On the Krack Attack: Reproducing Vulnerability and a Software-Defined Mitigation Approach

Ramon dos Reis Fontes and Christian Esteve Rothenberg
University of Campinas (UNICAMP)

Proof-of-concept

Detecting and mitigating vulnerability on 802.11r Fast-BSS Transition (FT)

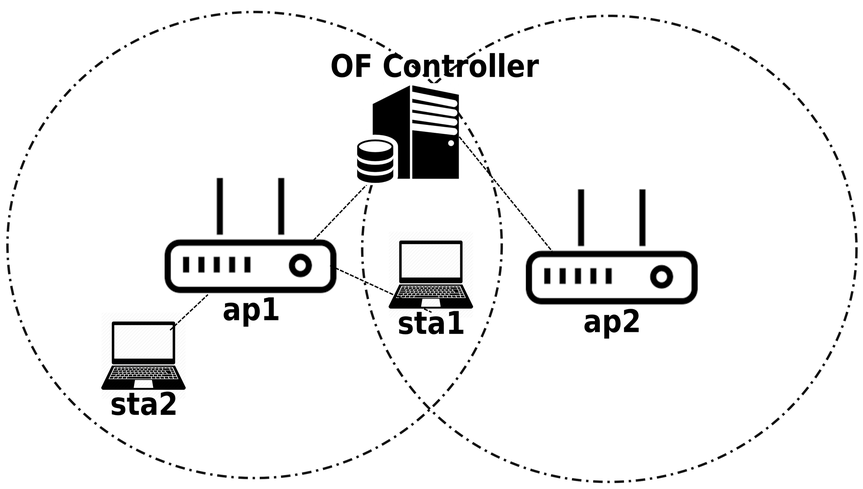
Emulation Platform

Mininet-WiFi: github.com/intrig-unicamp/mininet-wifi

OpenFlow Controller

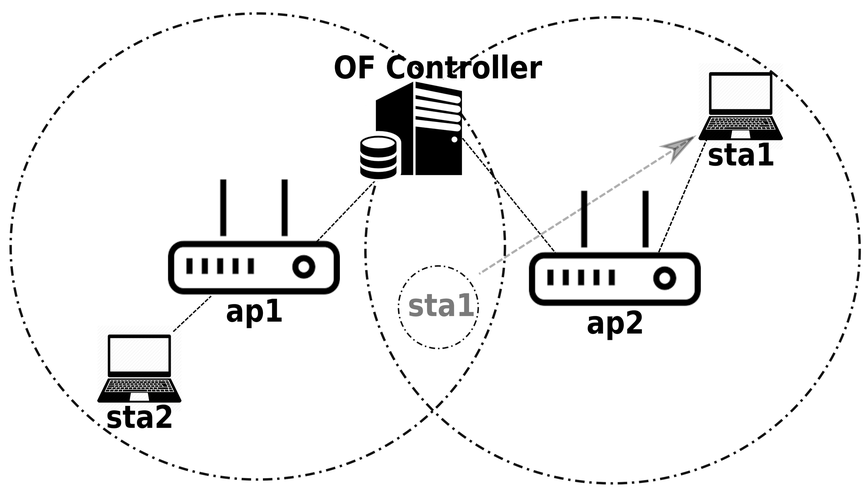
Extended version of Ryu: github.com/ramonfontes/ryu

Scenario 01 (monitoring)



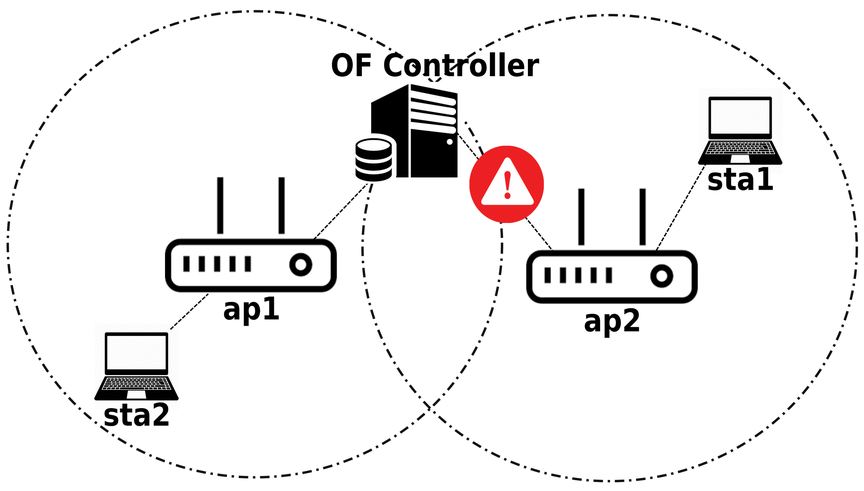
→ Both *sta1* and *sta2* are associated with *ap1*
OF controller is equipped with a Wi-Fi interface working in monitor mode

Scenario 02 (monitoring)



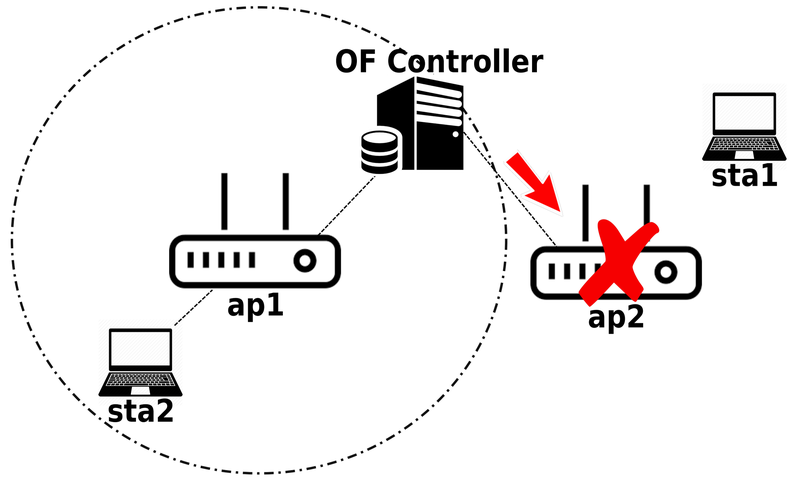
→ *sta1* roams to *ap2*

Scenario 03 (detected vulnerability)



→ OF Controller detects vulnerability on *ap2* during the Fast Transition (FT) handshake

Scenario 04 (mitigation strategy)



→ OF Controller turns *ap2* off
- Other mitigation strategies:
  isolating the AP dataplane
  warning the user / stations (e.g. HTTP/DNS redirection)

Watch The Video Demo

Reproduce Paper Experiments

INTRIG
intrig.dca.fee.unicamp.br
INFORMATION & NETWORKING TECHNOLOGIES RESEARCH & INNOVATION GROUP