VoiceSaver® IVR

Interactive Voice Response
GUI Application Generator

June 06, 2022

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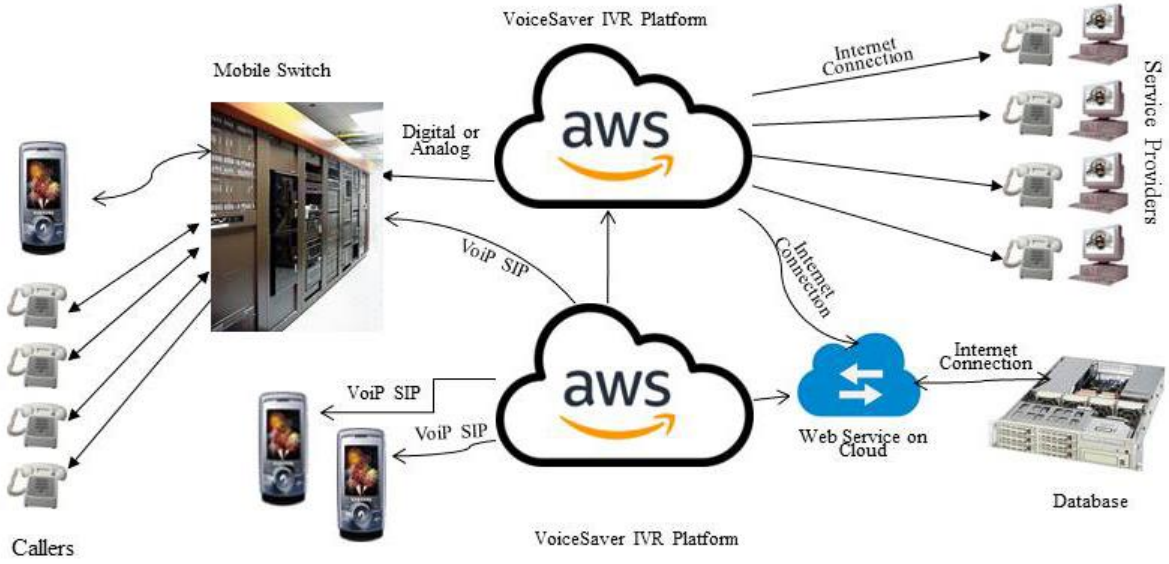
Introduction

Interactive Voice Response (IVR) software is a technology that automates interaction with telephone callers via phone and SMS. Whether you need to dial out or send an SMS to remind a customer about an outstanding payment or upcoming appointment, provide order information, or warn them of an emergency, VoiceSaver IVR is the right solution. Our powerful software allows companies to turn their vision of an interactive call or messaging flow into reality.

The VoiceSaver® IVR saves time, minimizes caller authentication times, proactively anticipates needs, remembers caller preferences, and generates exceptional results for callers.

The following diagram shows the general topology of how VoiceSaver® IVR fits into your telephony/messaging network.



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VoiceSaver® IVR

The VoiceSaver® IVR allows a system integrator or user to implement and make changes to a call flow in real time. Its user-friendly, drag & drop design allows changes to be quickly without fear of making a mistake. As a system integrator, this allows you to implement customized call flow requirements for your clients in a short period of time. This document shows you some of the capabilities of the VoiceSaver® IVR system.

VoiceSaver® IVR may be run on the following platforms:

1. Microsoft® Windows 10
2. Microsoft® Windows 2012-2019
3. Linux OS
4. Amazon Web Services (AWS)

VoiceSaver® IVR uses the following technologies:

1. Dialogic® Time Division Multiplexed (TDM) based systems.
2. Dialogic® Analog based systems.
3. Asterisk® PBX
4. Cisco® Voice Gateways
5. Twilio® network.
6. Synway - China

VoiceSaver® IVR command blocks support for the following fundamental services:

1. Receive a phone call.
2. Answer a phone call.
3. Make outbound calls.
4. Transfer a phone call to another destination.
5. Play voice file.
6. Record voice to a file.
7. Receive Dual Tone Multi-frequency (DTMF).
8. Generate DTMF
9. Receive Short Message Service (SMS)
10. Send SMS
11. Receive and email.
12. Send an email.
13. Send a message to a WhatsApp user.
14. Send a request to a web service.
15. Receive information from a web service.

VoiceSaver® IVR Command Blocks

The following menu of command blocks are available to you within the VoiceSaver IVR :

The following call flow example produced by VoiceSaver® IVR receives a call, plays the hours of operation, and disconnects:

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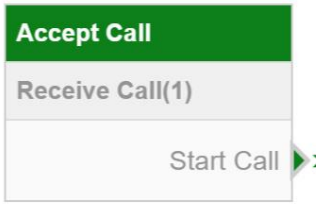
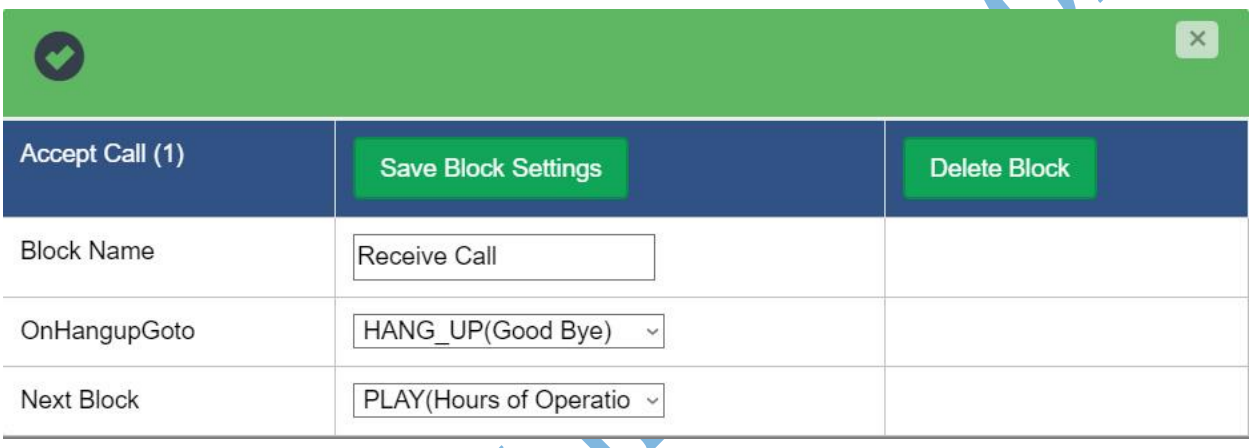
Accept Call



The Accept Call command block is activated when the call flow receives a new telephone call:

By double clicking on the Accept Call area of the command block, the following data entry form appears:



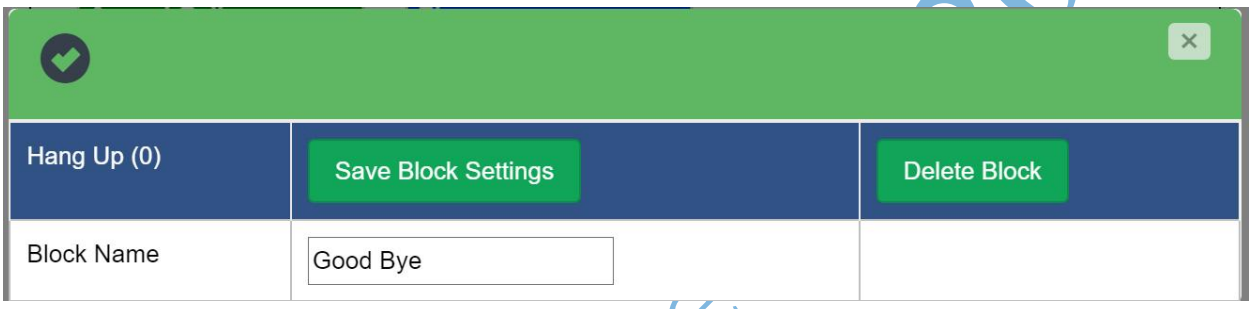
In the Block Name field, you should enter a descriptive name for this block. Then, tell the system which block to proceed to if the caller Hangs Up (OnHangupGoto) or if the caller does nothing (Next Block).

In this case, if the caller hangs up, the system will hang up and play "Good Bye." If the caller does nothing, it will continue to play the Hours of Operation.

Hang Up

The Hang Up command block disconnects the call, stops playing any messages, stops recording, and stops any other functions that may be in progress.

By double clicking on the Hang Up area of the command block, the following data entry form appears:



The form allows you to enter the Block Name. In the example above, it is set to “Good Bye”.

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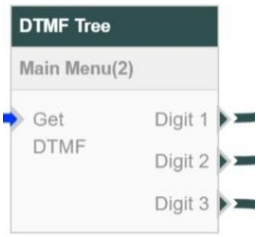
DTMF Tree Command Block



The DTMF Tree command block receives a DTMF digit from the caller and based on that key branches to different command blocks.

Click on the DTMF tree area of the command block to bring up the data entry form. In the form below, a caller can press 1 to listen to the Hours of Operation, press 2 for Directions, and press 3 to listen to the email address of the organization.

DTMF Tree (2)	Save Block Settings	Delete Block
Block Name	Main Menu	
OnHangupGoto	HANG_UP(Good Bye)	
Error Allowed	3	
Error-Play/Next	Not Set	Not Set
Timeout-Play/Next	Not Set	Not Set
Invalid Digit-Play/Next	Not Set	Not Set
Store Variable		
Speech Recognition Grammar	Do not use Speech Gra	
Digit 1	PLAY(Hours of Operatic	1
Digit 2	PLAY(Directions)	2
Digit 3	PLAY(Email Address)	3
Digit 4	Not Set	4
Digit 5	Not Set	5
Digit 6	Not Set	6
Digit 7	Not Set	7
Digit 8	Not Set	8
Digit 9	Not Set	9
Digit 0	Not Set	0
Digit *	Not Set	*
Digit #	Not Set	#

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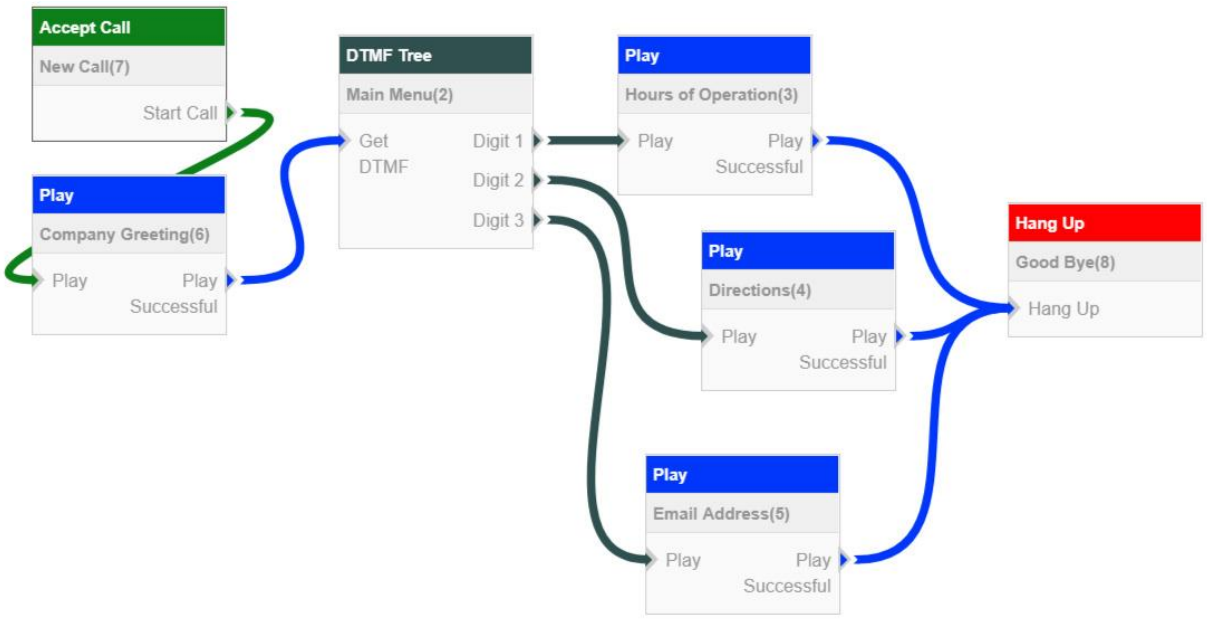
DTMF Tree Call Flow Example

This is what the company menu example above looks like after the DTMF Tree Command Block is completed:



In the above example, the system receives a new call and plays the Company Greeting message. Then it asks the caller to "Press 1 for Hours of Operation, press 2 for Directions, and press 3 for the email address of the Company". The caller to presses a digit on his phone and the system based on the digit entered sends the flow to one of the Play blocks. After playing the information, the flow jumps to the Hang Up block. The call disconnects.

You may modify the data in command blocks forms to allow a caller to press a key to repeat the information and handle the error conditions. However from a design and expression point of view, it is a good idea to implement the sunny conditions first and then add the error handling and abnormal conditions.

Get DTMF

The Get DTMF command block reads the DTMF digits the caller enters from his/her telephone keypad.

After the digits have been entered, the control goes to the next block specified in the Get DTMF form.

Click the area under Get DTMF to open the following form:

Get DTMF (9)	Save Block Settings	Delete Block
Block Name	Account Number	
OnHangupGoto	HANG_UP(Good Bye)	
Digits to Get	Enter Manually	6
Speech Recognition Grammar	Do not use Speech Grar	
Store Variable		
Next Block	PLAY(Account Number)	
Error Allowed	3	
Error-Play/Next	Not Set	HANG_UP(Good Bye)
Timeout-Play/Next	Not Set	HANG_UP(Good Bye)
Minimum # Digits	Enter Manually	4
Min-Digit-Play/Next	Not Set	PLAY(Company Greetin

The form allows to you set various settings, such as the minimum number of digits, the amount of time to wait, how many errors to allow, etc. The block above is accepting an account number from the caller with a minimum of 4 digits and maximum of 6. If the caller makes more than 3 errors, the system will hang up.

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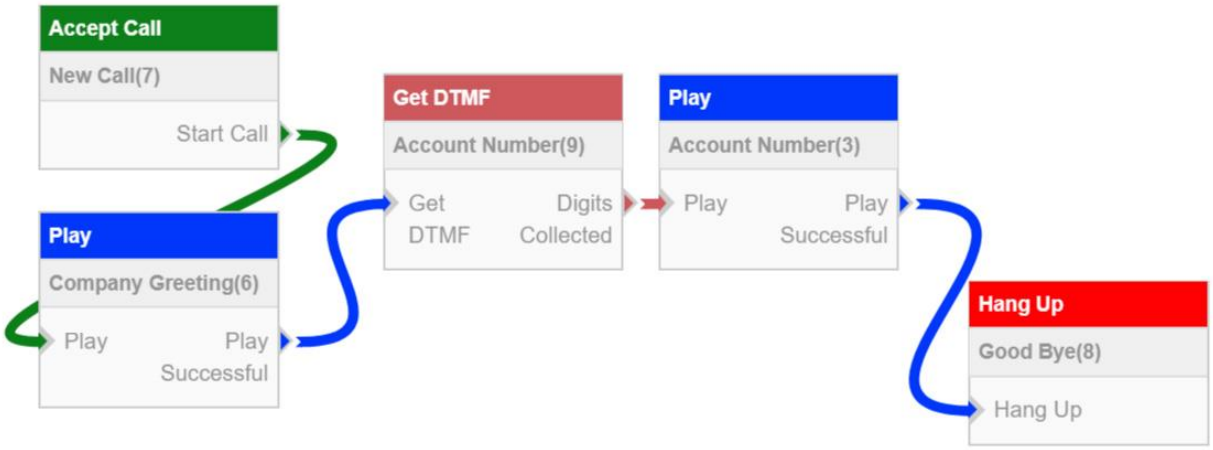
Get DTMF Call Flow Example

The following example shows the use of the Get DTMF command block. The call flow asks the caller to enter his/her account number and plays it back to him/her. If the caller does not enter anything, the flow goes to the HANG_UP command block and disconnect.



NOTE: Many of the conditions are not connected by arrows to the Hang Up command block even though they may result in a Hang Up condition. We have done this intentionally to prevent a cluttered screen.

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Send DTMF

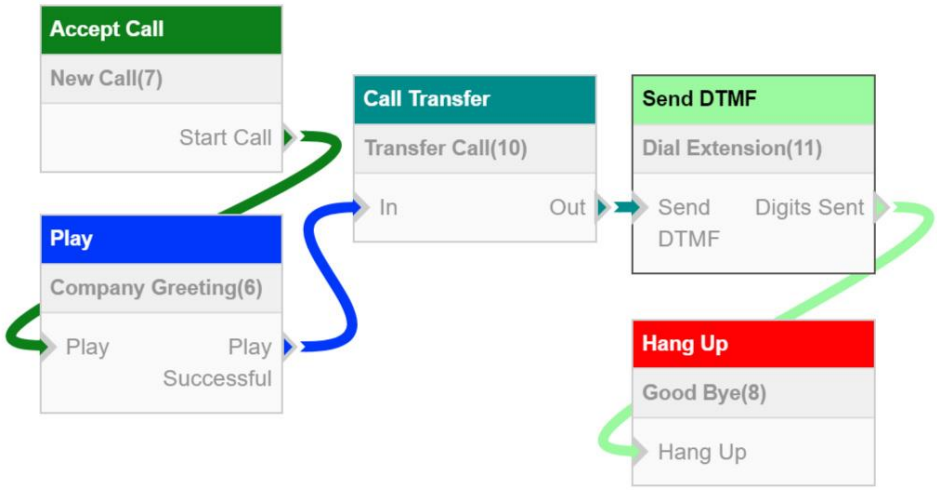
The Send DTMF command block generates DTMF digits. The uses are for making outbound calls or entering the extension number once a PBX has answered a transferred or dialed call.

Double-click the Send DTMF area of the command. The following form appears:

Send DTMF (11)	Save Block Settings	Delete Block
Block Name	Dial Extension	
OnHangupGoto	Not Set	
Digits to Send	ExtensionNo	
Next Block	HANG_UP(Good Bye)	

In the form above, the digits to dial are stored in a variable called “ExtensionNo”. Once the system executes this command, it generates the DTMF sounds based on the data in the “ExtensionNo” variable.

The example below shows how the Send DTMF command block is used:
The inbound call is transferred to a phone number and then Send DTMF generates the DTMF digits to transfer to a specific extension.



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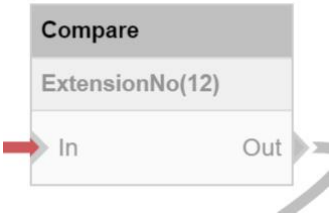
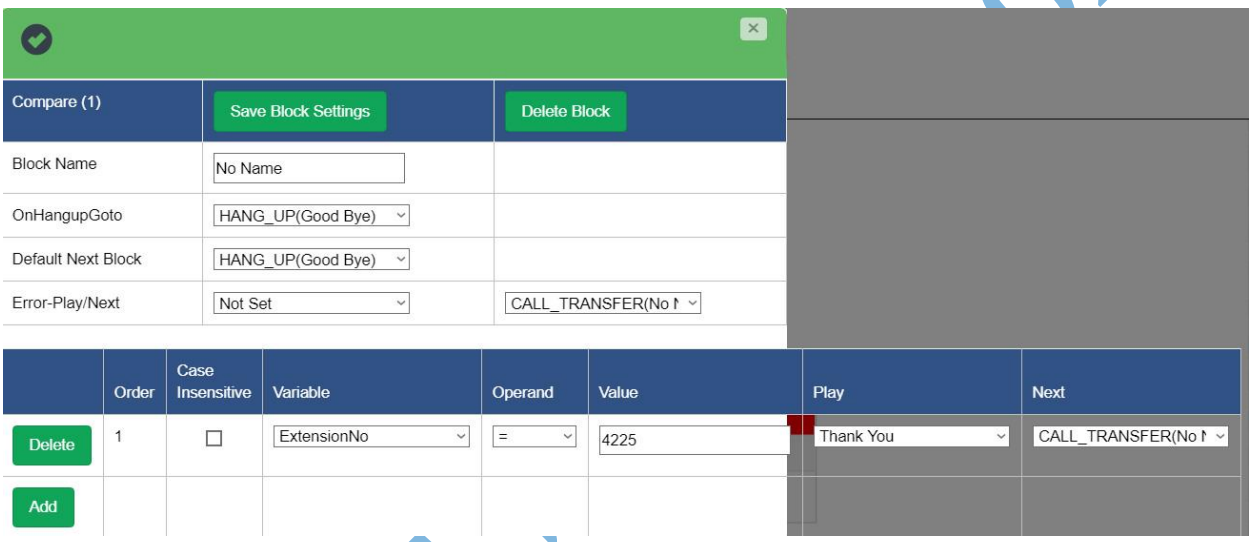
Compare

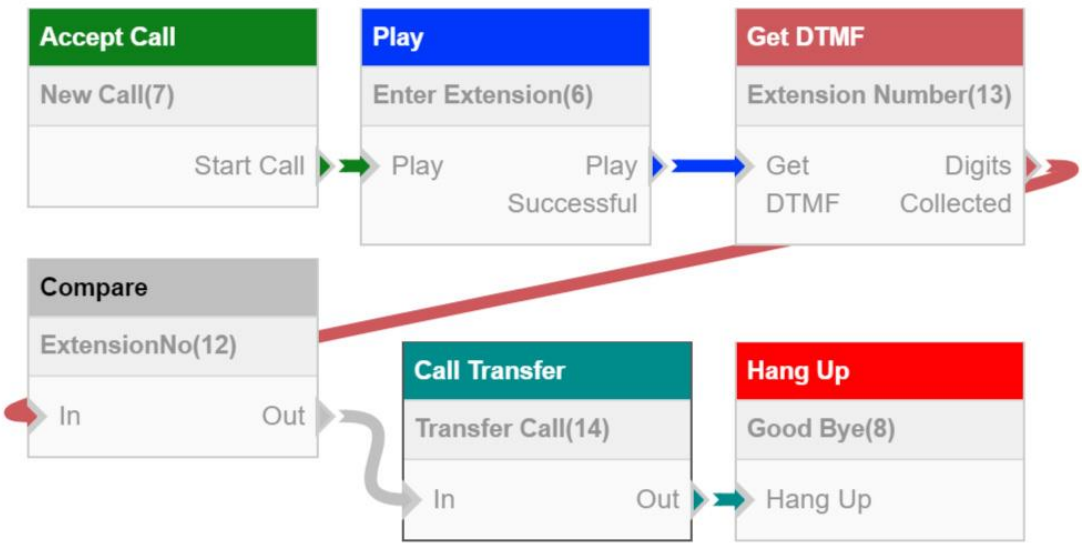


The Compare command block allows you to take an action based on the value of a specific variable. You can add as many conditions as you need.

In the example below, we are checking to see if the extension number equals 4225. If so, the system will play "Thank you" and transfer the call to the appropriate extension.



Below, you can see how Compare fits into the overall call flow:



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Play

The Play command block allows you to play a voice prompt to the caller. The file can be a pre-recorded message or it can use our text to speech engine that will play any message on the fly/

The Play block form is below. The example below plays the date and time which is stored in the variable Date_Time. The Play Type is set to "Interruptible" which means that the caller is able to press a DTMF key while the message is playing.

Play (2)	Save Block Settings	Delete Block
Block Name	Date and Time	
OnHangupGoto	HANG_UP(Good Bye)	
Next Block	HANG_UP(Good Bye)	
Error-Play/Next	Not Set	CALL_TRANSFER(No M
Error Repeats Allowed	3	
Store Variable	Date_Time	
Play Type	Interruptible	
Speech Recognition Grammar	Do not use Speech Grar	

Order	Play Type	Value To Play	Type
1	Play Variable	Date_Time	Date/Time

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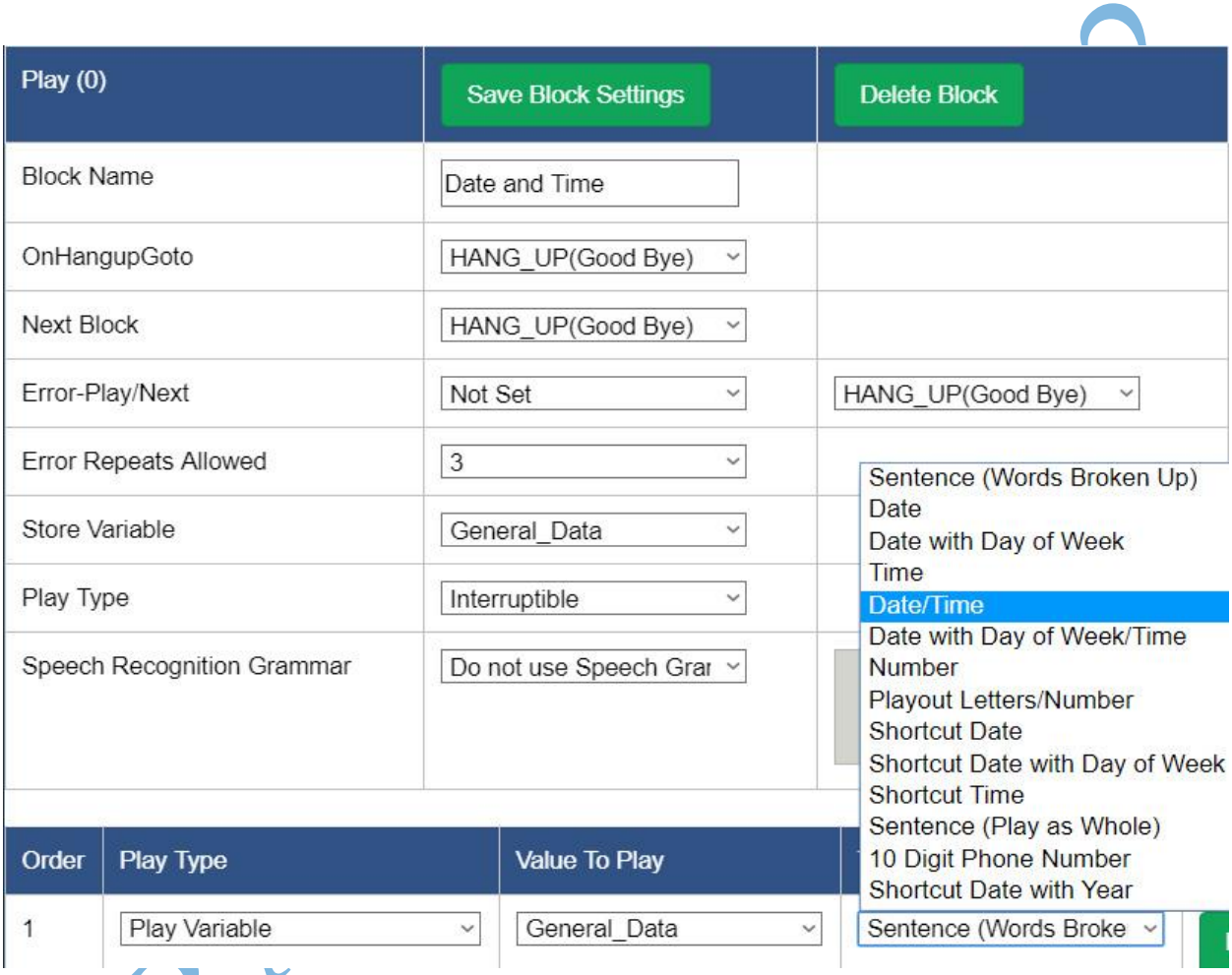
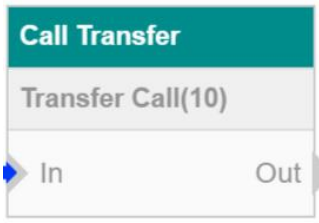
Play Block Options

The Play command allows you to select how a variable should be played. If you have currency it can play as One Thousand Two Hundred dollars. If the variable has data in the date format: 03/14/2019 11:34AM, if you indicate that variable is a Date/Time, the system plays out "March Fourteenth Two Thousand Nineteen Eleven Thirty Four AM." If you selected "Date with Day of Week/Time," the system would prepend the word "Thursday" to the message.



Call Transfer



The Call Transfer command block allows you to transfer a phone call to an extension or external phone number.

In the example below, the Call Transfer block directs the IVR to transfer the call to phone number "7322901900." If the called party answers the call, the system will play "Your appointment is scheduled for …." and disconnect the call. You can also set the Caller ID / ANI to use, set the Hold Music to play during the transfer, and decide whether or not to record the call.

Block Name	Transfer Call	
OnHangupGoto	Not Set	
Choose Transfer Type	Normal Transfer	
Number to Transfer to	Manually Enter Number	7322901900
ANI to Use	Manually Enter ANI to U	7671
Hold Music/Message	Free Music	
Variable to Store transfer status into	ExtensionNo	
Default Next Block	Not Set	
Record Call Settings	Do Not Record The Call	
Setup Trigger to a Web Service	Disable	

	Order	Status	Play	Next
Delete	1	Live Answer	Your Appointment is sch	HANG_UP(Good Bye)

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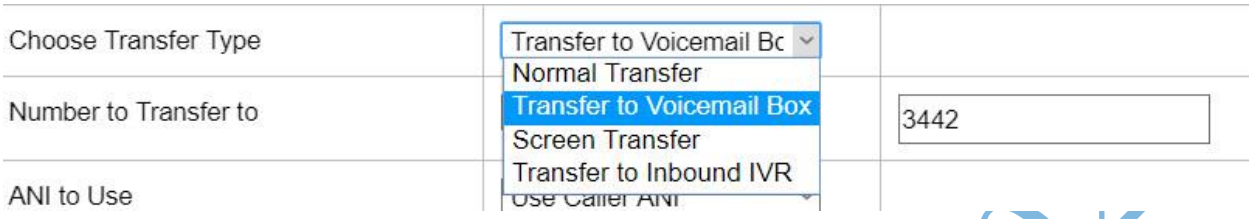
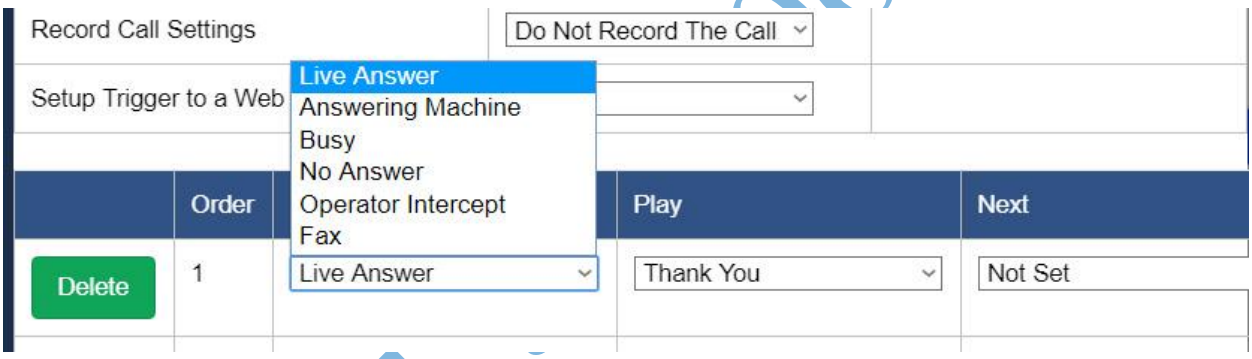
Call Transfer Options

The Call Transfer command block allows you to set the type of transfer that will take place. For example, you can transfer the call to a voice mail box and take a message by selecting “Transfer to Voicemail Box.” You can also transfer to another IVR or send a screen transfer.



Once the call is transferred, the system may encounter No Answer, Busy, Answering Machine, or Operator Intercepts. You can instruct the system how to handle each scenario. In the example below, if the called party answers the call, the system will play “Thank you.”



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Record File

The Record File command block allows you to record voice from the phone call and store it into a file on the IVR system.

The form below shows how the system will choose the file name and decide what to do after the file is recorded. The file name is dynamic based on the variable Message_File_Name to allow each file to have a unique name.

Record File (0)	Save Block Settings	Delete Block
Block Name	Message	
OnHangupGoto	HANG_UP(Good Bye)	
Recoring Filename	Message_File_Name	
Next Block	HANG_UP(Good Bye)	
Error Allowed	3	
Error-Play/Next	Not Set	HANG_UP(Good Bye)

Web Services

One of the most powerful features of VoiceSaver IVR is the ability to call external Web Services or applications to process code intense or database intense activities using a programming language that is more familiar to your developers.

The Web Services form below shows how the system would make a request to Microsoft Dynamic's API using the function "getcustomer()" and sending the variables "id" and "pin."

The result from the service response is placed in the variable "Collection_Agency." This data variable can be used in the future within the IVR flow.

Web Service (3)	Save Block Settings	Delete Block
Block Name	Microsoft	
OnHangupGoto	HANG_UP(Good Bye)	
Next Block	PLAY(Activation Key No	
Error-Play/Next	Not Set	HANG_UP(Good Bye)
Hold Music/Message	Not Set	

Map IVR variables to End Point IVR variables

Please select an End Point: MIcrosoft Dynamic

Please select a Call: getcustomer()

End Point / Call Parameters	Value Assignment	Value
id	IVR Variable	ExtensionNo
pin	IVR Variable	General_Data

End Point / Call Response	IVR Variable
account_status	Collection_Agency

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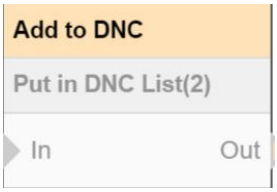
Add to DNC



The Add to DNC command allows you to add phone a number to the local or global Do Not Call list. The system will not call the numbers in the Do Not Call list.

The Add to DNC form below shows how to add a specific number (ExtensionNo) to the Global Do Not Call list.

Add to DNC (2)	Save Block Settings	Delete Block
Block Name	Put in DNC List	
OnHangupGoto	RECORD_FILE(No Nan	
Error Allowed	3	
Timeout-Play/Next	Not Set	RECORD_FILE(No Nan
Default Play & Next Block	Not Set	RECORD_FILE(No Nan
Number to add to DNC	ExtensionNo	
Choose DNC Type	Add to Global DNC	

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IVR Function

The IVR Function command allows you to activate a prebuilt call flow defined by a function name. This allows you to reuse frequently used IVR call flows throughout the IVR or across multiple IVRs without the need to create the same logic over and over.

The IVR Function form below defines a new function called "Get Credit Card" which asks the caller to enter his/her credit card number, expiration date, and validation code. Now, this function can be reused in other call flows to avoid rewriting the logic. (see example below)

IVR Function (4)	Save Block Settings	Delete Block
Block Name	Get Credit Card	
OnHangupGoto	HANG_UP(Good Bye)	
Next Block	PLAY(Account Number)	
Error-Play/Next	Ask to Enter Credit Carc	PLAY(Account Number)

IVR Function Variables to Pass and Return

Please select an IVR Function: Get the Credit Card Information(6)

Variables to Pass to the IVR Function	Value Assignment	Value
There are no parameters to send.		

Variables to map back from the IVR Function	IVR Variable
There is no response to receive.	

	Order	Case Insensitive	Variable	Operand	Value	Play	Next
Add							

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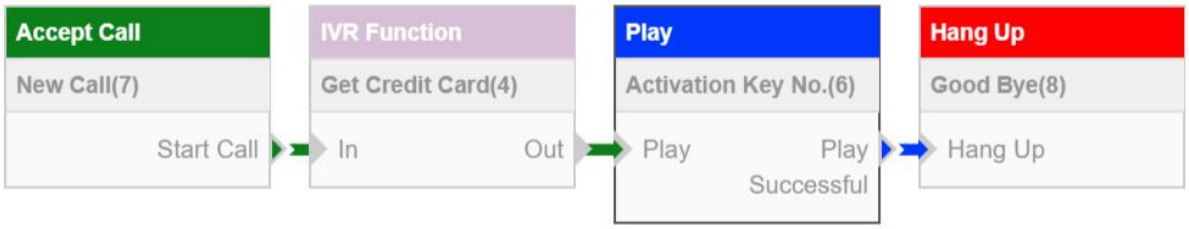
IVR Function Example

In the call flow example below, the software receives the call and activates the Get Credit Card Number IVR function. The function performs all the tasks needed to collect the credit card number and call a web service to validate the credit card. The function would then return back to the main IVR and continue with the information obtained from the "GetCreditCard()" function.



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