Industry Sponsored Standards

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HPEC Session 6 Introduction
10:35 to 10:50 a.m. - September 26, 2002

The Ultimate Performance Machine

1. **Academic thinking**

2. **Commercial experimentation**

3. **Consensus building around proposals**

4. **Contest for economic momentum**

5. **A Winner emerges**

6. **Evolution until a revolution moves attention elsewhere**

Defense Standards

1. **Academic thinking**
2. ~~**Commercial experimentation**~~
3. **Consensus building around proposals**
4. ~~**Contest for economic momentum**~~
5. **A Winner emerges**
6. **Commercial validation**
7. **Little evolution, 20-year stability**

Validation

- **Some defense standards attempt to skip the validation step by using a mandate (like the SCA described in the last talk).**

- **A few defense standards achieve the ultimate validation by becoming commercial standards (TCP/IP is the best example).**

- **Other defense standards are challenged in validation (MPI/RT and VSIPL are recent examples).**

Commercial Standards

- **The commercial standards process consumes more time and money. The rewards are potentially higher.**

- **This introduction and the next three talks explore three commercial standards contests. I will put these talks into a larger context before turning over the podium.**

RDMA

- **New fabric technologies such as InfiniBand offer the potential to significantly reduce IT data movement latency. Accomplishing this requires software changes:**
  - ▶ **OS Bypass (both hardware and software)**
  - ▶ **RDMA programming interfaces**

- **Many of you know Arkady from his past HPEC work for Mitre and Mercury. He left our world for a commercial storage vendor called Network Appliance. They asked him to lead a commercial standards play into "RDMA." I invited Arkady to share this update with us.**

RDMA Life-Cycle Status

- **Arkady appears to have achieved consensus among the commercial suppliers who care deeply about RDMA.**

- **His challenge is to achieve economic momentum.**

- **In this context, Microsoft is not helpful. Microsoft has dropped direct support for InfiniBand and other OS Bypass hardware offerings. They have created a weak and proprietary RDMA API called Sockets Direct Path.**

- **Jeff represents Motorola Computer Group (MCG). MCG is an embedded computer provider and one of the originators of the proven VMEbus standard. Jeff is behind the marketing drive called "VME Renaissance" based upon a standards proposal called VXS.**

- **VXS is a new infrastructure that can accept legacy VME boards. VXS embraces the various fabrics such as InfiniBand and RapidIO.**

- **The criticism of VXS is that it usually forces a VME chassis "fork lift" upgrade. That upgrade simply extends the life of the legacy VME boards inside (as opposed to delivering another 20 years of headroom for new board designs).**

VXS Life Cycle

- VXS is in a momentum contest with PICMG 3.0 and with a reemergence of proprietary form factors (many of which offer legacy slots).
- PICMG 3.0 is the replacement for CompactPCI within telecommunications. PICMG 3.0 has more technical headroom, but will adopters deliver a 20-year life cycle?
- Probably not. Just look at CompactPCI. It appears to be reaching the end of its new design life, having not lasted long enough to make any headway into defense.
- The fabric wars also impact life cycles. VXS and its alternatives are all mechanical standards for an unresolved interconnect contest. Can anyone guarantee a long life for a VXS or PICMG 3.0 InfiniBand 4x board?

Jim Kulp

- **Jim is a consultant who works with me at Mercury. Jim is a leader in the Object Management Group (OMG) community. OMG is the home of CORBA, UML, and a number of industry-specific standards, including a few defense applications of commercial standards.**

OMG

- **Zero copy – Jim is leading the OMG team that is looking to leverage emerging OS Bypass and RDMA functionality into a faster CORBA.**
- **Embedded CORBA – Jim is involved with several efforts to define CORBA real-time enhancements, as well as efforts to define subsets of CORBA functionality that meet embedded constraints.**
- **Component CORBA – Jim is helping to work the kinks out of the component CORBA specifications, particularly as they are applied to software radio within embedded constraints.**
- **Parallel CORBA – Jim led the data parallel CORBA specification team. We talked about this last year.**

- **The commercial market long ago elected to support two major object/component distribution standards. One is Microsoft's. The other is CORBA.**

- **We are in the evolution phase. Both Microsoft and CORBA seek to embrace embedded constraints.**

1. **Arkady on RDMA**

2. **Jeff on VXS**

3. **Jim on OMG**

Each talk is 15 minutes long.