

# Cooking With Asterisk

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- Leif Madsen, Asterisk Consultant
- Co-author of Asterisk: The Future of Telephony (1<sup>st</sup>, 2<sup>nd</sup> editions) & Asterisk: The Definitive Guide (3<sup>rd</sup> edition)
  - 3<sup>rd</sup> edition written with Jim Van Meggelen and Russell Bryant
- Asterisk bug marshal
- Asterisk release manager
- Specialize in database integration and distributed call centre implementations

- Will use the Problem/Solution/Discussion methodology from O'Reilly cookbooks
- Start with the Problem
- Show the Solution to the problem (dialplan)
- Discuss why the problem was solved in the way it was

# Which problems will be solved

- Looping in the Dialplan
- Creating Call Limits Using the GROUP() Function
- Building Find-Me-Follow-Me in the Dialplan
- Using Subroutines
- Triggering Audio Playback Into a Call Using DTMF

# Looping in the Dialplan

```
[IteratingLoop]
```

```
exten => start,1,Verbose(2,Looping through an action five times.)  
    same => n,Set(X=1)  
    same => n,Verbose(2,Starting the loop)  
    same => n,While(${X} <= 5)  
    same => n,Verbose(2,Current value of X is: ${X})  
    same => n,Set(X=${INC(X)})  
    same => n,EndWhile()  
    same => n,Verbose(2,End of the loop)  
    same => n,Hangup()
```

# Controlling Call Limits

```
[UsingGroupFunctions]
exten => _1NXXNXXXXXX,1,Set(GROUP(outbound)=myprovider)
    same => n,Set(COUNT=${GROUP_COUNT(myprovider@outbound)})
    same => n,NoOp(There are ${COUNT} calls for myprovider.)
    same => n,GotoIf(${COUNT} > 2)?denied:continue)
    same => n(denied),NoOp(There are too many calls up already. Hang up.)
    same => n,HangUp()
    same => n(continue),GoSub(callmyprovider,${EXTEN},1)
```

# Using Subroutines

# Solution + Discussion

```
[Business-Outgoing]
; Default for other devices outbound
exten => _+1NXXNXXXXXX,1,GoSub(out,1(${EXTEN:1}))

exten => _+NXXNXXXXXX,1,GoSub(out,1(${EXTEN:1}))

exten => _1NXXNXXXXXX,1,GoSub(out,1(${EXTEN}))

exten => _NXXNXXXXXX,1,GoSub(out,1(1${EXTEN}))
; End default for other devices outbound

exten => out,1,NoOp()
    same => n,Set(LOCAL(DialingNumber)=${ARG1})
    same => n,Verbose(1,--> ${CALLERID(num)} calling ${DialingNumber})
    same => n,Set(CALLERID(name)=${GLOBAL(G_CID_NAME)})
    same => n,Set(CALLERID(num)=${GLOBAL(G_CID_NUMBER)})
    same => n,Dial(${GLOBAL(G_BUSINESS_PSTN)}/${DialingNumber})
    same => n,ExecIf("${DIALSTATUS}" = "BUSY"?Busy(5))
    same => n,Hangup()
```

# Building Find-Me-Follow-Me in Dialplan

```
[public_extensions]
; Find Russell.
exten => 7001,1,Progress()
    same => n,Playback(followme/pls-hold-while-try,noanswer)
    same => n,Dial(Local/7101@trusted,20,rU(ackcall^s^1))
    same => n,Dial(Local/12565551212@trusted,20,rU(ackcall^s^1))
    same => n,Playback(followme/sorry,noanswer)
    same => n,Hangup()

exten => 7002,1,Progress()
    same => n,Playback(followme/pls-hold-while-try,noanswer)
    same => n,Dial(Local/7102@trusted,20,rU(ackcall^s^1))
    same => n,Dial(Local/12565559898@trusted,20,rU(ackcall^s^1))
    same => n,Playback(followme/sorry,noanswer)
    same => n,Hangup()
```

```
[trusted]
exten => 7101,1,Dial(SIP/russell_desk)
exten => 7102,1,Dial(SIP/leif_desk)
exten => _1NXXNXXXXXX,1,Dial(SIP/${NUMBER}@outbound_provider)
```

```
[ackcall]
exten => s,1,Background(followme/no-recording&followme/options)
    same => n,WaitExten(5)
    same => n,Set(GOSUB_RESULT=BUSY)

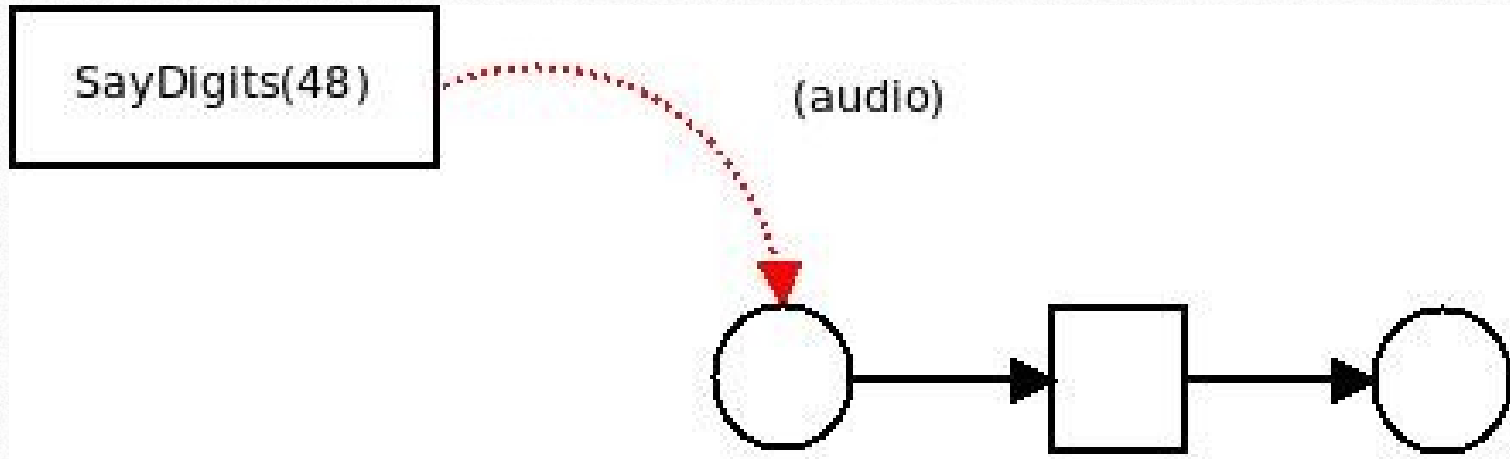
exten => 1,1,NoOp()

exten => 2,1,Set(GOSUB_RESULT=BUSY)

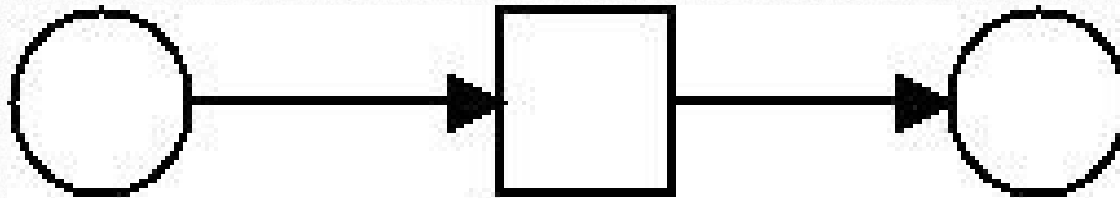
exten => i,1,Set(GOSUB_RESULT=BUSY)
```

# Triggering Audio Using DTMF

# Play audio to a channel



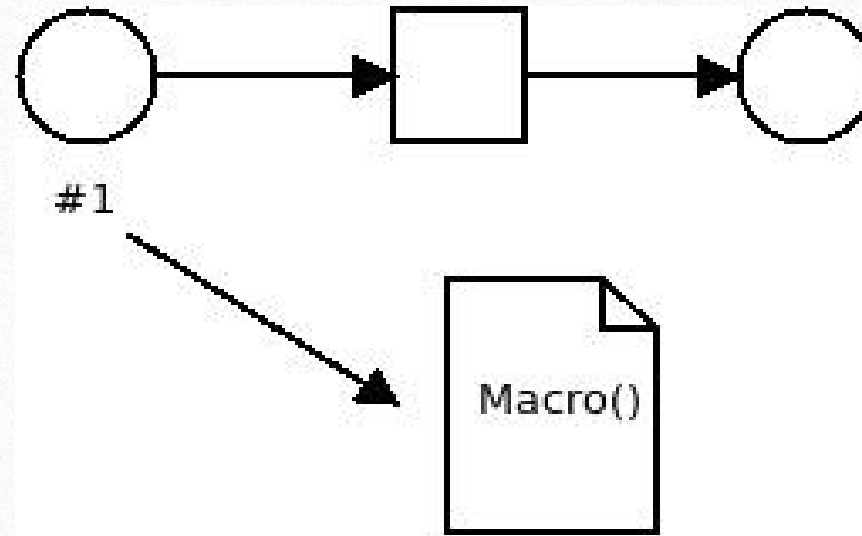
# Place a call



# Setup an application map

```
; features.conf  
[applicationmap]  
play_message => #1,self/caller,Macro(PlayMessage)
```

# Trigger application map via DTMF

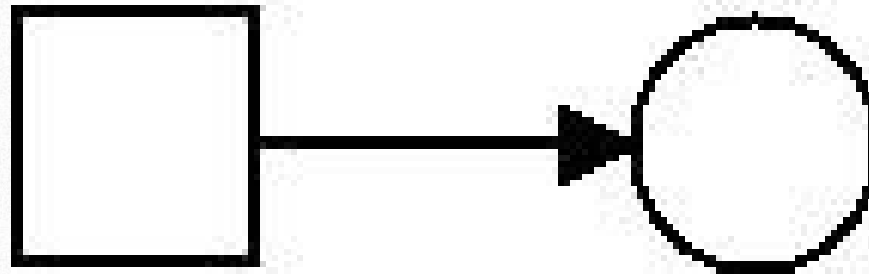


# Macro to originate a channel

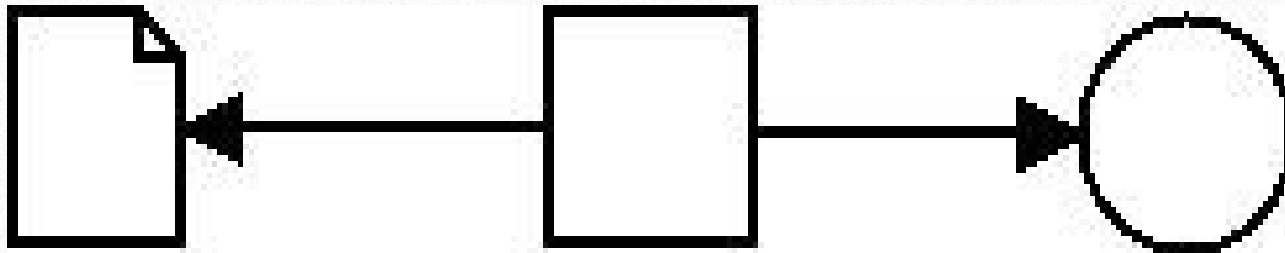
```
[macro-PlayMessage]
```

```
exten => s,1,NoOp()  
    same => n,Set(EncodedChannelToPass=${URIENCODE(${DYNAMIC_PEERNAME}})  
    same => n,Originate(Local/spy-${EncodedChannelToPass}@whisper-channel/n,  
exten,whisper-channel,audio,1)
```

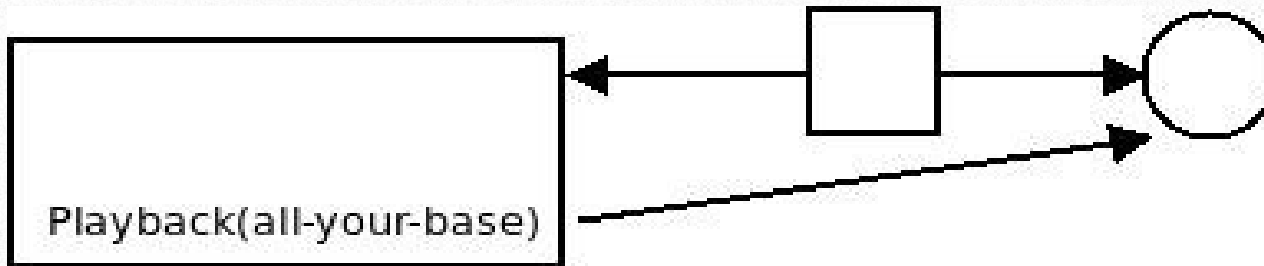
## Originate()



# On connect, execute dialplan



# Play audio to connected endpoint

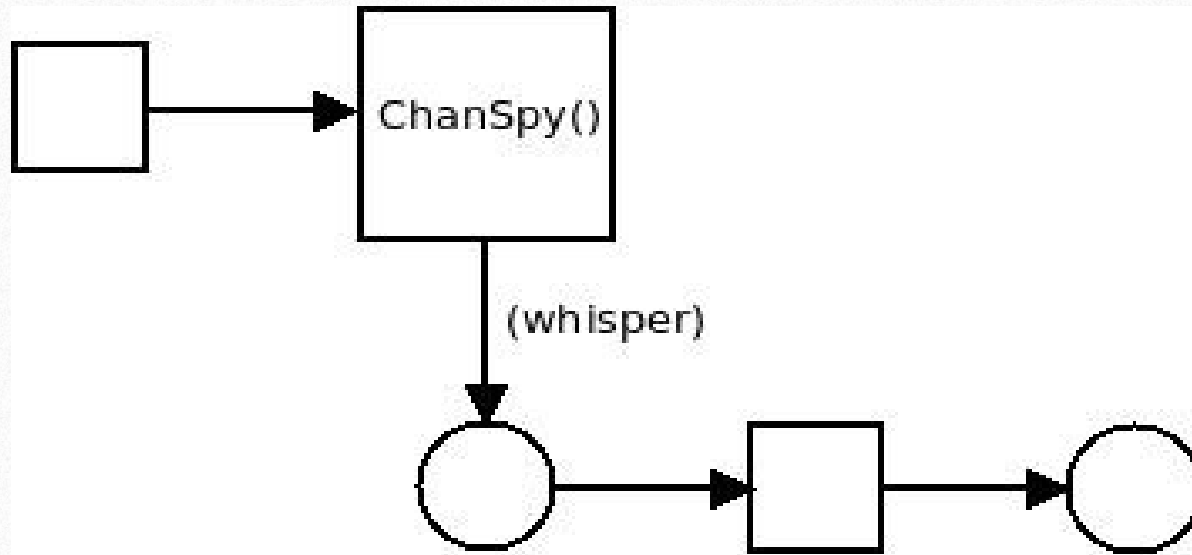


# Whisper to channel

```
[whisper-channel]
```

```
exten => _spy-.,1,NoOp()  
    same => n,Set(EncodedChannel=${CUT(EXTEN,-,2-3)})  
    same => n,Set(GROUP(whisper-channel)=${EncodedChannel})  
    same => n,ExecIf(${GROUP_COUNT(${EncodedChannel}@whisper-channel)} > 1)?Hangup()  
    same => n,Set(ChannelToSpy=${URIDECODE(${EncodedChannel})})  
    same => n,ChanSpy(${ChannelToSpy},wsqEB)  
    same => n,Hangup()
```

# Local channel uses ChanSpy()



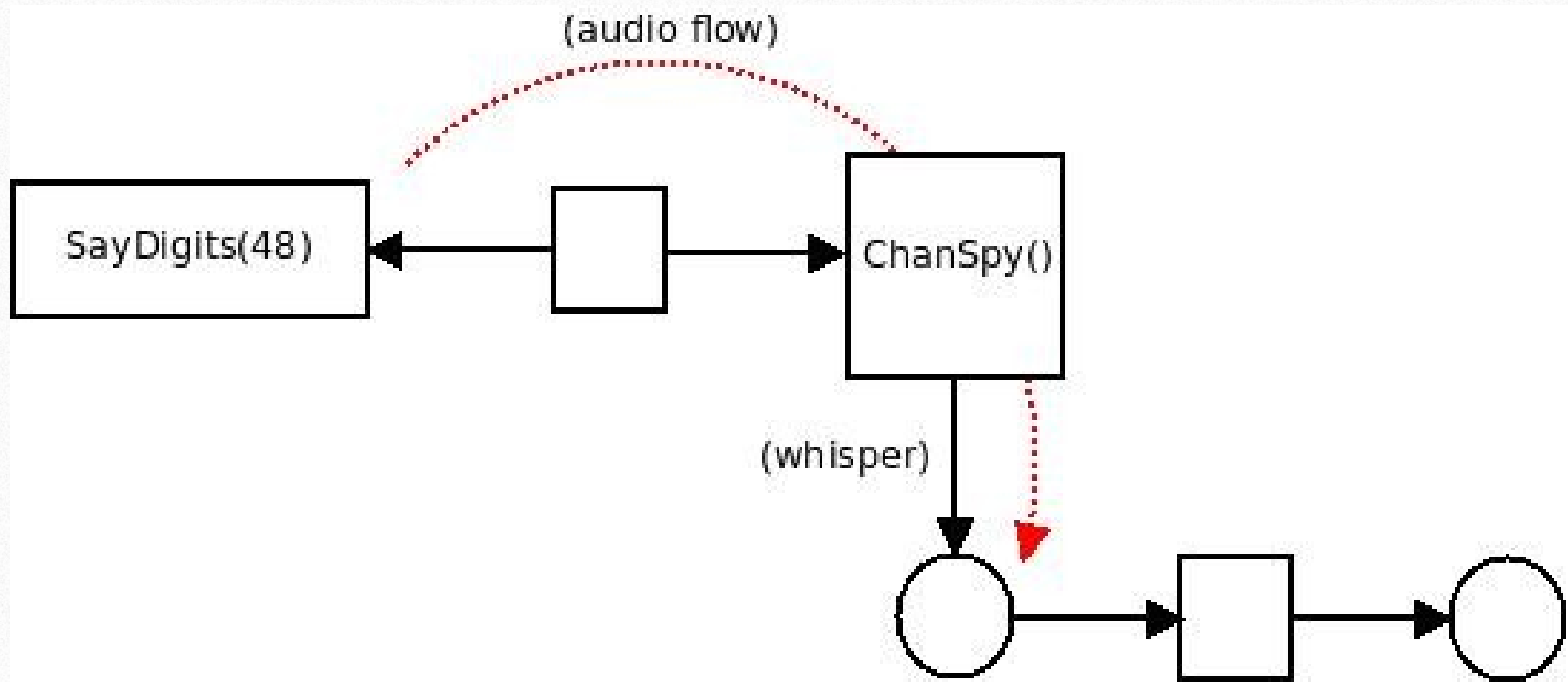
# Execute dialplan on connect

```
exten => audio,1,NoOp()  
    same => n,Answer()  
    same => n,Wait(0.4)  
    same => n,Set(VOLUME(TX)=-4)
```

```
; One example is to return current cost of the call. A lookup to a database or  
; webservice would be required to make the data dynamic.
```

```
; letters/dollar vs. digits/dollars (plural)  
    same => n,SayNumber(7)  
; letters/dollar vs. digits/dollars (plural)  
    same => n,Playback(digits/dollars)  
    same => n,SayNumber(48)  
    same => n,Playback(cents)  
    same => n,Hangup()
```

# Audio whispered to channel



```
exten => _2XX,1,NoOp()  
    same => n,Set(DYNAMIC_FEATURES=play_message)  
    same => n,Dial(SIP/${EXTEN},30)  
    ...
```

# Questions?

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