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STAR Awards

2024

2024 TSIA STAR Awards
Featured Application

Innovation in Leveraging Analytics for Service Excellence

TAC Virtual Engineer – Cisco's First AI-powered Humanoid

Overview

Support is a multi-billion-dollar business with high margins for Cisco and the most common challenge is how does the business scale its efforts while keeping costs low and delivering a premium customer experience. The existing human-only system had no real room for loss of staff, spikes in volume, or large customer expansion. Therefore, our team decided to build Cisco's first Humanoid, a Technical Assistance Center (TAC) Virtual Engineer.

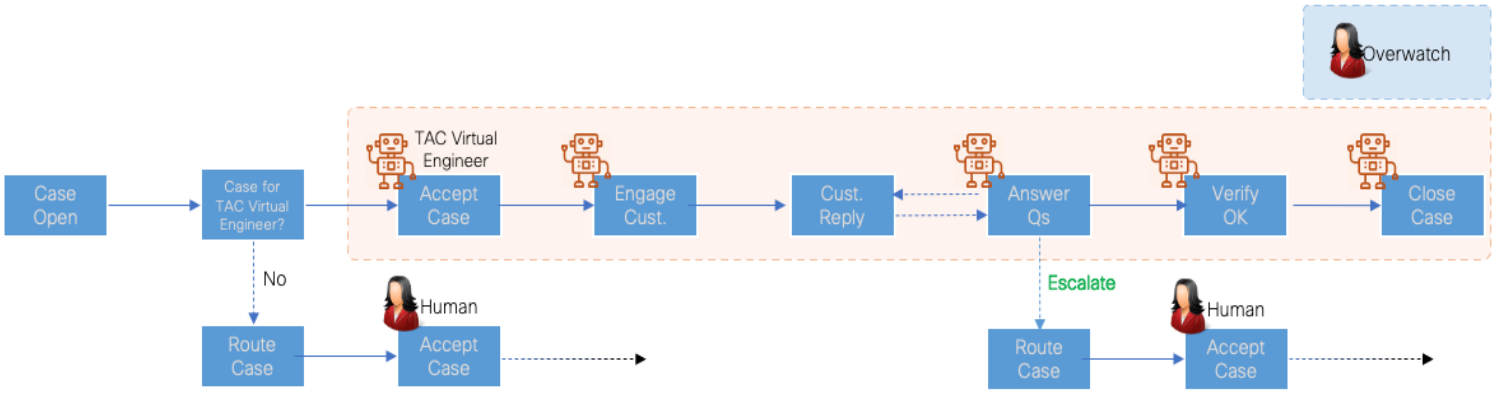
Cisco TAC Virtual Engineer was built to do everything a human TAC engineer can do and on a mass scale with superiorly repeatable results. It was built as a system that handles customer issues, evaluates customer problems, provides smart resolutions, and helps human TAC engineers with their cases. TAC Virtual Engineer was built to handle cases in 3 modalities: Proactive – where we detect an issue before the customer, Reactive – where a customer experiences a problem and opens a case about the issue, and Augmentation – where the virtual engineer assists a human engineer on their case. TAC virtual engineer supports a plugin system which allows other engineers to build Intellectual Capital and engage with the virtual engineer directly which has vastly expanded the virtual engineer's developer resource pool. TAC virtual engineer allows human TCEs to work higher complexity cases, faster and gives TAC the flexibility to scale with case volumes at ease without hiring new engineers, while customers receive the same consistent and premium experience on every single case. TAC virtual engineer was built to scale, be future proof, and produce award winning TAC support.

What have we solved for?

- **Massive Scale** – **Performs the work of 516+ TAC engineers daily** and has engaged 412,000+ customers across 470,000+ cases worked since 2020. In the past 12 months this has driven cost **savings of $17.3 Million**.
- **Repeatable superior customer experience** – Using a workflow engine to mirror human actions customers receive a **constant premium support experience** whether TAC virtual engineer is handling their email, parsing logs, or uploading patches for a hotfix. Cases are solved in mere minutes versus hours. This has driven a 38% reduced mean time to closure and **36% reduction in average time to solve a case**.
- **Ease of customer engagement**- The customer does not have to change the way they work as TAC virtual engineer's machine learning (ML) system handles natural language and uses deep learning and large language models to determine what a customer is looking for and how to best help them. This has produced a **93% customer satisfaction rating** which **exceeds the corresponding human rating by 5 points.**
- **Technological advances in customer success** – Uses multiple ML models wrapped in multiple systems and multiple different technologies to make up a larger scale system. The system is built with multiple software platforms in an API-first cloud native approach. Plugged in with cloud monitoring applications like Splunk, Datadog, and a home-grown API layer makes the solution highly scalable which has grown from a **single on-premises server to an AWS EKS deployed solution.**

How TAC Virtual Engineer Works

The core system handles the cases and does everything an expert TAC engineer would do including notating the case, analyzing logs, creating RMAs, and more. It engages with the customer via the web or email. TAC virtual engineer determines actions for the case based on customer responses in conjunction with its multi-ML brains. If it needs to, it will consult with "overwatchers" who are human experts in that technology in which TAC virtual engineer works. TAC virtual engineer can present a solution to these overwatchers and get approval or be given a better solution. If the solution is better, TAC virtual engineer will retrain itself to re-use that solution in the future. The more cases TAC virtual engineer works in an area, the smarter it becomes in those spaces. If TAC virtual engineer cannot solve a known issue, it will pass that case onto a human engineer in that space.



Customer Impact

Cisco's TAC organization has created an extraordinary ecosystem of automation and digitized capabilities that are revolutionizing the way that we support our customers, 24/7 whenever and wherever they need us. TAC virtual support engineer delivers a seamless customer support experience at scale which has resulted in 38% reduction in mean time to resolution and 36% reduction in average time to solve a service request to maintain business continuity.

Business Impact

By having TAC virtual engineer handle all technologies and cases, we have enabled TAC to scale by over 516 engineers at a cost of only 1 engineer's yearly salary. Over the past 12 months TAC virtual engineer has helped 292,000+ (246% Y/Y Growth) customers and saved TAC $17.3 million in cost savings (293% Y/Y Growth). TAC virtual engineer is forecasted to save $35 million over the next 12 months and assist over 5000 engineers on their cases.

"This was the best TAC experience I have ever had. The issue was diagnosed perfectly, and I was given great information that helped me better understand my Cisco ASA. "

– Large University Customer

"A true example of innovative grassroots creativity, TAC virtual engineer has given us new ways to engage with our customers and prevent known problems from impacting their environment, as well as augmenting the way our own engineers work."

– Chris Dexter, VP, CX Engines, Cisco

Lessons Learned

- AI/ML can be seamlessly integrated into your support experience as long as it is transparent to your customers and requires no learning or additional effort.
- Scaling performance is not a one-time thing. For large complex systems, identify the bottlenecks and scale those up, iteratively improving with each cycle.
- Automations need to provide a premium customer experience, so they feel and experience a difference which can be measured.
- Enabling engineers to build components for the system that can easily be "plugged in" has enabled the TAC virtual engineer core team to scale impact with net-new innovation.

For more information, visit the
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