

## JERCIs: SAVE THE WORLD FROM PCs

GORDON BELL

I attended a JERCI (Java Environment for Re-engineering the Computer Industry) follower prayer meeting. Our mission is to save the world from costly to maintain distributed PCs (and by inference, costly to maintain, expensive workstations), and to replace them with our own servers and network computers that host various Java environments.

Network computers will never fail because they are connected to all-caring, always-up, never-busy, servers through an always-up and never-congested network. The client (a.k.a. “network computer”) never fails because it maintains no programs or files. All the client programs and files are maintained by batteries of servers. The by-product is to render the several hundred million PCs obsolete so they can be replaced.

JERCIs believe in market-determined, open, de facto standards. Our leaders pioneered the open-standard concept with the VendorIX UNIX dialects, and can now do it again with their Java environments. De facto standards allow products to simultaneously be open, compatible, and yet differentiated to

lock in customers and maintain hardware margins.

JERCIs believe that Java is not just another programming language, but the first almost universal programming environment to operate on telephones, television sets, network computers, and existing PCs, workstations, downsizing servers and mainframes. The basis for our vision is that network computers have no legacy. We say they have a tremendous advantage over the thousands of varieties of PCs that connect to a thousand printer types, along with as many configurations for modems and networks, mass store, graphics, audio, etc. that run several hundred thousand different apps. Since they are just being introduced, each network computer has *no* options and the hardware is thus simpler and trivial to maintain. PCs need to be lobotomized (have their disks removed) so as to run only our JAVA Environments, albeit slowly.

The prayers of Brothers Gil, Larry, Lou, Mark, and Scott provided further insight for followers. Brothers lose a lot if followers continue to accelerate their use of PCs.

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Gil prayed that the NC would somehow ingratiate him because his was new and low cost. It would provide an image that he knew about the Internet, the Web, servers, and where he was going.

Larry prayed the longest and loudest, describing how his Network Computer was conceived to save America's educational system by taking an ordinary PC and removing its hard disk and floppy. Just before he had told how the NC was conceived to satisfy just two archetypal users: him (corporate user) and his mother (naive user). In the process it will bring computers to the entire world.

Larry's NC is connected through an Ethernet to Oracle's new operating system, NOS (a.k.a. Larry OS Technology), his UNIX dialect. Mom is connected via a POTS line to an ISP running LOST. As he went on, the disk slowly reappeared, along with the hardware cost savings. But since the disk was only a cache, holding no permanent programs or data, it could cause no harm or present a maintenance problem. Users could use slightly more complex, portable NCs without a network, because once reconnected all the data was fully resynched with his new server.

It was a wonderful story because a LOST/PC should be able to support 200 users, while its clients searched the web, did email, used his new word processors and spreadsheets, made videophone calls, and interacted with multimedia objects. It also runs new educational software that he and Michel Milken are funding. One follower had already ordered 10,000. I was moved by the vision, having recalled his last vision of the massively parallel NCube computers to revolutionize databases and warehouses, and then a year later the video server.

Brother Lou had the clearest picture because he knows that his followers of fifty

years easily get lost, unless he shows them the way. His NC would serve the faithful who needed a vision to tell their bosses. They've heard of a new land called Cyberspace. Unfortunately they are stuck with legacy "industry standard" platforms (AIX, AS400, OS/2, and 3090), nets (Twinex, and Token rings), and terminals (3270 and 5280 a.k.a. VT100). His NC also runs Java—clearly showing that he knows the way to Cyberspace.

By building an NC, Lou's followers are saved from buying PCs that run all those apps, including the new ones for multimedia. His followers must be shielded from modern data types, distributed computing, etc.—and the flock continues to wander with him in a well-controlled fashion. But above all, followers relate to the message. Now they again get back to centralization and have the critical control of: servers, networks, clients, and *all* the user apps... just like the good old days.

Mark's vision followed by describing what market-driven open standards are what it's all about. He's providing a new environment based on Java to be able to obsolete, recreate, and run a whole new cadre of new word processors, spreadsheets, and mail programs. We can license his environment. The vision was to follow his open standard because he has browser market share.

And then Scott spoke and we all listened, because he has shown us "the Java way" by removing some of the C++ uglies. Now the world can return to centralized, server-based, timeshared computers, a way of computing he disavowed when he started a company to sell workstations. He assured us that his Javastation would have no disk. Users are relieved of having to worry about their programs and data because the server owner takes care of them. Apps are only limited by

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the pipes and servers that feed them. We no longer need to worry about improvements in user interfaces or any changes that require modifying the platforms. We can start all over again and create a completely new world of word processors, spreadsheets, mail, higher level apps, and everything else a client needs. This time we will do it right.

Scott is so convinced of the way that he eliminated the use of Powerpoint within his company. He said new, simple office suites in Java will soon be available to replace the PC ones with all their features, because all users need is “cut” and “paste.” Control is a key virtue of centralized software distribution. If you do it right, then the cost of ownership is dramatically less than those pesky PCs that users run any old software. He is able to quote really big cost savings by simply ignoring the cost of maintaining his expensive, centralized servers. Since his followers are concerned with the cost of ownership, they’ll presumably ship out his workstations too, based on high apps and ownership costs. Based on the total, total cost, NT would seem to be the best alternative for serving NCs.

Scott will Javize the world by providing Java processor chips, interpreters, and compilers to put everywhere from pacemakers to mainframes. He told us how Java programs are safe, secure, and reliable. Mission critical programs can be freely shipped about and run anywhere without fear of viruses at a maintenance cost of zero. Somehow any combination of apps can be dynamically configured on his NC and it just runs right. This is in contrast to the cost of statically binding apps to PCs or workstations.

Programmer followers are glad for Java, having just spent fifteen years in the desert with ADA, C++, Forth, Telescript and other mirages.

We are on the verge of something new... and only the oblivious PC makers stand in the way. I doubt if they get it. PCs look just like the same old Boca box into which users stuffed boards to make a computer that communicates with a LAN, public net, disk, display and audio. One can understand why Larry and Scott claim their mothers cannot use PCs. We JERCIs need to persevere and create a brand new PC environment that has no vestige of the old, and in this way can truly re-engineer the future.

JERCIs armed with network computers offer to solve computing’s ills as long as there aren’t too many types and they remain stateless... like 3270s, VT100s, Xterminals, and diskless workstations. They reduce the cost of ownership of distributed computers (e.g. PCs and workstations) because servers can maintain things dynamically. Servers are not inexpensive to maintain and manage either, but there are fewer of them.

As network computers get closer to reality, they seem to acquire more state, and in time will probably look a lot like PCs and especially workstations because they’re all likely to be different. The big gain is that we again get the benefit of centrally controlled computing a.k.a. mainframes that we lost several times with minis, workstations, PCs, and VendorIX servers.

By the way: I hope you get the impression that I’m 100 percent behind NCs for users who use a few apps like mail. As an NT user and system manager with NCD remote windowing terminals, I applaud the idea and think it’s the best network computer server. I just want to make sure when we finally get these new computers that have the benefit of competition — that I can use those made by Scott, Mark, Gil, Lou, Larry or Moe or whoever, interchangeably. This just might be the final straw

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to reduce our dependence on those expensive workstations. And by the way, we also get rid of the software industry because all those downloaded Java programs can be read by anyone.

What do I really think about the Network Computer?

Network computers (a.k.a. diskless workstations, a.k.a. Xterminals using time-shared servers) are flawed in three ways as they are developing because they are likely to be: closed and proprietary; limited by networks and lack of memory that have so far shown them to be ineffective; and they trade-off the ubiquity, freedom, flexibility, and multimedia aspects of PCs. Furthermore, cost comparisons are specious because they fail to take into account the myriad of costs including the need to re-engineer the various UNIX dialects

a.k.a. VendorIX to cope with the demands of a real-time, timesharing system and to maintain complex remote apps on a dynamic basis.

Unique client platforms will take us back to proprietary VendorIX and mainframe server platforms and the resulting hardware-software-app lock-ins. The network computer (a.k.a. diskless workstation of ten years ago) was a clear failure because apps usually exceeded local memory requirements requiring memory paging via LANs. While network computers (a.k.a. Xterminals) may work just fine for some apps we know today such as mail, web browsing, and 3270 and other terminal emulation, they are likely to be unsuitable for the emerging apps such as video telephony.

Let's face it, network computers have made their biggest gain: they have forced the PC industry to focus on total cost of ownership. ~