

TROPO: TELEPHONY IN THE CLOUD



WES GAMBLE
BISON CONSULTING
KOACHED.COM

WES GAMBLE

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WHAT WE'LL DISCUSS TODAY

- Why?
- Trope offerings
- Trope code examples
- Other stuff

Next slide is video

WHY?



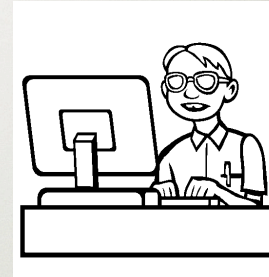
BEFORE



+



+



(Telephony)

(cheaper: computer + telephony HW + Asterisk)

A big server
plus money
plus telephony geek

NOW



+



(Web)

Tropo
plus Web geek

WHY TROPO?

- FREE to develop (pay for production)
- 10+ years of voice application experience, infrastructure (Voxeo)
- Multiple channels with one back-end (Voice, SMS, IM, Twitter)
- Open-source, standards-based (SIP)
- Web developers can do telephony now

Voxeo back end is a big Java program using SIP Servlet API
Think of Tropo as ODBC for communication

LANGUAGE SUPPORT

- APIs are available in:
 - JavaScript
 - PHP
 - Ruby
 - Python
 - Groovy

APIs

- Scripting API: execute one script file
 - Tropo-hosted or self-hosted
- Web API
 - Arbitrary Web application endpoint
- REST API
 - Session initiation, provisioning, signal/event passing

GETTING STARTED WITH TROPO

- Establish an account at Tropo.com
- Create an application
- Choose Scripting or Web API
- Set script location (scripting) or Web app. endpoints (Web API)
- Provision numbers

DEMO 1: FIRST STEPS

USERNAME: hcc_demo

PASSWORD: hcc_demo

CALLING TO: 281 968 8698

“2012 DOOMSDAY CLOCK”

[HTTPS://GITHUB.COM/WEYUS/HCC_TROPO_DEMOS/
BLOB/MASTER/
DEMO1/2012 DOOMSDAY COUNTDOWN INBOUND.RB](https://github.com/WEYUS/HCC_TROPO_DEMOS/blob/master/demo1/2012_doomsday_countdown_inbound.rb)

- 1) Show hcc_demo configuration screen: voice URL vs. SMS/messaging URL.
- 2) Show application debugger.
- 3) Call this # and mic the phone.
- 4) Discuss how you can do this with SMS - invite someone in the audience to send anything to this number, and countdown will begin.

DEMO 1: FIRST STEPS

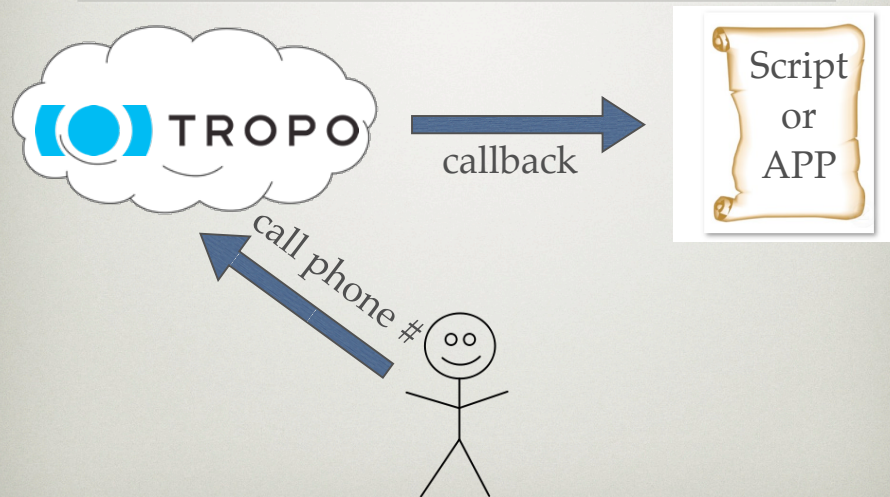
USERNAME: hcc_demo

PASSWORD: hcc_demo

LET'S LOOK AT THE CODE

Walk through code - high level.

RECEIVING INBOUND CALLS WITH TROPO



(*) Scripting API - script resides on Tropo server

DEMO: FIRST STEPS

KEY PIECES

- Bare Ruby script - just gets executed
- Tropo API is a DSL that emits JSON for consumption by Tropo server
- Important verbs:
 - say
 - ask, call
 - hangup
 - message (= call + say + hangup)

Show documentation for scripting/Web API

DEMO: FIRST STEPS

LESSONS LEARNED

- When an incoming call is picked up by Tropo, script is immediately run
- “ask” keyword is synchronous, and result is returned when user responds
- Voice recognition on input
- Text-to-speech on output
- Can be used with voice or SMS

SCRIPTING API: CURRENT CALL METADATA

- There are properties that are set on the \$currentCall object in Ruby for incoming calls
 - callerID
 - channel
 - network
- https://www.tropo.com/docs/scripting/call_properties.htm

SCRIPTING API - BASICS

SAY

say "I'm a computer and I'm talking to you",
options

- Say something to the user
- Options
 - voice: Use a different voice - there are ~60 voices from which to choose
 - as: type of data (DATE, DIGITS, NUMBER)

[Show Tropo documentation](#)

SCRIPTING API - BASICS

ASK

```
result = ask "Do you like stuff?", options
```

- Ask the user a question (say + wait)
- Blocks while waiting for result
- Options
 - attempts: how many tries do you get?
 - choices: grammar (allowable input)
 - onXXXX: Event handlers for: timeout, bad input, etc.

Talk about grammars

SCRIPTING API - BASICS CALL

`call "+17135551212ppp123", options`

- Makes an outbound call after session initiation (REST API)
 - pauses can be inserted into destination
- Options
 - channel: VOICE or TEXT
 - network: SIP, GTALK, JABBER, etc.
 - onXXXX: Event handlers

[Show Tropo documentation](#)

SCRIPTING API - BASICS

HANGUP

hangup

- Terminates the call

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SCRIPTING API - BASICS

MESSAGE

```
message "Howdy",  
{:channel => 'TEXT', :network =>  
  'YAH00', :to => 'homeboy987'}
```

- Used for one-off messages to user
- Equivalent to a call, say, and hangup
- Options
 - channel: VOICE or TEXT
 - network: SIP, MSN, YAHOO
 - to: destination number, username

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SCRIPTING API - BASICS

EVENTS

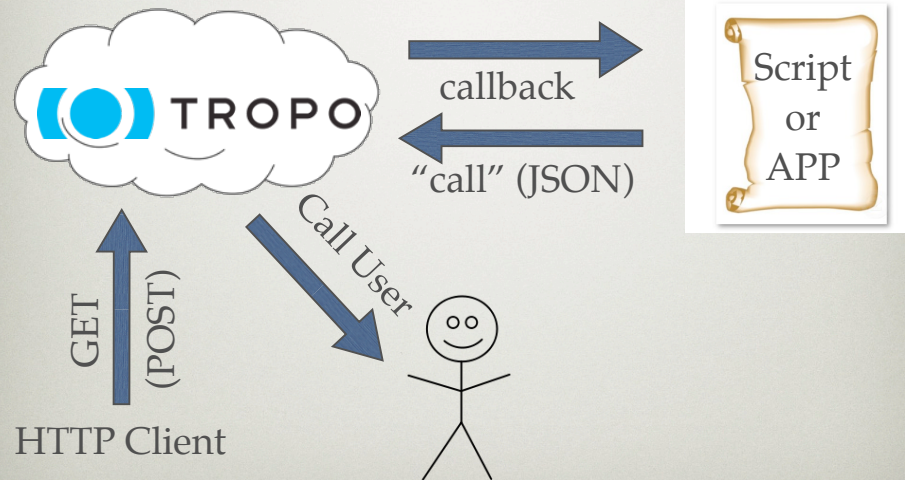
- Handlers can be specified for events on some verbs
- ask
 - onBadChoice, onChoice
- call
 - onAnswer, onHangup
- Signals - generic interrupts
 - https://www.tropo.com/docs/rest/rest_tutorials.htm#event_tutorials

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MAKING OUTBOUND CALLS WITH TROPO

- An outbound call is kicked off using the REST API to initiate a session
- Simulates an inbound message
- Programmatic or on-demand
- `http://api.tropo.com/1.0/sessions?action=create&token=voice_or_text_token[&custom_param_1=custom_value_1]`

MAKING OUTBOUND CALLS WITH TROPO



(*) Scripting API - script resides on Tropo server

DEMO 2: FIRST STEPS, OUTBOUND

USERNAME: hcc_demo

PASSWORD: hcc_demo

CALLS RECEIVED FROM: 713 489 7498

“2012 DOOMSDAY CLOCK”

[HTTPS://GITHUB.COM/WEYUS/HCC_TROPO_DEMOS/BLOB/
MASTER/
DEMO2/2012 DOOMSDAY COUNTDOWN OUTBOUND.RB](https://github.com/weyus/hcc_trope_demos/blob/master/demo2/2012_doomsday_countdown_outbound.rb)

1) Mic phone and click on outbound voice link in Trope app.

DEMO 2: FIRST STEPS, OUTBOUND

USERNAME: hcc_demo

PASSWORD: hcc_demo

LET'S LOOK AT THE CODE

Show call verb and "if \$currentCall" code.

DEMO: FIRST STEPS, OUTBOUND LESSONS LEARNED

- Simulated inbound call to app. via HTTP GET or POST call to session API
- Can be used with voice or SMS
- \$currentCall is not populated on outbound call before “call”

INTERNATIONALIZATION SUPPORT

- Multi-language voice recognition
 - “recognizer” option on “ask” command
 - https://www.tropo.com/docs/webapi/international_speech_recognition.htm
- Multi-language text-to-speech output
- Voices: 60+
 - https://www.tropo.com/docs/scripting/international_speaking_other_languages.htm
- Lots of international numbers

ADDITIONAL CAPABILITIES

- Record calls and generate transcriptions (up to 2 hours)
- Transfer calls
- Conference calling
- Play audio files
 - Tropo-hosted or self-hosted
- Reject calls (voice only)
- Advanced grammars (SRGS/GRXML)

VOICE VS. TEXT

- Inspect channel on inbound message to determine what kind of message
- Keep in mind for text channel:
 - initialText is set on the “session” input when a text comes
 - Throw away the initial text with a blank ask if you don’t want to use the inbound text

DEMO 3: CONFERENCES, TRANSFERS, AUDIO

USERNAME: hcc_demo

PASSWORD: hcc_demo

CALLING TO: 713 489 7524

“CONFERENCES, TRANSFERS, AND AUDIO FILES”

[HTTPS://GITHUB.COM/WEYUS/HCC_TROPO_DEMOS/BLOB/
MASTER/DEMO3/EXAMPLES.RB](https://github.com/weyus/hcc_trope_demos/blob/master/demo3/examples.rb)

- 1) Conference: Get one person to call 713 489 7524 and choose 1; get another person to call and choose 1. They should be able to talk to each other.
- 2) Get a volunteer number from the audience - change number in code, call and choose #2, call should be transferred.
- 3) Call 713 489 7524 and choose #3, hear audio.

DEMO 3: CONFERENCES, TRANSFERS, AUDIO

USERNAME: hcc_demo

PASSWORD: hcc_demo

LET'S LOOK AT THE CODE

Show demo3 code

WEB API

- Instead of compiling a script internally, Tropo issues a HTTP POST to your back end Web application (you specify the initial call in the app. setup)
- Example back end code is from a Rails app.
- Valid back end is anything that provides an HTTP endpoint and emits valid Tropo JSON
- API helpers for each language
 - Also Node.js, C#, Java, Grails, Erlang (?)
 - Basically provide wrappers for JSON generation

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WEB API

- More seamless integration into existing application infrastructure than scripts
- Scripts die, apps. (hopefully) do not
- When you use the session API to make an outbound call, each additional parameter in the GET (or POST) call are passed in the POST back to the application as parameters[*param_name*]
- POST params come in differently depending on whether a new session or not

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WEB API - EVENTS

```
t.on :event => 'continue', :next =>  
  process_answer_url
```

- Slightly different event model
- Each Tropo request must be routed to next request URI
- “on” JSON object
 - continue - required
 - timeout

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DEMO 4: WEB API

USERNAME: hcc_demo

PASSWORD: hcc_demo

CALLS RECEIVED FROM: 713 489 5682
KOACHED ARBITRARY MESSAGE SEND

- 1) Show hcc_demo configuration screen: voice URL vs. SMS/messaging URL.
- 2) Show application debugger.
- 3) Call this # and mic the phone.
- 4) Discuss how you can do this with SMS - invite someone in the audience to send anything to this number, and countdown will begin.

DEMO 4: WEB API

USERNAME: hcc_demo

PASSWORD: hcc_demo

LET'S LOOK AT THE CODE

- 1) Talk about Koached Tropo Generator - add functionality to stock Ruby Tropo Generator
- 2) Tropo Controller - generic tropo functionality, convenience methods
- 3) Prospecting controller - actual endpoint

WEB API - HTTP REQUEST VOICE MESSAGE

Started POST "/start.json?auth_token=6XcenKYWjthpe2x8jdRs" for 66.193.54.21 at Fri Aug 19 16:44:00 -0700

Processing by ProspectingController#start as JSON

Parameters: {"session"=>
{"timestamp"=>Fri Aug 19 23:44:00 UTC 2011,
"parameters"=>{"outbound_number"=>"17134895682",
"token"=>"0622c2ed2295ff41baf5d2d2990156a2996536189
808a336e06225b1a77f0391f841405ee974299bb3ab5508",
"username"=>"1xxxxxxxxx",
"action"=>"create", "network"=>"SIP",
"channel"=>"VOICE", "voice"=>"katrin",
"message"=>"Test message."},
"callId"=>nil, "userType"=>"NONE",
"id"=>"8c89342759e29279df6de3954bb7f0ea",
"initialText"=>nil, "accountId"=>"52396"},
"auth_token"=>"6XcenKYWjthpe2x8jdRs"}

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WEB API - JSON RESPONSE VOICE MESSAGE

```
Response is: {"tropo":  
  [{"message":  
    {"say": [{"value": "Test  
message."}],  
    "from": "17134895682",  
    "network": "SIP",  
    "to": "+1xxxxxxxxx;postd=p",  
    "channel": "VOICE",  
    "voice": "katrin"}]}}
```

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WEB API - HTTP REQUEST

SMS MESSAGE

Started POST "/start.json?auth_token=6XcenKYWjthpe2x8jdRs" for 66.193.54.21 at Fri Aug 19 16:44:35 -0700 2011

Processing by ProspectingController#start as JSON

Parameters: {"session"=>

```
  {"timestamp"=>Fri Aug 19 23:44:35 UTC 2011,  
    "parameters"=>{"outbound_number"=>"17134895682",  
      "token"=>"0622c2ed2295ff41baf5d2d2990156a299653618980  
8a336e06225b1a77f0391f841405ee974299bb3ab5508",  
      "username"=>"1xxxxxxxxx",  
      "action"=>"create", "network"=>"SMS",  
      "channel"=>"TEXT", "voice"=>"carmen",  
      "message"=>"http://houstoncodecamp.com/"},  
      "callId"=>nil, "userType"=>"NONE",  
      "id"=>"6b74525cf06e29cc911c3e5b86ea6353",  
      "initialText"=>nil, "accountId"=>"52396"},  
      "auth_token"=>"6XcenKYWjthpe2x8jdRs"}
```

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WEB API - JSON RESPONSE SMS MESSAGE

```
Response is: {"tropo":  
  [{"message":  
    {"say":[{"value":"Test  
message."}],  
    "from":"17134895682",  
    "network":"SMS",  
    "to":"+1xxxxxxxxxx",  
    "channel":"TEXT",  
    "voice":"carmen"}]}}
```

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VOICE RECOGNITION METADATA

- Tropo provides lots of information about what it thinks the user said, which you can use to make decisions about it's validity as application input
- "actions": { "name": "account_number",
"attempts": 1, "disposition": "SUCCESS",
"confidence": 100, "interpretation": "12345",
"utterance": "1 2 3 4 5", "concept": "12345" }

[Show Tropo documentation](#)

PRICING

- \$0.01 / SMS message
- \$0.03 / voice minute
- \$3 / month / phone number
- \$5 / month / toll-free phone number
- International rates vary
- <https://www.tropo.com/pricing/>

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PHONO.COM AND SMSIFIED.COM

- phono.com: “a simply jQuery plugin and Javascript library that turns any web browser into a phone”
- smsified.com: “Build powerful SMS applications with our easy API”

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MISCELLANY

- Use Tunnlr to have a local Web server be able to be addressed by Tropo
 - https://www.tropo.com/docs/webapi/using_tunnlr_reverse_ssh.htm
- Use Adhearsion (Ruby Asterisk API) for integration into Asterisk
- Tropo vs. Twilio Video: <http://www.youtube.com/watch?v=1y11S3cajUk>
- Support has good response time for development

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RESOURCES

- [https://github.com/weyus/hcc tropo demos](https://github.com/weyus/hcc_tropo_demos)
- <https://github.com/tropo/tropo-samples>
- <https://github.com/tropo/tropo-webapi-ruby>
- tropo.com
- smsified.com
- phono.com

QUESTIONS?

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THANKS!