Synchronized Network Analytics and Real-Time Performance Optimization

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Network traffic* and speeds

- 2013 Global mobile data traffic growth 81% (1.5 Exabytes/mo); Video > 50%
- 2013 – 2018 CAGR = 61% (15.9 Exabytes/mo)
- 4G devices generate 14.5 x traffic of non-4G devices
- 1 GbE ➜ 10GbE ➜ 40GbE ➜ 100GbE ➜ …

Transition to all-IP networks is nearly complete

- Fixed and mobile (LTE; LTE advanced)

Increasing challenges to deliver a good customer experience

- Network timing of asynchronous IP networks gets more complex with technology roadmap, i.e, LTE, LTE-Advanced, VoLTE

Software Defined Networks (SDN) and Network Functions Virtualization (NFV)

*Source: Cisco VNI

# Real-Time Network Visibility & Intelligence

- **Synchronized Network Performance Measures**
  - Network Optimization & Orchestration Systems

- **Differentiate and Monetize customer experience**
  - New category of high margin revenue services (low latency)
  - Infrastructure sharing among operators

- **Enable reduced TCO**
  - Identify performance areas in real-time to minimize Root Cause Analysis (RCA) times
  - Evaluate HW/SW/NW architectures in lab or in situ to "right-size" the network

- **Synchronized Precision:**
  - Measure live network traffic with microsecond accuracy
  - Correlate at millisecond intervals

- **Real-Time:**
  - Analyze and visualize results within seconds

- **Scale:**
  - Monitor up to every packet, every flow, and any location on a global network
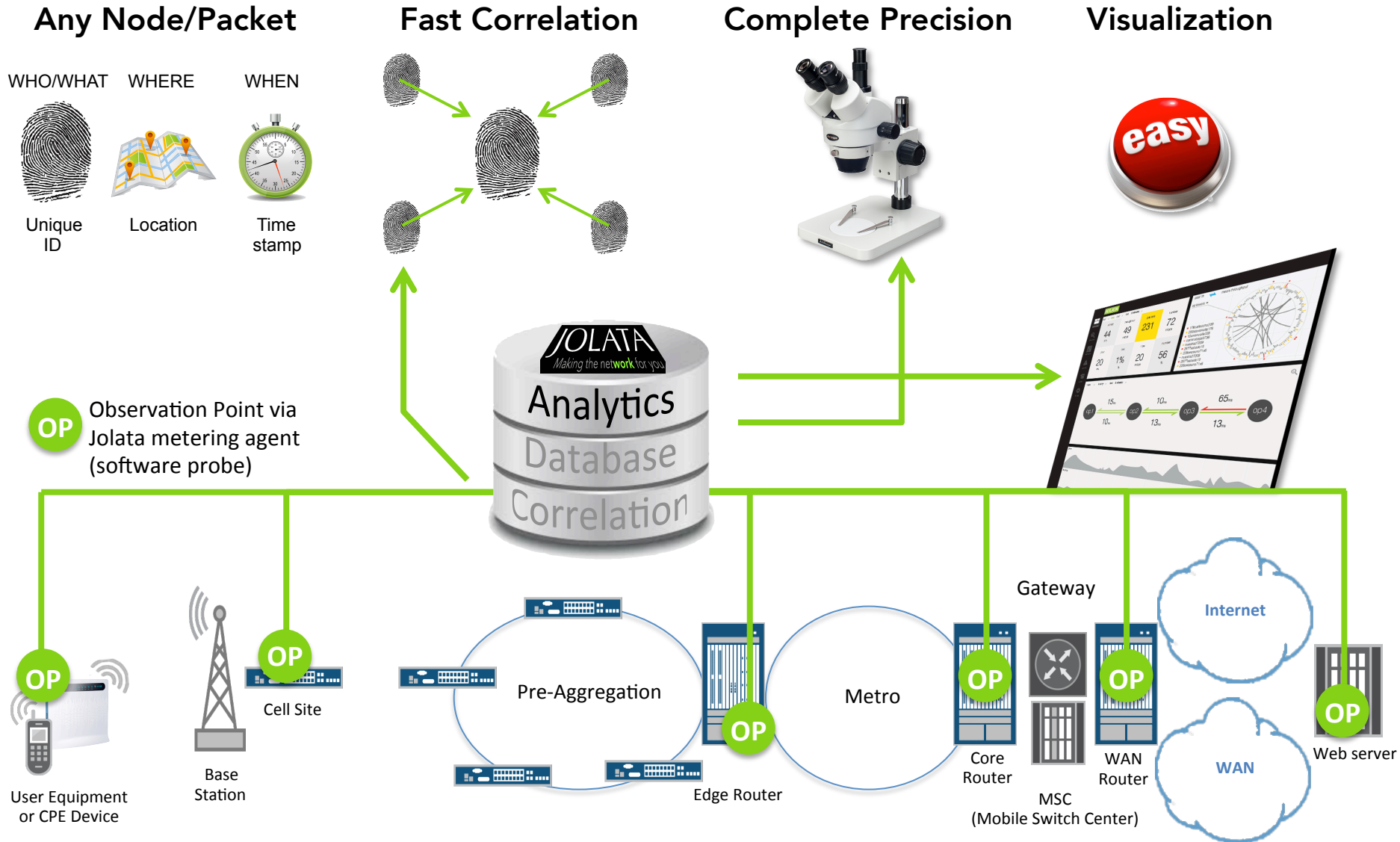
What A User Sees
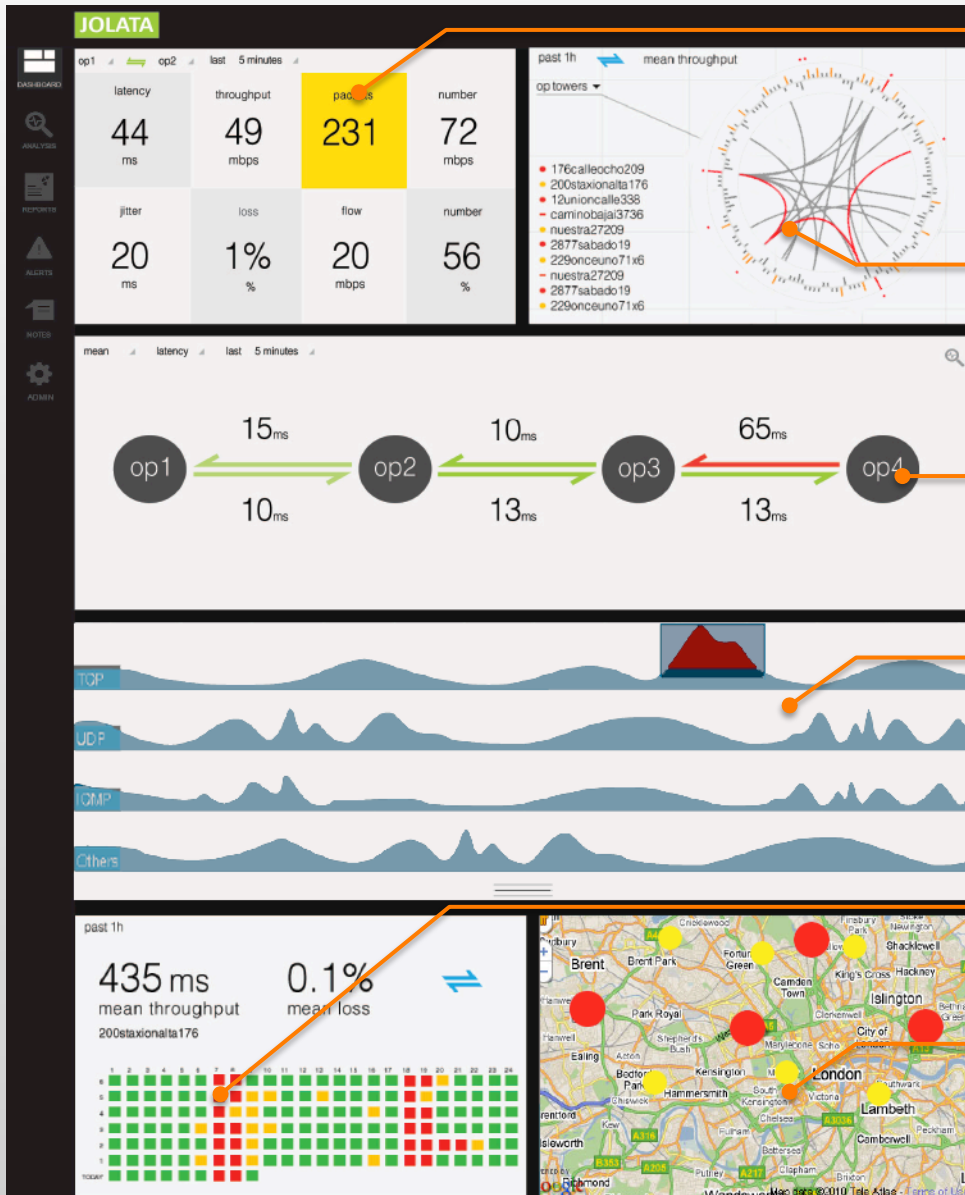
Metrics Cards View:
- Latency
- Jitter
- Loss
- Throughput
- # of Packets
- # of Flows
- Fragmentation
- Link level throughput

Chord View
- Simultaneously see >100 observations points, specific network flows
- Observe over- and under-utilized network segments

Spatial Map View
- Drag/drop Ops to create specific flow views
- See upstream/downstream, hop-by-hop

Temporal View
- Drill down into specific issues in real-time, and with sub-second precision
- Scrolling, continuous read-out

Heat Map View
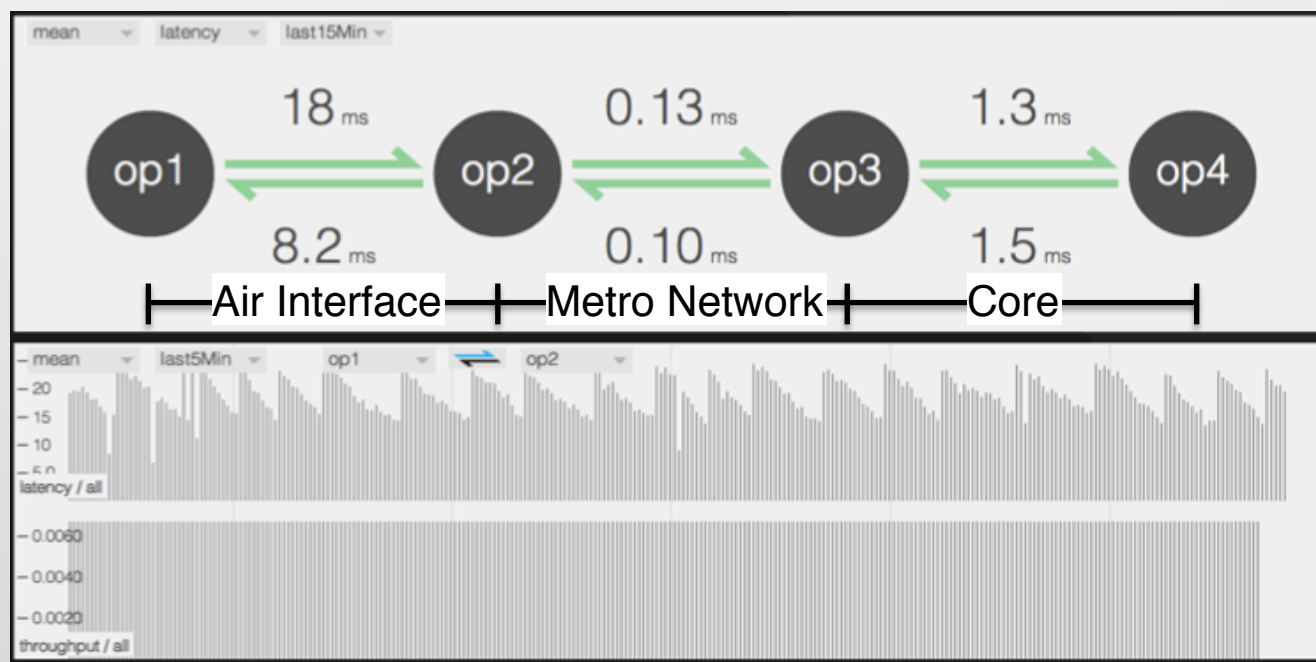- See 7/24 trends in network performance

Geo View
- See critical issue where they are physically located in a geography

Chord View (Logical Flows)

- See hundreds of nodes at one time

- See multiple flows, or view custom flows

- See over-utilized, and under-utilized nodes/links

JOLATA
Making the network for you

Latency

Throughput

No Latency Alerts When Statistics are Averaged…

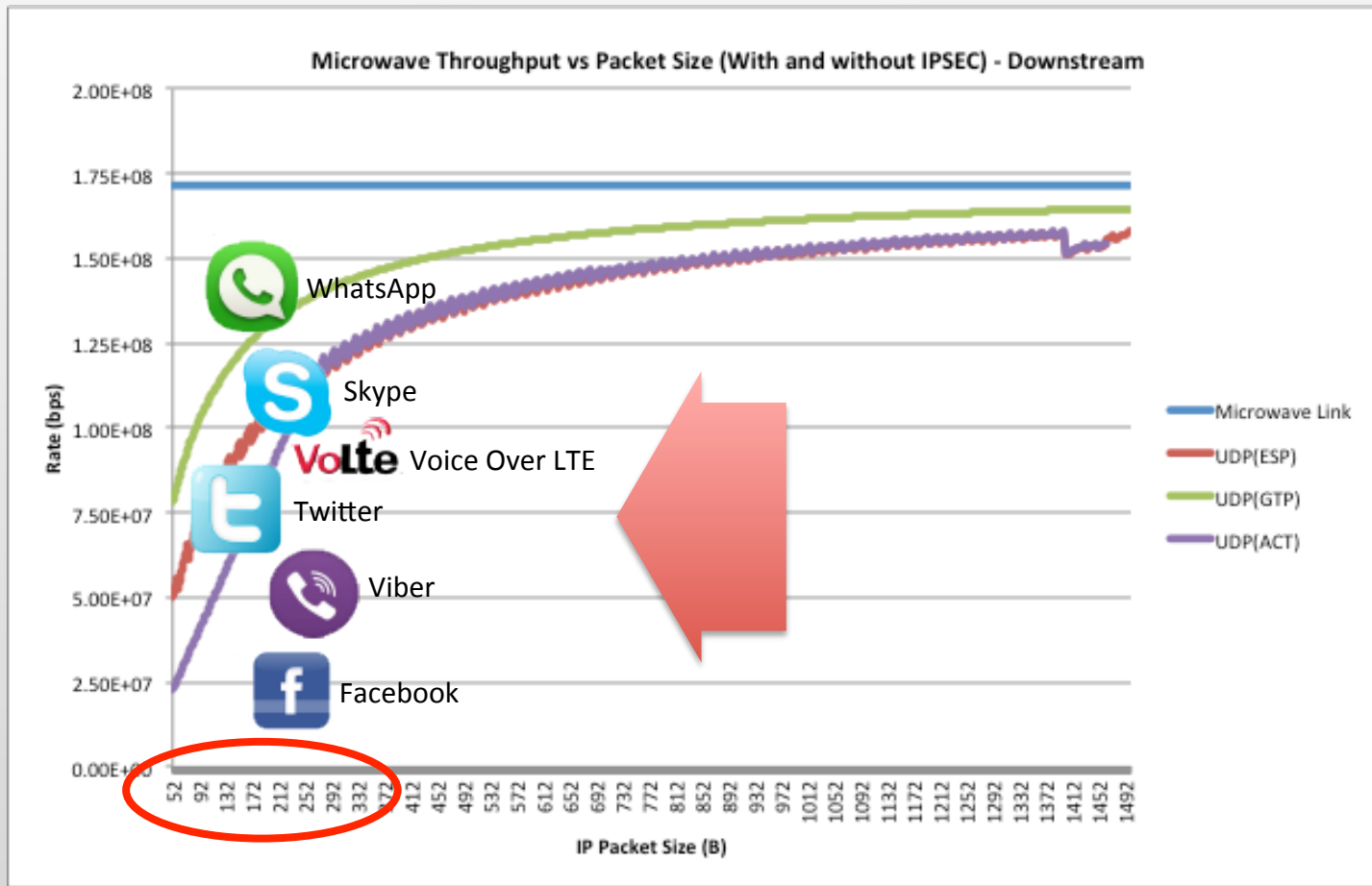# End-To-End LTE – The Value of Precise Resolution

Downstream load heavily Impacts upstream latency (Air Interface)

Downstream load heavily Impacts upstream latency (SPGW)
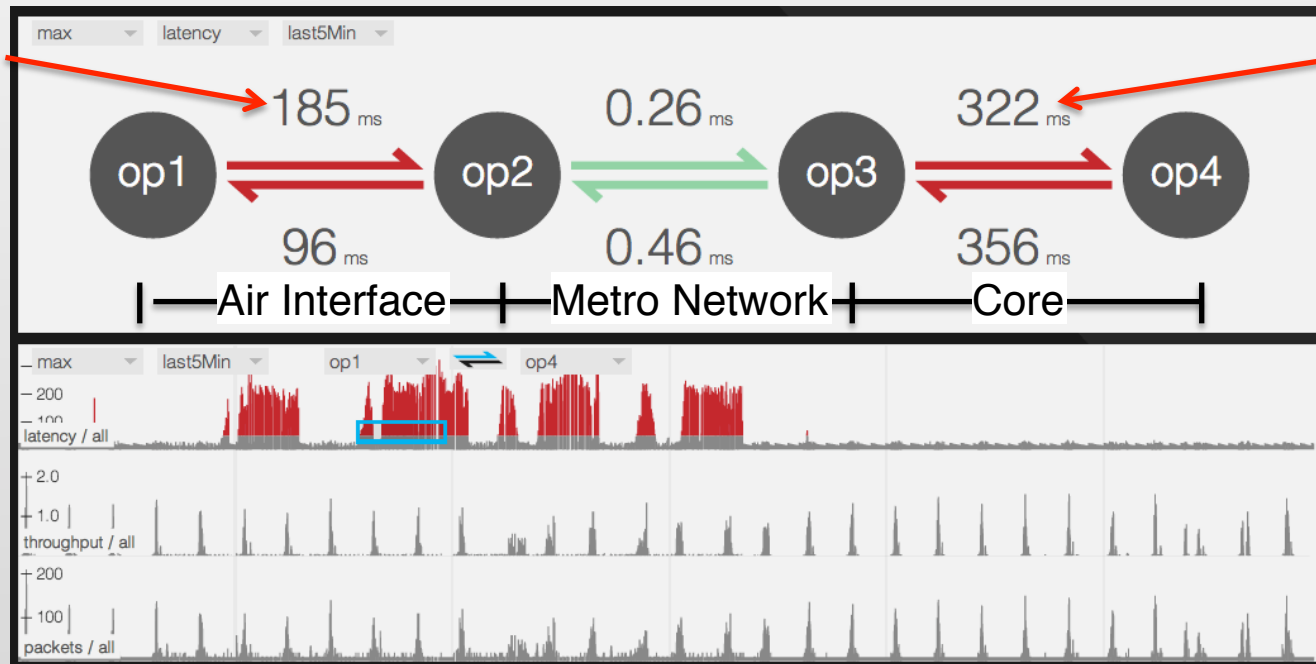
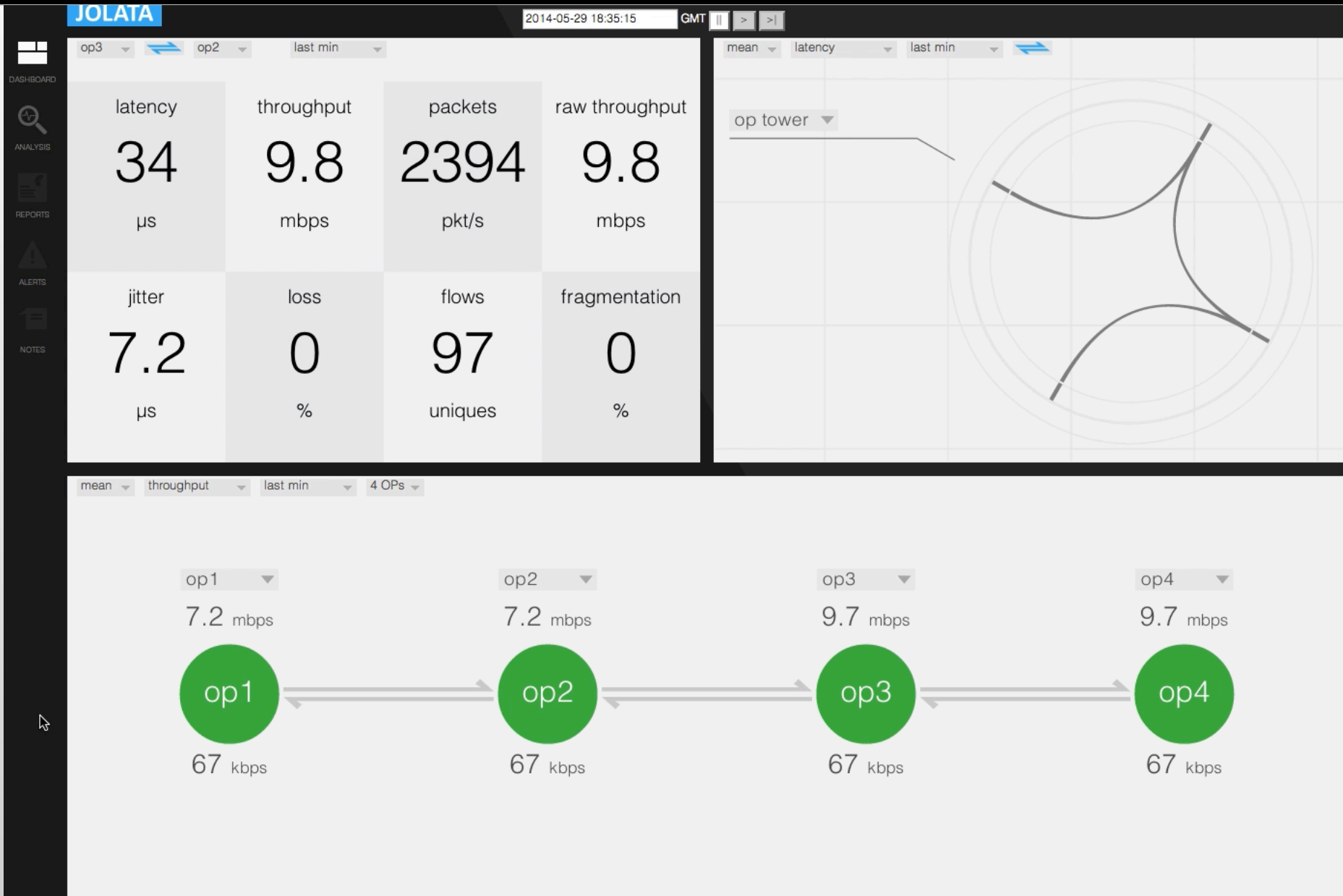Precise, Actionable Latency Statistics in Real-Time to pinpoint Root Cause

Microwave Link Throughput Limits

Microwave Throughput vs Packet Size (With and without IPSEC) - Downstream

- Small packet size devastates microwave transmissions, and …
- Most new services and applications are small packets (M2M, VoLTE, Skype, WhatsApp, Viber, Line, etc.)

Real Time Demo

- Provide Vendor-neutral solution that can independently verify all vendor equipment performance

- Measure EVERY packet and flow on any locations on the network to provide the most precise intelligence

- Compute metrics at different time resolutions depending on the use cases, including 1ms, 10ms, 100ms, 1 sec, 1 min and 1 hour

- Analyze and alert/visualize within 5 seconds of data capture, thus providing a real-time view of network performance, and enabling operators to react and fix issues immediately

Thank you

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