

# A Tale of Two Networks

From Interop to BlackHat (And Back Again)

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IT Professional Wi-Fi Trek 2016



# Venue



# Conference Wi-Fi Design 101

- Access Point choices:
  - Model/ antenna type
  - Placement/ count
- Channels: To plan or not to plan
  - DFS: FTW
- Rates
  - 11b
  - 2.4



# Layer 8

- Meet the team who has an opinion



# Assumptions

- Client side
  - Count, type, OS, usage
- Geography/Floor plans
  - Rolling deployment
- Infrastructure Wi-Fi and Wired side:
  - You are only as good as the copper/fiber you're riding on
- Osborne Effect and Murphy's Law (Is it time to go home yet?)



# Gear



# Interop NOC Team



# InteropNet SLA



- Ubiquitous coverage
- Play nicely with others
- Open SSID for attendees on public IP
- PSK SSIDs for Speakers, Registration, VIP
- No 2.4 on Expo Floor
- No 11b anywhere





# InteropNet Infrastructure



- Interop (Can't We All Just Get Along)
  - 8,000-10,000 Attendees
  - Typical tech conference attendees
  
- Definition of a win:
  - Roaming Wi-Fi calling on Expo Floor



# InteropNet Design



- 2015:
  - Floor 2 and 3 of Mandalay Bay Convention Center
  - 10,000+ attendees
  - 80 APs
- 2016:
  - Floor 2 of Mandalay Bay Convention Center
  - ~8K attendees (Keynote area: 1800 people)
  - 45 APs



# InteropNet Actual Usage



- Max clients: 2000
- Total throughput: 5TB (3 days)
- Client types by %
  - 75% iOS and Android (even distribution)
  - 11 Linux clients



# BlackHat NOC Team



# BlackHat SLA



- Don't get hacked
- 0 complaints = Awesome Wi-Fi
- Common area coverage during training days
  - Co-existing with another Wi-Fi network
- Ubiquitous coverage days 5-6
- PSK on one common SSID



# BlackHat Infrastructure

- 2015:
  - IDFs-- Mandalay Bay infrastructure (flat 10/100)
  - Wired vendor in MDF
- 2016:
  - Bypass Mandalay Bay infrastructure
  - Brocade in IDFs and MDF

  
**black hat**



# BlackHat Design



- 2015:
  - Floor 2 and 3 of Mandalay Bay Convention Center
  - 10,000+ attendees
- 2016:
  - Floors 1, 2, and 3 of Mandalay Bay Convention Center
  - 12,000+ attendees (Keynote area: 6400 people)
  - 125 AP by design (85 by deployment)
- Secured by Brocade port security and RGNets (per-device VLAN)



# BlackHat Actual Usage



- Max clients: 2000
- Total throughput: 5TB (3 days)
- Client types by %
  - 45% iOS
  - 30% Android (flipped from 2015)
  - 7 Blackberry clients





# Results

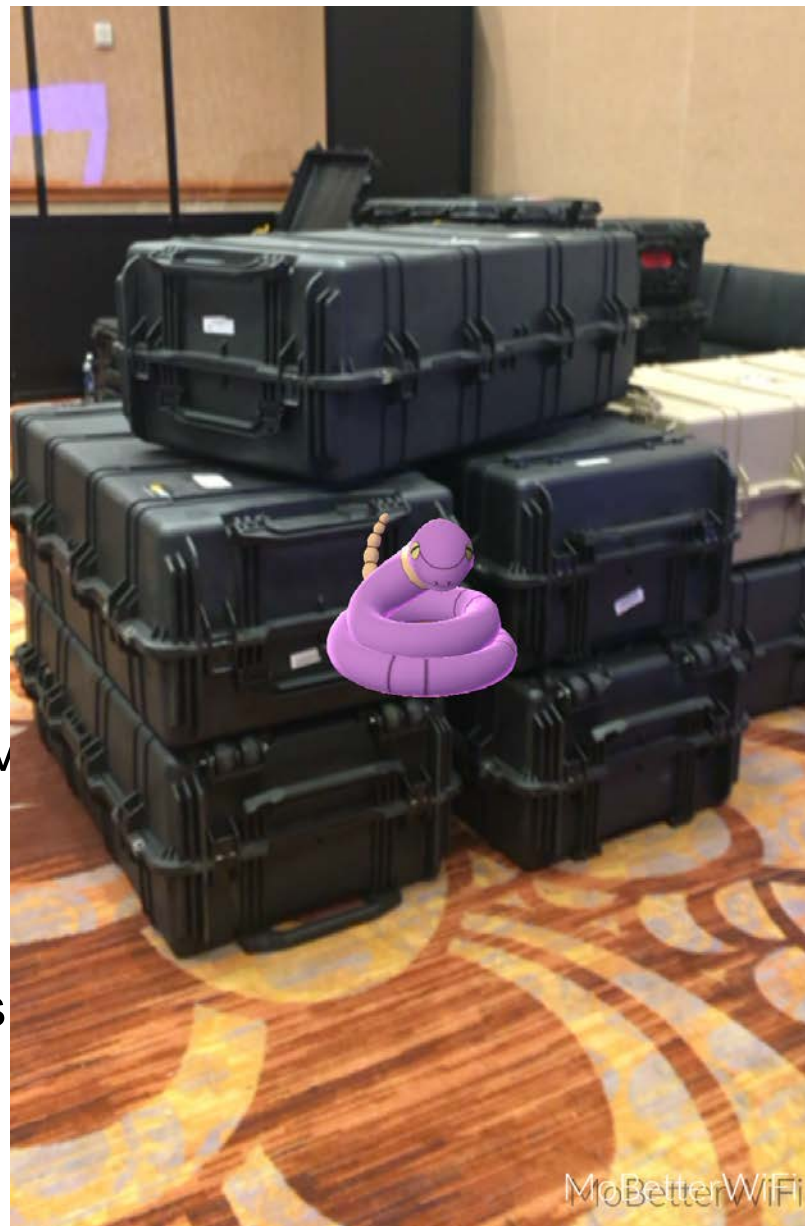


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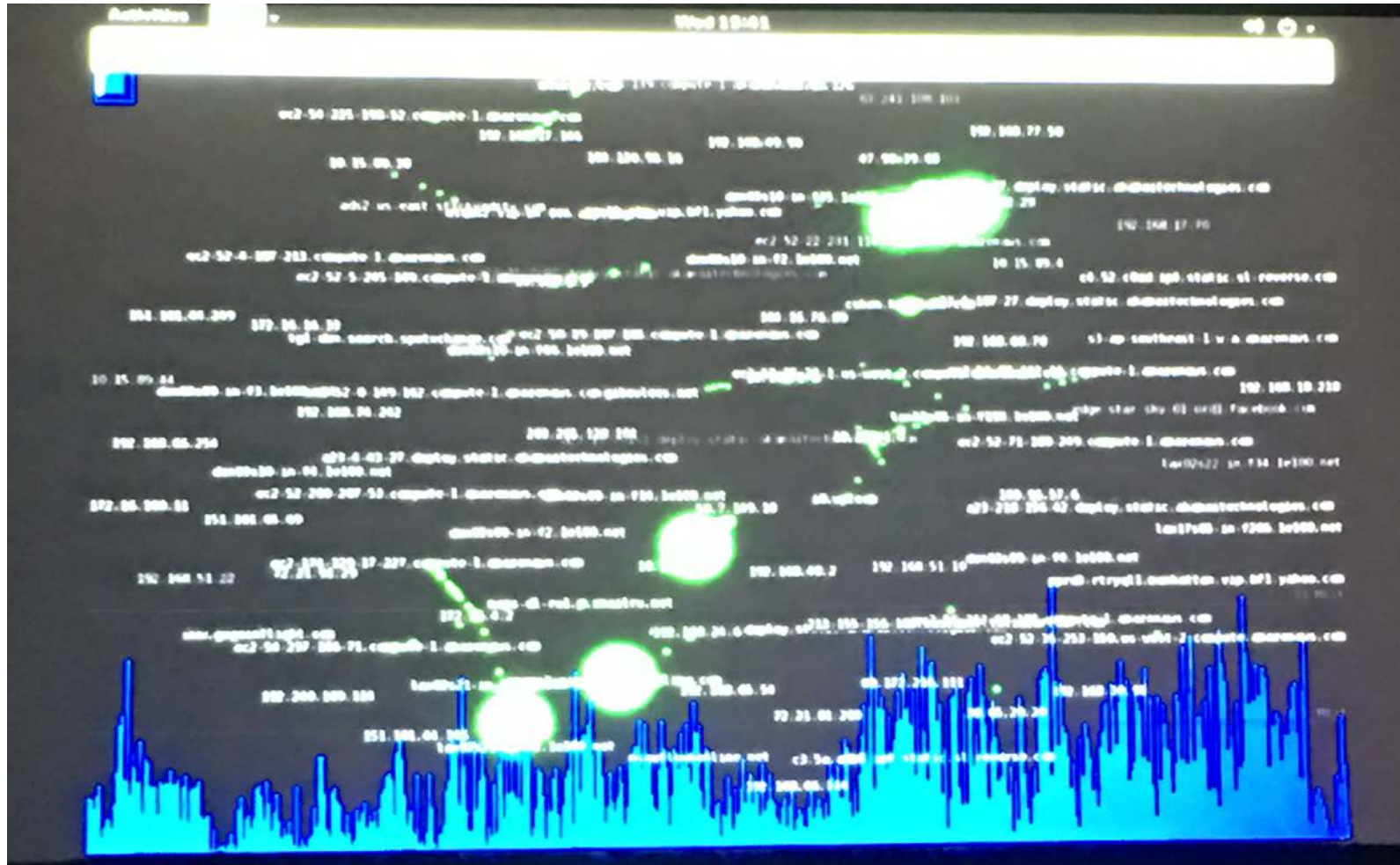


# Results

- Black Hat
  - 10,000+ Attendees
  - Previous deployment issues
  - High density keynote
  - Forget pineapple, these guys have scorpions
- Definition of a win:
  - 1000+ Attacks identified; 0 hacks
  - No complaints



# Real Time Attacks



# Wi-Fi Design

- Interop (Can't We All Just Get Along)
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# Practical Matters

- Rule of 3, 2, 1
- Two pairs of (very good) running shoes
- Advil
- Stay hydrated





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