

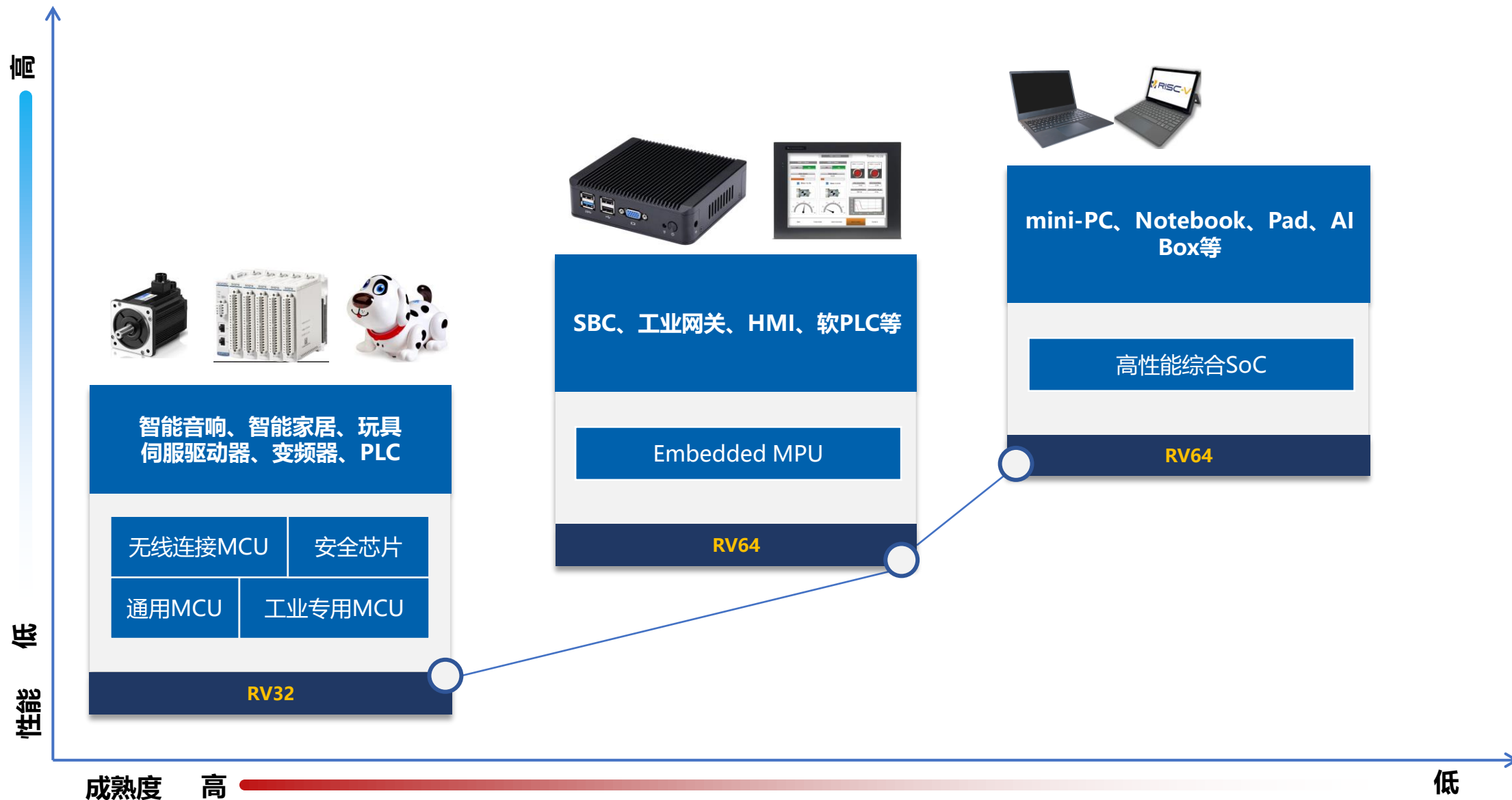
RISC-V在数据中心的挑战与机遇

赛昉科技 刘文进
2024年8月21日

Agenda

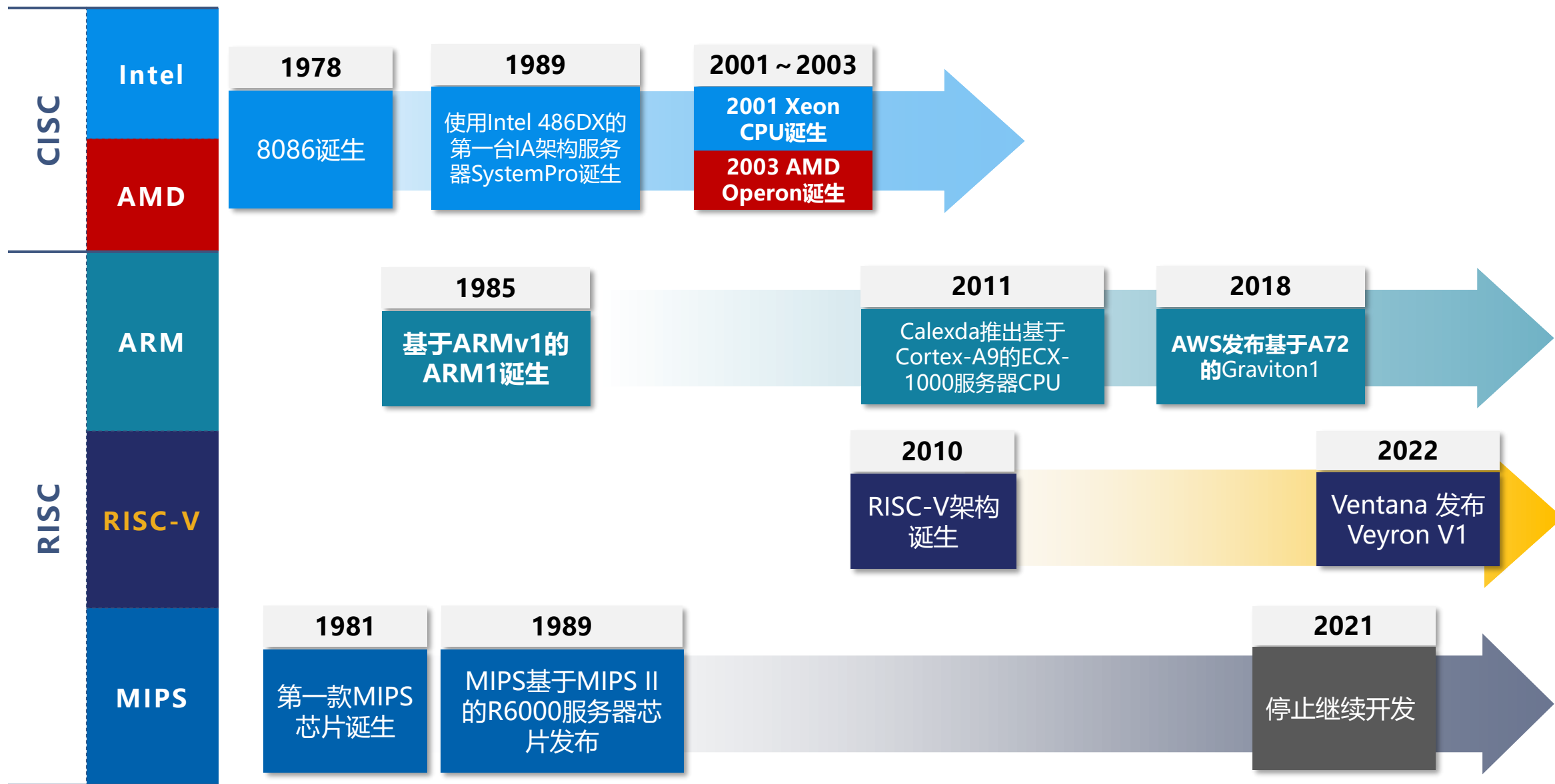
- 1. RISC-V在各行业的落地现状**
- 2. RISC-V在数据中心应用面临的挑战**
- 3. RISC-V在数据中心的关键技术布局**
- 4. RISC-V步入数据中心的机遇**
- 5. 赛昉对RISC-V迈入数据中心的展望**

RISC-V在各行业的落地现状





RISC-V对比其它ISA步入数据中心的时间





RISC-V在数据中心应用面临的挑战

- **High performance with balanced PPA**

- CPU implementation complexity
 - Architecture and Micro-arch
 - PPA
- Full chip implementation complexity
 - NOC architecture
 - Die size challenge

- **System architecture**

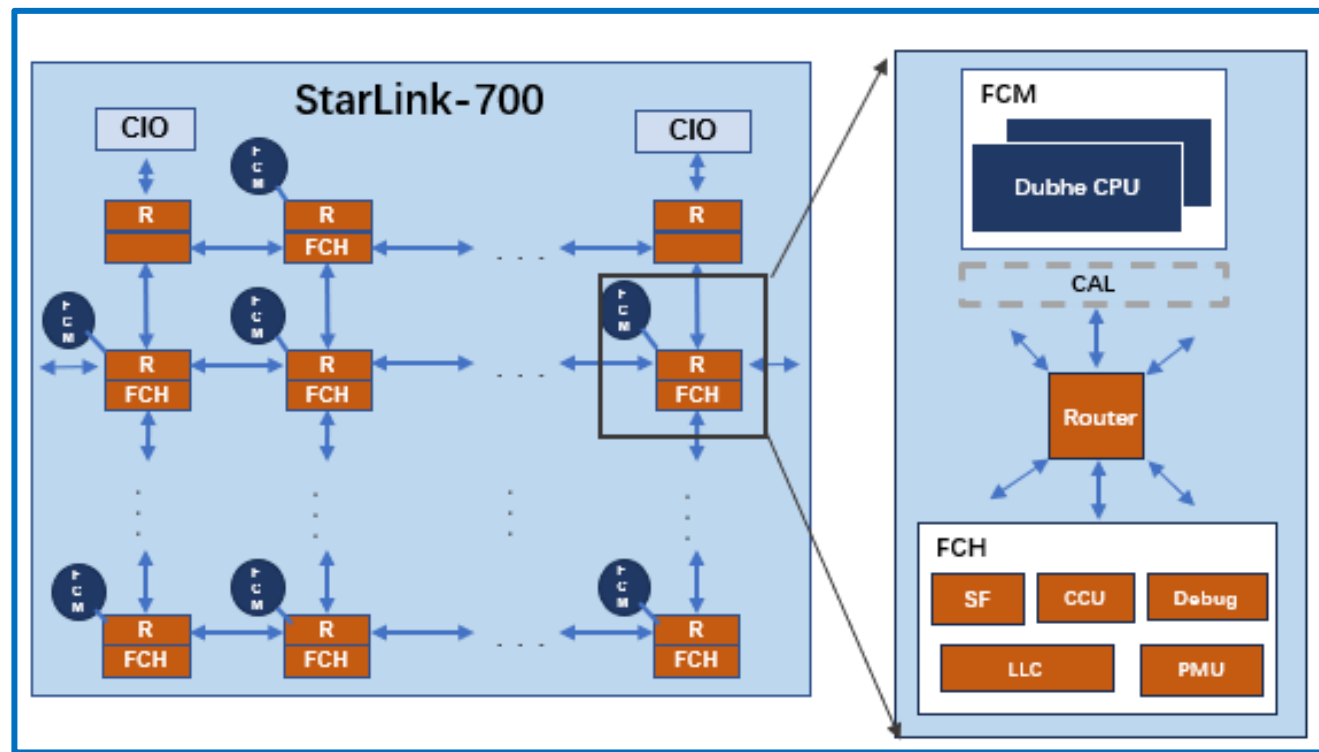
- Memory & IO Virtualization
- Power Control
- Security
- RAS

- **Software maturity and optimization**

- Provide interface and SW component support for upper layer, e.g., AIA/RAS for ACPI

- Sufficient **financial investment**

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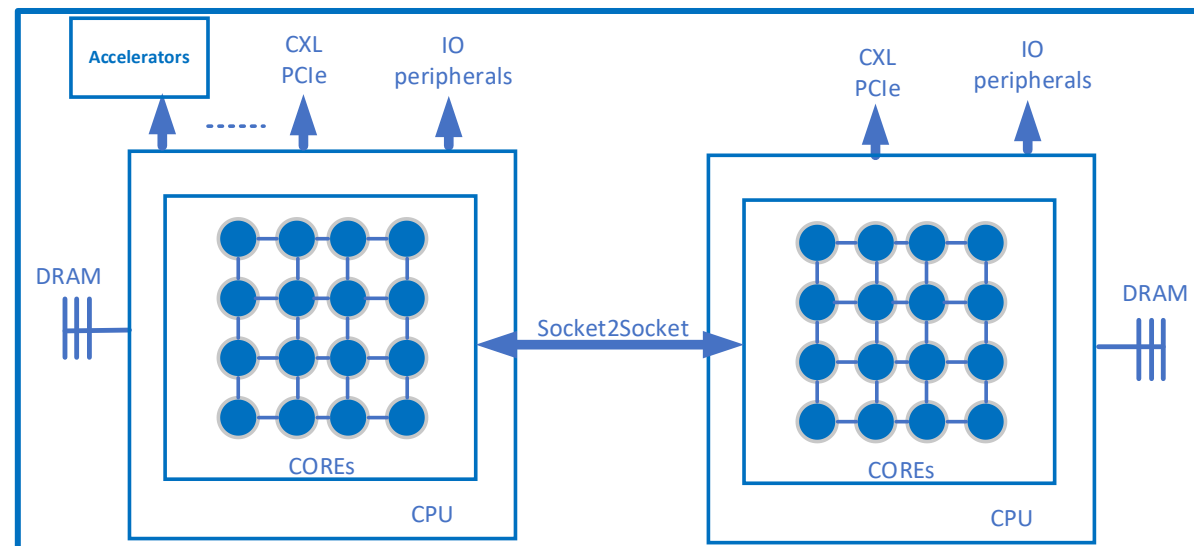
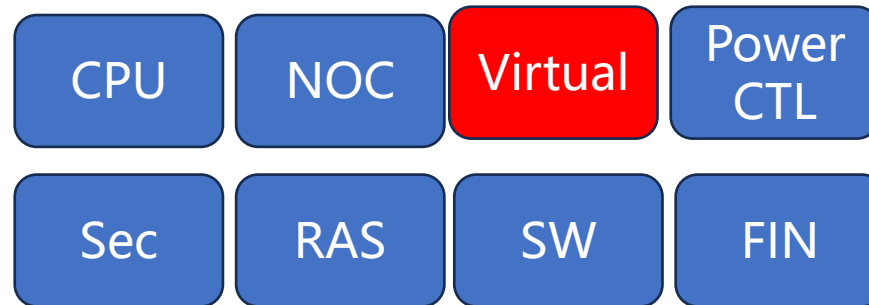
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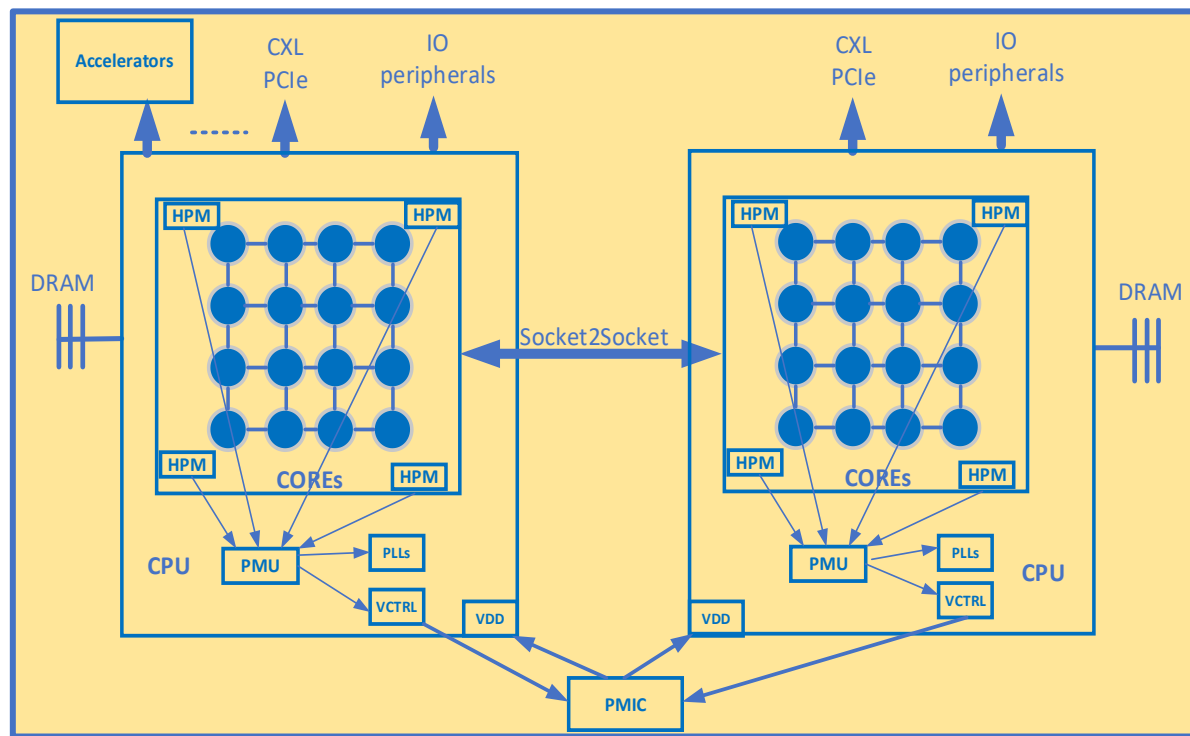
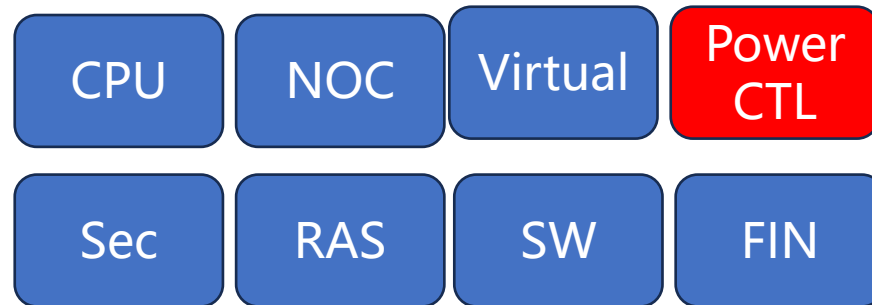


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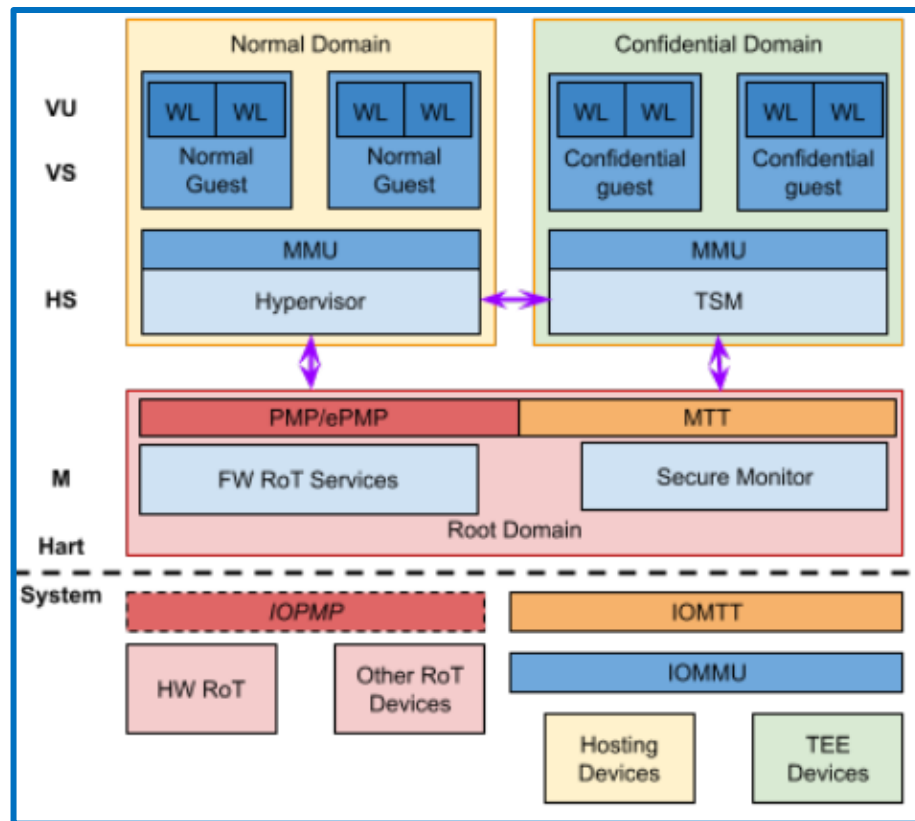
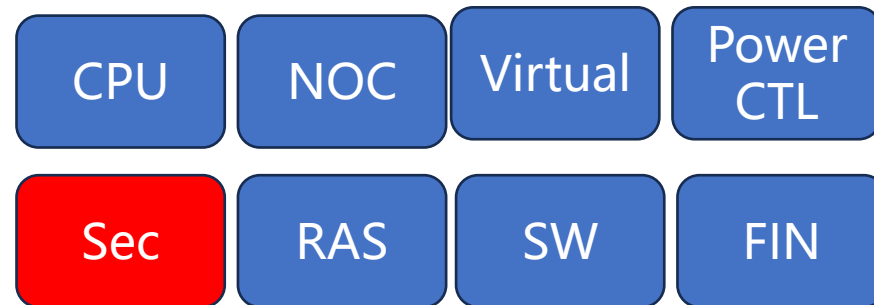
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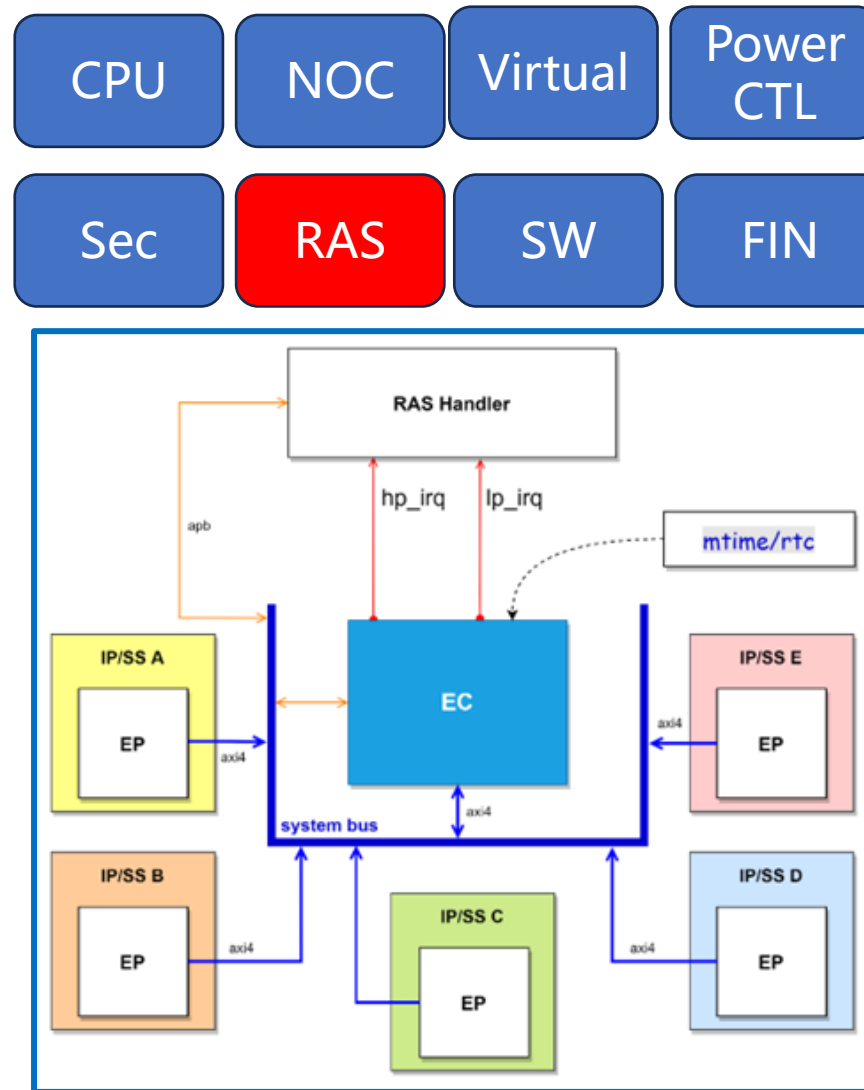


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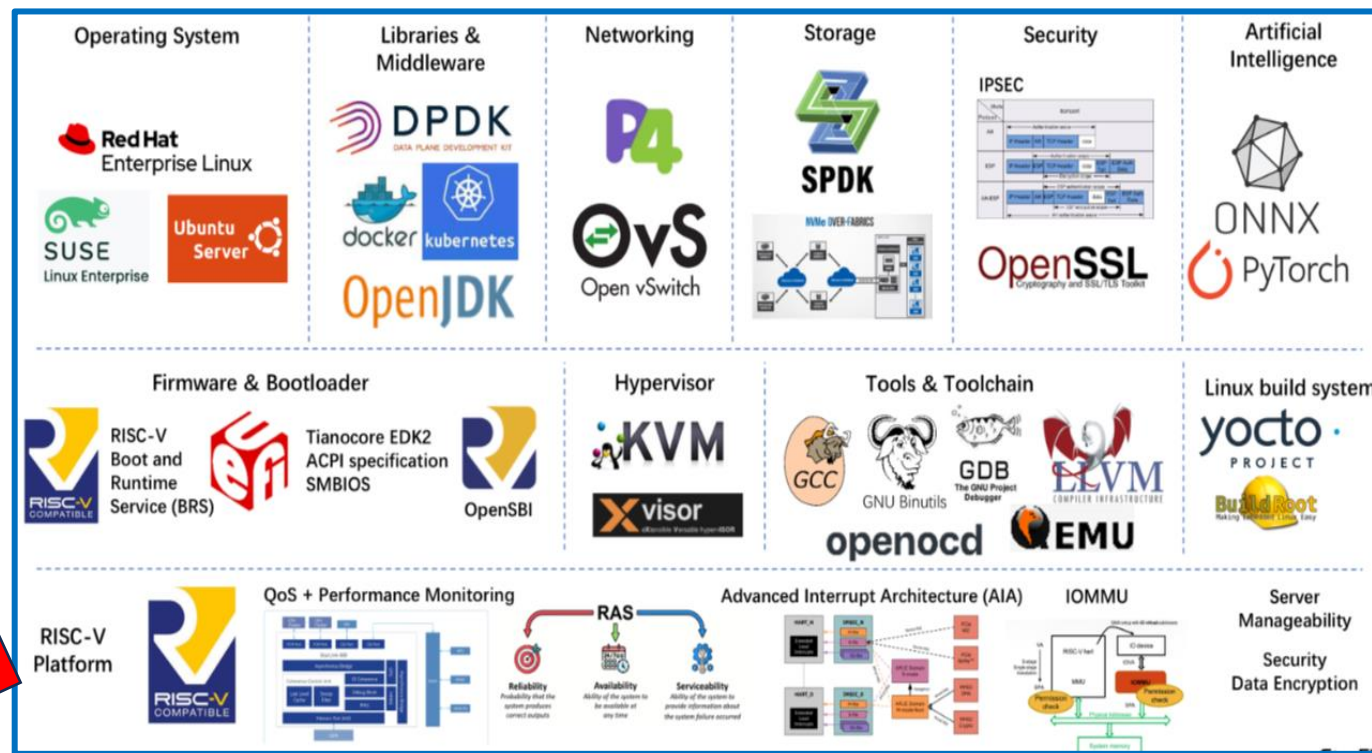
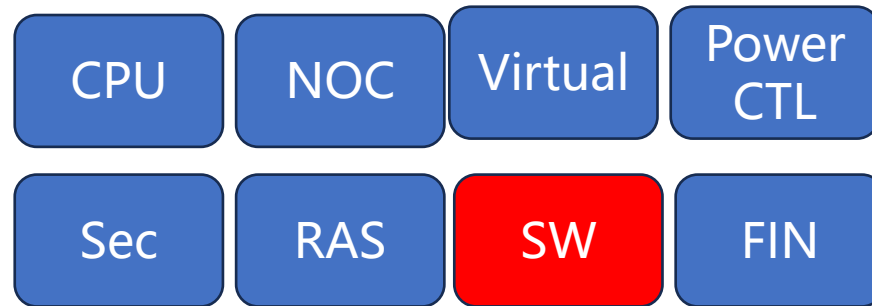
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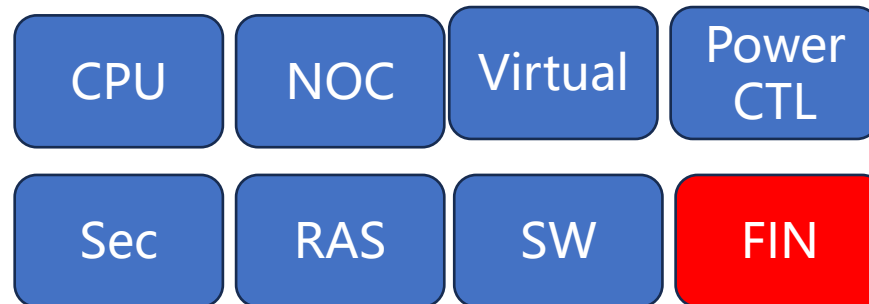
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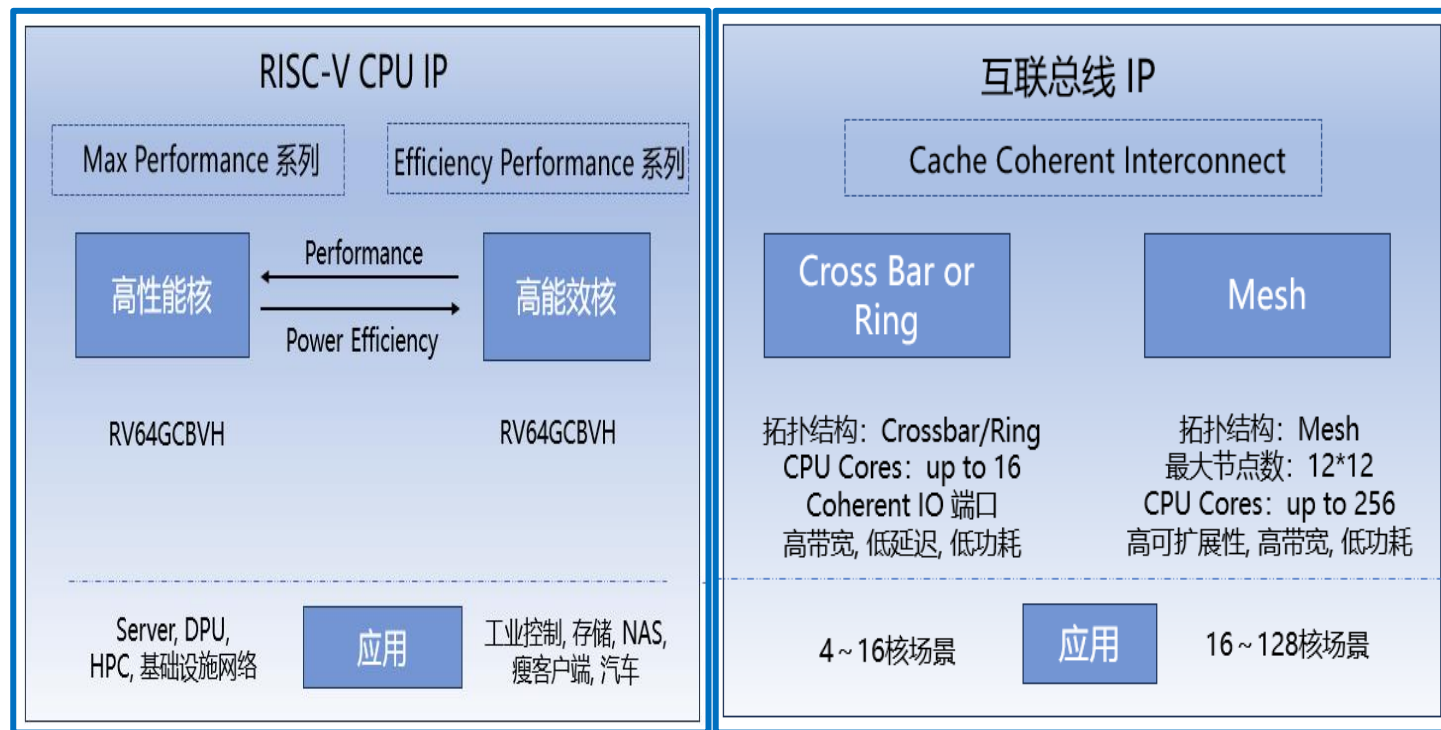
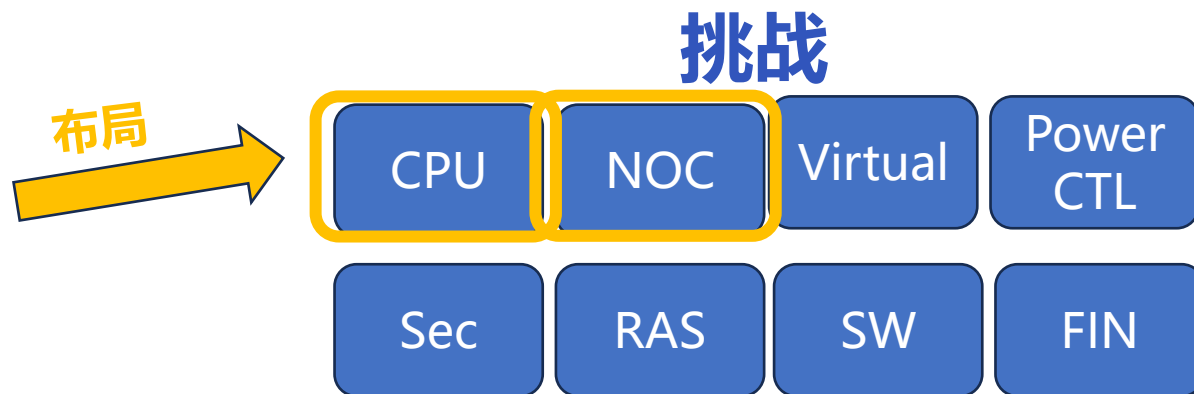
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RISC-V在数据中心的关键技术布局

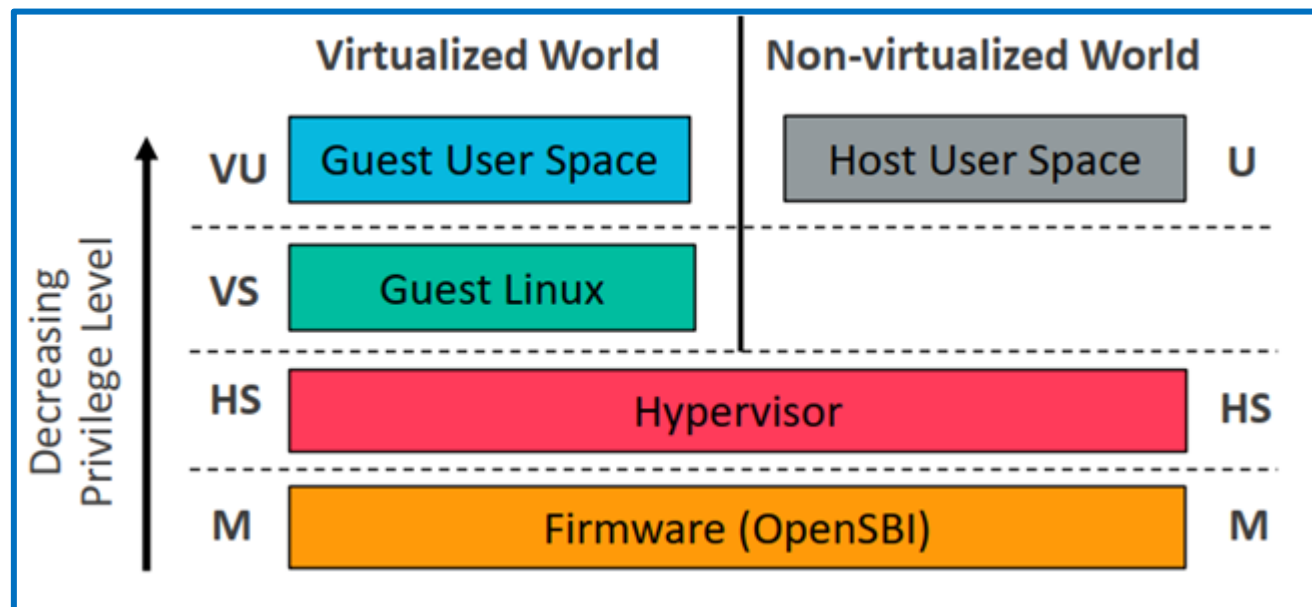
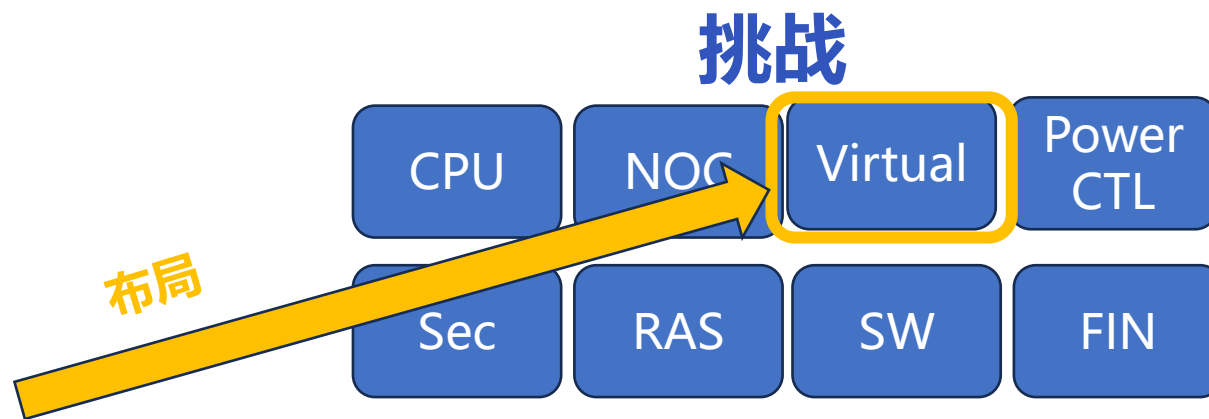
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 - **RISC-V Core**
 - **Uncore** – CNOC, NCNOC, CTRLNOC
- **SoC components**
 - **Virtualization** – Hypervisor, IOMMU, Interrupt
 - **Low power technologies** - RPMI
 - **Security** – CoVE, Cheri, SMMTT, etc
 - **RAS** - RERI
 - **RISC-V Debug and Trace**
- **Software Stacks**
 - RISC-V Server Platform compliant
 - Middleware
 - OS and many other SW components





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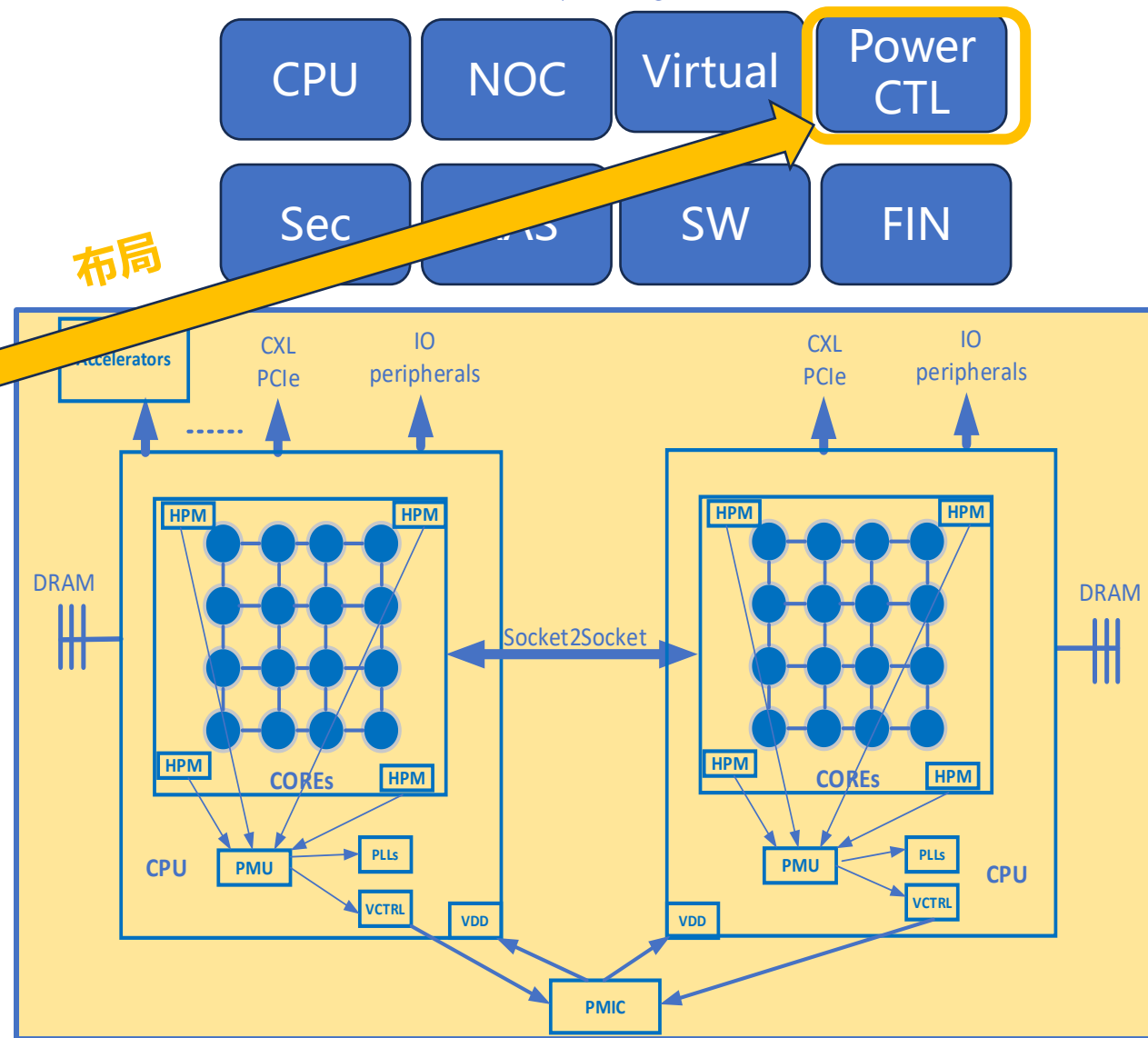


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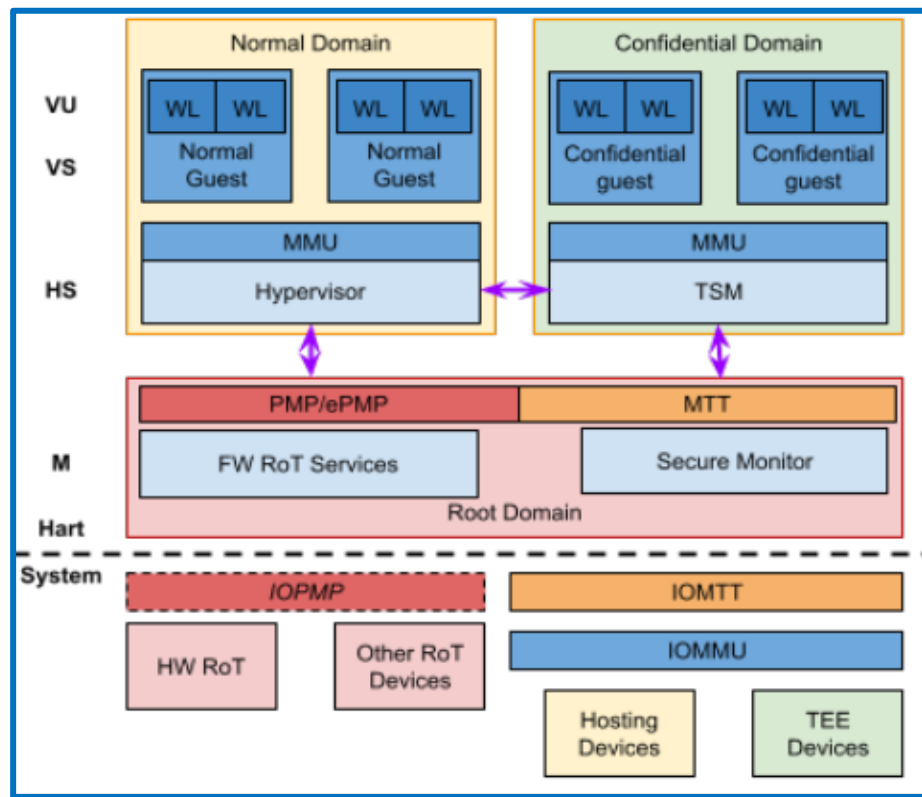
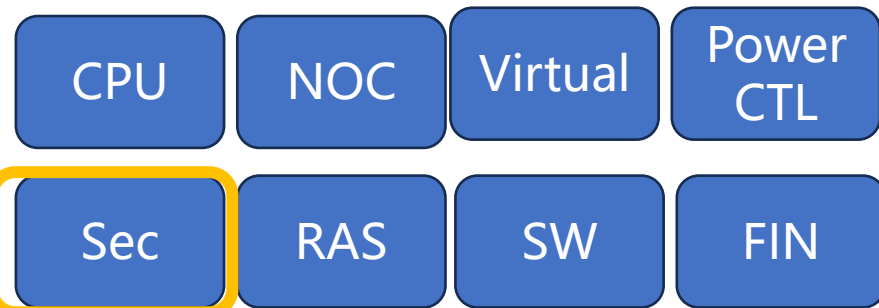


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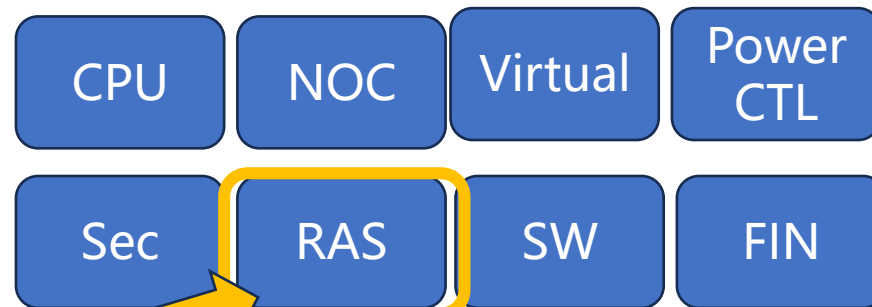




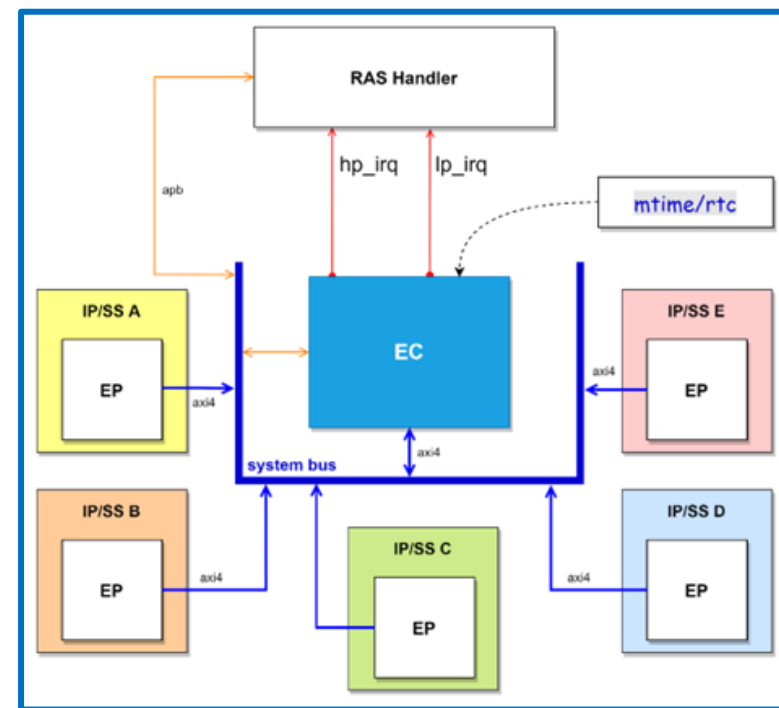
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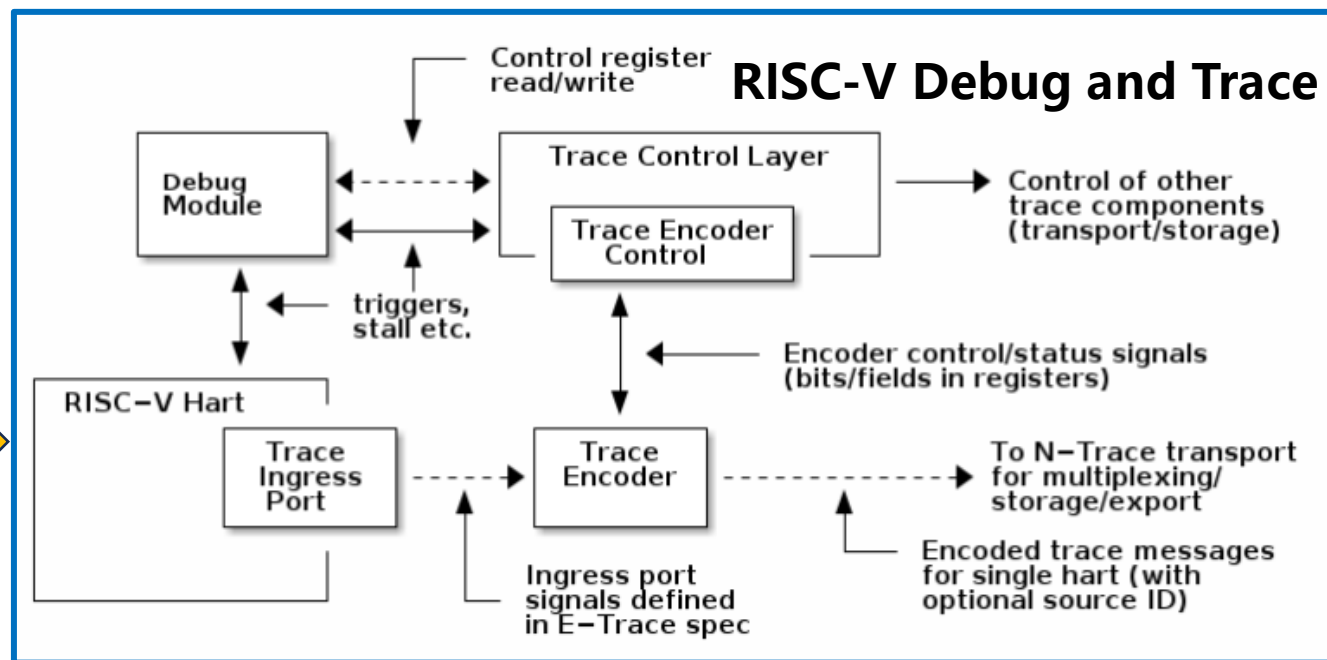


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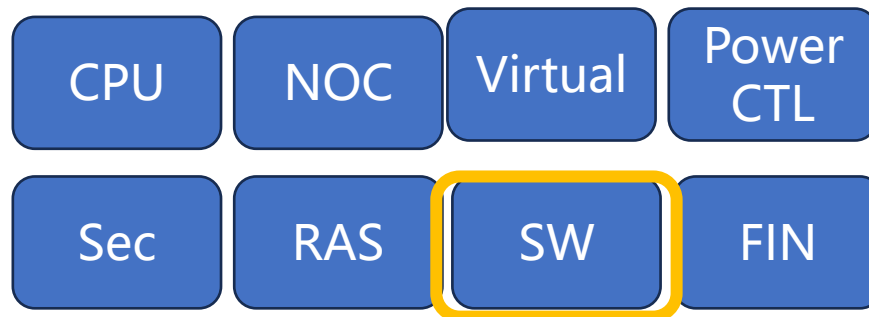
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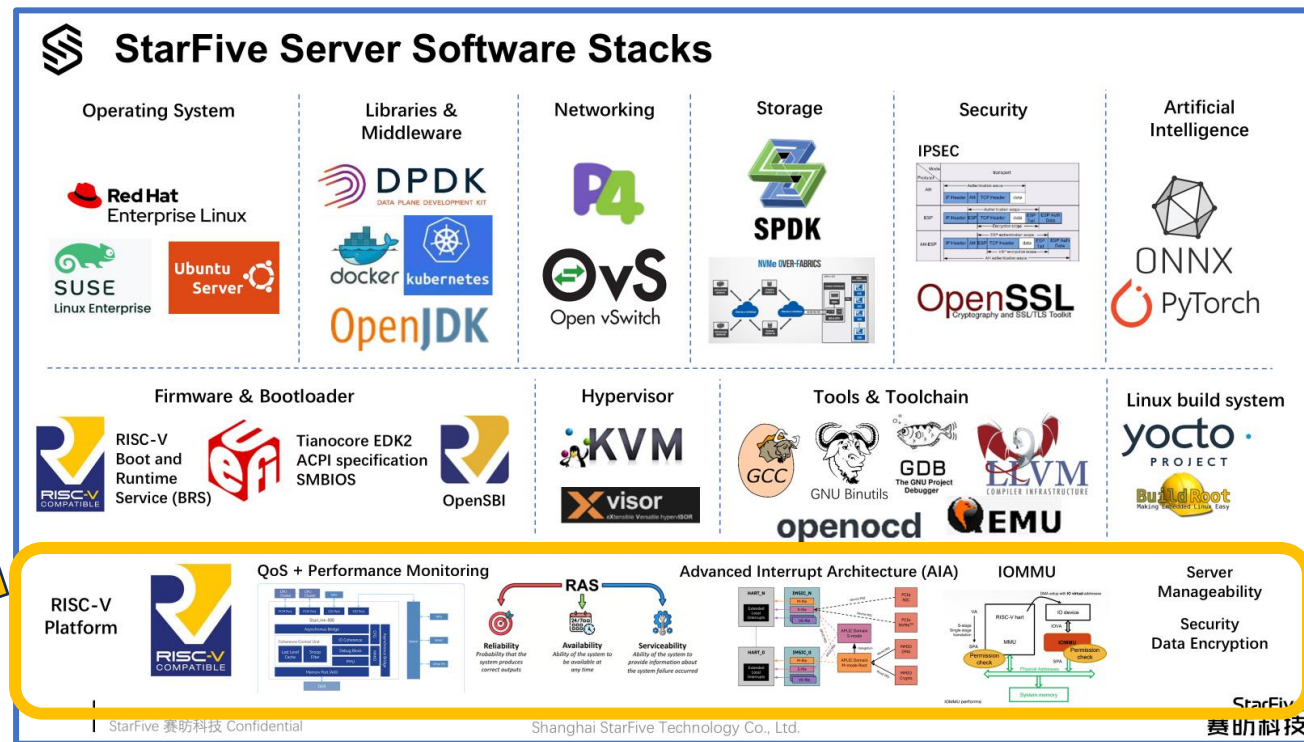
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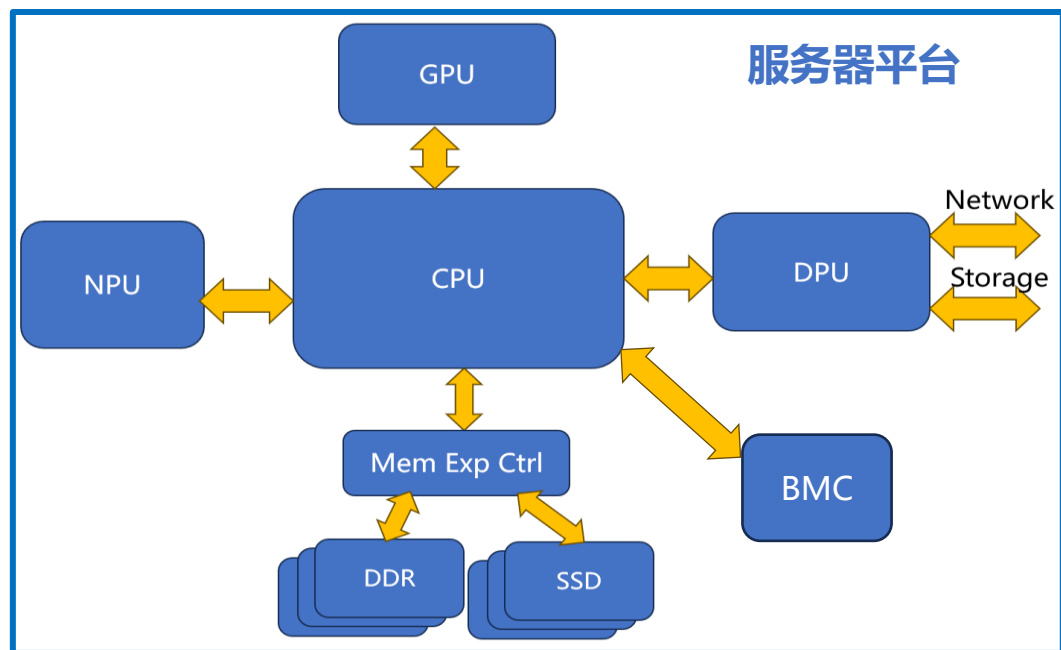


布局



RISC-V步入数据中心的机遇

- 机遇
 - **Heterogenous Computing**和**Domain Specific Computing**的兴起
 - **chiplet**技术的广泛采用可促进公司之间的合作
 - **开源软件 (open source)** 和**高级编程框架 (frameworks)** 大大减少了对传统平台的依赖
- 使能
 - **RISC-V Server SOC TG** 和 **Server Platform TG** 标准化及定义了 SW/HW 的要求，及其合规测试
 - 公司只需专注于提供 IP 和 SW 组件解决方案
- 以上条件提供了芯片公司机会直接与系统合作伙伴合作到最核心的层面
 - 通过量身定制的产品提供卓越的 PPA 和 ROI



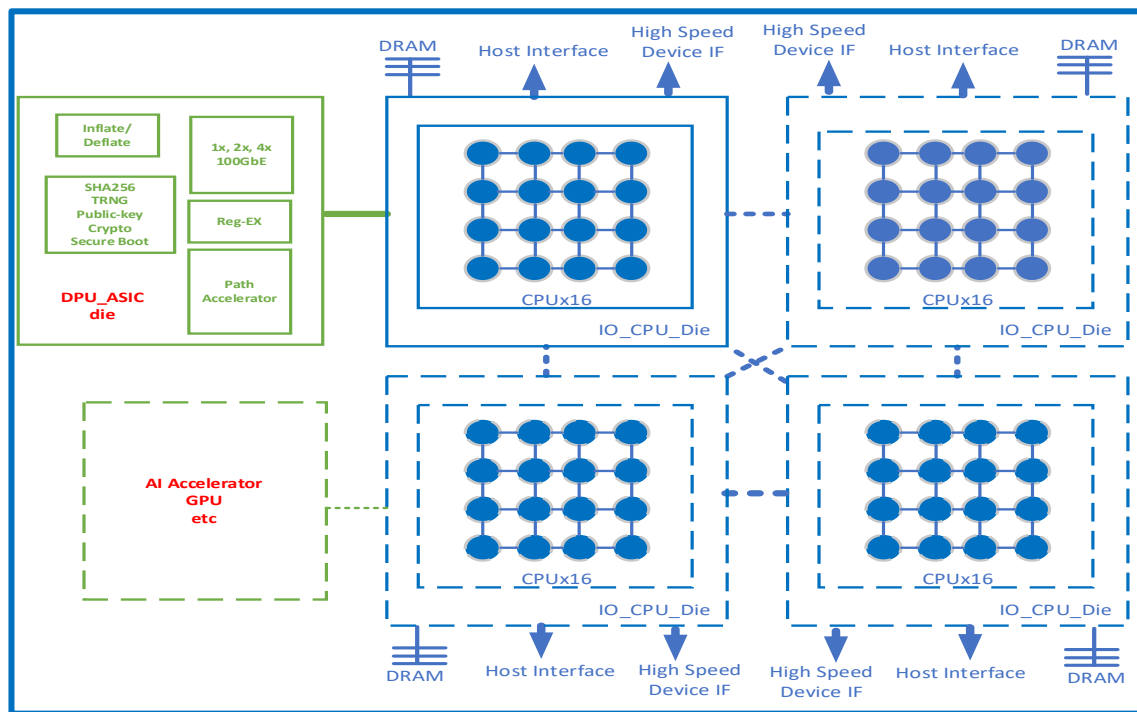
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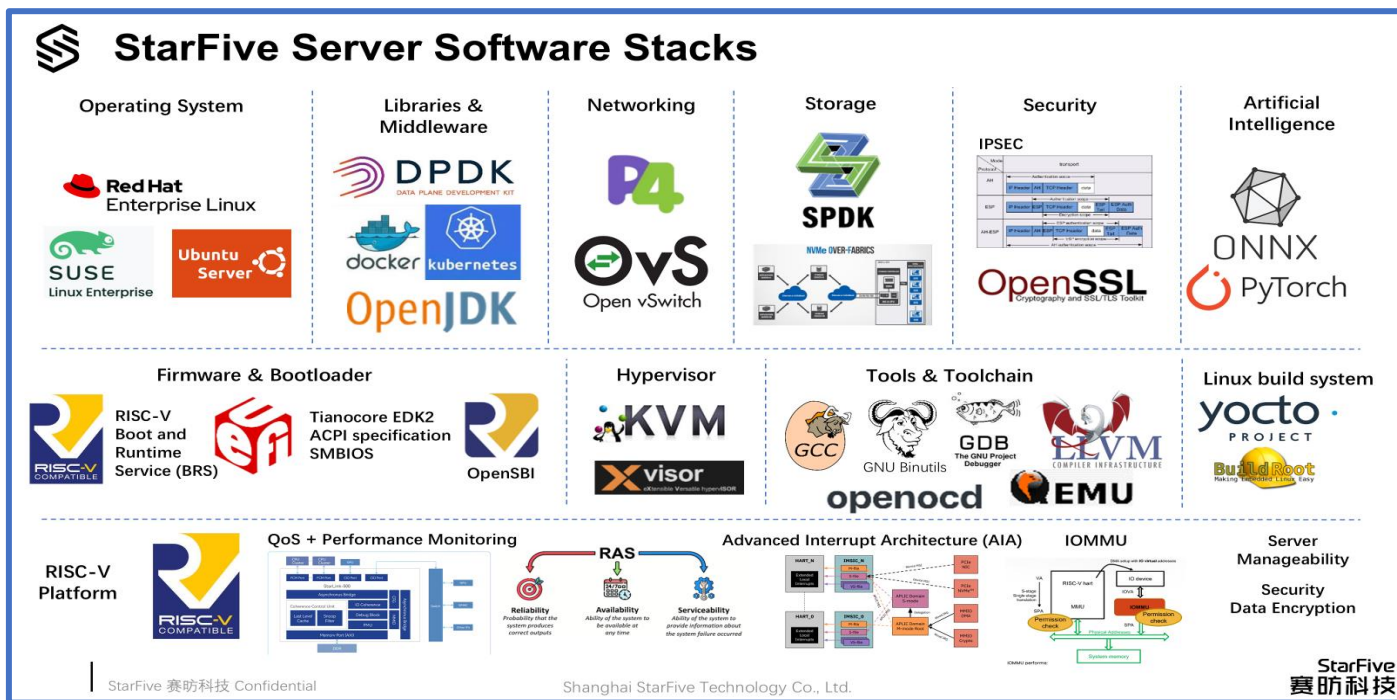
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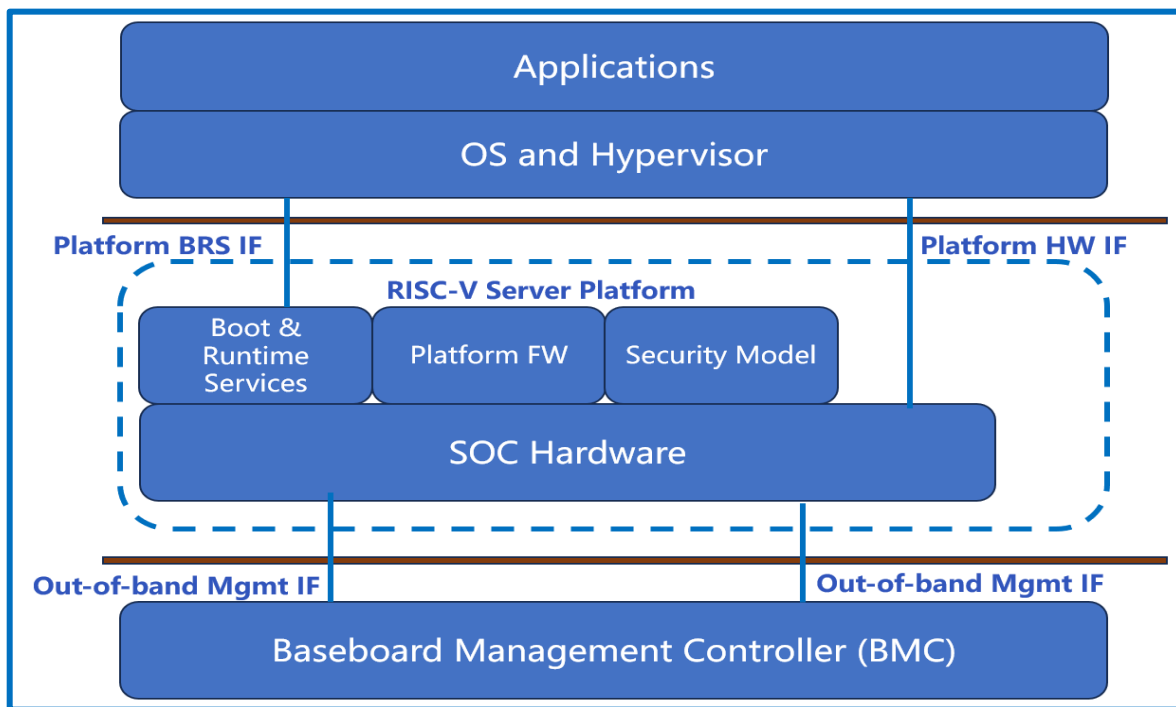
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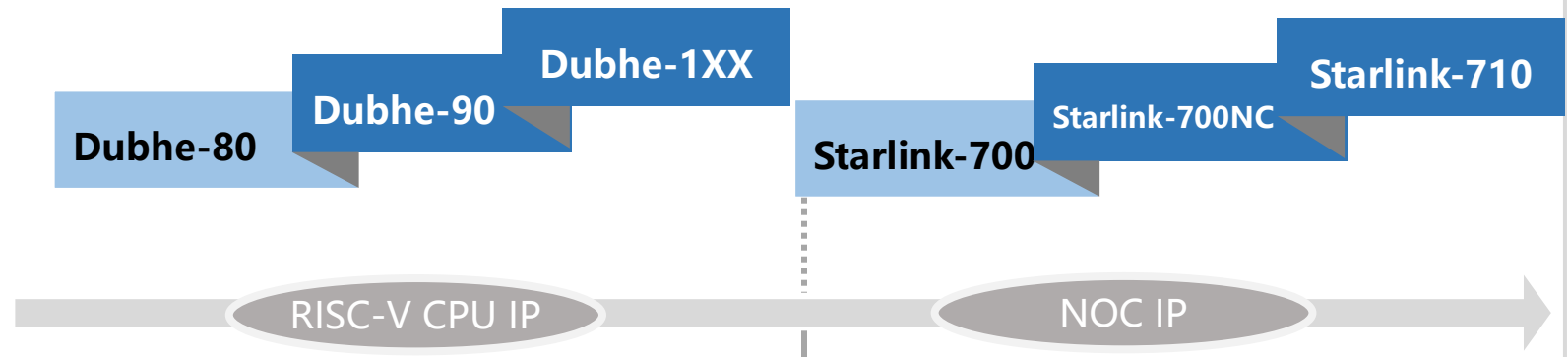
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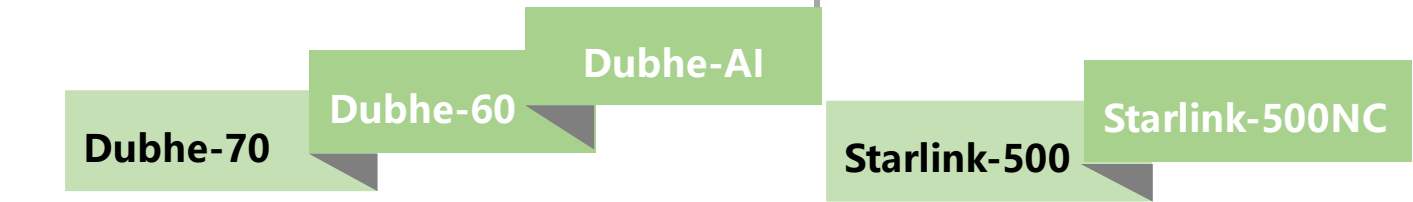


赛昉面向数据中心的IP产品路线图

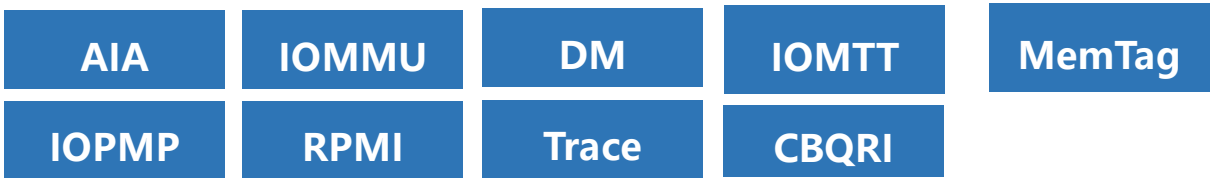
● Performance Core



● Efficiency Core



● Virtualization, Security, QoS, Platform Mgmt, Debug, Trace



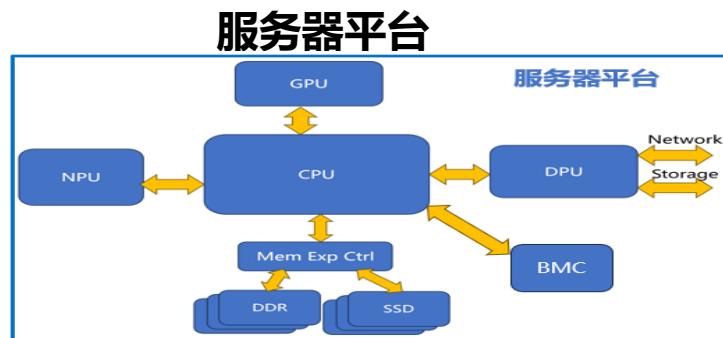
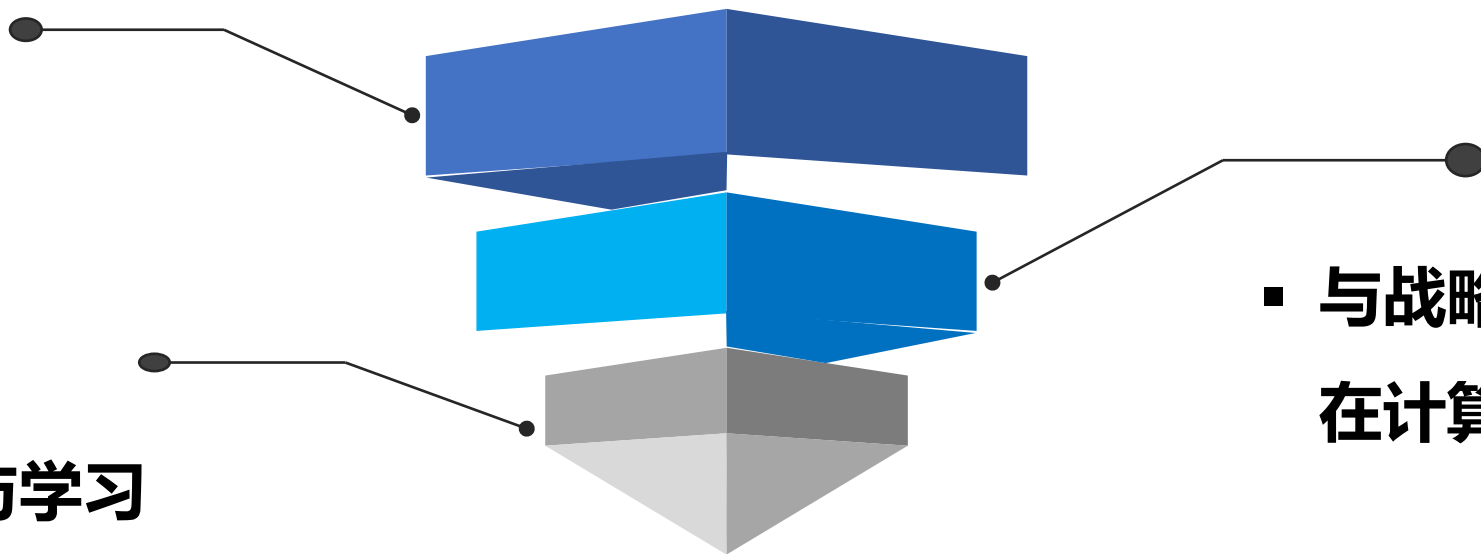
		应用场景
数据中心 Data Center	算 High Performance Computing	通用计算 服务器CPU
		AI智算 AI Training
		AI inference
	存 Memory & Storage	智能存储 内存扩展控制器
	网 Network	DPU
		Switch, Gateway, Router
	管 System Management	BMC

赛昉对RISC-V迈入数据中心的展望

- 坚持致力于IP 业务

- 分享产品经验与学习

- 与战略系统合作伙伴在计算层面紧密合作



芯片在数据中心的落地需要您的参与

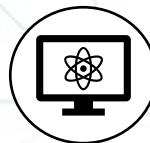




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以RISC-V创新为客户创造价值