New Testing Scenarios for MANET Routing Protocols

STU FIIT

Problem

- Comparison of proposed routing protocols for MANET networks are very hard only by their papers
- Security proposals in these papers are tested on ideal scenarios
- There is no standardized benchmarks for security evaluation of MANET routing protocols

Contribution

- 4 new attacks included in testing scenarios
- Complete description of these new attacks
- Each scenario focused on specific attack types
- Evaluation based on defined network parameters
- 2 new security proposals for detection of:
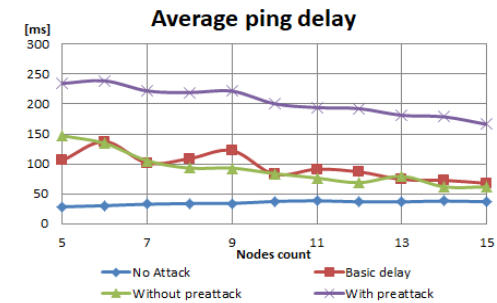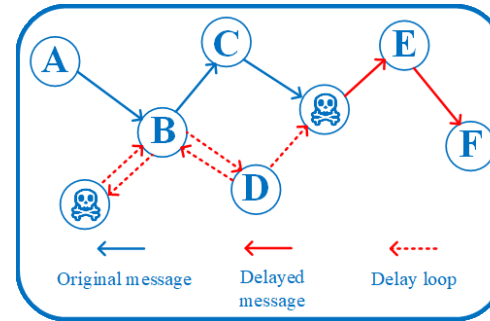 - Delay
  - Wormhole

Future work

- Propose own secure MANET routing protocols using new security proposals
- Compare proposed routing protocol with other secure reactive routing protocols such as SAOVD, SRP, ARAN
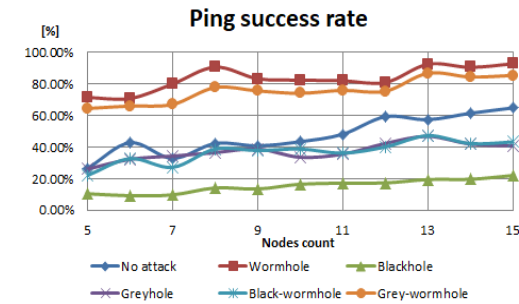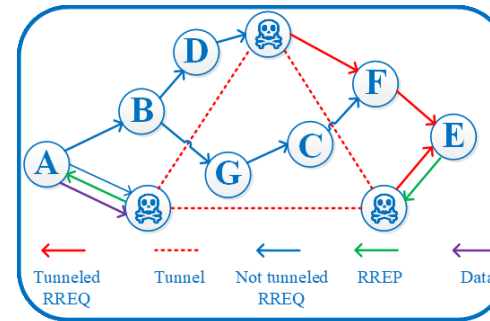
New attacks

Juggler

Original message   Delayed message   Delay loop

Black Wormhole

Tunneled RREQ   Tunnel   Not tunneled RREQ   RREP   Data

RREQ Flood

Original RREQ   First modified RREQ   Second modified RREQ

Evaluation

Average ping delay

No Attack   Basic delay   Without preattack   With preattack

Ping success rate

No attack   Wormhole   Blackhole   Greyhole   Black-wormhole   Grey-wormhole

Ping success rate

No attack   Basic RREQ   Our RREQ

Martin Ilavský | Jozef Filipek | Slovak University of Technology in Bratislava