



# The Impact of AI on Enterprise Networks



## INTRODUCTION

Over the past decade, a few key factors have dramatically increased network bandwidth consumption in enterprises:

- Digital transformation
- The movement to cloud, private cloud, and hybrid cloud
- The movement to SaaS and cloud-based applications
- The increased use of heavier content types such as video, voice, messaging and file exchange in enterprise applications
- The large increase in the total amount of data generated in enterprises for business processes and analytics

Artificial Intelligence (AI) is now about to exacerbate the bandwidth availability problem. While annual bandwidth growth has historically averaged 20-30 percent per year, many networking experts are expecting AI to push the bandwidth growth rates to nearly 40 percent annually, with the main driver being data movement requirements. In this paper we will explore how the data generation era has taxed our networks, how AI will make the problem even worse, and what you can do to keep your network optimized as we enter the AI era.

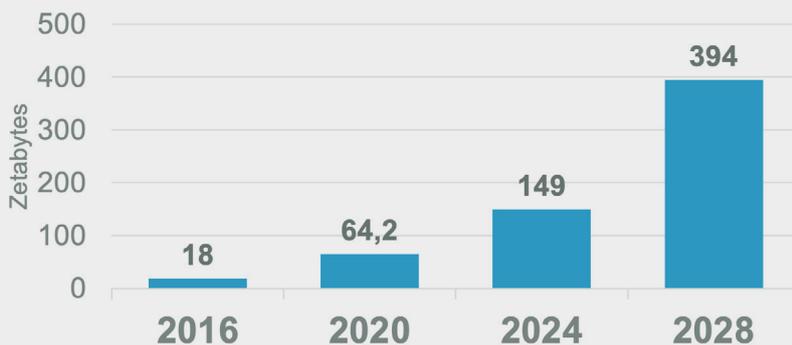
## How We Got Here: Data Generation

We cited earlier several reasons why modern enterprise networks are highly congested. Cloud and SaaS have certainly changed the dynamic of networks, in particular changing where and how bandwidth is consumed, but if you’ve ever wondered why your network is congested, you only need to look at two items: the amount of data generated and moved. As you can see by the chart below, from the mid-2010s to today, the amount of data generated annually has risen 8x with a compound annual growth rate (CAGR) of over 30%.

Today, 403 exabytes (1 exabyte = 1 billion gigabytes) of data is generated each day. A 2023 survey by IBM showed the average enterprise business generated approximately 2.5 exabytes of data themselves.

Figure 1

Amount of Data Generated in Each Year, 2016, 2020 and 2024 actual and 2028 projected (Source: Statista)



- 403 Exabytes generated each day
- Average enterprise generated 2.5 Exabytes per day\*
- 90% of all data generated is duplicate
- 30% of the data is “data in motion” – moving on the network

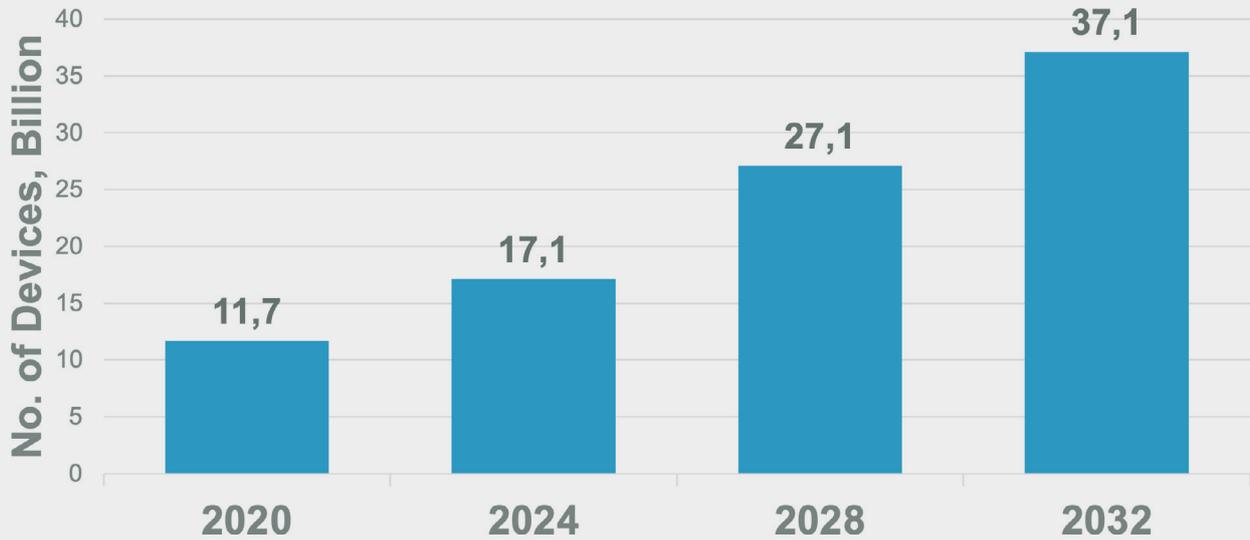
\* - IBM Survey, 2023

# The Impact of AI on Enterprise Networks



Figure 2

Number of IoT Devices each year, 2020 and 2024 actual and 2028 and 2032 projected (Source: Statista)



People tend to focus on the types of information used in digital transformations such as messaging and collaboration, video, digital documents, social media, and more. But another huge contributor to data growth and data movement volumes is IoT devices.

As you can see in the chart, the number of IoT devices in service continues to grow at a very high rate. Along with this rapid growth in number of devices, the amount of IoT data generated and sent over networks is growing at an accelerated rate, with 79.4 zettabytes (1 zettabyte = 1,000,000,000,000 gigabytes) of IoT data expected to be generated in 2025.

Of all the new data generated, 30% is "data in motion", which is data generated at some source and is being moved over the network. Consider also that 90% of all data is duplicate, and thus a great deal of your network bandwidth is consumed by moving copies of data around for business processes and analytics.

### AI Exacerbates the Problem

There is no doubt we are entering the AI era. The recent Databricks report: The State of Data and AI showed that:

- 11x more AI models were put into production last year (2024) than 2023
- Natural Language Processing (NLP) is the most heavily used AI-driven application (75%)
- 70% of companies use tools and vector databases with Retrieval Augmented Generation (RAG) to augment models
- Real-time RAG feeds incorporates proprietary, real-time data into Large Language Models (LLMs)

Artificial Intelligence and GenAI will only make the data movement problem worse. This will happen in three ways:

- Even more copies of data will be moved to support AI model training and learning. One AI model may need up to 1 petabyte (1 million gigabytes) of data to be useful and more accurate. With organizations using a multitude of models, this could lead to exabytes of training data. And models need to be continuously trained on fresh data, meaning the data needs to be constantly flowing.
- Some portion of AI will be in real-time, coming from IoT devices or other streams of data. This means the "data in motion" needed to support real-time AI will be constantly flowing over your networks.

# The Impact of AI on Enterprise Networks

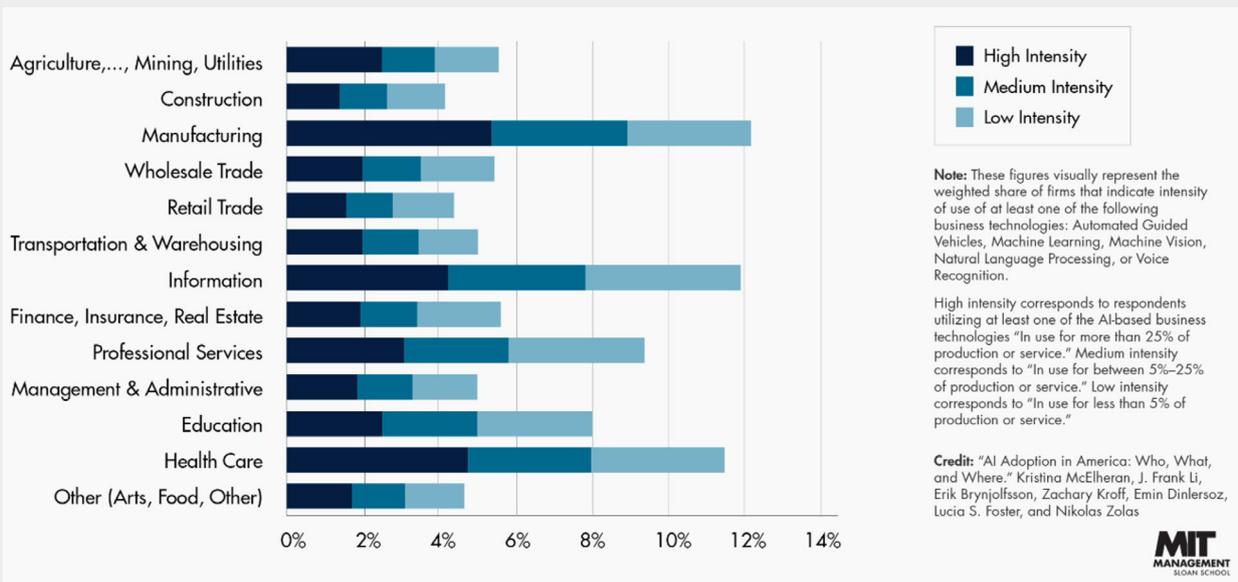


(c) GenAI will generate data results that will also flow to applications or users, further expanding information moving on the network. By definition, Generative AI produces far more elaborate responses than typical analytics or machine learning, which produce numbers or charts, meaning the amount of data in a response will be much larger.

As with other technologies, AI is not being evenly adopted. A recent MIT Sloan School of Management report surveyed IT leaders on their adoption of AI. The study found certain industries such as manufacturing, healthcare, and the information sector are leading the way.

Figure 3

AI Use Intensity and Testing Rates by Sector (Source: MIT Sloan School of Management)



Here are some specific examples of how various industries will use AI applications:

- Financial Services – fraud detection, investment analysis, automated trading, customer service and retention and compliance reporting.
- Manufacturing – manufacturing operations (IoT), predictive maintenance, supply chain optimization and product design.
- Healthcare – patient diagnosis, patient monitoring (IoT), medical diagnostics, and treatment plans.
- Retail – personalization, inventory management, supply chain management, virtual assistants and pricing.
- Energy and Utilities – smart-grid operation (IoT), energy generation (IoT), equipment monitoring and demand forecasting.
- Information Services – data products, data center service monitoring, customer service and operational optimization.

To correlate back to our data and IoT trends, two of the industries leading the way in AI – manufacturing and healthcare – are also two of the heaviest users of IoT devices.

# The Impact of AI on Enterprise Networks



## The Impact on Networks

As we have seen, the volume of data generated and moved on networks has already seen dramatic growth over the past decade and AI workloads will further increase the volume and need for data movement. This will have significant impacts on your enterprise network, namely:

- **Bandwidth** – AI will consume more bandwidth, potentially starving other applications, and thus generating greater demand for bandwidth. Whether it is the large training datasets for GenAI and deep learning or the need to support real-time AI, AI workloads will consume a great deal of your bandwidth
- **Low latency requirements** – Many AI applications will require real-time or near-real-time processing, requiring low latency and network support for accelerating these applications. Many customer-facing and operational AI processes will work in real time and require extremely fast response time and low latency.
- **Edge Computing** – To reduce the pressure from latency and bandwidth, especially from IoT devices, workloads may be moved closer to the edge to eliminate long-hop data transfers. This also means much more traffic will move east-west (across your network) versus north-south (top to bottom) and create different bandwidth consumption patterns in network locations.
- **Overall Scalability** – The overall scalability of the network will need to grow to support greater bandwidth consumption. However, scaling generically without utilizing insights to properly plan optimizations will lead to wasted costs.
- **Hybrid Environments** – Many AI workloads will run in specialized clouds with large-scale GPU compute resources. This will cause large volumes of data to be moved into and out of clouds.
- **Constant Change** – the ebb and flow of AI workloads and data movement will constantly change and fluctuate. The causes of network congestion can be different and require different forms of optimization at different times.

A 2024 study by PCCW asked enterprise CTOs about their plans and readiness for AI. When asked two critical questions about their network and technology infrastructure the responses were startling:

- 69% of senior IT leaders believe their current network infrastructure did not have the capacity to fully embrace generative AI.
- 76% agreed the rush to adopt generative AI may have long-term repercussions on their technology infrastructure.

## AI and Your Networks

We have seen the impact of the explosive data growth on networks and how AI can further compound those problems. Enterprise networks and infrastructure have already reached unprecedented levels of complexity over the past decade to support digital transformations and the explosion in data and CTOs have struggled to keep up their network infrastructure. Now enter AI, which will require an even more complex and powerful underlying technology and network infrastructure. Operating and optimizing this new infrastructure will require a different approach that requires the network team to move away from a pure performance and scalability approach (bandwidth) to one that optimizes the Quality of Service (QoS) and Quality of Experience (QoE) for all network activity, whether it be user-oriented applications or data-oriented ones.

There are two major forms of impact that AI will have on enterprise networks:

- **Network Operations for AI** – effectively operating an enterprise network to ensure AI applications can scale, work harmoniously with other applications, and have a high QoS.
- **AI for Networks** – using AI and data to help better manage and operate your enterprise networks for resolving problems and optimizing your networks.

# The Impact of AI on Enterprise Networks



## Network Operations for AI

As we discussed, AI is going to add even further complexity to enterprise networks that are already very complex. Managing AI applications, data, and workloads on top of the already complex suite of applications will be highly challenging for any enterprise.

Effectively managing current and future networks requires two key components:

- Comprehensive network observability – the ability to gain detailed visibility into network performance and application QoS and QoE with the breadth and depth of data to identify and drill into problems and identify contextualized optimization techniques.
- Contextual network optimization – a tool with a detailed understanding of network conditions and the ability to apply detailed contextual policies as needed to ensure the network runs optimally and that key resources are allocated to business-critical applications.

## AI for Networks

Even with in-depth network observability tools, LLM-powered AI assistants can make it easier to analyze and understand today's highly complex enterprise networks. Quickly asking natural language questions can allow network teams to more quickly assess their networks and identify problems, opportunities, and solutions.

AI can help better manage networks in two ways:

- AI-powered data – AI is only as good as the data that feeds it. AI models can be used to enrich your network data to provide far more comprehensive and detailed insights that shed new light on network performance and conditions.
- AI-powered Assistants – LLM-powered natural language AI assistants can speed problem-solving, network optimization, and planning. Network analysts can ask a series of questions that quickly identify how to react to specific network conditions and ensure high QoS and QoE.

---

## APPLIC NETWORKS – HELPING YOU MITIGATE RISK AND THRIVE

### AI-powered Data

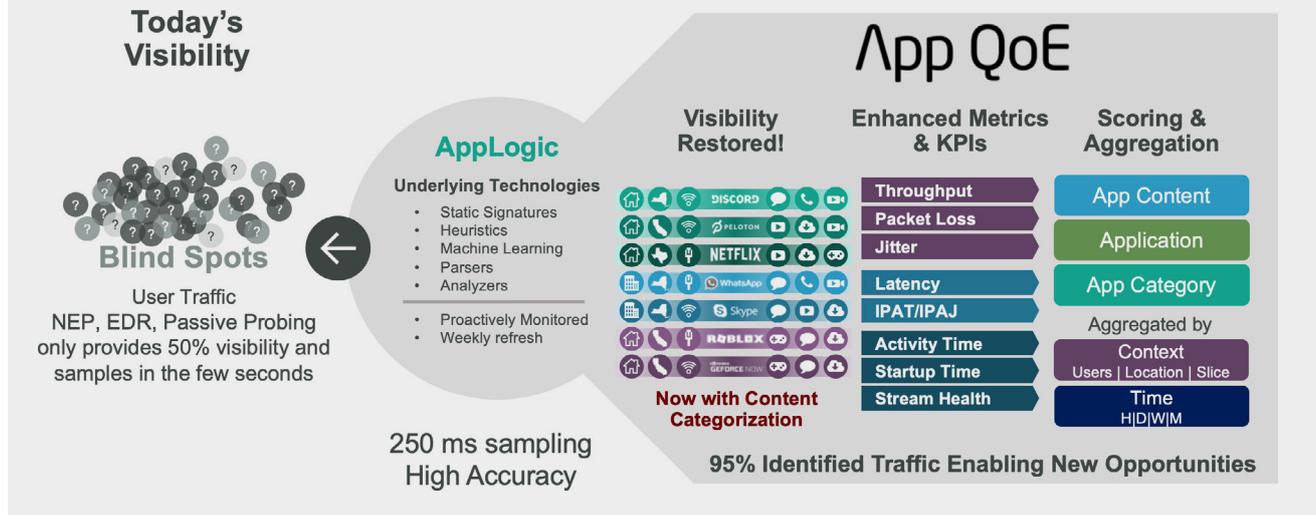
With AI, it all starts with your data. AppLogic Networks' key platform components – ActiveLogic, AppLogic, and AppQoE – provide the underlying data platform that generates and enriches your network data to power your network insights and optimization policies.

- **ActiveLogic** gathers data from your network at low-latency speeds – 250 ms; far faster than other network data tools -- to eliminate gaps and blind spots in your data. It also produces 18 detailed metrics around performance and consumption, as opposed to the 4 to 5 you see in other network observability tools.
- **AppLogic** is the industry-leading application identification and classification technology that uses its extensive signature repository of over 3,500 applications to identify and classify more than 95% of all network traffic.
- **AppQoE** uses AI models to enrich, contextualize and score network data to provide the deepest level of actionable insights and data.

# The Impact of AI on Enterprise Networks

Figure 4

How AppQoE enhances and enriches your network data to fill holes and gaps



### How This Helps

- Highly enriched data can show intimate details on how AI applications are performing
- The enriched data can also show details of the impact on other applications when AI workloads are running
- The enriched data can tell network teams specific metrics to watch and apply policies when network conditions are impacting AI or other application performance
- The AI scoring models can take detailed metrics and give network teams high-level insights as to when they need to troubleshoot and act

### Network Observability with Enterprise Insights

AppLogic Networks' Enterprise Insights provides the analytics and actionable insights needed to effectively operate and optimize enterprise networks, including for data and AI workloads. Enterprise Insights supports day-to-day observability to identify, troubleshoot and resolve problems, application classification and QoE scoring to manage SLAs and mechanisms to identify network optimizations.

Enterprise Insights provides comprehensive dashboards for network, user, location, content and application performance with actionable insights. Enterprise Insights goes beyond traditional pure network-level metrics provided by other solutions by providing insights at an application, content, location, device and user level to measure the business impact, identify the root cause of issues, and recommend ways to optimize traffic. It provides 18 network performance metrics to feed the insights, far greater than the few found in other network observability tools. The data also uses the enriched data provided by AppLogic and AppQoE.

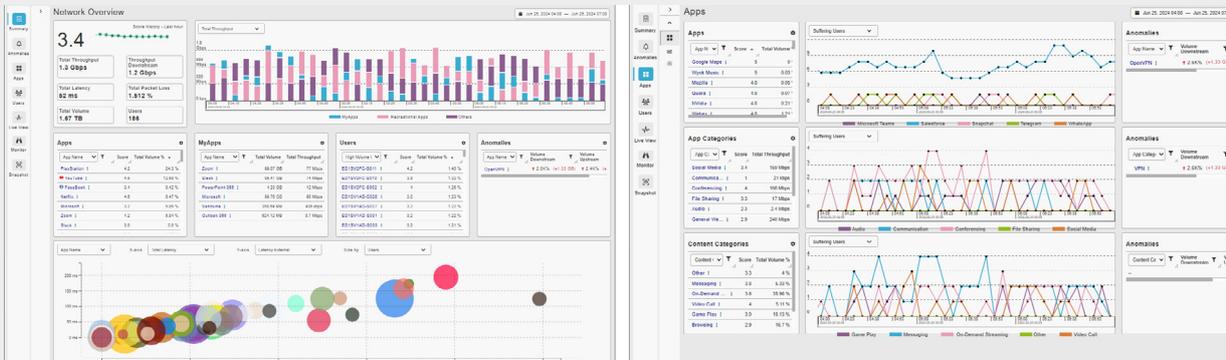
The Enterprise Insights dashboards, scoring, and metrics combine to form actionable insights that allow NetOps teams to rapidly identify, isolate and troubleshoot problems on the network. The contextualized insights can help identify problems across various dimensions such as applications, users, locations, and more.

# The Impact of AI on Enterprise Networks



Figure 5

## AppLogic Networks Enterprise Insights Network Observability



### How This Helps

- The observability insights can show detailed analytics and metrics on the AI workloads to identify ways to optimize these
- The observability insights can show the impact of AI workloads on other applications and identify ways to balance the needs of the network.
- If AI workloads are moved to the edge, the analytics can show how to optimize the east-west traffic and balance the needs of other local applications.
- The analytics can identify and troubleshoot problems created by AI workloads on different user groups and locations and isolate ways to optimize the applications for those users and locations.
- The analytics can provide a holistic view of how network resources and applications are impacted by new AI workloads and determine how to balance various needs and applications.

### Network Optimization

AppLogic Networks' network optimization platform is the industry's most flexible and powerful tool to optimize your network traffic and resources. It provides the pinpoint control mechanisms to optimize your network under all conditions and in a variety of different ways. It supports all four W's (Who, What, When, Where) and the H (How) as means to optimize traffic, giving you the greatest flexibility and control to optimize these different aspects of your network applications.

The contextualization enterprise network optimization supports traffic management policies with granular detail and parameters, including:

- The network conditions seen – specific metrics (e.g. total latency) or overall conditions (e.g. congestion) – can tell you when you want to apply a traffic management policy,
- The dimension values – application, application category, users, locations – can tell you what and where to apply the traffic management policy, and
- The conditions within the specific dimensional values can tell me how I want to apply the traffic management policy – how I want to allocate bandwidth or prioritize/de-prioritize traffic.

AppLogic Networks' network optimization solution is architected for and proven on the world's largest and fastest networks, AppLogic Networks' network optimization recognizes adverse network conditions and executes policies with extremely low latency and with no impact on traffic speed.

# The Impact of AI on Enterprise Networks



### How This Helps

- Contextualized optimization policies can be applied to AI workloads to ensure they get the treatment required (bandwidth, low latency, etc.)
- Optimization policies for AI workloads can protect resources for other applications to balance the needs of the total application suite and network.
- Optimization policies can be applied to specific locations so if AI workloads are moved to the edge, the needs of east-west traffic and other local applications can be balanced.
- Optimization policies can balance AI workloads with the needs of different user groups and locations.
- Situational policies can be applied that understand when AI workloads might need greater resources are only applied in those situations.
- Other situational policies can be applied so that when AI workloads take too much of network resources, the network is balanced to ensure other applications or users are not starved.

### Continuous Process

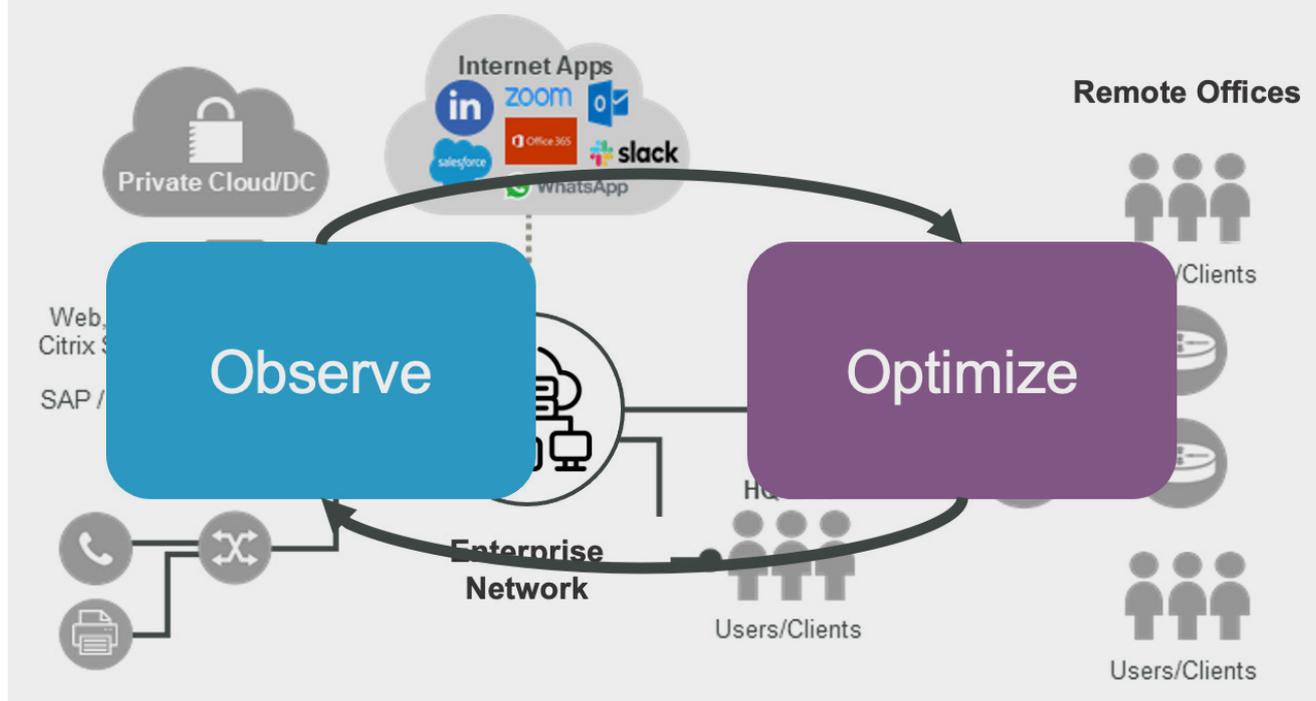
Your enterprise network is a living, breathing entity. New users are added all the time. New applications and network services are rolled out – some on-premises and some in the cloud. Usage patterns change or anomalies occur. The methods you take to optimize your network today may need to change tomorrow. How will you know? How will you know what optimizations to apply?

AppLogic Networks Enterprise Observability provides a continuous flow of analytics and insights about your network. It shows you when conditions change and what, where and how it has changed. It can show you the impact of changes you have made to your network and application portfolio.

Network Observability combined with Network Optimization (integrated together in AppLogic Networks' Enterprise Solution) work together to let you continuously analyze and optimize your network. This lets you gain the utmost performance, and make the best use of bandwidth and resources to deliver the best QoE constantly.

Figure 6

How AppLogic Networks' Enterprise Solution provides a continuous analytics and optimization process



# The Impact of AI on Enterprise Networks



## How This Helps

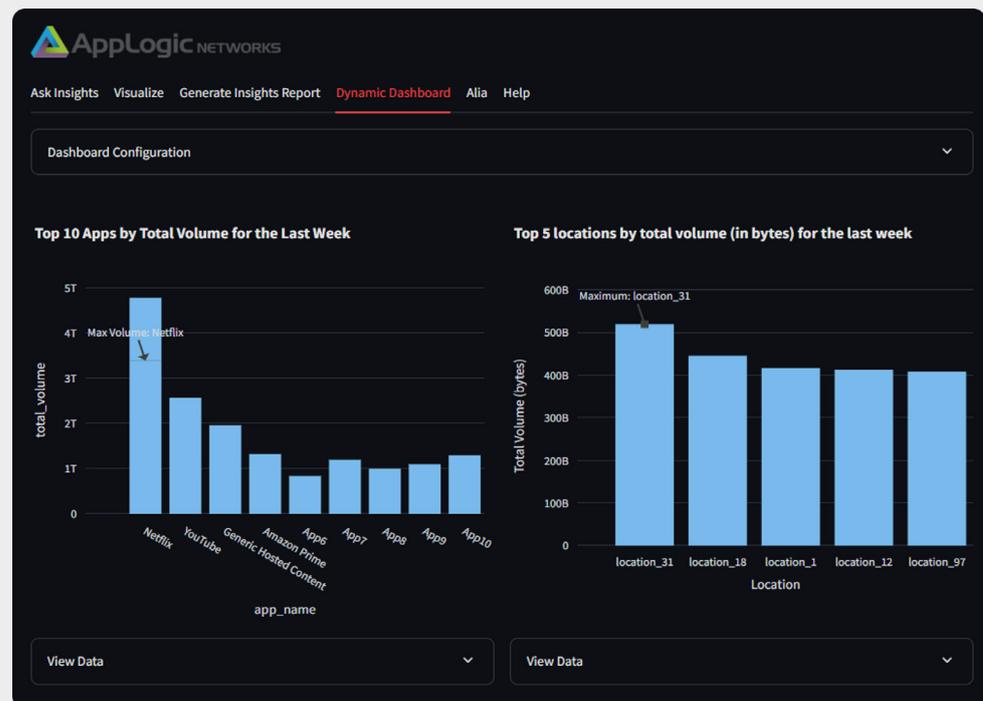
- As new AI workloads are rolled out, the analytics can identify new ways to ensure the network can be optimized
- As the performance of AI applications and workloads changes over time, the analytics can provide critical updates to adjust optimizations
- As new network capacity and services are added, the analytics can provide key information on how to adjust optimization policies
- As workloads are moved – to the cloud or the edge – the analytics can show the new impact on resource use and how to optimize the applications and network

## AI-driven Discovery

AppLogic Networks has created our new AI Analyst solution which is an AI-powered Assistant for network data discovery and exploration. The LLM-based solution allows network analysts to explore the rich and deep set of Observability data in the AppLogic Networks Enterprise Solution using natural language questions and prompts. Analysts can interactively explore network data in a variety of new ways, taking previously unexplored angles to identify ways to optimize the network and get better results from network resources and applications.

Figure 7

AppLogic Networks' AI Analyst for AI-powered network analysis



## How This Helps

- Network analysts can explore network conditions and situations from a current and historical perspective to discover better insights about their network.
- Network analysts can use freeform exploration to see insights about their network that may not be directly apparent in structured dashboards and insights.
- AI models can identify data correlations that might not be apparent in structured data exploration to identify hidden issues.
- Higher degrees of overall data exploration to identify better ways to optimize the network and better manage costs.

# The Impact of AI on Enterprise Networks



## CONCLUSION

Networks have been continuously overburdened with new data and application requirements over the past decade. AI will only further exasperate the demand on network resources and place a tremendous impact on the entire IT infrastructure, the network included.

The key to succeeding in the AI era is comprehensive network observability, AI-powered network data enrichment and highly contextualized network optimization. Having each of these three items in a single solution, such as AppLogic Networks Enterprise Solution, provides a more seamless and adaptive manner to roll out AI workloads across your enterprise and gives your organization a competitive edge in how you use AI.

Learn more about AppLogic Networks [Enterprise Solution](#) for [Network Observability and Network Optimization](#) to see how it can make your network more responsive to your business needs, help reduce network capital and operating costs and make your NetOps team more effective in operating your network.

## ABOUT APPLOGIC NETWORKS

AppLogic Networks' cloud-based App QoE portfolio helps customers deliver high quality, optimized experiences to consumers and enterprises. Customers use our solutions to analyze, optimize, and monetize application experiences using contextual machine learning-based insights and real-time actions. Market-leading classification of more than 95% of traffic across mobile and fixed networks by user, application, device, and location creates uniquely rich, real-time data that significantly enhances interactions between users and applications and drives revenues. For more information visit <https://www.applogicnetworks.com> or follow AppLogic Networks on X @AppLogic Networks.



**USA**  
5800 Granite Parkway  
Suite 170  
Plano, TX 75024  
USA

**EUROPE**  
Neptunigatan 1  
211 20, Malmö  
Skåne  
Sweden  
T. +46 340.48 38 00

**CANADA**  
410 Albert Street,  
Suite 201, Waterloo,  
Ontario N2L 3V3,  
Canada  
T. +1 519.880.2600

**ASIA**  
Arliga Ecoworld,  
Building-1, Ground Floor,  
East Wing Devarabeesanahalli,  
Bellandur, Outer Ring Road,  
Bangalore 560103, India  
T. +91 80677.43333

Copyright ©2025 AppLogic Networks Corporation. All rights reserved. Any unauthorized reproduction prohibited. All other trademarks are the property of their respective owners.

This documentation, including all documentation incorporated by reference herein such as documentation provided or made available on the AppLogic Networks website, are provided or made accessible "AS IS" and "AS AVAILABLE" and without condition, endorsement, guarantee, representation, or warranty of any kind by AppLogic Networks Corporation and its affiliated companies ("AppLogic Networks"), and AppLogic Networks assumes no responsibility for any typographical, technical, or other inaccuracies, errors, or omissions in this documentation. In order to protect AppLogic Networks proprietary and confidential information and/or trade secrets, this documentation may describe some aspects of AppLogic Networks technology in generalized terms. AppLogic Networks reserves the right to periodically change information that is contained in this documentation; however, AppLogic Networks makes no commitment to provide any such changes, updates, enhancements, or other additions to this documentation to you in a timely manner or at all.