



Tracewell Systems    high performance. forward deployed.



Answering the Department of  
Defense's Core High-Performance  
Computing Challenges

# Answering the Department of Defense's Core High-Performance Computing Challenges

Organizations across the military and intelligence community – including the U.S. Departments of Defense and Homeland Security – need to collect, process and analyze vast amounts of data to inform real-time decision making, and advances in technology have spurred smarter, more powerful and more efficient means of defense.

Motivated by budgetary challenges and the need for greater performance, systems and technology planners continually seek to balance the high-performance computing power to run the volume and complexity of applications that today's military requires in the air, at sea and on land with the reasonable price point the DoD expects. This reality requires advanced technology that combines high performance, reasonable cost and flexibility in a form factor specifically designed to meet MIL-SPEC standards for deployment outside the traditional data center (where such equipment is commonly found).

## The evolution of military and intelligence computing

Recognizing the need to deploy high performance computing in harsh environments, the market's early offerings were predominantly custom computing solutions that were purpose-built to perform in these environments. While these solutions performed reliably and often met MIL-SPEC requirements, their customized, purpose-built engineering presented several challenges. Not only were they very expensive and time-intensive to design, procure, maintain and repair, but they also afforded limited long-term value, since DoD planners were faced with acquiring new solutions on ever faster timeframes to meet specific threats and objectives.

Looking to leverage high performance computing that could support complex DoD applications while meeting price target challenges, DoD planners are turning their attention to COTS solutions commonly found in data centers. Despite benefits in utilizing data center technology for forward deployed use, the technology itself was never designed to tolerate harsh environments marked by extreme temperatures, shock and vibration, and other similar conditions.

**On today's battlefield, it's incredibly important to have an environment that doesn't take a computer scientist to manage. IBM has gone to great lengths to simplify management of storage and blades, empowering any soldier to easily troubleshoot server issues if they arise.**

*Mike Grove  
Storage Product Specialist  
IBM Federal Team*



## Blade technology: Blending custom computing performance with COTS data center computing value

The Department of Defense continues to search for and test new high-performance data center super-computing technology solutions that can be forward deployed quickly at a reasonable price. Tracewell Systems' Rugged Blade System offers the high-performance computing associated with IBM-based blade server technology that delivers consistent performance, flexibility and consolidation capabilities in a form-factor-engineered package designed to meet MIL-SPEC requirements.

The value of IBM-based blade server technology and form-factor engineering was proven during the U.S. Joint Forces Command led Empire Challenge 10 event, held at Fort Huachuca, Ariz. The Rugged Blade System not only offered planners the ability to take advantage of powerful and configurable IBM-based blade technology, but did so in a high temperature environment like those found in real deployment of critical military applications. To date, it has not been possible to have both feature sets in one product.



## Ruggedized systems and commercial off-the-shelf technology break through barriers

Based on IBM COTS blade server technology in a precisely engineered form factor, Tracewell's Rugged Blade System addresses the Department of Defense's core technology challenge in three important ways: it delivers consistent performance, provides flexibility and offers consolidation capabilities.

"You can't find this combination of performance and packaging anywhere else. Designed to replicate an IBM BladeCenter, the Rugged Blade System meets demanding technical and environmental requirements," said Matt Tracewell, executive vice president, Tracewell Systems.

**Tracewell's Rugged Blade System was designed to be a rugged system from the start. Forethought was put into how it would be ruggedized, so it is very light and will be even lighter in the future.**

*Dave Davidian  
IT Senior System Architect  
IBM (U.S. Air Force)*

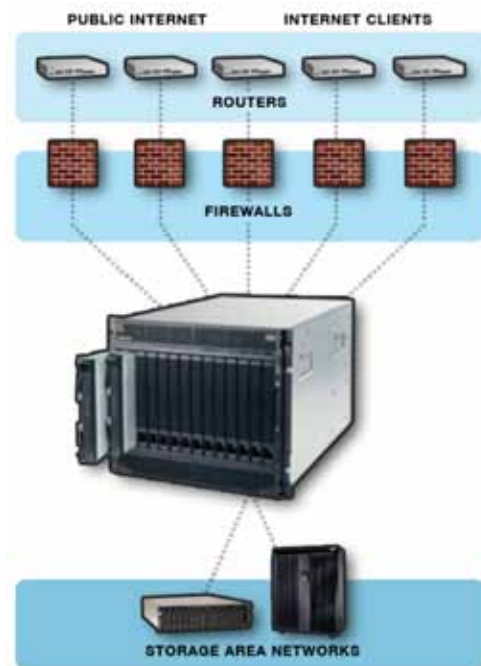
## Consistent performance

Tracewell designed the Rugged Blade System to meet all MIL-SPEC requirements and maintain optimal performance in extreme environments. Its high-performance computing outperforms other solutions, sometimes by as much as 200 percent. What's more, the Rugged Blade System's low weight coupled with its high strength enhances its performance capabilities, and adapts well to land, air and sea environments.

## Flexibility

Increasingly complex IT environments pose challenges to the Department of Defense. The Rugged Blade System provides much needed flexibility in a number of areas:

- **Affordability** – When compared to other COTS solutions, use of blade technology and form-factor engineering can reduce procurement costs by up to 90 percent while increasing high-performance computing capabilities by as much as 1,000 percent.
- **Deployment** – The Rugged Blade System enables users to test applications immediately on the same hardware that will be used for rugged deployment, which allows for considerable time savings.
- **Maintenance** – With the Rugged Blade System, while the hardware is ruggedized, COTS blades can be swapped “on-the-fly” as technology platform requirements evolve, which can reduce maintenance, upgrade and refresh costs by as much as 75 percent.



## Consolidation

The Rugged Blade System can house a mix of blade servers in a single chassis, eliminating redundancy of components by enabling multiple operating systems to run on a single platform. The result is a single, lightweight, high-performance package that uses fewer cases and cables for deployment.

In planning for today's demanding military applications and the need for an increasingly modernized IT environment, the implications of Tracewell's Rugged Blade System are tremendous. True, ruggedized servers aren't new. However, with Tracewell's Rugged Blade System, based on IBM blade technology, the DoD is afforded a forward-deployed COTS data center solution offering better performance at far greater value.

Now, Department of Defense agencies can invest in a solution designed to replicate an IBM BladeCenter and then deploy those same technologies in form factors that have been designed to operate in the air, on land and at sea.

## The future of forward-deployed COTS data center technology

Imagine widely deployed Rugged Blade Systems. Rather than ripping and replacing 1U and 2U systems, or completely redeploying transit-case-based systems, it would be possible to repopulate "rugged slots" with the newest blade technology. Widespread cost and time-savings would materialize immediately, and access to the IBM technology roadmap would consistently modernize and improve IT infrastructures and add measures of long-term confidence and affordability in technology investment.

The better technology works, the easier it becomes to make smart decisions based on sound, up-to-the minute data. Tracewell's Rugged Blade System meets a critical need for better high-performance computing solutions that lead to better decision making and, ultimately, greater success for the military and intelligence community. For more information on Tracewell Systems and its Rugged Blade System, visit [www.tracewell.com/rbs](http://www.tracewell.com/rbs).

**IBM has a long and rich history of innovation that many Department of Defense agencies are already benefiting from in conventional settings. Now, for the first time ever, they can leverage the same competitively priced, high-performance technology on the battlefield.**

*Todd Ramsey  
Managing Director  
U.S. Federal, IBM*





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