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Common Building Blocks Product Architecture and Technologies for Workload Optimization

Steven Lu, VP of Product Management, Wiwynn Inc.
Agenda

- Wiwynn Introduction and Product/Technology Strategies
- Common Building Blocks Architecture
- Wiwynn Technologies for Workload Optimization
A Value Partner for Customers in Cloud Service Business

Established on April 2, 2012
Listed on the Taiwan Emerging Stock on Nov. 13, 2017
Wiwynn Strategy – Maximize Customer Value

\[
\text{Customer Value} = \frac{\text{Workload Performance}}{\text{Total Cost of Ownership}}
\]
Outpace General Market Growth

- 2014
- 2015
- 2016: 1B USD$
- 2017: 2.8B USD$
- 2018: 5.8B USD$

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Various Rack Infrastructures to Support different Workloads Requirements

- Open Compute Project (DC 12V)
- Open Compute Project (Project Olympus)
- Open Compute Project (DC +48V)
- EIA 19” Series
- Open 19
Diverse Product Lines for Performance/Cost Optimization

Compute Server

Multi-Purpose & Storage Server

Edge & Front-End Server

JBOx — HDD, All Flash, GPU
Wiwynn Building Block Architecture Design to Fulfill Various Customers Demands

Wiwynn Design Solution

- Power Supply System
- RSD
- Cluster Manager

Wiwynn Server System Integration Design

- Chassis
- Thermal Solutions

Wiwynn Board Design

- M/B
- PCBAs – Mgt. Module / SW board / PDB / etc.,
- FW (BIOS/BMC/etc.)

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Major Building Block Components

**M/B**
- Intel M/B
- AMD M/B
- ARM M/B

**PCBAs**
- Mgt. Module
- PCIe Switch/SAS Exp. Board
- Power Conversion/Distribution Board

**FW**
- BIOS
- BMC
- FW (PCIe Switch / SAS Expander etc.,)

**Chassis**
- OCP 21”
- OCP 19”
- EIA 19”
- Open19
Examples of Common Building Blocks
Products Design

- **Wiwynn Mt. Olympus Family**
  - SV6100G3 (Open19 1U Server)
  - SV500G3 (EIA 19” 4U GPU Server)
  - SV7400G3 (OCP 21” 4U GPU Server)

- **Wiwynn Tioga Pass Family**
  - SV7220G3 (Tioga Pass for General Market)
  - SV302G3 (EIA 19” 1U2N)

- **DC-SCM** (Datacenter Ready Secure Control Module) **PoC**
  - Integrate BMC, Fan/PSU control, RoT (Root of Trust), BIOS/BMC Flash, and Boot device.

Siamak Tavallaei, Principal Architect, Microsoft
Friday March 15, 2:30pm - 2:55pm, 201 CG
Wiwynn SV5100G3 – 1U Olympus Server

- Olympus M/B
- FW (BIOS/BMC)
- TPM / Cerberus
- Thermal Solution
- OCP 19” Chassis
Wiwynn SV6100G3 – Open19 1U Server
Wiwynn Open 19 1U Server Use Same MB and TPM with Project Olympus

1U奥林匹a
- Olympus M/B
- FW (BIOS/BMC)
- TPM / Cerberus
- SW Board
- PDB
- Thermal Solution
- EIA 19" Chassis
Wiwynn SV500G3 – 19” 4U 8GPU Server

- Olympus M/B
- FW (BIOS/BMC)
- TPM / Cerberus
- SW Board
- PDB
- Thermal Solution
- EIA 19” Chassis
SV500G3 use the same MB and TPM with Project Olympus and PCIe-Switch Board with SV7400G3 (OCP 4U 8GPU Server)
Wiwynn Tioga Pass - OCP Server

- Tioga Pass M/B
- FW (BIOS/BMC)
- TPM
- Thermal Solution
- OCP 21” Chassis
SV7220G3 (Tioga Pass for General Market) – Hot-plug HDD/SSD and Dedicate Management Port

- Tioga Pass M/B
- FW (BIOS/BMC)
- TPM
- Thermal Solution
- OCP 21” Chassis
SV7220G3 Use the Same PCB and TPM with Tioga Pass
SV302G3 – EIA 19” 1U2N Server

Tioga Pass Upgrade M/B
FW (BIOS/BMC)
TPM
PDB
Thermal Solution
EIA 19” Chassis
SV302G3 leverage Tioga Pass MB design and use same TPM with Tioga Pass
Our Technologies for Workload Optimization

OCP Global Summit | March 14–15, 2019
48V Technology Innovation

- High Power, High Efficiency
- Convert 12V systems
- Modularize
- Cost effective

- New 2 stage design concept
- Efficiency improvement @ heavy load
- Cost/Performance

- -48Vin input
- Edge server at Telco CO
- Modularize

Higher Power PDB (2.4KW)

Efficiency Optimization

-48 Vin system (Telco)
Immersion Cooling Technology Strategy

~2017
Prove Immersion Cooling

2018
POC with Existing Board
Q2, 2018

High Power Tank for Existing Board
Q4, 2018

2019
Optimize Tank for Immersion Cooling

2020
Tank Next Gen
Q2 2020

2021~
Tank with Optimized Board

POC with Existing Board

Benchmarking Olympus

48V Tank Tioga Pass 60 kW

White Papers
Q3, 2019

Specifications
Q4, 2019

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Service Oriented 2-Phase Immersion Cooling with 48V Power Solution
Wiwynn 48V Immersion Cooling Solution Advantages

- Two Phase Immersion Cooling for Excellent PUE
- High Efficiency DC 48V Power Delivery System
- Advanced Condenser System for Low Vapor Leakage
- Tool-less Design, Automation, and Friendly UI with Easy Serviceability
- Tank Management for Safety
- Leverage Large Scale Deployed and Field Proven OCP Server Board
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Project</th>
<th>Topic</th>
<th>Speaker</th>
<th>Location</th>
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<tbody>
<tr>
<td>3/15</td>
<td>8:30am</td>
<td>HW Management</td>
<td>Modeling Immersion Cooling Compatible with OCP Profile</td>
<td>Shao Yen</td>
<td>Marriott</td>
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<td>Rack &amp; Power</td>
<td>48V 2-stage System Efficiency Optimization by using STC Converter with Dynamic Converting Ratio</td>
<td>Sam Yang</td>
<td>210 BF</td>
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<td>2:30pm</td>
<td>Advanced Cooling</td>
<td>Service Oriented 2-Phase Immersion Cooling with 48V Power Solution</td>
<td>Lentis Pai</td>
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<td>3:40pm</td>
<td>Storage</td>
<td>Learning of Designing Project Olympus JBOF with EDSFF SSD</td>
<td>Mark A. Shaw Antson Chang</td>
<td>212 AB</td>
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<td>HPC &amp; GPU/FPGA</td>
<td>Apply OCP Design Principles to Enhance 19 inch Power-Consuming GPU server</td>
<td>Gregory Liu</td>
<td>210 A</td>
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Welcome

The Open IT Gears By Choice


Booth A12
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