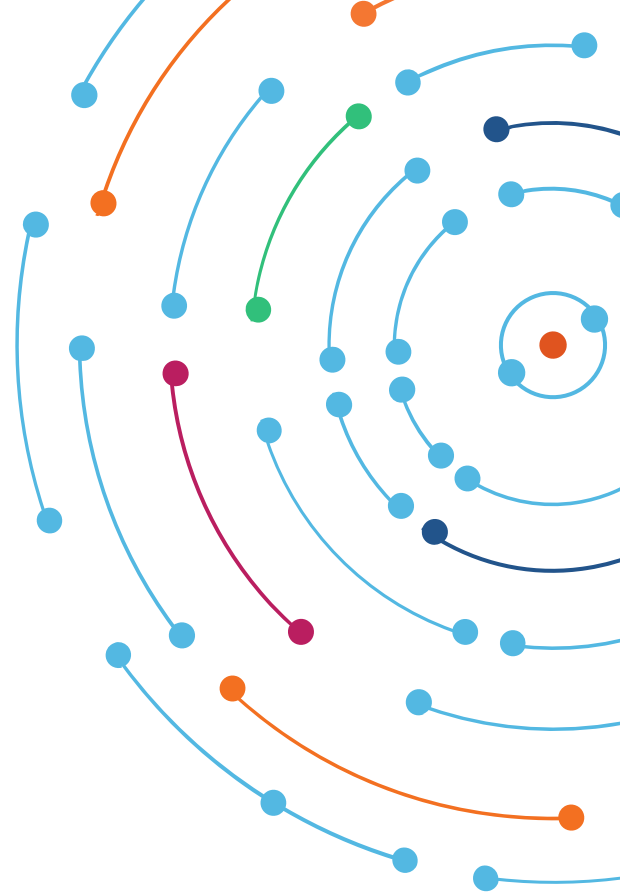




Observation on Facebook outage



Agenda

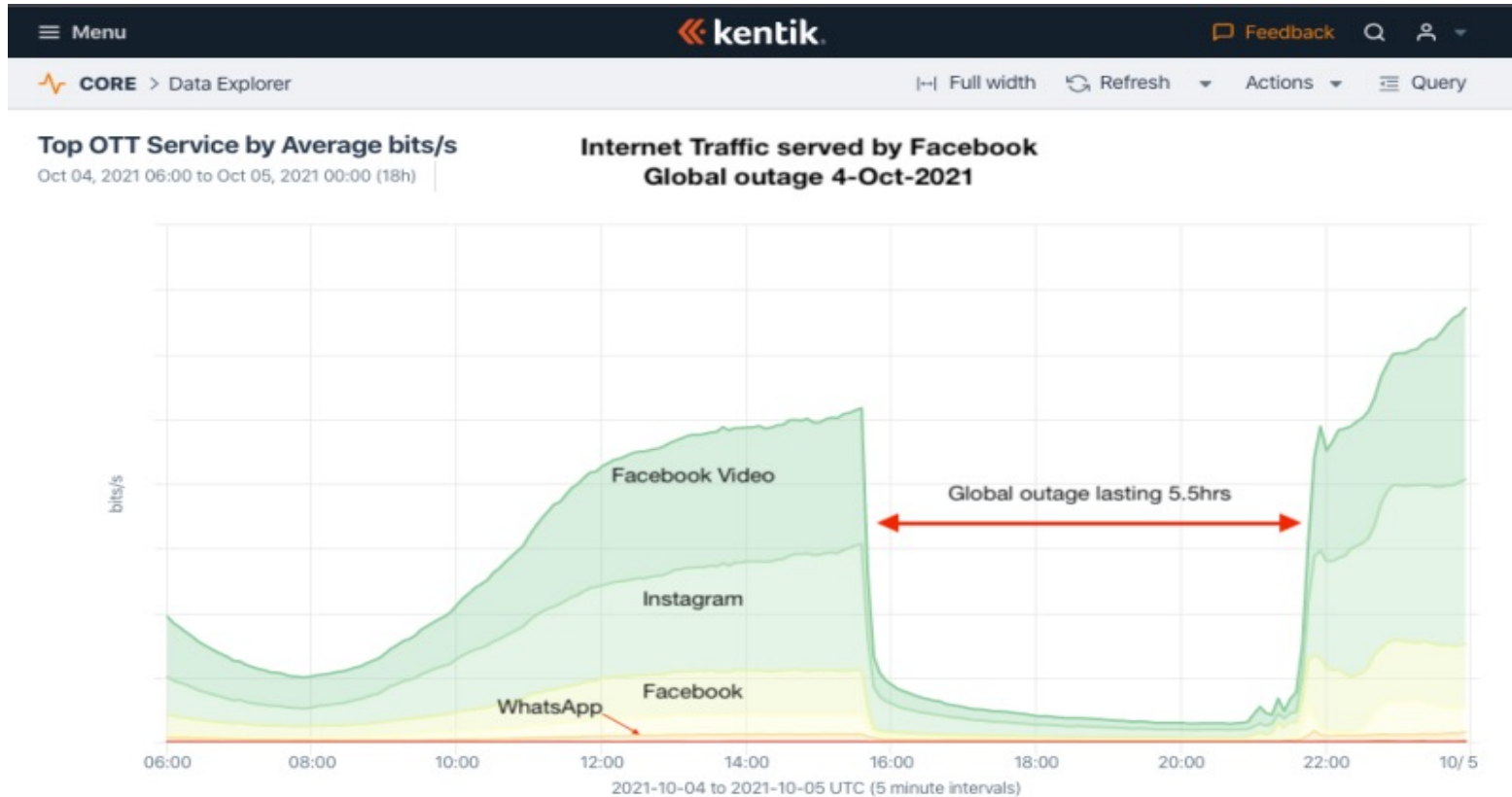
- What happened to Facebook
- What caused that
- What observation was made
- ... now we have more



Facebook outage

- On 4 Oct, Facebook suffered a global outage
- Facebook, WhatsApp, Instagram and Oculus were unavailable for nearly 6 hours
- Facebook's down-time comes to more than 1.2 trillion person-minutes of service unavailability

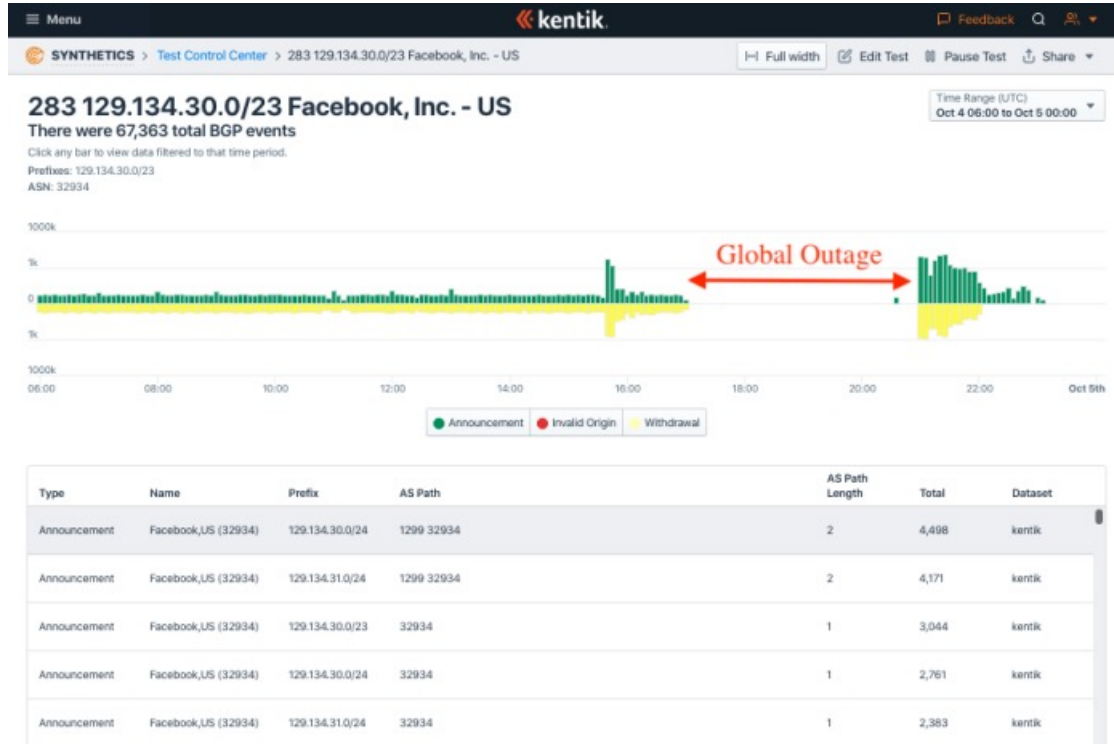
Where have the traffic gone?



Facebook traffic dip

- From Kentik's OTT service tracker show
 - Dropoff in volume of traffic by individual Facebook service
- According to statement published by Facebook
 - Misconfiguration on backbone routers results in withdrawal of some IPv4 and IPv6 prefixes
 - IP addresses of Facebook's authoritative DNS servers were also withdrawn, rendering themselves unreachable

Facebook authoritative server a.ns.facebook.com

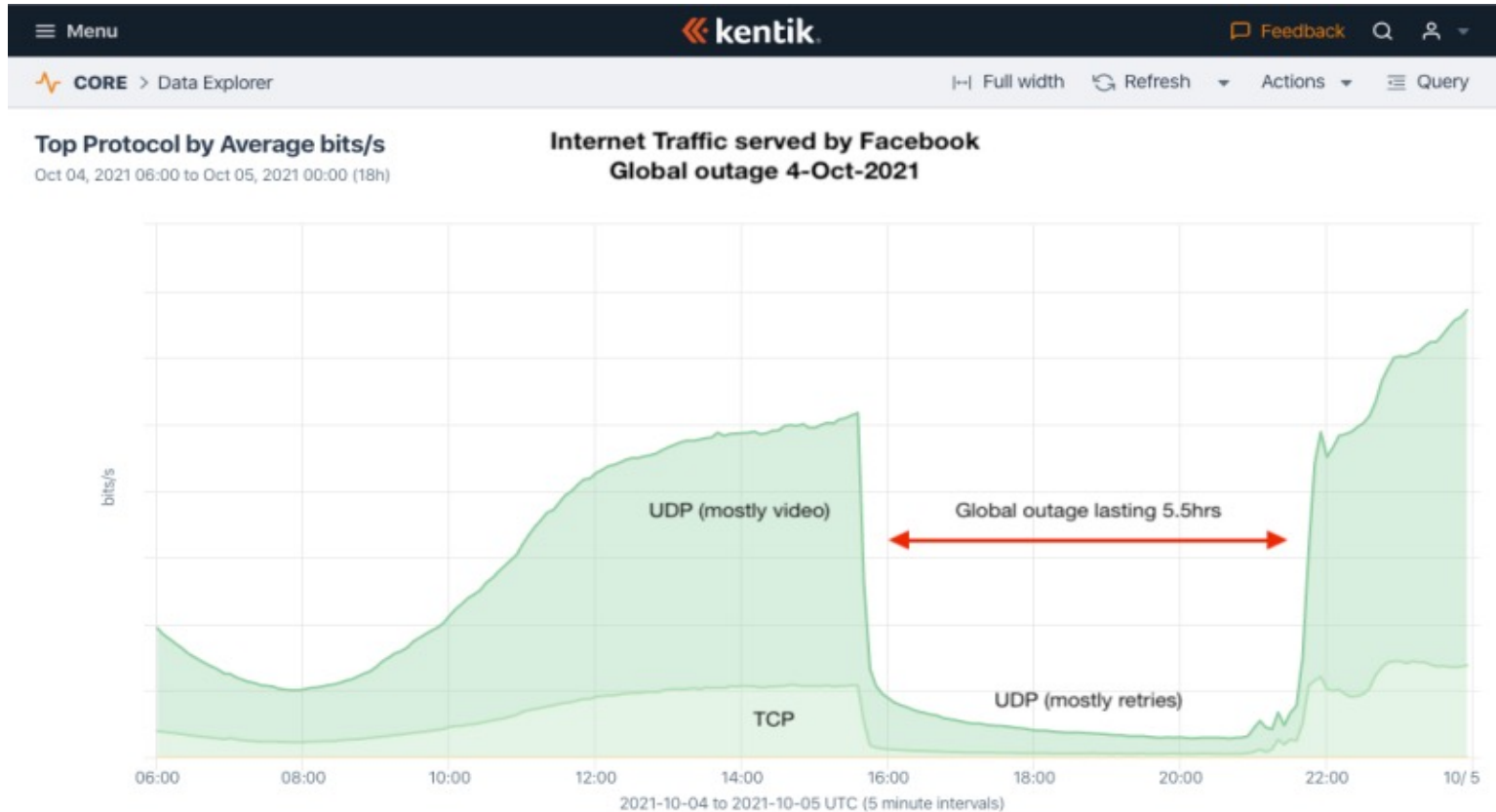


- Kentik's BGP Monitor shows withdrawal event of prefixes 129.134.30.0/24 and 129.134.30.0/23

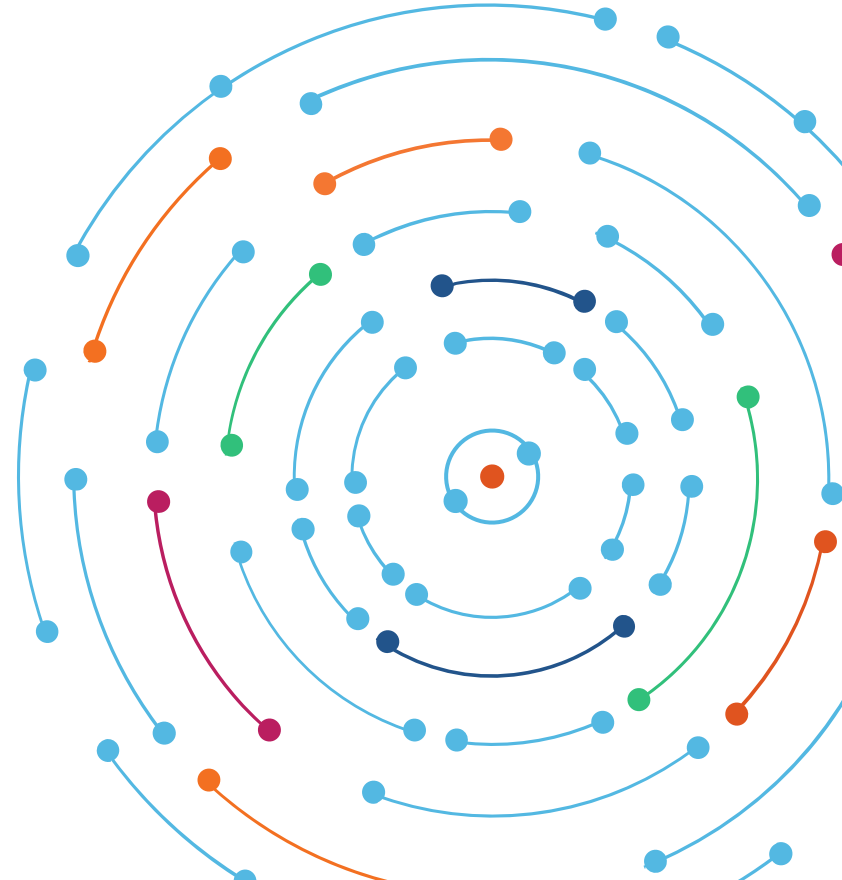
Facebook traffic breakdown – keep pressing the retry button

- Before the outage, UDP delivering traffic-intensive video
- During the outage, only DNS retries traffic seen
- Probably 3.5 billion Facebook users trying to reconnect to their services

Before and after the outage



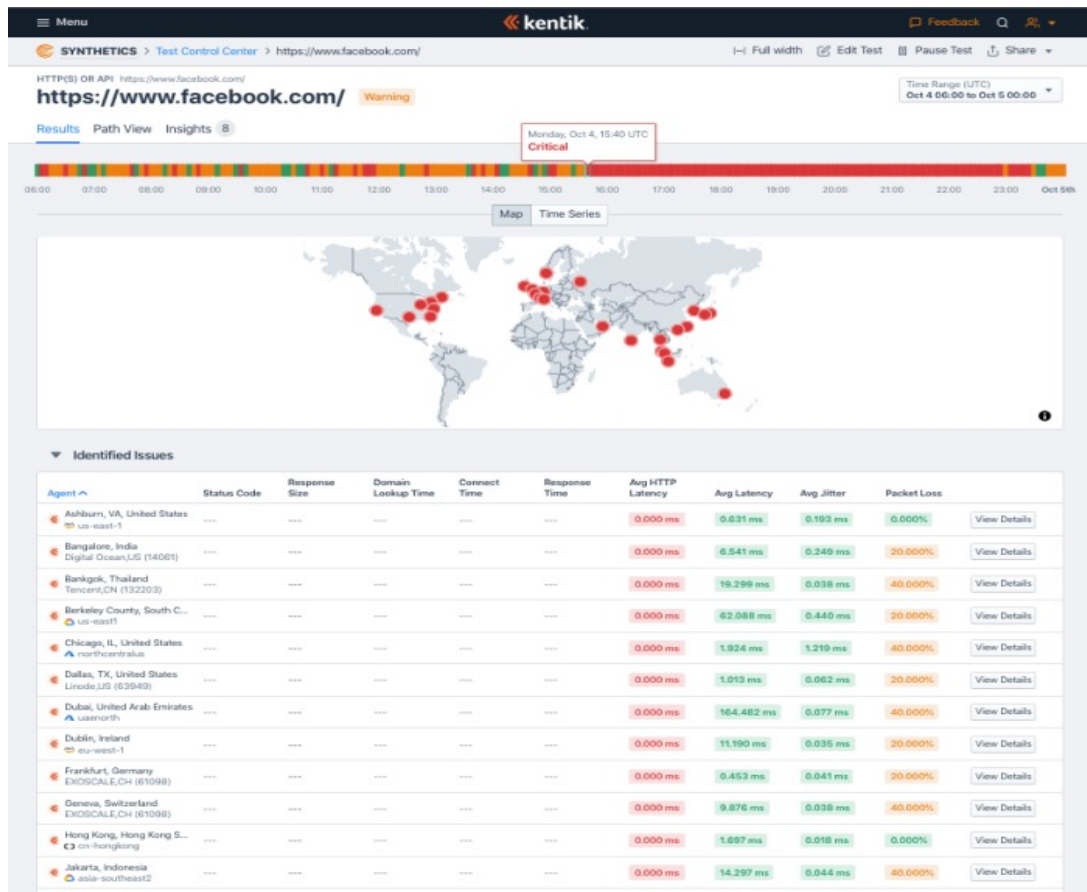
How can we detect it?



Service monitoring

- Imagine can actively monitor network performance metrics
- A global fleet of agents designed to continuously monitor different services
- Alert notification can be setup to immediately alert user if something had gone wrong

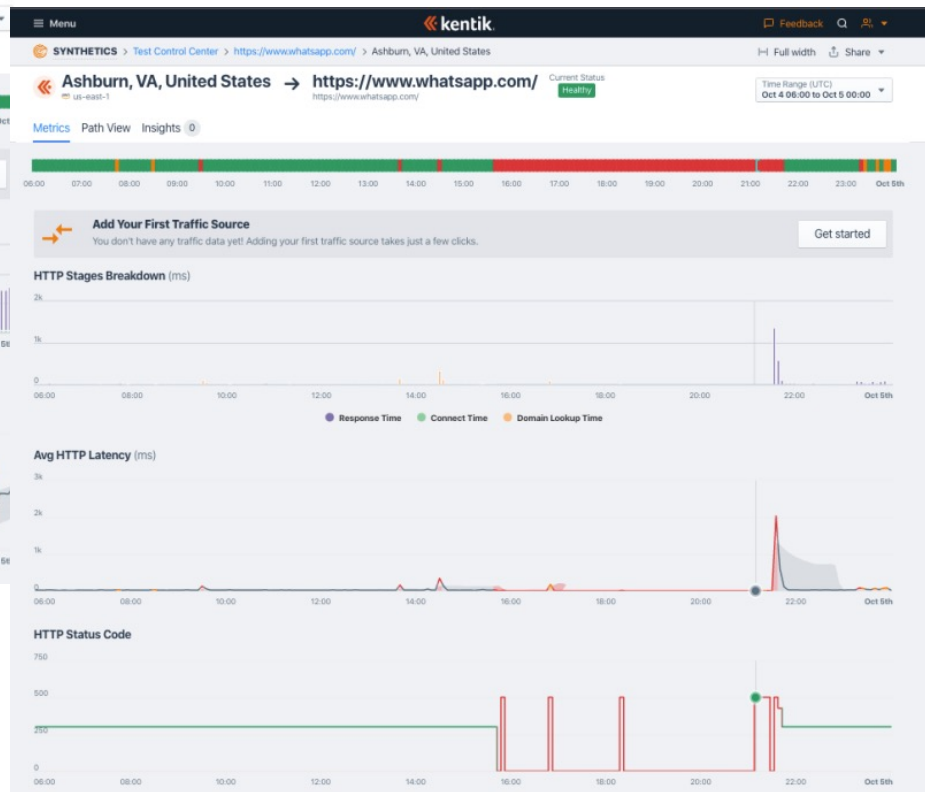
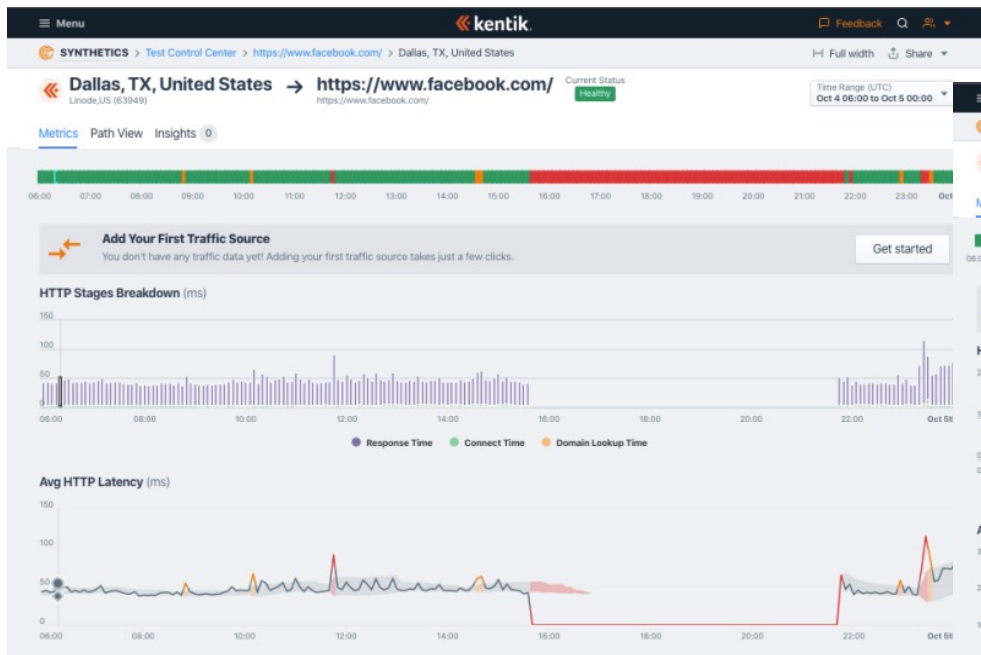
Eyes from all over the World



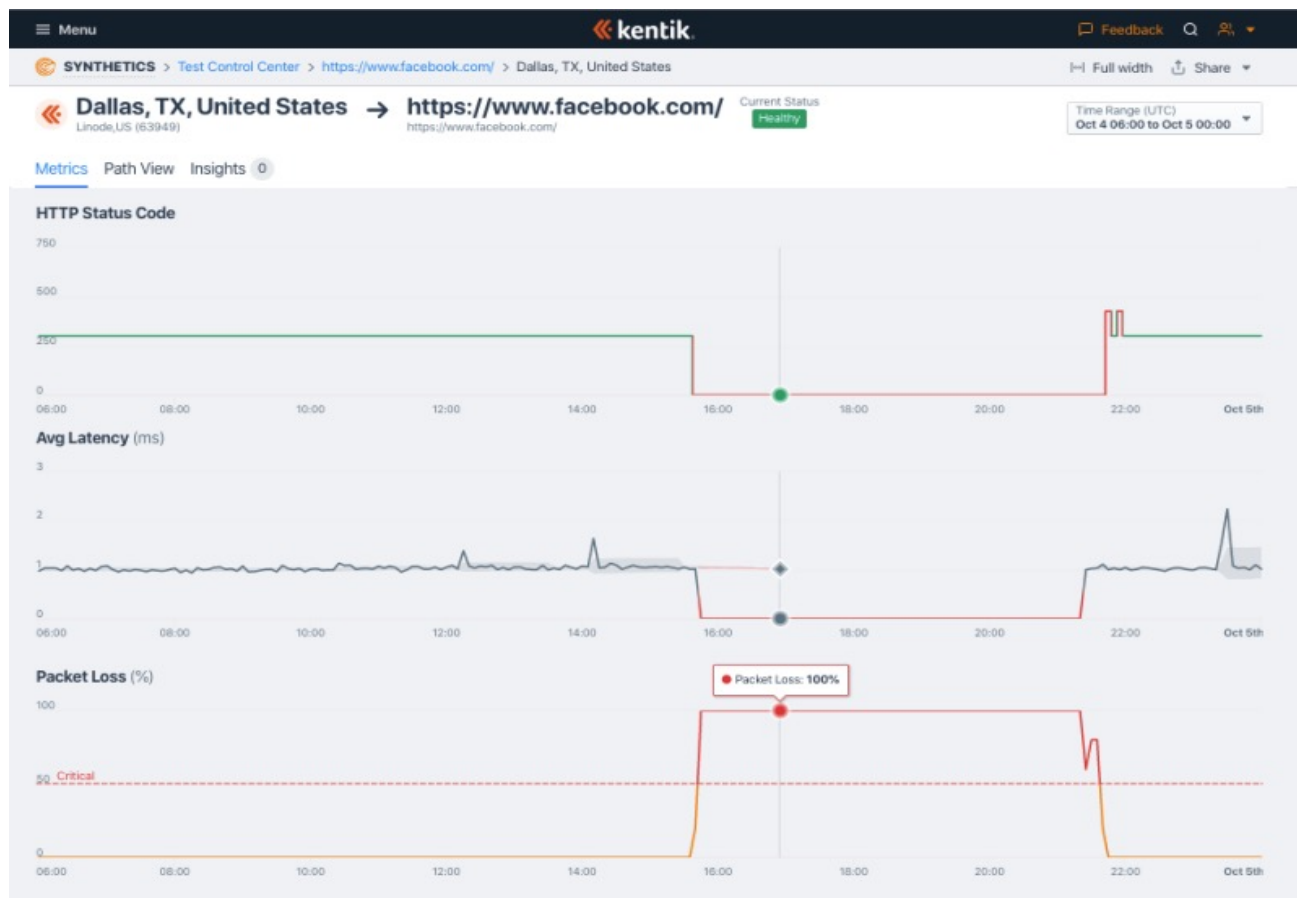
Services monitoring

- Various timing metrics of different HTTP stages
 - domain lookup time
 - connect time
 - average HTTP latency
- Other metrics
 - HTTP status code
 - Average latency
 - Packet loss

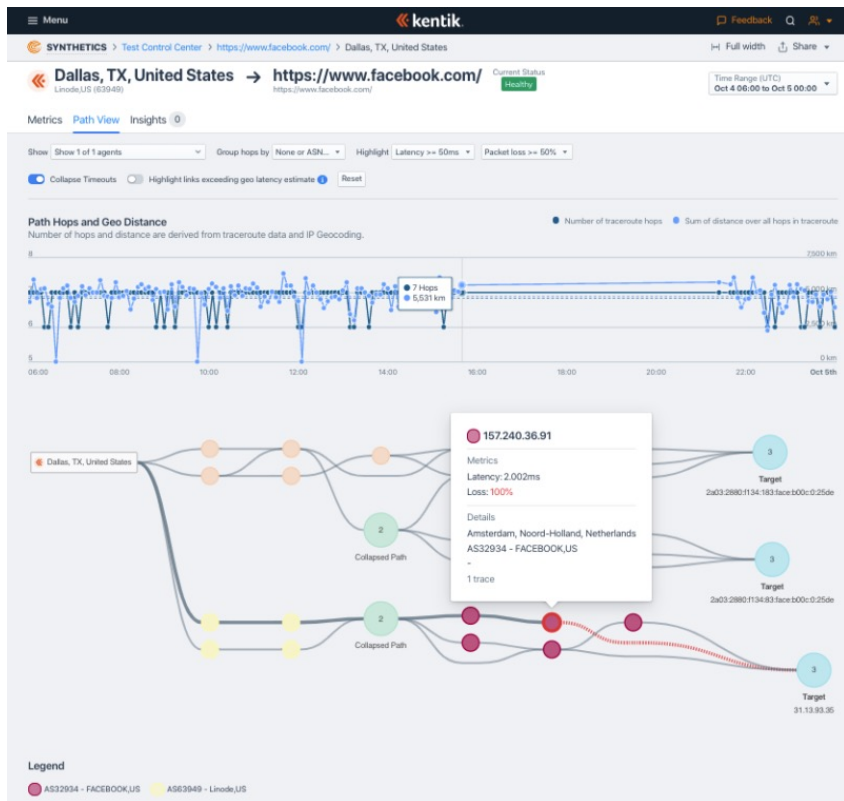
HTTP service metrics



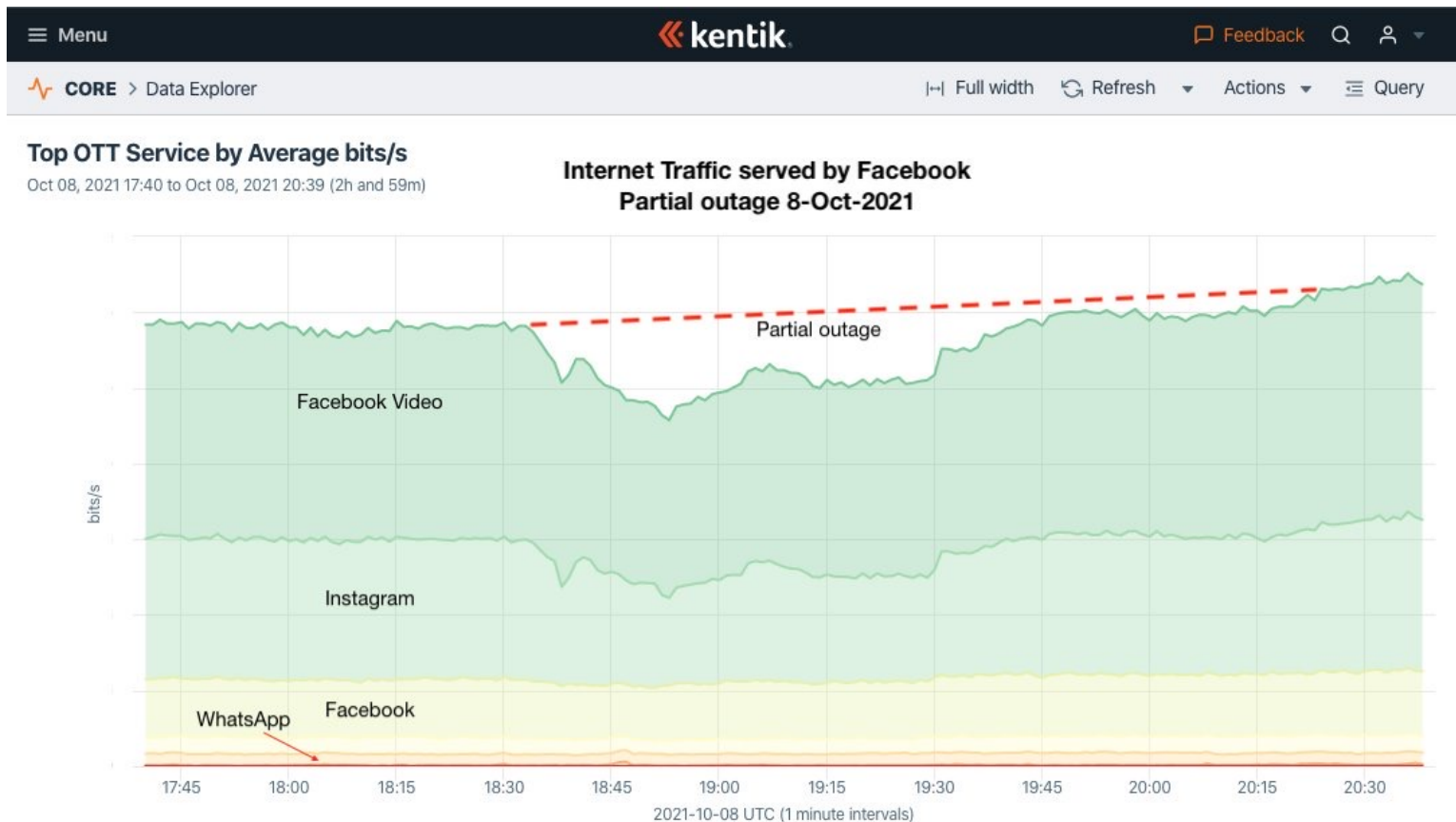
Performance metrics



The path to your services

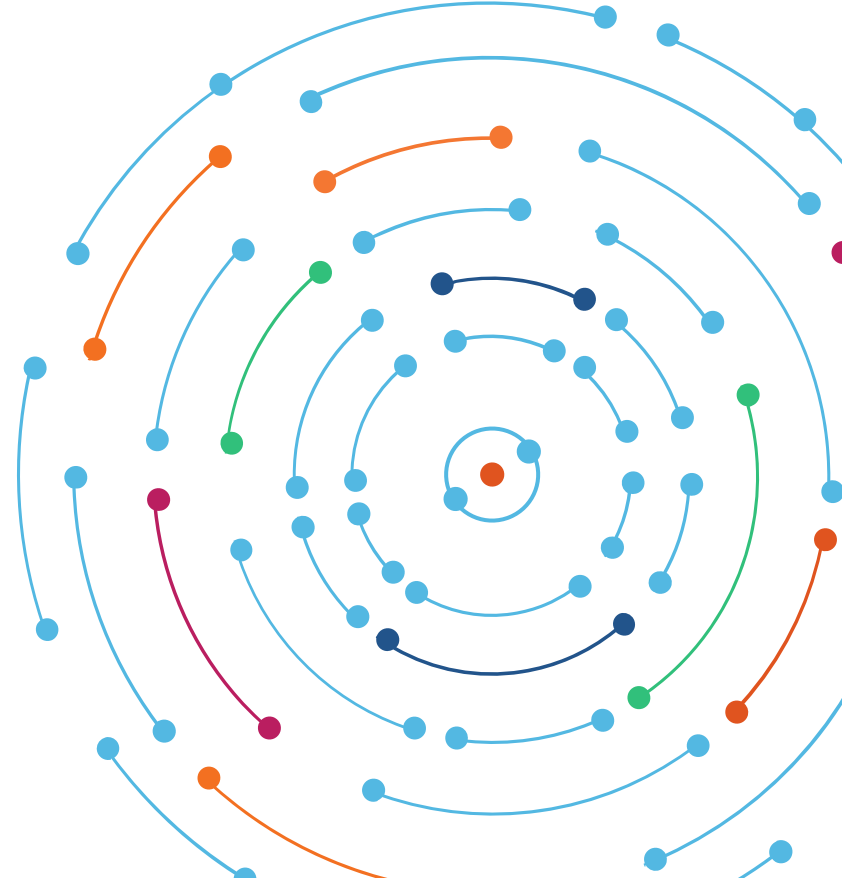


A few days later ...



From less traffic to more traffic

Microsoft Patch Tuesday



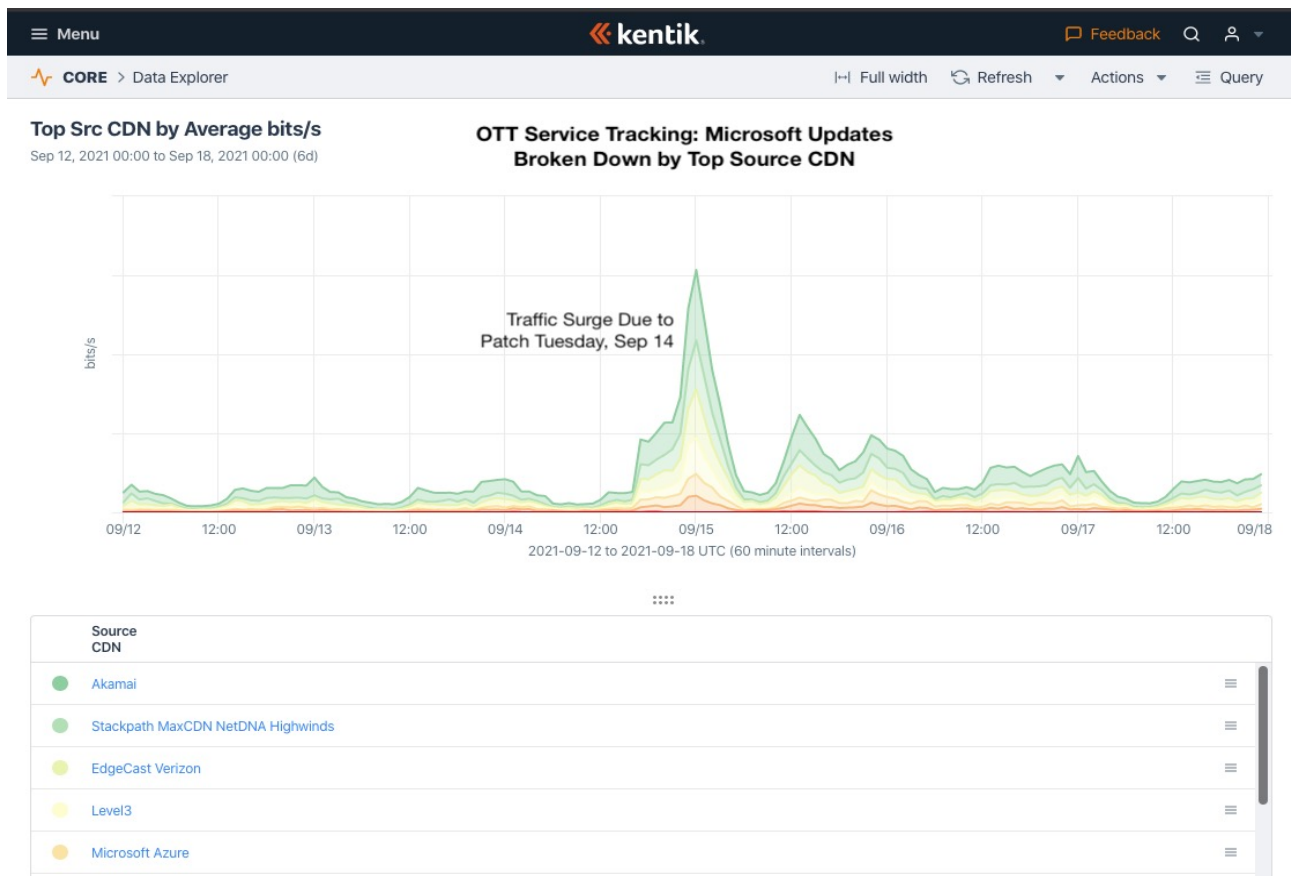
Anatomy of an OTT traffic surge

- The day of the month when Microsoft push updates
- These traffic events can put a lot of load on a network
- You may want to ask “What specific OTT service is causing my peering link with a certain CDN to become saturated”

What do we know?

- The update traffic was almost 7.5 times of the previous day
- Delivered through Akamai (38%), Stackpath (17%) and Edgecast (16%)
- In terms of connectivity types, they are Private PNI (54%), Transit (22%), embedded cache (17.4%) and IXP (7.1%)

Traffic by CDN



Traffic by connectivity

 Menu

 kentik

 Feedback





 CORE > Data Explorer

|<| Full width

 Refresh

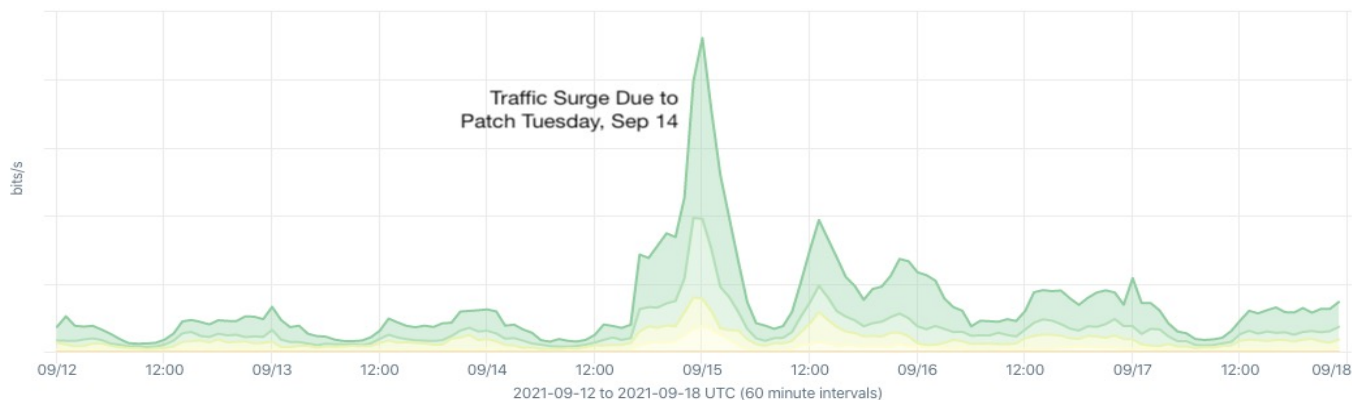
▼ Actions ▼

 Query


Top Src Connectivity Type by Average bits/s

Sep 12, 2021 00:00 to Sep 18, 2021 00:00 (6d)

OTT Service Tracking: Microsoft Updates Broken Down by Top Source Type



⋮

Source Connectivity Type	
 Free Private Peering	
 Transit	
 Embedded Cache	
 IX	

What have we learned?

- In the world of Internet, nothing is unbreakable
- What measures we can deploy to detect outage
- What kind of data could help us to anticipate and fix service performance issues

The Kentik Blog



PERFORMANCE MONITORING

NPM, encryption, and the challenges ahead: Part 1 of 2

by Michael Patterson

OCTOBER 13, 2021

Encryption and cloud adoption are creating hurdles for network performance monitoring vendors. To survive, solutions must evolve or die.

[READ MORE](#)



NETWORK OBSERVABILITY, NETWORK AF PODCAST

Network AF, Episode 2: Backbone engineering and interconnection with Nina Bargisen

by Michelle Kincaid

OCTOBER 11, 2021

In episode 2 of Network AF, Nina Bargisen joins Avi to discuss network interconnection and peering, her career in networking, and mentorship and diversity issues in network engineering.

[READ MORE](#)



INTERNET ANALYSIS

Facebook's historic outage, explained

by Doug Madory

OCTOBER 05, 2021

Facebook suffered a historic and nearly six-hour global outage on October 4. In this post, we look at Kentik's view of the outage.

[READ MORE](#)



NETWORK OBSERVABILITY, NETWORK AF PODCAST

Listen up: The Network AF podcast is here

by Michelle Kincaid

SEPTEMBER 28, 2021

Today our Co-founder and CEO Avi Freedman launches Network AF, his new podcast. Come and listen to all-things networking, cloud, the internet and more. The first episode is out today!

[READ MORE](#)



INTERNET ANALYSIS, OTT

Anatomy of an OTT traffic surge: Microsoft Patch Tuesday

by Doug Madory

SEPTEMBER 22, 2021

Last Tuesday, September 14th was the second Tuesday of the month, and for anyone running a network or working in IT, you know what that means: another Microsoft Patch Tuesday. Doug Madory looks at how the resulting traffic surge can be analyzed using Kentik's OTT Service Tracking.

[READ MORE](#)



SYNTHETIC MONITORING, LATENCY

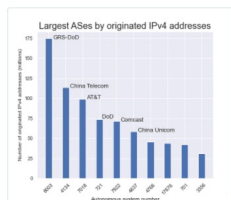
Why latency is the new outage

by Kevin Woods

SEPTEMBER 21, 2021

Adding more bandwidth from the business to the cloud is like adding more cowbell to Grazing in the Grass. In many cases, it won't improve the end-user experience when latency is the real problem.

[READ MORE](#)



INTERNET ANALYSIS

Wait, Did AS8003 Just Disappear?

by Doug Madory

SEPTEMBER 10, 2021

There has been a new development in [The Mystery of AS8003](#).

As you may recall, this was the AS number registered to a defunct company in Florida that appeared earlier this year in the global routing table announcing over 175 million IPv4 addresses belonging to the US Department of Defense.

Well, that just changed.

[READ MORE](#)



CLOUD VISIBILITY, SYNTHETIC MONITORING, DIGITAL EXPERIENCE MONITORING

Visibility into the cloud path of application latency

by Kevin Woods

SEPTEMBER 10, 2021

A company with thousands of remote employees connecting to the same SaaS applications will randomly experience slowness. How can we troubleshoot this sluggishness?

[READ MORE](#)



NEWS

What's next for the internet in Afghanistan?

by Doug Madory

AUGUST 31, 2021

As the last US military aircraft depart Kabul, so closes a chapter of U.S. involvement in the country. Will it also end a period of growth of the domestic internet in Afghanistan?

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NETWORK OBSERVABILITY

Network observability: Hype or reality?

by Kevin Woods

AUGUST 31, 2021

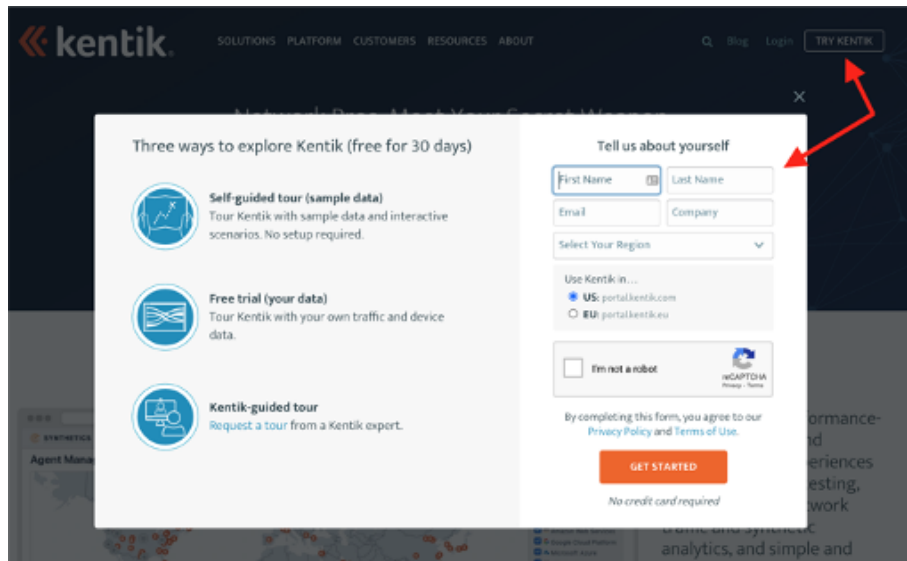
If you haven't heard of network observability, you soon will, and you'll be hearing it a lot. Some say it is just marketing hype and that networks have always been observable. This post will explore why that's not the case.

[READ MORE](#)

Get started today at kentik.com

30 day free trial includes:

- Unlimited Cloud Monitoring: AWS, GCP, Azure & IBM Cloud
- Visibility into Direct Connect & Site-to-Site VPN
- Support for Transit Gateway & Cloud Routing
- Free credits for Kentik Synthetics
- Onboarding automation guidance
- Guided tour
- Demo mode



The screenshot shows the Kentik website's 'Get Started' modal form. The modal is titled 'Three ways to explore Kentik (free for 30 days)' and offers three options: 'Self-guided tour (sample data)', 'Free trial (your data)', and 'Kentik-guided tour'. To the right, there is a 'Tell us about yourself' section with input fields for 'First Name', 'Last Name', 'Email', and 'Company'. Below these is a 'Select Your Region' dropdown menu. Further down, there is a section for 'Use Kentik in ...' with radio buttons for 'US: portal.kentik.com' and 'EU: portal.kentik.eu'. At the bottom of the form, there is a checkbox for 'I'm not a robot' and a 'GET STARTED' button. A red arrow points from the 'TRY KENTIK' button in the top right corner of the website to the 'GET STARTED' button in the modal.

Three ways to explore Kentik (free for 30 days)

- Self-guided tour (sample data)**
Tour Kentik with sample data and interactive scenarios. No setup required.
- Free trial (your data)**
Tour Kentik with your own traffic and device data.
- Kentik-guided tour**
Request a tour from a Kentik expert.

Tell us about yourself

First Name Last Name


Email Company

Select Your Region

Use Kentik in ...

☒ US: portal.kentik.com

☐ EU: portal.kentik.eu

☐ I'm not a robot 

By completing this form, you agree to our [Privacy Policy](#) and [Terms of Use](#).

GET STARTED

No credit card required



Thank you!

C F Chui

cfchui@kentik.com

