

# Near-Term Tactical IP Enhancements

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**Air Force MOIE**

The logo for the MITRE Technology Program, featuring a stylized graphic of stacked blocks in yellow, orange, and blue to the left of the text.

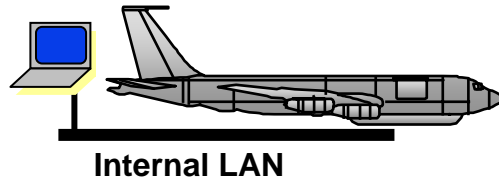
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# Problem

- **Air Force transitioning to IP network**
- **New tactical IP radio links emerging**
- **What is missing that limits effectiveness of near-term use of IP radio links?**
  - **Carry mix of C2 and routine SA traffic**
  - **Wide variety of link types in use**
  - **Some legacy links not IP capable**

# Background

Isolated “islands”  
of **evolving** types  
of data, some IP



Available comm  
links changing from  
legacy to **IP capable**



Need to ensure  
that links are  
used most  
**effectively**



Need  
methods to  
**manage** flow  
of IP traffic

# Objective

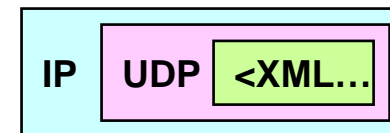
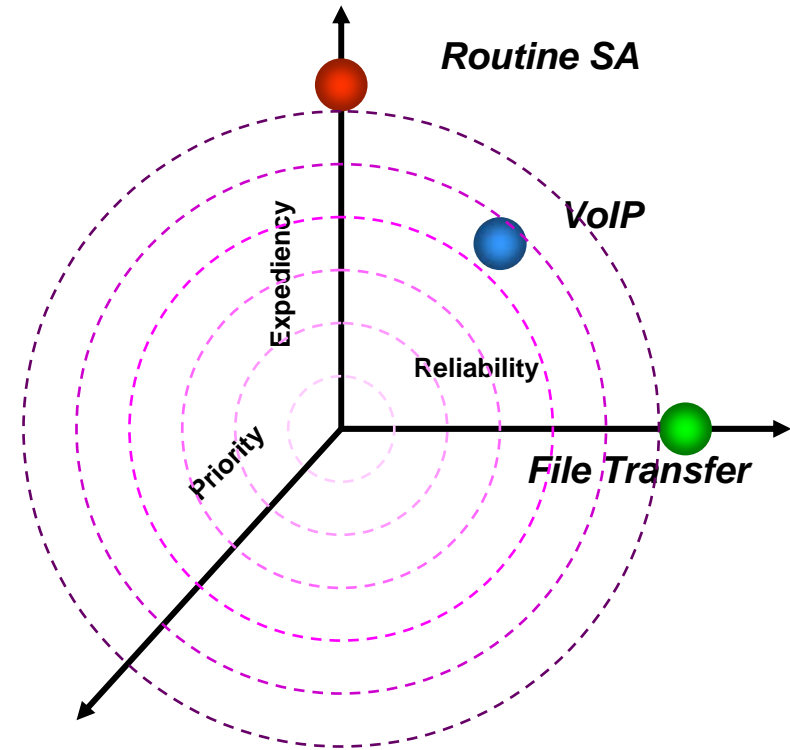
- **Develop tools and techniques to improve near-term effectiveness of emerging tactical IP links**
- **Provide facilities to enable new links to act as useful extensions of the developing infrastructure**
- **Allow net-centric methods and tactics to advance to the tactical edge**

# Activities

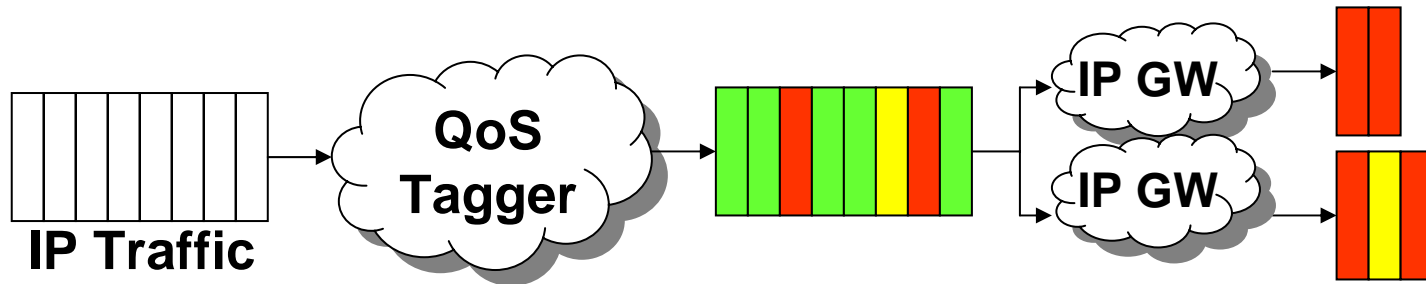
- **Create rule-based QoS tagging agent**
- **Add dynamic channel adaptation to IP over legacy radio driver**
- **Develop common ways to globally expose conditions of IP and non-IP links**
- **Investigate integration of new network information with dynamic link managers**

# Highlight

- Quality of service required for effective use of new networks
  - Permits applications to offer all available data
  - Lets network choose data based on current capacity
- Flows categorized by desired service characteristics
  - Tradeoff between packet inspection complexity and throughput



# Demonstration

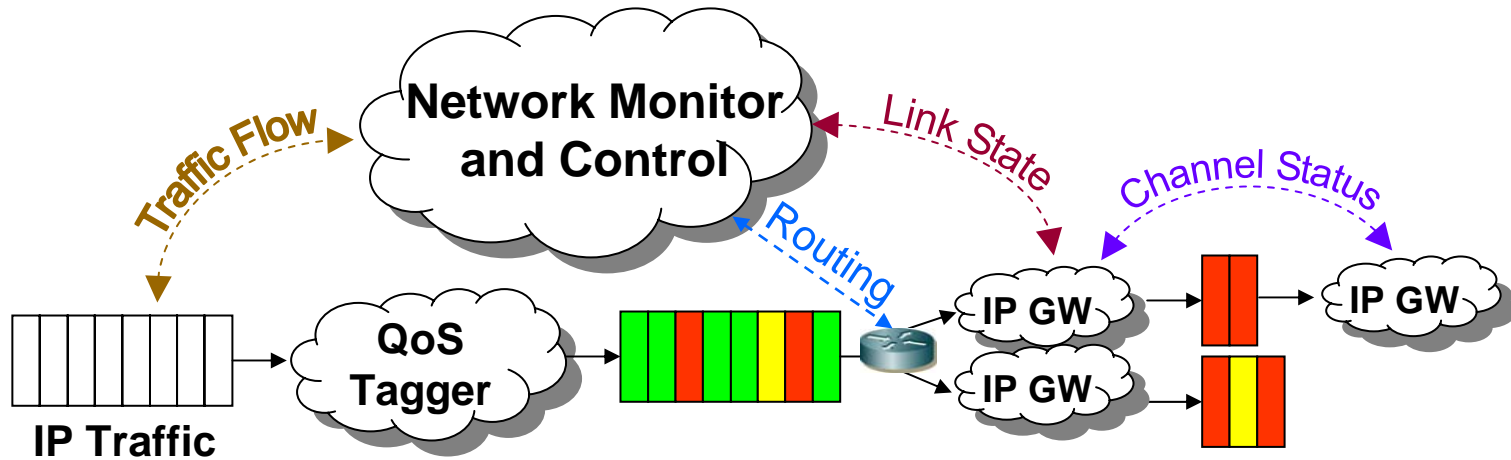


- Traffic routed through QoS proxy agent
  - Rule-based QoS assignment based on packet headers, content
  - Packet carries assigned QoS
- QoS assignment separated from enforcement
  - Link gateways select traffic based on QoS

# Impacts

- **Improve usability of emerging tactical IP networks**
  - **Provide basic connectivity *now!***
- **Provide early experience with tactical IP to help shape future development directions**
- **Develop better understanding of impact of widespread IP connectivity**
  - **Allows early formation of techniques and procedures for future all-IP environment**

# Future Plans



- Integrate pieces into network control
  - Use channel state, queue depths, flow patterns, desired QoS to control routes
- Ensure that entire network is always moving most important data
  - Expand from link level to network level