IPv6 in the Federal Market

Leveraging technology
that will touch everything

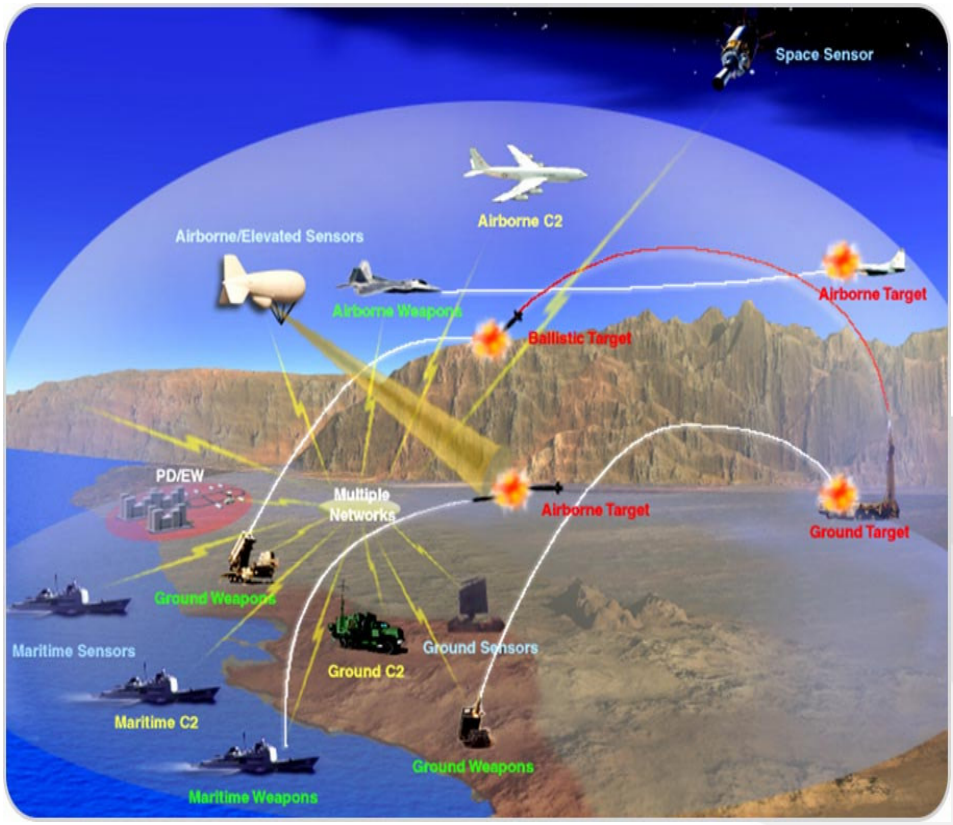
Taking advantage of this change requires a wide spectrum of computing, networking, IPv6, security, and operational expertise

CommandInformation
leverage the change

Agenda….

1. Some Brief Background & History
2. Mandate
3. Meeting the Mandate
   - Defense
   - Civilian
   - Hardware and Software Vendors
   - What's going on?
4. OMB, NIST, DOD…Additional information
5. Where is the IPv6 discussion going?

Starts with a Conclusion



Extracted from OSD Executive Briefing: November 2005

- **Without IPv6**, large scale, mobile, ad-hoc, voice, data, & video over a secure IP network ***will not happen***
- **Without IPv6**, cost of operations and management ***will be prohibitive***
- **Without IPv6**, innovation at the network edge will be ***restricted*** by network capability
- **Without IPv6**, 'sensor to shooter,' 'peer-to-peer,' 'network mobility,' 'IP consolidation,' 'unified communications,' and other goals ***will not happen***

IPv6 is Required for Network Centric Warfighter

What? IPv6? Oh Brother!

"As of October 1, 2003, all Global Information Grid (GIG) assets shall be IPv6 capable" June 2003 DoD Assistant Secretary of Defense/CIO Mr. John Stenbit.

"All agency infrastructures (network backbones) must be using IPv6 and agency networks must interface with this infrastructure" August 2005 Office of E-Government and Information Technology Karen Evans

Five Stages of Grief

1. Denial "this can't be happening"
2. Anger-"why me"
3. Bargaining-deals with God
4. Depression-overwhelming feelings of hopelessness, frustration, bitterness
5. Acceptance-(there is a difference between resignation and acceptance)

Since the "Mandates"

"All Global Information Grid (GIG) assets shall be IPv6 capable" *John Stenbit, 2003*

"All agency infrastructures must be using IPv6" *Karen Evans, 2005*

…..No mandate at all in commercial world….

IT Manufacturers Status

- ***Platform vendors-Linux, Vista, Longhorn***
- ***Router & Switch-Opportunity for churn***
- ***Network management tools***
- ***IPv6 PDA, phones, camera, all devices***
- ***Implementations of IETF standards…..***

Carriers

- ***Native IPv6 connectivity available***
- ***Tunneling Transport available***
- ***AT&T, Verizon, BT, NTT all "IP" companies***

- Federal Market focused on infrastructure upgrades only…
- Minimal understanding of IPv6 feature value, ROI and ultimate impact
- Almost no usage of IPv6 as a solutions enabler
- Few sources for clear value proposition, solid transition strategy and best practice
- The "mandate" risks becoming a money wasting exercise of poor execution

Widespread lack of IPv6 understanding……

Department of Defense

Status: Some good…Some bad.

1. **Diverse responses to the mandate…Across the all of DOD….**
2. **Many excellent initiatives… many lacking…**
3. **General struggle to understand the value drivers & ROI for IPv6**
4. **Procurement as a key to moving the vendor community**
5. **Disconnect between IPv6 and the network centric warfare requirements**
6. **Most agencies not thinking about their operation in a "network centric world"**

Still Needed:

1. **Connect the dots**
2. **Contractor, Vendor, Systems Integrators need to get on board**
3. **Value from the edge to drive upgrade of the core**

Civilian Agencies

Status:

1. **Diverse responses…Across the Board….Some very good initiatives**
2. **No direct "network centric warfighter" requirements**
3. **Perspective was that this is going go away…Many hope so**
4. **Turned to their existing network management contractor to "meet the mandate"**
5. **Fact of the matter the mandate is a "low threshold"**
6. **Near, Mid and Long term "network centric" strategies are missing**
7. **Some are re-thinking their operation in a "network centric world"**
8. **Dept of Education "Classroom 2.0"**

Still needed:

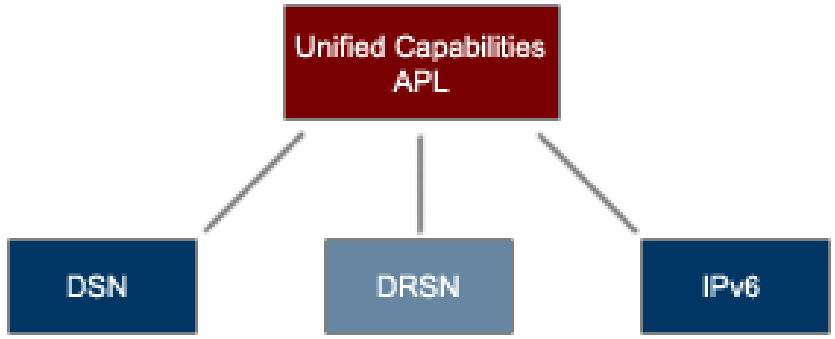
1. **Understanding beyond being told what to do**
2. **IT Ecosystem Readiness**
3. **Further encouragement**

Hardware & Software Vendors

1. Complex-changing landscape with uncertainty
   - Adoption
   - Enforcement
2. DOD & NIST IPv6 Product profiles
3. Vendor Compliance
4. Testing & Certification processes
5. IPv6 “Capable” & “Optimized”

JITC testing

will be vendor challenge



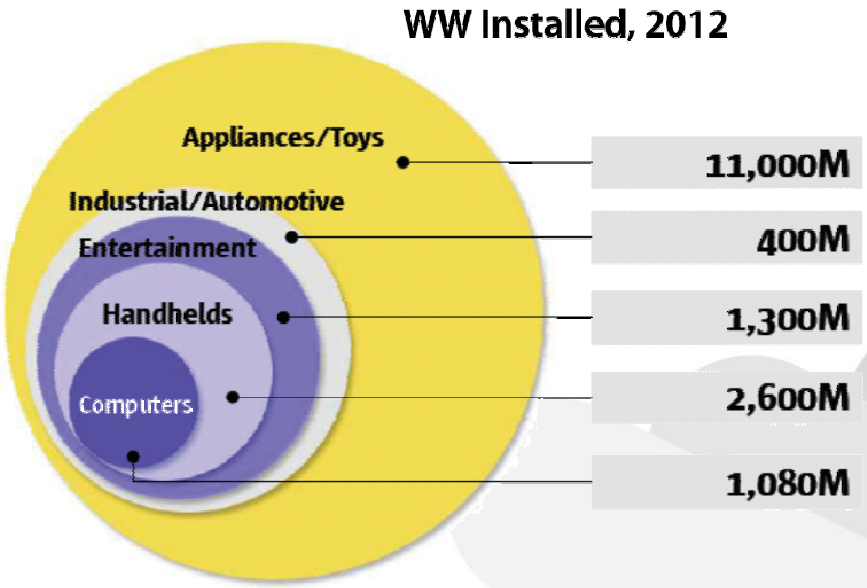
What are the discussions?

- What do I need to know?
- What do I need to do about it?
- Why does it matter to me?
- ROI?
- Security?
- Integration Planning and Operations
- Training

Determine: What does IPv6 do for me?

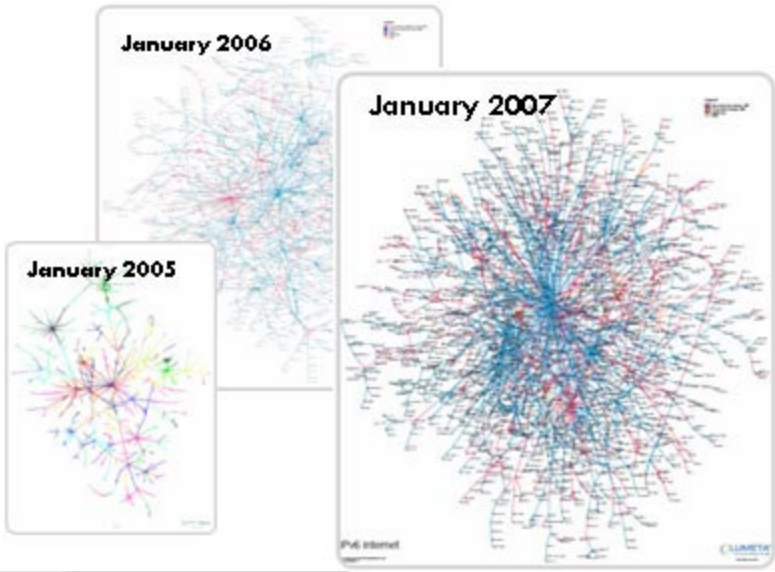
"Everything IP" & IPv6

17 Billion Devices



Source: IDC 2004

Sun Microsystems estimates that including sensor and RFID networks, the world could have a trillion communicating devices in a decade!



Source: Lumeta

- Billions of devices will use direct, secure, always on, anywhere connections.
- New products and services will place never-before-possible power to the edge of the network
- Systems that use this power and exploit the paradigm need to be built
- Net-centric operations and net-enabled service men and women are a reality
- **Much of this paradigm is possible now!**

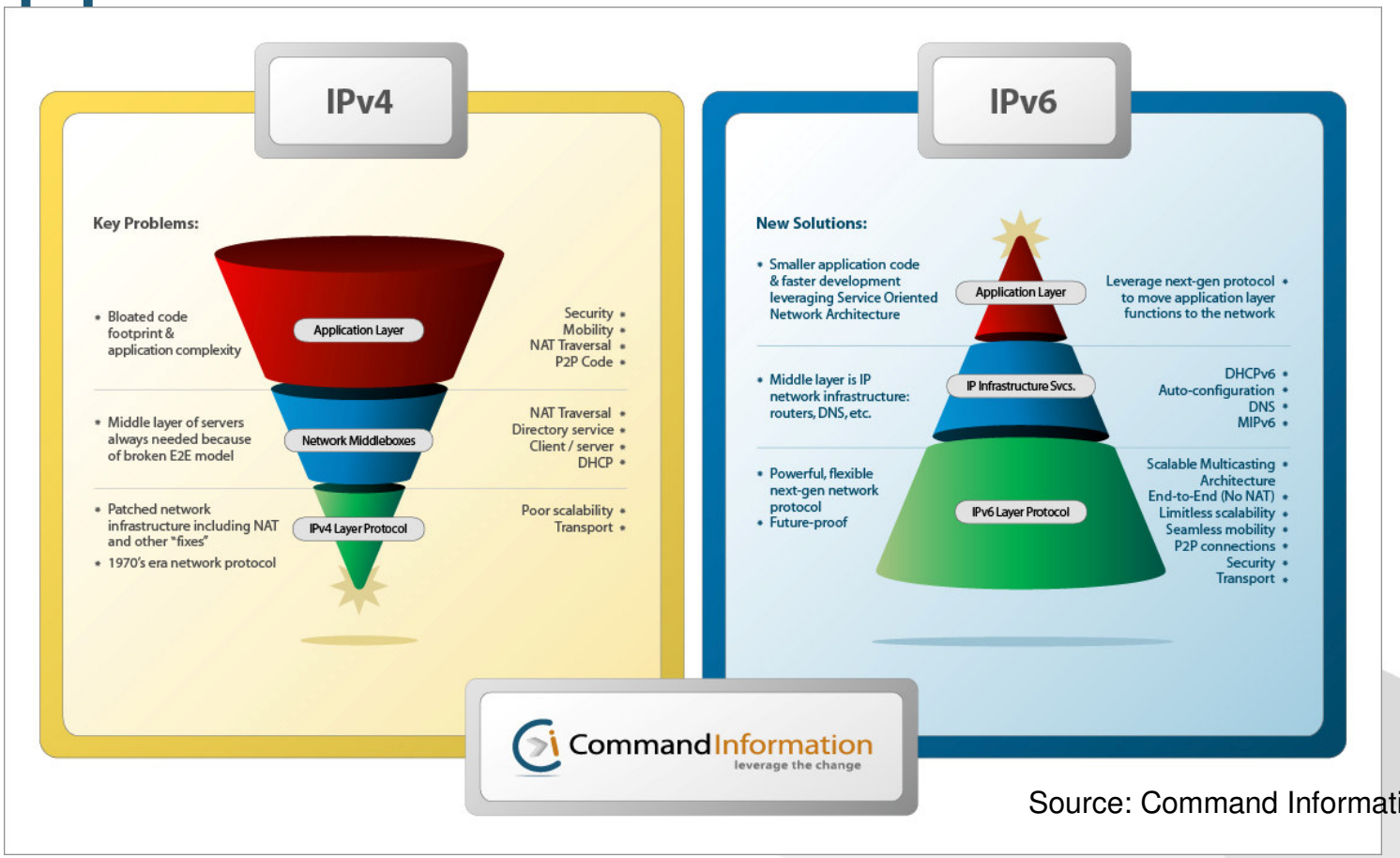
IPv6 is about everything connected

Define “everything connected” & “network centric” for your operation and you will see the value of IPv6

The Reality of IPv6

Misconceptions	Reality
IPv6 is all about the core network infrastructure.	IPv6 is about applications at the edge. The benefits of IPv6 come from capabilities at the edge.
"Everything over IP" just means voice, video, and data.	IPv6 is about connecting millions of computational devices, mining the data, and using that data to manage your mission.
It's all about addresses and we don't need any more addresses.	Addressing is important but only part of the picture. As sensors, controllers, and other embedded devices consolidate on IP the addressing aspect of IPv6 becomes more important.
Commercial tools don't exist yet to support IPv6.	IPv6 commercial tools do exist and more are on the way. IPv6 address management tools, sensors, portable devices, operating systems, all exist.
The Commercial world doesn't support IPv6 yet.	Microsoft, Apple, Linux , network infrastructure, and other commercial vendors already use IPv6 in their products.
IPv6 is not something to be concerned with now.	IPv6 must be addressed immediately. Implications on security, functionality gains, reduced cost, scalability, and knowledge are meaningful now.
IPv6 will go away.	V6 is not going anywhere. Microsoft, Cisco, Juniper, Google, carriers, device manufacturers, platform vendors, operating systems, smart phones, are all leveraging IPv6 now.

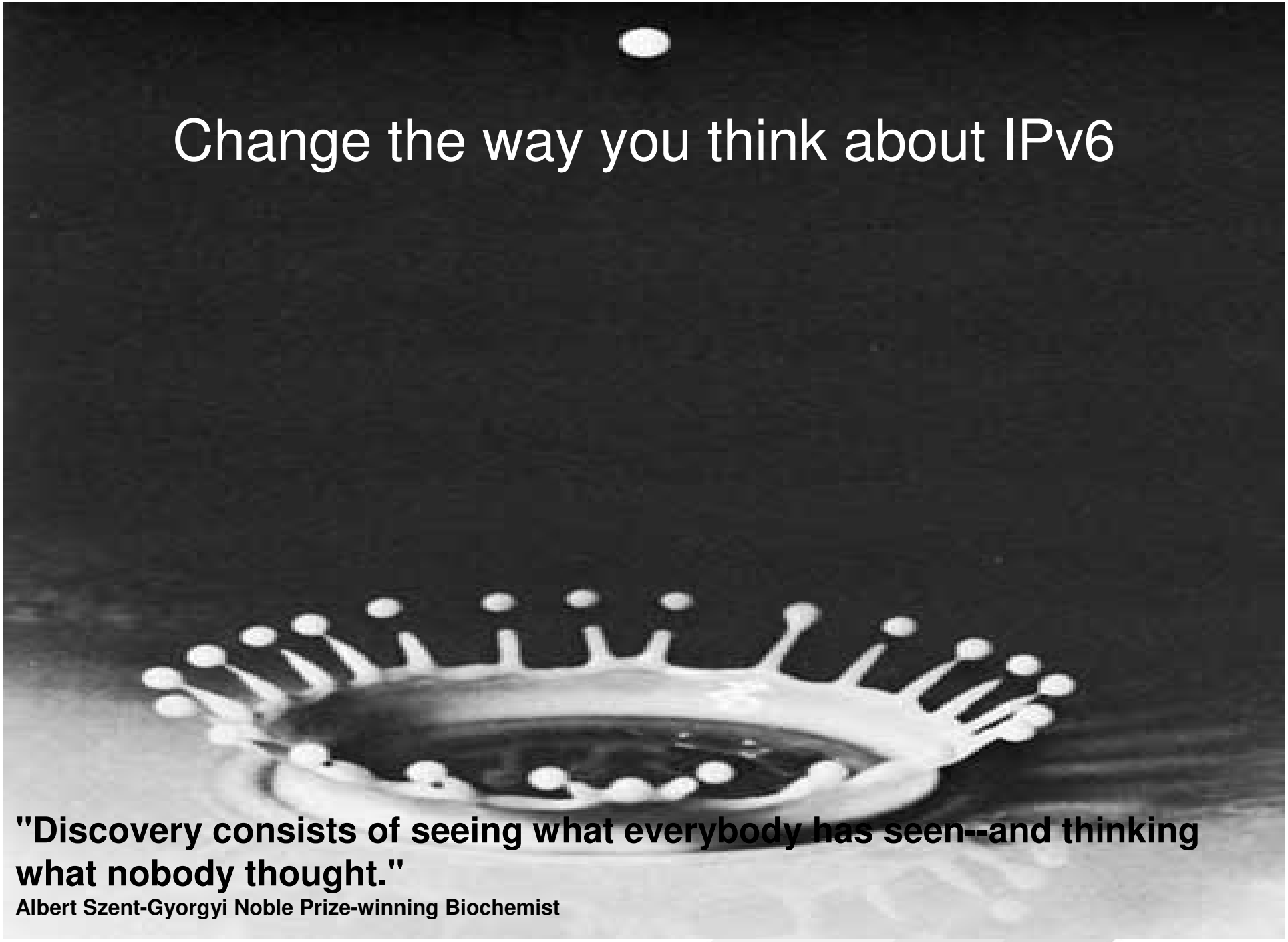
Applications



Source: Command Information Inc

- Future proof global standard for unified communications
- Lowers integration cost and eliminates proprietary licensing/maintenance cost
- Easily extensible to future networking needs (QOS, security) with extension headers
- Empowers P2P, M2M , and new content distribution methods

Change the way you think about IPv6



"Discovery consists of seeing what everybody has seen--and thinking what nobody thought."

Albert Szent-Gyorgyi Noble Prize-winning Biochemist

Sources of information

- Moon v6 http://www.moonv6.org/
- IPv6 Forum http://www.ipv6forum.org
- Joint Inter-operability Test Command http://jitc.fhu.disa.mil/apl/ipv6.html
- Chief Information Officers Council http://www.cio.gov/
- Federal Acquisition Guidance http://www.access.gpo.gov/su_docs/fedreg/a080207c.html
- National Institute of Standards and Technology (NIST) http://w3.antd.nist.gov/
- American Registry for Internet Numbers http://www.arin.net/v6/v6-info.html
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