CHTC Student Handbook

Edition 0.1 - May 2016

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Table of Contents

I. Student Work 101

A. Tasks

As a student worker for the CHTC you will be responsible for a large variety of tasks to help keep the CHTC Cluster up and running, but there a few basic things you will find yourself doing most often. Our primary job is to fix individual machines in the cluster that go down. Most often machines can be brought down by kernel panics, networking issues, or hardware issues. To fix a machine, we take a simple approach to diagnose the issue and come up with a solution.

1) Diagnose the problem. You might need to plug into the machine with a console, or SSH into it if it is still online. If a machine kernel panics it will often print a memory stack trace to the console and freeze up. You will need to physically reboot the machine to proceed.
2) Find a solution. Often times rebooting the machine will clear up minor problems such as kernel panics or networking issues.
    a) Kernel Panic - reboot, check for severe errors.
    b) Networking issue - reboot, reboot networking, then go to advanced networking troubleshooting if still needed.
    c) Hardware issue - diagnose the hardware issue and fix it. (Replace a bad disk, make note of a bad RAID card, etc)
3) Fix the problem and confirm that condor is running jobs again.
    a) This might mean rebooting the machine, rebuilding the machine, replacing a bad disk and rebuilding, or something else entirely. Fix it if possible. If not - make note of the issue in the ticket and await further instructions.

Some other tasks you might be assigned include, but are not limited to: archiving condor releases to DVD, building new exec machines, working with Dell/Cisco Tech Support to get replacement parts, moving servers, and other random tasks assigned by full time CHTC staff.

B. RT Ticket System

https://crt.cs.wisc.edu/rt/ is the home of our RT ticketing system. This will be your home for managing work tickets. The basic flow is: You are assigned a ticket, click on the ticket name to open it. By default, your 10 highest priority, or newest, tickets will be listed on your home page. You can view all of your tickets by clicking the “10 Highest Priority Tickets I Own” link (counter-intuitive, I know).

Once you have selected a ticket, you can read all correspondence related to that particular issue. Under the “actions” button (top right) the most common things you will

do are “reply” and “resolve.” Whenever you make changes to a machine, make sure to log what you did in the ticket. When the machine is fixed or the task is completed, you can resolve the ticket.

C. Monitoring

You can monitor the cluster on monitor0.chtc.wisc.edu. This has links to Icinga, our host monitoring application, Grafana, and Ganglia. All of these are extremely powerful tools that can be used to monitor the status of machines in the cluster and diagnose problems with individual nodes.

D. How to Use This Guide

Any line beginning with “$” is a command line operation. Enter it directly as it appears, without the preceding “$”. Any bracketed item (eg. [System Name]) needs to be replaced with the corresponding entity. (eg. change [System Name] → e1000.chtc.wisc.edu)

Following the step-by-step walkthroughs to complete most basic tasks and use this as a reference manual. The appendix also includes a comprehensive list of server locations.

II. Rebuilding a Node

Rebuilding nodes is one of the primary responsibilities of student CHTC employees. Here's a step-by-step walkthrough for you.

1) Enable netboot in cobbler.
    a) Via Command Line:
        i) SSH into wid-service-1.chtc.wisc.edu
        ii) $ sudo cobbler system edit --name=[server name] --netboot-enabled=True
        iii) Check that netboot is enabled → $ sudo cobbler system report --name=[server name]
        iv) Sync Cobbler → $ sudo cobbler sync
    b) Via Web Interface
        i) Go to wid-service-1.chtc.wisc.edu/cobbler_web in your web browser
        ii) Click on "Systems" under the Configuration tab on the left side.
        iii) Find the node you want to rebuild and click on it's name in the list to open the node configuration tool.
        iv) Alternatively, navigate directly to: wid-service-1.chtc.wisc.edu/cobbler_web/system/edit/[node name]
        v) Click on the "general" drop down button to reveal more options
        vi) Check the "enable netboot" option
        vii) Hit "save" on the bottom of the page
        viii) When you are redirected to the cobbler system list page, hit "Sync" Under the Actions tab on the left side.
        ix) Once you get a popup notification on the top-right of the screen, the sync has complete. This may take a few seconds.
    c) Make sure you have the correct profile enabled in Cobbler as well. If you are doing a standard rebuild you probably won't have to change it, but make sure if it's a multi-disk execute node that it is set to the correct SL66 Exec profile.
2) Reboot the machine and netboot it.
    a) Most machines are set to netboot by default, meaning if you reboot them they will search for a netboot entry and if they find it, they will netboot automatically. If a machine is not netbooting automatically, you may need to press a button on the keyboard (Often F12) when it POSTS in order to force it to netboot. If you have tried these and it still won't boot from the network, go into the BIOS and change the boot order to set netboot as boot priority #1.
    b) If done correctly, it should launch the Scientific Linux installer. Once you see this is happening, move on to the next step.
3) Run puppet
    a) We are going to need to run puppet once the machine is rebuilt in order to configure it.
    b) While the machine is rebuilding, SSH into wid-service-1.chtc.wisc.edu

c) Run this command: $ sudo puppetca -c [node name] on wid-service-1.
d) If you do this before the machine finishes rebuilding, it may run puppet automatically when it rebuilds. To see if it is doing this: When the machine is booting Scientific Linux, hit an arrow key ← or → on the console keyboard to view the boot log. If the log is paused on “Starting: anamon… [OK]” for a while, that mean’s it’s running puppet. Good job! Once it finishes booting now, you should be able to log in with your username.
e) If the machine does not automatically run puppet, connect a console to the machine and log in as a root user (ask Admin for root login)
f) After clearing the puppet files from wid-service-1 in the previous steps, run $ sudo rm -rvf /var/lib/pup/ssl **on the target node. DO NOT RUN THIS ON wid-service-1.**
g) Then run $ sudo puppetd -tv --configtimeout=1000
h) Note: Puppet will not run if networking is broken (try to restart networking or reboot the machine if this is the case) or the system clock is broken. To set the clock run: $ rdate -s ntp.doit.wisc.edu

4) Log in and confirm condor is running
a) Once puppet finishes running, you should be able to log in with your username
b) Confirm condor is running: $ condor_status $HOSTNAME

III. Building a New Node

TODO

IV. Decomissionig a Node

TODO

V. Creating Tickets

TODO

VI. Checking for Errors

TODO

VII. Advanced Topics

A. Networking

To change to a different port on the machine, change the network script in /etc/sysconfig/network-scripts. service network restart. Make sure to change to the MAC addr in dhcp and cobbler. ping google…

ifconfig -a | less to see list of NICs.

TODO

VIII. Appendix

A. Node Locations

Up to date as of May 13, 2016

Please note that not all of these machines listed are execute nodes. This is a comprehensive list of every execute server location that the CHTC manages, but it may contain some additional non-execute nodes. In the future it will hopefully contain a complete list of every server the CHTC manages.

3370

Rack 1 (De Pablo)	Rack 2	Rack 3	Rack 4	Rack 5
e198 e197 e196 e195 e194 e193 e192 e191 e190 e189 e188 e187 e186 e185 e184 e183 e182 e180 e179 e178 e177 e176 e175 e174 e173 e172 e171 e170 e169	n/a	n/a	[unlabeled] swamp05 swamp04 swamp03 swamp02 swamp01	osghost itb-data1 itb-data2 itb-data3 itb-data4 itb-data5 itb-data6 itb-host1 itb-host2 itb-host3 vdt-bastion vdt-centos5-test vdt-debian6-test vdt-debian7-test

e168 e167 e166 e165 e164 e163 e162 e161 e160 e159 e158 e157 e156 e155 e154 e153 e152 e151				

Rack 6	Rack 7	Rack 8	Rack 9	GLOW Rack 5
host-6 pagesubmit atlas21 atlas22 atlas27 atlas26 atlas25 atlas24 atlas23	e222 e220 e219 e215 e214 e119 e212 e211 e210 e209 e208 e207 e206 e205 e204 e203 e202 e201 e200 e199 host-24	submit-4 host-23 host-21 host-19 host-17 host-15 host-13 host-11 e238 e237 e236 e235 e234 e233 e232 e231 e230 e229 e228 e227 e226 e225 e224 e223	e116 e117 nmi-0067 oconnorsubmit e115 gpu-1 [unknown] atlas10 atlas09 e111 matlab-build-5 e113 e112 e246 e245 e244 e243 e242 e241 e240 e239 e259 e258 e256	spalding-4 spalding-1 spalding-2 spalding-3

			e255 e254 e253 e252 e251 e250 e249 e248 e247	

WID

A14	A12			
e093 e094 e095 e121 e122 e123 e124 e125 e126 e127 e128 e129 e130 e131 e132 e133 e134 e135 e136 e137 e138 e139 e140 e141 e142 e143 e144 e145 e146 e147 e148 e149	deepdivesubmit host-3 [unlabled] [unlabeled] [unlabeled] host-7 submit-5 [unlabeled] quickstep **wid-service-1** e092 osg-ss-se exec-8.batlab host-1 host-2			

e150				

B1	B5	B8		
wid-003 [unlabeled] e019 e017 e020 e033 e021 e014 e015 matlab-build-1 e001 e091 [unlabeled] [unlabeled] [unlabeled]	e110 e109 e108 e107 e106 e105 e104 e103 e102 e101 e100 e099 e098 e097 e096	batlab stuff		

B240

G1	G2	G5	G6
proxy-b240 satellite e029 stress1 stress2 stress3 stress4 host-5	host-9 e024 e053 e009 e008 e007 e005 e089 e090 e088 e087 e086 e085 e084 e083 e082 e081 e080 e079	[unlabeled] [unlabeled] atlas29 atlas30 atlas31 atlas32 atlas33 atlas34 atlas35 atlas36 atlas37 atlas38 atlas39 atlas40 atlas41 atlas43	atlas44 atlas45 atlas46 atlas47 atlas48 atlas49 atlas50 atlas51 atlas52 atlas53 atlas54 atlas55 atlas56 atlas57 atlas58 atlas59 atlas60 atlas61 atlas63

	e078 e077 e076 e075 e074 e073 e072 e071 e070 e069 e068 e067		

E1	E2	E5	E6
n/a	e061 e060 e059 e058 e002 e025 e030 e057 e022 e040 e023 e018 e016 e026 e028 e041 e038 e042 e046 e056 e052 e043 db1 - spare parts db2 - retired db3 - retired db4 - retired db5 - retired db6 - retired db7 - retired	atlas80 atlas81 atlas82 atlas83 atlas84 atlas85 atlas86 atlas87 atlas88 atlas89 atlas90 atlas91 atlas92 atlas93 atlas95 atlas96 atlas97 atlas98 atlas99	atls64 atlas65 atlas66 atlas67 atlas68 atlas69 atlas70 atlas71 atlas72 atlas73 atlas74 atlas75 atlas76 atlas77 c140 - is this correct? atlas79 atlas08 atlas42 atlas62

C1	C2	C4
e036 e027 e039 atlas17 atlas11 atlas12 atlas16	c031 c032 c033 c011 c035 c036 c037 c038 c039 c040 c021 c022 c023 c024 c025 c026 c027 c028 c029 c030 c012 c013 c049 c015 c016 c017 c069 c020 c001 c002 c004 c070 c065 c007 c008 c009 c010	atlas13 atlas14 atlas28 atlas15 starfish e013 e012 e011 spalding11 spalding10 spalding09 spalding08 spalding07 spalding06 spalding05 c081 c082 c084 c085 c086 c088 c089 c090

A1	A2	A4
n/a	c071 c061 c073	mussel atlas18 atlas19

	c074 c041 c076 c077 c078 c064 c080 c062 c053 c054 c055 c046 c057 c058 c059 c060 e049 e050 e051 e054 e055 e062 e063 e064 e065 e031	atlas20 e047 e035 e034 [unlabeled] e006 cobbler (cobblerb240?) e010 e045 e044 [unlabeled] e003

2360/CSL

Glow Rack 6	Glow Rack 0	Glow Rack 4	Glow Rack 3	Rack 10	Glow Rack 7
atlas07 atlas04 atlas06 atlas05 atlas03 atlas02 mem2 mem1 gpu1 host-22 host-20 host-18 host-16	e299 e298 e297 e296 e295 e294 e293 e292 e291 e290 e289 e288 e287	e339 e338 e337 e336 e335 e334 e333 e332 e331 e330 e329 e328 e327	e379 e378 e377 e376 e375 e374 e373 e372 e371 e370 e369 e368 e367	e419 e418 e417 e416 e415 e414 e413 e412 e411 e410 e409 e408 e407	e459 e458 e457 e456 e455 e454 e453 e452 e451 e450 e449 e448 e447

host-14	e286	e326	e366	e406	e446
host-12	e285	e325	e365	e405	e445
host-10	e284	e324	e364	e404	e444
	e283	e323	e363	e403	e443
	e282	e322	e362	e402	e442
	e281	e321	e361	e401	e441
	e280	e320	e360	e400	e440
	e279	e319	e359	e399	e439
	e278	e318	e358	e398	e438
	e277	e317	e357	e397	e437
	e276	e316	e356	e396	e436
	e275	e315	e355	e395	e435
	e274	e314	e354	e394	e434
	e273	e313	e353	e393	e433
	e272	e312	e352	e392	e432
	e271	e311	e351	e391	e431
	e270	e310	e350	e390	e430
	e269	e309	e349	e389	e429
	e268	e308	e348	e388	e428
	e267	e307	e347	e387	e427
	e266	e306	e346	e386	e426
	e265	e305	e345	e385	e425
	e264	e304	e344	e384	e424
	e263	e303	e343	e383	e423
	e262	e302	e342	e382	e422
	e261	e301	e341	e381	e421
	e260	e300	e340	e380	e420