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# EXHIBIT F

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Claim 1

A method for processing data at an (X) internet site comprising:  
providing a (B) reconfigurable server at said (X) site incorporating at least one (C) microprocessor and at least one (D) reconfigurable processing element;

#### The New F1 Instance

Today we are launching a developer preview of the new F1 instance. In addition to building applications and services for your own use, you will be able to package them up for sale and reuse in [AWS Marketplace](#). Putting it all together, you will be able to avoid all of the capital-intensive and time-consuming steps that were once a prerequisite to the use of FPGA-powered applications, using a business model that is more akin to that used for every other type of software. We are giving you the ability to design your own logic, simulate and verify it using cloud-based tools, and then get it to market in a matter of days.

(C) → Equipped with Intel Broadwell E5 2686 v4 processors (2.3 GHz base speed, 2.7 GHz Turbo mode on all cores, and 3.0 GHz Turbo mode on one core), up to 976 GiB of memory, up to 4 TB of NVMe SSD storage, and one to eight FPGAs, the F1 instances provide you with plenty of resources to complement your core, FPGA-based logic. The FPGAs are dedicated to the instance and are isolated for use in multi-tenant environments.

Here are the specs on the FPGA (remember that there are up to eight of these in a single F1 instance): (B)

- (D) →
- Xilinx UltraScale+ VU9P fabricated using a 16 nm process.
  - 64 GiB of ECC-protected memory on a 288-bit wide bus (four DDR4 channels).
  - Dedicated PCIe x16 interface to the CPU.
  - Approximately 2.5 million logic elements.
  - Approximately 6,800 Digital Signal Processing (DSP) engines.
  - Virtual JTAG interface for debugging.

In instances with more than one FPGA, dedicated PCIe fabric allows the FPGAs to share the same memory address space and to communicate with each other across a PCIe Fabric at up to 12 gigabytes per second in each direction. The FPGAs within an instance share access to a 400 Gbps bidirectional ring for low-latency, high bandwidth communication (you'll need to define your own protocol in order to make use of this advanced feature).

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## Announcing Amazon EC2 F1 Instances with Custom FPGAs

Hardware-Accelerated Computing on AWS

F1

F1 instances offer customizable hardware acceleration with field programmable gate arrays (FPGAs).

### Instances Features:

- High Frequency Intel Xeon E5-2686 v4 (Broadwell) Processors
- NVMe SSD Storage
- Support for Amazon EC2 Enhanced Networking

### FPGA Features:

- Xilinx UltraScale+ VU9P FPGAs
- 64 GiB of ECC-protected memory on 4x DDR4
- Dedicated PCI-Express x16 interface
- Approximately 2.5 million logic elements
- Approximately 6,800 Digital Signal Processing (DSP) engines
- [FPGA Developer AMI](#)

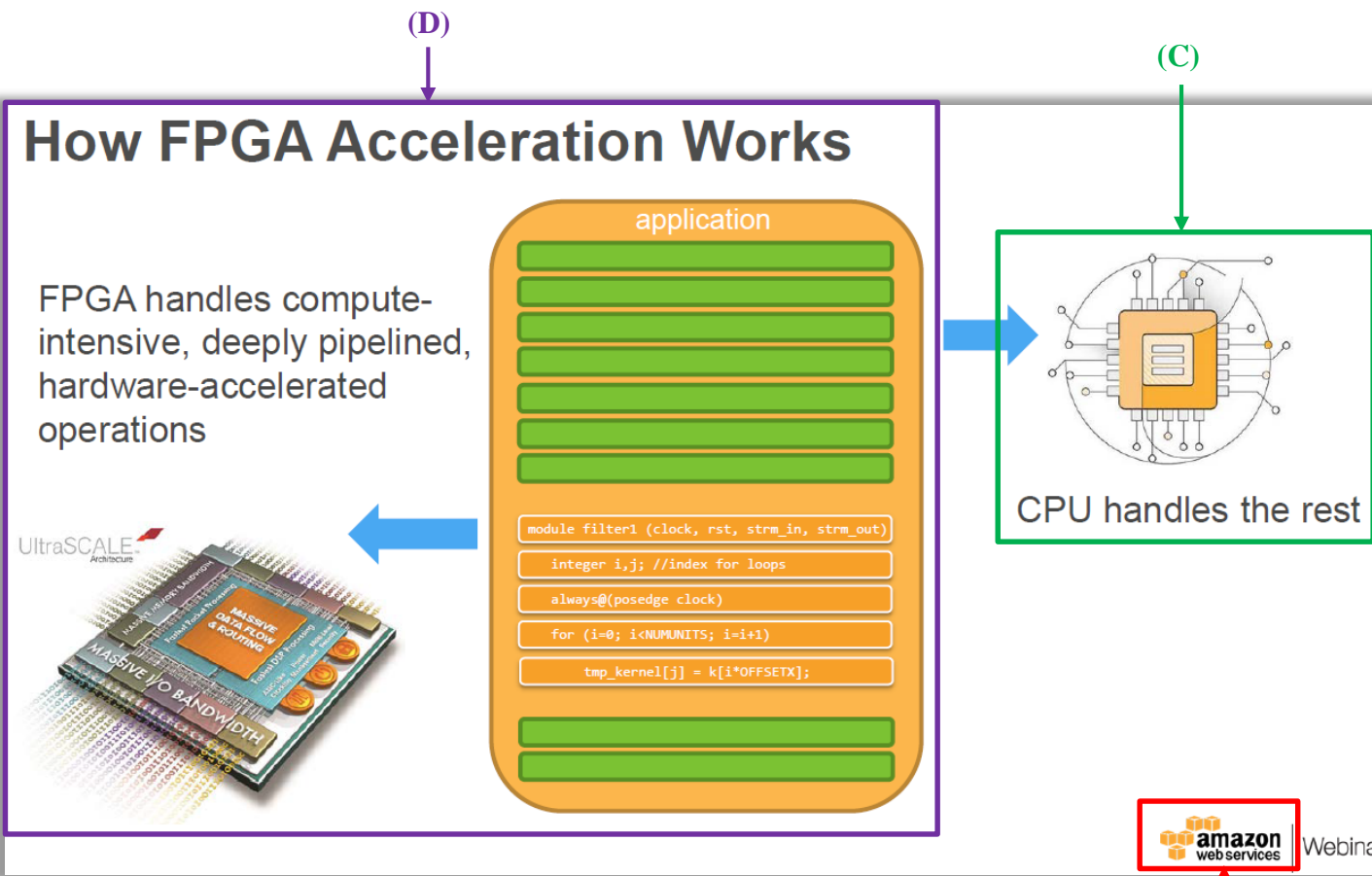
Model	FPGAs	vCPU	Mem (GiB)	SSD Storage (GB)	Networking Performance
f1.2xlarge	1	8	122	470	Up to 10 Gigabit
f1.16xlarge	8	64	976	4 x 940	20 Gigabit

For f1.16xlarge instances, the dedicated PCI-e fabric lets the FPGAs share the same memory space and communicate with each other across the fabric at up to 12 GBps in each direction. The FPGAs within the f1.16xlarge share access to a 400 Gbps bidirectional ring for low-latency, high bandwidth communication.

Source: <https://www.slideshare.net/AmazonWebServices/announcing-amazon-ec2-f1-instances-with-custom-fpgas>

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(X)

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receiving N data elements at said (X) site relative to a remote computer coupled to said (X) site; (E) instantiating N of (D) reconfigurable processing elements at said (B) reconfigurable server; and processing said N data elements with corresponding ones of said N (D) reconfigurable processing elements.

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