VoiceIt
Voiceprint Portal SDK
REST Users Guide

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Preface

The Voiceprint Portal Software Development Kit (SDK) helps you integrate our Voice Biometric Services into three different integration silos; we call them Web Servers (HTML5), Native Applications (iOS/Android), and Interactive Voice Response (IVR) systems.

Our SDK offers examples of coding – that compile and run – in HTML5, iOS, and Android. They show how each REST API is called, and include the supporting parameters and sound recording methods.

Please note that you must register with us in order to obtain a DeveloperID code. You will need this before you start using the Voiceprint Portal REST APIs described below.

User REST API Calls

createUser

This REST API call is used to register a new user profile within the Voiceprint Portal (VPP) service.

It creates a new user profile record in the VPP service database and returns true or false. Newly registered user profiles are enabled by default.

You can find our DeveloperID in your Welcome email when you have registered with us.

Method: POST
URL: https://siv.voiceprintportal.com/sivservice/api/users
Headers:
'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId,
'VsitFirstName': firstName,
'VsitLastName': lastName,
'VsitPhone1': phone1,
'VsitPhone2': phone2,
'VsitPhone3': phone3

createUser - continued

Parameters

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
developerId	Assigned after registration. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
firstName	The user's first name This is a required parameter and cannot be *null*.
lastName	The user's last name This is a required parameter and cannot be *null*.
phone1	The user's phone1 This is a required parameter and cannot be *null*.
phone2	The user's phone2
phone3	The user's phone3

deleteUser

This REST API call is used to delete an existing user profile within the Voiceprint Portal (VPP) service.

It deletes an existing user profile record from the VPP service database and returns true or false.

Method: DELETE
URL: https://siv.voiceprintportal.com/sivservice/api/users
Headers: 'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId

Parameters

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
developerId	Assigned after registration. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

getUser

This REST API call is used to retrieve an existing user profile within the Voiceprint Portal (VPP) service.

It retrieves an existing user profile record from the VPP service database and returns true or false.

Method: GET
URL: https://siv.voiceprintportal.com/sivservice/api/users
Headers: 'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId

Parameters

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
developerId	Assigned after registration. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

setUser

This REST API call is used to update an existing user profile within the Voiceprint Portal (VPP) service.

It updates an existing user profile record within the VPP service database and returns true or false.

Method: PUT
URL: https://siv.voiceprintportal.com/sivservice/api/users
Headers: 'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId,
'VsitFirstName': firstName,
'VsitLastName': lastName,
'VsitPhone1': phone1,
'VsitPhone2': phone2,
'VsitPhone3': phone3

Parameters

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

setUser - continued

Parameter	Description
developerId	Assigned after registration. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
firstName	The user's first name This is a required parameter and cannot be *null*.
lastName	The user's last name This is a required parameter and cannot be *null*.
phone1	The user's phone1 This is a required parameter and cannot be *null*.
phone2	The user's phone2
phone3	The user's phone3

Enrollment REST API Calls

createEnrollment

This REST API call is used to create a new enrollment template for the specified user profile within the Voiceprint Portal (VPP) service.

It creates a new enrollment template for the specified user profile in the VPP service database and returns true or false. We recommend a minimum of three (3) enrollment templates per voiceprint*.

Please note our voiceprint phrases are Text-Dependent*. We recommend the following voiceprint phrase (vpp) "***My name is <firstname><lastname> authenticate me.***" Minimum duration of vpp is 1.5 second.

Method: POST
URL: https://siv.voiceprintportal.com/sivservice/api/enrollments
Headers: 'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId
Data: contentType: 'audio/wav',
data: wav,
processData: false,

Parameters

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

createEnrollment - continued

Parameter	Description
developerId	Assigned after registration. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
wav	PCM Wave Data 44.1 kHz, 22.05 kHz 16-bit Stereo contentType “audio/wav” This is a required parameter and cannot be *null*.

createEnrollmentByWavUrl

This REST API call is used to create a new enrollment template for the specified user profile within the Voiceprint Portal (VPP) service via a pre-recorded sound file.

It creates a new enrollment template for the specified user profile in the VPP service database and returns true or false. We recommend a minimum of three (3) enrollment templates per voiceprint*.

Please note our voiceprint phrases are Text-Dependent*. We recommend the following voiceprint phrase (vpp) "***My name is <firstname><lastname> authenticate me.***" Minimum duration of vpp is 1.5 second.

Method: POST
URL: https://siv.voiceprintportal.com/sivservice/api/enrollments/bywavurl
Headers: 'VsitwavURL': wavurl,
'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId

Parameters

Parameter	Description
wavurl	The fully qualified URL to the pre-recorded sound file. Codecs Supported (mp3, mp2, wav, sln, u-law, pcm, and others). This is a required parameter and cannot be *null*.
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

createEnrollmentByWavUrl - continued

Parameter	Description
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
developerId	Assigned after registration. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

deleteEnrollment

This REST API call is used to delete an existing enrollment template for the specified user profile within the Voiceprint Portal (VPP) service.

It deletes an existing enrollment template for the specified user profile from the VPP service database and returns true or false.

Method: DELETE
URL: https://siv.voiceprintportal.com/sivservice/api/enrollments
Headers: 'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId

Parameters

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

deleteEnrollment - continued

Parameter	Description
developerId	Assigned after registration. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
Enrollment	The enrollment ID value is retrieve from the getEnrollment REST API call. This value is numeric. This is a required parameter and cannot be *null*.

getEnrollments

This REST API call is used to retrieve the existing enrollment template(s) for the specified user profile within the Voiceprint Portal (VPP) service.

It retrieves the existing enrollment template(s) for the specified user profile from the VPP service database and returns true or false.

Method: GET
URL: https://siv.voiceprintportal.com/sivservice/api/enrollments
Headers: 'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId

Parameters

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

getEnrollments - continued

Parameter	Description
developerId	Assigned after registration. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

Authentication REST API Call

authentication

This REST API call is used to authenticate the specified user profile within the Voiceprint Portal (VPP) service.

It authenticates the specified user profile in the VPP service database and returns success or failure.

Please note our voiceprint phrases are Text-Dependent*. We recommend the following voiceprint phrase (vpp) "***My name is <firstname><lastname> authenticate me.***" Minimum duration of vpp is 1.5 second.

On the authentication call we recommend calling with 0 for accuracy, 5 for accuracy passes, 2 for accuracy pass increment, and 85-90 for confidence. This allows multiple attempts at secure authentication without having to re-record and send the voiceprint phrase.

Method: POST
URL: https://siv.voiceprintportal.com/sivservice/api/authentications
Headers:
'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId,
'VsitAccuracy': accuracy,
'VsitAccuracyPasses': accuracyPasses,
'VsitAccuracyPassIncrement': accuracyPassIncrement,
'VsitConfidence': confidence
Data:
contentType: 'audio/wav',
data: wav,
processData: false,

Parameters

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.

authentication – continued

Parameter	Description
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
accuracy	This is used to set how strict or lax you wish the authentication to be. The values are 0 - 5. Zero (0) being the most strict setting and 5 being the most lax setting. This is a required parameter and cannot be *null*.
accuracyPasses	This is used to set how many passes you wish to take. These values are 1-10. This is required parameter and cannot be *null*.
accuracyPassIncrement	This is used to set how much you want to increase accuracy parameter with each accuracy pass. These values are 1-5. This is required parameter and cannot be *null*.

authentication – continued

Parameter	Description
confidence	This is used to set an acceptable confidence level needed for successful authentication. The values are 85 – 100. 85 being most lax and 100 being most strict. This is a required parameter and cannot be *null*.
wav	PCM Wave Data 44.1 kHz, 22.05 kHz, or 11.025kHz 16-bit 2-Channel (Stereo) contentType “audio/wav” This is a required parameter and cannot be *null*.

authenticationByWavUrl

This REST API call is used to authenticate the specified user profile within the Voiceprint Portal (VPP) service via a pre-recorded sound file.

It authenticates the specified user profile in the VPP service database and returns success or failure.

Please note our voiceprint phrases are Text-Dependent*. We recommend the following voiceprint phrase (vpp) "***My name is <firstname><lastname> authenticate me.***" Minimum duration of vpp is 1.5 second. ***Please note: You cannot use enrollmentByWavUrl sound file for authentication. This is because of our anti-spoofing technology.***

On the authentication call we recommend calling with 0 for accuracy, 5 for accuracy passes, 2 for accuracy pass increment, and 85-90 for confidence. This allows multiple attempts at secure authentication without having to re-record and send the voiceprint phrase.

Method: POST
URL: https://siv.voiceprintportal.com/sivservice/api/authentications/bywavurl
Headers:
'VsitwavURL': wavurl,
'VsitEmail': email,
'VsitPassword': CryptoJS.SHA256(password),
'VsitDeveloperId': developerId,
'VsitAccuracy': accuracy,
'VsitAccuracyPasses': accuracyPasses,
'VsitAccuracyPassIncrement': accuracyPassIncrement,
'VsitConfidence': confidence

Parameters

Parameter	Description
wavurl	The fully qualified URL to the pre-recorded sound file. Codecs Supported (mp3, mp2, wav, sln, u-law, pcm, and others). This is a required parameter and cannot be *null*.

authenticationByWavUrl – continued

Parameter	Description
email	The user's valid email address. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
password	The user's password. Provided as part of the REST API Access Credentials. This is a required parameter and cannot be *null*.
accuracy	This is used to set how strict or lax you wish the authentication to be. The values are 0 - 5. Zero (0) being the most strict setting and 5 being the most lax setting. This is a required parameter and cannot be *null*.
accuracyPasses	This is used to set how many passes you wish to take. These values are 1-10. This is required parameter and cannot be *null*.
accuracyPassIncrement	This is used to set how much you want to increase accuracy parameter with each accuracy pass. These values are 1-5. This is required parameter and cannot be *null*.

authenticationByWavUrl – continued

Parameter	Description
confidence	This is used to set an acceptable confidence level needed for successful authentication. The values are 85 – 100. 85 being most lax and 100 being most strict. This is a required parameter and cannot be *null*.

Developer Portal

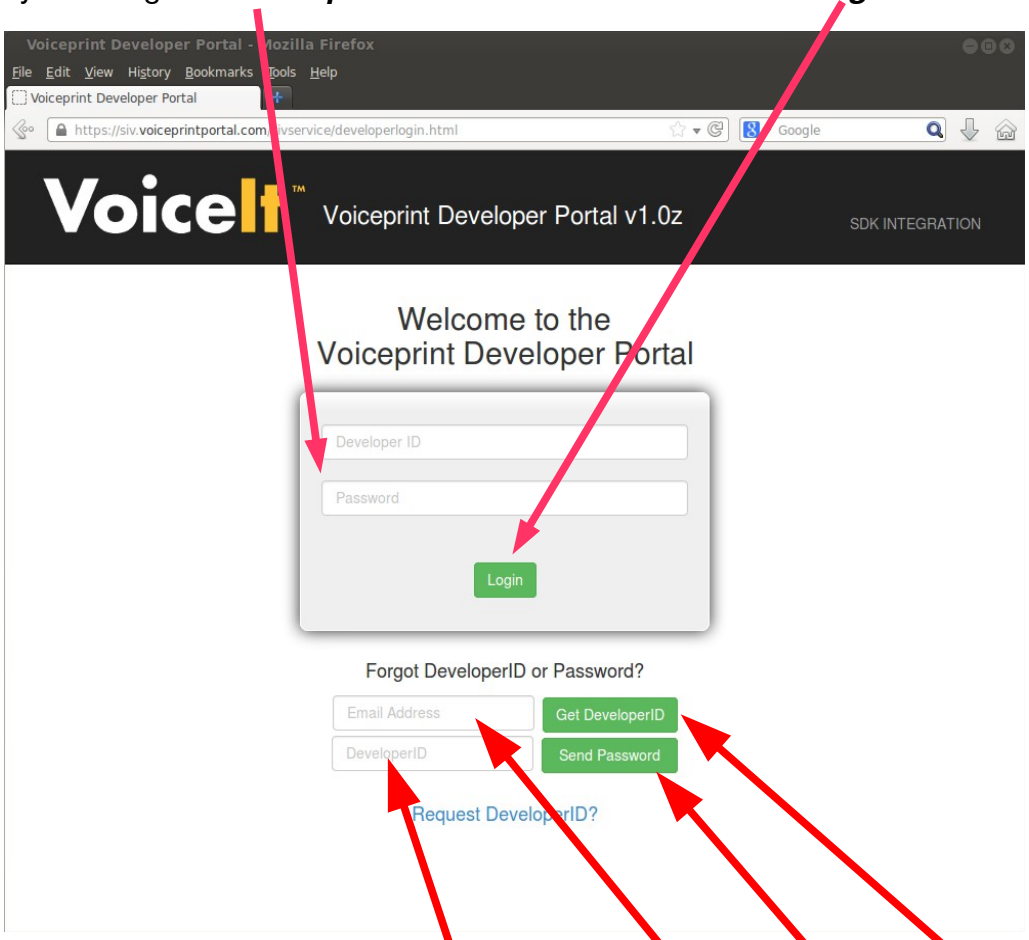
The developer portal allows management of user credentials, enrollments, and authentication activity.

After logging into: https://siv.voiceprintportal.com the developer can search, create, update, and delete user credentials, manage their enrollments and view their authentication activity.

User Management

Developer Login

To manage users navigate to https://siv.voiceprintportal.com/sivservice/developerlogin.html. Then enter your assigned ***DeveloperID*** and ***Password*** and click on ***Login*** button.

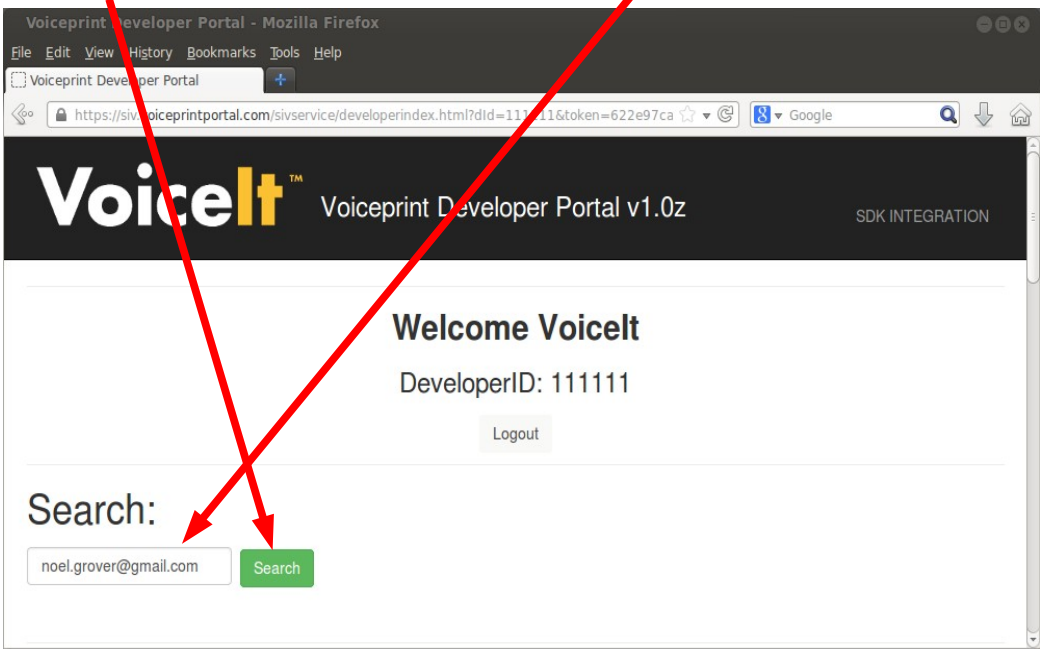


If you forget your **DeveloperID** enter registered company email and click on the **Get DeveloperID** button. The assigned **DeveloperID** will be emailed.

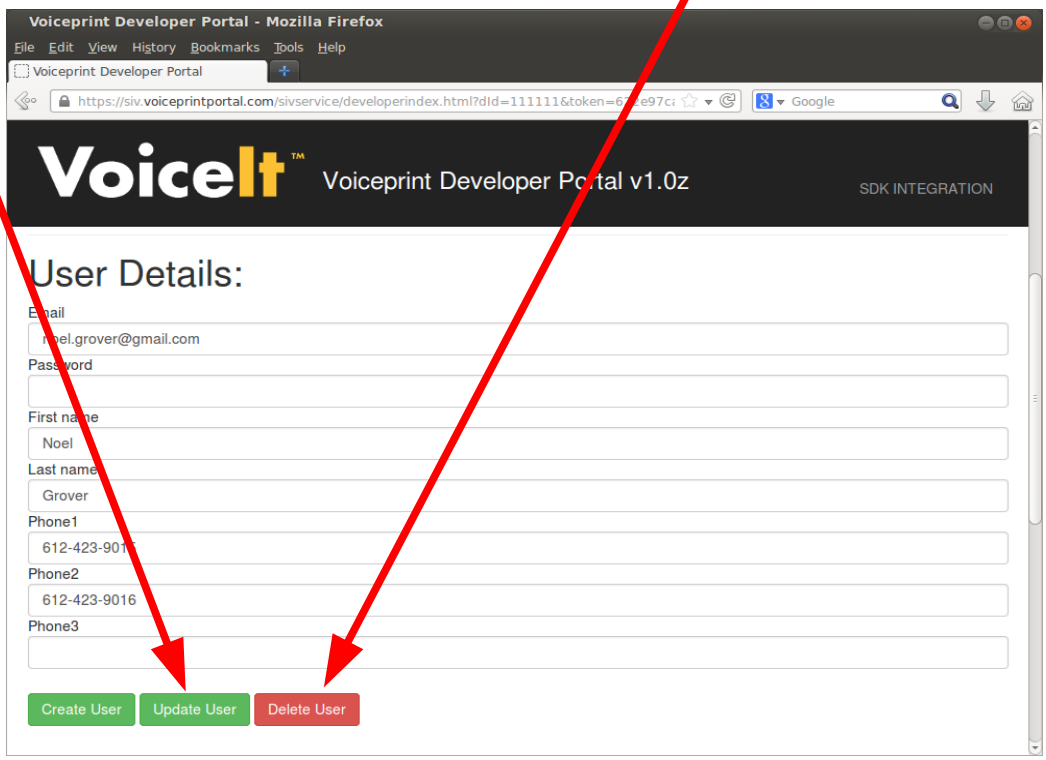
If you forget your **Password** enter assigned **DeveloperID** and click on the **Send Password** button. A new **Password** for assigned **DeveloperID** will be emailed.

User Search, Update, and Delete

To search and display a user's information, enter their email address in the Search Box. Then click on the ***Search*** button.

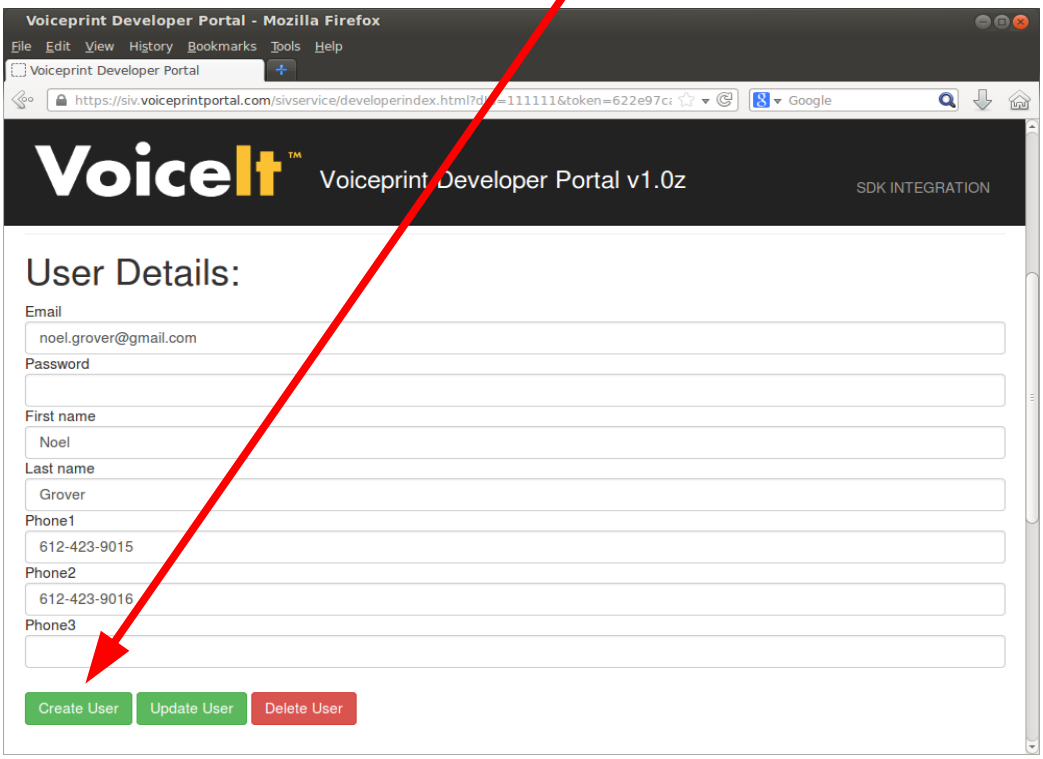


If found, User Details are populated. To update, simply modify details and click on the ***Update User*** button. To remove user from system click on the ***Delete User*** button.



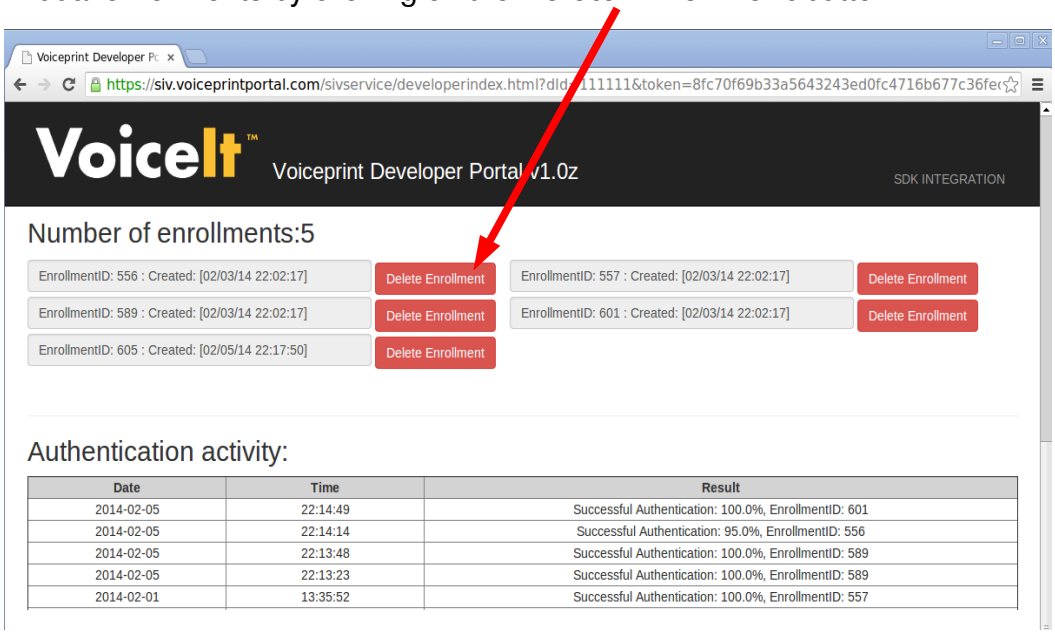
User Create

The typical user will create their own profile through your company's integration of **createUser API** (page 3). However, if a new user needs assistance you can create a user profile through the Voiceprint Developer Portal. To create a new user enter in their Email, Password, First name, Last name, Phone 1, and click on the **Create User** button.



User Enrollments

The User Details includes a list of enrollments and their creation date. Should you need to assist a user in removing a bad enrollment or re-enrolling a new Voiceprint Phrase, you can delete individual enrollments by clicking on the **Delete Enrollment** button.



User Authentication Activity

The User Authentication Activity log shows all attempts of authentication for the displayed User Profile. Here you can view Failed and Successful attempts along with percentages and EnrollmentIDs.

Term Definitions

Biometrics. 'Biometrics' as a term refers to the measurement of a physical feature or repeatable action of an individual. There are many forms of biometric measurements taken. For example: fingerprints, retinal/iris scans, facial recognition, hand geometry, signatures, DNA, and of course voiceprints. Voice biometrics is simply a reference to the study and measurement of how individuals speak.

Enrollment. This is the initial process of collecting data. In the case of voice biometrics, enrollment is the capture of voice samples from an individual with the intent of creating a voiceprint from the unique characteristics (or features) of their speech patterns. Enrollment can be active and voluntary or passive and involuntary.

Equal Error Rate (EER). This is the most common term used to judge the accuracy of biometric and other security systems. The equal error rate (or EER) of any security tool is simply the operating point where the percentage of false acceptances is equal to the percentage of false rejections. The lower the EER value, the better, as it is desirable to be both very good at recognizing valid system users as well as very good at screening out impostors and fraudsters.

False-Acceptance Rate (FAR). In biometric and other security systems, the false acceptance rate (or FAR) is the percentage of times when the system will incorrectly let an impostor or fraudsters in as a valid user. This scenario is sometimes also referred to as a 'Type II' error. Giving unauthorized users access to any system can have profound implications, so it is very important to tune biometric systems to low FAR levels.

False-Rejection Rate (FRR). In biometric and other security systems, the false rejection rate (or FRR) is the percentage of times when the system will incorrectly reject a valid user. This scenario is sometimes also referred to as a 'Type I' error. Rejecting a valid user is an inconvenience and this can have implications for long-term user acceptance. To help manage these types of errors, tuning is recommended, along with offering retries for users that 'pass' other security factors.

Identification. During identification a user submits speech samples to the voice biometric engine without first making any claim of identity. The engine then extracts vocal features from the temporary sample and performs comparisons to a set of previously stored voiceprints, identifying the best/closest match.

Interactive Voice Response (IVR). Interactive voice response, or IVR, refers to telephony technology in which someone uses a telephone to interact with an application or database system. IVR technology does not require that a live person answer the phone; in fact, IVR systems allow for callers to answer questions or navigate menus using either a touch-tone phone, their voices, or a combination of both. IVR systems are very common -- they are prevalent in almost every industry.

Term Definitions – continued

Multi-Factor Authentication (MFA). An authentication factor refers to a piece of information and/or a technique used to authenticate someone's identity. Factors are something you have (like a picture ID or token), something you know (like a password, PIN, or answer to a shared secret), or something you are (such as a biometric -- fingerprint, voiceprint, etc). Multi-Factor Authentication, or MFA, is a system where multiple factors are obtained during a single session to authenticate an individual, yielding a greater match confidence.

Speech Recognition (ASR). Speech recognition is also referred to as voice recognition or automatic speech recognition (ASR). ASR is a technology where spoken words are recognized for specific content. This technology is typically used in call centers and IVR systems. Essentially, a caller speaks when prompted, then his or her response is captured and converted to an electronic format. The electronic content is processed and transformed into patterns that are identified by a computer system as specific words. Based on the content identified, the computer system typically takes some kind of action. As an example ... please say 'sales' to speak with a sales agent or 'tech support' to get technical support, etc.

Text-Dependent System. A text-dependent voice biometric system prompts users to speak specific words, phrases, or numbers -- placing known limits on what can be said. These same limits are then imposed during all enrollment, verification, and identification processes. Text-dependent systems tend to be easy to understand and use.

Text-Independent System. A text-independent voice biometric system does not require users to say specific words, phrases, or numbers -- almost any speech can be used. However, the enrollment process for text independent systems typically needs to be longer than text dependent systems, as more speech is needed to create a more "complete" voiceprint for users.

Text-to-Speech (TTS). The term 'text-to-speech' (or TTS) refers to speech synthesis, or a process where a computer converts written text into spoken voice output. Early TTS systems were developed to aid the visually impaired by offering them computer-generated speech that would 'read' text passages to them. Today, TTS technology is widely used within IVRs and call centers to dynamically generate and speak information to callers.

Voice Verification. Voice verification, or voice authentication, or speaker verification refers to the process of verifying someone's identity by evaluating their unique vocal characteristics. In a voice verification application, users make an initial claim of identity (perhaps by entering a user id and password to a web-based system, or by keying in a partial account number with their telephone keypad). The application then prompts users for a speech sample and sends it to a voice authentication system. The voice authentication system extracts unique vocal features from the sample, compares them to the stored voiceprint for that user, and then returns the result to the application. The application can then decide whether to "pass" the user and let them continue or "fail" them and perform some alternate process.

Term Definitions – continued

Voiceprint. A voiceprint is a mathematical representation of the unique physiological and behavioral features of a person's voice stored in electronic format (frequently proprietary). A voiceprint is not a recording or file that can be played back or otherwise listened to. Rather, a voiceprint is derived from audio analysis and statistical modeling of vocal features. Voiceprints cannot be reverse-engineered back into original speech, so this gives voiceprints very high innate security levels relative to information storage concerns.

VoiceXML. VoiceXML is a voice-based Extensible Markup Language that has fast become the de-facto standard within call centers and IVR systems. Specifically, VoiceXML is a standard used for specifying interactive voice dialogs between people and computing systems. It does not require specific hardware to run, nor does it require proprietary extensions for any of the major telephone systems providers.