

G E N E R A L M O T O R S

JACE A MOGILL
ETHERNET BANDWIDTH --
WHERE DOES IT END?

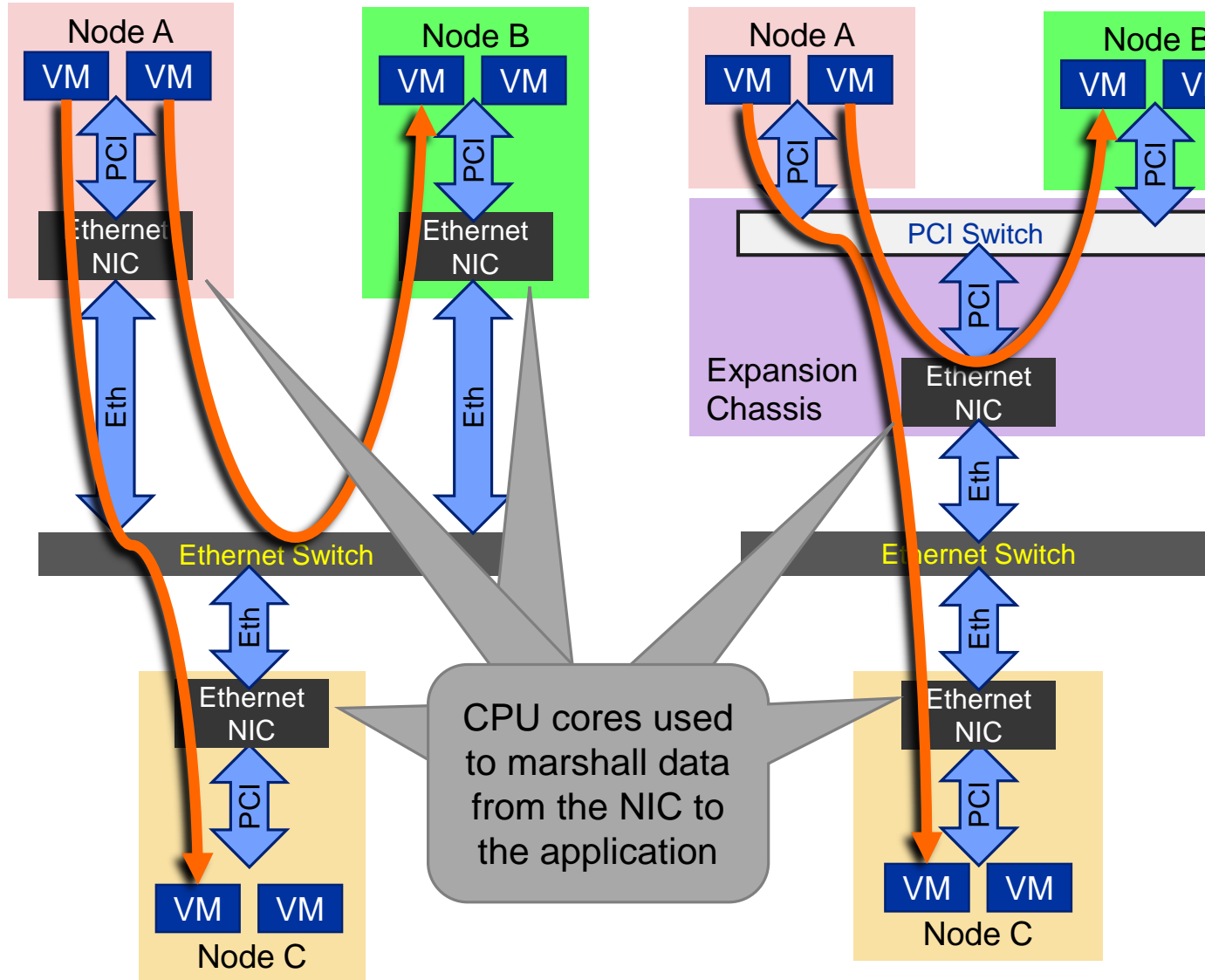
OVERHEAD OF UNUSED FEATURES WEIGHS SYSTEMS DOWN

ETHERNET SOLVES PROBLEMS VEHICLES DON'T HAVE, THOSE FEATURES WILL BE REMOVED OVER TIME

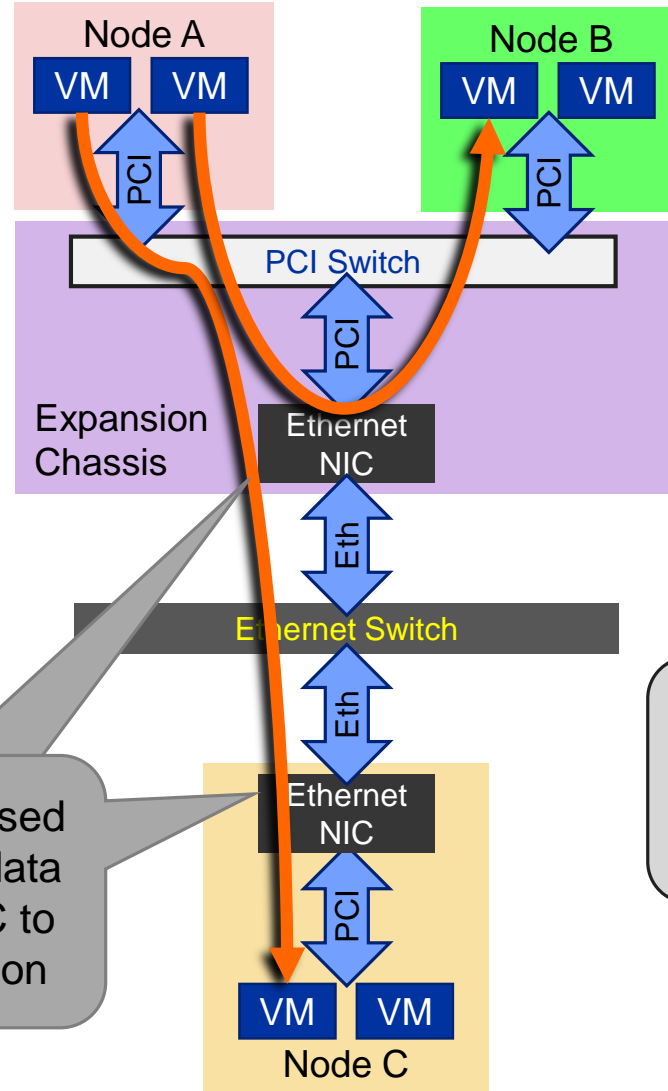
Ethernet Feature	Problem Created by Ethernet Feature
Handle error correction in higher level software abstractions	Need more memory, more & bigger cores in SoCs and switches to process the TCP/IP stack
Adaptive routing for ad-hoc and constantly changing network topologies	
OS-level resource arbitration	
Recoverable errors and retransmission are transparent to the application	Safety system implementers must choose between standard APIs and extensions
Single physical interface per endpoint shared by many virtual networks	Discourages distributed switching designs, requires adding dedicated switch(es) to the system.
	Favors hierarchy of successively larger switches
	Slower wake times from cascading switch start-up

OVERHEADS WILL BE REMOVED UNTIL ETHERNET IS GONE

Single Root I/O Virtualization (SR-IOV)



Multi-Root I/O Virtualization (MR-IOV)



Remote Direct Memory Access (RDMA)

