

# CCI – A Data Center Perspective



Common  
Communication  
Interface.

<http://www.cci-forum.com>

# What is CCI?



- An API for inter-process communication over modern interconnect technologies
- Designed to provide a common API for application and system software developers for data movement
- A balance between simplicity of semantic and support for modern interconnect capabilities
- Designed from the ground-up for scalability, robustness, and performance
- Community developed and vendor neutral

# Current State of the Art

- North/South traffic
  - Remote side is Internet: IP on the wire
  - Applications use Sockets
    - Little incentive to transition from this API
- East/West traffic
  - Application controls both sides of the network
  - Performance and scalability are critical
  - Applications can choose between:
    - Sockets API (for portability)
    - Custom vendor/interconnect APIs (for improved performance)
- The Sockets API was not designed for modern networks
  - Design limitations: assumes buffering, no zero-copy, per-peer resources/completion
  - Cannot properly leverage high-speed interconnects



# Rationale for a New Approach

- Network-specific communication APIs
  - Design driven by hardware capabilities
  - **Benefits:** high performance, native hardware capabilities
  - **Drawbacks:** vendor lock-in, single-source risk, and limited portability
- Unattractive alternatives
  - RDMA over Converged Ethernet is driven by the InfiniBand community
    - Semantics suited for InfiniBand hardware, not Ethernet
    - Highly complex API
  - Sockets is ubiquitous, but provides low performance
- Need a common, high performance communication API
  - Targeted to provide *portability, scalability, and performance*
  - Design driven by the needs of the data center while exposing common capabilities of modern interconnects

# The CCI Approach



- Common Communication Interface
  - Best practices from 15 years of R&D
  - Community-driven, vendor-neutral ecosystem
- Benefits for developers
  - Designed for performance, scalability, resilience, and portability
  - Leverage the capabilities of modern Ethernet (and “Ethernor”) networks
  - A network neutral API: performance without vendor lock-in
- Benefits for vendors
  - Leverage technological innovations
  - Increases total addressable market
  - Levels the playing field

# Partners



<http://www.cci-forum.com>