FUSION NARRATE® SECURITY BRIEF

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CONTENTS

EXECUTIVE OVERVIEW

Fusion Narrate® and SayIt™ from Dolbey powered by nVoq™, provide cloud-based speech recognition, enabling providers to accurately and efficiently capture the patient narrative for seamless inclusion in the patient record. The Fusion Narrate suite also includes the Fusion Narrate CAPD™ module for clinical documentation improvement (CDI) as well as the Fusion Narrate Text™ premise-based solution for back-end transcription. This document provides information on the security features of the Fusion Narrate product suite. It is intended to help customers understand how the platform can support their organizations' compliance with the Health Insurance Portability and Accountability Act and implementing regulations ("HIPAA").

Dolbey understands that performance and robust security must go hand-in-hand. The Fusion Narrate platform delivers a secure solution with configurable options that instill confidence and allow customers to tailor features to their internal compliance program.

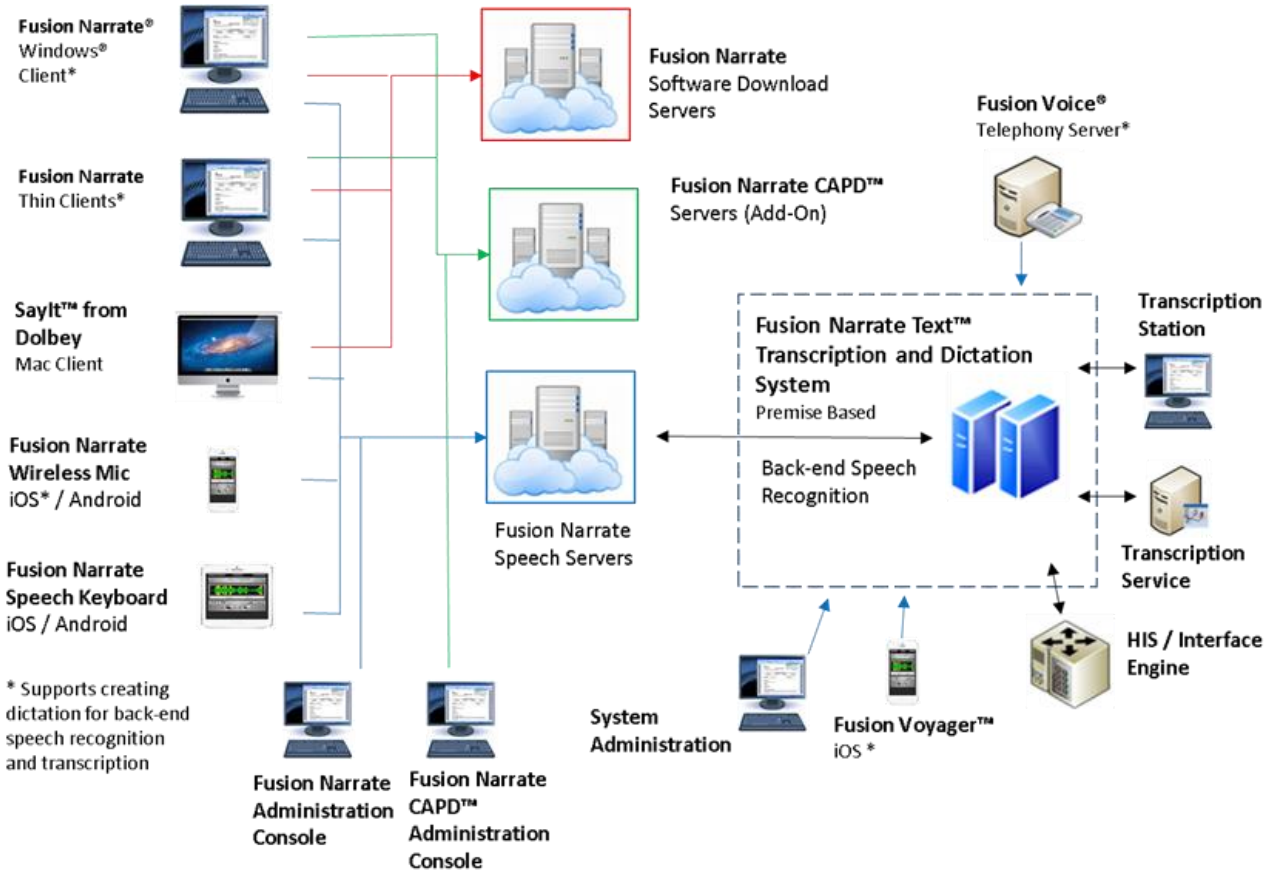
This document first provides a general system overview, followed by a summary of the flow of PHI within the platform. Finally, we summarize the following security features:

- Data Encryption
- User Accounts and Password Management
- Client Software Security
- Data Storage and Retention
- Data Center Security and Backups
- System Auditing

The Fusion Narrate platform is a cloud-based speech recognition solution delivered through a partnership between Dolbey and Company (Dolbey) and nVoq. Dolbey provides technical support for the full application suite to its customers, while nVoq manages the speech recognition servers in a secure cloud hosting platform. Dolbey's Customer Services team is available during the implementation process to address and help configure security settings per the customer's requirements.

SYSTEM ARCHITECTURE

The following diagram provides an overview of the system architecture for the entire suite of products comprising the Fusion Narrate platform.



Additional information regarding the above components and their requirements can be found in the document titled Fusion Narrate Requirements and the online Fusion Narrate Help Center.

The Fusion Narrate Text system is an add-on premise based transcription software solution that incorporates back-end speech recognition, dictation workflow, output distribution and a host of other features. Security topics for this system are covered in separate documentation available upon request.

PHI WITHIN THE FUSION NARRATE PLATFORM

The starting point for any security assessment is understanding what data is collected, whether it contains any Protected Health Information (PHI), and the flow of PHI throughout the system.

In order to minimize capture and retention of PHI with in the Fusion Narrate platform, Dolbey recommends that customers train their users to avoid dictating PHI into the system whenever possible.

Fusion Narrate Client

The Fusion Narrate client does not interface with or provide access to patient record data that may reside in a customer's other applications, such as an EHR. Rather, the Fusion Narrate client software receives input directly from the provider, summarized below. The Fusion Narrate CAPD client does interface with patient record data from the customer's other applications, but does not store such data, as described below.

Front-End Speech Recognition: Generally, the audio file received for front-end speech recognition does not contain any PHI. Providers use the Fusion Narrate tool for front-end speech recognition within another application (such as an EHR) that already includes the patient identifying information; the provider does not need to dictate a patient name or identifying number when documenting the patient encounter. This audio is streamed to the Fusion Narrate cloud-based speech recognition servers. The Fusion Narrate client application does not store audio on the client device and does not provide user access to past audio recordings stored on the speech servers. The Fusion Narrate client also analyzes text areas of the screen to build a speech grammar of the identified words for advanced select and say commands (i.e. 'SELECT headache'). These grammars together with the spoken audio commands are submitted to the speech servers for recognition. It is possible that these grammar files may contain fragments of PHI. Advanced select and say can be disabled upon request.

Back-End Speech Recognition: The optional Fusion Narrate Text premise-based transcription module allows users to dictate a report for transcription. The captured dictation is sent to the Fusion Narrate cloud-based speech recognition servers as an audio file, processed through back-end speech recognition, and then transmitted to the Fusion Narrate Text system located on the customer's network for a transcriptionist to review and correct as necessary. Customers using the Fusion Narrate Text module may configure the Fusion Narrate client to prompt the provider for a patient identifier such as an MRN that can help automate the lookup process for the transcriptionists. Additionally, when dictating for back-end transcription, providers sometimes dictate patient identifying information so that the transcriptionists can confirm the patient information. Dictation audio files for the Fusion Narrate Text module are temporarily stored on the client device until transmitted to the cloud-based speech recognition servers, and are then removed from the client device. The Fusion Narrate client does not provide user access to past dictations stored on the speech servers.

Fusion Narrate CAPD: The optional Fusion Narrate CAPD module analyzes the text of the patient record for clinical document improvement (CDI) and notifies the provider of any recommendations. The analyzed text includes a combination of the speech recognized text from the provider's input, as well as any other text that Fusion Narrate is able to read from the current application such as the EHR. This text, which may contain PHI, is sent to the Fusion Narrate CAPD cloud servers for analysis, but is not stored on the Fusion Narrate CAPD servers or the client device.

Application Logging: The Fusion Narrate client writes log data to the Windows® App Data folder which typically resides on the device on which the Fusion Narrate client runs. By default the logging level is set to a low level where no PHI is logged. A higher logging level may be enabled temporarily for troubleshooting an issue; at these levels, it is possible that PHI could be included in the log file. Logs may also be submitted upon request to the Fusion Narrate speech recognition servers to enable support staff to diagnose an issue. Historical log data is automatically purged off the client device after a configurable file size is reached.

Data Downloaded to Client Device: Administrators with access to the cloud-based Administration Console have the option to download the audio and the recognized text to their client device. Since it is possible that this data contains PHI, this function should only be performed if the client device employs an appropriate third party encryption solution.

Fusion Narrate Speech Recognition Servers

The Fusion Narrate speech recognition servers store the following types of data which are accessible from the Administration Console:

- Audio and recognized text for each dictation, which may contain PHI if dictated
- Advanced select and say speech grammars
- Client log data which can be uploaded to the servers from the Fusion Narrate client upon request for technical support purposes, which may contain PHI if higher level logging is enabled
- Language modeling data that can be imported for sentence modeling
- Demographic data requested from a user when creating a standard dictation for submission to transcription, which may contain PHI depending on how the Fusion Narrate Text client is configured

The Administration Console is also used to perform a variety of management functions including managing users, shortcuts (i.e. voice commands), custom vocabulary, groups, and reporting tools.

Fusion Narrate Wireless Microphone

This is a smart phone application for iOS and Android that can be used as a microphone for the Fusion Narrate application. It can be used in place of a microphone attached to the workstation. Audio for front-end speech recognition is streamed from the device to the speech recognition servers and is not stored on the device. When combined with a Fusion Narrate Text system, the wireless microphone application can optionally be used to capture dictation for sending to an MT. This audio typically contains some type of PHI that the provider dictates for the MT. In this mode, only the current dictation audio is stored locally until it can be fully transmitted to the speech recognition servers or the user signs out. This audio is secured with a hash and stored in a temporary location not accessible to users.

Fusion Narrate Speech Keyboard

This is a smart phone application for iOS and Android that can be used in place of the built-in operating systems' keyboard. It allows the provider to use speech recognition to quickly insert text into other mobile applications. Similar to that of the Fusion Narrate workstation client, this mobile application streams dictated audio to the speech recognition servers which return the recognized text. Audio is not stored on the device. The speech keyboard does not access the existing text from the target application with the exception of capturing what is needed to determine proper spacing and capitalization. Characters typed with the keyboard are neither stored nor transmitted to the servers.

Fusion Narrate CAPD Servers

The Fusion Narrate CAPD servers are separate from the Fusion Narrate speech recognition servers and run on a different cloud hosting platform. The Fusion Narrate CAPD servers receive text from the Fusion Narrate client, process the text, and return back recommendations for documentation improvements. The text received may contain PHI, but the received text is not stored on the Fusion Narrate CAPD servers.

On occasion it may be necessary for Dolbey technical support to enable detailed logging on the Fusion Narrate CAPD servers to diagnose an issue. These detailed logs would contain the text received from the client, and thus could contain PHI. This information is only retained on the Fusion Narrate CAPD servers for the necessary time to troubleshoot and resolve an issue.

Fusion Narrate Text Premise Based System

The Fusion Narrate Text system is a premise based transcription system that receives back-end speech recognized dictations from the Fusion Narrate speech recognition servers. The Fusion Narrate Text system stores the audio dictations and associated recognized text, the transcribed reports, and any associated identifying information which the provider is prompted to provide per the customer's configuration. PHI may be included in this data. Security topics for this system are covered in separate documentation available upon request.

DATA ENCRYPTION

Data in Transit

All data transmitted between the client applications, the Fusion Narrate speech recognition servers, and the Fusion Narrate CAPD servers use TLS 1.2 with 256-bit AES encryption (Cipher: TLS_RSA_WITH_AES_256_CBC_SHA256). The Fusion Narrate client, Fusion Narrate Speech Keyboard, and Fusion Narrate Wireless Microphone use 256-bit encryption (Cipher: TLS_DHE_RSA_WITH_AES_256_GCM_SHA384). The SayIt from Dolbey client uses the Java Runtime, which installs with 128-bit AES cipher encryption by default. To reach 256-bit encryption the Unlimited Strength Java Cryptography Extension Policy from Oracle must be installed on the clients. Data transmitted between the Administration Console and servers use a web browser. The most common browsers support and use 256-bit encryption (Cipher: TLS_RSA_WITH_AES_256_GCM_SHA384).

Data at Rest

All data at rest on the Fusion Narrate speech recognition servers and the Fusion Narrate CAPD servers, including log files, is encrypted with AES 256-bit encryption. Encryption within the Fusion Narrate Text premise based system is covered in separate documentation available upon request.

On the client device, all data stored by the Fusion Narrate client application is encrypted using AES 256-bit encryption, including high-level log files (when enabled) and data stored temporarily if the optional Fusion Narrate Text solution is used. While it is possible for an administrator to elect to download audio and recognized text to the client device via the cloud-based Administration Console, downloading data is not recommended; a customer that downloads such data should employ an appropriate third party encryption solution on the client device.

USER ACCOUNTS AND PASSWORD MANAGEMENT

User Accounts for both access to the Fusion Narrate client applications and the Administration Console are managed in the Administration Console.

User Account Types

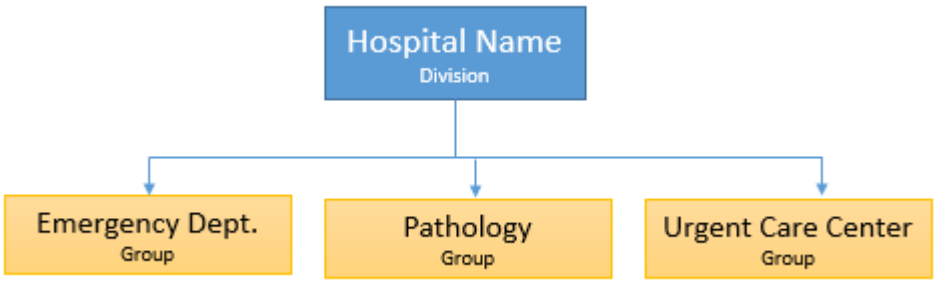
Client User: Provides access to use the Fusion Narrate clients and not the Administration Console

Administrator: Provides access to the Administration Console and optionally the Fusion Narrate clients. Administrators can be defined as one of the following roles:

- *Read-only*: Full read access to the Administration Console.
- *Transcriber*: Full read access to the Administration Console plus the ability to review and correct dictations in order to perform speech profile optimization services for the users.
- *Shortcut Designer:* Full read/write access to organization and user personal shortcuts for management purposes.
- *Customer Administrator*: Full read/write access to the Administration Console.

Hierarchy

A customer's User Accounts can be organized into divisions and groups. Administrator access can be restricted to specified divisions or groups. For example, a customer could organize its accounts into multiple groups representing different departments or locations, such as the following:



Password Settings

The system provides the following configurable password policies:

Strength Settings:

- Strong: Requires at least 8 characters and must contain lowercase, uppercase, a number and a symbol.
- Medium: Requires at least 6 characters and must contain a letter and number.
- Weak: Requires at least 1 character.

Require Password Change on Initial Login

Password History: Prevents the user from using a previous password, with a configurable history count.

Auto Lockout: Automatic account lockout after a configurable number of failed attempts.

Password Expiration: Configurable number of days before requiring users to change a password.

Client Inactivity Timeout: Configurable number of minutes before the client will auto logout the user.

All passwords are encrypted during transmission and at rest. User passwords are not visible to Administrators.

Administrators can reset passwords if required. Administrators can also disable or delete user accounts in accordance with the customer's policies.

Fusion Narrate Text Premise Based System

Usernames and passwords for the Fusion Narrate Text system are maintained in the premise based SQL Server database. This system also includes standard application security settings such as password expiration, strength, auto lockout, inactivity, and password history settings.

CLIENT SOFTWARE SECURITY

All client software access requires a unique user name and password.

The customer can elect to use third party anti-virus and anti-malware software packages in conjunction with the client applications. Please see the online help documentation for recommendations on exclusion settings to ensure optimal performance.

Fusion Narrate client executables are digitally signed with a VeriSign security certificate. The software is an XCopy based installation and does not require write access to any system areas of the operating system or elevated privileges in order to install or operate.

DATA STORAGE AND RETENTION

The Fusion Narrate application is designed as a tool to enable insertion of the patient narrative into a customer's application (such as an EHR); it is not intended to function as a record repository. This section describes the categories and configurable retention settings for data stored on the Fusion Narrate speech recognition servers. *To avoid the unnecessary retention of data, Dolbey recommends that customers configure the system to purge audio and speech recognized text frequently, at intervals no greater than 30 days.*

Front-End Speech Audio and Recognized Text

Audio received from the client devices is processed on the speech servers and the recognized text is returned. This audio and the recognized text is available to administrators from the Administration Console for a configurable period of time, after which it is purged. In addition, audio and recognized text is periodically collected, De-Identified, and pulled into a system-wide aggregated audio and text corpus. This anonymized data set is used to train acoustic profiles and language models for continual improvement to speech recognition accuracy. Customers may opt-out of contributing anonymized data to the aggregated corpus, but this may result in smaller improvements over time.

Back-End Dictation Audio and Recognized Text

Dictation recorded for back-end transcription, and the associated recognized text, is available to administrators from the Administration Console. Additionally, any demographic data such as MRN that the provider may have been prompted for is stored with the dictation record on the speech servers. By default this information is hidden in the Administration Console, but could be configured to be visible. The audio and text can be configured to purge at the same intervals as the speech audio and recognized text described above, and available for anonymization and inclusion in the audio and text corpus; this is the recommended approach as it helps improve speech recognition accuracy over time. Upon request, audio and recognized text records can be configured to purge immediately after being pulled into the premise-based Fusion Narrate Text transcription system. The demographic data associated with the records can be configured to purge at the same intervals as the audio and recognized text, or more frequently if desired.

Language Modeling Data

The system provides the ability to tune the language models for the various topics with text data in order to improve speech recognition accuracy. This can be performed in two different ways from within the Administration Console: Accuracy Optimization Services (AOS) and Sentence Modeling.

- AOS is an optional process of reviewing recognized texts in the Administration Console, correcting any recognition errors, and saving the corrected texts as part of the data used to improve a user's language model. These texts are stored on the speech servers and are retained until the associated user's account is deleted; optionally, audio and text also can be downloaded to the client device. If users dictate PHI, then the audio and associated texts could contain PHI; however, Dolbey recommends that users avoid dictating PHI whenever possible.

- Sentence Modeling is an optional process of importing representative texts for an individual or group of users using the Administration Console. This text data is retained on the speech servers until manually deleted, or until the associated groups or individual accounts are deleted. Dolbey recommends that customers redact any PHI from the text prior to submission for the Sentence Modeling process.

DATA CENTER SECURITY AND BACKUPS

Fusion Narrate Data Center

The Fusion Narrate speech recognition servers are housed in a secure data center located in the United States, and are backed up at another US location for disaster recovery purposes. The speech recognition software solution is managed and supported by the nVoq engineering team, exclusively within the United States. The following security measures protect the cloud environment:

- Required two-factor authentication for nVoq personnel to access the servers.
- Monthly patching of servers.
- Intrusion detection systems, threat protection systems, and penetration testing.
- Traffic restricted to required ports and protocols.
- Web Application Firewalls to filter and sanitize application requests.
- Industry standard best practices such as network segmentation, anti-virus, and network perimeter firewalls.
- Threats monitored at the network level and alerts automatically sent to the operations team.
- Separated production, test, and development environments.

nVoq undergoes annual audits for PCI-DDS Level 1 and SSAE 16 SOC 2 Type II compliance as well as regular penetration tests of its production systems. The SOC 2 audits include Trust Service Principles for Security, Availability and Confidentiality, including HIPAA administrative, physical, and technical safeguards under 45 CFR 164.308, 164.310, and 164.312.

Fusion Narrate CAPD Data Center

The Fusion Narrate CAPD servers are housed in a secure data center located in the United States, and are backed up at another US location for disaster recovery purposes. These servers are managed and supported by Rackspace together with the Dolbey operations team. The following security measures protect the cloud environment:

- Required two-factor authentication for Dolbey personnel to access the servers.
- Monthly patching of servers.
- Intrusion detection systems, threat protection systems, and penetration testing.
- Traffic restricted to required ports and protocols.
- Web Application Firewalls to filter and sanitize application requests.
- Industry standard best practices such as network segmentation, anti-virus, and network perimeter firewalls.
- Threats monitored at the network level and alerts automatically sent to the operations team.
- Separated production, test, and development environments.

The Fusion Narrate CAPD solution leverages Rackspace's secure cloud platform, which has achieved HITRUST CSF certification and undergoes annual SSAE 16 SOC 2 audits. Third-party penetration testing of the Fusion Narrate CAPD production system is performed on a regular basis.

SYSTEM AUDITING

System audit logging is performed on both the client workstation and the speech servers.

Fusion Narrate Client

The client logs record many application events which include:

- Log in, failed log in attempts, log out
- Inactivity timeouts
- Starting and ending a dictation
- Shortcut execution
- Setting changes

Additionally, these logs capture the current user's settings and some client device and microphone information.

Fusion Narrate Speech Servers

Interactions with the speech servers from client applications are also logged. The following events are available for viewing from the Administration Console:

- Starting and ending a dictation
- Shortcut execution
- Last activity timestamp

nVoq also can run Security Audit Queries on the following events:

- Log in, failed log in attempts, log out
- Changes to organizations and users
- Anyone who accesses a page that includes audio recordings and/or transcripts, for example, the Review and Correct page
- Account password changes

Fusion Narrate CAPD Servers

The Fusion Narrate CAPD servers store information about each text that is processed, including username, date time stamp, and any notifications that were presented to the user.