

Protocol Engineer

Location: Ellicott City, Maryland (Hybrid)

Department: Engineering / Networking & Embedded Systems

Employment Type: Full-Time

About Tolero Networks

Tolero Networks enables secure, resilient communications from the most remote locations on Earth to the far reaches of the solar system. We build technologies that facilitate cooperative resource sharing across terrestrial and extraterrestrial networks.

We are seeking a **Protocol Engineer** specializing in Delay/Disruption-Tolerant Networking (DTN) to shape the future of space and challenged-network communications. In this role, you will bridge protocol specification and real-world deployment—authoring international standards, maintaining open-source protocol implementations, and guiding the protocol architecture for the Tolero Overlay Networking Router. You will serve as a subject matter expert on network protocols, ensuring our products remain performant, secure, and fully interoperable across complex network environments.

Key Responsibilities

- **Standards Authoring & Review:** Active participation in standards organizations, including the Internet Engineering Task Force (IETF) and the Consultative Committee for Space Data Systems (CCSDS), authoring, reviewing, and advancing specifications related to DTN topics.
- **Open-Source Maintenance:** Maintain, optimize, and contribute to open-source implementations of DTN standards—including both internal contributions and third-party codebases and libraries.
- **Implementation & Software Support:** Support the design, software development, and testing of new, high-performance protocol implementations for embedded systems and flight-ready software.
- **Architecture & Deployment Planning:** Help shape the overarching network, security (BPSec), and network management architecture to plan successful deployments across terrestrial, satellite, and deep-space networks.

- **Systems Engineering Subject Matter Expertise:** Serve as the protocol Subject Matter Expert (SME) for internal systems engineering activities, helping translate protocol specifications into practical software requirements, interface definitions (ICDs), and test cases.
- **Culture & Ownership:** Cultivate a technical environment that encourages creative problem-solving, high-quality standards, collaboration, and team ownership of complex engineering products.

Required Qualifications

- **Education:** Bachelor's degree in Computer Science, Computer Engineering, Software Engineering, or a related technical field (or equivalent practical experience).
- **Experience:** 3+ years of hands-on experience in low-level network software development (using C, C++, or Rust) and protocol analysis.
- **Standards Familiarity:** Familiarity with standard-setting organizations (e.g., IETF, CCSDS) and experience reading, writing, or implementing networking RFCs or technical standards specifications.
- **Open Source & Code Maintenance:** Demonstrated experience maintaining, debugging, or contributing to open-source networking projects or libraries.
- **Networking & Security Fundamentals:** Understanding of network layer responsibilities, socket programming, transport/network layer protocols, and network security principles.
- **Communication:** Proven written and verbal communication skills.
- **Soft Skills:** Self-motivated and collaborative with strong interpersonal skills and a track record of taking initiative and seeing projects through to completion.

Preferred Qualifications

- Master's degree in Computer Science, Computer Engineering, Software Engineering, or a related technical field.
- Direct experience with Delay/Disruption-Tolerant Networking (DTN) protocols, such as **Bundle Protocol v7 (RFC 9171)**, **BPSec (RFC 9172)**, TCPCL, UDPCL, or LTP.
- Hands-on involvement with open-source DTN frameworks such as **NASA ION**, **HDTN**, or **μPCN**.

- Experience with Contact Plan Routing (CPR), schedule-based routing, or DTN Network Management protocols.
- Proven track record of authoring or co-authoring published IETF RFCs or CCSDS standards.
- Experience integrating network protocols into embedded operating systems (Linux, FreeRTOS, VxWorks) or spacecraft software frameworks (e.g., cFS/cFE).
- Demonstrated ability to build technical consensus among diverse stakeholders.
- Ability and willingness to obtain a Top-Secret level security clearance. This includes being subject to a government security clearance investigation and meeting the requirements for access to classified information. Eligibility requirements include U.S. citizenship.

Why Build the Future with Tolero?

At Tolero Networks, solving the toughest communications challenges—from remote terrestrial environments to interplanetary space—requires brilliant minds working seamlessly together. We cultivate an open, purposeful environment where curiosity is celebrated, ego is left at the door, and cross-disciplinary collaboration fuels our most complex achievements.

If you are a smart, proactive problem solver who thrives in a supportive team culture and gets energized by the idea of building the networking infrastructure that connects our world to the solar system, Tolero is where you belong. Join us, and help pioneer the future of resilient, solar-system-wide communications.

Benefits

Tolero offers a generous, comprehensive benefits package designed to support our team members and their families:

- **Compensation & Equity:** Competitive base salary, performance bonuses, and company equity opportunities.
- **Health & Wellness:** Comprehensive medical, dental, and vision plans, plus Flexible Spending Accounts (FSAs).
- **Financial Security:** Retirement plans with Tolero contributions, life insurance, and short- and long-term disability coverage.
- **Work-Life Balance:** Generous paid time off (PTO) to ensure rest and recharge.

Equal Opportunity Employer Statement

Tolero is an Equal Opportunity Employer. We celebrate diversity and are committed to creating an inclusive environment for all employees. We do not discriminate based on race, color, religion, sex (including pregnancy, gender identity, and sexual orientation), national origin, age, disability status, genetic information, protected veteran status, or any other characteristic protected by law. Qualified applicants from all backgrounds are encouraged to apply.