

Fault location on OpenLDAP

FAULT LOCATING INSTRUCTION



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1 INTRODUCTION

1.1 SCOPE

This document describes the best practices for locating and repairing faults in the MX-ONE Service Node use of OpenLDAP.

1.2 BACKGROUND - REQUIRED READING

The ***OpenLDAP Database*** description provides required background information and is required reading for anyone trying to troubleshoot OpenLDAP in the MX-ONE Service Node.

The *OpenLDAP Database* description also lists some other sources of OpenLDAP information. The information available in those sources will not be duplicated here.

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GENERAL FAULT LOCATION

Check carefully to see where the fault really is. Check the information provided by the MX-ONE Service Node to get information about what has gone wrong. Often you will find that your fault is something that is totally unrelated to OpenLDAP.

2.1

LOG FILES

Like all LINUX-based systems, the MX-ONE Service Node uses **syslog** (the system logging daemon) for logging of diagnostic messages. There is a configuration of syslog where to store or forward the messages, but normally the relevant messages will be found in the file **/var/log/messages**. When reading the log files it is essential to know the following names that are recorded as senders of the messages:

slapd

The OpenLDAP server

BDB (or bdb-)

Berkley Database backend used by OpenLDAP

2.2

ALARMS

Check with the command *alarm* to print (list) alarms in the alarm log. Use *alarm -p --format detail* to see the detailed information. The detailed alarm information can sometimes tell you exactly what is wrong.

2.3

FAULT MESSAGES

Use the command *trace -print 0* to print the fault messages in the system. The fault messages can be very valuable when trying to understand a fault. But often an experienced service technician is needed to understand the information in the fault messages.

3 SYSTEM HANGS DURING BOOT

If the system has not booted, you cannot login on the console. However, you are very often able to log in remotely using SSH. Log in using SSH, and do the normal steps to locate the fault.

Note: The SSH daemon/service is started before many other services to allow an SSH login for fault location.

4 NETWORK TROUBLE

Many times OpenLDAP problems are actually caused by network trouble. The OpenLDAP deployment in the MX-ONE Service Node is especially sensitive to network trouble during the initial startup and initial configuration of the system.

4.1 PROPER OPERATION OF DNS

LDAP is very sensitive to mis-configuration of the name- and address-lookup facility. To see whether the results of a DNS and Reverse DNS query match, log in to every LIM and check with the host command that both the names and the IP addresses of every other LIM are translated correctly.

4.2 NETWORK CONNECTIVITY

Check network connectivity with **ping**. Make sure that all LIMs can ping the LDAP master (by default, LIM1). Also check if the LDAP master can ping all LIMs. It is essential that the address translation echoed by ping match that of the host command.

4.3 TIME/DATE CONFIGURATION PROBLEMS

Many features of the MX-ONE Service Node need the time and date to be synchronized between all LIMs. OpenLDAP is only one of the functions that can be sensitive to time/date problems.

Using the **date** command, check if the time and date configuration is identical on all LIMs.

If necessary, start NTP.

The recommended setup is to use LIM 1 as NTP server (synchronization source) for all other LIMs. LIM 1 updates the time and date configuration from an external source.

5 LDAP MASTER NOT STARTING

5.1 HOW TO FIND MASTER

If some LIMs do not start because of LDAP problems, you first have to find the master and repair it. You should try to repair the replicas only after you have the master up and running properly.

Read in `/etc/openldap/slapd` on any LIM to see where the master is located.

Note: The default configuration is to have the master on the lowest LIM number.

5.2 TEST IF LDAP MASTER WORKS

Log in to the computer or LIM with the LDAP master and test with the commands `ldap_ping -verbose` and `ldap_wait_until_replicated -verbose` that the master is operational.

5.3 CORRUPTED DATABASE FILES ON MASTER

5.3.1 START FROM HOT-BACKUP

Every time the OpenLDAP server is closed down properly and every time the `data_backup` command is run, a binary hot-backup of the LDAP database files is created. Normally, the start script, `/etc/init.d/eri_ldap`, detects if the binary database files are corrupt, and the start script will itself use the hot-backup files instead. If the automatic procedure has failed to detect this problem, you can force a start from the hot-backup by performing the following steps:

1. Shut down the local server:
`/etc/init.d/eri_ldap stop`
2. Delete the binary database files to force use of the hot-backup:
`rm -rf /var/opt/eri_sn/ldap/master/*`
`rm -rf /var/opt/eri_sn/ldap/local/*`
3. Start using the hot-backup files:
`/etc/init.d/eri_ldap start`

5.3.2 START FROM LDIF FILES

Every time the `data_backup` command is run, a new text-based LDIF, LDAP Data Interchange Format, file is created. If 5.3.1 Start from hot-backup on page 6 failed, you can delete all binary data on the master and force it to read back data from the text-based LDIF file. To do so, follow these steps:

1. Shut down the local LDAP server:
`/etc/init.d/eri_ldap stop`
2. Delete the binary database files to force use of the hot-backup:
`rm -rf /var/opt/eri_sn/ldap/master/*`
`rm -rf /var/opt/eri_sn/ldap/local/*`
`rm -rf /var/opt/eri_sn/ldap/recovery/*`

3. Start the LDAP server:
/etc/init.d/eri_ldap start

6 LDAP REPLICA NOT STARTING

If an LDAP replica does not start properly, you should first verify that the master is up and running. See 5.1 How to find master on page 6.

6.1 START FROM HOT-BACKUP

Every time the OpenLDAP server is closed down properly and every time the *data_backup* command is run, a binary hot-backup of the LDAP database files is created. Normally, the start script, */etc/init.d/eri_ldap*, detects if the binary database files are corrupt, and the start script will automatically use the hot-backup files instead. If the automatic procedure has failed to detect this problem, you can force a start from the hot-backup by following these steps:

1. Shut down the local LDAP server:
/etc/init.d/eri_ldap stop
2. Delete the binary database files to force use of the hot-backup:
*rm -rf /var/opt/eri_sn/ldap/master/**
*rm -rf /var/opt/eri_sn/ldap/local/**
3. Start using the hot-backup files:
/etc/init.d/eri_ldap start

6.2 REPLICATE ALL FROM MASTER

If 6.1 Start from hot-backup on page 7 does not work, you can delete all data on the replica, and let it replicate all from the master again. To do so, follow these steps:

1. Shut down the local LDAP server:
/etc/init.d/eri_ldap stop
2. Delete the binary database files to force use of the hot-backup:
*rm -rf /var/opt/eri_sn/ldap/master/**
*rm -rf /var/opt/eri_sn/ldap/local/**
*rm -rf /var/opt/eri_sn/ldap/recovery/**
3. Start and wait for replication:
/etc/init.d/eri_ldap start

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INCORRECT DATA AT SOME REPLICA

If you suspect that some replica has incorrect data, it can be checked with the *ldap_db_diff* command. This command checks for differences between the data in two LDAP servers. (The default is to compare the LDAP server at localhost to the configured master.) See *ldap_db_diff -help* for more information.

Note: A small replication latency is unavoidable and allowed.

If there is a significant difference between the local replica and the master, the local replica can be forced to re-synchronize its data from the master by the command */etc/init.d/eri_ldap force-resync*.

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REPORT FAULTS

If you have to resort to the manual fault repairing described in this document, for any other reason than broken hardware or administration failure, and you can reproduce the fault - please, report it.