A Brave New World

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In short

With the last set of changes, I can boot the full COS operating system.

Booting the system the first time

Download the updated image (version 0.82) from the [download page](#). Then open a command prompt, and type cray_xmp_sim xmp_sim.cfg in the 'bin' directory. This will start the simulator.

In order to boot the OS the first time, you have to do something called 'install'. What this does essentially is to initialize all the hard-drives (formatting if you wish). To start the process, you'll have to start the simulator. It will pup-up three consoles with similar content. Look for the one, that corresponds to IOP-0:

In the prompt at the bottom, type in a date between 1989 and 1999! I usually use 01/01/89. The next prompt asks you for the time. I've used 01:01:01 in this example, but any valid time should work. If the system accepts your input, it echoes back the date and the time like this:

Now you're in the IOP console prompt. Here you can issue several commands (type in HELP to see a list). The one we'll use is the 'START' command. This loads the specified OS image and parameter file from the IOP (expander) hard-drive into to the mainframe, and start the main CPU(s). On the disk there's an OS image, called COS_117 and a prepared install parameter file, called INSTALL. So, the command you need to type in is: START COS_117 INSTALL. A short while later, the main CPU is released from reset, the communication path between the IOP and the main CPU is established, and the following messages appear on the console:

At this stage, we're ready to start the Cray Station SW, which is essentially the console to the COS operating system. The command to do that is STATION. When you hit enter, the following window will appear on your screen:

This is the main screen on the Cray Station. Here you have a different set of commands to play
with than in the IOP console, again HELP gives you a list. The first thing we need to do is to log
on to the system. You do that with the 'LOGON' command:

If the logon finishes, the OS greets you with it's version number and build date. Also notice at
the top of the screen the letter 'L' appeared. This tells you the console is logged on. The letter
'M' informs you about unread messages. To see them, you need the 'STMSG' (station
message) command:

Here you could change the supplied configuration options, but you don't need to do that. You
can let the system continue booting by typing in REPLY,0,GO. This means that you reply to
message '0' with 'GO':

In a short while another message pops up:

You reply to it the same way you did to the previous one (REPLY,1,GO):

Now, the install process really starts. And it takes a long time. On a fast machine, it takes about 10-15 mintes. So, while you're waiting, you can check certain things out. For example, you can check the progress by looking at information messages (STMSG,INFO command):

Or, you can look at how busy the various parts of the STP (System Task Processor) process are (STP command):

Eventually the system finishes the install process and starts up. At that point you should see the following in your STMSG,INFO display:

There's more though, so you can flip between the frames with the '+' and '-' keys. The second frame shows this:

The last message is the key one. **It tells you that the system is fully booted and is operational now.** I've created a short video of the boot process as well:

Subsequent boots

Once you waited through the install process, you can get the system up and running much faster. This is called the 'deadstart' option, where the system is booted from a cold state, but the content of the hard drives is preserved. The initial part of the boot is the same, the first difference is the parameter file that you give to the START command: instead of 'INSTALL', you specify 'DEADSTART':

Once the system loaded the files, you can start the Cray Station and log on just as before:

The STMSG command asks you about configuration changes, just as before, simply reply with go (REPLY,0,GO).

Next, you're asked about the missing label on the BMR-0-20 drive. This is a RAM-disk drive, which of course doesn't preserve it's content between boots. According to the COS Operational Procedures Reference Manual, this message is displayed unless the *RESTORE directive is present in the parameter. File. I'm not sure why the OS assumes a volatile device would preserve it's content between boots. Maybe this is just a safety feature to prevent accidental automatic re-writes of the disk label during warm-boots. At any rate, type in REPLY,10,CONTINUE to re-write the disk label to this RAM-disk.

At this point the booting starts, and just as before, you can check the progress with the STMSG,INFO command:

After some time, some new messages appear:

And just as with install, there's (eventually) more on the second frame:

Here, again, the last message informs you about a fully booted system. You can watch a video of this type of boot as well: