all of its functions would be no more useful than an unplugged telephone. With the coming of the TVS product, the gateway PC has outlived its usefulness. Not only is the Wang Local Office Connection (WLOC) and/or SCSI interface slow, but the cards ran on an ISA bus. PCs with an ISA bus are becoming harder to find.

Turning the gateway PC into a virtual gateway did three important things. First, the WLOC or SCSI card is no longer a bottle neck in Lightspeed operations. In many cases, customers have found that a PC running the Lightspeed client runs better and faster than a serially (928) connected local workstation. Second, the gateway PC now runs on a Linux platform. TCP/IP is

"If it works on VS Legacy hardware, it should work on the TVS product."

an integral part of the Linux environment and TCP/IP is what the Lightspeed client uses to talk to the outside world. Third, we've eliminated one more point of failure in your network. All around, it's a vast improvement.

Q: What about the Lightspeed software and its interface?

A key goal of TVS is to make the upgrade from your legacy hardware to the new hardware as smooth and as seamless as possible. The end user shouldn't notice the changes have been made except of course that everything is much faster. There is no need to complicate the change to the TVS platform, Lightspeed is good at what it does and we don't want to change that. That said, the original has a few critical flaws that needed fixing. As mentioned earlier, the gateway PC had to go. After that, we took a look at security. The original Lightspeed did include encryption, but by contemporary standards it's hopelessly inadequate. We have modified the Lightspeed PC client so that it can talk to the virtualized gateway via a secure shell tunnel. Getting into what a secure shell tunnel does is far beyond the scope of this FAQ, but suffice it to say, this gives you a robust and strongly encrypted data stream. Even better, as you explore secure shell you will find enough additional security enhancements to fit any need. We also brought WebVT up to date so that it runs on a state of the art Java machine. Finally, of course, the installer is now Vista compliant.

Q: WebVT? What's that? Sounds like a new TV show.

WebVT is an application that allows you to have VS Workstation access from web browsers. If you have a PC with and an internet connection, all you have to do is connect to the TVS application and it downloads a Java applet to the browser. In all other respects, it's like having a local workstation on your VS system.

Q: What about backups?

There are two important things to remember:

1. If it works on VS Legacy hardware, it should work on the TVS product. Bearing in mind that there are still the usual third party licensing issues to be resolved, all of the native VS backups and all third party backups that we have tried have worked.
2. The TVS application runs on a Linux OS running on state of the art hardware. There is a vast amount of Linux support software out there, some commercial, some in the public domain, including some very sophisticated backup products. These all work in the TVS/VS environment.

The TVS application and the VS disk images, are all ordinary Linux files, you can use any Linux backup tools (including network backups) to save and/or restore them. Except, (and there's always an "except" isn't there) some precautions are required. If you make a Linux backup of the VS files, make sure that VS is shut down. If you back up the files while the VS is up and

running your files may end up in inconsistent states. At that point you are potentially left with an ugly situation if you have to do a restore. In short, yes you can use your favorite backup utility, just use a little common sense and don't try it on active files.

Do you have a question about system upgrades or the future of your legacy VS applications? Send it to us at vsinfo@transvirtualsystems.com.

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