Poly-Messenger®/MCAPI

Poly-Messenger®/MCAPI provides flexible, efficient, standardized communications for closely distributed computing - multiple cores on a chip and/or multiple processor chips on a board.
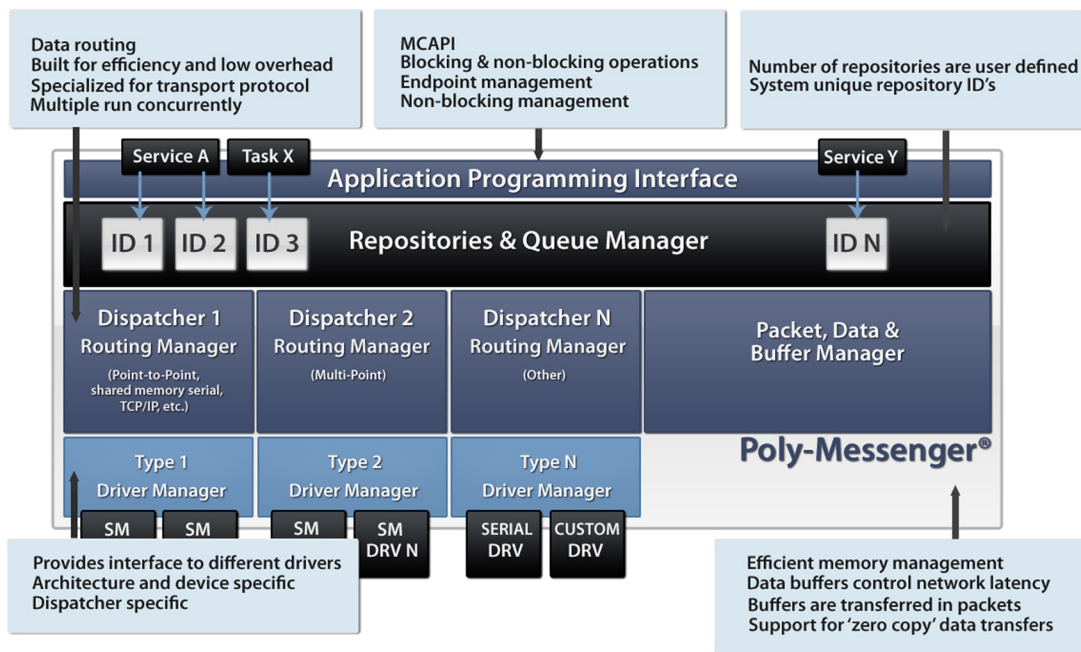
MCAPI

MCAPI is a standard light weight communications API defined for closely distributed embedded computing, from the Multicore Association. MCAPI provides three communications modes:
• Connectionless Messages
• Connection Oriented Packet Channels
• Connection Oriented Scalar Channels
Both blocking and non-blocking communication is provided for message and packets.

Simplification

Poly-Messenger/MCAPI abstracts communications for multicore application developers, hiding the underlying system software and hardware, such as Operating Systems, number and type of cores and type of physical transports. Users simply choose the appropriate Poly-Messenger library components for the target system. A system with more than one multicore chip will have different physical transports and may require routing. Poly-Messenger seamlessly handles the routing and multiple transports.

Data routing
Built for efficiency and low overhead
Specialized for transport protocol
Multiple run concurrently

MCAPI
Blocking & non-blocking operations
Endpoint management
Non-blocking management

Number of repositories are user defined
System unique repository ID's

Service A | Task X | **Application Programming Interface** | Service Y

ID 1 | ID 2 | ID 3 | **Repositories & Queue Manager** | ID N

Dispatcher 1
Routing Manager
(Point-to-Point, shared memory serial, TCP/IP, etc.)

Dispatcher 2
Routing Manager
(Multi-Point)

Dispatcher N
Routing Manager
(Other)

Packet, Data & Buffer Manager

Type 1 Driver Manager | Type 2 Driver Manager | Type N Driver Manager

SM | SM | SM | SM DRV N | SERIAL DRV | CUSTOM DRV

Poly-Messenger®

Provides interface to different drivers
Architecture and device specific
Dispatcher specific

Efficient memory management
Data buffers control network latency
Buffers are transferred in packets
Support for 'zero copy' data transfers

Performance

Poly-Messenger is easily configured for the application and the target system which helps to balance performance and resource utilization. Performance goals are to maximize throughput, while keeping the run-time overhead for communication to a minimum. Poly-Messenger always uses the shortest path between nodes.

Portability and Reuse

Poly-Messenger/MCAPI provides scalability and portability when the application's complexity increases or its multicore platform changes. The same consistent API and programming model enables the application to scale from one to many cores and across homogenous or heterogeneous cores.

About PolyCore Software, Inc.

PolyCore Software, Inc., provides run-time solutions and tools for multicore platforms simplifying application migration to multicore, while preserving existing software investments thus improving time to market while reducing development costs and risk.

Poly-Generator™   Communications Topology Generator

Poly-Generator™ is a multicore communications topology generator that creates a validated topology definition of the infrastructure for the Poly-Messenger communication.
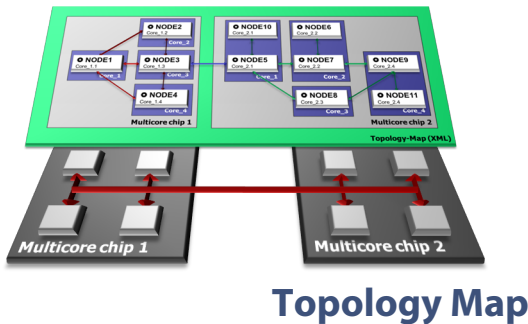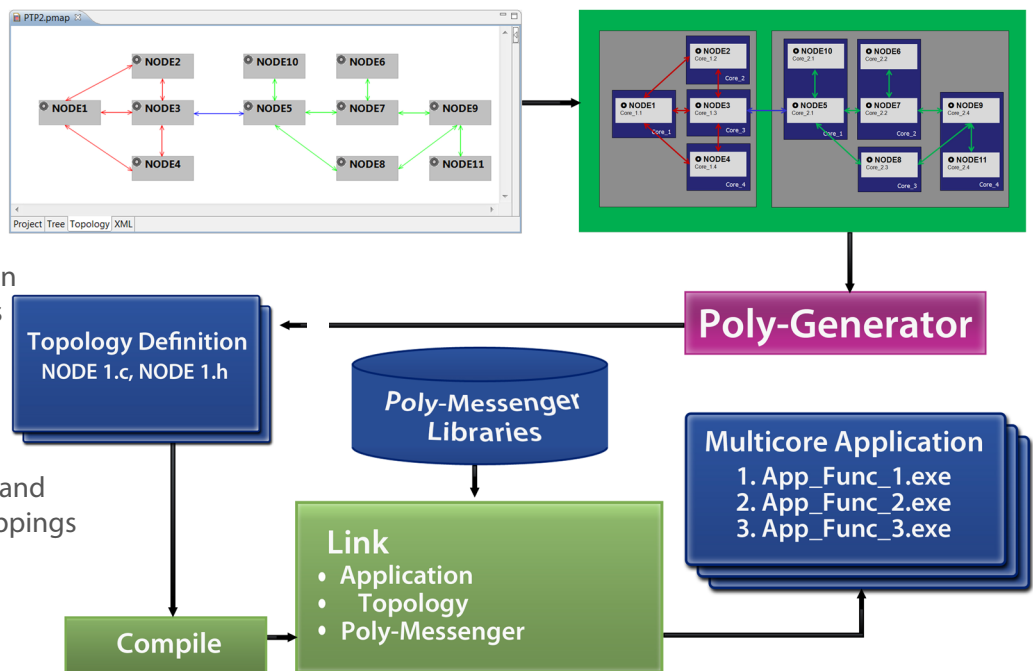

Topology Map

Application and Topology Separation

The Poly-Mapper, Poly-Generator and Poly-Messenger/MCAPI combination provides separation between the multicore application and the communications topology. MCAPI-ready functional modules are easily re-mapped to different cores, at configuration time, and the topology resources and configuration are modified and optimized, without modification of the application source code. This allows the application developer to quickly and accurately evaluate different mappings and configuration to balance performance and resource allocation.

Poly-Generator™

The Poly-Mapper, Poly-Generator and Poly-Messenger/MCAPI combination provides separation between the multicore application and the communications topology. MCAPI-ready functional modules are easily re-mapped to different cores, at configuration time, and the topology resources and configuration are modified and optimized, without modification of the application source code. This allows the application developer to quickly and accurately evaluate different mappings and configuration to balance performance and resource allocation.

About PolyCore Software, Inc.

PolyCore Software, Inc., provides run-time solutions and tools for multicore platforms simplifying application migration to multicore, while preserving existing software investments thus improving time to market while reducing development costs and risk.