**Title:** Extending the New OpenFabrics Interfaces to Storage and Data Access

**Session Leaders:** Paul Grun, Cray Inc., would like to have another from DS/DA

**BoF Topic Area:** Storage

**Abstract:**

This BoF brings together consumers of network services for storage and data access with OpenFabrics Alliance developers to discuss new APIs for storage, NVM and data access. A key to developing an API is early engagement with the users of network services. This BoF is an opportunity for the storage and data access community including developers and users of block and file storage systems and NVM solutions to discuss requirements, exchange points of view on kernel mode versus user mode APIs and to debate how best to provide network services meeting I/O needs into the future. APIs for NVM will be a hot topic of conversation.

**Long Description:**

RDMA networks provide uniquely valuable features relative to conventional networks and therefore require unique APIs to expose those features. Current APIs for RDMA, developed over ten years ago, represented an important step in the development of these advanced networks but may not be naturally aligned with the needs of the consumers of those APIs; in some cases there may be a 'semantic mismatch' between the functions exposed by the API and the way those functions are deployed by a consumer. These mismatches may make the existing API difficult to use, or cause reductions in performance or scalability. A key to developing a successful and widely adopted network API is to ensure that it meets the needs of its consumers, where ‘consumers’ means programs that depend directly on network services for efficient and high performance operation.

In 2013 the OpenFabrics Alliance (OFA) launched an effort to develop a family of network APIs carefully tailored for this purpose. This effort was the focus of a BoF at SC13. The initial work was focused on developing user mode libraries, called libfabric, targeted at communications middleware for distributed and parallel computing. The OFA recently expanded that charter to begin addressing the needs of the providers and users of storage and data access services. Included in those services are object, file and block storage services and access to non-volatile memory whether local or remote. A newly proposed API, which complements the recently released libfabric API, is specifically targeted at meeting the requirements for storage and data access services. This proposed new API is the focus of this BoF.

This BoF brings together members of the OpenFabrics Alliance who are engaged in this work with designers and users of data storage systems such as file and block storage systems and NVM solutions. The objective is to validate the need for such a new API and to encourage strong ties and a lively dialog between the consumers and developers of them. Building such a community of network developers and consumers of network services sets the stage to achieve the objective of creating network solutions that improve the performance, efficiency and scalability of storage systems, including NVM now and into the next generation.

The specific desired outcomes from the BoF include the following:

- Consensus on whether or not a new API that is responsive to the needs of storage and data access applications is valuable in improving the efficiency, performance or scalability of these applications or would encourage the development of new ways of thinking about accessing data or storage, whether local or remote,

- Validate the various use cases for NVM and the means by which those use cases can be served by a new API,

- Discuss the need for an API for user mode storage access for current or next generation systems, for example for a user mode filesystem such as CEPH, or for access to byte addressable persistent memory.

**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

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

**Description of the session format:**

Setting the stage for a fruitful dialog between OFA members and the audience requires that some effort be spent in setting the context for this new work. We expect to use a series of short slide decks to do so.

- Overview and introduction to the OFA's OpenFabrics Interfaces project, including a statement of the new working group's charter,

- A brief summary of the work that has taken place to date,

- A framing of the particular areas of concern, such as a discussion of expected use cases for NVM.

It is expected that these short presentations (30 minutes maximum) will set the stage for a lively public discussion to be moderated by members of OFA.