Installing ivy

Allart Ian Vogelesang ian.vogelesang@hitachivantara.com

2019-10-21

Download or build executables

HITACHI
Inspire the Next

- Source for `LUN_discovery` is at https://github.com/Hitachi-Data-Systems/LUN_discovery
- Source for `ivy` is at https://github.com/Hitachi-Data-Systems/ivy
  - Scroll down from this URL and there is a download URL for pre-built Linux binaries for both `LUN_discovery` & `ivy`.
- `ivy` build is makefile-based. Edit the source & build using the "codeblocks" IDE (http://codeblocks.org/), or use Eclipse for C++, and create project from existing makefile & source.

1) Put `ivy` & `LUN_discovery` executables in a folder

HITACHI
Inspire the Next

- For example, put in `/path/to/ivy`
- For HDS performance team users
  - Check that the test hosts have `/scripts` mapped to "the filer".
  - The ivy executables are in `/scripts/ivy/bin/latest`
  - ivy was link-edited with dynamic links to the normal C library routines, that is, ivy uses each test host's own C library routines.
  - ivy was statically linked with the C++ libraries on Ian's Linux development host, meaning that ivy uses the C++ libraries from Ian's Linux development host, which have been copied into the ivy executables, making them quite big, but ensuring that ivy will work on hosts that don’t have up-to-date C++ libraries.

2) Put executable folder in *background* PATH

HITACHI
Inspire the Next

- The folder containing the ivy binary executables must be put in the environment PATH variable for background tasks on all hosts running ivy.
  - ivy uses SSH to remotely invoke executables on test hosts (I/O driver hosts), and invoked this way, the remote ivy executables run as a "background" process.
  - For background processes, the normal BASH or `/etc/profile` login profile files associated with foreground command windows *are not executed*.

- Edit `ivy_etc_profile_d.sh` to reflect the ivy binary folder path, and place the edited file in `/etc/profile.d` to put ivy in the PATH for background processes:

```
if ! echo "$PATH" | grep -qE ".*:/path/to/ivy.*" ;
then
        export PATH="${PATH}:/path/to/ivy"
fi
```

  - Even for background processes, all the scripts in `/etc/profile.d` are executed when the process starts up.

3) Set up certificate-based SSH logins

HITACHI
Inspire the Next

- Certificate-based SSH logins must be set up so the central test control host (running the "ivy" executable) can SSH into the I/O driver hosts without SSH asking for a password.
- Search for "certificate based SSH logins" to find instructions on how to do this.

ivy runs as `root`

HITACHI
Inspire the Next

- The `ivydriver` executable must run as root in order to open entire raw LUNs.
- SCSI Inquiry commands can only be run as root, and therefore the `InquireAbout` executable is "`setuid`" and owned by `root`.
  - `InquireAbout`, `InquireAboutHeaders`, and `showluns.sh` are executables forming part of Ian's `LUN_discovery` tool package.
  - `lun2string` is also part of Ian's LUN lister tool, but is not used by ivy.
    - lun2string lets you build a text string, plugging in decoded Hitachi proprietary LUN attributes.

Ivy output folder root

HITACHI
Inspire the Next

- When ivy runs a program like "`xxxx.ivyscript`", an output folder named `xxxx` is created in a root folder specified by the `[OutputFolderRoot]` statement in the `.ivyscript` program.
  - The default is `"."`, the current directory.

- To put the output somewhere else, put the following statement in your `.ivyscript` program:
  - `[OutputFolderRoot] "/your/output/file/root/folder";`
  - Note that for this one ivyscript statement, the operand may not be a string expression; it must be a string literal (a string constant).
  - This is because ivy creates the output folder for a test run after compiling the `.ivyscript` program, but before the `.ivyscript` program starts to run. (`[OutputFolderRoot]` is evaluated at compile time.)

HITACHI

Inspire the Next