"Full" Renesas Use Case Visual Studio Code Heterogenous Multiple Vendors Single unified interface to all processes 3rd Party Debug Adaptor Protocol (DAP) Multi-context Debug Adaptor Protocol (DAP) 3rd Party Debug Adaptor Protocol (DAP) Renesas Debug Adaptor Protocol (DAP) Renesas Debug Adaptor Protocol (DAP) 3rd Party Debug Adaptor Protocol (DAP) RH850 GDB **IMP-X GDB ARM GDB** We need to support 3rd party DAP components for IP used in Renesas Renesas GDB Server Renesas GDB Server parts. The new multi-context DAP should also support loading 0, one or more DAP and using these too. E2 emulator TCP/IP TCP/IP connection connection **USB** Linux GDB Server SDB **SOC Target System**

Visual Studio Code Single unified interface to all processes CDT Amalgamator (DAP) CDT GDB Adapter (DAP) CDT GDB Adapter (DAP) **Host GDB Host GDB** Process 2 **Process 1** (empty1.exe) (empty2.exe) **SOC Target System** (Host Windows/Linux)

"Simplified" Use Case

- No hardware needed
- Useful to explore problem space



Visual Studio Code CDT GDB Adapter (DAP) CDT GDB Adapter (DAP) **Host GDB** Host GDB Process 1 Process 2 (empty1.exe) (empty2.exe) SOC Target System (Host Windows/Linux)

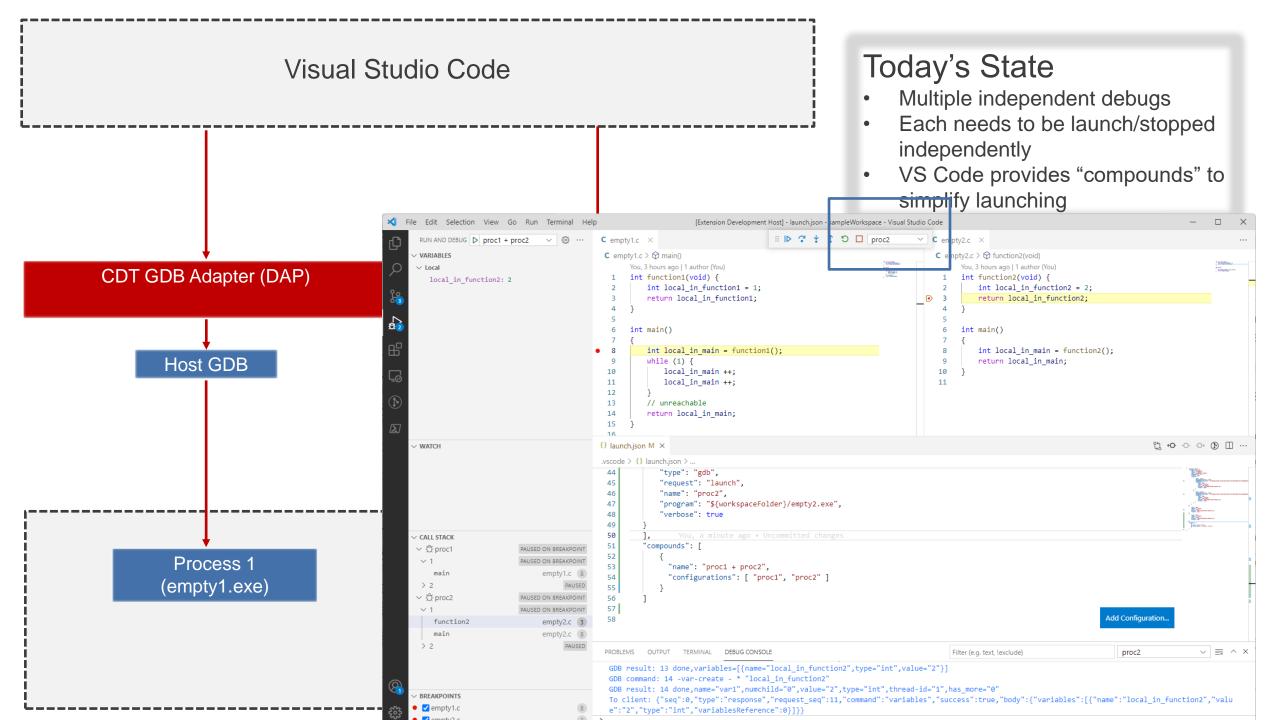
Today's State

- Multiple independent debugs
- Each needs to be launch/stopped independently
- VS Code provides "compounds" to simplify launching

Single Process config using cdt-gdb-vscode

```
"type": "gdb",
 "request": "launch",
 "name": "proc1",
 "program": "${workspaceFolder}/empty1.exe",
 "verbose": true
  "type": "gdb",
 "request": "launch",
 "name": "proc2",
 "program": "${workspaceFolder}/empty2.exe",
 "verbose": true
"compounds": [
 "name": "proc1 + proc2",
 "configurations": [ "proc1", "proc2" ]
```





Visual Studio Code Single unified interface to all processes CDT Amalgamator (DAP) CDT GDB Adapter (DAP) CDT GDB Adapter (DAP) **Host GDB Host GDB** Process 1 Process 2 (empty1.exe) (empty2.exe) **SOC Target System** (Host Windows/Linux)

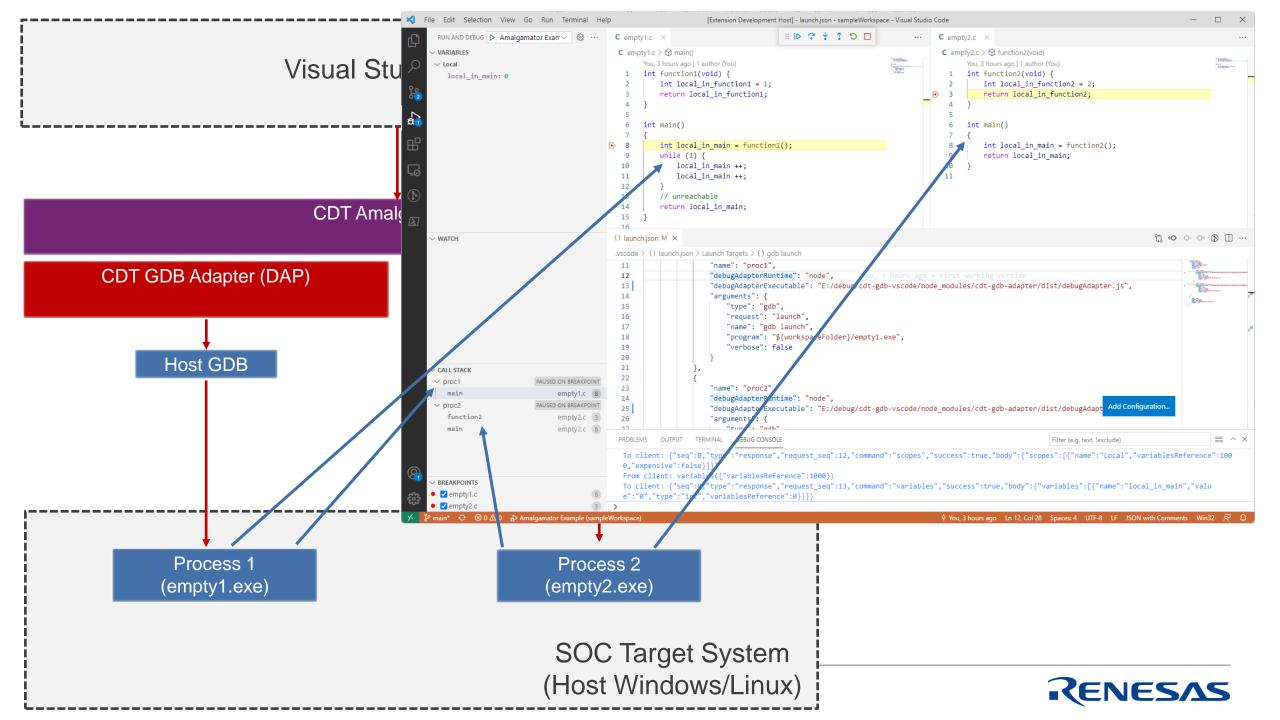
"Simplified" Use Case

- No hardware needed
- Useful to explore problem space

CDT Amalgamator config

```
"type": "amalgamator",
"request": "launch",
"name": "Amalgamator Example",
"children": [
    "name": "proc1",
    "debugAdapterRuntime": "node",
   "debugAdapterExecutable": "cdt-gdb-adapter.js",
    "arguments": {
      "program": "${workspaceFolder}/empty1.exe",
    "name": "proc2",
   "debugAdapterRuntime": "node",
    "debugAdapterExecutable": "cdt-gdb-adapter.js",
   "arguments": {
      "program": "${workspaceFolder}/empty2.exe",
```





Visual Studio Code Single unified interface to all processes Renesas Amalgamator (DAP) Renesas Debug Adaptor Renesas Debug Adaptor Protocol (DAP) Protocol (DAP) **IMP-X GDB** RH850 GDB **ARM GDB** Renesas GDB Server Renesas GDB Server E2 emulator TCP/IP TCP/IP connection connection **USB** Linux GDB Server SDB **SOC Target System**

"Full" Renesas Use Case

- Heterogenous
- Multiple Vendors

Possible Rensas Amalgamator config

The Renesas Amalgamator knows which debug adapter + connection settings, gdb, gdbserver, etc to use based on combination of "board" and "deviceid" fields. Just like it does today in e2studio (Eclipse CDT).



"Simplified" Use Case Visual Studio Code No hardware needed Useful to explore problem space CDT Amalgamator config Single unified interface to all processes CDT Amalgamator (DAP) "type": "amalgamator", "request": "launch", "name": "Amalgamator Example", CDT Amalgamator First Working Version: https://github.com/jonahgraham/cdt-amalgamator "name": "proc2". "arguments": {

Process 1

(empty1.exe)

"name": "proc2",
 "debugAdapterRuntime": "node",
 "debugAdapterExecutable": "cdt-gdb-adapter.js",
 "arguments": {
 "program": "\${workspaceFolder}/empty2.exe",
 }
}

SOC Target System (Host Windows/Linux)

Process 2

(empty2.exe)



Visual Studio Code

"Simplified" Use Case

- No hardware needed
- Useful to explore problem space

CDT CDT GDB Adapter (DAP) **Host GDB** Process 1 (empty1.exe)

Demo

Ime

algamator config

```
"amalgamator",
":" "launch",
"Amalgamator Example",
n": [

ne": "proc1",
nugAdapterRuntime": "node",
nugAdapterExecutable": "cdt-gdb-adapter.js",
numents": {
program": "${workspaceFolder}/empty1.exe",
nugAdapterExecutable": "node",
nugAdapterExecutable": "cdt-gdb-adapter.js",
nugAdapterExecutable": "cdt-gdb-adapter.js",
nugAdapterExecutable": "cdt-gdb-adapter.js",
numents": {
program": "${workspaceFolder}/empty2.exe",
```

SOC Target System (Host Windows/Linux)

