

Network Processors: Prospects for Practical Deployment

Hot Interconnects Panel

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Where are we?

- **No longer a question**
 - whether NPs have a market
 - Every major vendor uses some NP in some product(s)
- **Used in a variety of products and applications**
 - Access Points, switches, firewalls, etc
- **Increasing in volume and revenue**



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Prospects in future networks

- **Multi-threaded multi-core architecture goes mainstream**
 - Expect impact on host I/O sub-systems (esp. on high end server platforms)
- **Level of flexibility needed varies**
 - Limited re-configurability vs full programmability
 - Nice continuum that spans FPGAs to fully programmable NPU
- **Challenges**
 - Realizing the promise of field upgrades and programmability
 - Software reliability and its impact on high availability
 - Tools/languages for real-time, distributed, multi-processing



Role of open interfaces

- **Software ecosystem**
 - Need for wide-spread availability of software IP
 - *ala* silicon IP libraries available today
 - Interfaces to NPUs work at two levels
 - Programming individual engines at instruction level
 - a couple of architectures will emerge as industry standards
 - Integration of NPU building blocks with router/switch software (management, control plane, re-configuration, etc)
 - NPF establishing standards in this area
 - Standardized tools and programming environments will emerge
 - *Rational Rose** like stuff a matter of time



Role of merchant NPs vs proprietary NPs

- Both have a place for some time
- Analogous to what happened in CPU world (e.g., ATT*, Digital*, HP*, Sun*,)
- At low to mid end, utility NPs have already established a beachhead (Wintegra*, Intel, etc)
 - Access points, Line cards, Print servers, IBM* postal scanners
 - Largest markets being served (DSLAMs, wireless base stations, firewalls, line cards)



*Other names and brands may be claimed as the property of others.

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Thanks!



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