Sonics NoC IP Family

SonicsStudio® Director Development Environment		Fully Non-Blocking	Interface Protocols
On-Chip Network System IP	**SonicsGN®** — High-speed, serialized, router-based network with integrated power/clock domain management and scalability from IoT to servers	✅	
	SonicsSX® — Low-power, low-latency, high-bandwidth network featuring cascaded switching exchanges, multi-channel memory interleaving and a rich set of network services	✅	**ACE-Lite**
	SonicsLX® — A limited version of the SonicsSX suitable for mid-range SoCs and IP subsystems requiring minimum latency to subsystem memory	✅	**AXI**
	Sonics3220™ — Non-blocking, peripheral interconnect that ensures power-efficient, low latency access to a large number of low bandwidth target cores while spanning large physical distances	✅	**AHB**
	SonicsExpress™ — A highly configurable bridge, with native OCP or AXI support, typically used for asynchronous clock, voltage, or power domain crossing.	✅	**APB**
DRAM Systems	**MemMax®** — A multi-threaded DRAM scheduler that optimizes memory throughput while protecting QoS	✅	**OCP**
On-Chip Analysis	**SonicsMT™** — Performance monitoring and hardware trace IP provides real-time measurement of throughput and latency and tracing of transactional events for CoreSight®-compliant debug		

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Sonics Nomenclature

Name	Definition
NoC / SoC	Network-on-Chip / System-on-Chip
OCP	Open Core Protocol - OCP is the first fully supported, openly licensed, comprehensive, interface socket for semiconductor intellectual property (IP) cores
AXI	ARM eXtensible Interface based on AMBA (Advanced Microcontroller Bus Architecture)
Links	A group of wires connecting two entities (i.e. routers). Links may consist of one or more logical or physical channels and each channel is composed of a set of wires
Fabric	Network of interconnect wires
Router	Routers are switching devices that provide many-to-many connectivity between input and output interfaces
Initiator Agent (IA) / Target Agent (TA)	Initiator (master) and target (slave) agents are used at the periphery of the SonicsGN interconnect to provide OCP- and AXI-compliant sockets for the attached IP cores
Packet	Unit of data that consists of header and data payload
Flit	Smallest flow control unit that make up of a packet

Name	Definition
Wormhole	A routing strategy that forward portions of the packet as soon as the header arrives. The subsequent flits follow the header as they arrive
Virtual Channels	An extension of wormhole switching that provides multiple virtual outputs to allow non-blocking traffic flow through the network
Latency	The time elapsed between the beginning of the transmission of a message (or packet) and the message complete reception at the target node
QoS	Quality-of-Service is a measurement to assure predictable performance for real-time data flows
GALS	Global Asynchronous Local Synchronous
RT	Register target (RT) used to access the configuration registers internal to the SonicsGN interconnect
Mesochronous	Same frequency source and (different clock domain OR different voltage domain)
Crossbar	Crossbar switching is characterized by many-to-many connectivity, with dedicated connections between initiators (or master) and targets (or slaves)

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