TALKDESK EBOOK

Talkdesk: Enterprise Cloud Contact Center for the Digital World

talkdesk®

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Introduction

The transition from premises-based to cloud-based systems has been underway for over a decade. Spurred by broader digital transformation initiatives and buoyed by clearcut ROI, cloud initiatives are now ubiquitous across every aspect of business systems such as CRM, Helpdesk, HR, and Finance.

The Contact Center, however, has been slow to adopt the cloud. Legacy, decades-old on-premises systems still pervade, entrenched like a badger in a hole. Why the holdout to modernization? Perhaps, in part, it is due to the thinking of the contact center as a cost center. This traditional way of thinking requires that every vestige of cost be squeezed from the contact center, regardless of the impact on the customer. In other cases, it is a very real and painful situation; i.e., companies facing seven-figure costs to update their outdated, fragile legacy systems. So, they are stuck with the unsavory choice of paying extortionist sums of money to upgrade an old system to a "less-old" system or doing nothing (if it ain't broke…) and allowing their customer experience and operations to suffer.

The problem is that these legacy systems were never built to support the needs of the modern digital consumer, where customer experience is king. Those companies that have made the transition to first-generation cloud offerings have found familiar issues of poor reliability, lack of integration and inflexibility, plus poor call quality.

Customer service providers need a contact center platform that offers the combination of intuitiveness, flexibility, reliability and performance that can support the dynamic needs of their business.

With the benefit of hindsight, companies today recognize that not all cloud platforms are created equal, and that cloud technology has made massive advancements since the first cloud contact center offerings hit the market over a decade ago. Unencumbered by the baggage of legacy on-premises and first-generation cloud systems, companies are now taking advantage of true cloud-native contact center platforms to change old paradigms, redefine the customer experience and maximize operational efficiency.

Talkdesk: Enterprise Cloud Contact Center for the Digital World

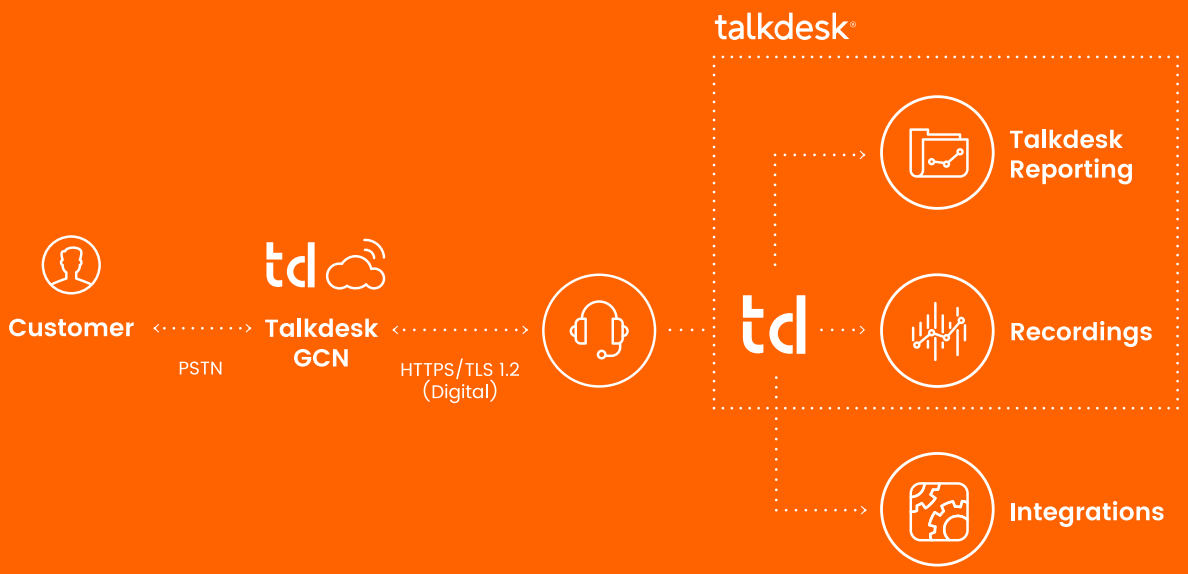
Talkdesk is the industry's first cloud-native enterprise contact center and is the fastest growing vendor in the Cloud Contact Center as a Service (CCaaS) space. In this paper, we explore the unique technical attributes that are leading many of the world's largest brands to trust Talkdesk as their enterprise cloud contact center.

[1] Frost & Sullivan Cloud Contact Center Buyers Guide, North America, 2018

I.

The Talkdesk Architecture

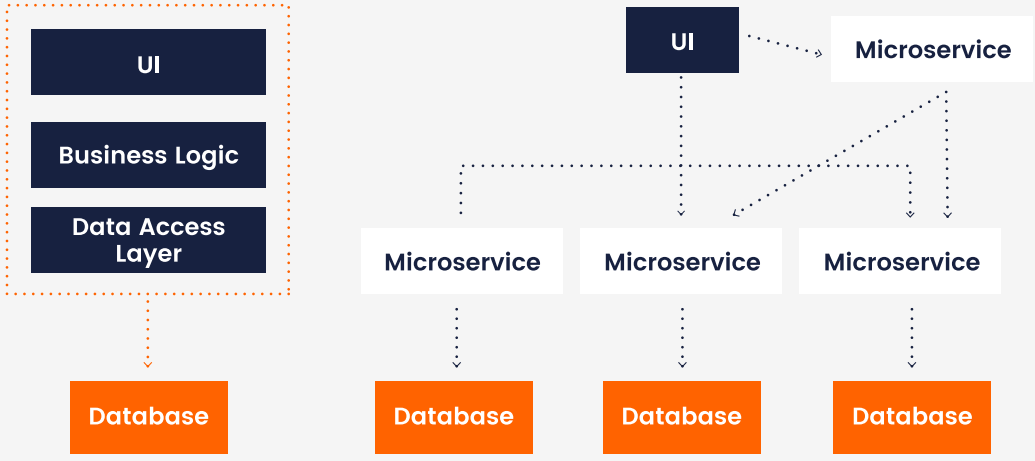
Talkdesk offers the scalability, reliability and security required by large global organizations. Our cloud-native architecture supports enterprise global brands running multiple thousands of agent positions around the world. And importantly, Talkdesk is built from the ground up to scale elastically, so additional seats can be provisioned without sacrificing quality or security.



Microservices API-First Architecture

Traditional on-premises and first generation cloud contact centers were built with monolithic architectures. Second-generation, cloud-native platforms like Talkdesk are built with microservices architectures. A monolithic application is built as a single unit, making it susceptible to single point of failure. A bug in any module can potentially impact the availability of the entire application. Monolithic applications can also be difficult to scale when different modules have conflicting resource requirements. If you want to use a new platform or framework on a monolithic architecture, the entire solution has to be rewritten. This is why many companies running monolithic contact center platforms are stuck with the prospect of costly platform "forklift" upgrades.

Monolithic vs Microservices Architecture



Monolithic Architecture

Microservices Architecture

Software built as microservices can be broken down into multiple component services, so that each can be deployed and then redeployed independently without compromising the integrity of an application. Each microservice can be implemented in a different programming language on a different platform. This translates to:

- **Higher reliability -** If one microservice fails, the others will continue to work. This also enables zero-downtime maintenance, because we can focus maintenance on a single service rather than the whole monolith.

- **Faster innovation -** Microservices enables continuous delivery, as apps are easier to build and maintain. API-first design allows our customers to extend capabilities as their needs evolve, taking advantage of evolving technologies like IoT and AI.

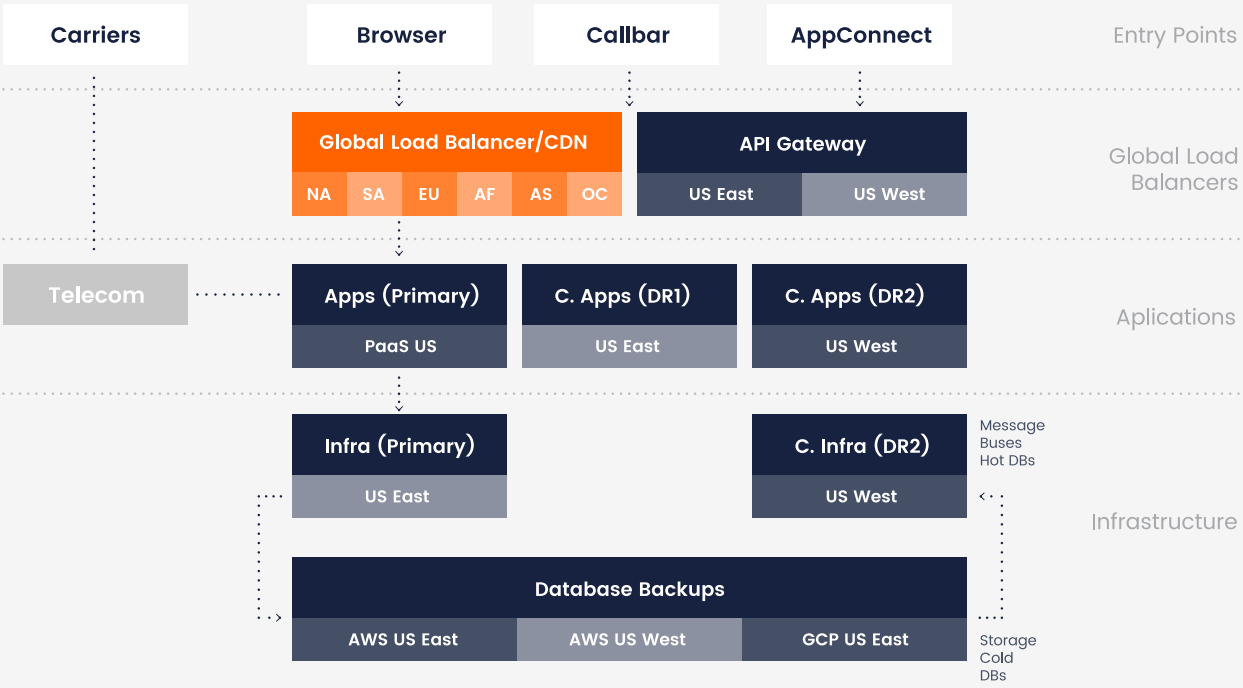
- **Superior scalability -** Easy to scale and integrate with third-party services.

Talkdesk Global Communications Network (GCN)

For global coverage, legacy and first generation cloud contact center solutions force businesses to run separate contact center instances in different regions or countries, and tie them together with pre-routing. Most first-generation cloud contact center systems were built on single-tenant, managed hosted platforms that don't scale well as they require working with multiple individual networks in global regions.

With Talkdesk GCN, the public switched telephone network (PSTN) is woven into one global super telecom network. Modern platforms like Talkdesk are designed to give you one singular, global contact center that allows you to simplify routing and save money by not having to replicate your infrastructure in each individual global contact center location. The super network uses intelligent software and the advantages of the cloud so you can engage your customers any time, anywhere. Using software intelligence we mitigate many common issues associated with traditional telco providers such as degraded quality of service and outages. We monitor over a billion data points for end-to-end performance every single day, so we can identify issues and disruptions early and then automatically reroute customers' communications.

System Architecture



Talkdesk offers the largest selection of phone numbers available for instant provisioning in over 100 countries and 50,000 specific localities. If the customer already owns a carrier relationship we can onboard it and minimize the impact on existing customer commitments.

II.

Reliability / Disaster Recovery / Failover

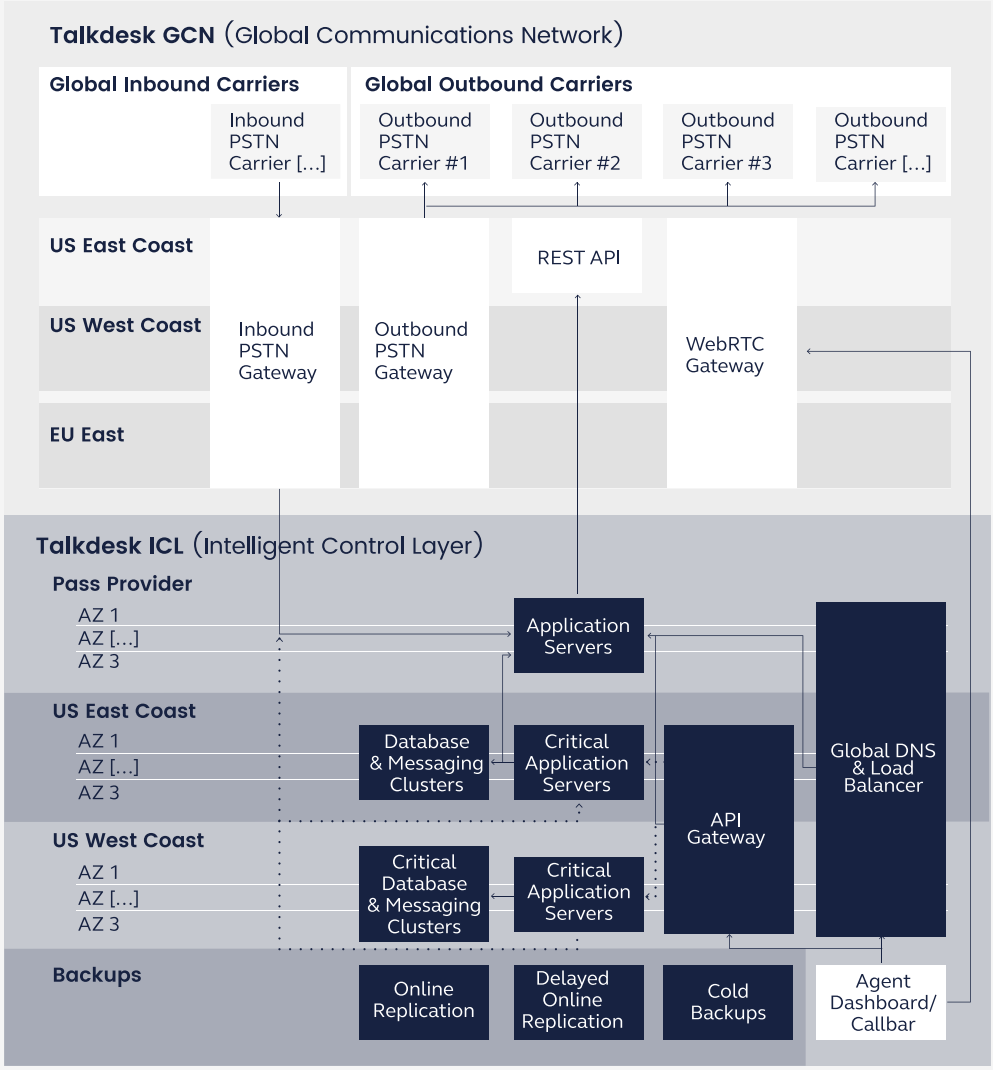
Talkdesk is the only company in our industry to offer a 100% uptime SLA. Talkdesk is built with distributed systems engineering practices using diverse cloud infrastructure providers, including Amazon Web Services (AWS) industry-leading cloud infrastructure. We have geographically distributed data centers and invest in redundancy on every level to eliminate single-point-of-failure. DDoS mitigation is in place with edge servers across the globe.

Talkdesk GCN ensures communication reliability by having:

- Automated failover with data centers in nine globally-distributed regions.
- Data centers connected to multiple Tier 1 carriers to guarantee reliable connections for call termination.
- The ability to reroute call paths around carriers that experience any failures.

In the event we experience a failure in our main site, Talkdesk is able to switch over critical applications to a disaster recovery site located in AWS US East. In the event our Disaster Recovery (DR) site at AWS US East experiences any failure, we are able to switch our critical application and infrastructure to a DR site at AWS US West. We use multiple Availability Zones for additional redundancy within our main and DR sites. The critical applications and infrastructure running in the AWS US East DR site run in hot standby, while the critical applications and infrastructure running in the AWS US West DR site run in warm standby.

Voice calls are powered using WebRTC technology. Talkdesk Global Network has WebRTC Gateways spread across data centers around the globe. WebRTC connections use the Global Low Latency network to connect to the nearest WebRTC server, providing speed and redundancy. In the event that WebRTC servers are experiencing connection issues, besides being able to fallback to PSTN, we are able to switch the Agent Dashboard for accounts to use an alternative WebRTC server with a failover environment.



Talkdesk's comprehensive disaster recovery program includes a 24/7 Engineering On-Call team to respond to any alert/event that might impact service. The team is tasked with keeping the service reliability within the customer commitment. In the event of alerts, engineers from the On-Call team are paged with an expected acknowledge time of five minutes. Upon acknowledging the alert, engineers perform an impact analysis and determine what the issue is, then act to resolve it as soon as possible. On-Call teams use multiple runbooks that are continuously maintained and updated to ensure best practices are followed when responding to an incident. Fire Drills are performed on a weekly basis to ensure that the On-Call team knows how to handle situations, and to ensure that our Disaster Recovery options work as expected. Upon major failures, the On-Call team will make the decision to switch to any of the available Disaster Recovery sites, taking into account the situation at hand.

Talkdesk provides a full trust status center page that is updated throughout the day to denote any issues across all components, including date/time, severity, impact and resolution plan. This page features all historical events, as well as real-time status changes that can be subscribed to via email notification, SMS, Twitter or RSS Feed.

III.

Global Call Quality

Talkdesk offers industry-leading global call quality, with an average MOS score of 4.22. MOS (Mean Opinion Score) measures subjective call quality for a call from 1 for unacceptable to 5 for excellent. For comparison, typical voice over IP (VOIP) calls are in the 3.5 to 4.2 range.

High latency on a call results in periods of silence, disturbance, and people talking over one another, each of which creates a bad call experience. Our call quality is guaranteed by a Global Low Latency (GLL) network. Because Talkdesk GCN is built in data centers in major regions around the world, we can ensure low latency in several ways
Global Low Latency optimizes call quality, ensuring that each call travels the most direct route through regional nodes, resulting in fewer dropped packets, less jitter and minimal delay. GLL ensures high call quality for all geographies and gives Talkdesk the confidence to offer voice quality SLAs.

Talkdesk offers priority voice packet routing in which over 1 million routing optimizations are performed per year to ensure that if a carrier goes down it does not impact Talkdesk calls.

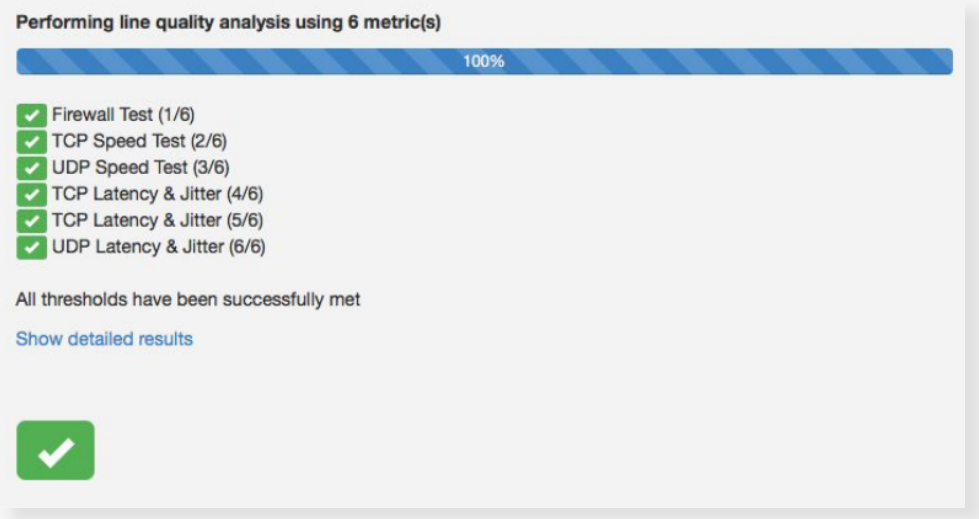
IV.

Service Delivery & Quality of Service (QoS) Transparency

Talkdesk's goal is to provide customers with transparency, so they can take steps to address network issues and understand differences between their offices and agents. There are four ways in which we can help gain insights on network conditions and perform Root Cause Analysis (RCA) on how these affect call quality:

#1 Simple Network Test

This is a quality test that checks five different metrics and provides a good predictor of whether connectivity is sufficient. This test checks for open ports, as well as simulating a real call and checking for packet loss, jitter and latency. Anyone can run this. Customers just need to tag results with their company name and send via email to Talkdesk support.



#2 Analysis of Aggregate Call Data

Once an account is live and making calls, Talkdesk is collecting connectivity metrics for every call made in the browser. Presenting these metrics in aggregate for an account is extremely valuable for IT and network admins to understand where problems may be occurring. The example below, which is analyzing call data by IP address, shows a large customer with multiple call centers. This highlights two of them performing poorly. With this data a customer's IT department can investigate why, and refer to Talkdesk's QoS guide to reconfigure and optimize their networks for voice traffic.

Voice Call LegsPublisher Country Name	Voice Call LegsPublisher IP Address	Voice Call LegsCount	Voice Call LegsLatency Avg	Voice Call Legs Mos Avg	Voice Call Legs Jitter Avg	Voice Call Legs Packet Loss Perc Overall
Guatemala	190.143.	7,037	190	4.2	0	0.01%
Philippines	58.71.75	7,029	262	3.88	2	0.07%
Philippines	203.177.	4,216	251	3.94	1	0.07%
Philippines	125.212.	3,282	185	4.22	0	0.10%
United Kingdom	195.59.1	3,117	140	4.25	0	0.25%

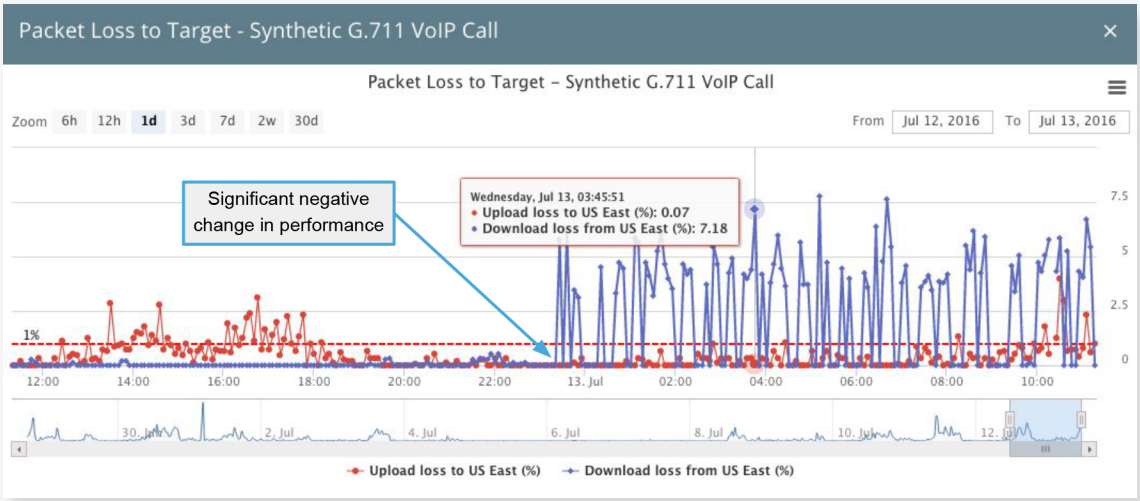
#3 Investigate Individual Calls

For troubleshooting individual calls, with the unique call identifier Talkdesk can understand and share what the network connectivity data shows for a particular call. Our inspection tools can monitor call performance metrics - Jitter, Latency, Packet Loss, Audio Levels and MOS - against historical calls. Talkdesk provides an early warning system for Network Admins/Heads of Operations who can pinpoint the performance of each call by location, and take action accordingly.

#4 Continual Network Monitoring

Continual Network Monitoring provides real-time continual monitoring of a customer network, end-to-end. We leverage a cloud-based offering called Firebind to monitor ISP network quality in the last mile. By employing active testing technology via on-premises and cloud-based software agents, empirical measurements are taken every five minutes. This data can then be used to isolate network issues and prove out both in-house or last-mile network issues.

In the example below, packet loss at the site begins at 3:45 AM. As the office was empty at this time, we know it's not a local congestion issue, but likely a problem with the networking equipment or a fault with the ISP.



V.

Security & Compliance

At Talkdesk, we take security and privacy seriously and have implemented a variety of safeguards in our design and code to carefully protect our customer data.

Our dedicated security team works every day to ensure the proper measures are in place to keep your data safe. In addition to closely monitoring our threats landscape, they also conduct regular audits of our system. Talkdesk's Information Security Management System (ISMS) has several fundamental principles including:

- Awareness of the need for information security
- Assignment of responsibility for information security
- Security incorporated as an essential element of information networks and systems, ensuring a comprehensive approach to information security management
- Continual reassessment of information security and making of modifications as appropriate.

Accreditation & Compliance

Talkdesk has over 30 security certifications and accreditations. We follow the main security frameworks such as ISO27001, NIST and OWASP and holds several certifications such as SOC2 Type II, SOC3, PCI-DSS Level 1, CSA Star Level 1 and Cyber Essentials (UK) and we are rated in the Advanced security rating by Bitsight. We are compliant with several privacy laws such as GDPR and HIPAA and hold a Privacy Shield certification. We are also members of Cloud Security Alliance (CSA) and CiSP.

Talkdesk's physical infrastructure is hosted and managed within Amazon's secure data centers and utilizes the AWS technology. Amazon has extensive experience designing, constructing and operating large-scale data centers globally. Additionally, Amazon undergoes frequent assessments to ensure continual compliance with industry standards.

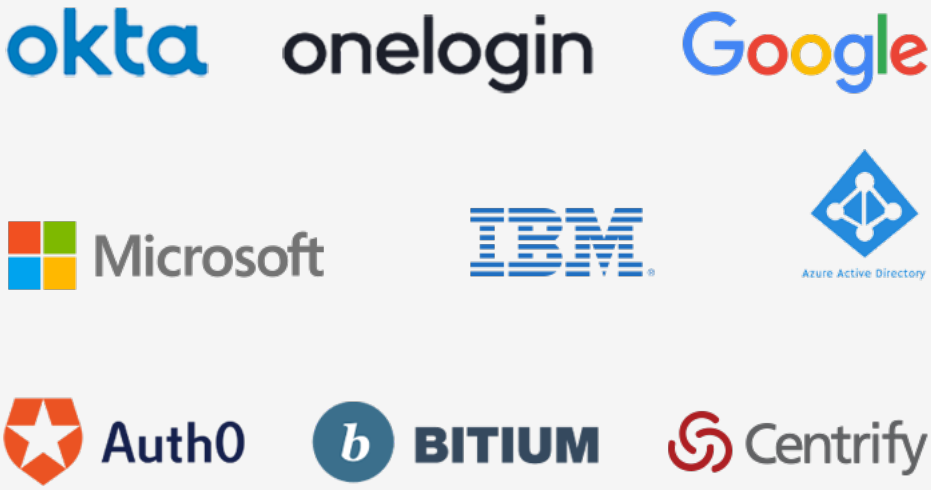
Talkdesk physical infrastructure is located and maintained in different data centers to leverage the fastest and most secure transmission of data between applications. Our data center partners are required to be accredited under the following certifications:

- ISO 27001
- SOC 1 and SOC 2/SSAE 16/ISAE 3402 (Previously SAS 70 Type II)
- PCI Level 1
- FISMA Moderate

Talkdesk is committed to security and compliance and provides information security and privacy training to workforce members to ensure a common understanding of laws, regulations and best practices. These are the certifications and accreditations of our security team:

Single Sign-On

Talkdesk provides broad multifactor authentication & integration support via these common Identity Providers and any IdP that complies with SAML 2.0.



Talkdesk Application Security

Password Security

All passwords are salted and encrypted with a one-way hashing algorithm to resist brute-force and dictionary attacks. Passwords are not logged under any circumstances.

Communication Security

All communications are encrypted using the latest version of the Transport Layer Security (TLS) security suite allowing for perfect forward secrecy. Sensitive data between applications is protected by access tokens and encrypted during transmission.

Credit Card Information

Talkdesk does not hold any customer credit card information. All data is processed by a PCI-certified partner.

Conclusion

Today's digitally transformed world has put new pressures and expectations on contact centers. Customers have elevated expectations for customer experience and contact centers need agility, speed and reliability. Older generation on-premises and first gen cloud contact center solutions were never designed to handle today's dynamic business.

Talkdesk is a new breed of enterprise cloud contact center built for this world and is leading the contact center digital transformation. Innovative and disruptive global brands like IBM, Dropbox, and Peloton trust Talkdesk as their customer engagement platform to make customer experience a competitive advantage. This trust is enabled by a modern, cloud-native architecture that delivers the reliability, scalability and security required by today's customer-centric companies. For IT operations struggling for speed[2], contact center digital transformation with Talkdesk provides the speed and agility to respond more nimbly to the rapidly changing landscape of customer service and become a collaborator in the goal of delivering customer experience excellence.

[2] https://a.sfdcstatic.com/content/dam/www/ocms/assets/pdf/misc/2017-state-of-it-report-salesforce.pdf

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Talkdesk Enterprise Cloud Contact Center empowers companies to make customer experience their competitive advantage. With enterprise-class performance and consumer-like ease of use, Talkdesk easily adapts to the evolving needs of sales and support teams and their end-customers, resulting in increased customer satisfaction, productivity and cost savings. Over 1,800 innovative enterprises around the world including Canon, 2U, IBM, Peloton and Trivago, rely on Talkdesk to power their customer interactions. Learn more and request a demo at www.talkdesk.com.