

Military Systems Solution Brief

The Challenge – Network of Networks, Resource Coordination, Operational Integrity & Cost Management

Globally, military systems have rallied around a series of computing standards including the US Department of Defense (DoD) Defense Architecture Framework (DoDAF), and the UK's Ministry of Defense Architecture Framework [MoDAF]. These standards help military systems deliver C4I and C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance). As military systems are more deeply integrated into missions, increasing support for Network-Centric Warfare (NCW), Network Enabled Capability (NEC), and Network-Based Defense (NBD) is vital for them to provide:

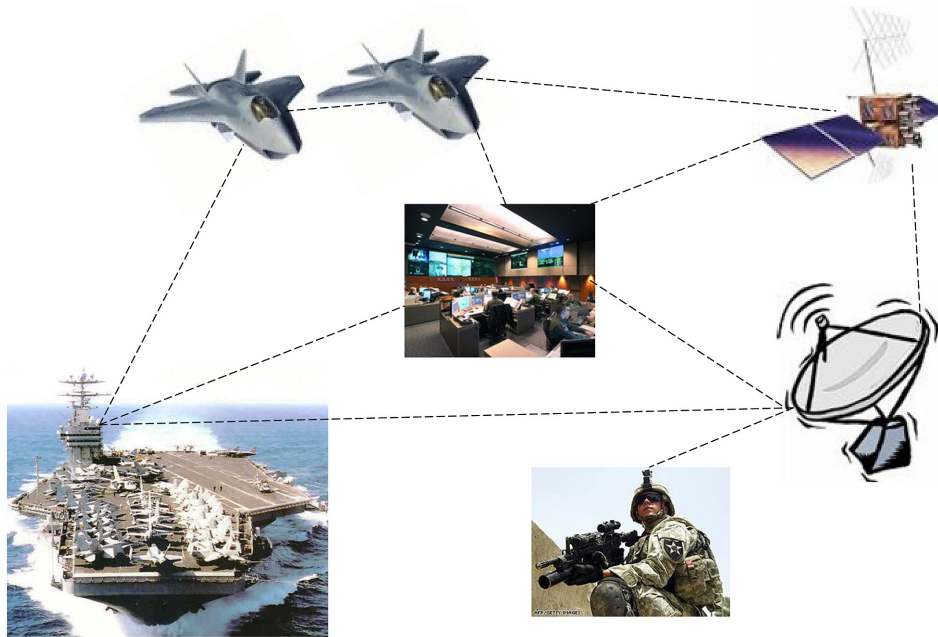
- ◇ Reliable Delivery of Network-Centric Warfare and Defense – Reliable deployment of NCW systems is vital to data-driven decision models. Military applications require unique levels of field reliability, environmental support and remote management. The key to meeting these requirements is support for leading standards that leverage shared parts, infrastructure and management models.
- ◇ Quality and Speed of Decisions – The quality, velocity and effectiveness of real-time decisions is only as good as the data they are based upon. Systems must be able to transmit accurate information across many types of systems in real time with minimal latency.
- ◇ Supporting Networks of Networks – The world of full of networks and successful missions require the ability to reliably store, transmit, interchange and receive data from a variety of networks and supports systems, flawlessly and securely.
- ◇ Using Standards to Drive Operational Cost – Budgets are a never-ending concern for all organizations. One of the key value propositions for supporting leading industry and government standards is the ability to leverage lower costs for off-the-shelf systems.

The Requirements – Military System Application Requirements

Storage is a foundational service for deploying and scaling core military systems such as satellite imaging, video systems, sensor data acquisition, situational and resource positioning and mapping systems. The following table outlines the key application storage requirements to support the scaling of current deployments and the introduction of new applications.

Application	Storage Requirement					
	High Availability	High IOPS	Scalability	Rapid Response	Multiple Streams	Capacity on Demand
Satellite Imaging	✓	✓	✓		✓	✓
Video Systems	✓		✓	✓	✓	
Sensor Data	✓	✓		✓	✓	
Situational Positioning	✓	✓		✓	✓	
Field Communications	✓	✓		✓	✓	
Mapping Systems	✓	✓	✓	✓	✓	

Network of Networks



The Solution - Astute Networks Edge Storage Architecture

Astute Networks' Edge Storage Architecture (ESA) provides the storage solutions required to help military systems vendors meet the myriad of standards, application and technical demands to execute missions on the global stage. The Caspian family of edge storage blades is based on Astute Networks' high-performance, low-power, green-friendly 10Gb ASIC technology. The Caspian meets the rigorous design criteria demanded by military systems vendors that includes: support for NEBS Level 3, advance cooling solutions that keep high-performance 15K SAS disk drives operational under extreme conditions and a 100% high-availability (HA) architecture that creates a solution with the right built-in capabilities:

- ◇ Built-in Reliability
- ◇ Built-in High Performance
- ◇ Built-in Rack Density
- ◇ Built-in Deployment Simplicity
- ◇ Built-in Power Savings
- ◇ Built on Open Standards

Application	Storage Requirement	Caspian Storage Solution Proof Points
Satellite Imaging	<ul style="list-style-type: none"> • HA Storage • High data rates • Scalable Storage • Multiple Streams 	<ul style="list-style-type: none"> • 1.3 GB/sec for blade pairs • 120 SAS/SATA/SSD Drives/Blade pair • NEBS Reliability
Video Systems	<ul style="list-style-type: none"> • HA Storage • High data rates • Scalable Storage • Multiple Streams 	<ul style="list-style-type: none"> • 1.3 GB/sec for blade pairs • 120 SAS/SATA/SSD Drives/Blade pair • NEBS Reliability
Sensor Data	<ul style="list-style-type: none"> • HA Storage • High IOPs • Rapid Response 	<ul style="list-style-type: none"> • 140K IOPs/Blade pair • 120 SAS Drives/Blade pair • NEBS Reliability
Situational Positioning	<ul style="list-style-type: none"> • HA Storage • High IOPs • Capacity on Demand 	<ul style="list-style-type: none"> • 140K IOPs/Blade pair • 120 SAS Drives/Blade pair • NEBS Reliability
Field Communications	<ul style="list-style-type: none"> • HA Storage • Multiple Streams • Rapid Response • Capacity on Demand 	<ul style="list-style-type: none"> • 140K IOPs/Blade pair • 120 Enterprise Drives/Blade Pair • NEBS Reliability • Dynamic Storage Allocation
Mapping Systems	<ul style="list-style-type: none"> • HA Storage • High IOPs • Capacity on Demand 	<ul style="list-style-type: none"> • 140K IOPs/Blade pair • 120 SAS Drives/Blade pair • NEBS Reliability

The Benefits – More Revenue, New Services, Lower Capital & Costs

The key benefits of deploying the Astute Networks Caspian Edge Storage Blade family is that it provides the right storage solutions to meet the technical, operational and applications needs of the defense market. The Caspian does this in four ways:

- ◇ Reliable Delivery for Network-Centric Warfare and Defense – The ESA has the built-in reliability (NEBS, low power, easy cooling) and simplicity of management (single SMNP console) required to make deploying and supporting applications easy and predictable. Since the Caspian family of edge storage is ATCA based, it can be pre-configured and shipped to field and command locations without the additional installation or complexity of external storage (HBAs, cables, storage chassis) which can significantly lessen time and personnel required for system configuration.
- ◇ Using Standards to Drive Operational Costs – The Caspian Edge Storage Blade family lowers operational cost vs. external FC storage by leveraging existing ATCA infrastructure, lowering FRU count, and reducing power consumption by 60% over external storage.
- ◇ Quality and Speed of Decisions – Caspian is based on Astute Networks' advanced 10Gb ASIC that offloads TCP/IP and iSCSI overhead for scalable high performance transfers. It also supports up to 60 SAS, SSD and SATA drives to meet transactional and streaming requirements and provides storage scalability to meet growing media applications.
- ◇ Supporting Networks of Networks – Astute Networks uses standard 10Gb Ethernet and IP to support leading network systems for all C4ISR applications.

To Learn More

To learn more about the Astute Networks Edge Storage Architecture and the Caspian family of edge storage blades, please visit us at www.astutenetworks.com.

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