3D Xpoint in 2025

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Flash Memory Summit

Product Forecasts

- Optane (and eventually Micron) 3D Xpoint SSDs will differentiate themselves MORE from Fast NAND Products in 2021+
  - Controller improvements
  - PCIe Gen 4 allows Chip/Cell speed differentiation to shine through
- Optane DC persistent Memory will grow steadily
  - Gen 1 and Gen 2 DIMMs will continue to sell and grow steadily BUT…
  - The Future of Persistent Memory is not on the DRAM bus
    - The right answer for multiple sources, growth, and easier development is a new Bus (CXL and others). This will lead to inflection point in 2023 timeframe

3D Xpoint Revenue

Aug 2019	2020	2022	2024
3DXP (Non-DIMM)	$650M	$750M	$800M
3DXP (DIMM)	$700M	$1.9B	$2.8B
3DXP (Total)	$1.35B	$2.65B	$3.6B

**NOV 2020 NEW!*	2020	2022	2024
3DXP (Non-DIMM)	$500M	$750M	$800M
3DXP (DIMM/NEW BUS)	$600M	$1.0B	$2.8B
3DXP (Total)	$1.10B	$1.75B	$3.6B

This is for Micron and Intel. Micron is minimal impact until 2022+. Significant Micron ramp would be upside
Non-DIMM Data based on projections for Optane SSDs and memory sales
DIMM data based on assumptions for Cascade/Cooper lake share, server DIMM attach rate, average Optane density
Intel may report out Revenue numbers in preparation for Hynix Sales of NAND unit.

3D Xpoint in 2025

- 3D Xpoint will be the dominant persistent memory technology in 2025
- >4.5B GBs shipping in 2025
- >$4B in Revenue from Micron and Intel (and any partner)
- Persistent memory is accessed on DRAM and CXL Bus.
- RDMA Persistent memory available
- Fastest SSDs are shipped with 3D Xpoint
- Competition exists, but simple fuels growth and adoption

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