Lattice IP Suites

Lattice IP Suites are economical packages of IP cores that allow designers to conveniently obtain critical functions for their applications. The suites offer ready-made building blocks for solving a variety of design problems, such as high-speed data transfer, Ethernet networking, high speed memory interfaces, digital signal processing, display interfaces, and video processing. These customizable Core Solutions are required in a number of industries and empower design engineers to quickly build leading edge wireline, wireless, embedded, industrial, compute, storage, video and display, and consumer systems.

Lattice IP Suites are optimized for Lattice device architectures and use latent strengths of Diamond Design Software for logic-efficient and low-power implementations. The IPexpress™ tool within the Lattice Diamond Design Environment allows customers to seamlessly access the latest IP Cores from the Lattice IP Server and configure them. All Lattice IP can be fully evaluated prior to the purchase. In the free evaluation mode, customers can fully configure an IP, integrate it in their designs, perform full verification, and even run it in hardware for a limited time (usually 30 minutes). Purchase of an annual node-locked IP Suite license enables the member IP to operate in hardware for an unlimited time. The node-locked license can be used on multiple designs or projects over a one year period.

Features

- Selection of IP cores to develop solutions for various markets – Wireline, Wireless, Compute, Embedded, Industrial, Video, Consumer and many others
- Configurable IP cores using IP Express tool within Lattice Diamond Software
- IP cores support multiple product families
- One year node locked license with freedom to use IP cores within a suite for multiple designs or projects

The following tables summarize the list of IP cores included in each IP suite, and the FPGA families that are supported for each core:

VALUE SUITE

	ECP3	ECP2/M	EC/P	SC	XP	XP2	MachXO	MachXO2
DDR3 Controller	✔							
DDR2 Controller	✔	✔		✔		✔		✔
DDR Controller	✔	✔	✔	✔	✔	✔	✔	✔
LPDDR Controller								✔
FFT Compiler	✔	✔	✔			✔		
FIR Filter	✔	✔	✔			✔		
Triple Speed Ethernet MAC	✔	✔	✔	✔	✔	✔		

PCI EXPRESS SUITE

	ECP3	ECP2/M	EC/P	SC	XP	XP2	MachXO	MachXO2
PCI Express Endpoint x1	✔	✔						
PCI Express Endpoint x4	✔	✔						
PCI Express Root Complex Lite x1	✔	✔						
PCI Express Root Complex Lite x4	✔	✔						
Scatter-Gather DMA Controller	✔	✔		✔				
PCI Master/Target 32-bit	✔	✔	✔	✔	✔	✔	✔	✔
PCI Master/Target 64-bit	✔	✔	✔	✔	✔	✔		
PCI Target 32-bit	✔	✔	✔	✔	✔	✔	✔	✔
PCI Target 64-bit	✔	✔	✔	✔	✔	✔		
DDR3 Controller	✔							
DDR2 Controller	✔	✔		✔		✔		✔
DDR Controller	✔	✔	✔	✔	✔	✔	✔	✔

	ECP3	ECP2/M	EC/P	SC	XP	XP2	MachXO	MachXO2
LPDDR Controller								✔

ETHERNET SUITE

	ECP3	ECP2/M	EC/P	SC	XP	XP2	MachXO	MachXO2
Triple Speed Ethernet MAC	✔	✔	✔	✔	✔	✔		
SGMII & Gb Ethernet PCS	✔	✔		✔				
10 Gb+ Ethernet MAC	✔	✔		✔				
XAUI	✔	✔						
SPI-4.2	✔			✔				
Scatter-Gather DMA Controller	✔	✔		✔				
DDR3 Controller	✔							
DDR2 Controller	✔	✔		✔		✔		✔
DDR Controller	✔	✔	✔	✔	✔	✔	✔	✔

DIGITAL SIGNAL PROCESSING (DSP) SUITE

	ECP3	ECP2/M	EC/P	SC	XP	XP2	MachXO	MachXO2
Block Convolutional Encoder	✔	✔	✔	✔	✔	✔		
Block Viterbi Decoder	✔	✔	✔	✔	✔	✔		
CIC Filter	✔	✔	✔	✔	✔	✔		
CORDIC	✔	✔	✔	✔	✔	✔		
DA-FIR Filter	✔	✔	✔	✔	✔	✔		
Dynamic Block RS Decoder	✔	✔	✔	✔	✔	✔		
Dynamic Block RS Encoder	✔	✔	✔	✔	✔	✔		
FFT Compiler	✔	✔	✔			✔		
FIR Filter	✔	✔	✔			✔		
Interleaver/De-Interleaver	✔	✔	✔	✔	✔	✔		
Num. Cont. Oscillator (NCO)	✔	✔	✔	✔	✔	✔		
Turbo Decoder		✔	✔	✔	✔			
Turbo Encoder		✔	✔	✔	✔	✔		

VIDEO & DISPLAY SUITE

	ECP3	ECP2/M	EC/P	SC	XP	XP2	MachXO	MachXO2
2D Edge Detector	✔	✔				✔		
2D FIR Filter	✔	✔	✔			✔		
2D Scaler	✔	✔				✔		
Color Space Converter	✔	✔	✔	✔	✔	✔		
Median Filter	✔	✔				✔		
Tri-rate SDI PHY	✔							
DDR3 Controller	✔							
DDR2 Controller	✔	✔		✔		✔		✔

	ECP3	ECP2/M	EC/P	SC	XP	XP2	MachXO	MachXO2
DDR Controller	✔	✔	✔	✔	✔	✔	✔	✔

Try Before You Buy

Using the Lattice IPexpress tool you can create custom configurations of IP cores, fully integrate them into your design, and even test them in hardware before you buy anything. These trial configurations will only run for a limited time in hardware however (usually 30 minutes), after which time you'll have to re-program the silicon device.

If you like what you see, just purchase the IP core license to remove the time-limited restriction.

How To Purchase IP Suites

It's easy to get started using Lattice IP suites. Just follow these simple steps:

1. Contact **your Lattice sales representative** to order the suite(s) you want.
2. When your order is processed, you will receive a serial number by mail.
3. Sign the **click-through license agreement**. You will need the serial number you received in step 2 and the serial number for your Diamond design software**.
4. A new license.dat file will be sent to you and you are licensed to use the IP for 1 year – with no limits on the number of target designs, IP reconfigurations or FPGA technologies used.

** Since Lattice IP cores are configured with the IPexpress tool, included with the **software**, a licensed copy of the the software tool is required. Each IP Suite is a node-locked license type.

Ordering Information

Suite	Part Numbers
Value Suite	DS-VAL-ST-U1
PCI Express Suite	DS-PCIE-ST-U1
Ethernet Suite	DS-ETH-ST-U1
Digital Signal Processing (DSP) Suite	DS-DSP-ST-U1
Video & Display Suite	DS-VDS-ST-U1