**Title:** An Update on Libfabric, a new Network API for User Space Programs

**Session Leaders:** (I expect to include all the tutorial presenters as Session Leaders)

**BoF Topic Area:** ???

**Abstract:**

This session re-convenes the parties to an SC13 BoF titled, “Discussing an I/O Framework”. The results of that BoF motivated the formation by the OpenFabrics Alliance of a project to develop network APIs targeted at specific consumers of network services. The first result of that project was the recent release of libfabric, an API designed to support networking middleware such as MPI and programming models and languages such as PGAS and SHMEM. The objective of the BoF is to re-engage the community of consumers of such network interfaces to checkpoint the progress to date and to discuss future API developments.

**Long Description:**

Since the advent of RDMA-enabled networks more than a decade ago, much progress has been made in providing network stacks allowing a network consumer to access communication services over those networks. Consistent with common network development practice at the time those APIs, such as the Verbs API from the OpenFabrics Alliance, were expressly designed to expose the capabilities of the specific underlying RDMA network. In many cases, this meant that the API was tailored to the architecture of the network in question. For example, the implementation of the verbs API is based on the design of the InfiniBand Architecture.

Partially as a result of inputs received from a BoF held at SC13, the OpenFabrics Alliance began a review of its approach to developing future APIs with the goal of learning to develop APIs that are optimized to the requirements of the consumers of network services. The result of that review was the establishment of a new project called OpenFabrics Interfaces (OFI) which had as a specific goal the development of a new API using a so-called ‘application centric’ approach. This simply means that development of the API is driven by the needs of the API’s consumers, independent of the architecture of the underlying network.

The first result of this development effort is *libfabric* which is an API carefully designed to meet the needs of user mode networking middleware, programming models and languages such as MPI, PGAS and SHMEM. Libfabric was developed as an open source project and is freely available for download and use. (There is a companion effort to develop an API tailored for storage applications based on the same ‘application-centric’ design approach.) Libfabric is also the topic of a tutorial being presented at SC15 titled “(I need to go look up the exact name)”.

Given the emphasis placed on responsiveness to the needs of the consumers of network services, forums such as this BoF are critical opportunities for API developers and consumers of those APIs to collaborate. The specific outcomes of this BoF are:

- A brief overview of the architecture and design of the libfabric library,

- An update on the current state of the API and its accompanying network providers,

- The collection of feedback from the community of consumers of the API,

- An open discussion among all participants on possible future directions for the OFI project.

**Session Format:**

- interaction between audience and session leaders? 50%

- what is the primary format for content that does not directly involve audience discussion? A sequence of presentations including a brief overview of the architecture and current status of the software.

- does the BoF topic deal with commercial technology? Vendor-neutral

**Description of the session format:**

The BoF begins with a brief description of the OpenFabrics Interfaces project to include motivations and objectives of the project and a short discussion of the breakdown of the work among the various OFA working groups. This also includes a mention of the charter from the OFA for the OpenFabrics Interfaces Working Group.

Next, slides describing the high level architecture of the API are presented, including the current status of the software. Included here are pointers to the GitHub repository and the OFA website containing working documents.

Finally, an open discussion among all participants is facilitated by members of OFI WG focusing on collecting feedback and comments from the participants and including a discussion of future directions for the OFI project.