Supplemental PreCheck Script for Linux   
Requirements  
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Introduction

There have been a number of failures during upgrades and installs by Professional Services of Trellis 5.0.1, 5.0.1.2, and 5.0.2. While some could not have been forseen, there are many that could have been forseen. Preventing a failure can save many hours of diagnosis, opening tickets to engage Support, and Support engaging Engineering. Preventable failures include reasons like SELINUX not being disabled, or not have enough TMP file space. These and other root causes are not being caught by the Engineering precheck routine, version 4.0.0.31, which is the version downloaded from the CDN accessed from ft04.vertivco.com

Professional Services (PS) used to have its own precheck script that we ran in addition to the Engineering precheck. However, there was a lot of overlap between the two, and at some point the process was changed to only run the Engineering precheck. Given the number of recent failures, it has been decided to create a new PS precheck, that only checks for requirements not included in the Engineering Precheck. The new PS precheck will use the old version as a starting point, since it contains many checks that are still needed.

This document has 3 main sections:

1. A review of the checks in version 4.0.0.31 of the Engineering Precheck
2. A list of many of the reasons for recent failures in installs and prechecks that were not caughtby the Engineering Precheck
3. A review of the tests in the last version of the PS Precheck, and which tests are being kept, dropped, changed, or added.

Engineering Precheck 4.0.0.31 Linux

Here is high-level list of the tests in the Engineering Precheck file, xxxx. These were obtained from a review of the XML output from running the precheck, so there may be some tests that are missing or not clearly stated.

1. ValidateLinuxDirectoryPermissoins

stat -t --format=%n,%a,%U,%G, /etc/oraInst.loc /etc/oratab /etc/sudoers /u01 /u02 /u03

* 1. 664 and root:root on /etc/oraInst.loc
  2. 664 and oracle:oinstall on /etc/oratab
  3. 440 and root:root on /etc/sudoers
  4. 644 and root:root on /etc/xinet.d/nodemanager
  5. 775 and oracle:oinstall on /u01 /u02 and /u03

1. ValidateLinuxEntropy
   1. Tests how quickly entropy drained, and whether sufficient random numbers were generated.
   2. Shows current entropy. Not sure what value it’s using for a required miminum
2. ValidateLinuxSysctl
   1. Compares expected value (2097152) to configured value for kernel.shmall
   2. Compares expected value (536870912) to configured value for kernel.shmax
3. ValidateHostAlias
   1. Shows /etc/hosts file.
   2. Validates trellis-front and trellis-back roles
4. ValidateLinuxMemoryRequirements
   1. Compares expected value to actual value (24G on back, 32 on front)
5. ValidateLinuxSystemInformation
   1. Shows df –si, fdisk -1, pvdisplay, lvdisplay, /proc/meminfo, /proc/mounts, /proc/diskstats, dmidecode
6. ValidateHostnameResolution
   1. Shows hostname
7. ValidateFIODisk
   1. Runs fio
   2. Shows df -P --si
8. ValidateLinuxIPV6LocalHostAlias
   1. Not sure of test
9. ValidateLinuxTMPDirectory
   1. Shows /proc/mounts
   2. Runs df -P /tmp | tail -1 | cut -d' ' -f 1
10. ValidateSudoersFile
    1. Looks for missing or unwanted entries for root and oracle
11. ValidateLinuxTimezone
    1. Checks for valid timezone
    2. Compares /etc/localtime to /usr/share/zoneinfo/GMT
12. ValidateLinuxTMPFS
    1. Shows /proc/mounts
    2. Shows /etc/fstab
13. ValdiateLinuxUserLimits
    1. ulimit -S -u, result >= 2047
    2. ulimit -H -u, result >= 16384
    3. ulimit -S -n, result >= 1024
    4. ulimit -H -n, result >= 65536
    5. ulimit -S -s, result >= 10240
14. ValidateInvalidCharacters
    1. Not sure which key files it is checking for invalid characters
15. ValidateLinuxDiskPerformance
    1. Various disk performance checks
16. ValidateNetworkBandwidth
    1. Computes network bandwidth in MB/s
17. ValidateNetworkConnectivity
    1. Pings front server looking for packet loss and time
    2. Connects to ports 7/80/443/1521/6443/7011/7012/8011/8012/7005/8001/8002/7001/7002/7021/7022/7023/7024/7026/7027/7031/8080/5556
18. ValidateNetworkLatency
    1. Performs series of latency tests
19. ValidateXinetdConfiguration
    1. Shows /etc/xinetd.d/nodemanager file. Checks disable flag
20. ValidateRPMPackages
    1. Validates required packages
21. ValidateLinuxOSVersion
    1. Shows current OS. Validates if OS is supported.
22. ValidateLinuxVirtualization
    1. Not sure what tests are performed.

Reasons for Recent Failures

Here is a list some of the root causes of failures in recent installs and ugprades, that were preventable if the tests has been included in a Precheck:

1. Insufficient space for the /tmp folder
   1. Doesn’t check for >= 9.8G /tmp file for installs and upgrades, with at least 9.6 free
2. Insufficient space for the /u0x folders
   1. Doesn’t check for >= 50G available space for upgrades (Note: how should this be split if separate mount points used)?
   2. Doesn’t check for >= 300G available space for installs.
3. Insufficient swapfile space
   1. One failure was because 500MB wasn’t available at the start of one of the Oracle component installs. Support recommended starting the install with a 10G swapfile
4. Missing packages
5. Incorrect expected values for kernel.shmall and kernel.shmax.
6. Not checking that the memory needed for oracle was compatible with the kernel.shmall and kernet.shmax values
7. Not checking that SELINUX is disabled
8. Not checking that the owner on /home/oracle is oracle:oinstall
9. Not checking that ORACLE\_HOME system variable is set.

Changes to Existing Script

The Professional Services precheck script, Trellis-3.x\_Linux\_Report\_v-3\_1.sh, will be used as the starting point. It already has many tests that not included in the Enginerring PreCheck. The tests are numbered, to match the tests described in the document xxx. Here is a list of the changes that will be made to each test.

* Keep the configuration details summary
* Remove 1.1 check for OS version
* Remove 1.2 check for /u0\* permissions
* Keep 1.51 check for Oracle User Info (e.g. oracle:x:500:500::/home/oracle:/bin/bash\*)
* Keep 1.52 check for Group Info (i.e. oracle:oinstall)
* Change 1.53 check for Environment Variables (i.e. PATH, MW\_HOME, ORACLE\_HOME, ORACLE\_SID) to update folder name in ORACLE\_HOME (to 12.0.1.2)
* Keep 1.54 check for oraInst Content and Permissions
* Keep 1.55 check for oratab Content and Permissions
* Remove1.56 Check for Network Manager Disabled
* Remove 1.57 check for nodemanager content and permissions
* Remove 1.58 check for sudoers Content
* Keep 1.59 check to verify required packagesonly check for those packages not included in Engineering Precheck
* Keep 1.60 check that ANT package is not installed
* Change 1.61 check for /etc/sysctl.conf file to update shmall/shmax to match 7.3 kickstart file, and remove check for kernel.random.write\_wakeup\_threshold
* Remove 1.62 check for /etc/limits.conf file
* Remove 1.63 check for /etc/pam.d/login file
* Keep 1.64 check for oracle user mask
* Change 1.65 check for licensing server symlinks to match new location for licensing folder
* Keep 1.66 check that file permissions are retained in the /home/oracle and /tmp folders
* Keep 1.67 check for /tmp permissions
* Keep 1.68 check for global Java version of 1.6 or 1.7
* Remove 2.2 check for memory
* Keep 2.3 HDD Throughput check of >= 150 MB/s
* Modify 2.4 check for Disk Space
* Keep 2.7 check for required CPU Nominal Core Frequency (> 2600 best, > 2200 ok, <= 2200 not ok)
* Keep 2.8 check for recommended CPU Nominal Core Frequency
* Keep 2.9 check for CPU Core Count (>= 4)
* Keep 3.1 check for VMWare tools
* Keep 3.5 check for RNGD options for virtual environment in /etc/sysconfig/rngd
* Keep 4.2 check for IPTABLES disabled
* Keep 4.3 check that Entropy Services are enabled and start up with server
* Keep 4.4 check for SELinux disabled
* Keep 5.1 check for only 1 NIC Enabled
* Keep 5.2 check for DHCP not enabled
* Keep 5.3 check that hosts file resolves to correct ip, and if user wants script to create hosts file
* Keep 5.8 check for Time Zone

These additional tests need to be added to the script:

* Add check for swapfile space
* Add check for /home/oracle ownership
* Add check for shmall and shmax values compared to database value
* Modify check 3.5 to check package and service state before checking the configuration
* Modfy check 3.5 to only recommend changes to RNGTools configuration on virtual hosts that can not produce enough entropy and even when they meet that criteria the user should be warned to configure a suitable entropy source instead of using the change.
* Add check to validate name servers and FQDN functionality (e.g. /etc/resolv.conf has nameserver 123.123.123.123. nslookup should validate the hostname -f entry. e.g. nslookup set type=any $hostname and get a valid response for each. DNS server entry.)
* Add check to recommend installation of Name Server Caching Daemon (ncsd) to significantly improve name resoltution between hosts.
* Add check if ipv6 in use or counted as dual stack
* Add check for ip6tables