

## A Perspective on IPv6 and DoD Transformation

### Why does the DoD NEED IPv6 Right Now?

David N. Goodwin, Houston Associates



**IPv6 will create a military advantage.** While many technology advocates have stressed that adoption of IPv6 will improve infrastructure, extend addressing and a host of other technical improvements, the single biggest DoD impetus is the shift to NETWORK-CENTRIC operations. DoD requirements have historically been technology accelerators, from aviation to dial tones, but it is the ability to successfully execute military strategy and tactics that is still the number one mission.

The shift to true network-centricity allows for a host of capabilities: dynamic situational awareness; flexible, mobile, and secure "infostructure;" holistic information assurance (Defense in Depth); use of COTS; collaboration; standards-based protocols; bandwidth on demand; converged communications; and converged voice/ video/ data/ graphic 2D & 3D as well as auto-configuration that will allow the use of many new devices without detailed technical support – for instance, sensor webs that can be deployed by ordinary soldiers or air-dropped with an absolute minimum of manual configuration.

Expressed more simply, this non-exhaustive list of features will provide the right information, at the right time, and to the right person, and will support three critical mission-based requirements:

1. DoD Force Alignment **U.S. National and Coalition forces require the ability to:**

- Rapidly establish communications between all echelons.
- Deploy to "hot spots" or remote/harsh environments globally.

2. **Organizational Flexibility.**

- Coalition and Joint Programs; must be Joint, JTF capable, and Modular.
- Mix and match organization based on operational context.
- Rapid Community of Interest formation (any number of nodes at any time).

3. **Increasing numbers of aerial, sea, space, and land based platforms require:**

- End-to-End communication and measures.
- Assured access delivery.

These three imperatives are more keenly required as we deploy to varied and geographically dispersed areas, often as the coordinating lead for coalition forces, while concurrently retaining our standing commitments.

As I have often related in my oral presentations, my perspective on change and success in DoD has been forged from experiences on the battlefield as a signal officer, as well as serving as an architect of what has evolved into DISA. In my view there are four key ingredients for successful technological change:

1. The new technology must address a current CRITICAL mission need.
2. A Technology Leader must join with a line-responsible champion to encourage and provide analysis to support calculated risk-taking in the new technology.
3. A line-responsible leader must understand and address the organizational and cultural changes the technology will necessitate.
4. There must be adequate funding to implement enough of the new technology so that success may be assessed by mission critical measurements.

IPv6 is the latest technology in a tradition of technological changes that have long supported DoD's

communications evolution. In a simplified view, this is the third generation of change:

- Voice Communication – Service-to-Service (1960's)
- Data Communication – System-to-System (1990's)
- Net-Centricity – Person-to-Person (21st Century)

As we have witnessed in past technology changes, success is dependent not only on a technology shift, but depends on a major cultural shift as well. Success is also dependent on the timing of funding matching the requirements. The DoD IPv6 transition requires superior engineering, planning, and implementation. The U.S. DoD leadership must actively support the DoD IPv6 Transition Office to successfully meet this challenge.