**Hewlett Packard Enterprise**

# Avion Simulators builds innovative flight simulator on HPE servers

## HPE OEM partnership helps reduces cost and boost efficiency of pilot training worldwide

**Industry**
Flight Simulation

**Objective**
Reduce the cost and form factor of flight simulators that improve aircraft safety and enable airline compliance with regulated training requirements

**Approach**
Design HPE servers into flight simulators and deliver them worldwide backed by HPE support

**IT Matters**
- Reduces IT complexity due to servers integrated directly into flight simulators

- Minimizes the form factor needed for flight simulation

- Streamlines server management and minimizes cabling requirements

**Business Matters**
- Significantly reduces product costs through direct integration of servers into simulation platforms

- Supports revenue growth by leveraging the value of the HPE brand to reinforce the quality of the technology and services included with each simulator

- Enabling greater market penetration by reduces customer costs by an average of 40%

The Avion 320 Full Flight Simulator (FFS) is the most advanced flight simulator in the world, designed from the ground-up to integrate all of the required technology within the simulator to drive down flight training costs while minimizing facility requirements and maintenance costs. By participating in the HPE OEM program, Avion Simulators has developed an innovative flight simulation solution that is allowing airline carriers worldwide to reduce training costs, more carefully prepare pilots, and improve airline safety.

To provide its customers with a more reliable, cost-effective alternative to traditional flight simulators, Avion Simulators designed a fully-integrated flight simulator with on-board servers and a simulator data backbone running high-speed Ethernet, eliminating the need for expensive ARINC and other proprietary interfacing protocols. The result

is an extremely reliable and cost-effective real-time flight simulator with reduced maintenance and operations costs.

Using the latest solid-state technologies and top-of-the line server hardware allows Avion Simulators to reduce both equipment interfacing costs and IT facility requirements. Despite the fact that all hardware is on-board, the A320 FFS is the lightest and most energy-efficient flight simulator available today and it also includes the climate control system on-board to further increase energy efficiency and streamline operations and maintenance.

Avion Simulators, an Avion Group company founded in 2015, partnered with HPE for an OEM solution that includes HPE servers and networking designed into the simulation platform. This is a departure from the traditional method of requiring separate deployments of the computing environment

"Our participation in the HPE OEM program is allowing us to deliver extremely reliable and effective real-time simulation that reduces the total cost of ownership for airlines through lower maintenance costs, fast and flexible deployment, and global service and support."

— Arthur Bezuidenhout, CEO of Avion Simulators

outside of the flight simulator.

This innovative design reduces the cost model for flight simulation, the Avion A320 FFS is now deployed by airlines primarily throughout China, Russia, India, and the Asia Pacific. Each Avion A320 FFS simulates an Airbus A320 airplane and includes two integrated HPE ProLiant ML350 Gen9 Servers with 3 NVIDIA Quadro K6000 PCI-E Graphics Adapters, two ProLiant DL360 Gen9 Servers, and one HPE Aruba 2920-48G Fixed Port L3 Managed Ethernet Switches.

Avion Simulators worked closely with HPE converged infrastructure partner PQR to significantly reduce production costs by streamlining the setup and deployment of the A320 FFS. The HPE OEM partnership is allowing Avion Simulators to back each unit with HPE Global Support and HPE Proactive Care services so airline clients can be sure that the IT infrastructure delivered with each A320 FFS remains stable and reliable, which is particularly important since flight simulators can be used up to 24 hours daily, seven days a week to train pilots.

The A320 FFS was developed without focusing on the constraints of conventional wisdom, with clear design goals including:

- The lowest weight of any FFS
- Everything on-board

- Environmental toughness
- Minimum facility requirements
- Extremely low maintenance
- Extremely low costs

"Pilots need continuous training to ensure passenger safety and prepare for a wide spectrum of emergency situations, and smaller airlines are hard-pressed to buy and support flight simulation platforms that can help them meet regulated training requirements," says Bezuidenhout. "We combined the best ideas and out-of-the-box thinking to design a product that is cost effective as well as easy to use for the people who actually use it, including pilots, flight instructors, and maintenance personnel."

### What distinguishes Avion Simulators from the traditional flight simulators?

While a traditional flight simulator requires an external computing environment consisting of at least four-to-five 19-inch racks housing servers deployed in an air-conditioned computing environment, Avion Simulators has integrated the HPE servers and switches within the simulator, reducing the form factor of the simulator and streamlining deployment, operations, and management of the IT infrastructure.

"By incorporating HPE hardware within the frame of our simulator, we eliminate miles of

## Customer at a glance

**HPE Hardware**
- HPE ProLiant ML360 Gen9 Servers
- HPE ProLiant DL360 Gen9 Servers
- HPE Aruba 2929-48G Switches

**HPE Services**
- HPE Proactive Care
- HPE Global Support

cabling and have relied on virtual machines (VMs) hosted on the servers to simplify and streamline the processing environment," states Bezuidenhout. "We've reduced the complexity of flight simulation by downsizing multiple server racks into powerful HPE servers with lots of memory integrated within the frame of each simulator to create a 'plug-and-fly' machine that can be deployed in just five days, instead of the two-to-three months required to deploy traditional simulators."

HPE ships the servers to the company's factory in the Netherlands, where Avion Simulator engineers load the company's proprietary software and integrate the servers into each simulator. "While competitors require multiple wired connections to server infrastructure typically deployed in a datacenter, we've architected the computing environment directly into the simulator. Controlling all of the processing power onsite significantly reduces labor costs and streamlines management and software upgrades," says Bezuidenhout.

Avion Sims has clearly defined the market for its innovative simulators. "While large airlines are accustomed to the costs and IT support requirements of legacy flight simulators, smaller airlines that lack the IT infrastructure or the budget to support the traditional approach see great value in our approach," Bezuidenhout states. "They're able to reduce their flight training costs by up to 40% while increasing flight safety by leveraging our competency-based simulation software that helps pilots more quickly recognize and address real-world flight problems."

He adds, "After evaluating IBM, we selected the HPE OEM program because HPE swiftly developed a prototype of the server and switching infrastructure we needed and recognized our business requirement for incorporating the server and switching technologies within the simulator frame. HPE not only provided a hardware solution that could help us accelerate time to market and revenue growth, but also offered the global support infrastructure we needed to support around-the-clock operations of our flight simulators."

Avion Simulators continues to innovate, and is now leveraging solar power to fuel its flight simulators in sunny climates. The energy costs of powering an A320 FFS is about 42% less than the cost of powering competitive simulators, and Avion Sims can build a new flight simulator in 81 days, while it typically takes a competitor from six to nine months.

Now that the A320 FFS is in broad distribution, Avion Simulators is in the process of expanding its product line to develop similar integrated flight simulators for additional airplane environments. "Our relentless drive to produce the most innovative, yet cost-effective full flight simulator is what makes us proud," explains Bezuidenhout. "Our passion makes it possible for more airlines and flight training organizations to provide high-quality training when conventional simulators are out of reach financially and organizationally."

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