

ORACLE®

Oracle Digital Assistant

The Complete Training

Custom Component Debugging

Safe Harbor Statement

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Topic agenda

- 1 ➤ Debugging vs. logging
- 2 ➤ Debugging architecture
- 3 ➤ Debugging practices
- 4 ➤ Debugging with MS Visual Studio Code

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Logging

- Logging is good to find problems that occur at runtime
 - Digital Assistant version 19.1.3 and later provide a diagnostic panel for displaying logs for locally deployed custom components
 - Mobile Hub and 3rd party Node containers have their own consoles for displaying logs
- Logging is not efficient enough for finding problems at design time
 - Not all problems are exceptions
 - Custom component doesn't render a response
 - Values returned by a custom component don't show in skill
 - Code logic is not getting executed
 - Broken dialog flow navigation after custom component was added

Debugging

- Monitors bot-component interactions
 - Access to bot message payload
 - Insights to variable states
 - Steps through code execution
- Use your JavaScript IDE of choice
 - E.g. MS Visual Studio Code, JetBrains Webstorm
- Run custom component service from your local computer
 - Connect from Oracle Digital Assistant skill
- If it works, then it continues working after deployment

Before you can debug custom component services

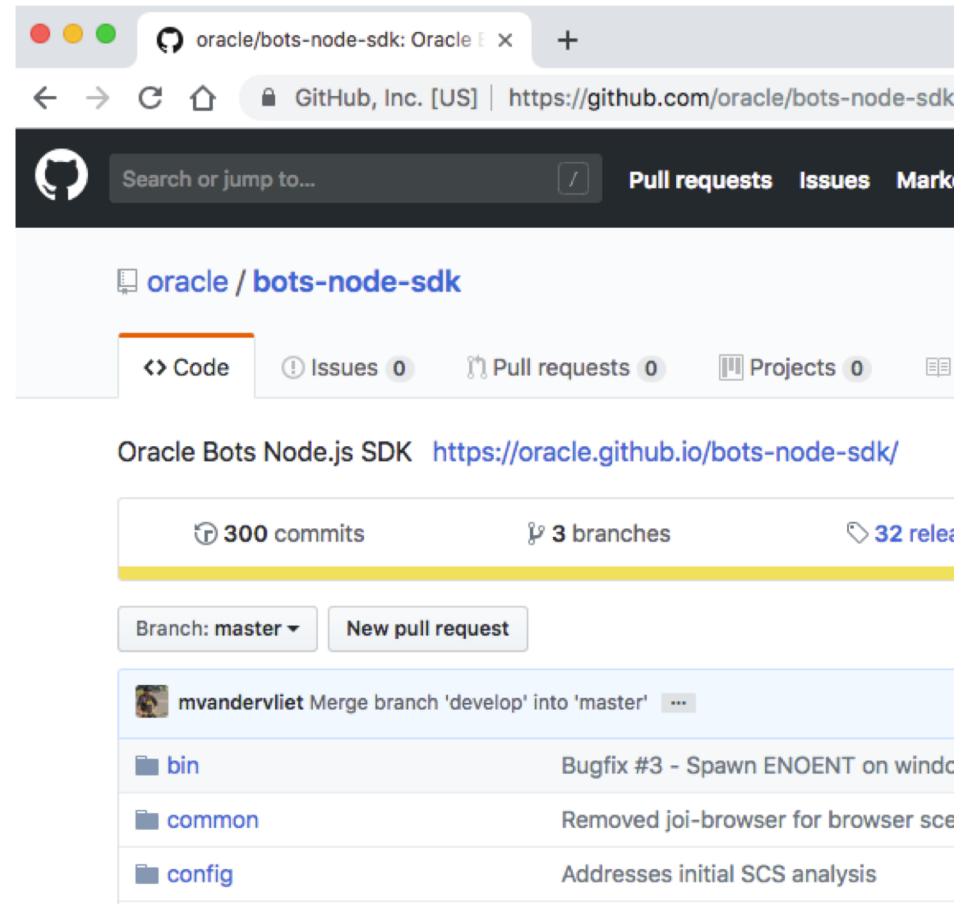
- Create local environment
 - Local runtime for custom component REST service
 - Install Oracle Bots Node.js
 - Command line to create custom component services
 - Includes local runtime
- Make local machine accessible from the Internet
 - Oracle Digital Assistant needs to access local component service runtime URL
- Have JavaScript IDE installed that supports Node debugging

Topic agenda

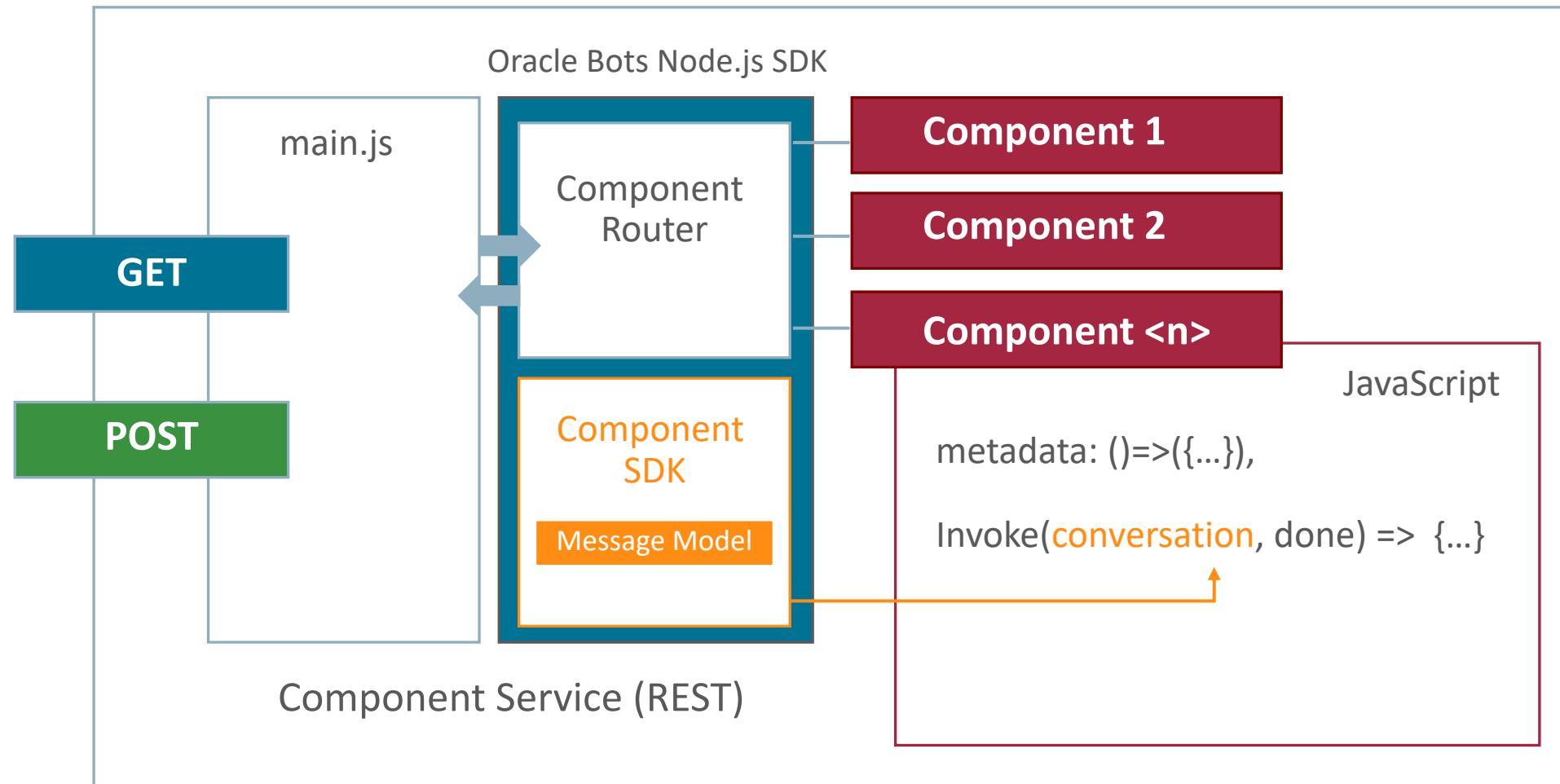
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About Oracle Bots Node.js SDK

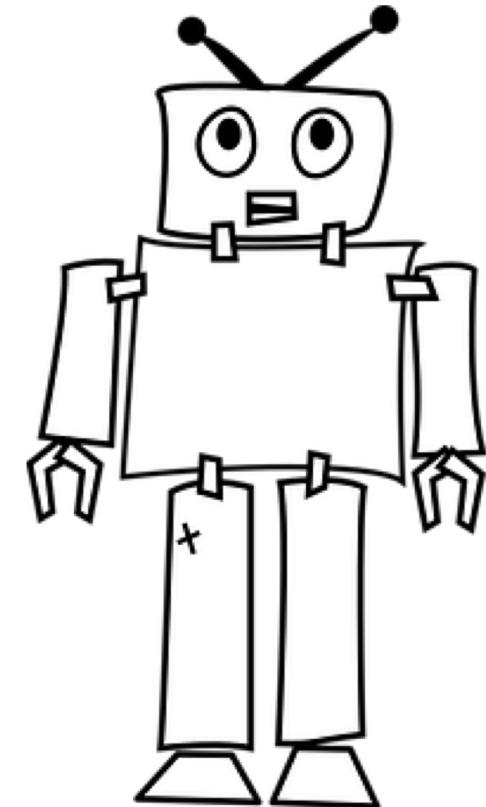
- Provides local environment for
 - Component development
 - Component debugging
 - Packaging for deployment
- NPM installable
- Command line to
 - Create custom component service project
 - Create custom components
- Adds bots custom component SDK



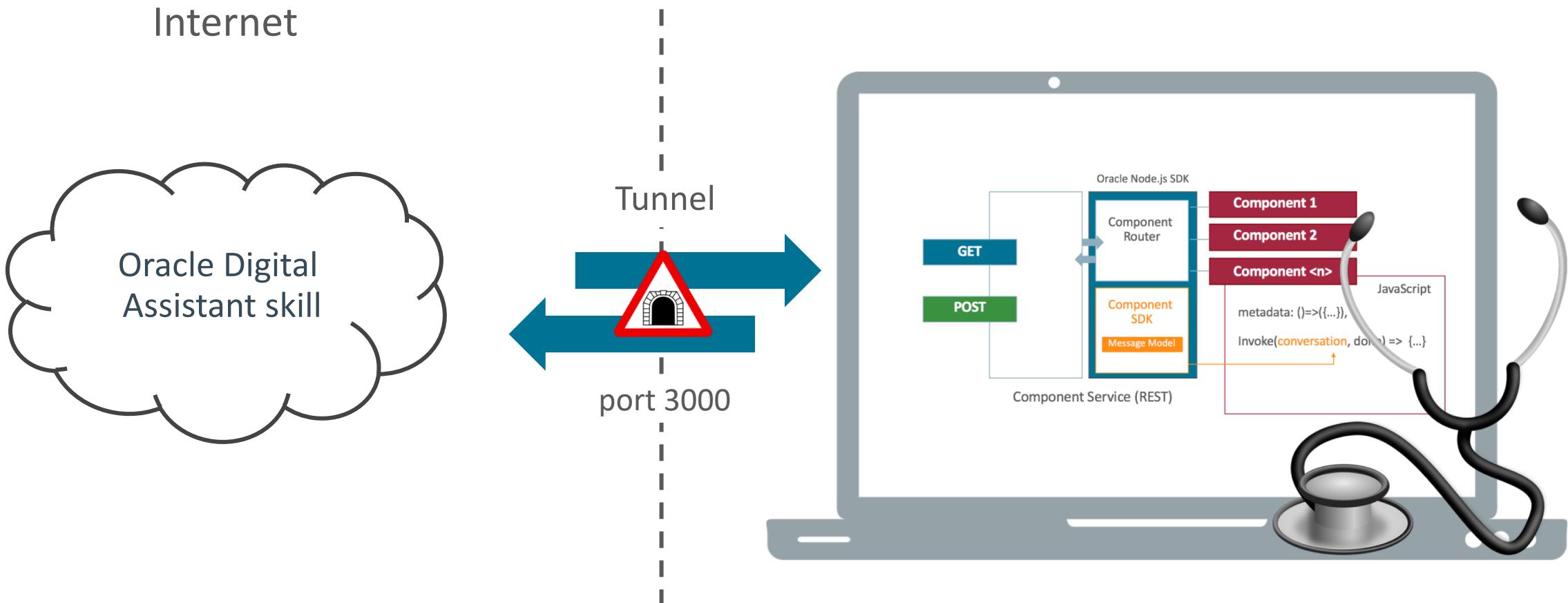
Oracle Bots Node.js SDK component service architecture



**For debugging, your local machine
must be accessible from Oracle Digital
Assistant running on the Internet**

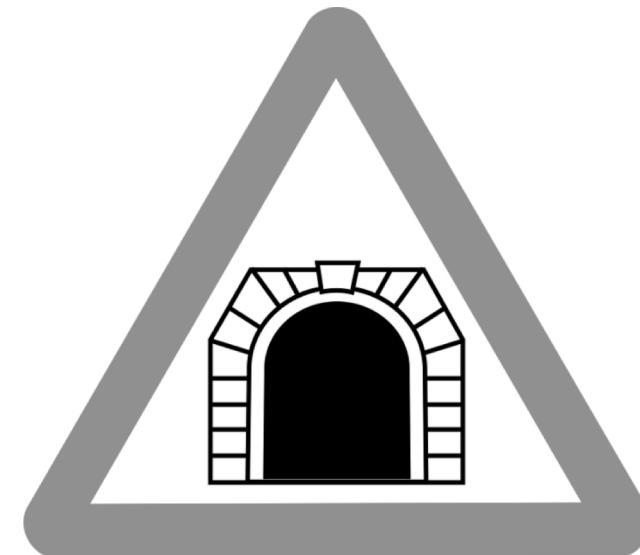


Debugging Architecture



Popular tunneling options

- ngrok
 - Well known
 - Doesn't require account
 - <https://ngrok.com/download>
- localtunnel
 - GitHub
 - Doesn't require account
 - <https://github.com/localtunnel/localtunnel>



Hints and tips

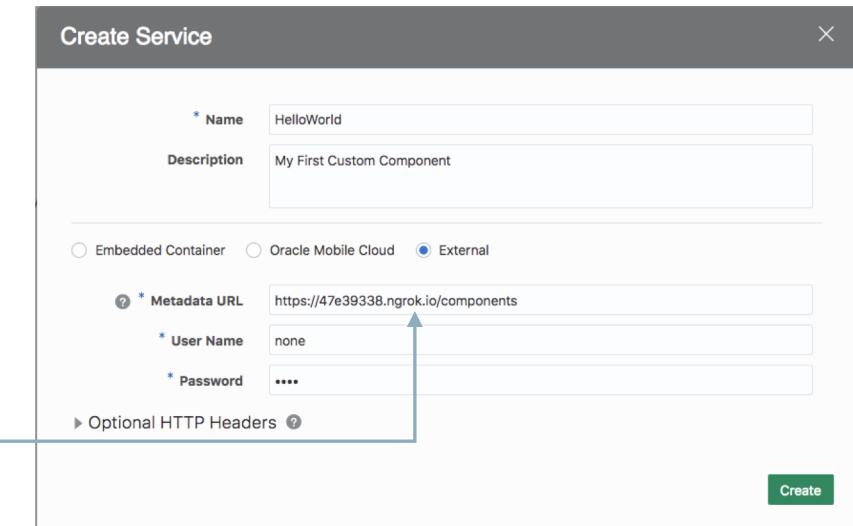
- Generally speaking, ngrok works on Windows and Mac
 - Oracle Windows images (OBI) don't allow the use of ngrok
 - When ngrok doesn't work, use "localtunnel" instead instead
- Ensure you have direct Internet access
 - Public or home network
 - Mobile hotspot
- If you are behind a proxy
 - Get the external IP address of your proxy (<http://www.whatismyproxy.com/>).
 - In the terminal window where you'll be using ngrok enter
 - `export https_proxy=http://<external ip>:80`
 - `export http_proxy=http://<external ip>:80`

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How-to debug custom component services

- Run Node server in Oracle Bots Node.js SDK
- Configure tunnel to expose port 3000
- Register component service 'External' service
 - Local runtime is an 'External' deployment
 - <https://tunnel-url/components>
- Connect JavaScript IDE debugger to local node server process
- Set breakpoints and use conversation tester in skill to start the debug session



Starting the Node server on the local machine

- On local machine, start component service from parent folder
 - E.g. bots-node-sdk service helloworld101
- Open tunnel for port 3000
 - E.g. ngrok

```
Desktop — node /usr/local/bin/bots-node-sdk service helloworld101 — 76x25
...bin/bots-node-sdk service helloworld101 /Applications — ngrok http 3000 ...
fnimphiu-orcl:Desktop fnimphiu$ ls
helloworld101
fnimphiu-orcl:Desktop fnimphiu$ bots-node-sdk service helloworld101
-----
Component Service Ready (no auth):
http://localhost:3000/components
-----
helloworld101 => HelloWorldComponent
```



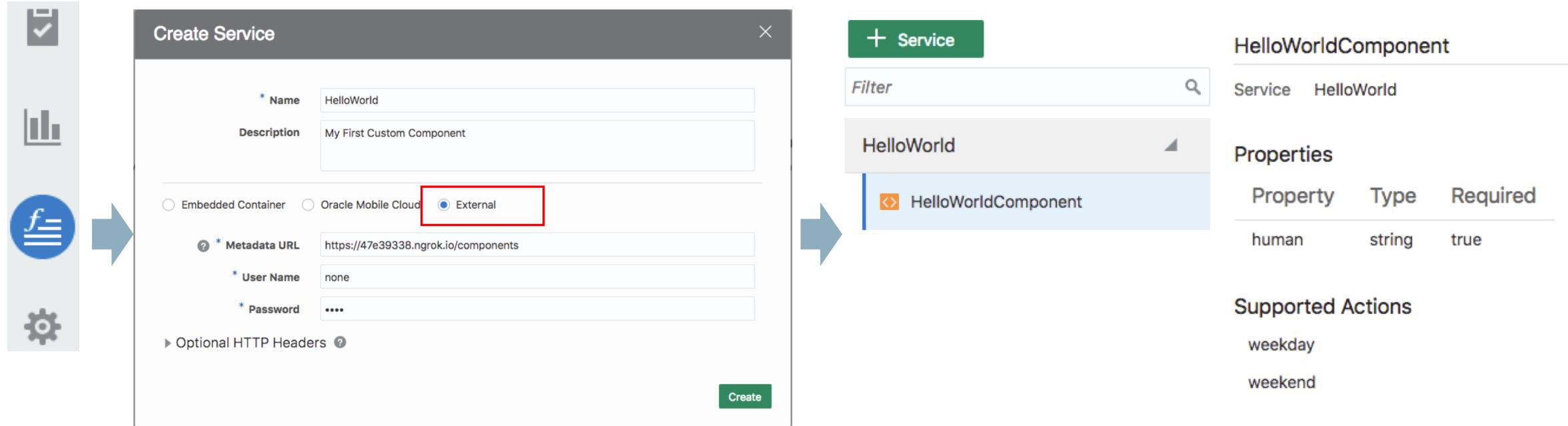
```
/Applications — ngrok http 3000 ...ots-node-sdk service helloworld101
ngrok by @inconshreveable (Ctrl+C to quit)
Session Status          online
Session Expires         7 hours, 32 minutes
Version                 2.2.8
Region                  United States (us)
Web Interface           http://127.0.0.1:4040
Forwarding              http://47e39338.ngrok.io -> localhost:3000
Forwarding              https://47e39338.ngrok.io -> localhost:3000
Connections             ttl     opn      rt1      rt5      p50      p90
                        0       0       0.00    0.00    0.00    0.00
```

Testing the custom component service access in browser

- Type `https://<tunnel URL>/components`
 - Displays list of components hosted by component service
- Be aware
 - Tunnel URL changes with each re-start of the tunnel



Register custom component service in skill



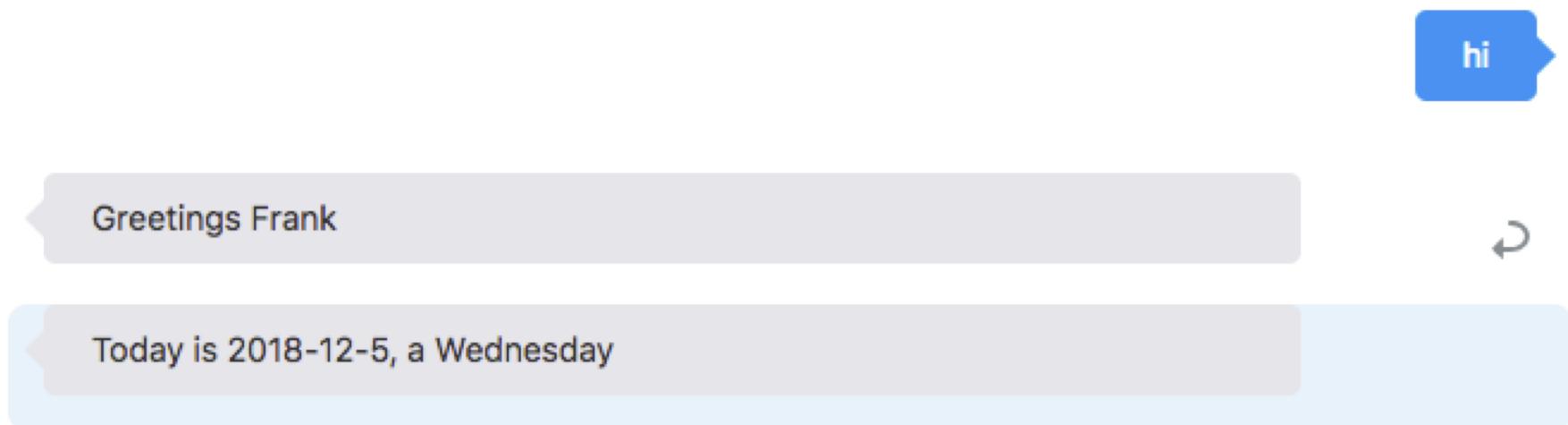
The diagram illustrates the steps to register a custom component service:

- Create Service Dialog:** Shows the configuration for a new service named "HelloWorld". The "Provider" is set to "External" (highlighted with a red box), and the "Metadata URL" is set to <https://47e39338.ngrok.io/components>. Other fields like "User Name" and "Password" are filled with placeholder values.
- Service List:** Shows the "HelloWorld" service has been successfully registered. A blue arrow points from the Create Service dialog to the Service list.
- Properties and Supported Actions:** Detailed view of the registered service, showing its properties (human, string, true) and supported actions (weekday, weekend).

- Configure custom component service using ngrok or local tunnel URL
 - <https://47e39338.ngrok.io/components>
- No authentication required (just put something into the username and password field)

Dialog Flow configuration & runtime output

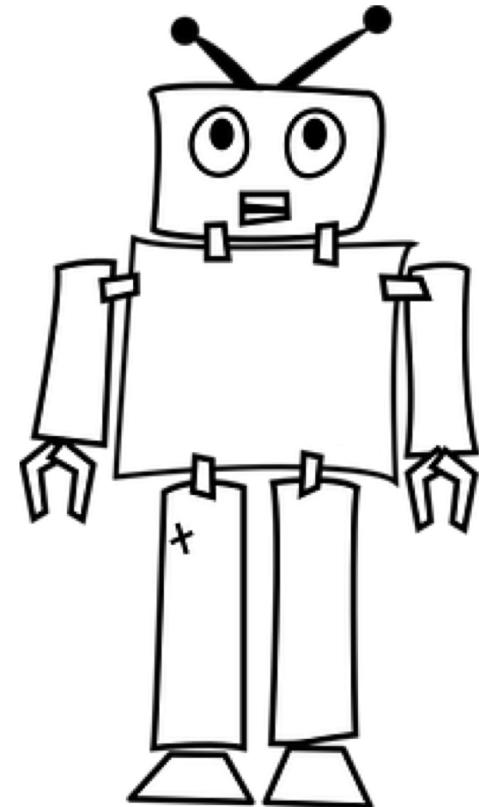
```
states:  
  askGreeting:  
    component: "HelloWorldComponent"  
    properties:  
      human: "Frank"  
  transitions:  
    return: "done"
```



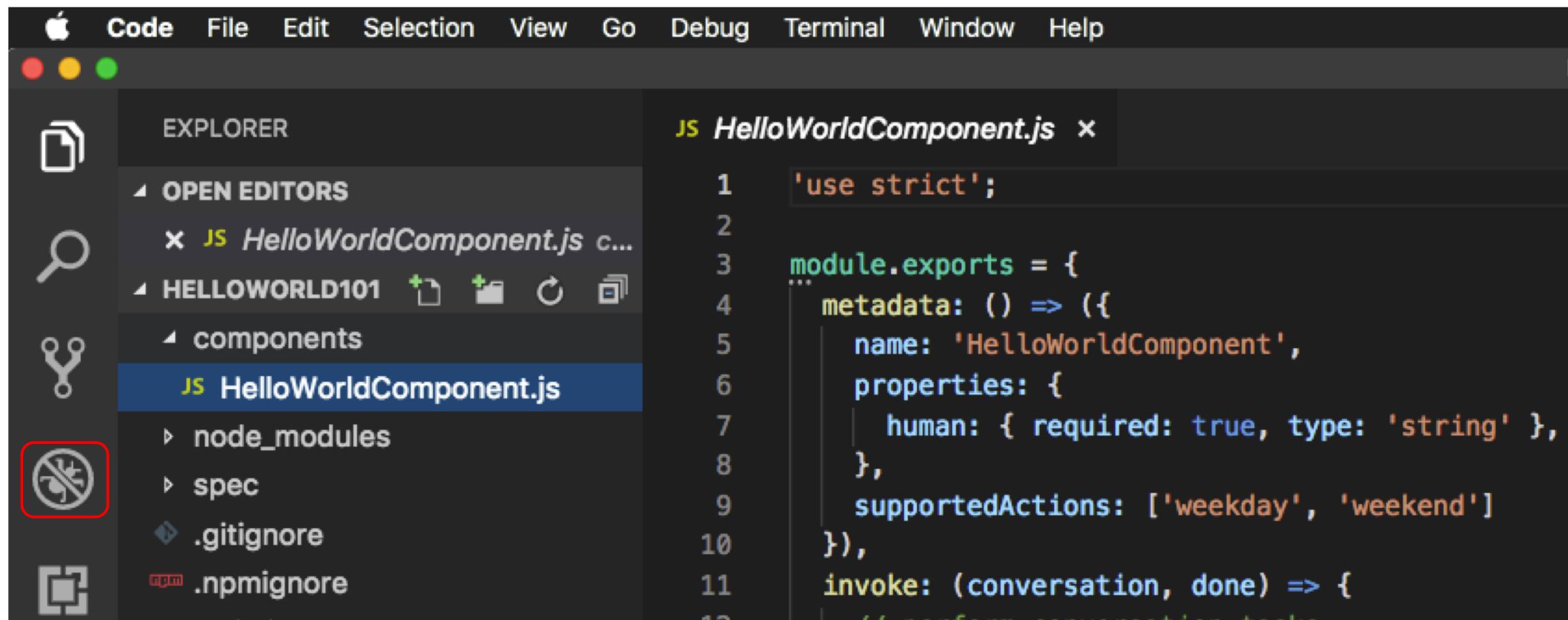
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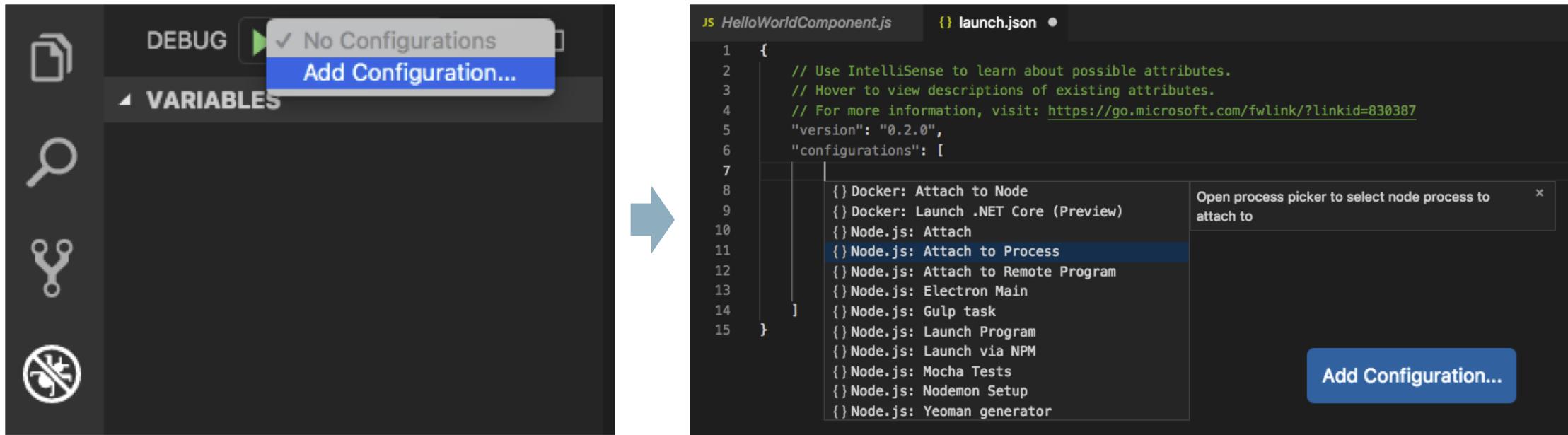
There is no dependency to a specific JavaScript IDE. The IDE must be able to debug local Node process.



Open project in IDE and select debug option

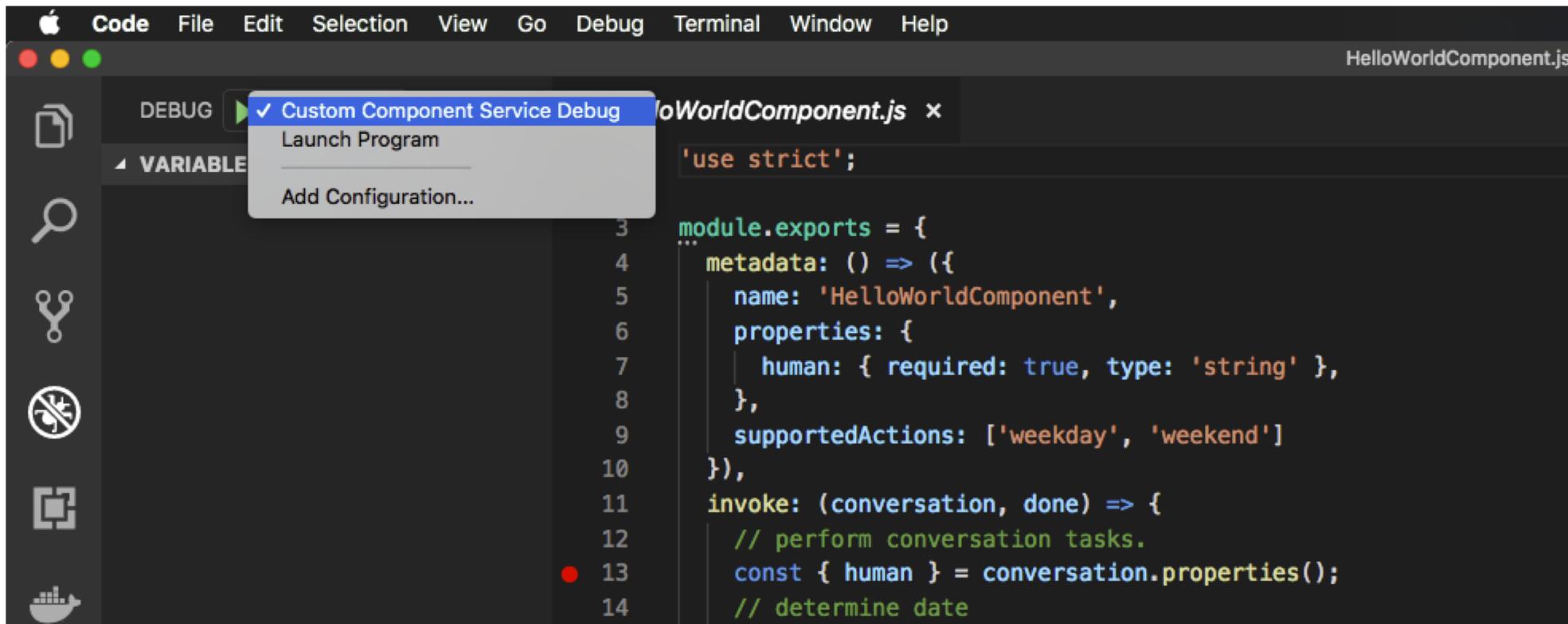


Create debugging configuration



- Add a new debug configuration
 - Choose "Attach to Process" from "Add Configuration" button list
- Optionally, provide a custom name for the debug configuration

Set breakpoint and start debugging session

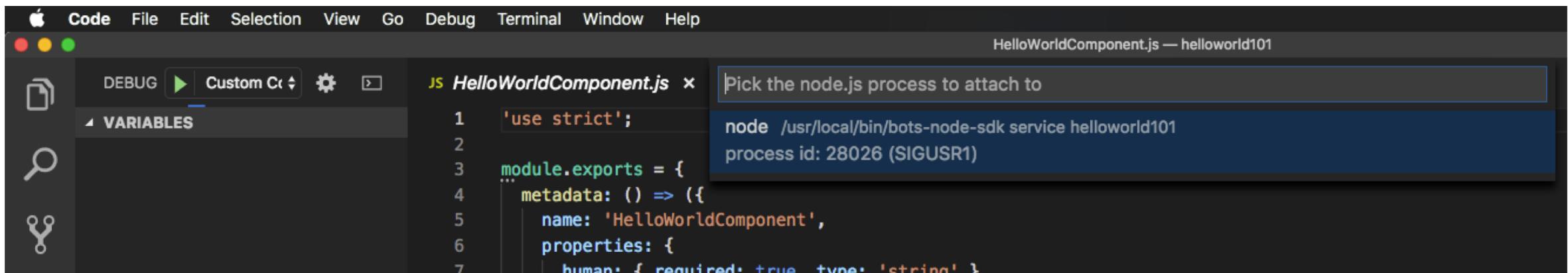


```
'use strict';

module.exports = {
  ...
  metadata: () => ({
    name: 'HelloWorldComponent',
    properties: {
      human: { required: true, type: 'string' },
    },
    supportedActions: ['weekday', 'weekend']
  }),
  invoke: (conversation, done) => {
    // perform conversation tasks.
    const { human } = conversation.properties();
    // determine date
  }
};
```

- Set break-points in the *invoke* function
- Select your custom debug configuration

Select process



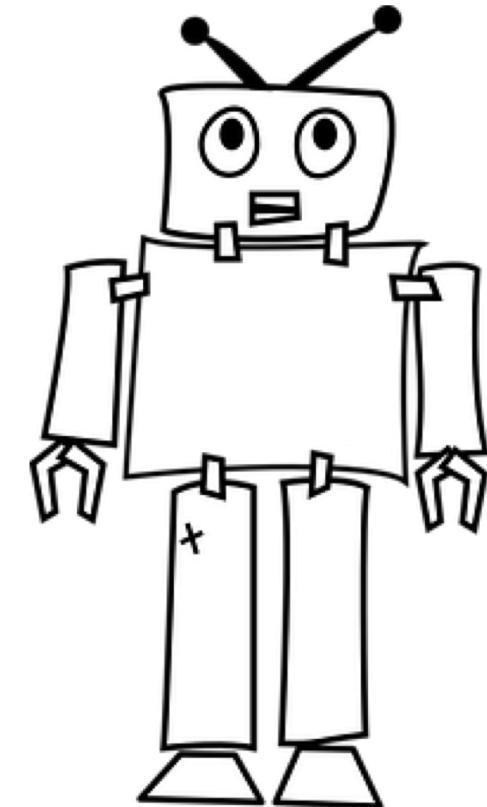
- Press the green run icon
- Select the Node process from the list

Debug component service by running skill bot tester

The screenshot shows the SAP Cloud Platform Studio IDE interface. The top menu bar includes Code, File, Edit, Selection, View, Go, Debug, Terminal, Window, and Help. The title bar indicates the file is "HelloWorldComponent.js — helloworld101". The left sidebar features icons for DEBUG, Custom Component Service Debug, Variables, Local, Global, Watch, and Performance. The Variables panel is open, showing a tree structure of local variables. A red box highlights the variable "human: 'Frank'" under the Local section. The main editor area displays the code for HelloWorldComponent.js:

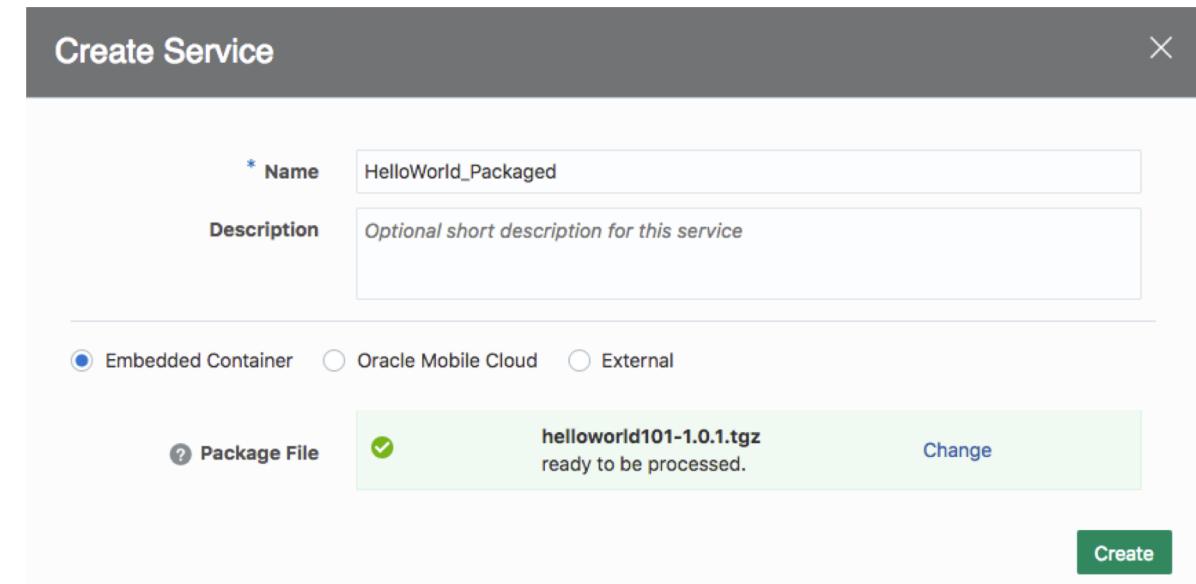
```
1  'use strict';
2
3  module.exports = {
4    ... metadata: () => ({
5      name: 'HelloWorldComponent',
6      properties: {
7        human: { required: true, type: 'string' },
8      },
9      supportedActions: ['weekday', 'weekend']
10    }),
11    invoke: (conversation, done) => {
12      // perform conversation tasks.
13      const { human } = conversation.properties();
14      // determine date
15      const now = new Date();
16      const dayOfWeek = now.toLocaleDateString('en-US', { weekday: 'long' });
17      const isWeekend = [0, 6].indexOf(now.getDay()) > -1;
18      // reply
19      conversation
20        .reply(`Greetings ${human}`)
```

Rerun the 'bots-node-sdk service' command each time you change the component source code in a debug session for changes to take affect.



Custom component deployment to local container

- Create a .tgz file for local container deployment
 - Run *npm pack* in the component service project folder
- Delete or disable the current custom component service configuration
- Create new service configuration using packaged component service
 - Name different if you kept the debugging configuration



Integrated Cloud Applications & Platform Services

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Oracle Digital Assistant Hands-On

TBD