SSI Micro Module Opportunity

Flexible & modular node building block that:

– Efficiently scales across applications & design targets

– Converges industry on a common form factor

– Reduces R&D & accelerates TTM by maximizing leverage

– Enables a wide range of product differentiation
Micro Module SSI Definition Framework

Applications & Design Targets
- Low Node Cost
- Low End FEW
- CDN
- Dedicated Hosting
- Workloads that scale efficiently with small cores – nodes
- Power, Thermal, & Space Efficiency
- Static Web Serving
- Density as Function of Rack Power & Serviceability

Micro Server
SSI Micro Module
- Intel® Xeon® processor 1S
- Intel® Atom™ Microarchitecture

Shared Sys Resources
- Industry
  - Backplane
  - Switch Module
  - Chassis
  - CMM
  - Power

OEM #1 system architecture
acquisition cost, front I/O, DAS, scalable density, full roadmap, etc.

OEM #2 system architecture
TCO driven, switch fabric I/O, DAS, container optimized, low power, etc.

OEM #3 system architecture
TCO driven, optional switch fabric, DAS, high density, low power, etc.

OEM #n ......
Micro Module SSI Overview

Front Access
- Blade-like service, interface choice made in chassis
- 3U module, ~4.7” x ~10”, pitch not specified
- Two main configuration options:
  - I/O from rear, fabric on backplane
  - I/O from front of individual modules

Top Access
- Enables up to 2x front access micro module density
- 3U, ~4.7” x ~10”, pitch not specified
- Modular architecture
  - Fabric on baseboard, I/O from rear or front, etc.
  - System I/O and storage through baseboard

✓ Compliance requirements maximize reuse & minimize module SKUs
✓ Choice & flexibility enables solution scale across segment requirements

SSI Specification announced January 10, 2011
Front Access Micro Module SSI

Front Panel Interfaces
- Optional / OEM Defined
- Keep-in zone specified

Superset Module
- Base x8 – Required
  - PWR / GND Pin-out – Required
  - I/O, Mngt, Misc Pin-out – Optional (if not used, pins can not be repurposed)
  - 7 OEM Defined Pins
- Extended x4 – Optional
  - OEM Defined
  - Reference Pin-out for Max Compatibility

Front I/O Module
MDI LOM

Backplane I/O Module
SERDES LOM

Same Module Core
Same Connectors
Max Design Leverage

Backplane connector decided in chassis

On-module interfaces Decided on Tray

“Recommended” Options Enable Path to Elec/Mech Compatibility
“OEM defined” Options Enable Differentiation w/ Low Investment

https://ssiforum.org/
Top Access Micro Module SSI

Base x16 – Required
- PWR / GND Pin-out – Required
- I/O, Mngt, Misc Pin-out – Optional (if not used, pins can not be repurposed)
- 4 OEM Defined Pins

Extended x24 Pins – Optional
- OEM Defined
- Reference Pin-out for Max Compatibility

Integrated I/O & Management
- GbE switches
- DAS and shared storage possible
- System level management (rKVM, etc.)

Enables Optional Path to Elec/Mech Compatibility
OEM defined functions enable low investment differentiation
SSI Front Access Micro Module
Rev. 1.0: single node optimized

PCle = PCI Express* Technology
**SSI Front Access Micro Module**

**Rev. 1.1: multi-node optimized**

12V/GND | uMDL | Slot ID | ID_BTN | ID_LED | IPMB | SMBus | Mgt LAN A | PBTN_A | SATA A | SATA B | SerDes A | SerDes B | OEM | RSVD
---|---|---|---|---|---|---|---|---|---|---|---|---|---|---
Up to 150W | Present | x6 | | | | | 100Mbps | | HD_LED | HD_LED_B | GbE | GbE | 7 pins | 9 pins

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**Base x8 PCIe – Signals stay compatible with Rev 1.0**

**Extended x8 PCIe – More I/O for additional node(s).**

**Single-node SSI 1.0 and multi-node SSI 1.1 co-exist in the same chassis.**

Module pitch flexible to accommodate different processor/memory packaging and thermal solutions (full-width, half-width).
SSI Top Access Micro Module Connector Definition

SSI v1.0

Extended – x24 Portion

Base – x16 Portion

Required

Maximal Leverage
Pins cannot be repurposed

12V/GND
Pwr Ctrl
2x Present
SSI RSVD
3 pins
2x SERDES w/ ACT LEDs
2x SATA
3.3V 1A out
ID Btn, ID LED
6x Slot ID
SM Bus
IPMB
Mngt LAN
w/ ACT LED
PCIe x8
2x USB
OEM Future use
4 pins
OEM Defined
64 pins

Optional Reference Pinout

2x SATA
PCIe x4
SSI RSVD
9 pins

Extended x4 PCIe

Extended x24