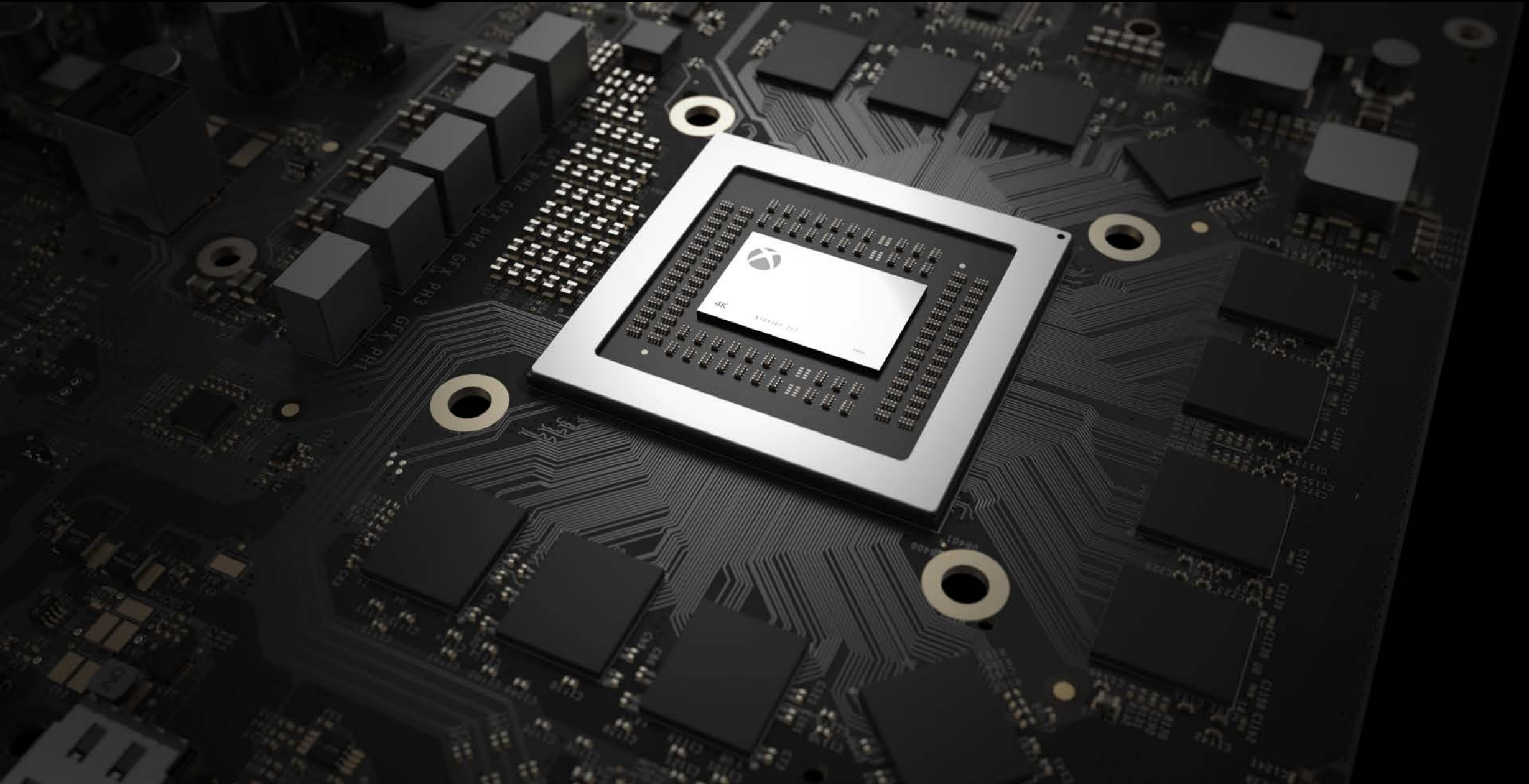


XBOX ONE X SCORPIO ENGINE



SCORPIO ENGINE

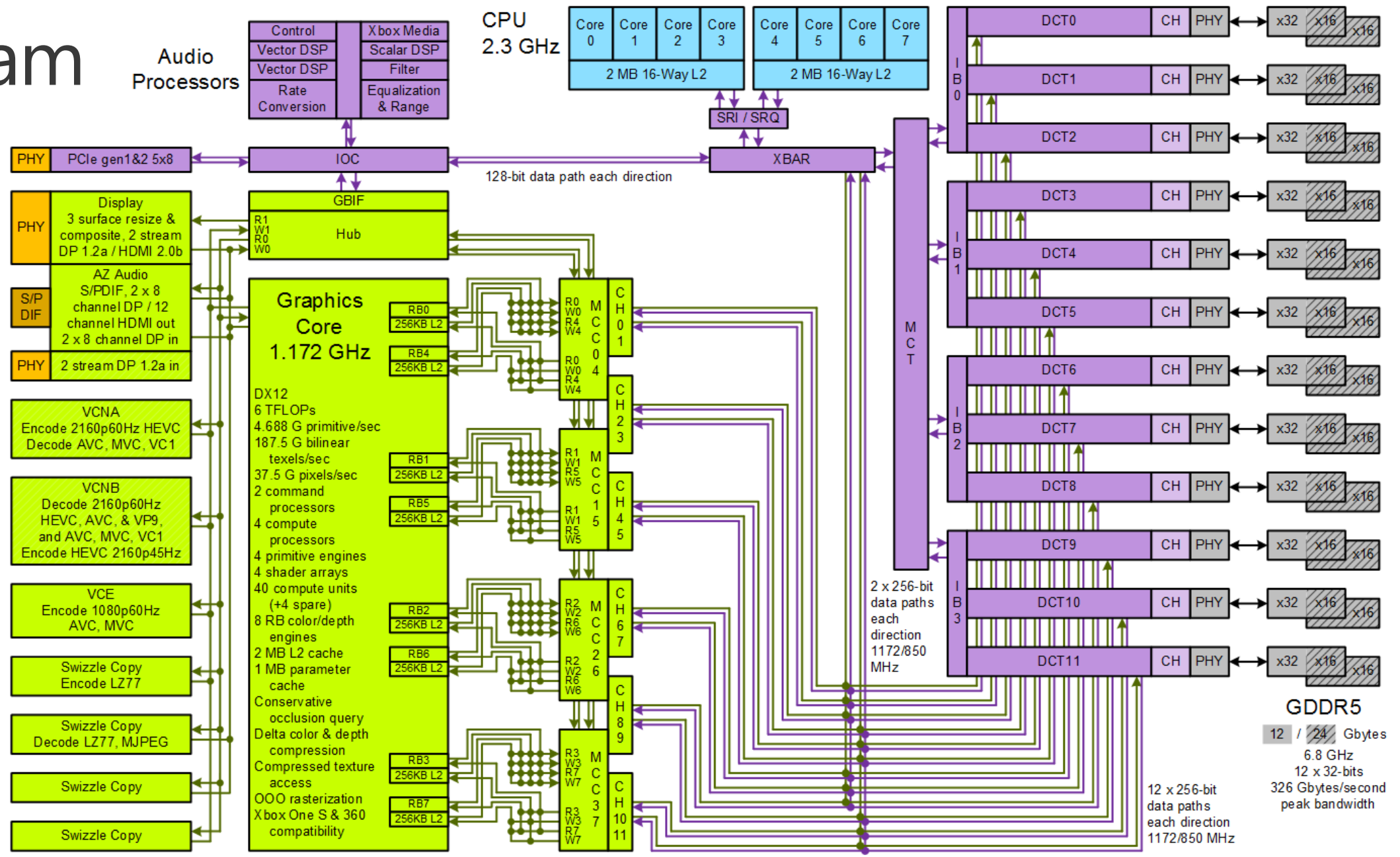
- True 4K, 2160p, 60 Hz games
- 7 billion transistors
- TSMC 16FF+ technology
- 359 mm² die
- 50 mm module
- Developed in partnership with AMD



Physical Layout



Diagram



GPU

- 4 compute processors, 2 command processors, DX12 firmware, new work distribution
- 4 shader engines: 4.688 G primitives/second (2.6x)
- 4 shader arrays:
 - 6 TFLOPs: 40 compute units x 128 FLOPs x 1.172 GHz (4.3x)
 - 187.5 G bilinear texels/second (4.3x)
- 8 RB color/depth engines: 37.5 G pixels/second (2.6x)
- 2 MB L2 cache with bypass and index buffer access (4x)
- 1 MB parameter cache (4x)
- Conservative occlusion query
- Delta color and depth compression
- Compressed texture access
- OOO rasterization
- Xbox One S and 360 compatibility

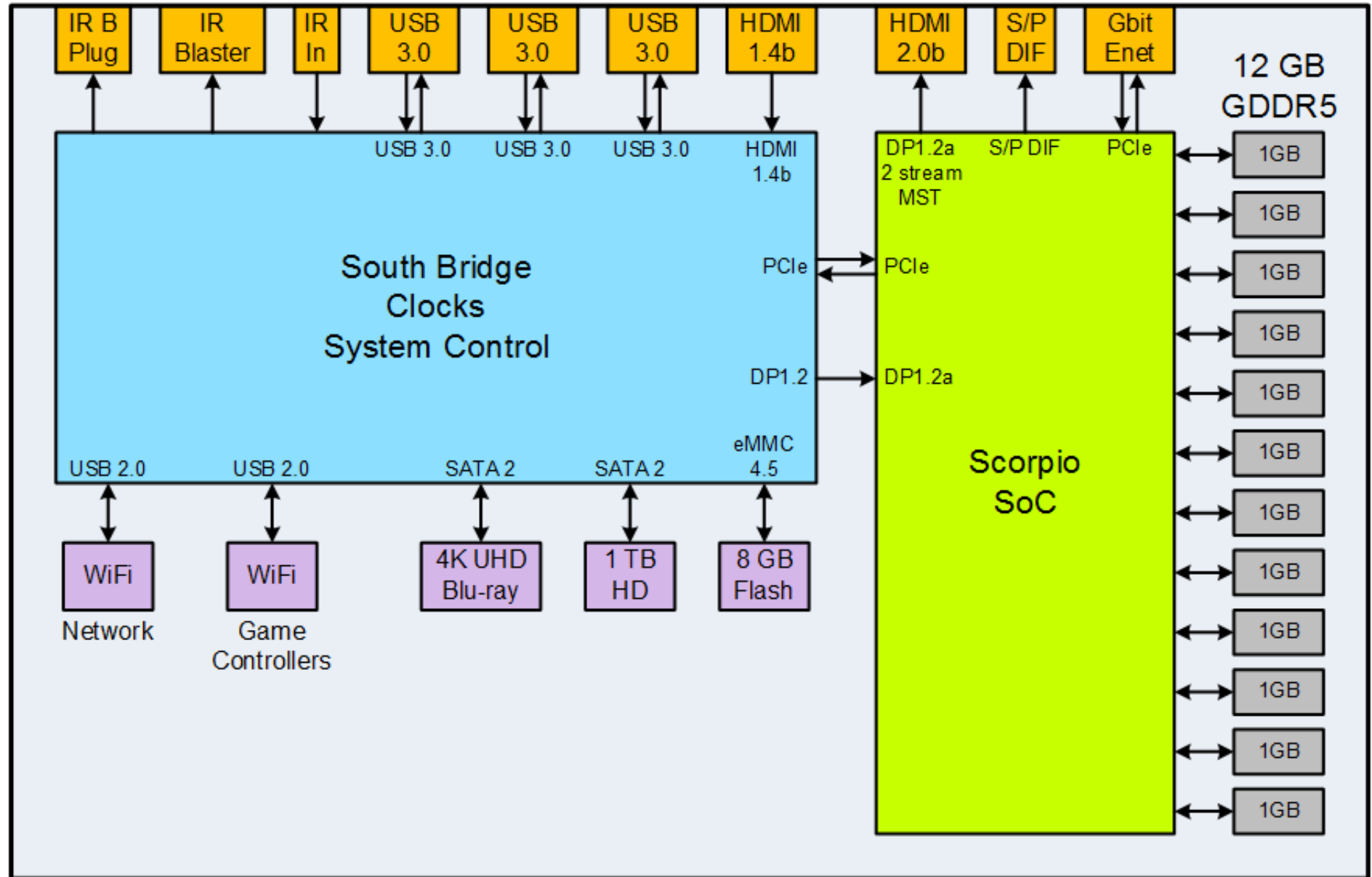
CPU

- 8 x86 cores, 2.3 GHz (1.3x)
- 32 KB L1I, 32 KB L1D caches per core
- 4 MB shared L2 cache (2 MB per 4 core cluster)
- Lower main memory latency (up to 20%)
- 12 channels and 192 banks of main memory (3x and 6x)
- 2048 entry L2I TLB and L2D TLB for 4 KB pages (4x)
- 32 entry L1I TLB for 4 KB pages, 8 entry L1I TLB for 2 MB pages
- 40 entry L1D TLB for 4 KB pages, 8 entry L1D TLB for 2 MB pages, 256 entry L2D TLB for 2MB pages
- Page Descriptor Cache of nested translations (up to 4.3% performance)

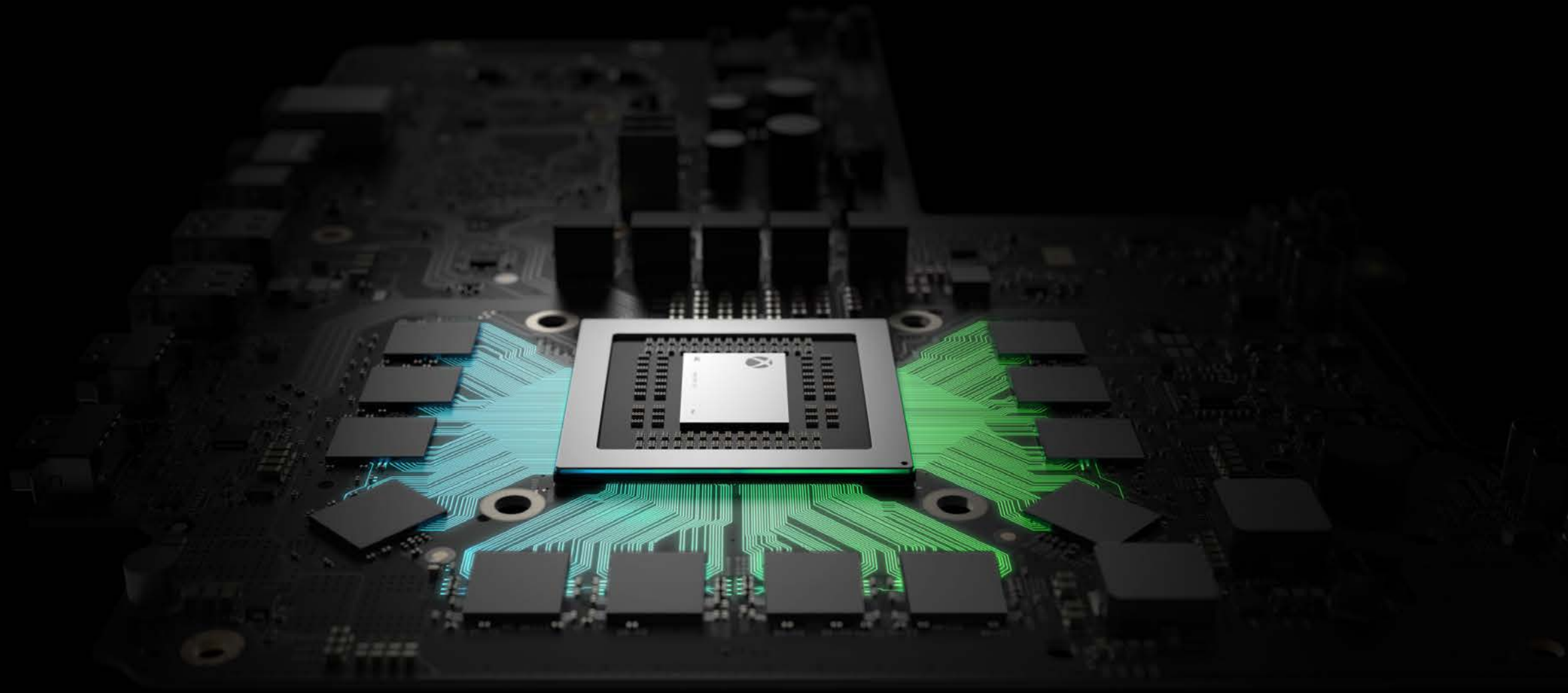
AV

- Video decoding for cut-scenes and multimedia
 - 4K p60Hz HEVC, VP9, AVC
 - 10-bit high dynamic range HEVC, VP9
- Video encoding for DVR and streaming
 - 4K p60Hz HEVC
- Display
 - 4K, 64-bit, 3-surface resize and blending
 - Pre-multiplied floating point alpha
 - 10-bit high dynamic range
 - DP 1.2a / HDMI 2.0b, HDCP 2.2, two-stream MST
- Audio
 - 8 custom processors, new firmware, e.g. spatial surround (also for Xbox One S)

System



November 7, 2017





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