

Increasing Network Uptime:

An industry-wide problem with a simple solution





Alex Trader
Account Manager

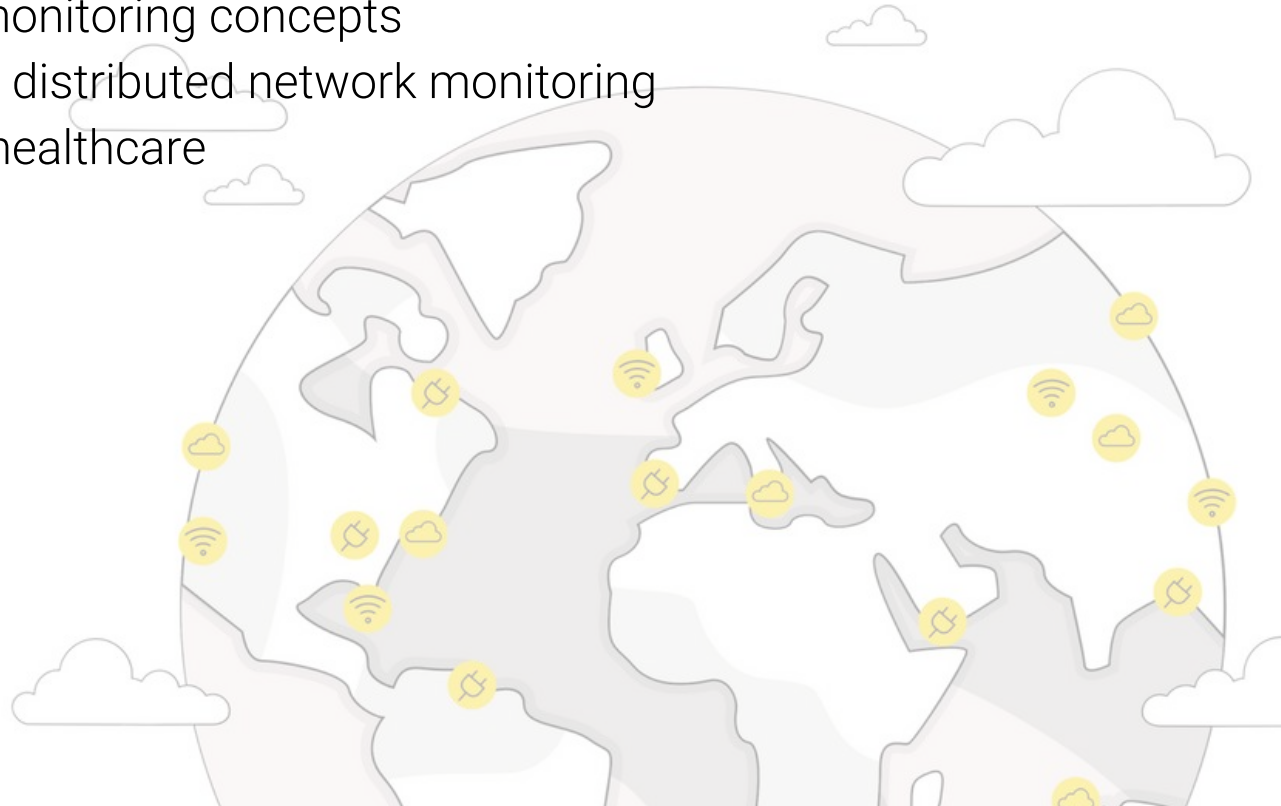


Stefano Gridelli
Co-founder and CEO



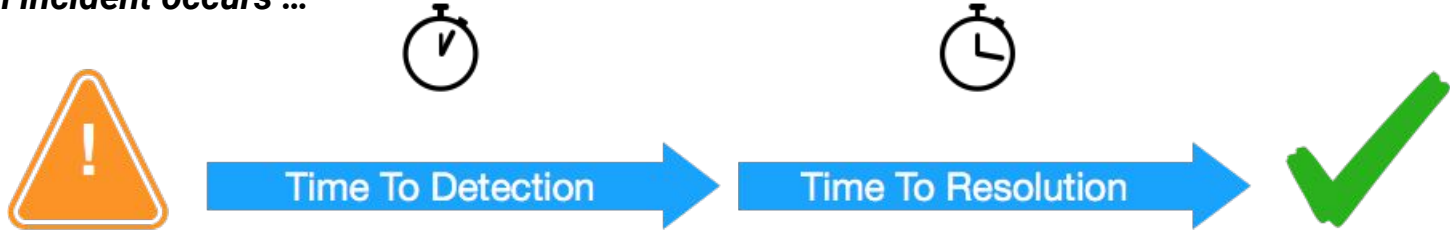
Agenda

- Part I: Network monitoring concepts
- Part II: Active and distributed network monitoring
- Part III: Use case healthcare



TTD and TTR

When an incident occurs ...



A network or application incident is detected and notified to IT.

IT finds the root cause and restores the service to its original state.

What can you do to reduce it?

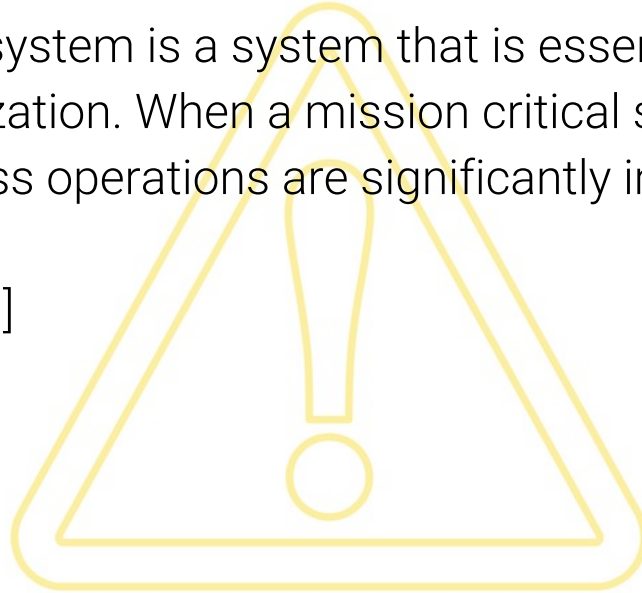
- Network management tools
- Network monitoring tools
- Service assurance tools

- Integration between network monitoring and network management tools
- Architecture and design documents
- Incident escalation procedures
- Team expertise

Mission Critical Systems

A “mission critical system is a system that is essential to the survival of a business or organization. When a mission critical system fails or is interrupted, business operations are significantly impacted.”

[Source: Wikipedia]



Network Availability

Availability is the percentage of time, in a specific time interval, during which a server, cloud service, or other machine can be used for the purpose that it was originally designed and built for.

Availability	Downtime per year	Downtime per month
99.999%	5.26 minutes	25.9 seconds
99.995%	26.28 minutes	2.16 minutes
99.99%	52.56 minutes	4.32 minutes
99.95%	4.38 hours	21.56 minutes
99.9%	8.76 hours	43.8 minutes

Reducing Network Downtime

TIME TO DETECTION:

Active Network Monitoring

TIME TO RESOLUTION:

Distributed Network Monitoring

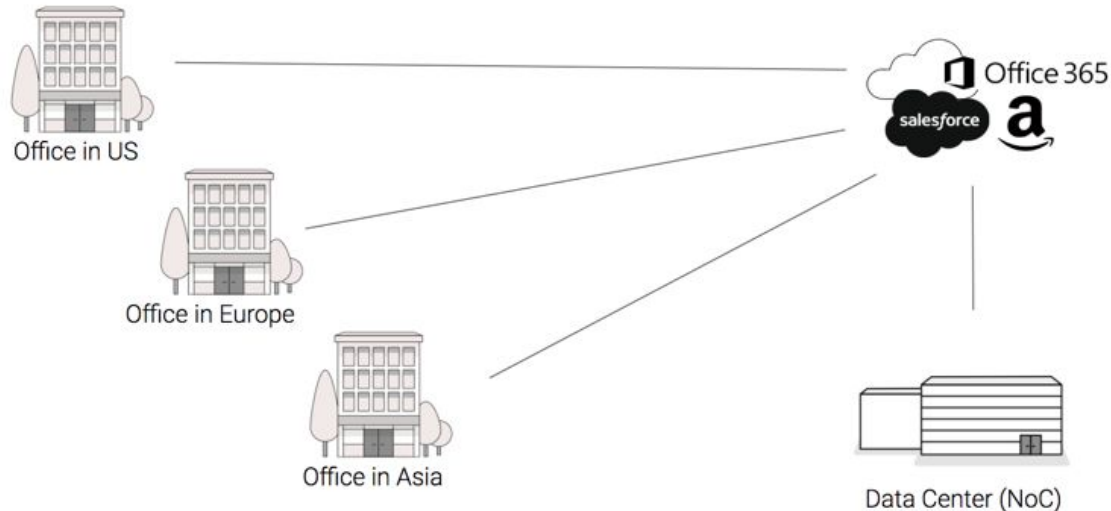
Active Monitoring

Verifying network, application availability and performance via active and real tests on the network and against applications.

Test	Primary Metric	Test interval*	Detection time*
PING	RTT, Packet loss	5 seconds	25 seconds
DNS	Lookup time	30 seconds	2.5 minutes
HTTP	HTTP Get time	60 seconds	5 minutes
Traceroute	Hop count, RTT, MTU	120 seconds	User-defined
iPerf	TCP/UDP/Multicast Throughput	User-defined	n/a
VoIP	Jitter, Packet Loss, MOS	User-defined	n/a
Speedtest	Download/Upload Throughput	User-defined	n/a

Distributed Network Monitoring

Distributed network monitoring is a monitoring strategy that relies on the information provided by multiple observation points with the goal of determining the real status of the target independently from conditions that may affect the measurement of one or more agents.



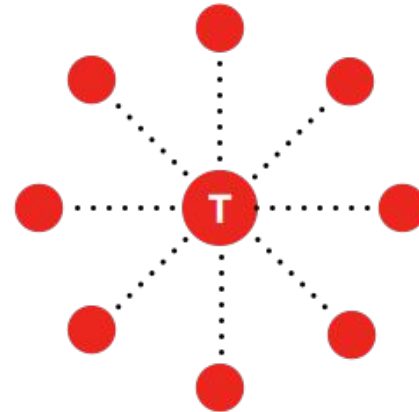
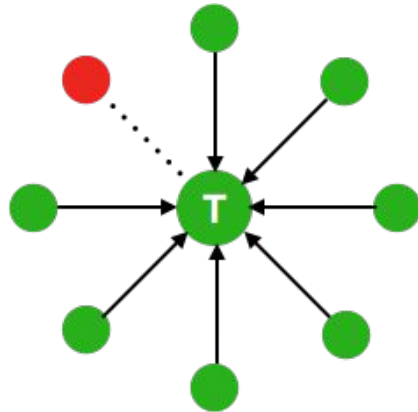
Network vs Application

Network Incident

One sensor deployed at one specific location is having partial or total interruption to access one or more applications.

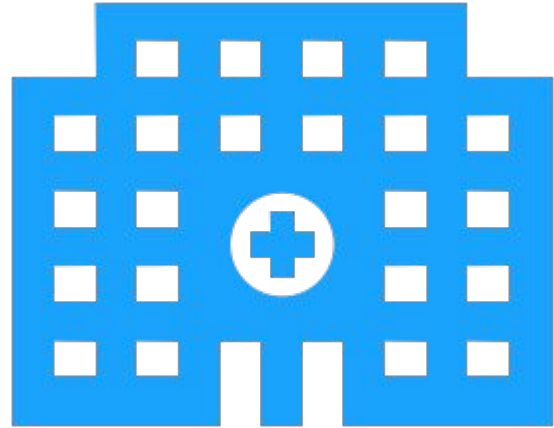
Application Incident

All sensors monitoring one specific application can access it or are having degraded performance.



Healthcare Monitoring Challenges

- HIPPA compliant
- Electronic Medical Records
- Clinical and Guest WiFi
 - Carts on Wheels (COW)
 - Check-in kiosks
 - Digital signage



Healthcare Use Case:

A healthcare system with state-wide presence

- 2 data centers
 - Virtual agent
- 10 large hospitals
 - GigE agent
 - WiFi agent
- 140+ remote physician offices
 - FastE agent
 - WiFi agent

Healthcare Use Case



Let doctors spend their time treating patients, not waiting on the network.

Ensuring a reliable network for clinicians, patients and visitors: A Healthcare Case Study

Mobility in Healthcare

Mobility in hospitals is very important because it enables Healthcare Systems to provide efficient patient care and quick response in medical emergencies. Mobility introduces efficiencies in an industry that perpetually aims to reduce operating costs - especially countries such as the U.S. where healthcare costs per capita are very high.

WiFi Clinical Devices and Services

WiFi is driving improvements and efficiencies in healthcare delivery thanks to a variety of applications; Electronic Medical Records (EMR) and telemedicine, as well as medical devices like infusion pumps and carts on wheels (COW). These rely on a wireless connection to function. Also, more and more hospitals are offering Guest WiFi access to patients and visitors that

Challenge

Ensuring ubiquitous and reliable WiFi service to clinical and guest clients.

Results

Hospitals that are monitoring their network with NetBeez were able to reduce downtime as well as IT and clinical staff's time and resources thanks to:

- Reduced service interruptions of Electronic Medical Records and Telemedicine services
- Reduced time spent validating configuration changes on WiFi and WAN networks
- Decreased time spent to identify network versus application issues

Industry

Healthcare

Use Cases

Hospitals that have deployed wifi monitoring sensors are able to verify the correct functioning of:

- Clinical and guest WiFi networks
- Compliance of HIPPA networks
- Telemedicine applications

Products

BeezKeeper - Dashboard
WiFi Beez - Monitoring Sensors



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