



USING AI AGENTS IN CALL CENTERS, HELP DESKS, AND SECURITY OPERATIONS CENTERS

June 2024

Written By:
Brett Fraser, EVP of Technical Services





Executive Summary

Call centers and help desks leverage the human workforce to field incoming inquiries through phone, email or web chats. Security Operation Centers (SOCs) staff cyber security analysts to respond to threats and use tools and techniques to ensure secure environments.

Supervisory staff is tasked with hiring and training, shift scheduling, process compliance and workload balancing within the support center and SOC. Customer satisfaction can be measured through first call resolution, quality assurance gauging and customer satisfaction metrics gathered at the end of each inquiry. This becomes a very complicated balancing act between the customer, the agent, and the support center to ensure everything happens properly at the right time to close the inquiry or respond to a threat within the appropriate service levels.

Artificial Intelligence (AI) is the collection of tools that See, Say, Act, and Learn. Generative AI and Specialized AI have gone well beyond AI being used as a simple tool. AI can now be used to work alongside humans in call centers, help desks, and SOCs to perform the same functions and tasks at a scale not humanly possible. With AI configured as a contact center or SOC agent, the AI agent can work 24 hours a day and proactively perform hundreds of tasks at once creating consistency, efficiency, and scale.

Keeping a human-in-the-loop for oversight, enhancement, and ongoing training is critical to smooth and seamless operations. Historically, support centers and SOCs have been reactive in their approach as they wait for a caller to call, or wait for a threat to occur before acting. Three areas where AI agents can be configured and leveraged to proactively support the call center, help desk, or SOC are:

- 1. Alert monitoring and incident notification, handling, and escalation**
- 2. Daily checklist activities, follow up, and reporting**
- 3. Customer experience and interaction to drive customer satisfaction**

The NSS AI Sentinel is a stand-alone automated monitoring solution that watches and monitors for alerts, events, or scenarios and acts autonomically to collect diagnostic information, escalate to a human, or resolve an issue. The AI Sentinel removes the need for human “stare and glare” support services and frees the human up for more strategic or critical activities.

UiPath AI-driven automation can be configured to perform a multitude of daily checklist activities for daily readiness and ramp up, IT resource management, software and application availability checks, and error handling and recovery. UiPath automation can work user-by-user with desktop solutions or connected through an Orchestrator for 24x7 checklist support.

Support center and SOC front line Tier 1 support can be provided through conversational AI integrated to advanced Integrated Voice Response (IVR) systems, customer support applications, knowledge bases, and IT Service Management (ITSM) ticketing systems. Human subject matter experts can work with conversational AI by continually enhancing the solution to handle additional inquiries or fielding escalations.

Connecting all three solutions together would enable a 24x7 watchdog that could be configured to monitor thousands of points across multiple systems and environments. Checklist items would be centralized and handled expertly and consistently. Customers would have a method for self-service with inquiries handled expertly. Human agents could also benefit from an AI “shadow agent” feeding them expert answers and building client profiles on the fly. Combining and customizing these capabilities creates a formidable AI Agent.



The Problem

The integration of AI in call centers and help desks enhances operational efficiency, reduces costs, improves customer satisfaction, and provides valuable insights, making it a strategic asset for modern customer service operations. AI enhances the effectiveness, efficiency, and agility of cyber security operations centers by automating threat detection and response, handling large volumes of data, reducing false positives, providing predictive insights, and optimizing resource use. This leads to a more robust and proactive cybersecurity posture.

Human error and inconsistency arise from miscommunication, fatigue, and burnout, impacting service quality.

Call centers, help desks, and security operation centers have been plagued by human-driven inefficiencies and limitations. These issues often lead to suboptimal performance, reduce customer satisfaction, and force reactivity instead of proactive response. In call centers and help desks, high call volumes and long wait times frequently overwhelm agents, resulting in inconsistent response times. Limited availability, with non-24x7 support and scalability issues, hampers the ability to meet customer demands effectively.

Additionally, lengthy training periods and knowledge gaps among agents contribute to inefficiencies. In SOCs, analysts face alert overload and fatigue due to an excessive number of false positives and the need for manual triage. The complexity of threat detection is heightened by sophisticated attacks and data overload, making it challenging for analysts to identify significant patterns. Skill shortages and expertise gaps are prevalent, with a global shortage of skilled cybersecurity professionals and a continuous need for learning due to the fast-evolving nature of threats. Human errors and biases lead to inconsistent analysis and potential misjudgments in threat assessments.

The high agent turnover rate in call centers and help desks, which exceeds 30% annually, imposes significant costs and operational challenges. Frequent hiring and training of new agents is resource-intensive, increasing recruitment expenses and diverting time from productive work. Additionally, the loss of experienced staff results in a knowledge drain and reduced efficiency, as new agents take time to reach the performance levels of their predecessors.

30% annual average attrition rate in call centers and help desks

Customer satisfaction is also adversely affected by high turnover. New agents are more prone to mistakes and less adept at handling complex issues, leading to inconsistent service quality. Long-term customers, who prefer familiar agents, find it difficult to develop relationships, reducing loyalty and satisfaction. Furthermore, the morale of remaining call center and help desk staff suffers as they witness colleagues frequently leaving, creating uncertainty and diminishing job satisfaction. This disruption in team dynamics makes cohesive teamwork more challenging.

Operationally, high turnover causes understaffed shifts and increased workloads for remaining agents, leading to burnout and further attrition. Quality control becomes harder to maintain with a constantly changing workforce, as new agents may not fully adhere to standards. Mitigating turnover requires improving working conditions, offering career development opportunities, providing competitive compensation, fostering employee engagement, and streamlining onboarding and training processes. Addressing these areas can lower turnover rates, enhance service quality, and stabilize the workforce, ultimately benefiting both the organization and its customers. An AI Agent works all-day every day without breaks or time off delivering expert customer service and further supporting the human staff members.

The Solution – AI Agent

AI and automation can address the challenges seen in call centers, help desks, and security operation centers by proactively monitoring environments, infrastructure, and applications, automating routine tasks, and providing a more efficient customer engagement model. This leads to improved operational efficiency, enhanced service quality, and a strengthened consistent security posture.

NSS has developed an integrated three-prong solution to deliver an end-to-end AI Agent to fill seats within a call center or help desk and work alongside the human workforce in a security operation center. The combination of the NSS AI Sentinel, the UiPath Automated Checklist Handler, and Conversational AI can be combined to deliver efficient scalability using an AI Agent.

The AI Sentinel

Currently, Tier 1 engineers support “monitoring” by staring at a screen or reactively checking the status of an application by process, data, or transaction failure to manually troubleshoot the cause of failure and determining the action to take from standard operating procedures. Dedicated teams of engineers are needed to monitor environments and applications 24x7 per company.

The NSS AI Sentinel provides an “observability plus” automated management solution through “Intelligent Ops” with smart monitoring and automated actions for proactive issue identification and remediation. The AI Sentinel solves the issue of dedicated engineers for each company and provides a Single Pane of Glass solution.

The AI Sentinel acts as a watchdog constantly looking for scenario-based items which cause a trigger. These triggers generate alerts that can be sent to an ITSM ticketing system while automated rules-based actions can be taken to diagnose, troubleshoot, and mitigate the issue.



The AI Sentinel can be configured to monitor networks, environments, applications, automation, input and output sources, and data stores. Bisynchronous integrations can be used to connect the AI Sentinel to ticketing systems for notification and escalation handling.

Pre-built and customizable workflows can be enabled within the AI Sentinel to take action to diagnose and isolate issues and faults. These same workflows can be used to mitigate incidents and problems within the monitored environment with a full audit trail, including timestamps and tasks performed, to use in root cause analysis or compliance audits.

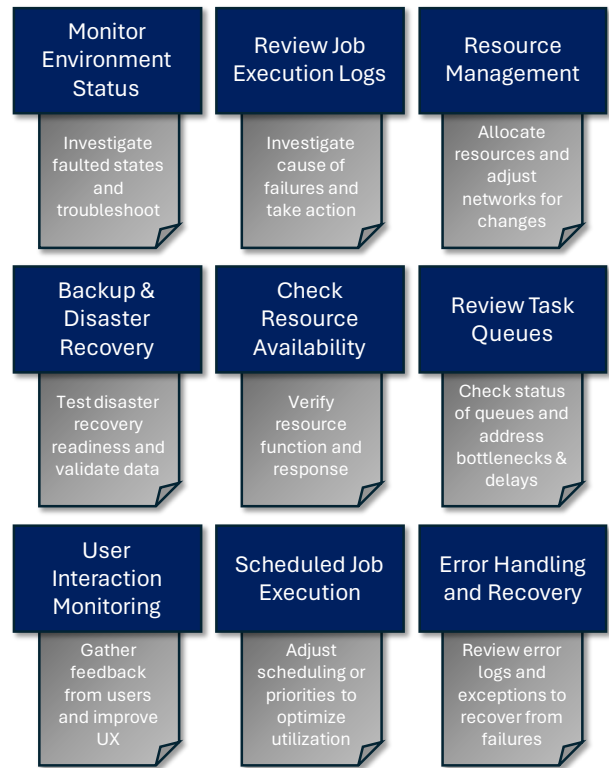
The NSS AI Sentinel revolutionizes help desks and security operation centers by enhancing efficiency, accuracy, and scalability by streamlining operations leading to quicker response times, improved customer satisfaction, and optimized resource allocation. Similarly, in SOCs, the AI Sentinel filters out false positives, prioritizes genuine threats, and enables rapid detection and response, reducing the risk of breaches to ensure continuous support during peak times resulting in improved operational effectiveness and overall performance.

The Solution – AI Agent

UiPath Daily Checklist Activities

UiPath automation offers a robust solution for streamlining daily checklist activities across various industries. The process begins with identifying the routine tasks essential for the daily checklist. These tasks can range from data entry and file management to system checks and email processing. Once these tasks are identified, UiPath Studio is used to design a workflow that automates each activity seamlessly. This involves creating a sequence of actions that mimic human behavior, such as opening applications, copying data and files, sending emails, and performing checks.

Integration with relevant databases, spreadsheets, or APIs is essential to ensure data accuracy and completeness. UiPath enables seamless integration, allowing the automation workflow to fetch or update data required for checklist activities. Conditional logic is then implemented within the workflow to handle different scenarios or exceptions that may arise during checklist execution. This includes error handling, decision-making based on specific conditions, and branching the workflow accordingly to ensure smooth execution.



The UiPath Orchestrator plays a crucial role in scheduling and triggering the daily checklist automations. The execution of the workflows can be scheduled at specified times, such as the start or end of the day, or triggered based on specific events or conditions. Additionally, the UiPath Orchestrator facilitates monitoring and maintenance of the automation solution. It allows organizations to track performance, receive alerts for errors or exceptional conditions, and ensures that checklist activities are executed accurately and on time. Regular updates and maintenance of the automation solution are essential to accommodate changes in processes or systems and to ensure ongoing efficiency and reliability. Finally, maintaining compliance with regulatory requirements and industry standards is paramount. UiPath provides features for maintaining an audit trail of checklist activities, ensuring transparency and accountability in the automation process.

Once the checklist items are complete, a daily report of findings and actions taken can be created and distributed as required. Weekly roll-up reports can summarize the incident related and change management actions taken. These volumetrics can be used during Monthly Service Reviews.

Using UiPath automation for daily checklist activities offers numerous benefits across various aspects of organizational operations. It enhances efficiency and productivity by reducing manual effort and errors, allowing employees to focus on strategic tasks. The consistency and standardization ensured by automation contribute to compliance adherence and uniformity in processes. UiPath's scalability and adaptability enable organizations to handle changing workload volumes and requirements effectively. Furthermore, the platform provides real-time insights and analytics, facilitating performance monitoring and decision-making. Improved employee satisfaction and cost savings are additional advantages, making UiPath automation a valuable tool for optimizing processes, driving efficiency, and achieving organizational goals.

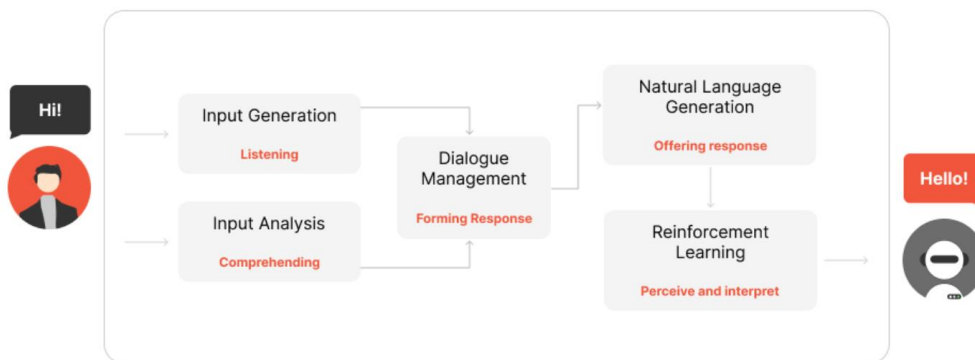
The Solution – AI Agent

Conversational AI for Tier 1 Support

Conversational AI can identify issues beyond their scope, handle most Tier 1 needs, and redirect customers to live support center staff in real time for escalations, allowing human agents to focus solely on more complex customer interactions. The following can be combined to expertly replicate Tier 1 interactions:

- **Neural Networks** – to classify interactions to determine the context and intent of the conversation
- **Emotional Quotient Ontology** – to determine the right emotional tone for response
- **Persona Management** – to provide the right conversational tone based on customer demographics
- **Process-based Interactions** – to model the proper workflow based on SME input
- **Customer Profile Building** – to quickly pull ticket history, customer data, and new knowledge
- **ITSM and Knowledge Integration** – to document, archive, and build stronger customer experiences

Conversational AI can also be leveraged in call centers and help desks as “shadow agents” to follow alongside a human agent and provide guidance, content, collateral, or suggest next steps. Conversational AI can be positioned for Tier 1 self-service or as a web-enabled agent to field front line calls and inquiries. The core components of Conversational AI include the following:



Conversational AI is one of the most transformational technologies shaping the call center.

Conversational AI orchestrates a blend of technologies for a human-like interaction. User Input Analysis involves AI scrutinizing user input using Natural Language Processing (NLP) and intent recognition, discerning intention from sentence structure and keywords. Contextual Understanding ensures coherent, context-aware responses by considering prior interactions. Additionally, Response Generation is conducted by AI crafting responses based on input and context, addressing user queries effectively through text, images, links, or dynamic content as needed. Moreover, Personalization is achieved as AI recalls customer preferences, tailoring responses for a more user-centric experience. Learning and Improvement follow interactions, with AI learning from errors and feedback, refining future responses in an ongoing cycle. Through this well-coordinated process, Conversational AI creates smooth flexible conversations that consistently improve user experiences.

Conversational AI can be configured to perform Tier 1 support functions within a call center, help desk, or security operation center. Integrations can be used to connect to knowledge bases for expert responses. Human-in-the-loop “shadow agents” can also be used to provide humans with the ability to gain insight on-the-fly. Conversational AI with automation can also be enabled to provide customer profile information or provide historical incident summaries in real time. Observational Machine learning allows Tier 3 resources to continually enhance the solution for expert responses to one-off and edge use cases.

Conversational AI can enhance the efficiency and effectiveness of call centers and help desks by providing personalized, context-aware responses, reducing wait times, and improving overall customer satisfaction through seamless interactions.

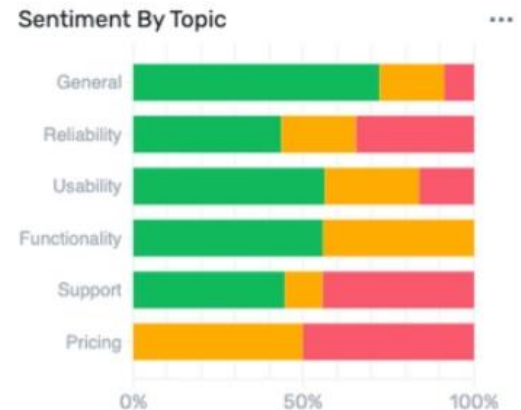
Conclusion

Human-operated call center, help desk, and security operation center deployments often face challenges such as high call volumes, long wait times, human error, and limited availability, leading to decreased service quality and security vulnerabilities. However, by harnessing AI Agents, organizations can significantly mitigate these issues. Coupling together the AI Sentinel, UiPath Automation for Checklist Activities, and Conversational AI creates an AI Agent solution that monitors 24x7, performs daily checklist actions and provides reporting, as well as enables a method for customers and agents to speak to and interact with the data, process, and technology.

AI Agents can deliver a higher level of service, improve agent productivity, and enhance customer satisfaction.

AI agents play a pivotal role in augmenting and enhancing operations across call centers, help desks, and security operation centers (SOCs). By automating routine tasks such as inquiry handling, AI Agents can streamline processes, allowing human agents to focus on more complex issues. Moreover, the AI Sentinel provides 24x7 support and monitoring, ensuring round-the-clock assistance and proactive threat detection, thereby improving customer satisfaction and reducing security risks. Additionally, intelligent automated routing and triage optimize resource utilization and response times by directing inquiries or security alerts to the most appropriate personnel based on various factors.

One area where AI Agents excel is in data analysis and insights generation. In call centers and help desks, AI analytics tools scrutinize customer interactions, feedback, and trends, extracting valuable insights to inform process improvements, product enhancements, and customer service optimization strategies. These insights enable organizations to identify recurring issues, understand customer preferences and pain points, and tailor their services, leading to a more personalized and satisfying customer experience. Similarly, in SOCs, AI-driven analytics platforms process and correlate vast volumes of security data from diverse sources, uncovering hidden threats, identifying attack patterns, and providing actionable insights to enhance cyber defense strategies.



AI Agents also facilitate continuous learning and improvement across call centers, help desks, and SOCs. By learning from past interactions, feedback, and outcomes, AI Agents refine their performance, accuracy and relevance over time. This iterative learning process enables AI Agents to adapt to changing circumstances, evolving customer needs, and emerging security threats, ensuring that operations remain efficient, effective, and responsive. As AI agents continue to evolve and mature, they will play an integral role in driving innovation, optimization, and excellence in customer service and security operations.

In conclusion, while call centers, help desks, and security operation centers have long grappled with human-driven inefficiencies and limitations, the integration of NSS’ AI Sentinel for monitoring, UiPath automation for checklist activities, and conversational AI presents a transformative solution. Coupling these three solutions together creates the ability to leverage an end-to-end AI Agent.

AI Sentinel monitoring enhances detection and response capabilities in SOCs, reducing alert overload and improving threat detection accuracy. UiPath automation streamlines repetitive tasks in call centers and help desks, boosting efficiency, reducing errors, and enabling 24/7 support. Additionally, conversational AI optimizes customer interactions by providing personalized, context-aware responses, leading to faster query resolution and enhanced user satisfaction.

CAPABILITIES STATEMENT



NSS is a Woman-Owned Small Business Technology Solution and Services company specializing in Business Automation and Artificial Intelligence capabilities.

Automation and AI transforms organizations by filling software gaps, improving speed and accuracy of everyday tasks, and working alongside the workforce allowing businesses to save money and scale through efficiency.

CERTIFICATIONS



SBA WOSB
Woman Owned Small Business



SAM UEI

Z7NNMWMKLAK5

CAGE CODE

82PT2

DUNS

015130399

NAICS

541511, 541512, 541519,
541611, 541618, 54690

AWARDS



CORE COMPETENCIES

- Robotic Process Automation
- RPA Monitoring & Response
- Intelligent Doc. Processing
- AI Process Optimization
- Large Language Models
- Digital Twins
- Managed IT Service & Support
- Technology Training
- Technology Assessments
- Technology Staffing Services

PAST PERFORMANCE



Built an Email Parser for Drug and Food Trial Data Distribution to process bulk emails received. 300 emails processed in 3 minutes enabled operational scale, removed human error, and automated reporting.



Designed and Deployed a UiPath Claims & Grants Center of Excellence and Automation Operating Model to establish NSF Citizen and Federated development and support across the agency.



Automated network compliancy checks were run from DISA recommendations and OS updates were provided with checks and balances ensuring compliancy and uptime against DISA standards.



Conversational AI solution deployed for NETCOM to handle Tier 1 IT inquiries and incidents. Runbook processes, escalation matrices, and Remedy integrations helped handle up to 40% of the incoming ITSM volume as part of the Proof of Concept.

Brett Fraser

EVP of Tech Services
(571)-524-9125
bfraser@nssfed.com

TEAMING PARTNERS & CLIENTS

Booz | Allen | Hamilton



Peraton



SAIC

GENERAL DYNAMICS



serco

NORTHROP GRUMMAN

