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TDDI41 Lab report

Högskoleingenjörsutbildning i datateknik, 180 hp

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System Administration
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NTP

Exercise 2: The Network Time Protocol

2-1 Explain the concept of "stratum" in a clock hierarchy (e.g. NTP, but also synchronized networks and other clock hierarchies).Why is it necessary to have a hierarchy of clocks rather than just a bunch of reference clocks.

Stratum 0 are reference clocks, usually atom clocks. An NTP server which gets its time from those are labeled stratum 1, and the servers which sync to stratum 1 are labeled stratum 2, and so on. Stratum 16 is an unsynchronized device. Stratum tiers are necessary for backup and "sanity checks".

2-2 How large a difference between the reference clock and the system clock does NTP accept and attempt to adjust.

Less than 1000 s, but greater than 128 ms.

2-3 NTP usually works by speeding up or slowing down the clock, not setting it outright. Why.

Setting the time is a security risk and a reliability risk with time stamps occuring twice or not at all.

Exercise 3: Install and configure NTP server and clients

3-3 Explain the output of ntpq -p.

```
# ntpq -p
     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
*ida-gw.sysinst. 192.36.143.130   2 u    3   64   37  130.222   55.492  64.905
 130.236.178.159 .BCST.          16 u    -   64    0    0.000    0.000   0.031
```

*	current time source
remote	target of sync
refid	remote source's sync source
st	stratum level of source
t	types available (u = unicast)
when	time since last received packet
poll	poll interval (log2 seconds)
reach	Octal binary history of packets
delay	roundtrip delay
offset	server time difference (ms)
jitter	difference in milliseconds between two samples