



Flexibility and rugged design makes the Versatile Computing Platform (VCP) an adaptable solution for most any aircraft.

The GE Aviation Versatile Computing Platform (VCP) is a family of rugged embedded computers developed to satisfy a wide range of vehicle and mission computing applications. The VCP uses open architecture components and software to provide a flexible yet cost effective solution. The VCP provides standard digital avionics interfaces for vehicle or mission computer systems. The baseline VCP configuration contains a 6-slot 3U OpenVPX backplane, up to three 3U Single Board Computer (SBC) processor cards, up to eight I/O cards (3U and XMC), an Electro Magnetic Interference (EMI) filter assembly, and a power supply housed in a passive cooled chassis.

The VCP architecture uses OpenVPX multi-core processors and network fabric backplane technology integrated with standard and application unique avionics interfaces. System redundancy is supported by multiple Cross Channel Data Links and custom discrete interfaces. The VCP maximizes the use of COTS components to leverage the latest commercial driven technology and minimize development and production costs. The VCP unit provides the resources to meet a wide range of applications without modification or with minimum modifications while providing a common software environment for hosted applications.

The VCP is provided application ready; it comes with the GE Synergy software stack for application development. In addition to a Real Time Operating System (RTOS) and Board Support Package (BSP), the Synergy software stack includes all of the software components necessary to fully support embedded avionics application software development such as I/O drivers, Built-In-Test (BIT) functions, runtime libraries, and ground support tools. The GE Synergy components are designed to provide standard application program interfaces and a hardware abstraction layer in order to isolate the impact of future hardware modifications to the customer's application software, allowing low cost technology updates.

Key Features

- 6-Slot 3U VPX/PCIe Backplane
 - Dedicated PCIe lanes between all SBCs and from Slot 1 SBC to I/O
- Support for the latest Freescale Multi-core VPX SBCs (2 SBCs in baseline)
- GE Synergy Software Stack Designed to Minimize Development Cost
 - Standard Platform API compatible with Wind River VxWorks 6.9
 - Enhanced Avionics Capabilities
- On-Aircraft 615A loader
- Fast Restart (i.e. < 100 ms)
- Integrated System BIT
- Full Avionics System Design and Analysis (including COTS components)
- Requirements and DAL Analysis
- FMEA/MTBF/MTBCF
- EMI and Lightning protected MIL-DTL-38999 Flight Connectors
- Flexible I/O Configuration
 - 1394, A429, 1553
 - Ethernet (1000/100/10)
 - RS-422/485
 - Discrete I/O (28V/Open, Open/Gnd)
 - 1 PPS Receiver/Repeater
- Dual, Triple, or Quad System Redundancy Support
 - Cross Channel Data Link (CCDL)
 - Channel Operation Discrettes



Specifications - VCP-6S1

Baseline Configuration

Length	9.8 in.
Width	8.7 in.
Height	5.5 in.
Weight	14 lbs.
Power	< 100 Watts
	28 VDC Power Supply

- (1) EMI Filter Assembly
- (2) SBC314 – 3U VPX T1042 SBC
- (1) RAR15 Quad 1553 XMC
- (2) M1394 - 3U VPX
- (2) XMC2500 – XMC I/O
- (2) Spare Slots
- 13,000 hour MTBF (estimated)

Connector I/O Details

- MIL-STD-38999 Connectors
- DO-160E XXJ22 Lightning Protection
- Test Connector:
- (4) Test Discretes (Lab Mode, Data Load Enable, NVM Write Inhibit, Spare)
- (4) Test Voltages (+5V, +3.3V, +/-12V)

VCP-6S1: A Conduction Cooled, Six-Slot 3U VPX Rugged Embedded Computer Platform

VCP Block Diagram - (Baseline Configuration VCP-6S1)

