



AI 供應鏈 – BMC 是 AI 伺服器中的關鍵零組件

June 2024



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請注意，儘管我們已盡力羅列各項重要風險，但仍可能存在尚未識別或當前看似不顯著的其他風險因素。



Agenda

- 公司簡介
- BMC 是 TCO 最佳化的關鍵
- BMC 在 AI 伺服器的使用量
- 產品與科技發展
- 2024年第三季展望
- Q&A

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公司簡介

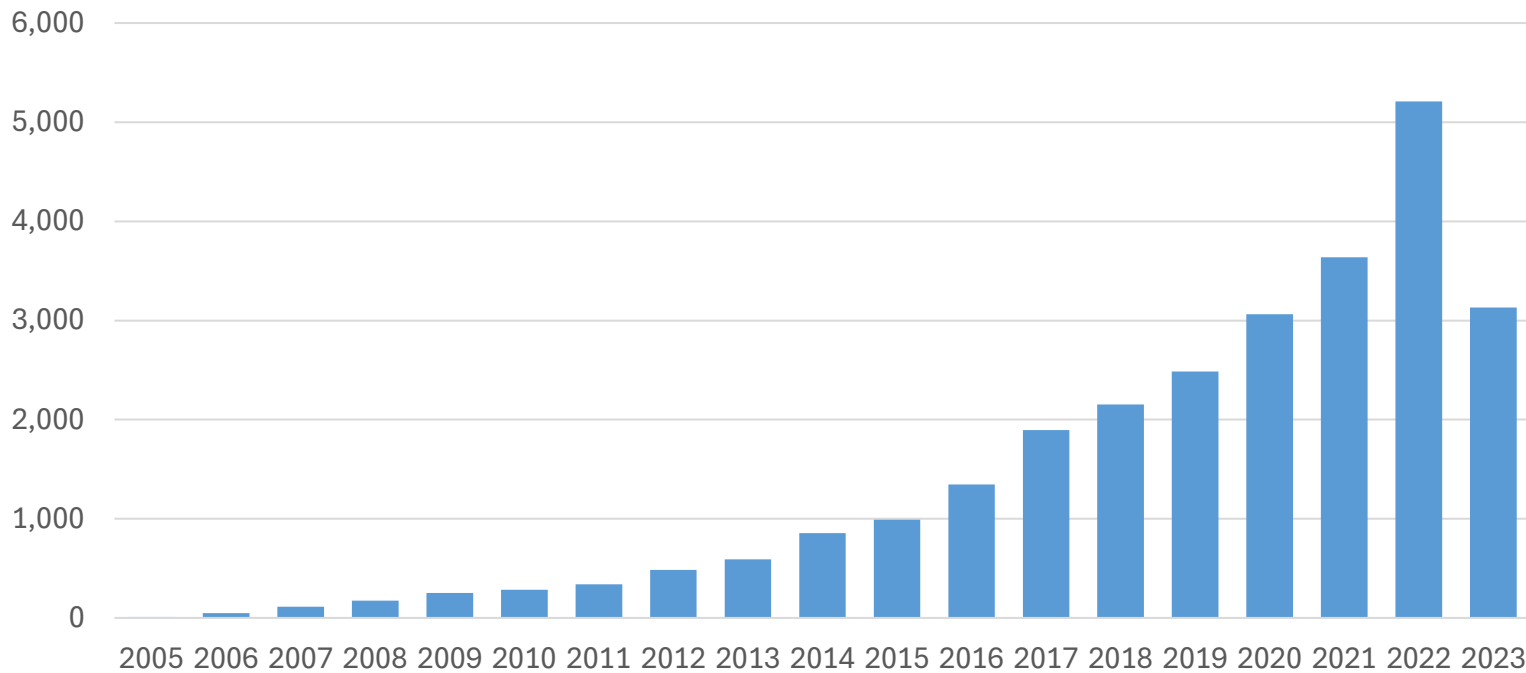


公司簡介

- 2004 年成立
- 無晶圓廠 IC 設計公司
- 員工人數：125 (2023 年 11 月資料)
- 產品組合 (根據 2023 年年報資料)
 - 企業及雲端業務 (BMC/BIC/PFR)：佔營收 89%, **#1 in BMC**
 - 智慧 AV (Cupola360 & AVoIP SoC)：佔營收 11%, **#1 in AV over IP (1G Ethernet)**
#1 in industrial 360 camera
- 營運地點:
 - 總部：台灣新竹市
 - 分公司：台灣台北市
 - 美國辦公室：San Jose, CA

歷史營收表現

Million TWD



重要里程碑

ASPEED founded

2004.11

- ISO 9001:2000 certified
- Introduced 2nd gen BMC SoC AST2100/2050/1100
- Introduced 3rd gen BMC SoC AST2200/2150

2007-2008

Listed on the Taiwan OTC stock market

Listed on Taipei Exchange

Introduced 6th gen BMC SoC AST2500

2012-2014

Joined Open Compute Project (OPC)

Introduced new product line: Cupola360 Spherical Image Processor

ISO 14001:2015 certified

2017-2018

2005-2006

Introduced 1st gen BMC SoC AST2000/1000

Delivered 1st mass production of SoC shipment

2009-2011

Launched new product line: PC/AV Extension SoC

Received funding from Intel Capital

2015-2016

BMC SoC market share ranked No.1

Acquired Broadcom Emulex Pilot™ BMC SoC Business

ISO9001:2015 certified

2019-2023

Introduced 7th gen 28nm BMC SoC AST2600

ISO 27001:2015 certified

ISO 14064:2018 certified

獲獎紀錄與其他殊榮

2014 - 2023

Forbes Asia's Best Under A Billion for 10 consecutive years

2009

COMPUTEX Best Choice Award

2008

Ranked 37th in Deloitte Asia Pacific Technology Fast 500

2020

Lenovo Technology Innovation Award

Chairman & President Mr. Chris Lin received NYCU Distinguished Alumni Award



2021

Chairman & President Mr. Chris Lin received Outstanding ICT Elite Award and NTHU Distinguished Alumni Award

High-Growth Companies Asia Pacific 2021 from the Financial Times



2022

COO Mr. CJ Hsieh received SEMI Industry Contribution Award and ISES Advisory Board Member Award

Taiwan Best-in-Class 100 from Taiwan Institute of Directors and CDRC Consulting Group



2023

Chairman & President Mr. Chris Lin received the ERSO Award

InfoComm Best of Show

Ranked 1st in Most Honored Company (All Asia Executive Team – Semiconductor) from Institutional Investor

Ranked 5th in Business Performance of Taiwan's Top 5000 Large Enterprises from CRIF

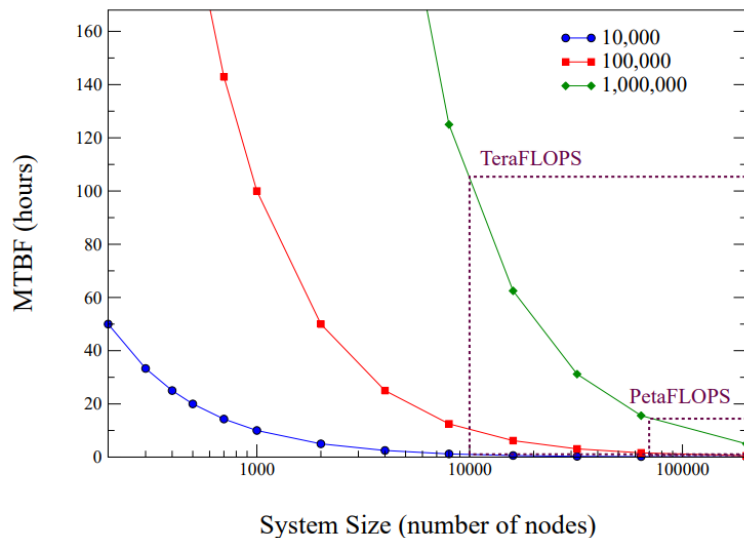
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BMC是TCO最佳化的關鍵

平均故障間隔時間 (MTBF)

$$MTBF = \frac{1}{\sum_{i=1}^N \lambda_i}$$

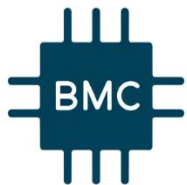
- MTBF 是降低總擁有成本 (Total Cost of Ownership, TCO) 的關鍵
- λ_n : 元件 n 的故障率



備註：MTBF 全稱為 Mean Time Between Failure，也就是平均故障間隔時間

來源：Fault-Tolerance in Large-Scale Parallel Machines with Buffered Co-scheduling, *Fabrizio Petrini, Kei Davis and Jose Carlos Sancho*

BMC 是 TCO 最佳化的關鍵



- 錯誤檢測及記錄
- 處理和恢復
- Out-of-Band管理

RAS Engine



總擁有成本 (TCO) 最佳化

基於 AI 的預防性維護

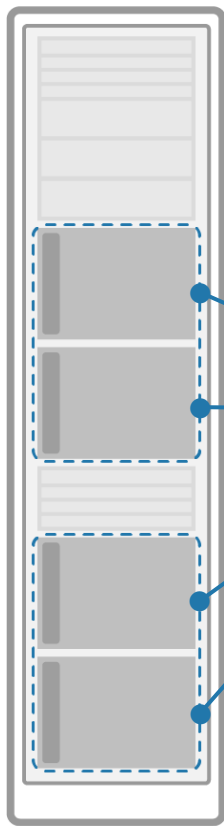
- 最大化系統正常運行時間
- 提高系統韌性(resilience)

備註：RAS 代表可靠性、可用性與可服務性 (Reliability, Accessibility and Serviceability)

The background of the slide is a photograph of a server rack. On the left side of the rack, four NVIDIA GPUs are visible, each with a gold-colored front panel and the NVIDIA logo. To the right of the GPUs, the internal components of the server are visible, including multiple rows of blue network ports and various cables. The right side of the image is partially obscured by a dark blue diagonal overlay that contains the title text.

BMC在AI服务器的使用量

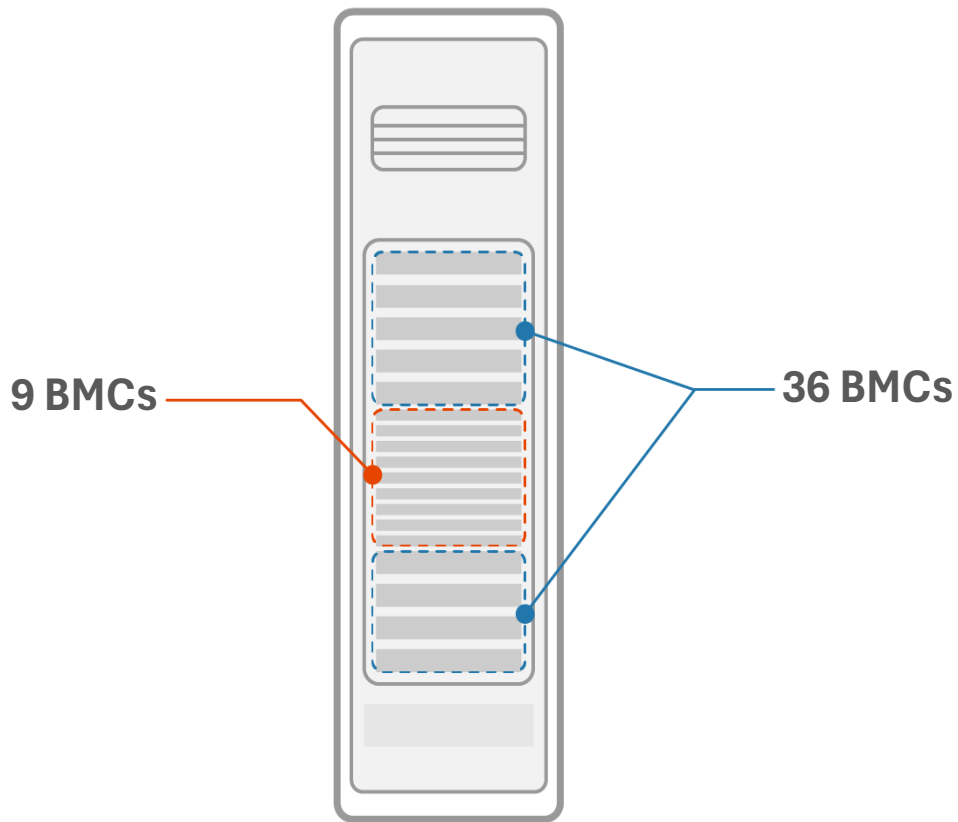
BMC 是 AI 伺服器的關鍵元件



在 Hopper HGX 系統中

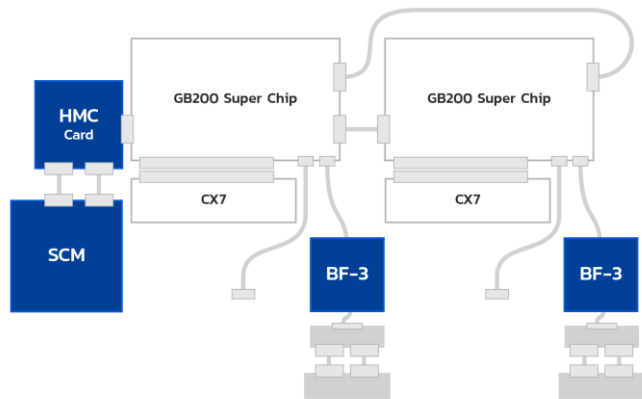
- 共 12 顆 BMC 在 4 個運算匣 (compute trays)

BMC 是 AI 伺服器的關鍵元件

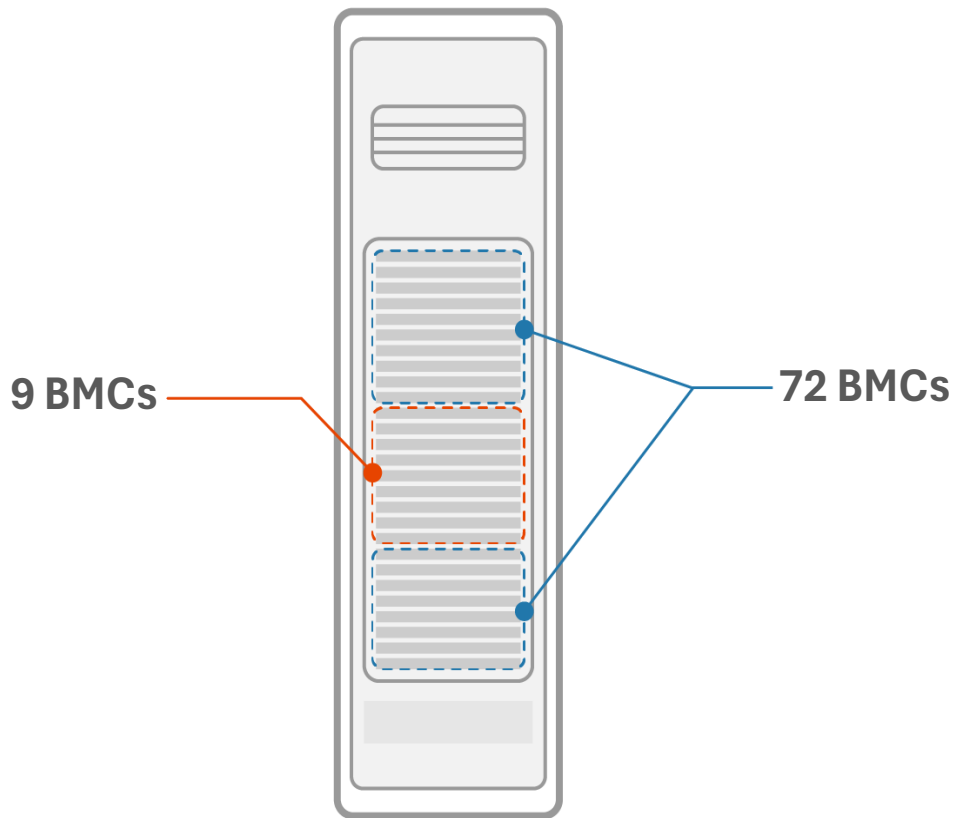


在 **Blackwell NVL36** 系統中

- 共 36 顆 BMC 在 9 個運算匣
- 共 9 顆 BMC 在 9 個 switch 匣

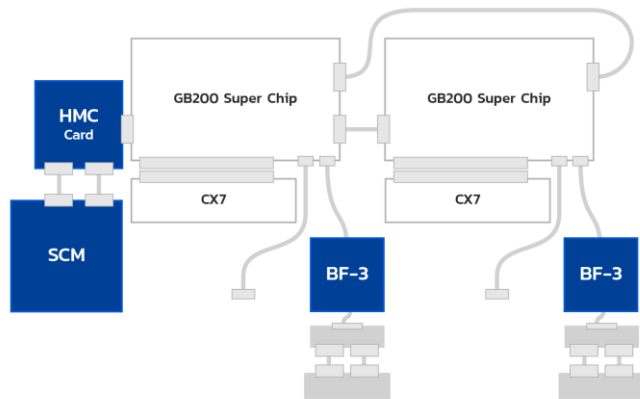


BMC 是 AI 伺服器的關鍵元件



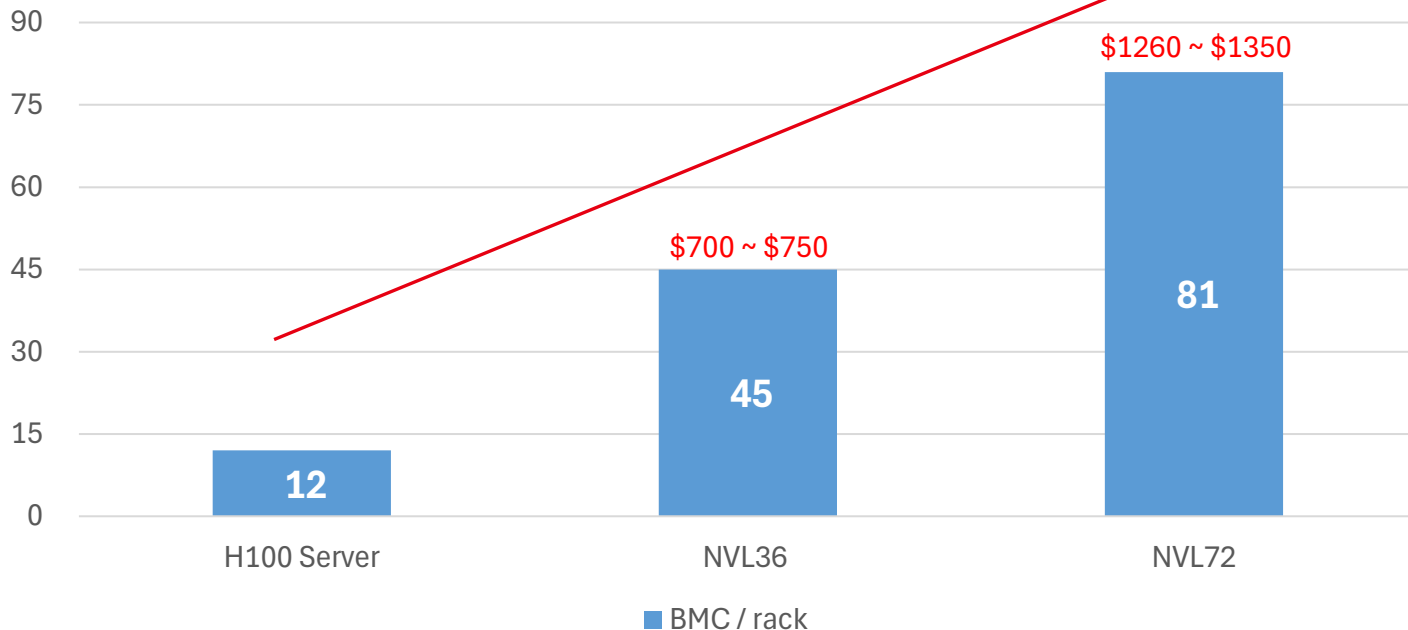
在 **Blackwell NVL72** 系統中

- 共 72 顆 BMC 在 18 個運算匣
- 共 9 顆 BMC 在 9 個 switch 匣



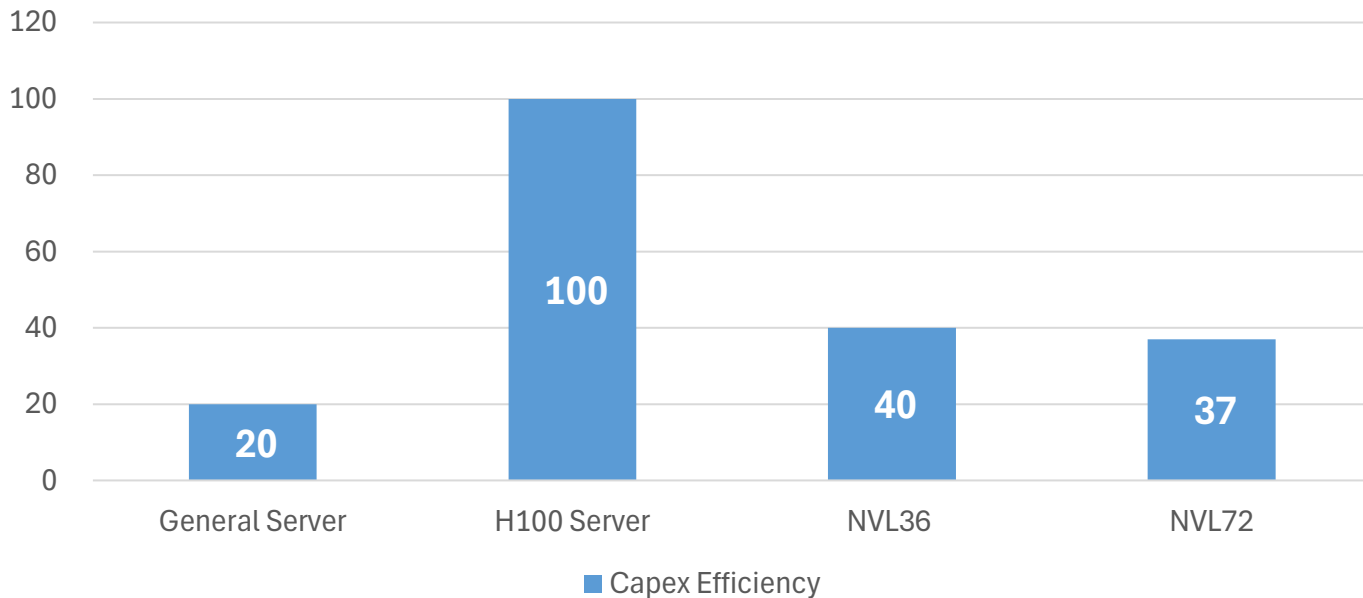
每機櫃的 BMC 使用量

BMC 使用量



資本支出效率 (Capex Efficiency)

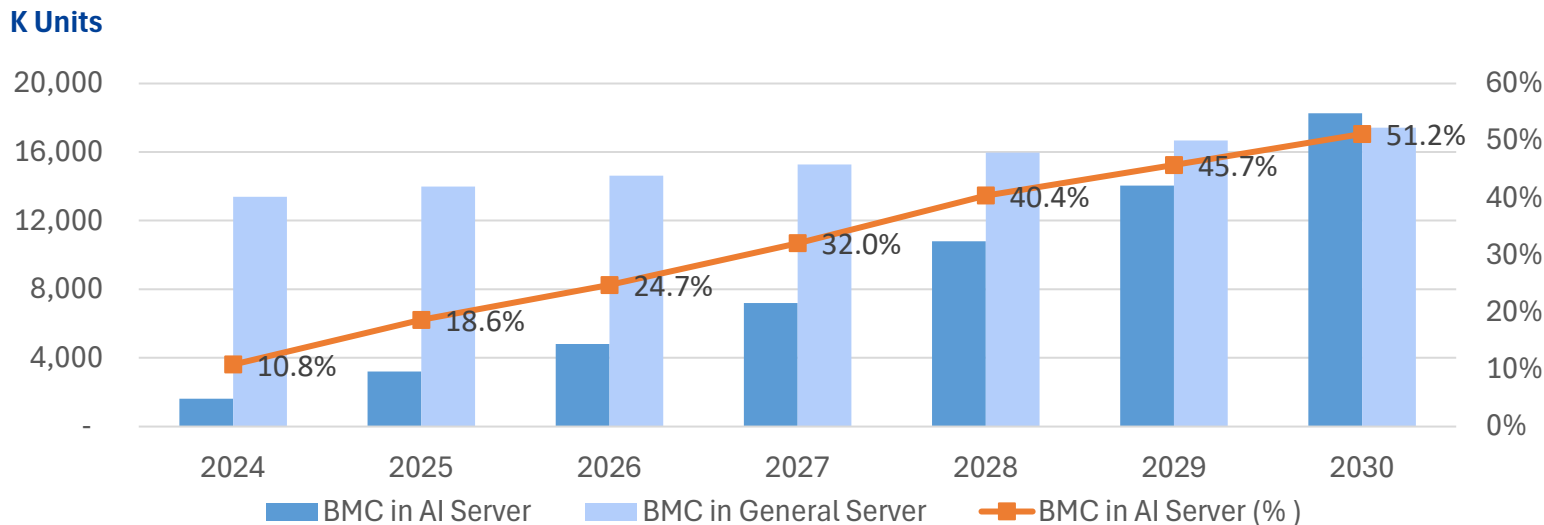
Thousand USD



備註：資本支出效率 (Capex efficiency) 定義為貢獻 1 顆 BMC 需求所需的伺服器資本支出金額

BMC 市場預估

- AI 伺服器市場拉動的 BMC 出貨量將於 2030 年超越通用伺服器所需的 BMC 數量



備註：1) BMC in AI Server (%) 是 AI 伺服器中使用的 BMC 數量相對於 BMC 總出貨量的百分比。

2) 通用伺服器的 BMC 需求量將以 4.5% 的年複合成長率增長，而 AI 伺服器中的 BMC 數量將以 49.6% 的年複合成長率增長。

來源：信驊科技預估

The ASPEED logo is located in the top left corner. It features the word "ASPEED" in a bold, italicized, sans-serif font. The letter "A" is stylized with a horizontal line through its center. The logo is white and stands out against the dark blue background of the circuit board.

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The background of the slide is a close-up, high-angle photograph of a microchip mounted on a circuit board. The chip is a square, dark blue component with a gold-colored border and pins. It is surrounded by a complex network of white circuit traces and numerous small, gold-colored components. The lighting is dramatic, with bright blue and white highlights on the chip and traces, and deep shadows in the surrounding areas. The right side of the slide is a solid blue triangle that contains the title text.

產品與科技發展

產品組合

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雲端企業產品

BMC : AST2500, AST2600, **AST2700**

BIC : AST1030

PFR : AST1060

I/O Expander : **AST1700**

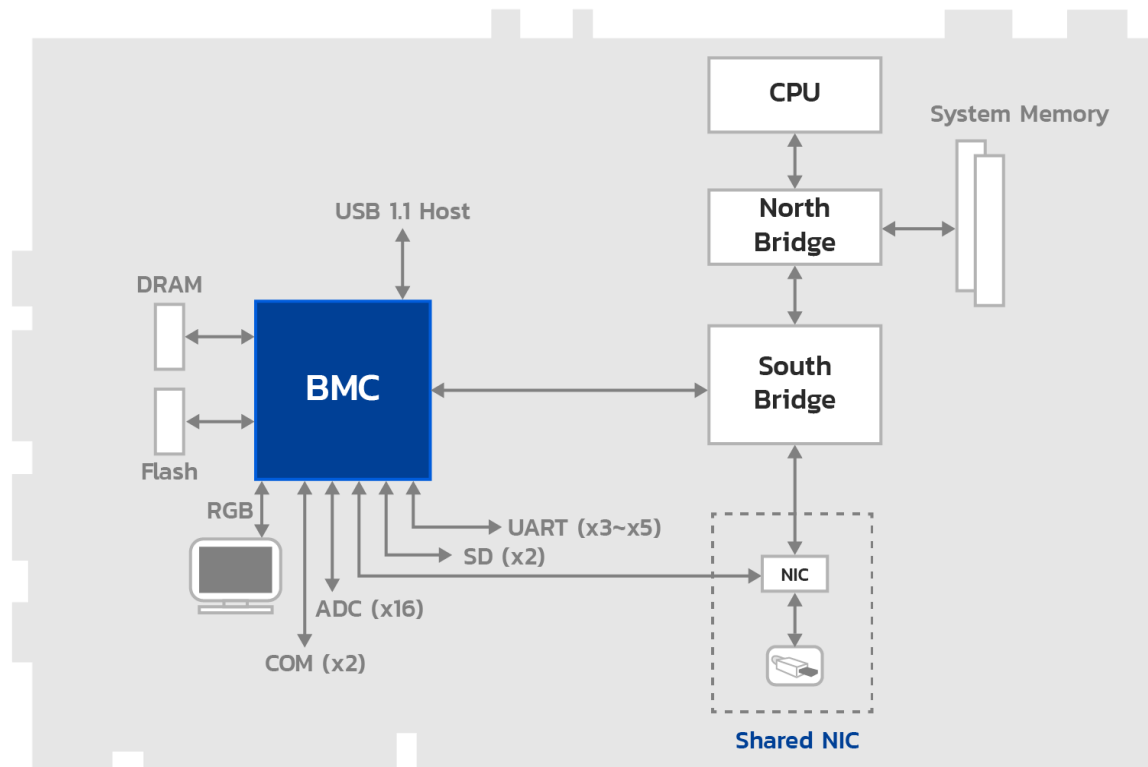
智慧AV產品

AV Matrix : AST1520, AST1530, **A1540**

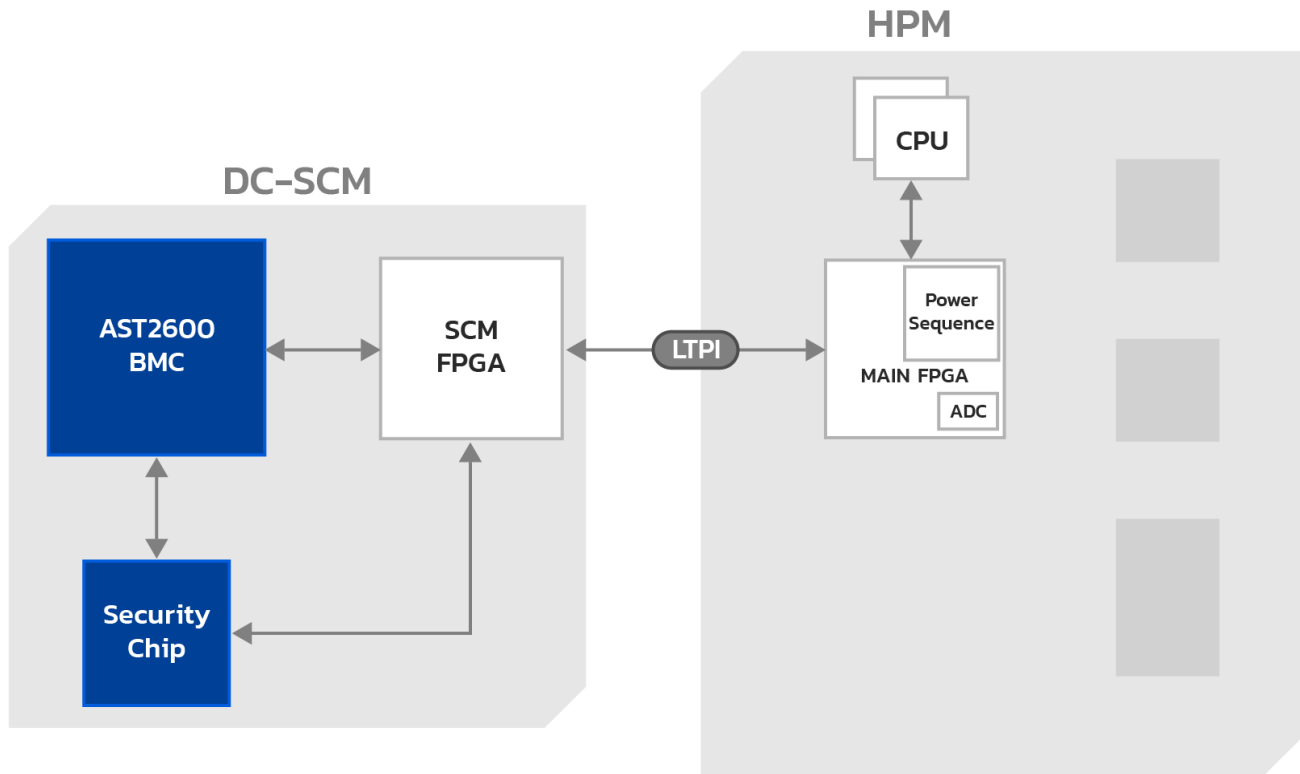
AV Extender: AST1620, AST1630

Cupola360 : AST1220, AST1230, **AST1240**

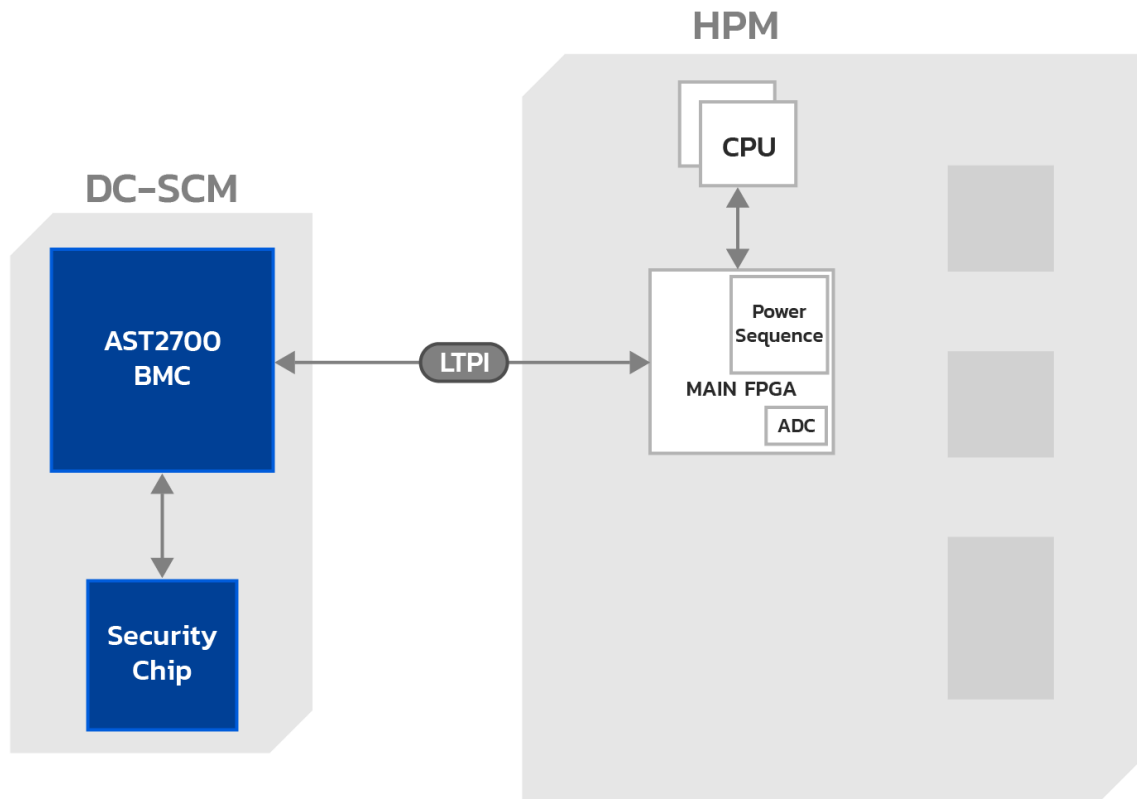
BMC 在傳統伺服器的架構



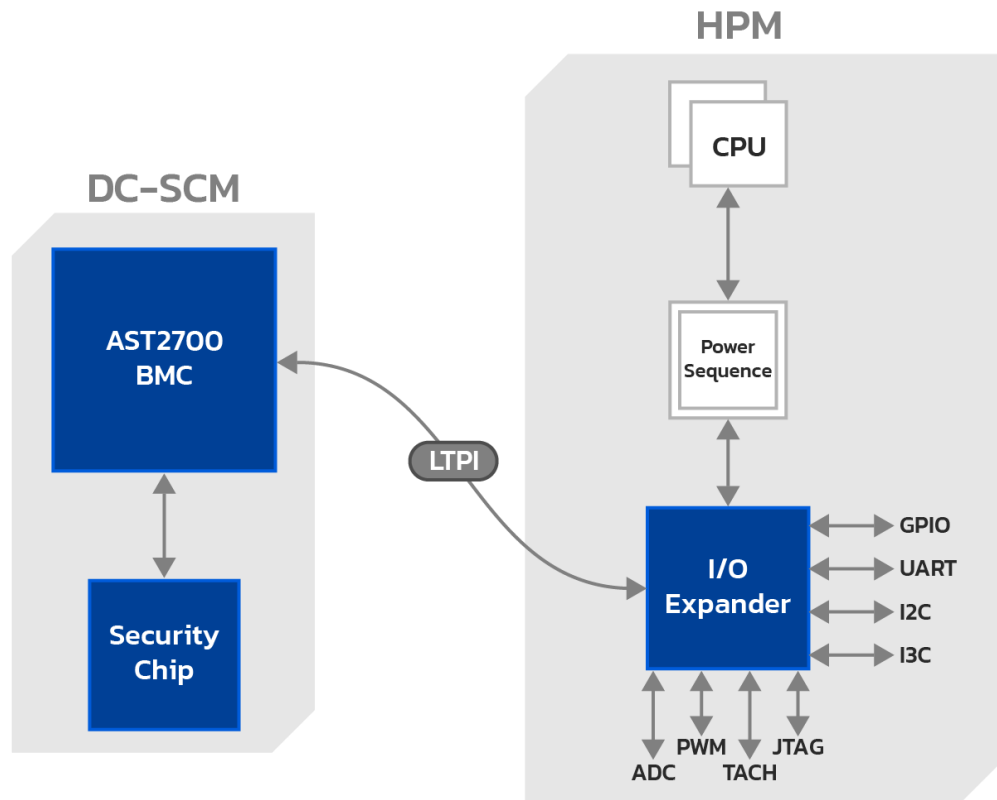
當前主流的 BMC 在 DC-SCM 架構



下一世代的 BMC



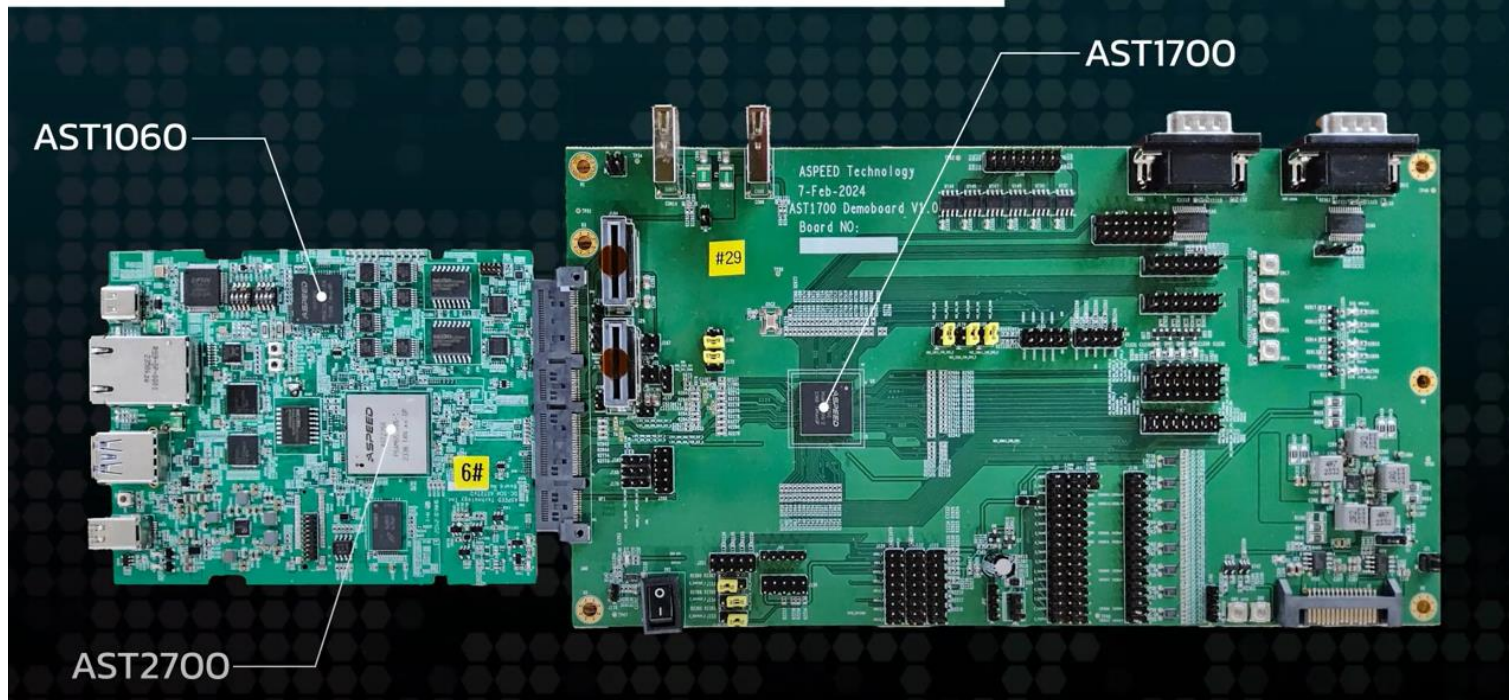
下一世代的 BMC 搭配 I/O 擴展晶片



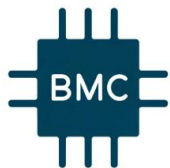
BMC 搭配 I/O 擴展晶片的示範伺服器主板

AST2700/AST1700 DC-SCM demo board

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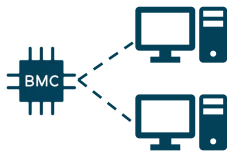
AST2700 功能增強與創新



有史以來最強大的 BMC (速度提升 28 倍)

- 1 顆 ARM Cortex®-A35 (Quda-core 1.6GHz per core)
- 2 顆 ARM Cortex®-M4 (400MHz)
- 2 顆 RISC-V CPU

* Multi-Thread benchmark between AST2600 and AST2700



第一款支援雙節點的 BMC

- AST2750



整合南橋 (Southbridge) 功能

- USB 3.2 over PCIe xHCI



符合 OCP DC-SCM 標準

- LVDS Tunneling and Protocol Interface (LTPI)
- SiRoT (Caliptra)

arm

RISC-V



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AST1700 優勢



簡化硬體設計

- 無韌體，透過 LTPI 介面連接到 AST2700
- EIO (I3C, I2C, GPIO, JTAG, PWM, FAN 技術...)



簡化軟體開發

- 無需軟體開發、升級、維護和保護工作
- 由 AST2700 系列產品無縫控制



差異化的增值功能

- I3C Expansion and MCTP over I3C
- MCTP over SMBus (I2C)



BMC 商業策略

	通用伺服器	AI 伺服器
趨勢	個位數增長率	高速增長
策略	最大化每台伺服器的營收份額	<ul style="list-style-type: none">• 最小化總擁有成本 (TCO)

2024年第三季度展望



營運展望

雲端企業解決方案

- 掌握 AI 伺服器需求的強勁增長機會。
- 通用伺服器在 2024 年溫和復甦。
- 最大化每台伺服器內含的信驛晶片價值(dollar content per server)。
 - 下一世代 BMC 的價值增長與安全晶片及 I/O 擴充晶片導入市場。

智慧AV解決方案

- 預計 AVoIP 在 2024 年將維持其雙位數的增長率。
- 酷博樂 360 迅速佈署到智慧工廠以及其他應用場景。



營運展望

2024年第三季預估

- 合併營收：約新台幣 **16 億元 ~ 17 億元**
- 毛利率：**63.2% ~ 64.7%**



Q&A

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