**First OpenFabrics Alliance Zurich Workshop, September 24,25 2012**

**Generously Hosted at IBM Zurich Research Laboratory**

Säumerstrasse 4  8803 Rüschlikon, Switzerland

**See** [**www.zurich.ibm.com**](http://www.zurich.ibm.com)

**Monday, September 24, 2012**

***0900:- Introduction to the Workshop– Bill Boas***

* A tipping point in I/O architectures
* Important capabilities that are driving RDMA adoption
* IB, iWARP, RoCE and other transports
* Importance of APIs to allow traditional applications to work unchanged

***0930:- OFA Development, testing, upstream, distribution, support – OFS Maintainers***

* How does it all fit? Linux 3.n, Windows Server 2012
* Distribution‐bundled
* Kernel modules
* Building custom configurations
* Recognized Applications and Software that’s known to work with OFS

***1000:- Joining the OFA Users’ Group and Mail List – Bill Boas***

 Why form a Users’ Group? Who will lead it? Your role in the group

 How EMEIA Developers/Users Community can contribute

 Brainstorming ground rules of how to work with each other and US community

 An OFEMEA Users Community formation

 Now we’ve done with organization let’s get technical, see next topics

***1030-1100:- Coffee Break at Cafeteria***

***1130 Range of OFA Fabric Transports – IB, Ethernet, WAN, Other – Paul Grun***

 What really matters to users and adopters of RDMA? ‐ Stories from the field

 What IB topologies are in use, and why? Is routing a major headache for this group?

 How topologies affect routing and vice versa IB layer 2 networking compared to IP routing

 Credit driven process/credit loops, SLs and VLs

 RoCE and Soft RoCE updates: IWARP update: WAN Use of RDMA protocols

* Other Fabrics‐ Rapid I/O, Blue Gene, Cray Gemini, etc

***1300-1400: Lunch at Cafeteria***

***1400:- Virtualization – the Killer App for RDMA - Josh Simons***

 VMware

 KVM, Xen

 HyperV

***1430:- IB in an IP world – IPoIB – IBM lead***

 A brief history of IPoIB – why it emerged and how its used

 Using IPoIB ‐ Stories from the field

 IPoIB and RDMACM ‐ ARP / Path Record

 Connection management (RDMA‐CM vs. IBCM)

 IPoIB for Multicast group management

 IPoIB for “tunneling” IP

***1500:- RDMA APIs for Sockets, Cloud and Enterprise Applications – IBM lead***

* SMC-R
* R sockets
* EXS
* Java
* Programming to Verbs – Linux and Windows
* Hadoop, Big data, Cloud Middleware and Stacks
* Storage, File Systems, Databases

***1600:- Update on APIs for HPC Applications – Carsten Lojewski lead invited***

* All the MPIs
* PGAS languages
* Collectives, barriers, scaling
* PSM

***1700:- Bus leaves for Boat Tour of Lake Zurich and Dinner aboard. Networking and open discussion in bus and on board. Bus returns to Ruschlikon later in evening or make your own way back to hotel. Details at www.openfabrics.org***

***September 25, Day 2***

***0900: – What did we learn and agree to yesterday? Lead by Ronald Luijten***

***0930 am Using IB Subnet Management – Experienced users lead***

 A major headache, a necessary evil or a crucial advantage? ‐ Stories from users

 Configuration Options, Non Blocking, Topologies, Deadlocks

 Light/heavy sweeps, Link state changes

 Path records, Log file goodies

 Ibsim (what is this?)

 M Keys

***1000:- Tools and Techniques for Managing an IB Fabric – Experienced users lead***

 Where are my Tools? How do I observe and control this thing? – Stories from the field

 Bringing up an IB fabric, how do you monitor it?

 When things go wrong

* job failure, trouble shooting
* finding the elusive error conditions and faults

 Performance management

***1030:- Using RDMA in the Real World – Experienced users lead***

 What it means to be a “user”

 User goals: Why are you using RDMA?

 Performance in the Real World – What can users expect?

 Performance control points – Where are the knobs? Programming style? Fabric Configuration?

 Characterizing the pain points – What are the greatest difficulties and frustrations

***11.00 Break – walk to Cafeteria***

***1130:- Topics in Partitioning, Protection and Isolation – Experienced users lead***

 What does isolation and protection mean to you? ‐ Stories from the field

 Security, protection and isolation – not the same things

 Using Partitions, Protection domains, P Key, L Keys, R Keys, Q Keys, M Keys?

 Are you baffled by IB’s protection and isolation mechanisms?

***1200:-* *Test Driving IB (first session) – leader Rupert Dance***

 Access to Cluster at UNH-IOL – Guest accounts set up – continue after lunch, see topics below

***1300-1400 Lunch in Cafeteria***

***1400:- Test Driving IB (second session) – Rupert Dance***

 Validating the fabric

* Identify OFED Version and check HCA status
* ofed\_info, ibstat, ibstatus, ibv\_devinfo
* Configure and validate IPoIB
* Understanding OpenSM
* Run opensm and explore common options
* Exploring the Fabric
* Ibdiagnet, ibnetdiscover
* Common commands in ibutils

ibaddr ibnetdiscover ibroute ibtracert

ibclearcounters ibnodes ibstat perfquery

ibclearerrors ibping ibstatus saquery

ibhosts ibportstate ibswitches sminfo

iblinkinfo ibqueryerrors ibsysstat vendstat

 Log Files

* /var/log/messages
* /var/log.opensm.log
* /tmp/ibdiagnet.lst ‐ A list of all the nodes, ports and links in the fabric
* /tmp/ibdiagnet.fdbs ‐ A dump of the unicast forwarding tables of the fabric switches
* /tmp/ibdiagnet.mcfdbs ‐ A dump of the MC forwarding tables of the fabric switches
* /tmp/ibdiagnet.sm ‐ A dump of all the SM (state and priority) in the fabric
* /tmp/ibdiagnet.pm ‐ In case ‐pm option was provided, this file contain a dump of all
* the nodes PM counters
* /tmp/ibdiagnet.pkey ‐ A list of the partitions in the IB fabric and their members

 Bandwidth and latency tests

 Running Open MPI and other application level tests

***1500-1530:- Break***

***15.30:‐ Meeting close–Establish Volunteer leaders of OF-EMEIA Developer/User Community***

* Next steps,
* Major topics of interest
* Experts in major topics
* Ground rules for working together
* Using the mail list
* Other sources of support and technical help

***1630:-***