MACHINE LEARNING

HOPE OR HYPE?

Just as complexity threatens to crush the IT resistance, a new hope appears and its name is machine learning.

At least, that was the feeling we got from our survey respondents. In this report, we delve into why your peers feel there is some real value behind the marketing buzz...

ExtraHop

2017 SURVEY REPORT

Survey Demographics

TechValidate

This survey was commissioned by ExtraHop and conducted by TechValidate in October 2016.

The survey received 113 responses from a broad representation of IT roles, but focused on IT Managers and IT Directors.

113

34	34	23	15	6	2	5
IT Manager	IT Director	Founder	CIO	Engineer	IT Architect	Other

- Professional Services **(27)**
- Computer Software **(26)**
- Computer Services **(14)**
- Industrial Manufacturing **(14)**
- Retail **(11)**
- Construction **(9)**
- Education **(5)**
- Automotive & Transport **(4)**
- Financial Services **(4)**
- Healthcare **(4)**
- Telecommunications **(3)**
- Media & Entertainment **(3)**
- Other **(7)**

From the CIO

Enterprise technology generates more buzzwords than any other industry. Without a doubt, there is currently a lot of noise in the market around machine learning. But is it all hype, or does machine learning offer real hope for IT organizations?

In order to understand the value of machine learning for IT, we commissioned TechValidate to survey IT professionals. Overall, we found a surprising amount of optimism from the respondents. While aware of the limitations, the survey respondents on the whole agreed that machine learning was the only way to deal with the deluge of data coming at them.

In response to the open question at the end of the survey, one CTO said of machine learning, "It's the best solution to face all the current problems in the field of IT."

If you think that machine learning represents more hope despite the hype, we welcome you to investigate how ExtraHop applies machine learning to your richest dataset—the communications on your network.

I hope that you find this report helpful. It contains your peers' surprisingly optimistic views on a technology that is sure to change enterprise IT for the better.

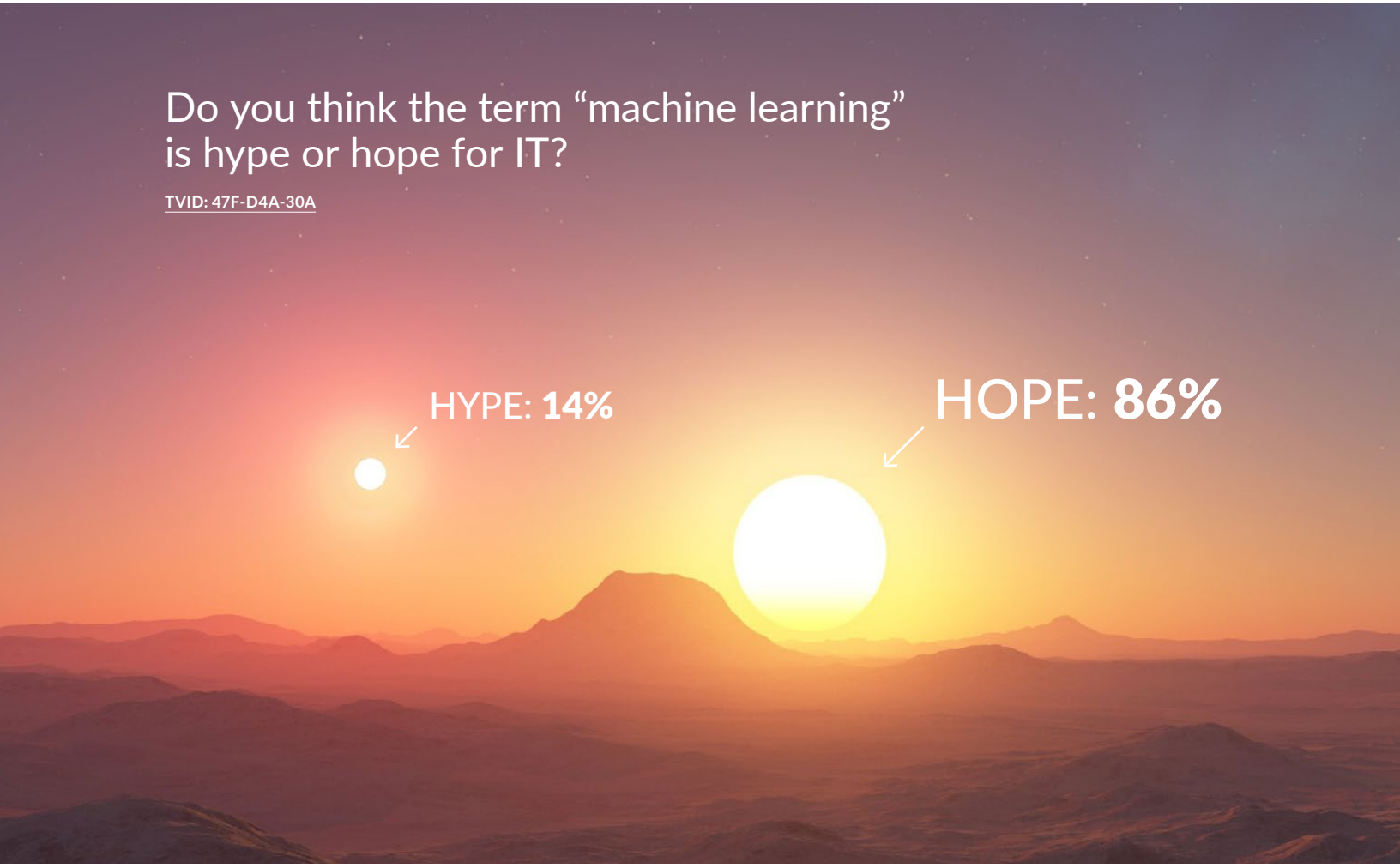
John Matthews
Chief Information Officer
ExtraHop Networks

FINDINGS

IT Is Hopeful About Machine Learning

It's Episode IV all over again. Machine learning is a new hope for the small, brave band of IT professionals fighting against the onslaught of complexity. At least, that was the feeling we got from our survey respondents.

Overwhelmingly, our participants said that machine learning represents hope for IT. The rest of this survey report digs into how our respondents anticipated machine learning to provide value.



IT Automation Means New Types of Jobs

Whew! It turns out that software won't be eating our IT jobs just yet. Three-quarters of our survey respondents saw IT automation as leading to new types of IT jobs instead of cumulative job loss.

Even more encouraging was the view of the 25 CIOs and CTOs that took the survey. Among this cohort, 84 percent believed that IT automation would not result in a net job loss but would change the nature of IT roles.

How will IT automation affect jobs in the enterprise?

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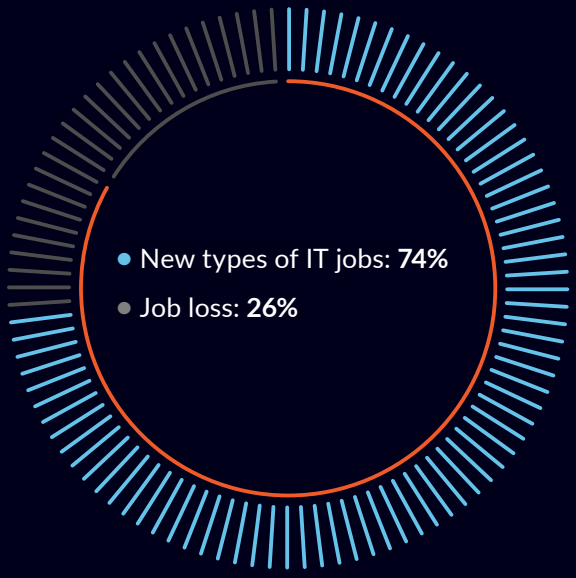

C-Level Execs See New Jobs

TVID: E70-2BE-D7E

- New types of IT jobs: 84%
- Job loss: 16%

Expected Benefits of Machine Learning for IT

Asked what they anticipated as the top benefits of machine learning, most of our survey participants cited productivity and improved application performance and availability.

Machine learning can boost productivity by sifting through large sets of data and isolating the anomalous events and metrics that people should analyze. This is especially important in IT operations as staff spend a lot of time combing through alerts and digging through data to try and detect anomalies.

What was most interesting about this particular survey question was the optimism of respondents in large enterprise IT organizations. More of that cohort expected benefits across the board compared with their peers in small and medium-sized organizations. The divergence was most pronounced when it came to expected IT staff productivity gains, with 81 percent of respondents among large enterprises expecting productivity gains.

What are the top benefits of machine learning for IT?

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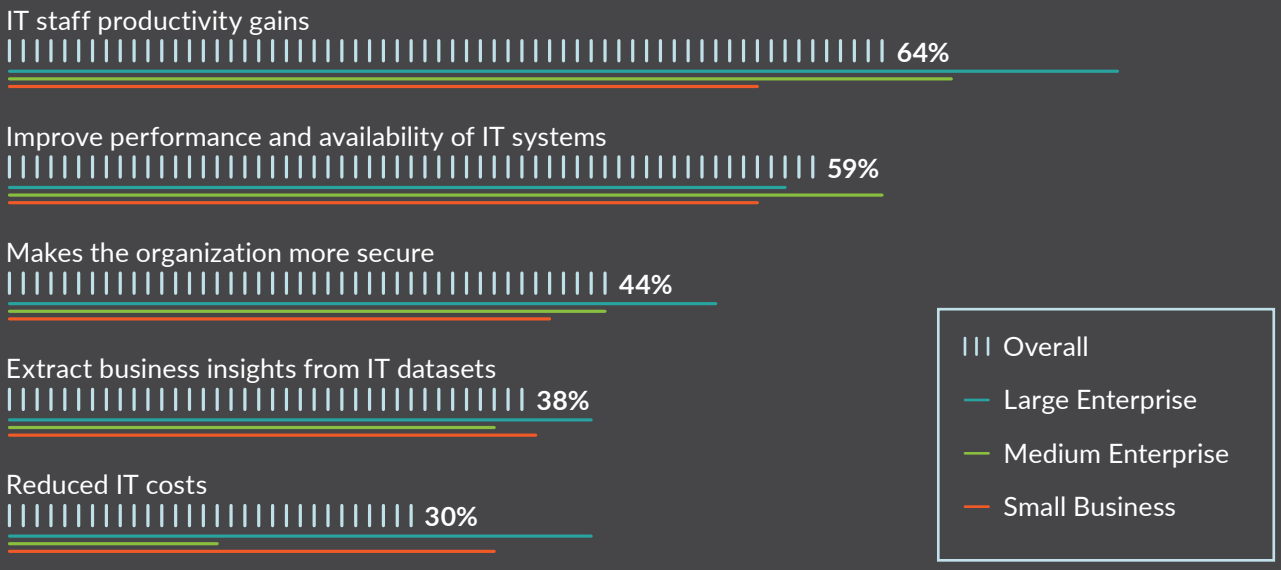
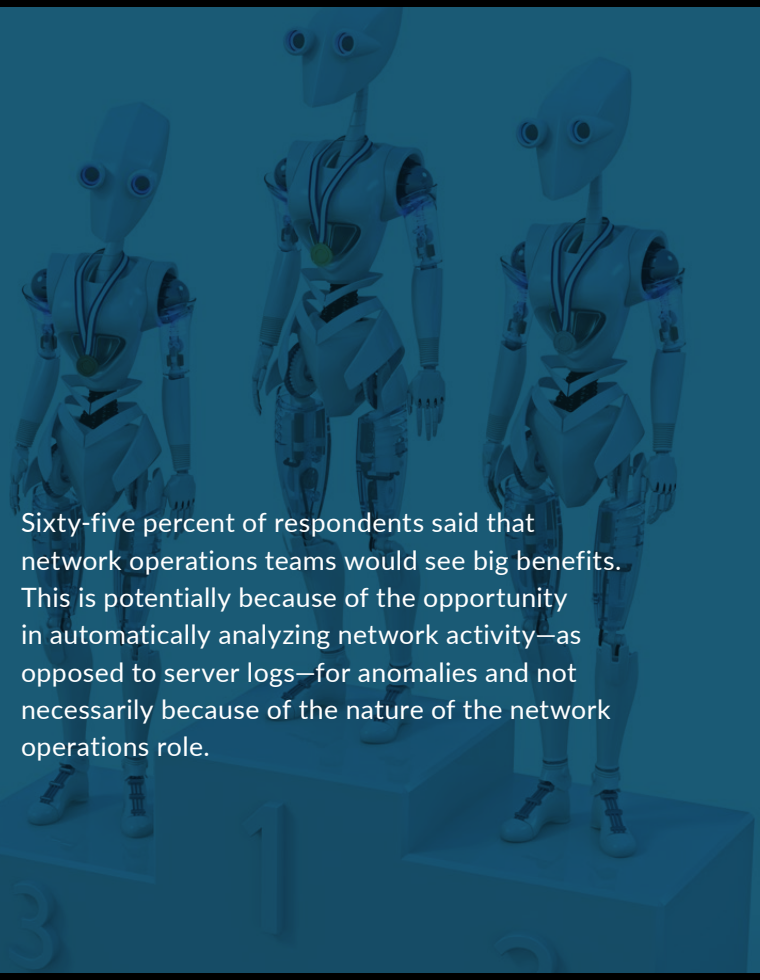


Network and Server Teams Get the Gold



Who are the biggest winners in the machine learning sweepstakes? Our survey respondents saw network and server teams as benefiting most from machine learning.

The teams responsible for operating network and server infrastructure are arguably the most pressed for time. Going back to the previous question, we saw that the biggest benefit would be staff productivity. Well, no one needs more productivity like the admin or engineer!

Sixty-five percent of respondents said that network operations teams would see big benefits. This is potentially because of the opportunity in automatically analyzing network activity—as opposed to server logs—for anomalies and not necessarily because of the nature of the network operations role.

Which IT roles will benefit most from machine learning?

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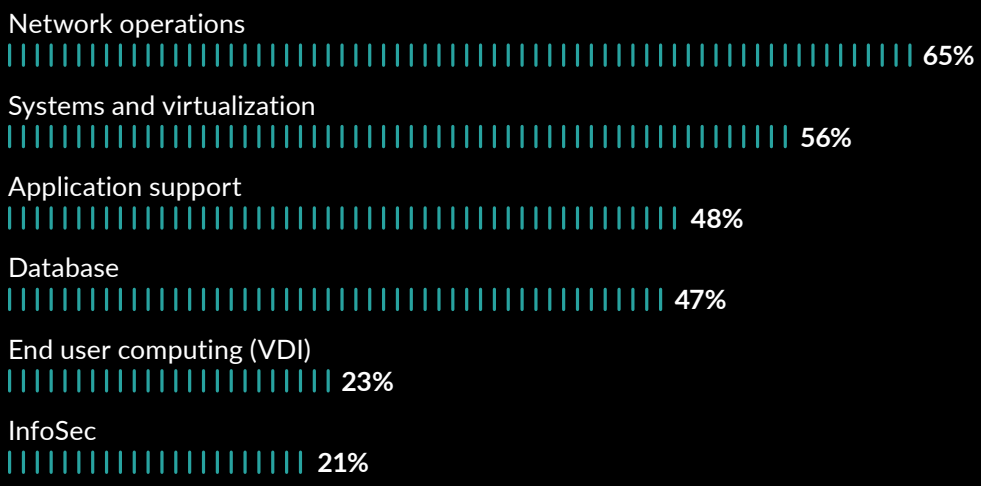

Security Event Response a Big Winner

Security is a big play for machine learning, according to the survey respondents. Identifying security threats and network intrusions is a major challenge for IT organizations, with a mean time to identify a data breach at 201 days, according to a 2016 Ponemon Institute study.1 By identifying anomalous or non-compliant behavior, machine learning can help IT organizations speed up detection and incident response when attackers make it past perimeter defenses.

Even though security was a big winner with machine learning, significant percentages of those surveyed also saw benefits for other IT activities such as automatically fixing infrastructure outages and troubleshooting performance issues. Overall, the respondents saw machine learning as broadly applicable.

> *"There's been plenty of discussion at security conferences about the impact that machine learning will have on the cyber landscape. A subset of artificial intelligence, it involves the use of powerful algorithms that spot patterns and relationships from historical data and gets better over time at making predictions about brand new data sets based on this experience. Companies such as Amazon and Netflix use machine learning to help drive their recommendation engines, and banks and other financial institutions have long used it to tackle credit card fraud."*
>
> **Chief Information Officer,** Medium Enterprise Industrial Manufacturing Company

Which of these IT activities will benefit from machine learning?

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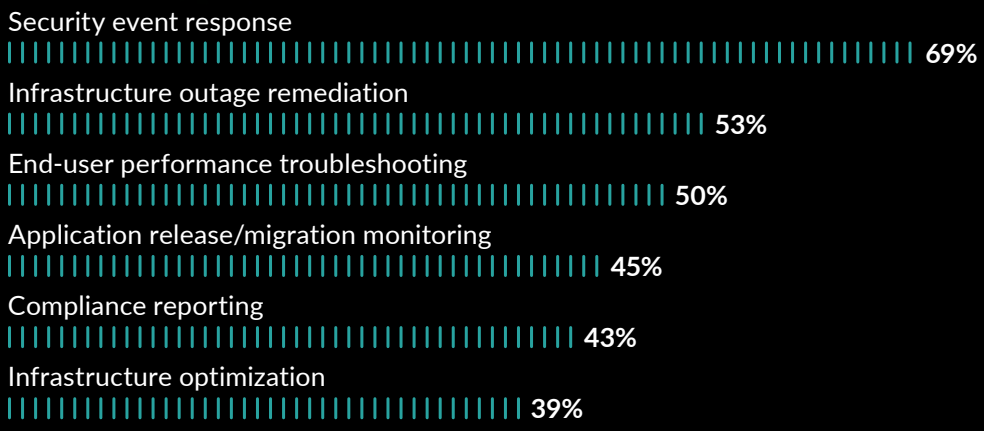

[1] https://securityintelligence.com/media/2016-cost-data-breach-study/

Cost Is the Greatest Barrier to IT Automation

So, if machine learning is so great, then what's stopping IT organizations from automating more things? As it turns out, the biggest barrier isn't that we can't make the machines smart enough, but the cost of making everything work. A whopping 59 percent of respondents said that the industry needs to figure out how to bring costs down for greater automation to happen.

The next-biggest barriers to more IT automation were concerns about whether it was smart enough and the complexity of configuration. These concerns were tied at 38 percent of respondents.

What are the barriers to greater automation in IT?

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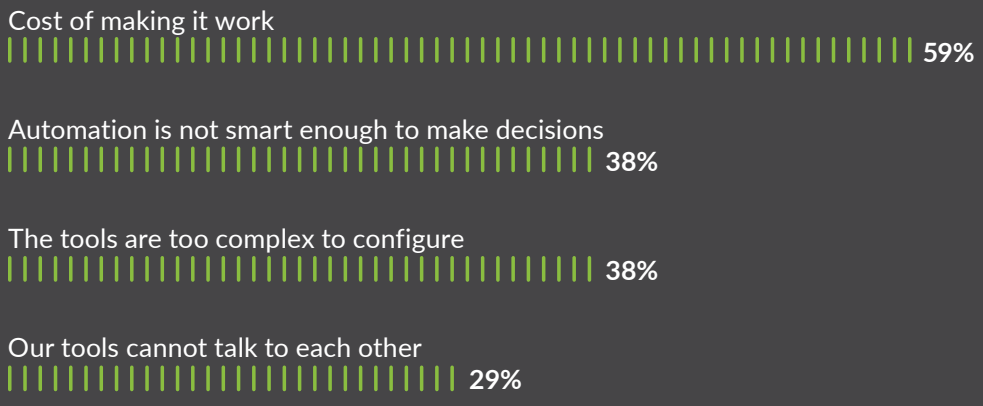

IT Buyers Demand Machine Learning Now

"Take my money already!"

OK, so the people who took the survey weren't exactly begging to buy technologies with machine learning, but more than half of respondents said that they include machine learning capabilities among their requirements when looking for monitoring products. In other words, machine learning is a thing they are specifically looking for.

Among the respondents who are part of large enterprises, the percentage of those who made machine learning a requirement was higher, at 60 percent.

Do you already include machine learning in your list of requirements for monitoring technologies?

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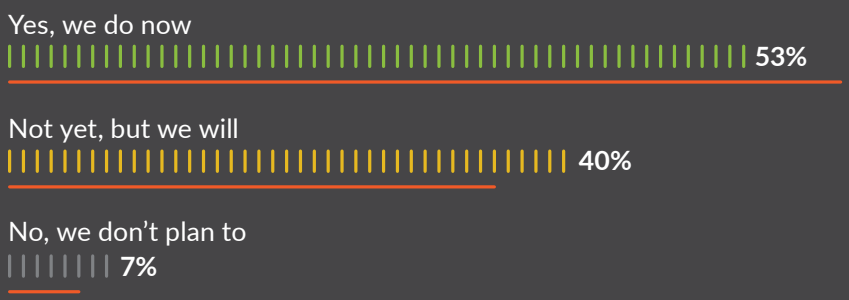

Machine Learning a Must for Large Enterprises

TVID: 2B1-195-1D3

Yes, we do now: **60%**
Not yet, but we will: **35%**
No, we don't plan to: **5%**

Machine Learning Should Go Big or Go Home

Machine learning should have a broad scope, according to 81 percent of survey respondents. They expect big things from machine learning and say that it should change how IT organizations operate as opposed to solving specific narrow problems.

Among the CIOs and CTOs included in the survey, the demand that machine learning keep lofty goals was even more insistent, with 92 percent of that cohort urging a broad role for the technology.

What do you think should be the goal of machine learning for IT organizations?

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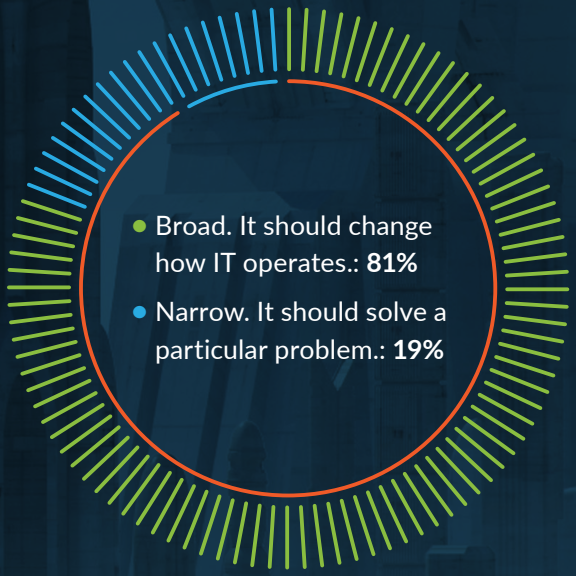

Execs See Broad Scope for Machine Learning

TVID: 9CF-97B-2B7

- Broad. It should change how IT operates.: **92%**
- Narrow. It should solve a particular problem.: **8%**

How Quickly Will This Come?

Based on the survey results, machine learning technology promises to transform IT Operations on a short timescale. A vast majority of respondents—93 percent—expected that machine learning would play an important role in just three years.

Impressively, there was complete consensus among the 72 IT Directors and IT Managers that took the survey that machine learning would play an important role over the next several years.

Will machine learning play an important role in IT Operations over the next three years?

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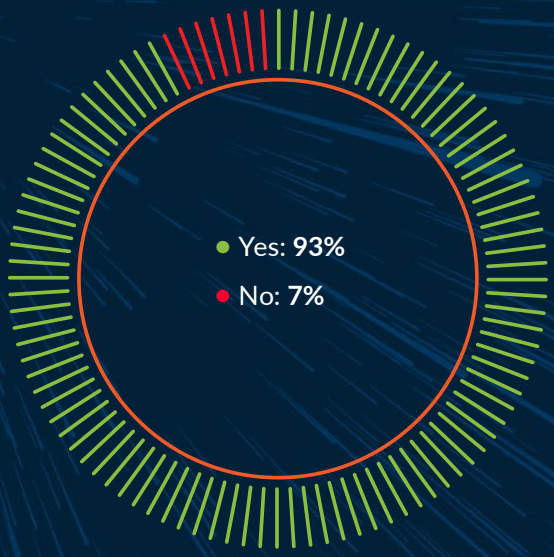


Consensus Among IT Directors/Managers on Machine Learning's Role

TVID: A7E-FD3-B53

- Yes: **100%**
- No: **0%**

In Their Own Words

We offered the survey participants the chance to offer their own thoughts, asking them "Please explain why you think machine learning is hype or hope." In line with the rest of the survey, substantially more people weighed in to explain why they thought machine learning represented hope for IT.

HYPE

"I expect more noise before the actualization of benefits."

Founder, Small Business Computer Services Company

"Hype because it's only applicable for certain uses."

Co-Founder, Small Business Retail Company

"Hype because nothing can replace good old human intuition."

Co-Founder, Small Business Computer Software Company

"Hype because so far, people are still needed to make final decisions."

IT Manager, Small Business Financial Services Company

HOPE

"Hope because there will be fewer problems and more reliability if more things were automated without human error."

Engineer, Small Business Professional Services Company

"There is so much that needs to be done. Anything that makes automation smarter means hope."

Chief Technology Officer, Small Business Professional Services Company

"I think it's hope because of what we would expect from the technology of future."

IT Manager, Large Enterprise Computer Software Company

"Ultimately it will allow our systems to create big-picture data sets from everyday activity."

Chief Technology Officer, Small Business Media & Entertainment Company

"It's the best solution to face all the current problems in the field of IT."

Chief Technology Officer, Large Enterprise Professional Services Company

"At the rate processing power increases, it is only a matter of time."

IT Director, Small Business Retail Company

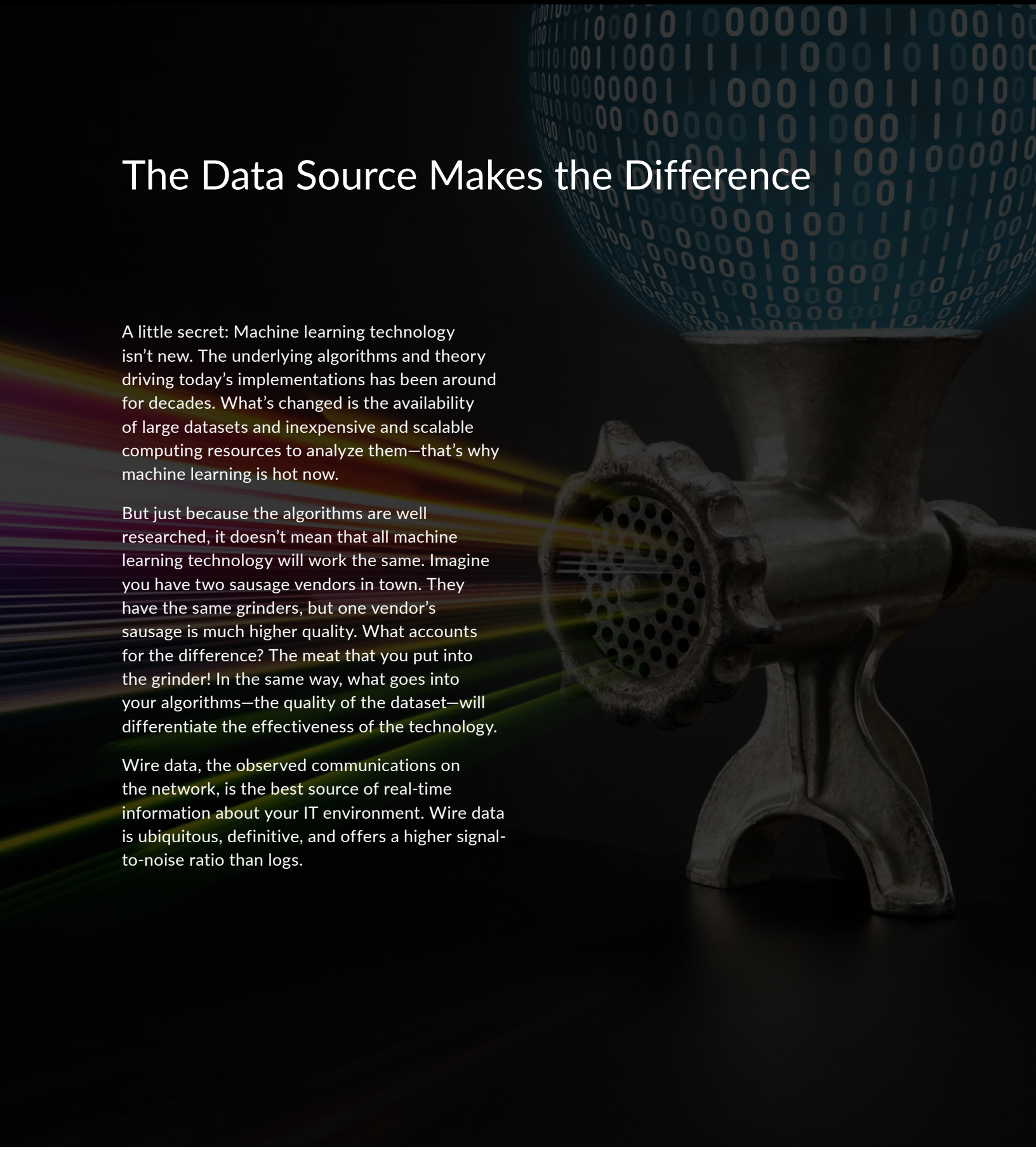
"It will get there, it will just take time. Everyone is working on it."

Chief Technology Officer, Medium Enterprise Hospitality Company

"It's going to be reality; it's definitely not hype. As computers continue to get faster and more powerful the sky is the limit. However, we have to figure out how best to use it to fully realize the 'hope' of it."

Chief Information Officer, Medium Enterprise Professional Services Company

The Data Source Makes the Difference



A little secret: Machine learning technology isn't new. The underlying algorithms and theory driving today's implementations has been around for decades. What's changed is the availability of large datasets and inexpensive and scalable computing resources to analyze them—that's why machine learning is hot now.

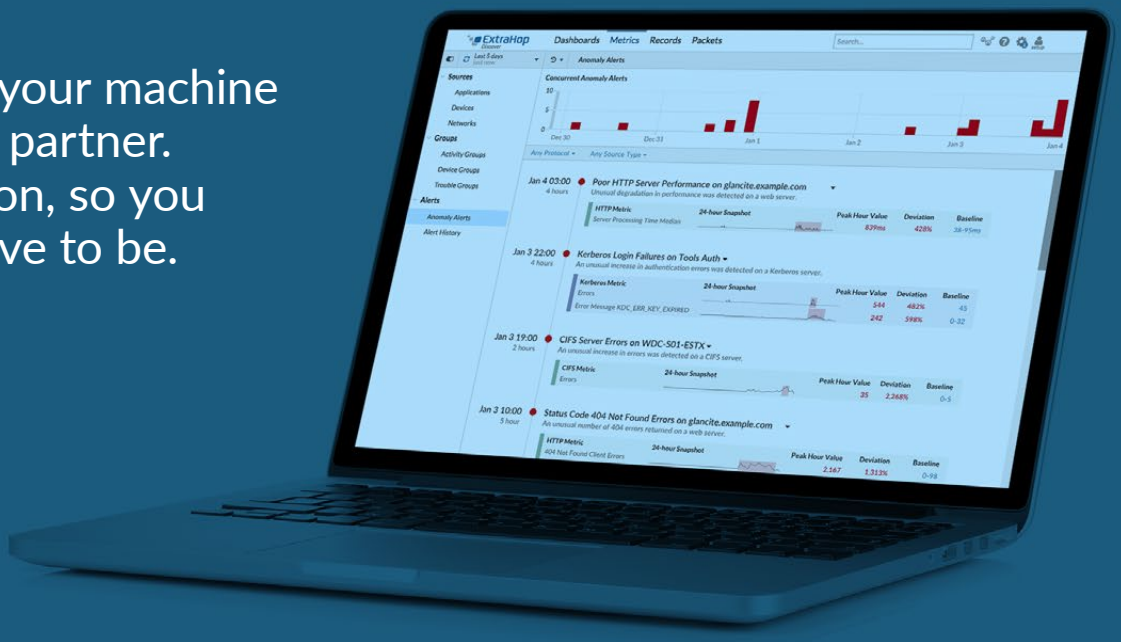
But just because the algorithms are well researched, it doesn't mean that all machine learning technology will work the same. Imagine you have two sausage vendors in town. They have the same grinders, but one vendor's sausage is much higher quality. What accounts for the difference? The meat that you put into the grinder! In the same way, what goes into your algorithms—the quality of the dataset—will differentiate the effectiveness of the technology.

Wire data, the observed communications on the network, is the best source of real-time information about your IT environment. Wire data is ubiquitous, definitive, and offers a higher signal-to-noise ratio than logs.

Machine Learning for Data-Driven IT Ops

If you think that machine learning is hope for IT, ExtraHop is a great place to start. Our platform features Addy, an always-on service that acts as eyes and ears for IT Operations teams, cutting through the noise so that they can become more proactive and data-driven. Addy applies machine learning to what's happening on your network, continuously building baselines for every system, network, and application, and then letting you know about anomalies that you really care about.

Addy is your machine learning partner. Always on, so you don't have to be.



www.extrahop.com/addy

About ExtraHop

ExtraHop makes real-time data-driven IT operations possible. By harnessing the power of wire data in real time, network, application, security, and business teams make faster, more accurate decisions that optimize performance and minimize risk. Hundreds of organizations, including Fortune 500 companies such as Sony, Lockheed Martin, Microsoft, Adobe, and Google, start with ExtraHop to discover, observe, analyze, and intelligently act on all data in flight on-premises and in the cloud.

ExtraHop