Microsoft Azure

Intro to AI Infrastructure

Agenda

AI Infrastructure

Why AI needs purpose-built infrastructure

Azure AI Stack

Real world solutions

Next steps

Every business can infuse AI

HEALTHCARE

- Patient Data & Risk Analysis
- Lifestyle Management & Monitoring
- Precision Medicine
- Inpatient care & Hospital Management
- Medical Imaging & Diagnostics
- Drug Discovery
- Virtual Assistant
- Personalized Treatment

MANUFACTURING

- Material Movement
- Predictive Maintenance & Machinery Inspection
- Production Planning
- Quality Control
- Revenue Estimation
- Supply Chain Management

RETAIL

- Product Recommendation & Planning
- Customer Relationship Management
- Visual Search
- Virtual Assistance
- Price Optimization
- Supply Chain Management & Demand Planning
- Payment Service Management
- Customer Segmentation & Targeting

FINTECH

- Fraud & Risk Management
- Customer Segmentation
- Sales & Marketing Campaign
- Investment Prediction
- Digital Assistance
- Compliance Management
- Credit Underwriting
- Portfolio Monitoring

AUTOMOTIVE

- Autonomous Driving
- Human Machine Interface
- Semiautonomous Driving
- Signal Recognition

AGRICULTURE

- Precision Farming
- Livestock Monitoring
- Drone Analytics
- Agricultural Robotics
- Soil Management
- Smart Greenhouse Management

MARKETING

- Social Media Advertising
- Search Advertising
- Dynamic Pricing
- Virtual Assistance
- Content Curation
- Sales & Marketing Automation

"Companies that are slow to adopt AI will be left behind..."

Mike Glennon, Senior Market Research analyst, IDC Customer Insights & Analysis team

AI needs cloud infrastructure

The power and scale AI demands without the cost and burden of on-prem infrastructure.

On-premises

- Costly to purchase, scale and maintain
- Difficult to integrate AI
- AI can tie up existing system capacity for days
- Lack full stack seamlessly integrated solution
- Lost time and resources
- Can't keep up with latest technologies

Cloud

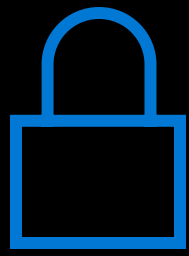
- Supercomputing with massive parallel processing
- Engineered for AI using latest technology
- Unprecedented scale – up, out, down as needed
- Storage and networking solutions
- Integrated AI services, machine learning, tool chain and open-source solutions
- Pay for what you use
- Let's your focus on AI innovation

Maximize the value of AI with Azure purpose-built infrastructure

Optimize AI performance at any scale

Accelerate innovation and time to market

Realize cost and resource efficiency

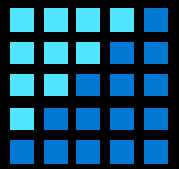


Increase security and compliance

IDC research consistently shows that inadequate or lack of purpose-built infrastructure capabilities are often the cause of AI projects failing.

Peter Rutten, IDC, Research VP & Global Research lead

Azure is the only public cloud with full stack solution for AI



Full stack AI platform with seamless integration with Azure Machine Learning and open-source toolchain.

From data prep to model production to deployment and optimization

World class performance with purpose-built AI infrastructure that meets AI demands at any scale

#1 for cloud supercomputing performance*

Built –in security, data governance, compliance, and responsible AI methodologies

Engineered to be secure, trusted and responsible

*#1 for cloud-based performance (#14 over all) - Top500 List May 2023

Accelerate innovation with Azure full stack solution

Transformative AI Services

Portfolio of AI services designed for developers and data scientists

Azure AI Services

Machine learning platform

Managed end-to-end machine learning platform and OSS frameworks

Azure Machine Learning PyTorch ONNX Runtime OSS frameworks

Workload orchestration

End-to-end workflow agility using known, familiar tools and processes

Azure Machine Learning VM Scale Sets Azure Batch Azure CycleCloud OSS frameworks

Fast, secure networking

Fast inter-connects and edge-to-cloud connectivity

InfiniBand ExpressRoute

High-performing Storage

Range of storage capabilities for simple-to-complex needs

Azure Blob Azure Managed Lustre

Optimized compute

A full range of GPU and CPU capabilities with scale to 80K+ cores

N series virtual machines

Full stack infrastructure engineered for AI

Azure AI services

Bot Service

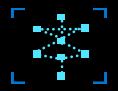
Cognitive Search

Form Recognizer

Video Indexer

Metrics Advisor

Immersive Reader


Vision

Speech

Language

Decision

Azure OpenAI Service

Machine Learning

Azure Machine Learning platform

Deep learning frameworks

Azure AI Infrastructure

Rely on multi-layered security controls

Identity & access

Unify identity management and secure identities to implement zero trust

App and data security

Encrypt data, and protect keys and secrets used by apps

Network security

Enhance the protection of your virtual networks

Threat protection

Access cloud-native SIEM and AI-driven security analytics

Security management

Manage security state of hybrid workloads with a single view

$1B+ annual investment

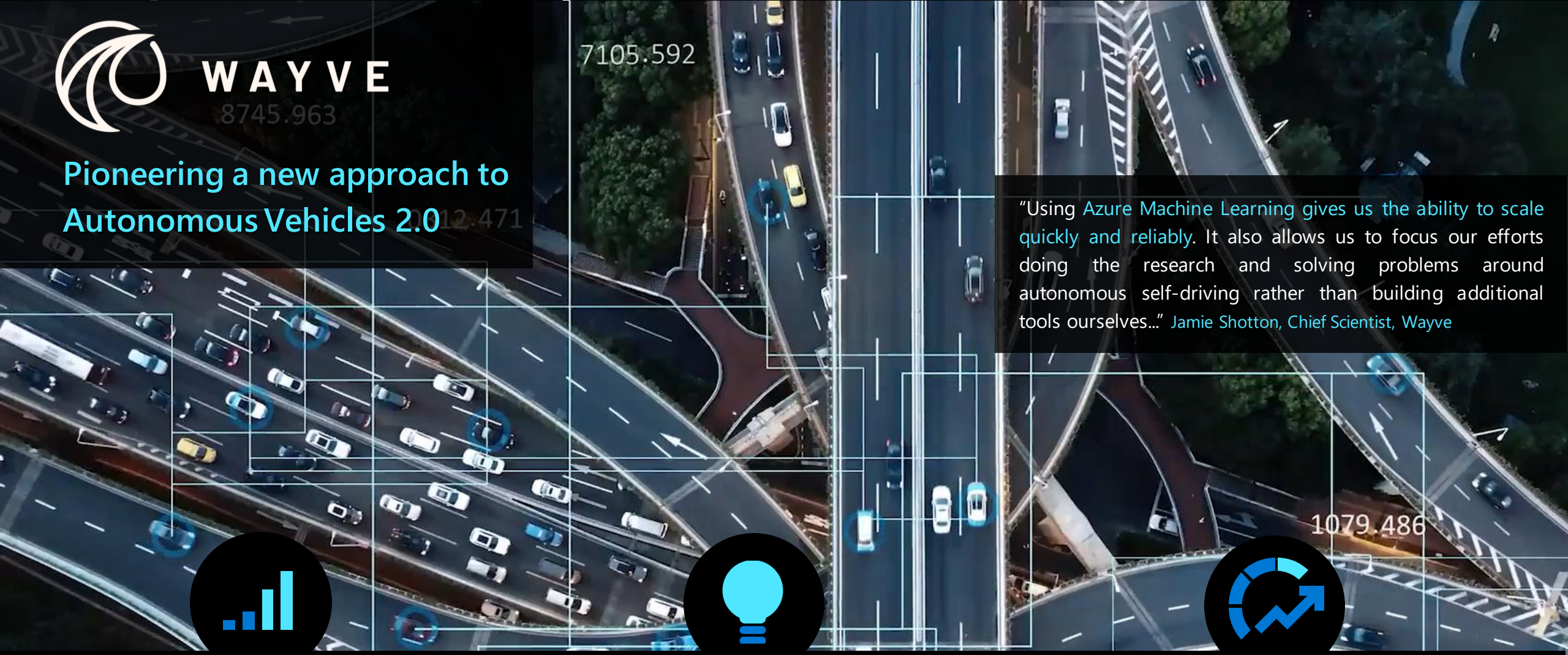
3500+ security experts

6.5 trillion global signals daily

Proving it through real-world solutions

WAYVE

Pioneering a new approach to Autonomous Vehicles 2.0



"Using Azure Machine Learning gives us the ability to scale quickly and reliably. It also allows us to focus our efforts doing the research and solving problems around autonomous self-driving rather than building additional tools ourselves..." Jamie Shotton, Chief Scientist, Wayve

Scale

Azure supports the massive compute and data needs of constantly changing AV models, meeting Wayve's AI demands at any scale.

Innovation

Azure AI infrastructure and Azure Machine Learning let Wayve focus on training AV models and driving AV2.0 innovation, not infrastructure.

Performance

Azure AI infrastructure and Azure Machine Learning help Wayve train their AV2.0 model 90% faster, moving from millions to many billions of training examples.

FASHABLE

Revolutionizing fashion design with AI

"PyTorch and Azure Machine Learning are the perfect match for our research team goals, saving time to create disruptive innovation."

— Orlando Ribas Fernandes: Co-Founder and CEO

Cost-effective

Azure full stack AI platform provides high performance with a low investment model for start-up Fashable.

Performance

Azure AI infrastructure and Azure Machine Learning powers Fashable's AI solution, letting designers generate fashion designs in minutes, not months.

Innovation

Azure full stack AI solution lets Fashable focus on developing unlimited inspiration and content for the fashion industry.

Helping protect the wildest places on earth with AI

"We save a lot of time because we're not chasing down ways to connect disparate technologies. The streamlined nature of the Microsoft stack brings a lot of benefit to a small team like ours."

— Matt Morrissette: Director of Technology, Wildlife Protection Solutions

Accuracy

Microsoft AI for Earth MegaDetector solution improved accuracy for Wildlife Protection Solutions threat detection solution.

Speed

Azure GPU-optimized virtual machines process images faster, providing real-time wildlife threat detection and notification.

Innovation

Azure AI cloud infrastructure lets Wildlife Protection Solutions focus on protecting wildlife and developing new AI solutions.

Improving patient care with AI generated documentation

"We architected our whole solution on Azure, which shows how much the platform has to offer. We have a leg up on security and privacy that would have been more difficult to achieve in our own datacenters."

— *Guido Gallopyn: VP of Healthcare Research, Nuance*

Performance

Nuance uses Azure's portfolio of services to train, store, deploy and manage the data and AI models that power their Dragon Ambient eXperience (DAX) solution. With Azure, Nuance has a fast and highly scalable solution.

Compliance

Azure provides the expertise and certifications required for putting healthcare applications in the cloud. Nuance found development and compliance much easier with Azure than with competing offerings.

Experience

Doctors save hours per week thanks to DAX running on Azure and can spend more time with patients with better documentation that deepens customer care.

AI innovators run on Azure AI Infrastructure

"NVIDIA and Microsoft Azure have collaborated through multiple generations of products to bring leading AI innovations to enterprises around the world. The NDv5 H100 virtual machines will help power a new era of generative AI applications and services."

Ian Buck, Vice President of hyperscale and high-performance computing at NVIDIA

"Co-designing supercomputers with Azure has been crucial for scaling our demanding AI training needs, making our research and alignment work on systems like ChatGPT possible."

Greg Brockman, President and Co-Founder of OpenAI

"Our focus on conversational AI requires us to develop and train some of the most complex large language models. Azure's AI infrastructure provides us with the necessary performance to efficiently train these models reliably at a huge scale. We are thrilled about the new VMs on Azure and the increased performance they will bring to our AI development efforts."

Mustafa Suleyman, CEO, Inflection

Customers are realizing substantive savings

"We're now saving about 30 percent a year on infrastructure costs just by moving to Azure, with more flexibility, better servers, greater customization, and more freedom to do what we want."

Darren Gourley, Chief Technology Officer, CYTI

"We've accelerated the benefits of Azure by using the Cloud Adoption Framework… We're already seeing significant cost savings from automation, standardization, and retiring around 20 percent of our existing apps."

Chris Fry: Director of Global Program Delivery, Dentsu Aegis Network

"It was shocking to see that we had so many servers running so much more than we needed. Some were running only one process that we easily migrated. And many could just shut down. Overall, we really optimized our costs."

Morten Hansen, Infrastructure Architect, TINE S

Next steps

Learn more about Azure AI Infrastructure

Azure AI Infrastructure

Inside Microsoft's AI supercomputer

Accelerate large-scale AI innovation

Learn about solutions for your industry

Azure solutions

Engage a partner

Azure partner directory

Find an app or service

Azure Marketplace

Microsoft Azure

Be future ready | Build on your terms | Operate hybrid seamlessly | Trust your cloud

Invent with purpose