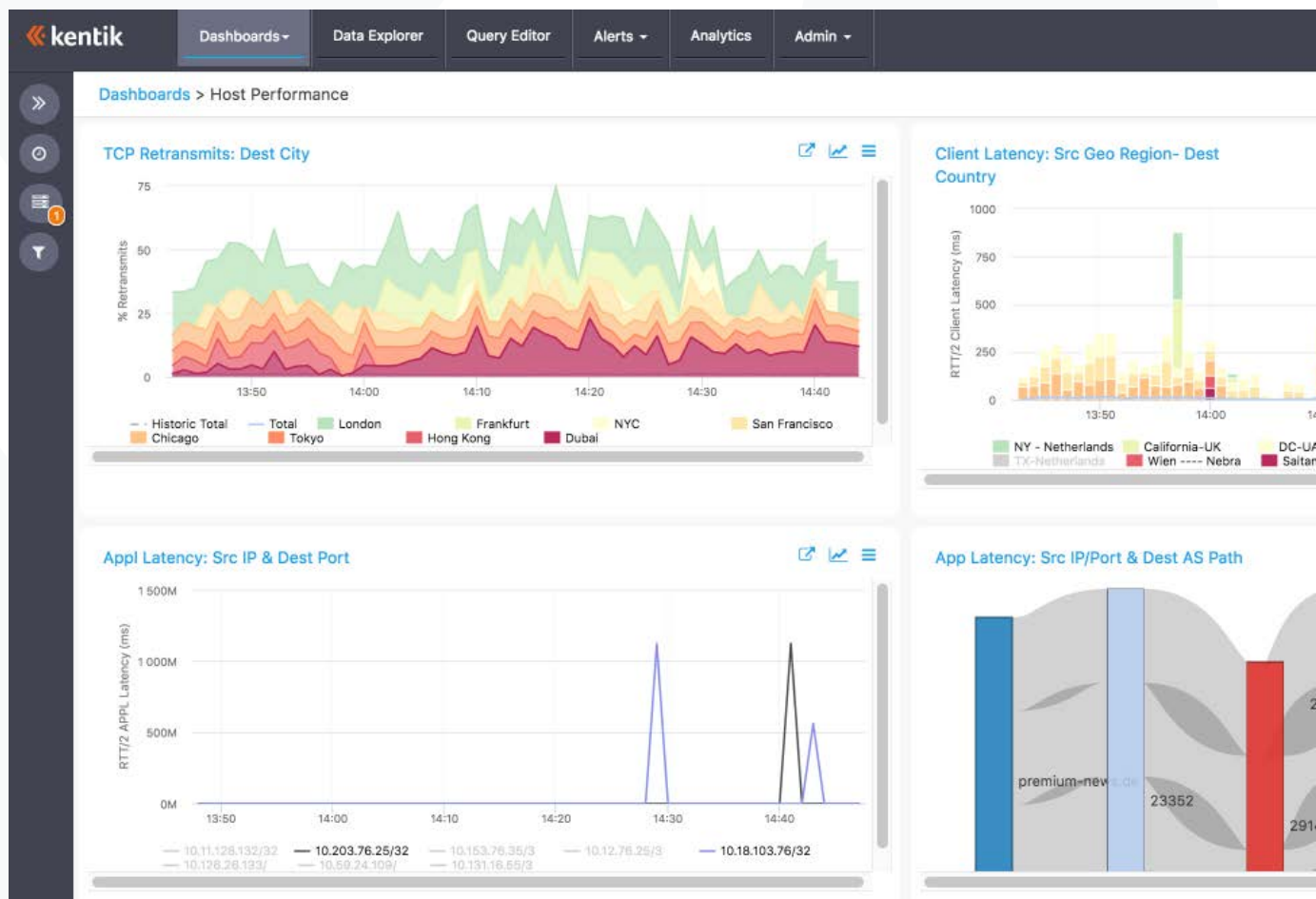


## Network Performance is Business Performance

In today's digital business, network performance is front and center — critical for user experience, revenue generation, and operational efficiency. But traditional performance monitoring (NPM) tools were developed for the pre-cloud era, when appliances could easily track monolithic applications in centralized datacenters. As applications and networks become increasingly distributed, these legacy monitoring tools leave gaps where performance can't be seen. And without timely, complete information, operators can't ensure optimal performance. That's the issue that Kentik NPM is built to solve.

Kentik NPM uses lightweight, easily deployed software agents to monitor real application traffic. And it's the first network performance monitoring solution that leverages Big Data to provide comprehensive visibility and detection of performance issues across the entire network and on the Internet. Why Big Data? Because network traffic is massive and growing, making network performance monitoring a Big Data challenge. The key is to implement NPM on a cloud-scale platform that delivers Big Data analytics with the efficiency of SaaS. Built on Kentik Detect, Kentik NPM is the only NPM solution architected to provide real-time answers to ad-hoc questions across multi-billion-row datasets.





## It's About Time

Suppose your commerce application is choking on orders and your customers are giving up. How do you know whether the issue is with your payment processor, your IP transit provider, or within your own network? And how much revenue will you lose while trying to figure it out?

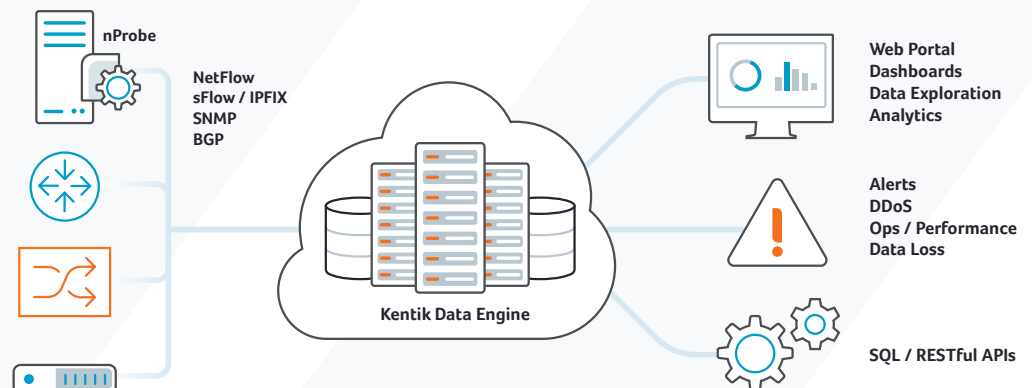
Prior to Kentik NPM, network engineers and operators have traditionally been able to access traffic metrics and routing data only in siloed reports based on summarized, predefined views or - even worse - by logging into network devices to dump out raw network data. That makes it nearly impossible to get to the bottom of performance issues in operationally acceptable timeframes. Without sufficient details to answer relevant questions, engineers resort to guesswork or rely on slow, manual examination of data tables, trying to piece together a big picture view from disparate sources. Every second of delay impacts user experience and revenue.

## NPM Without Constraints

Kentik NPM takes performance monitoring beyond the limitations of yesterday's approaches. Host-level data originates from the Kentik nProbe Host Agent, which enables precise live-traffic performance monitoring. nProbe-generated data is accessed via Kentik Detect, which uses a distributed Big Data backend to unify unsummarized flow records — NetFlow v5/9, sFlow, IPFIX — into a time series database with BGP and GeoIP data.

Leveraging the power of Kentik Detect, Kentik NPM provides the fast answers that operators need to keep traffic flowing. Run ad-hoc queries against a broad variety of performance and traffic metrics. Group by multiple dimensions selected from dozens of data fields. Zoom in on just a few minutes or out to see months at a time. With a 95th percentile query response time of just a few seconds across Terabits of data and billions of datapoints, Kentik NPM operates at the scale and speed of today's digital business networks.

Kentik NPM also includes all of the key features that differentiate a full solution from a simple tool. Customizable baselining and alerting — including a self-learning dynamic thresholding engine — generates notifications when user-specified performance indicators exhibit anomalies. Graphically rich dashboards and reports allow information-sharing with peers and managers. And open APIs (RESTful and PostgreSQL) enable integration of Kentik Detect data with 3rd-party systems for capabilities such as DDoS mitigation and business intelligence.



## Kentik NPM Performance Metrics

Kentik NPM enables easy monitoring, alerting, and analytics on the following key measures of network performance:

- **Retransmits** – Retransmission of packets from source to destination indicates network delivery issues that can degrade application/service performance. Shown as packets per second or as a percentage of all packets sent.
- **Out of order** – Packets arriving at the destination out of sequence indicates potential variability in delivery paths and is particularly detrimental to latency-sensitive traffic such as real-time audio or video. Shown as packets per second or as a percentage of all packets sent.
- **Fragments** – Packets that have been split for delivery across the network, which can increase CPU load and also cause retransmits when fragments arrive out-of-order. Shown as fragments per second or as a percentage of all packets sent.
- **RTT/2 latency (derived)** – One-way network latency, shown from multiple perspectives:
  - *Client*: High values indicate latency problems in the network or at the server end of the flow.
  - *Server*: High values indicate latency problems in the network or at the client end of the flow
  - *Application*: Derived by examining request/response pairs at the application layer (i.e. HTTP GET vs. first response). Provides a reasonable proxy for end-user experience of application response.

## Kentik NPM Top Use Cases

Kentik NPM tells you when performance issues are impacting user experience, and it helps you to rapidly diagnose root causes so that you can remediate problems.

**Application performance optimization** – Monitor and troubleshoot performance for networked and distributed applications

- Monitor HTTP and database calls for three-tier networked applications. Understand whether application performance issues are related to network factors. Resolve performance issues.
- Evaluate complex network API communications for highly distributed applications:
  - recognize and diagnose emergent performance issues;
  - measure relative performance of API partners for vendor selection.
- Guide decisions on distributed application architecture, such as when to locally cache network API calls.

**Datacenter traffic management** – Monitor intra- and inter-datacenter performance issues. Isolate and troubleshoot infrastructure root causes.

**Internet traffic management** – Make efficient routing decisions by monitoring performance across hops (first, second, and third) and destination ASNs and geographies. Quickly and cost-effectively bypass network roadblocks by serving traffic from alternate PoPs or via alternate first-hop ASNs.

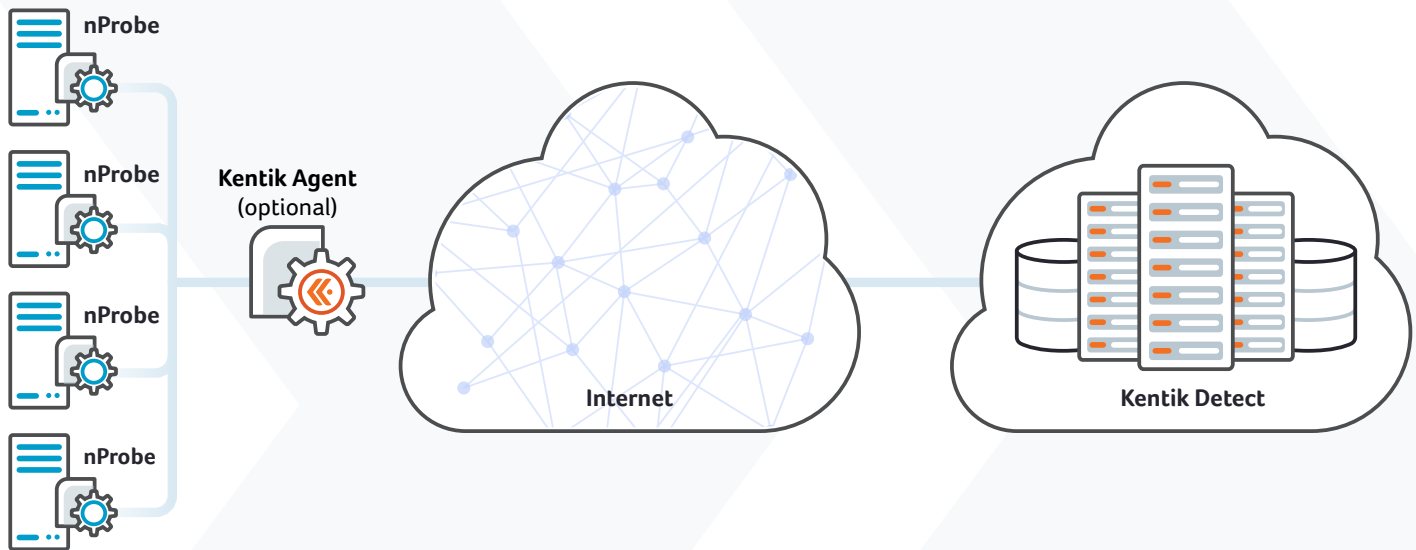
**Cloud networking** – Monitor relative quality of IaaS and other cloud providers to guide network connectivity architecture, vendor selection, and contract negotiation.

**Network change and new deployment validation** – Provide instant visibility for network changes and new deployments when building or changing applications, servers, network elements, circuits, or peering/transit.

## Kentik NPM Solution Components

**nProbe Host Agent** – Deployed on key application servers or load balancers such as HAProxy or NGINX servers, Kentik nProbe Host Agent monitors every packet in flows sampled from real traffic. Passing the collected data to Kentik Detect, nProbe enables Kentik NPM to provide live insight into network and application performance. The Kentik nProbe Host Agent is developed jointly with ntop, the industry's leading open-source provider of network analytics software.

**Kentik Detect** – The industry's only Big Data SaaS platform built from the ground up for network analytics, Kentik Detect ingests BGP, GeoIP, and flow data (NetFlow, sFlow, IPFIX) at the rate of trillions of records per day. It retains complete, unsummarized data for 90 days (or more by special arrangement). And it provides lightning-fast, ad-hoc network traffic analysis as well as anomaly and DDoS detection and BGP peering analytics.



## SaaS NPM for Cloud-driven Business

Cloud-hosted applications are driving today's explosive growth in digital business. Does it still make sense to rely on legacy approaches — appliances and packaged software — for a business-critical function like network performance monitoring? With Kentik NPM, your network operations team can finally take advantage of the benefits of a cloud-based SaaS. Forget about time-to-value that's measured in weeks or months. With Kentik NPM there's no installing and maintaining costly hardware, or investing engineering resources in custom solution development. You can get up and running on Kentik Detect in 15 minutes, configure nProbe on a host, and be monitoring network performance in less than an hour. Powerful, cost-effective, and headache-free, Kentik NPM is the smart, modern solution to NPM for digital business.