

## ACCELERATING SENSOR SIGNAL PROCESSING WITH THE ALVEO™ U55C CARD

### INTRODUCTION

Sensor signal processing applies mathematical and practical applications of signal processing algorithms that learn, reason and act.

Signal processing techniques have broad usage for advanced applications including:

- Biomedical imaging
- Computer vision and 3D modeling
- Data science and analytics for big data
- Deep learning
- Energy management
- Pattern recognition and analysis
- Precision farming
- Machine learning
- Radio astronomy
- Traffic monitoring
- Weather forecasting

*The explosion of sensors at the Edge has accelerated the need to process data in real-time.*

### ACCELERATING SIGNAL PROCESSING

The Alveo U55C card is ideally suited for processing terabytes of sensor data in real time, via distributed processing across hundreds of Alveo accelerator cards.

Deploying Alveo U55C cards as network-attached accelerators with high-bandwidth memory (HBM2) allows for massive throughput at scale across the HPC signal processing cluster.



### THE ALVEO U55C CARD ADVANTAGE

Built from the ground up to deliver the best performance-per-watt for HPC and Big Data workloads, the [Alveo™ U55C accelerator card](#) delivers the efficiency and scalability called for by the most demanding applications.

The U55C delivers dense compute and HBM, with onboard 200Gbps networking enabling massive scale-out using Xilinx's groundbreaking open-standards based clustering.

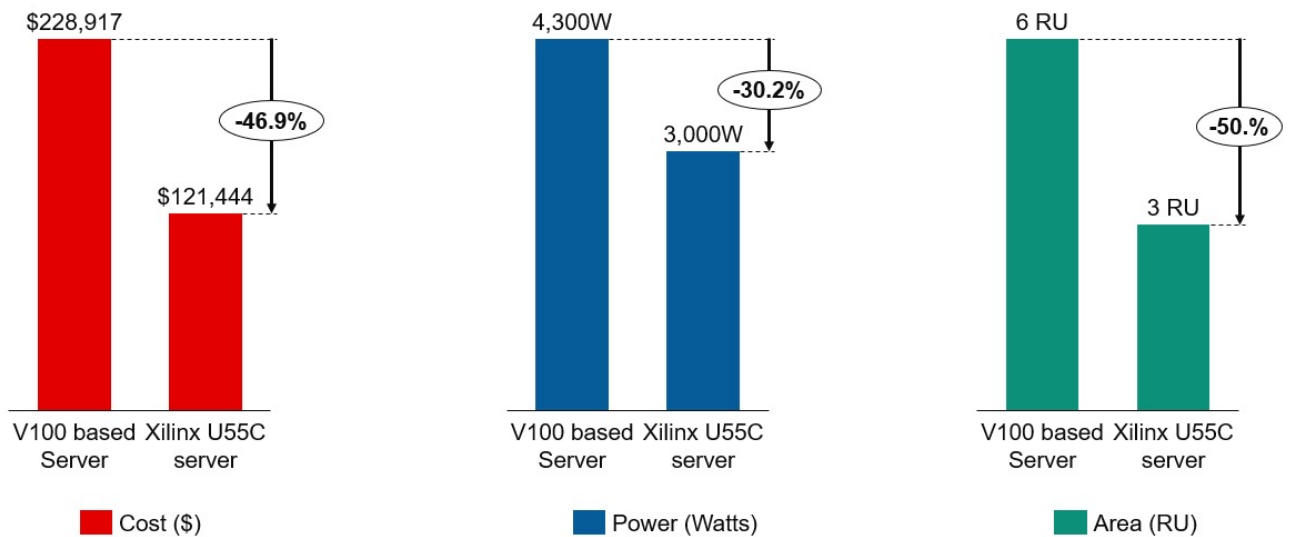
The U55C harnesses the power of Xilinx Adaptive Computing to deliver extraordinary performance unmatched by competing architectures, with:

- Data pipeline hyperparallelism
- Superior memory management
- Optimized data movement

# REAL-TIME RADIO ASTRONOMY WITH THE ALVEO U55C

One of the world's largest radio astronomy antenna arrays has built an HPC cluster consisting of 400+ Alveo U55C cards and 20 P4 switches that perform end-to-end signal packet processing on incoming data at a total throughput of 15Tbps. Each Alveo FPGA in the beamformer implements end-to-end signal processing at a fraction of the bandwidth, while requiring half the number of servers and less than half the power compared to commodity GPUs for significant cost savings.

## Alveo U55C Delivers Cost Savings, Area & Power Efficiency up to 50x Lower than GPU



## TAKE THE NEXT STEP

Learn more about the Alveo U55C data center accelerator card > [xilinx.com/AlveoU55C](http://xilinx.com/AlveoU55C)

### Corporate Headquarters

Xilinx, Inc.  
2100 Logic Drive  
San Jose, CA 95124  
USA  
Tel: 408-559-7778  
[www.xilinx.com](http://www.xilinx.com)

### Europe

Xilinx Europe  
Bianconi Avenue  
Citywest Business Campus  
Saggart, County Dublin  
Ireland  
Tel: +353-1-464-0311  
[www.xilinx.com](http://www.xilinx.com)

### Japan

Xilinx K.K.  
Art Village Osaki Central Tower 4F  
1-2-2 Osaki, Shinagawa-ku  
Tokyo 141-0032 Japan  
Tel: +81-3-6744-7777  
[japan.xilinx.com](http://japan.xilinx.com)

### Asia Pacific Pte. Ltd.

Xilinx, Asia Pacific  
5 Changi Business Park  
Singapore 486040  
Tel: +65-6407-3000  
[www.xilinx.com](http://www.xilinx.com)

### India

Xilinx India Technology  
Services Pvt. Ltd.  
Block A, B & C, 8th, 12th and 13th Floors,  
Meenakshi Tech Park, Survey No. 39,  
Gachibowli (V), Serilingampally (M),  
Hyderabad - 500 084 India  
Tel: +91-40-6721-4747  
[www.xilinx.com](http://www.xilinx.com)

