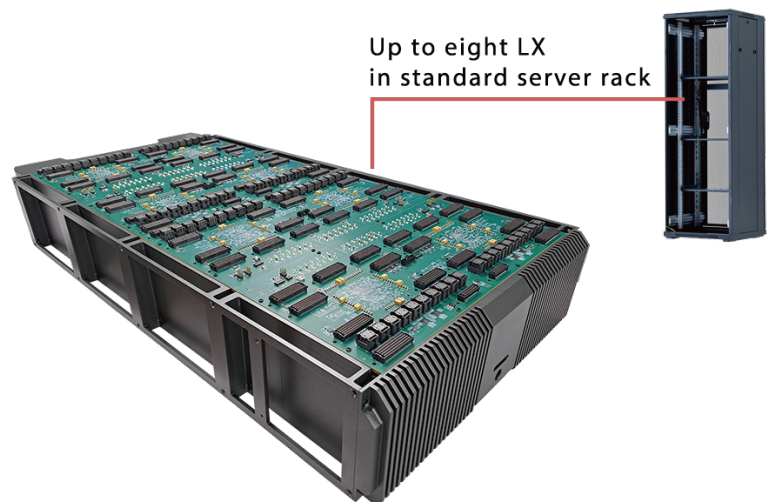


# Prodigy™ LX1 Logic Matrix

The Prodigy™ LX1 Logic Matrix is a high-density FPGA prototyping platform architected from the ground up to meet today's needs for both large design scaling and performance. Optimized for space and connectivity, LX1 is designed for multi-system expansion to support bills of ASIC gate capacity. LX1 is the ideal solution to address the ever-increasing complexity AND performance requirements found in large scale SoC designs for applications such as 5G, data center, AI/ML, and autonomous driving.

## Highlights

- Industry leading density and capacity - up to 1.92billion ASIC gates in single standard server rack
- Hierarchical connectivity to support flexible topology and hyperscale design at prototyping performance
- Highly modular design to simplify deployment, maintenance, and expansion in via standard server racks
- Multi-usages: early software development, full system integration, high performance regression



## Large Capacity & Scalability

- LX1 available in 2, 4, 6, or 8 Xilinx VU440 FPGA configuration offering up to
  - 44.32M System Logic Cells
  - 708.8Mb of internal memory
  - 23,040 DSP Slice
- House up to 8 LX1 or 64 FPGAs in single standard server rack
- Interconnect multiple server racks for large scale deployment
- Future upgrade made easy - same physical dimension as LX2

## Flexible Topology & Hierarchical Connectivity

- Advanced Clock Management
  - 12 global clock inputs, 3 global clock outputs and 4 global resets
  - Dedicated global control module to synchronize clocks & resets across multiple systems
- Hierarchical Connectivity using 9,984 GPIO & 384 GTH transceivers
  - ShortBridge: high throughput connectivity between neighboring FPGAs
  - SysLink: high throughput cable for local and neighboring system connectivity
  - TransLink: long distance links between FPGAs with SerDes over copper or optical cables

## Features

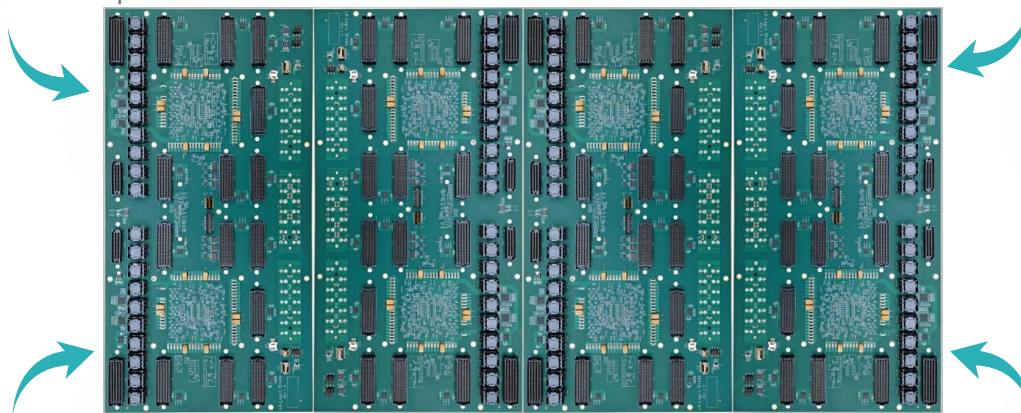
### High Reliability

- Redundant hot pluggable power supplies keep the system always online
- Professional air duct & heat pipe design
- Screw-locked high speed I/O connectors

## I/O Architecture

64 Prodigy Connectors  
each supports 144  
single-ended / 72 LVDS pairs

I/O voltage can be adjusted to  
1.0V ~ 1.8V



80 Mini-SAS connectors  
each supports 4 GTH  
transceivers and 8 GPIOs

8 PGT connectors  
each supports 8 GTH  
transceivers and 16 GPIOs

## Configuration Table

|                          | LX1-11 | LX1-21 | LX1-31 | LX1-41 |
|--------------------------|--------|--------|--------|--------|
| FPGA Count               | 2      | 4      | 6      | 8      |
| System Logic Cells (M)   | 11.08  | 22.16  | 33.24  | 44.32  |
| Estimated ASIC Gates (M) | 60     | 120    | 180    | 240    |
| FPGA Memory (Mb)         | 177.2  | 354.4  | 531.6  | 708.8  |
| DSP Slices               | 5760   | 11520  | 17280  | 23040  |
| External User I/Os       | 2496   | 4992   | 7488   | 9984   |
| GTH Transceivers         | 96     | 192    | 288    | 384    |
| Prodigy Connectors       | 16     | 32     | 48     | 64     |
| PGT Connectors           | 2      | 4      | 6      | 8      |
| Mini-SAS Connectors      | 20     | 40     | 60     | 80     |