TALKING TO THE MOON

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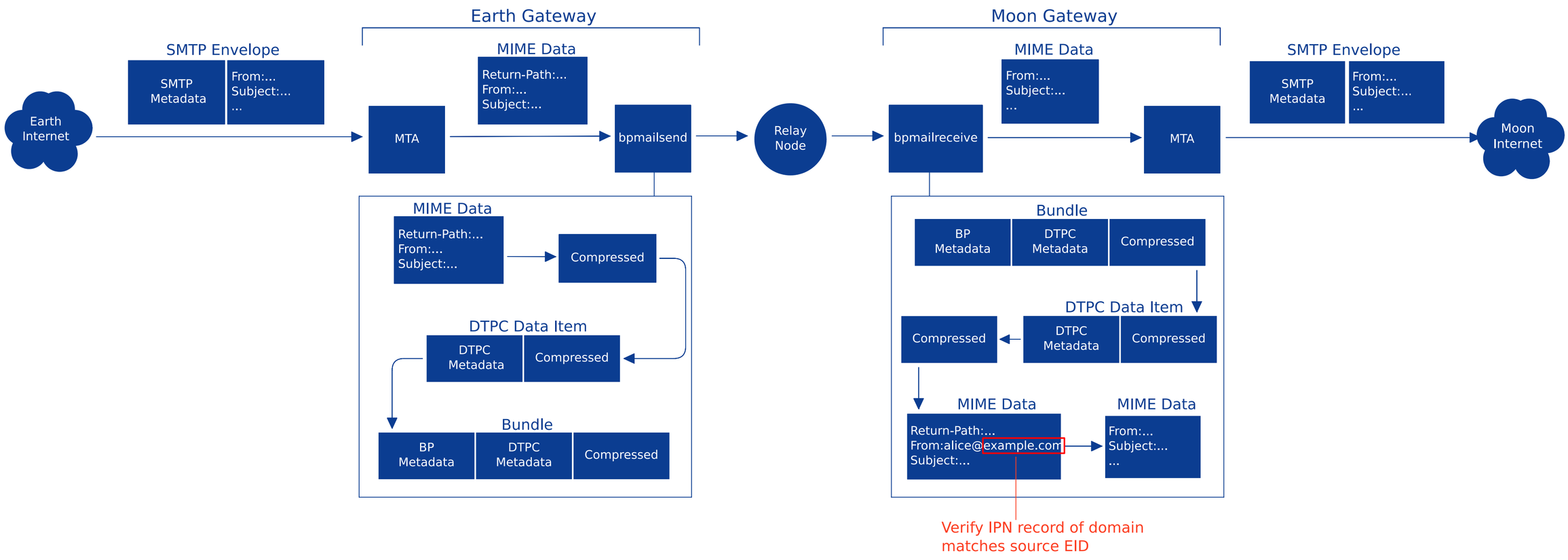
AIM & OBJECTIVES

- Build a prototype interplanetary email system using the Interplanetary Overlay Network (ION) implementation of Delay Tolerant Networking (DTN) to send email between nodes on Earth and nodes on a celestial body
- Extend traditional email architecture to handle TCP connection constraints in space communication
- Utilize discrete DNS systems at each celestial body or isolated world

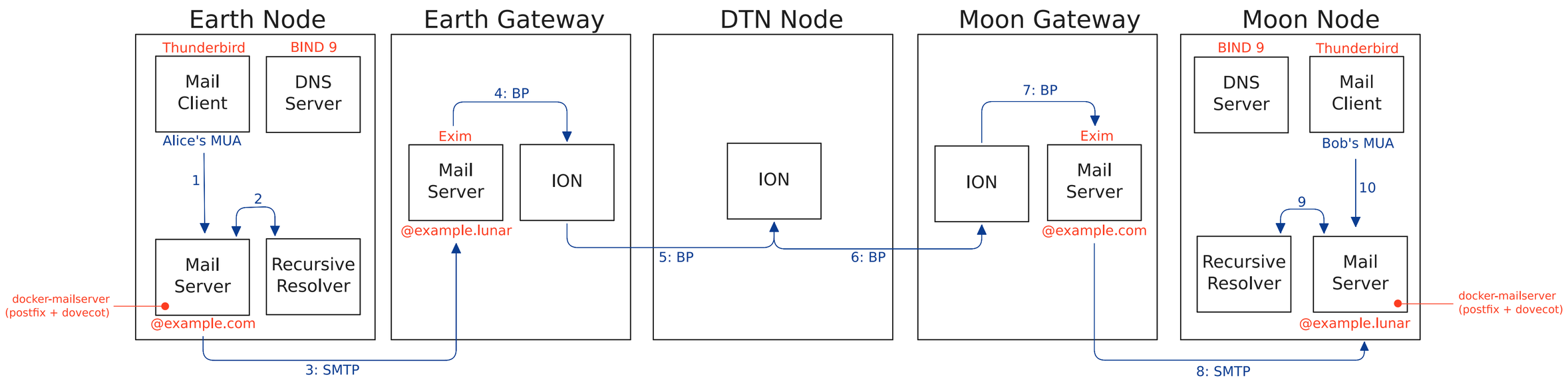
MOTIVATION

- TCP/IP suite relies on continuous end-to-end paths with short, predictable round-trip times
- Deep space communication has punctuated connectivity, significant signal attenuation, and highly variable delays
- Email architecture highly relies upon TCP/IP protocols and services reliant on TCP/IP which are all unworkable or impractical in space

SOFTWARE SOLUTION



EXPERIMENTAL TESTING



FUTURE WORK

- More realistic testbed environment with DNSSEC, SPF, DKIM, DMARC, ARC, Cc, Bcc, mail loops, bounce messages, and back scatter
- bpmail as a daemon that speaks SMTP
- Independent batch SMTP processor and generator
- Configurable DTN aware mail filtering

REFERENCES & WIKI

Johnson, S. M., "DNS Resource Records for DTN Overlays", Work in Progress, Internet-Draft, draft-johnson-dns-ipn-cla-07, 1 July 2024.

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Johnson, S. M., "A method for delivery of SMTP messages over Bundle Protocol networks", Work in Progress, Internet-Draft, draft-johnson-dtn-interplanetary-smtp-01, 18 March 2025.