v1.18_ EMS

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    -
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  - SNMP

/usr/lib/eltex-ems/conf/config.txt

.

/usr/lib/eltex-ems/conf/config.txt

```
# DB Event
poolName1=event
event.jdbc.driver=org.gjt.mm.mysql.Driver
event.jdbc.dbUrl=jdbc:mysql://localhost/eltex_alert?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
event.jdbc.username=javauser
event.jdbc.password=javapassword
event.jdbc.maxPoolSize=32
event.jdbc.inUse=yes
# remote db host access with su privileges
# event.ssh.login=
# event.ssh.password=
# event.ssh.port=

# DB Tree
poolName2=tree
tree.jdbc.driver=org.gjt.mm.mysql.Driver
tree.jdbc.dbUrl=jdbc:mysql://localhost/eltex_ems?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&noAccessToProcedureBodies=true&u
seSSL=false
tree.jdbc.username=javauser
tree.jdbc.password=javapassword
tree.jdbc.maxPoolSize=20
tree.jdbc.inUse=yes

# DB Ont
poolName3=ont
ont.jdbc.driver=org.gjt.mm.mysql.Driver
ont.jdbc.dbUrl=jdbc:mysql://localhost/eltex_ont?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
ont.jdbc.username=javauser
ont.jdbc.password=javapassword
ont.jdbc.maxPoolSize=40
ont.jdbc.inUse=yes

# DB Syslog
poolName4=syslog
syslog.jdbc.driver=org.gjt.mm.mysql.Driver
syslog.jdbc.dbUrl=jdbc:mysql://localhost/Syslog?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
syslog.jdbc.username=javauser
syslog.jdbc.password=javapassword
syslog.jdbc.maxPoolSize=4
syslog.jdbc.inUse=yes
# remote db host access with su privileges
# syslog.ssh.login=
# syslog.ssh.password=
# syslog.ssh.port=

# DB acsmain (alias=cpe)
poolName5=cpe
cpe.jdbc.driver=org.gjt.mm.mysql.Driver
cpe.jdbc.dbUrl=jdbc:mysql://localhost/acsmain?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
cpe.jdbc.username=javauser
cpe.jdbc.password=javapassword
cpe.jdbc.maxPoolSize=2
cpe.jdbc.inUse=yes

# DB  acscmds(alias=cmds)
poolName6=cmds
cmds.jdbc.driver=org.gjt.mm.mysql.Driver
cmds.jdbc.dbUrl=jdbc:mysql://localhost/acscmds?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
cmds.jdbc.username=javauser
cmds.jdbc.password=javapassword
cmds.jdbc.maxPoolSize=2
cmds.jdbc.inUse=yes
```

```
# DB  acsinf(alias=inf)
poolName7=inf
inf.jdbc.driver=org.gjt.mm.mysql.Driver
inf.jdbc.dbUrl=jdbc:mysql://localhost/acsinf?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
inf.jdbc.username=javauser
inf.jdbc.password=javapassword
inf.jdbc.maxPoolSize=2
inf.jdbc.inUse=yes

# DB  acscache(alias=cache)
poolName8=cache
cache.jdbc.driver=org.gjt.mm.mysql.Driver
cache.jdbc.dbUrl=jdbc:mysql://localhost/acscache?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
cache.jdbc.username=javauser
cache.jdbc.password=javapassword
cache.jdbc.maxPoolSize=2
cache.jdbc.inUse=yes

# DB  radius(alias=radius)
poolName9=radius
radius.jdbc.driver=org.gjt.mm.mysql.Driver
radius.jdbc.dbUrl=jdbc:mysql://localhost/radius?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
radius.jdbc.username=javauser
radius.jdbc.password=javapassword
radius.jdbc.maxPoolSize=40
radius.jdbc.inUse=yes
# remote db host access with su privileges
# radius.ssh.login=
# radius.ssh.password=
# radius.ssh.port=

# ------------------------------------------ SSID ---------------------------------------------
# DB  wireless (alias=wireless)
poolName10=wireless
wireless.jdbc.driver=org.gjt.mm.mysql.Driver
wireless.jdbc.dbUrl=jdbc:mysql://localhost/wireless?
useUnicode=true&characterEncoding=utf8&relaxAutoCommit=true&connectTimeout=5000&useSSL=false
wireless.jdbc.username=javauser
wireless.jdbc.password=javapassword
wireless.jdbc.maxPoolSize=30
wireless.jdbc.inUse=yes

# memcached server address
#memcached_server_ip_port=127.0.0.1:11211
```

, 'radius':

- **poolName** - EMS;
- **radius.jdbc.dbUrl** - ;
- **radius.jdbc.username** - ;
- **radius.jdbc.password** - ;
- **radius.jdbc.maxPoolSize** - , EMS . , MySQL. ONT CPE, ont, cpe, cmds, inf, cache 0.
- **ssh** , EMS .

/usr/lib/eltex-ems/conf/log4j2.xml

EMS .

/usr/lib/eltex-ems/conf/log4j2.xml

```
<?xml version="1.0" encoding="UTF-8"?>

<!--
    Use log4j version 2  - EMS server
```

```
    error  black_box -     :
     1)   - () -    .
     2)    () -    .

        configuration
     - monitorInterval="30" -   -  30  -   .
            - 36000  -  10 .
-->

<configuration monitorInterval="600">

    <properties>
        <property name="basedir">/var/log/eltex-ems</property>
        <property name="maxSize">20 MB</property>
        <property name="maxCount">20</property>

        <property name="gelfHost">udp:lab3-test.eltex.loc</property>
        <property name="gelfPort">12201</property>
        <property name="gelfLevel">OFF</property>

        <Property name="dateSuffix">%d{yyyyMMdd}</Property>
        <property name="pattern">%d{ISO8601} [%t] %-5p %logger{1} %C{1}.%M(line:%L). %m%n</property>
    </properties>

    <appenders>

        <!-- =========  black_box  ============ -->

        <!-- 1) -  - -    maxCount  -   . ,     .  - -  . -->

        <RollingFile name="black" fileName="${basedir}/black_box.txt"
                     filePattern="${basedir}/black_box/black_box-${dateSuffix}-%i.txt.gz">
            <ThresholdFilter level="INFO" onMatch="ACCEPT" onMismatch="DENY"/>
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <!-- =========  error  ============ -->

        <!-- 1) -  - -   -    maxCount -    -->

        <RollingFile name="errorLog" fileName="${basedir}/error.log" filePattern="${basedir}/error
/error-${dateSuffix}-%i.log.gz">
            <ThresholdFilter level="ERROR" onMatch="ACCEPT" onMismatch="DENY"/>
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <!-- =========  unknown  ============ -->

        <!-- ,    ,  AsyncAppender     (  ).    -    . -->
        <RollingFile name="unknowLog" fileName="${basedir}/unknown.log"
                     filePattern="${basedir}/unknown/unknown-${dateSuffix}-%i.log.gz">
            <ThresholdFilter level="ERROR" onMatch="ACCEPT" onMismatch="DENY"/>
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
```

```
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!--           ,   logger.debug,
     - ..        ,     .
     bufferSize -     (  - 128). -->
    <Async name="async">
        <appender-ref ref="black"/>
        <appender-ref ref="errorLog"/>
        <!-- ,    ,  AsyncAppender     (  ).    -    . -->
        <error-ref>unknowLog</error-ref>
    </Async>

    <Syslog name="syslogApp" format="RFC5424" host="192.168.1.1" port="514"
            protocol="UDP" appName="Eltex" includeMDC="true" mdcId="mdcId"
            facility="USER" enterpriseNumber="18060" newLine="true"
            messageId="Audit" id="App"/>

    <!--       syslog.    ,     INFO -->
    <Syslog name="TrapSyslog" format="RFC5424" host="192.168.1.1" port="514"
            protocol="UDP" appName="Eltex-EMS" includeMDC="true" mdcId="mdcId"
            facility="USER" enterpriseNumber="18060" newLine="true"
            messageId="Audit" id="App">
        <ThresholdFilter level="ERROR" onMatch="ACCEPT" onMismatch="DENY"/>
    </Syslog>

    <Gelf name="Gelf" host="${gelfHost}" port="${gelfPort}" version="1.1" facility="eltex-ems"
          extractStackTrace="true" originHost="%host{fqdn}" maximumMessageSize="8192" >
        <Field name="thread" pattern="%t" />
        <Field name="level" pattern="%level" />
        <Field name="severity" pattern="%-5level" />
        <Field name="logger" pattern="%logger{1}" />
        <Field name="location" pattern="%C{1}.%M(line:%L)" />
    </Gelf>

    <!--  . -->
    <RollingFile name="testLog" fileName="${basedir}/test.txt" filePattern="${basedir}/test
/test-${dateSuffix}-%i.txt.gz">
        <!--ThresholdFilter level="DEBUG" onMatch="ACCEPT" onMismatch="DENY"-->
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- ================================  ========================================== -->

    <RollingFile name="HandlersPool" fileName="${basedir}/monitor/HandlersPool/handlers_pool.log"
                 filePattern="${basedir}/monitor/HandlersPool/handlers_pool-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <RollingFile name="CheckDbConnect" fileName="${basedir}/monitor/CheckDbConnect/check_db.log"
                 filePattern="${basedir}/monitor/CheckDbConnect/check_db-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
```

```
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <RollingFile name="AlertsSynchronized" fileName="${basedir}/monitor/AlertsSynchronized/alerts_sync.log"
                 filePattern="${basedir}/monitor/AlertsSynchronized/alerts_sync-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <RollingFile name="AlertsArchiving" fileName="${basedir}/monitor/AlertsArchiving/alerts_archiving.log"
                 filePattern="${basedir}/monitor/AlertsArchiving/alerts_archiving-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <RollingFile name="FwReports" fileName="${basedir}/monitor/FwReports/fw_reports.log"
                 filePattern="${basedir}/monitor/FwReports/fw_reports-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <RollingFile name="MonitoringTask" fileName="${basedir}/monitor/MonitoringTask/monitoring_task.log"
                 filePattern="${basedir}/monitor/MonitoringTask/monitoring_task-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <RollingFile name="UploadConfigure" fileName="${basedir}/monitor/UploadConfigure/upload_configure.log"
                 filePattern="${basedir}/monitor/UploadConfigure/upload_configure-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <RollingFile name="SystemBackup" fileName="${basedir}/monitor/SystemBackup/system_backup.log"
                 filePattern="${basedir}/monitor/SystemBackup/system_backup-${dateSuffix}-%i.log.gz">
        <PatternLayout>
```

```
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="SyncPon" fileName="${basedir}/monitor/SyncPon/sync_pon.log"
                     filePattern="${basedir}/monitor/SyncPon/sync_pon-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="EmsServerDiagnostics" fileName="${basedir}/monitor/EmsServerDiagnostics
/ems_server_diagnostics.log"
                     filePattern="${basedir}/monitor/EmsServerDiagnostics/ems_server_diagnostics-${dateSuffix}-%
i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="SystemBackupDiagnostics" fileName="${basedir}/monitor/SystemBackupDiagnostics
/system_backup_diagnostics.log"
                     filePattern="${basedir}/monitor/SystemBackupDiagnostics
/system_backup_diagnostics-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="SyslogCleaner" fileName="${basedir}/monitor/SyslogCleaner/syslog_clean.log"
                     filePattern="${basedir}/monitor/SyslogCleaner/syslog_clean-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="AlertsClose" fileName="${basedir}/monitor/AlertsClose/alerts_close.log"
                     filePattern="${basedir}/monitor/AlertsClose/alerts_close-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
```

```
        </RollingFile>

        <RollingFile name="LogsDirCleaner" fileName="${basedir}/monitor/LogsDirCleaner/logsdir_clean.log"
                     filePattern="${basedir}/monitor/LogsDirCleaner/logsdir_clean-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="FwStationUpdate" fileName="${basedir}/monitor/FwStationUpdate/station_update.log"
                     filePattern="${basedir}/monitor/FwStationUpdate/station_update-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="CheckOLTTermoMonitor" fileName="${basedir}/monitor/CheckOLTTermoMonitor
/temperature_scan.log"
                     filePattern="${basedir}/monitor/CheckOLTTermoMonitor/temperature_scan-${dateSuffix}-%i.log.
gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="LogsSender" fileName="${basedir}/monitor/LogsSender/logsdir_sender.log"
                     filePattern="${basedir}/monitor/LogsSender/logsdir_sender-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="SwitchCounterCleaner" fileName="${basedir}/monitor/SwitchCounterCleaner
/switch_counter_clean.log"
                     filePattern="${basedir}/monitor/SwitchCounterCleaner/switch_counter_clean-${dateSuffix}-%i.
log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <!--  ACS -->
        <RollingFile name="CheckAcsdBreak" fileName="${basedir}/monitor/CheckAcsdBreak/acsd_break.log"
                     filePattern="${basedir}/monitor/CheckAcsdBreak/acsd_break-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
```

```
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <!--  GePON -->
        <RollingFile name="FwNteUpdate" fileName="${basedir}/monitor/FwNteUpdate/nte_update.log"
                     filePattern="${basedir}/monitor/FwNteUpdate/nte_update-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>


        <!--  RADIUS -->
        <RollingFile name="NasAndTreeObjFitnessMonitor" fileName="${basedir}/monitor/NasAndTreeObjFitnessMonitor
/nas_treeobj_fitness.log"
                     filePattern="${basedir}/monitor/NasAndTreeObjFitnessMonitor
/nas_treeobj_fitness-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <!--  GPON -->
        <RollingFile name="NtpOmciSheduler" fileName="${basedir}/monitor/NtpOmciSheduler/ntp_omci_sheduler_log.
log"
                     filePattern="${basedir}/monitor/NtpOmciSheduler/ntp_omci_sheduler_log-${dateSuffix}-%i.log.
gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>
        <RollingFile name="GponOntAutoupdateFlag" fileName="${basedir}/monitor/GponOntAutoupdateFlag
/gpon_ont_autoupdate_flag.log"
                     filePattern="${basedir}/monitor/GponOntAutoupdateFlag
/gpon_ont_autoupdate_flag-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <!--  PON COMMON -->
        <RollingFile name="OntProblems" fileName="${basedir}/monitor/OntProblems/ont_problems.log"
                     filePattern="${basedir}/monitor/OntProblems/ont_problems-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
```

```
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- Ott Overdue -->
    <RollingFile name="OttOverdue" fileName="${basedir}/monitor/OttOverdue/ott_overdue.log"
                 filePattern="${basedir}/monitor/OttOverdue/ott_overdue-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- TL1 -->
    <RollingFile name="TL1" fileName="${basedir}/modules/TL1/tl1.log"
                 filePattern="${basedir}/modules/TL1/tl1-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- Feature #26980      '-'  xml  -->
    <RollingFile name="Language" fileName="${basedir}/language/language.log"
                 filePattern="${basedir}/language/language-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!--appender type="List" name="List"></appender-->

    <!--  PON COMMON -->
    <RollingFile name="SyncPonProfiles" fileName="${basedir}/monitor/SyncPonProfiles/sync_pon_profiles.log"
                 filePattern="${basedir}/monitor/SyncPonProfiles/sync_pon_profiles-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- SsidLinkCheckMonitor -->
    <RollingFile name="SsidLinkCheck" fileName="${basedir}/monitor/SsidLinkCheck/ssid_link_check.log"
                 filePattern="${basedir}/monitor/SsidLinkCheck/ssid_link_check-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
```

```
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="RadiusBackup" fileName="${basedir}/monitor/RadiusBackup/radius_backup.log"
                     filePattern="${basedir}/monitor/RadiusBackup/radius_backup-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="SsidSchedulerCheck" fileName="${basedir}/monitor/SsidSchedulerCheck/ssid_scheduler.
log"
                     filePattern="${basedir}/monitor/SsidSchedulerCheck/ssid_scheduler-${dateSuffix}-%i.log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="WifiAlienMonitor" fileName="${basedir}/monitor/WifiAlienMonitor/wifi_alien_monitor.
log"
                     filePattern="${basedir}/monitor/WifiAlienMonitor/wifi_alien_monitor-${dateSuffix}-%i.log.
gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="SsidApbCheckMonitor" fileName="${basedir}/monitor/SsidApbCheckMonitor/ssid_apb_check.
log"
                     filePattern="${basedir}/monitor/SsidApbCheckMonitor/ssid_apb_check-${dateSuffix}-%i.log.gz"
>
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <RollingFile name="LossCommunication" fileName="${basedir}/monitor/LossCommunication
/wifi_loss_communication.log"
                     filePattern="${basedir}/monitor/LossCommunication/wifi_loss_communication-${dateSuffix}-%i.
log.gz">
            <PatternLayout>
                <pattern>${pattern}</pattern>
            </PatternLayout>
            <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
                <SizeBasedTriggeringPolicy size="${maxSize}"/>
            </Policies>
            <DefaultRolloverStrategy max="${maxCount}"/>
        </RollingFile>

        <!-- Eltex Radius NBI -->
```

```
    <RollingFile name="NBI" fileName="${basedir}/modules/NBI/nbi.log"
                 filePattern="${basedir}/modules/NBI/nbi-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- Eltex PCRF -->
    <RollingFile name="PCRF" fileName="${basedir}/modules/PCRF/pcrf.log"
                 filePattern="${basedir}/modules/PCRF/pcrf-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- Eltex SORM2 -->
    <RollingFile name="SORM2" fileName="${basedir}/modules/sorm2/sorm2.log"
                 filePattern="${basedir}/modules/sorm2/sorm2-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- Eltex APB -->
    <RollingFile name="APB" fileName="${basedir}/modules/apb/apb.log"
                 filePattern="${basedir}/modules/apb/apb-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

    <!-- AccountExpireMonitor -->
    <RollingFile name="AccountExpire" fileName="${basedir}/monitor/AccountExpire/account_expire.log"
                 filePattern="${basedir}/monitor/AccountExpire/account_expire-${dateSuffix}-%i.log.gz">
        <PatternLayout>
            <pattern>${pattern}</pattern>
        </PatternLayout>
        <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true"/>
            <SizeBasedTriggeringPolicy size="${maxSize}"/>
        </Policies>
        <DefaultRolloverStrategy max="${maxCount}"/>
    </RollingFile>

</appenders>

<loggers>
    <!-- ================================  ========================================== -->
    <!--
      additivity="false" - ..
      TRUE -          -  ,    errorLog      ERROR.
```

```
 -->
<logger name="gpon_ont_autoupdate_flag" level="error" additivity="true">
    <appender-ref ref="GponOntAutoupdateFlag"/>
</logger>
<logger name="ntp_omci_sheduler_log" level="error" additivity="true">
    <appender-ref ref="NtpOmciSheduler"/>
</logger>
<logger name="nte_update" level="error" additivity="true">
    <appender-ref ref="FwNteUpdate"/>
</logger>
<logger name="acsd_break" level="error" additivity="true">
    <appender-ref ref="CheckAcsdBreak"/>
</logger>
<logger name="logsdir_sender" level="error" additivity="true">
    <appender-ref ref="LogsSender"/>
</logger>
<logger name="temperature_scan" level="error" additivity="true">
    <appender-ref ref="CheckOLTTermoMonitor"/>
</logger>
<logger name="station_update" level="error" additivity="true">
    <appender-ref ref="FwStationUpdate"/>
</logger>
<logger name="logsdir_clean" level="error" additivity="true">
    <appender-ref ref="LogsDirCleaner"/>
</logger>
<logger name="syslog_clean" level="error" additivity="true">
    <appender-ref ref="SyslogCleaner"/>
</logger>
<logger name="alerts_close" level="error" additivity="true">
    <appender-ref ref="AlertsClose"/>
</logger>
<logger name="ems_server_diagnostics" level="error" additivity="true">
    <appender-ref ref="EmsServerDiagnostics"/>
</logger>
<logger name="system_backup_diagnostics" level="error" additivity="true">
    <appender-ref ref="SystemBackupDiagnostics"/>
</logger>
<logger name="sync_pon" level="error" additivity="true">
    <appender-ref ref="SyncPon"/>
</logger>
<logger name="upload_configure" level="error" additivity="true">
    <appender-ref ref="UploadConfigure"/>
</logger>
<logger name="system_backup" level="error" additivity="true">
    <appender-ref ref="SystemBackup"/>
</logger>
<logger name="monitoring_task" level="error" additivity="true">
    <appender-ref ref="MonitoringTask"/>
</logger>
<logger name="fw_reports" level="error" additivity="true">
    <appender-ref ref="FwReports"/>
</logger>
<logger name="ott_overdue" level="error" additivity="true">
    <appender-ref ref="OttOverdue"/>
</logger>
<logger name="alerts_archiving" level="error" additivity="true">
    <appender-ref ref="AlertsArchiving"/>
</logger>
<logger name="alerts_sync" level="error" additivity="true">
    <appender-ref ref="AlertsSynchronized"/>
</logger>
<logger name="handlers_pool" level="error" additivity="true">
    <appender-ref ref="HandlersPool"/>
</logger>
<logger name="check_db" level="error" additivity="true">
    <appender-ref ref="CheckDbConnect"/>
</logger>
<logger name="ont_problems" level="error" additivity="true">
    <appender-ref ref="OntProblems"/>
</logger>
<logger name="switch_counter_clean" level="error" additivity="true">
```

```
    <appender-ref ref="SwitchCounterCleaner"/>
</logger>
<logger name="sync_pon_profiles" level="error" additivity="true">
    <appender-ref ref="SyncPonProfiles"/>
</logger>
<logger name="ssid_link_check" level="error" additivity="true">
    <appender-ref ref="SsidLinkCheck"/>
</logger>
<logger name="nas_treeobj_fitness" level="error" additivity="true">
    <appender-ref ref="NasAndTreeObjFitnessMonitor"/>
</logger>
<logger name="radius_backup" level="error" additivity="true">
    <appender-ref ref="RadiusBackup"/>
</logger>
<logger name="ssid_scheduler" level="error" additivity="true">
    <appender-ref ref="SsidSchedulerCheck"/>
</logger>

<logger name="TL1" level="error" additivity="true">
    <appender-ref ref="TL1"/>
</logger>

<logger name="Language" level="error" additivity="true">
    <appender-ref ref="Language"/>
</logger>
<logger name="wifi_alien_monitor" level="error" additivity="true">
    <appender-ref ref="WifiAlienMonitor"/>
</logger>
<logger name="ssid_apb_check" level="error" additivity="true">
    <appender-ref ref="SsidApbCheckMonitor"/>
</logger>
<logger name="wifi_loss_communication" level="error" additivity="true">
    <appender-ref ref="LossCommunication"/>
</logger>


<!-- ==============================      ============================== -->
<!--
       Syslog       syslogApp
 additivity="false" - ..      -->
<logger name="Syslog" level="error" additivity="false">
    <appender-ref ref="syslogApp"/>
</logger>

<logger name="NBI" level="debug" additivity="true">
    <appender-ref ref="NBI"/>
</logger>

<logger name="PCRF" level="debug" additivity="true">
    <appender-ref ref="PCRF"/>
</logger>

<logger name="SORM2" level="debug" additivity="true">
    <appender-ref ref="SORM2"/>
</logger>

<logger name="APB" level="debug" additivity="true">
    <appender-ref ref="APB"/>
</logger>

<logger name="TRAP_SYSLOG" level="OFF" additivity="false">
    <appender-ref ref="TrapSyslog"/>
</logger>

<logger name="AUTH_SYSLOG" level="OFF" additivity="false">
    <appender-ref ref="TrapSyslog" />
</logger>

<!--       .   . -->
<!--logger name="Kernel" level="error">
    <appender-ref ref="black"/>
```

```
        </logger>

        <logger name="DB" level="error">
            <appender-ref ref="black"/>
        </logger-->

        <!--  snmp4j   log4j  . -->
        <logger name="org.snmp4j" level="error">
            <appender-ref ref="black"/>
        </logger>

        <!--      .     . -->
        <logger name="org.apache" level="error">
        </logger>

        <!--logger name="org.apache.log4j.xml" level="error">
            <appender-ref ref="black"/>
        </logger-->


        <!-- ================================   ================================ -->
        <!--
                     - test.txt (ref="testLog")
                 ( - additivity=false).
        -->

        <!--      wifi.associateClientsSize -->
        <logger name="wifiAssocClient" level="info" additivity="false">
            <appender-ref ref="testLog"/>
        </logger>

        <!--     . -->
        <logger name="dbConn" level="error" additivity="false">
            <appender-ref ref="testLog"/>
        </logger>

        <!-- ==========================        ====================== -->
        <!--    DEBUG.        . -->
        <root level="debug">
            <!--appender-ref ref="List"/-->
            <!--appender-ref ref="async"/-->
            <appender-ref ref="errorLog"/>
            <appender-ref ref="black"/>
            <appender-ref ref="Gelf" level="${gelfLevel}"/>
            <!--appender-ref ref="syslogApp"/-->
        </root>
    </loggers>

</configuration>
```

- :

```
<Configuration monitorInterval="600">
```

- :

```
<property name="basedir">/var/log/eltex-ems</property>
```

- (,):

```
<property name="maxSize">20 MB</property>
```

- , :

```
<property name="maxCount">20</property>
```

- Graylog (, ,):

```
<property name="gelfHost">udp:lab3-test.eltex.loc</property>
<property name="gelfPort">12201</property>
<property name="gelfLevel">OFF</property
```

- :

```
<root level="debug">
```

/usr/lib/eltex-ems/conf/system-config.txt

, . GUI EMS:

/usr/lib/eltex-ems/conf/system-config.txt

```
#    ,     MA4000
#Levels: Emergency,Alert,Critical,Error,Warning,Notice,Info,Debug
#Transport: udp, tcp
syslog.defaultIP=192.168.1.1
syslog.defaultPort=514
syslog.defaultTransport=udp
syslog.defaultLevels=Emergency,Alert,Critical,Error,Warning

# server socket and socket handlers pool
gui.port=9310
#gui.handler_pool_size=48
gui.handler_pool_size=200
gui.connection.timeout.sec=300

# snmp
alert.use=yes
alert.port=162
alert.connection_timeout_sec=10

### Monitors
monitor.xml-config=conf/monitors.xml

#   .  : 2, 4.
socket_version=2

#     (enum) : BY_DOMAIN, BY_ROLE.   - BY_ROLE
user_access_type=BY_ROLE
```

- syslog: IP-, , :

```
syslog.defaultIP=192.168.1.1
syslog.defaultPort=514
syslog.defaultTransport=udp
syslog.defaultLevels=Emergency,Alert,Critical,Error,Warning
```

- GUI:

```
gui.port=9310                    ,       GUI  (       )
gui.handler_pool_size=200
gui.connection.timeout.sec=300
```

- SNMP (, ,):

```
alert.use=yes
alert.port=162
alert.connection_timeout_sec=10
```

- :

```
monitor.xml-config=conf/monitors.xml
```

- :

```
socket_version=2
```

- (enum):

```
user_access_type=BY_ROLE
```

/etc/eltex-ems/gui.conf

.

/etc/eltex-ems/gui.conf

```
#    GUI: DEBUG, INFO, WARN, SEVERE, ERROR, FATAL
log.level=INFO

#   ,
ping.period=10

#     ,
socket.timeout=300

# ,
#    ,
#socket.port=9310

#   Java heap
java.max_heap=700m

#  Java heap
java.init_heap=256m
```

- **log.level** - GUI : DEBUG, INFO, WARN, SEVERE, ERROR, FATAL. , windows C:\Users\<UserName>\ems_log\.
- **ping.period** - ,
- **socket.timeout** - .
- **socket.port** - , . ( ) , .
- **java.max_heap** - , .
- **java.init_heap** - , .

/etc/eltex-ems/check-ems-replication.conf

MySQL.

/etc/eltex-ems/check-ems-replication.conf

```
# ("Yes") / ("No")
ENABLE_REPLICATION="No"

#
HOST1=192.168.56.100
#
HOST2=192.168.56.101

#    mysql
#  mysql
USER="root"
#  mysql
PASSWORD="root"
```

- **ENABLE_REPLICATION** - . "Yes" - , "No" - .
- **HOST1, HOST2** - .
- **USER, PASSWORD** - MySQL. .

/etc/default/eltex-ems

eltex-ems.

/etc/default/eltex-ems

```
# Eltex.EMS (ACS GUI) Server daemon parameters

# Location of java
JAVA=/usr/bin/java

# Maximum size of Java heap
JAVA_MAX_HEAP_MB=1024
# Initial size of Java heap
JAVA_INIT_HEAP_MB=256

# Options for Java Garbage Collector
GC_OPTS="-XX:+UseG1GC \
-XX:+PrintGCDateStamps \
-XX:+PrintGCDetails \
-XX:+UseGCLogFileRotation \
-XX:NumberOfGCLogFiles=7 \
-XX:GCLogFileSize=5M \
-XX:+UseStringDeduplication \
-XX:+PrintGCTimeStamps \
-XX:+PrintTenuringDistribution \
-Xloggc:/var/log/eltex-ems/gc.log"

# Additional arguments to pass to java
JAVA_OPTS="-XX:+HeapDumpOnOutOfMemoryError \
-XX:HeapDumpPath=/var/log/eltex-ems \
-Djava.security.egd=file:/dev/./urandom"

# Remore monitoring
#JAVA_OPTS="-XX:+HeapDumpOnOutOfMemoryError \
#-XX:HeapDumpPath=/var/log/eltex-ems \
#-Djava.security.egd=file:/dev/./urandom \
#-Dcom.sun.management.jmxremote \
#-Djava.rmi.server.hostname=192.168.1.1 \
#-Dcom.sun.management.jmxremote.port=9900 \
#-Dcom.sun.management.jmxremote.authenticate=false \
#-Dcom.sun.management.jmxremote.ssl=false"

# Eltex.EMS home location
ELTEX_EMS_HOME="/usr/lib/eltex-ems"

# Set it more than (EMS tree objects number * 5)
FILE_LIMIT=65535
```

- **JAVA** - java-.
- **JAVA_MAX_HEAP_MB** - , EMS . , OutOfMemory.
- **JAVA_INIT_HEAP_MB** - , EMS.
- **GC_OPTS** - .
- **JAVA_OPTS** - EMS .
- **ELTEX_EMS_HOME** - EMS .
- **FILE_LIMIT** - . 5. 'java.io.IOException: Too many open files'.

/etc/eltex-ems/ssid-default-params.conf

SSID SSID, SSID

/etc/eltex-ems/ssid-default-params.conf

```
#General options
radio=ALL
bandSteering=true
#RADIUS options
activeServer=primary
radiusip=192.168.1.1
radiuskey=eltex
radiusaccount=up
radiusAcctPeriod=600
apBssRadiusPort=1812
#CaptivePortal options
apCaptivePortalExternalUrl=http://192.168.1.1:8080/eltex_portal/
```

, IP	SSID
	SSID
(CheckBox)	`true`, ; `false`,
( )	`<1, , 0>:<>:<>:<>:<>`
	(.).

!

,

	ssidtype		: `hotspot`, `enterprise`
	NAME		
	DESCR		
Domain	radiusDomain		
SSID	STATUS		: `operational`, `locked`
Bridge, Location	bridgeLocation		
Switch Community	switchCommunity		
VAP	status		: `down`, `up`
VAP (GRE)	trafficModeVAP		: `tunnel`, `local`
Broadcast SSID	broadcastSsid		
Radio	radio		: `ALL`, `ALL24`, `ALL5`
	security		: `plainText`, `wpaPersonal`, `wpaEnterprise`
SSID (GlobalRadius)	validateSsidRadiusAcc		
WPA-TKIP	wpaen		
WPA2-AES	wpa2AesEn		
TLS	tlsEnabled		
Enable pre-authentication	preauth		
MAC Auth Type	macCAuthType		: `disable`, `local`, `radius`

MFP	mfp		: notrequired, capable, required
(WPA)	wpakey		
Policy	policy		: GLOBAL, ALLOW, BLOCK
MAC	macList		
Broadcast Key Refresh Rate	brcstRfrshRate		
Session Key Refresh Rate	sessionRfrshRate		
Client QoS	qosMode		: off, on
VLAN-ID	vlanid		
QoS method (down link)	priority		: p8021, dscp
VLAN trunk	vlanTrunk		
General Mode	generalMode		
General VLAN-ID	generalVlanId		1 4094
802.1p priority (up link)	vlanPrio		0 7
	stationIsolation		
Band steer	bandSteering		
Support 802.11k	support80211k		
PMKSA caching	pmksaCaching		
Accounting wait IP	accountingWaitIp		
Wireless Multicast Forwarding	wmfEnabled		
Hotspot 2.0	hotspot20		
DiffServ Policy Up	policyUp		
DiffServ Policy Down	policyDown		
Bandwidth Limit Up, kbps	bwMaxUp		0 1331200
Bandwidth Limit Down, kbps	bwMaxDown		0 1331200
Quantity Resend	apBssMaxREeq		
Supplicant Timeout, ms	apBssSuppTimeout		
VAP Limit Up, kbps	vapLimitUp		0 1331200
VAP Limit Down, kbps	vapLimitDown		0 1331200
DPI (Step Logic)	dpiStepLogic		
Minimal Signal			
Enabled	checkMinimalSignal		
Level, dBm	minimalSignalLevel		
Timeout, s	minimalSignalTimeout		
Roaming Level, dBm	roamingSignalLevel		
RADIUS			
Active Server	activeServer		: primary, backupone, backuptwo, backupthree
RADIUS IP Address	radiusip		IP-
RADIUS IP Address-1	radiusip1		IP-
RADIUS IP Address-2	radiusip2		IP-
RADIUS IP Address-3	radiusip3		IP-
RADIUS Key	radiuskey		
RADIUS Key-1	radiuskey1		
RADIUS Key-2	radiuskey2		
RADIUS Key-3	radiuskey3		
RADIUS accounting (/)	radiusaccount		: down, up
RADIUS accounting period, s	radiusAcctPeriod		
RADIUS accounting retry count	apBssRadiusAcctRetryCount		

RADIUS accounting retry timeout	apBssRadiusAcctRetryTimeout		
RADIUS authenticate retry count	apBssRadiusAuthRetryCount		
RADIUS authenticate retry timeout	apBssRadiusAuthRetryTimeout		
RADIUS	apBssRadiusPort		1 65534
Fast Bss Transition			
Fast Transition	apFbtEnabled		: `off`, `on`
FT over DS	apFbtOverDSEnabled		: `off`, `on`
R0 Key Holder	apFbtR0KeyHolderID		
Reassociation Deadline, ms	apFbtReassociationDeadline		1000 4294967295
RRB key	apFbtRrbKey		
Captive portal			
Enabled	apCaptivePortalAdminMode		
Virtual portal name	apCaptivePortalVirtualPortalName		EMS
	apCaptivePortalTinyproxyTransportMode		: `HTTPS`, `HTTP`, `Auto`
Verification	apCaptivePortalVerifyMode		: `Guest`, `RADIUS`, `CaptivePortal`
External	apCaptivePortalExternalMode		
External URL	apCaptivePortalExternalUrl		
Away Time, min	apCaptivePortalAwayTime		0 1440
Session Timeout, min	apCaptivePortalSessionTimeout		0 1440
User mobility domain (FW 1.9.0)	apCaptivePortalUserMobilityDomain		
	scheduler		
	monday		
	tuesday		
	wednesday		
	thursday		
	friday		
	saturday		
	sunday		

/etc/hosts

ip .

```
127.0.0.1 localhost
127.0.1.1 ubuntu
```

- **127.0.0.1 localhost** - 127.0.0.0/8.
- **127.0.1.1 < >** - , *hostname*. ip- .

GUI EMS

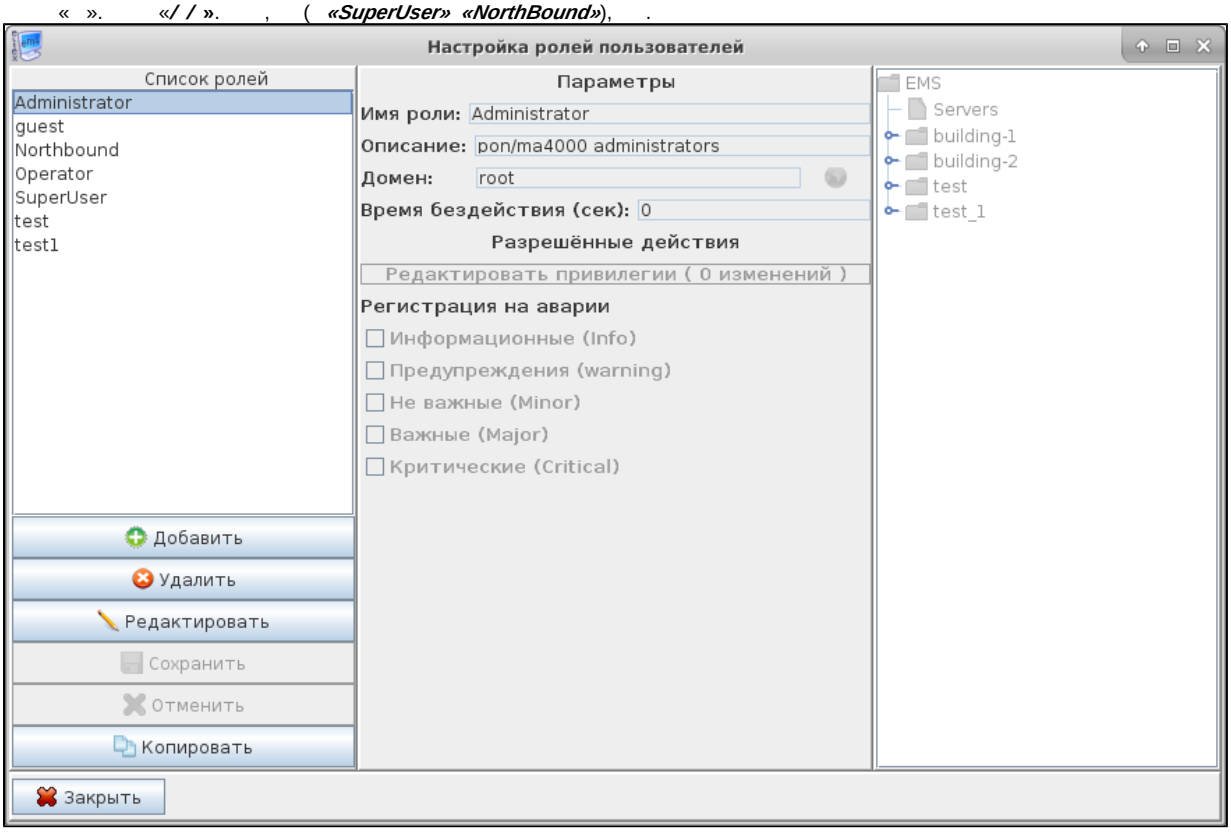
. — , :

- ;
- ;
- , ;
- ();
- :
- :
    - (Info);
    - (Warning);
    - (Minor);
    - (Major);
    - (Critical).

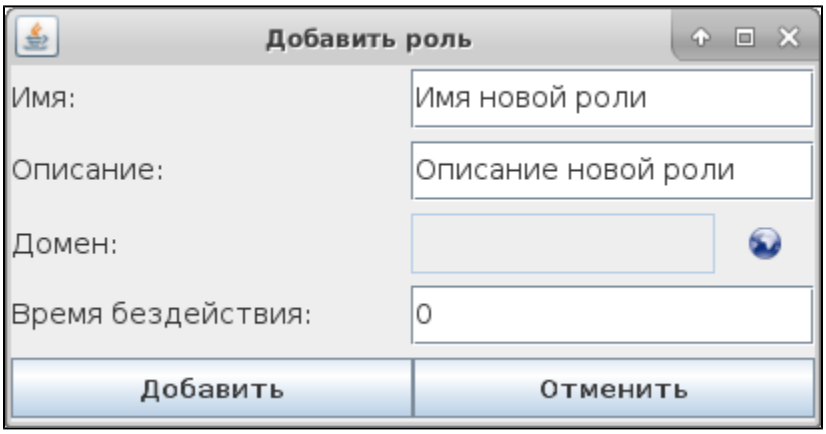
, *«SuperUser».* . .

, .

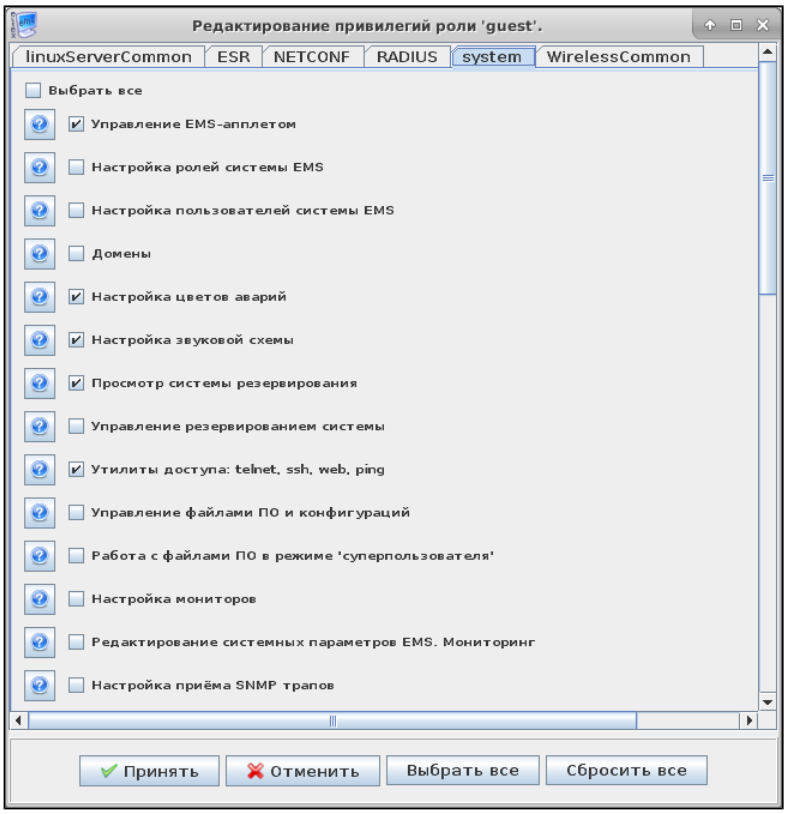
« ». *«/ / ».* , (***«SuperUser» «NorthBound»***), .

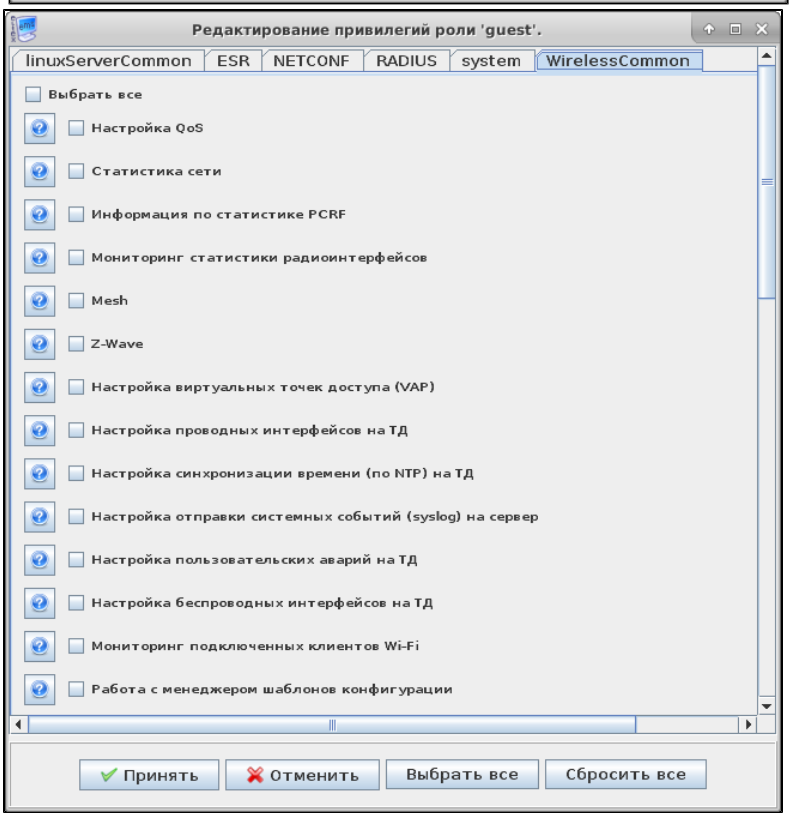


– , , , . *«0».*



, , *« ».* . *«system».* wireless *«Wireless Common».* , ( ).



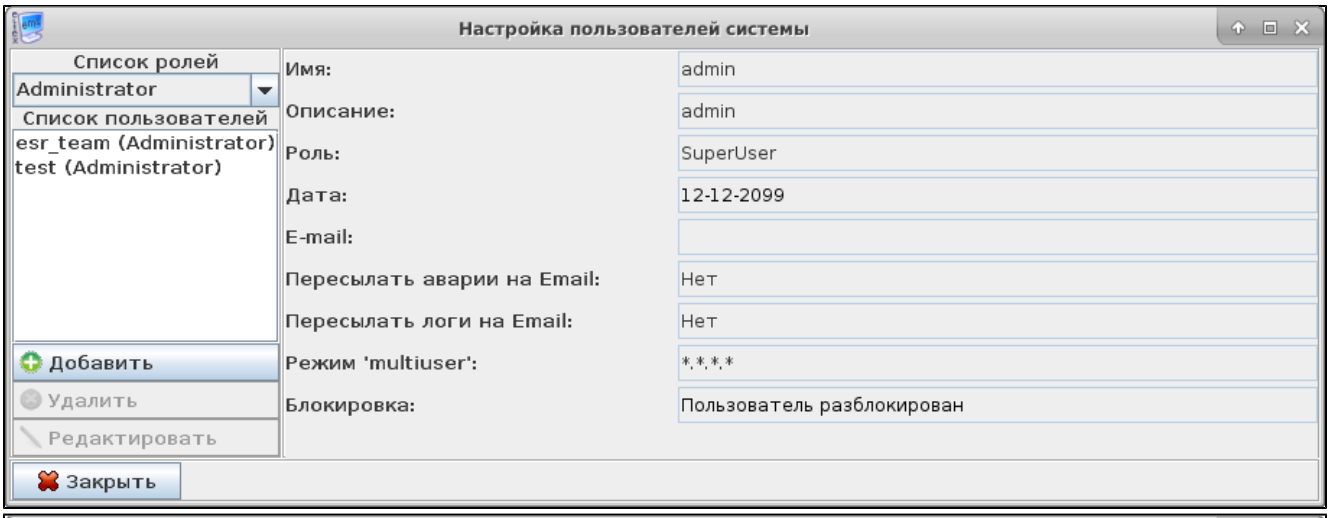


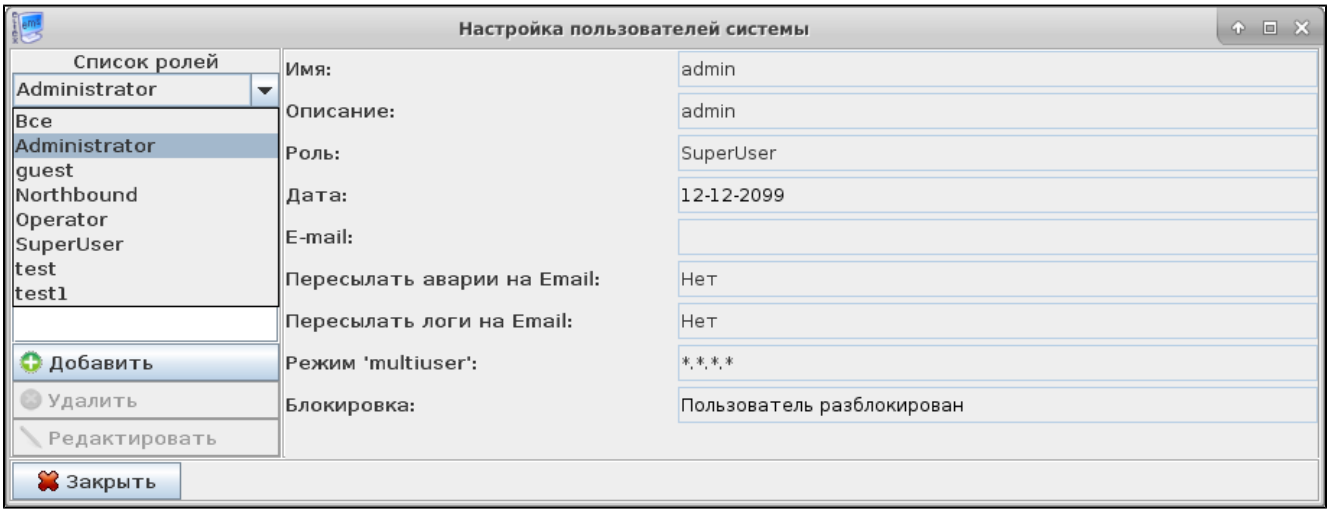
« » , , (E-mail).

, , . . " ", " ".

«» . . *«RootNode».*

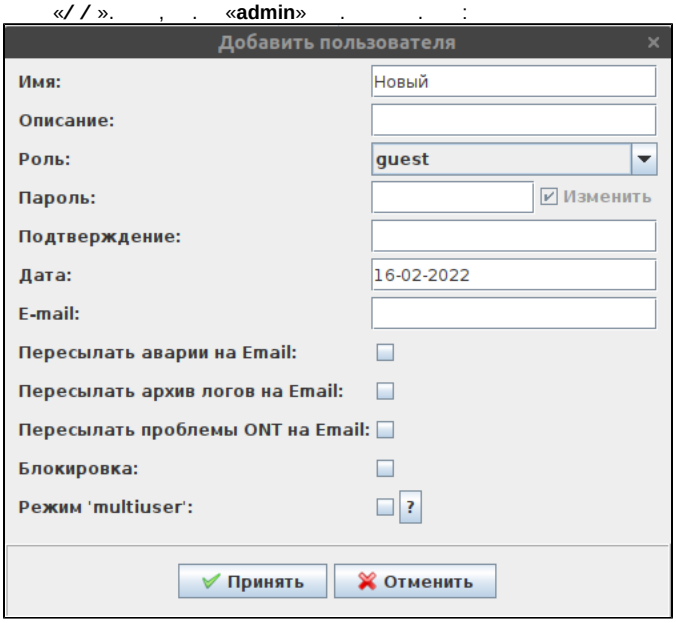
— , . :


Настройка пользователей системы
Список ролей
Administrator
Список пользователей
esr_team (Administrator)
test (Administrator)
Добавить
Удалить
Редактировать
Закрыть
Имя:
admin
Описание:
admin
Роль:
SuperUser
Дата:
12-12-2099
E-mail:
Пересылать аварии на Email:
Нет
Пересылать логи на Email:
Нет
Режим 'multiuser':
..*.*
Блокировка:
Пользователь разблокирован

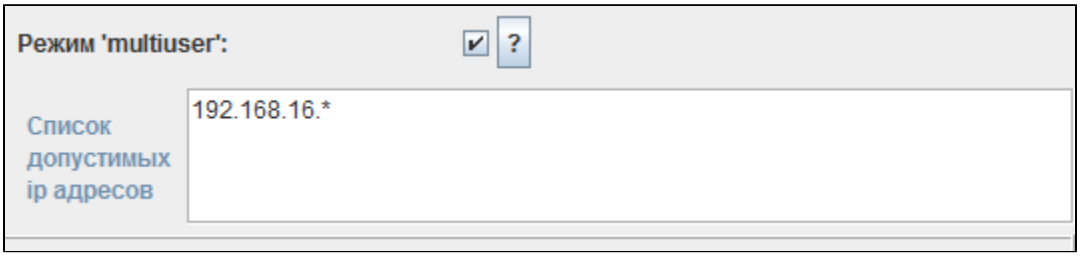

Настройка пользователей системы
Список ролей
Administrator
Все
Administrator
guest
Northbound
Operator
SuperUser
test
test1
Добавить
Удалить
Редактировать
Закрыть
Имя:
admin
Описание:
admin
Роль:
SuperUser
Дата:
12-12-2099
E-mail:
Пересылать аварии на Email:
Нет
Пересылать логи на Email:
Нет
Режим 'multiuser':
..*.*
Блокировка:
Пользователь разблокирован

", " (''), () , '', . , .

«/ / ». , . «**admin**» . . :



- — 32 ;
- — 64 ;
- — , ;
- — ;
- — ;
- – ;
- *E-mail* – ;
- e-mail – , – (E-mail system, //);
- *e-mail* – - , – (**..4**);
- *ONT e-mail* – , – (**..4**);
- – ;
- *Multiuser* – , . IP- (GUI). «»(**192.168.0.** 192.168.0.0/24). . : **...** A**..*** A.B**..** A.B.C.*. . – 255 . IP-, .



, , .

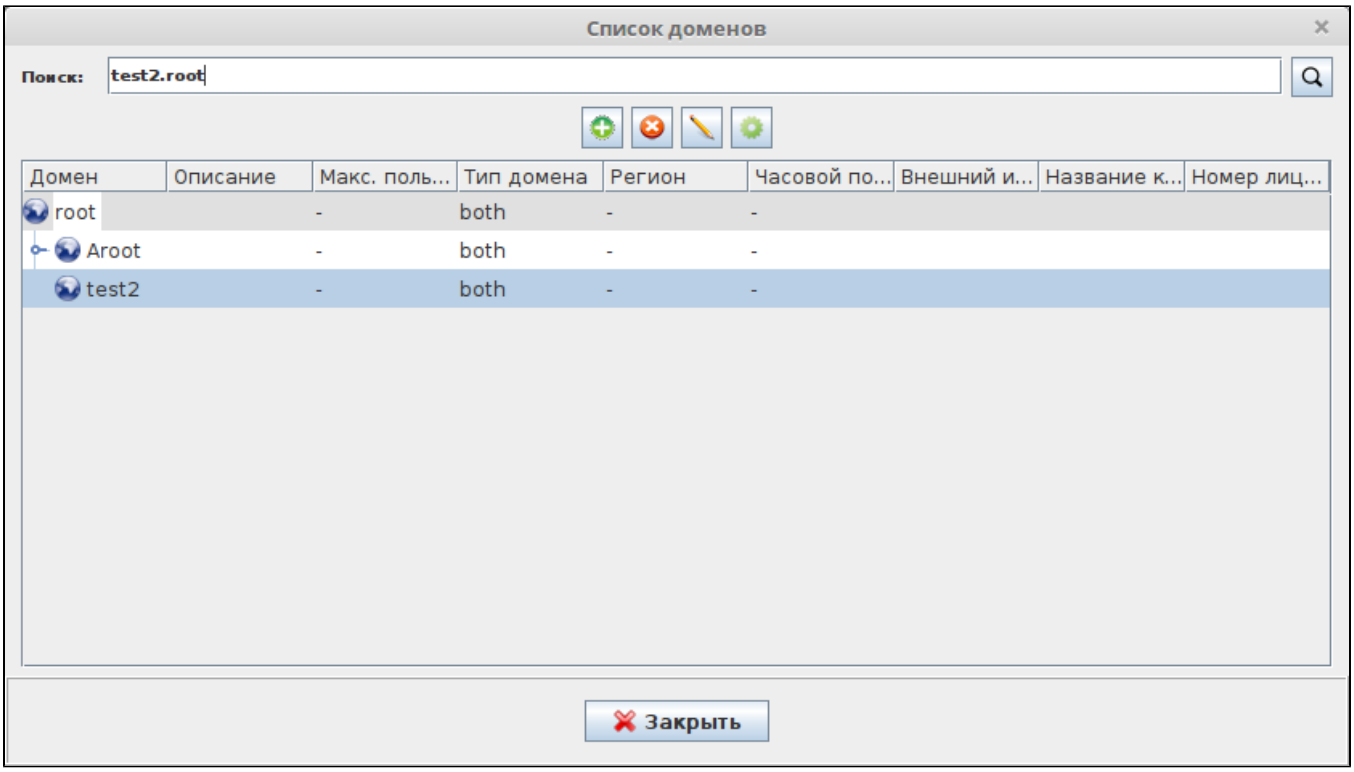
, .

«» «» , . ( ), «». , , . , . «admin» - .

. .

– , , SoftWLC.

() . , **,** , SoftWLC, , . , , .



SSID . , Wi-Fi , . SSID (,). :

- **'ap'** - , . , .
- **'service'** - SSID, , .
- **'both'** - , . , .

, , . , 'both'.

Wi-Fi

, . .

.

. . , . , , .

. , . , .

, , . , .

, Asia/Novosibirsk, Europe/Moscow.

"Etc" , : GMT , - . Etc/GTM-7 UTC+7 (GMT+7) Asia/Novosibirsk

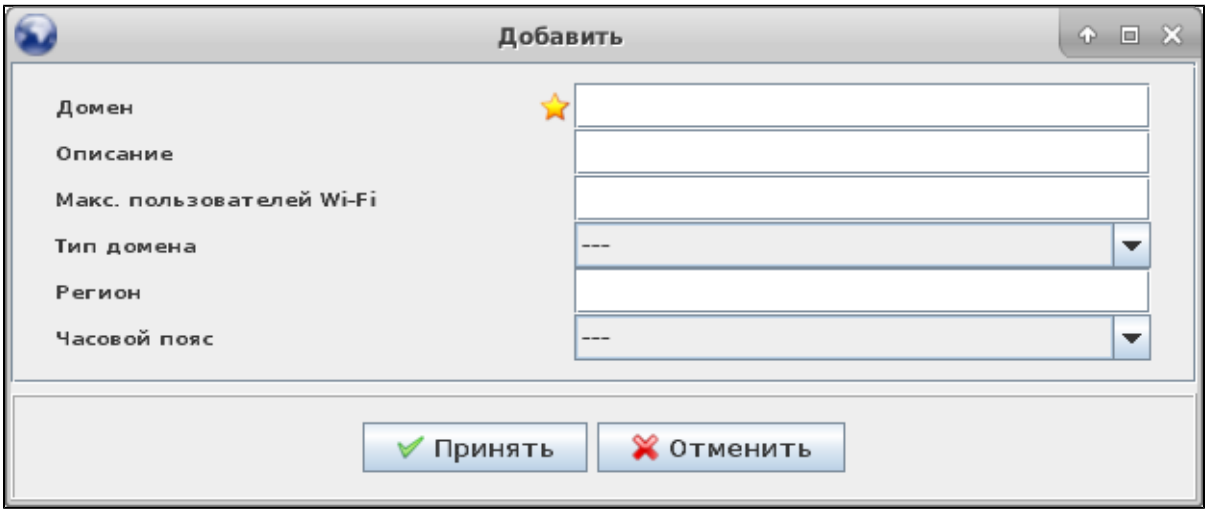
, () , (eltex-bob).

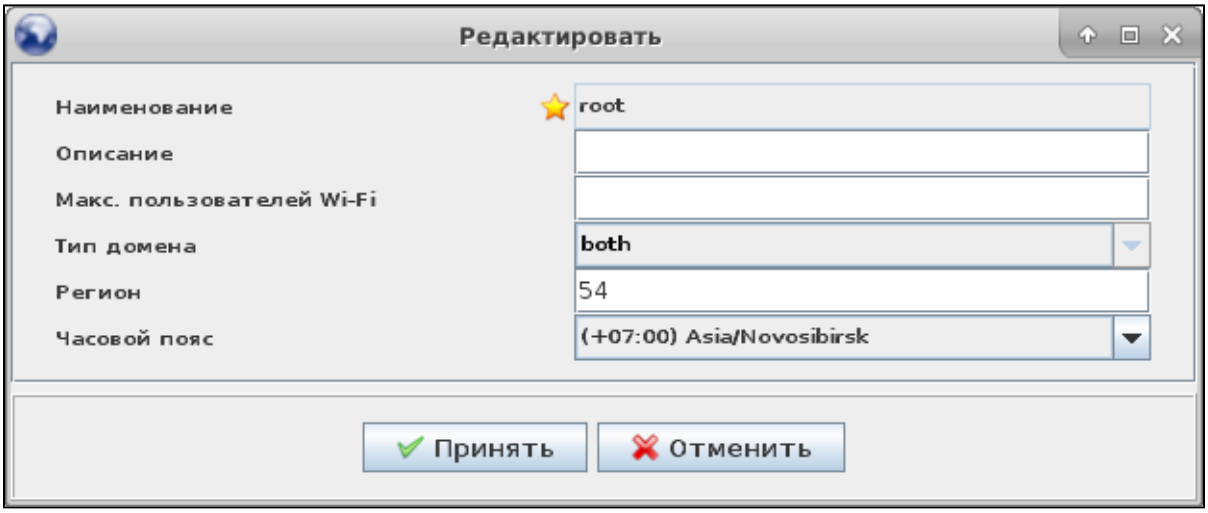
/

.

, .

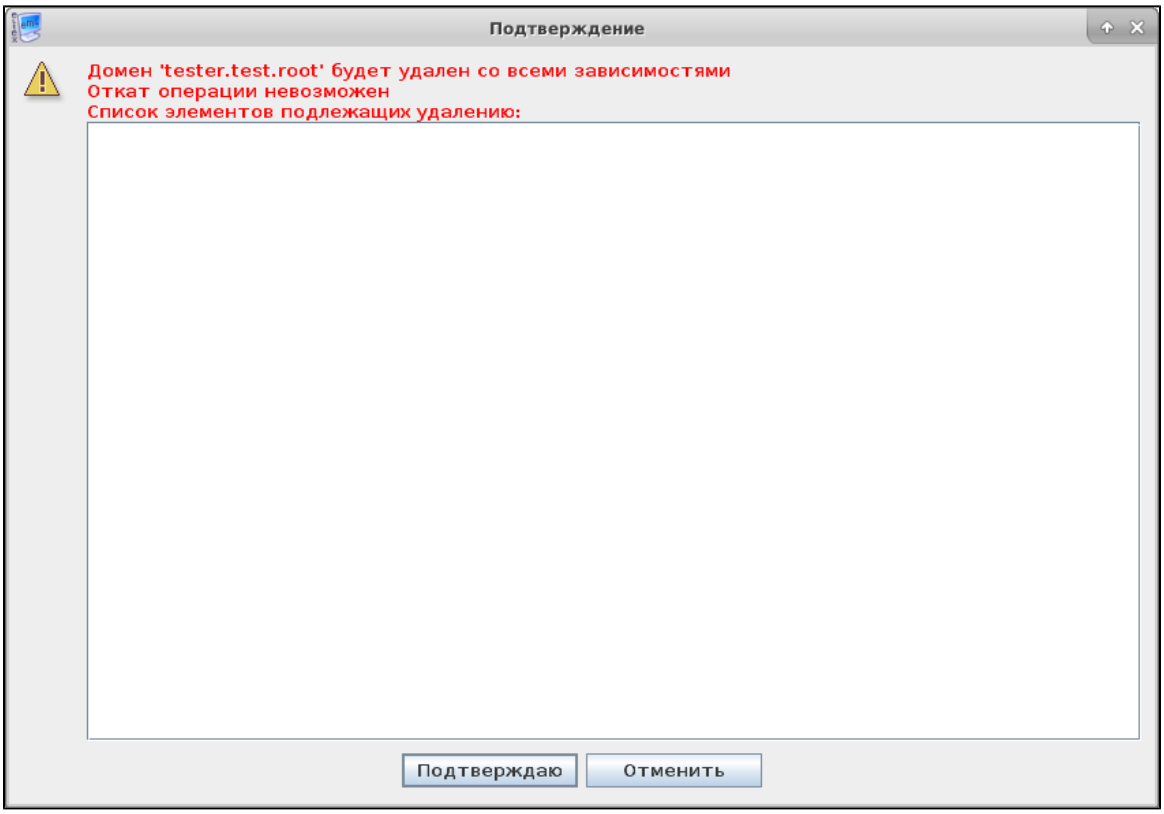
. .



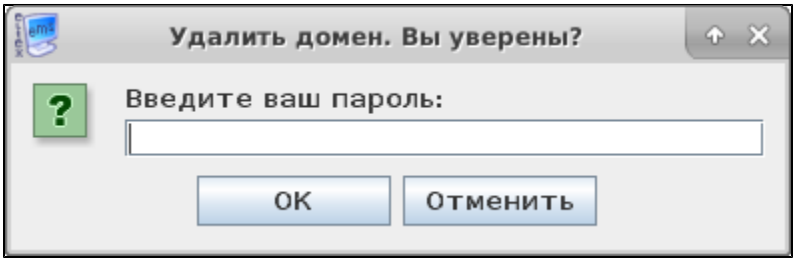


SuperUser. , , , .

, . - . , (SSID, , ,) .



, , .



"" , ( ). .

SSID, . ESR/BRAS, .

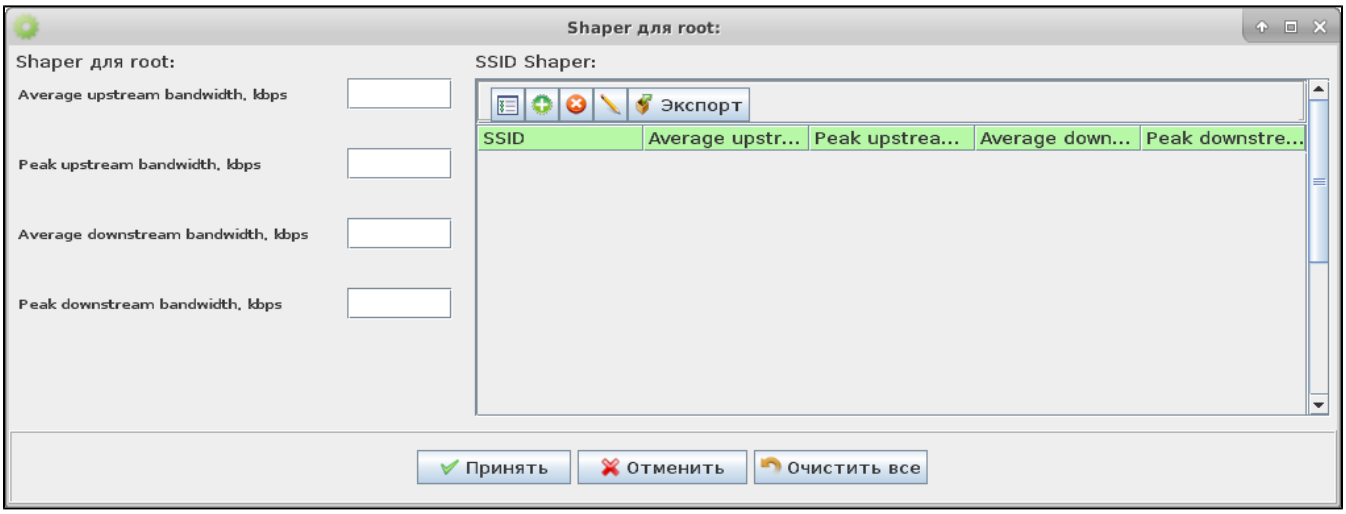
, data- . , SSID ESR BRAS .

'ap' 'both', , .

:

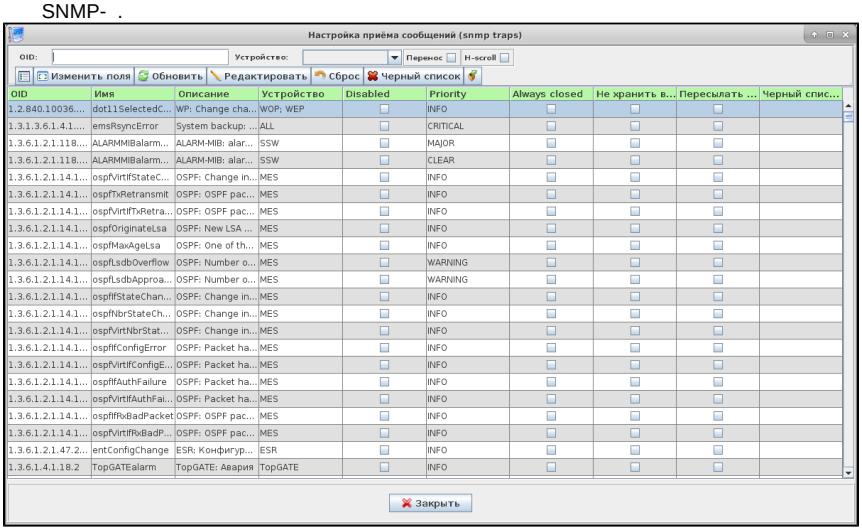
- **Average upstream bandwidth, kbps** - .
- **Peak upstream bandwidth, kbps** - .
- **Average downstream bandwidth, kbps** - .
- **Peak downstream bandwidth, kbps** - .

.


Shaper для root:
Shaper для root:
Average upstream bandwidth, kbps
Peak upstream bandwidth, kbps
Average downstream bandwidth, kbps
Peak downstream bandwidth, kbps
SSID Shaper:
Экспорт
SSID
Average upstr...
Peak upstrea...
Average down...
Peak downstre...
Принять
Отменить
Очистить все

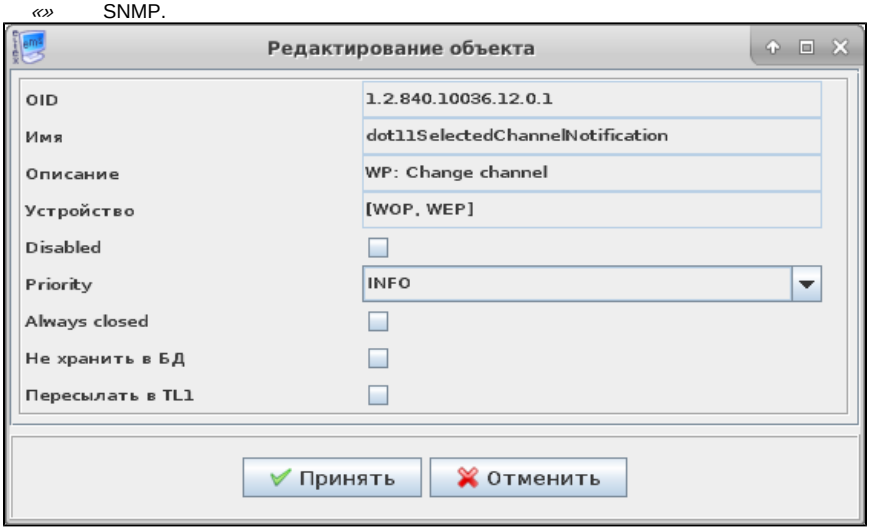
SNMP

SNMP- .



OID	Имя	Описание	Устройство	Disabled	Priority	Always closed	Не хранить в...	Пересылать ...	Черный спис...
1.2.840.10036....	dot11SelectedC...	WP: Change cha...	WOP; WEP		INFO				
1.3.1.3.6.1.4.1....	emsRsyncError	System backup: ...	ALL		CRITICAL				
1.3.6.1.2.1.118....	ALARMMIBalarm...	ALARM-MIB: alar...	SSW		MAJOR				
1.3.6.1.2.1.118....	ALARMMIBalarm...	ALARM-MIB: alar...	SSW		CLEAR				
1.3.6.1.2.1.14.1...	ospfVirtIfStateC...	OSPF: Change in...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfTxRetransmit	OSPF: OSPF pac...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfVirtIfTxRetra...	OSPF: OSPF pac...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfOriginateLsa	OSPF: New LSA ...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfMaxAgeLsa	OSPF: One of th...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfLsdbOverflow	OSPF: Number o...	MES		WARNING				
1.3.6.1.2.1.14.1...	ospfLsdbApproa...	OSPF: Number o...	MES		WARNING				
1.3.6.1.2.1.14.1...	ospfIfStateChan...	OSPF: Change in...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfNbrStateCh...	OSPF: Change in...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfVirtNbrStat...	OSPF: Change in...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfIfConfigError	OSPF: Packet ha...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfVirtIfConfigE...	OSPF: Packet ha...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfIfAuthFailure	OSPF: Packet ha...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfVirtIfAuthFai...	OSPF: Packet ha...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfIfRxBadPacket	OSPF: OSPF pac...	MES		INFO				
1.3.6.1.2.1.14.1...	ospfVirtIfRxBadP...	OSPF: OSPF pac...	MES		INFO				
1.3.6.1.2.1.47.2...	entConfigChange	ESR: Конфигур...	ESR		INFO				
1.3.6.1.4.1.18.2	TopGATEalarm	TopGATE: Авария	TopGATE		INFO				

«» SNMP.



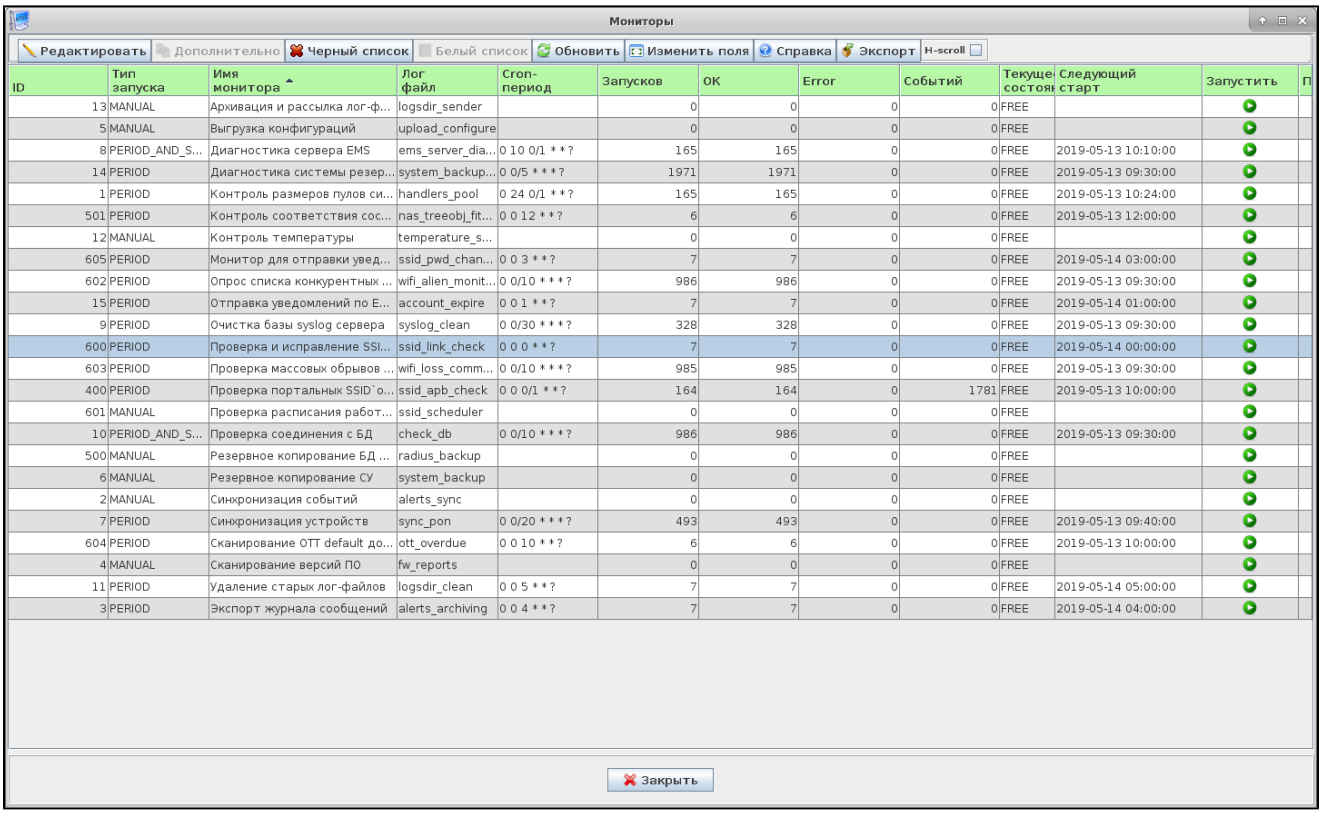
:

- *Disabled* – (– e-mail, , ..);
- *Priority* – ( );
- *Always closed* – «» (, ,);
- – ( ) , (, ,).

«» .

« » , (*«Disabled»*). *«ALL», «EMS_SERVER» «KEEPALIVED»* , .

()

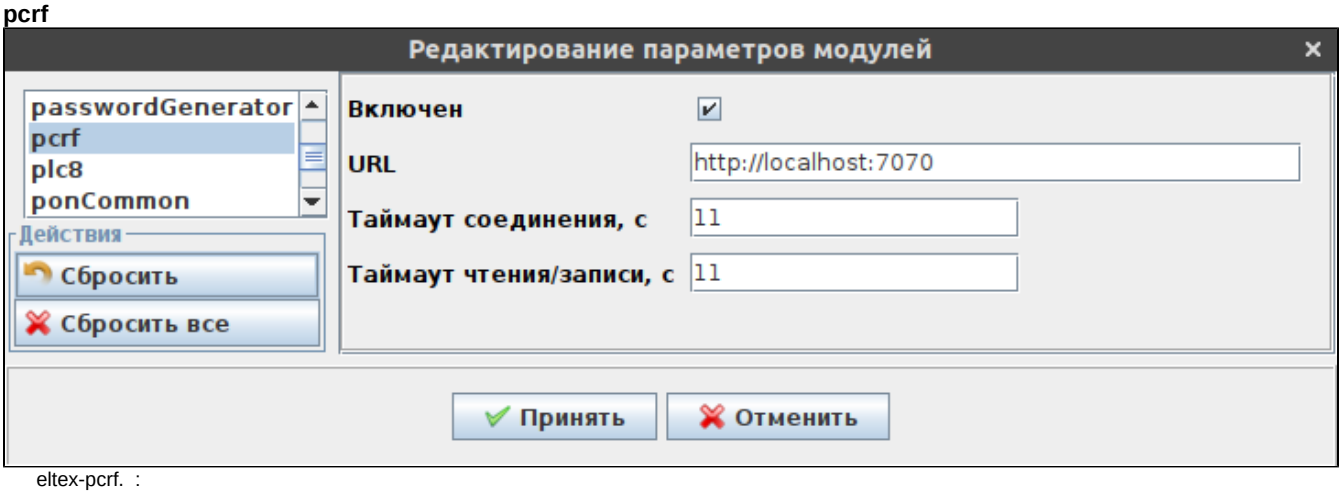


ID	Тип запуска	Имя монитора	Лог файл	Cron-период	Запусков	OK	Error	Событий	Текуще состоя	Следующий старт	Запустить	П
13	MANUAL	Архивация и рассылка лог-ф...	logsdir_sender		0	0	0	0	FREE			
5	MANUAL	Выгрузка конфигураций	upload_configure		0	0	0	0	FREE			
8	PERIOD_AND_S...	Диагностика сервера EMS	ems_server_dia...	0 10 0/1 * * ?	165	165	0	0	FREE	2019-05-13 10:10:00		
14	PERIOD	Диагностика системы резер...	system_backup...	0 0/5 * * * ?	1971	1971	0	0	FREE	2019-05-13 09:30:00		
1	PERIOD	Контроль размеров пулов си...	handlers_pool	0 24 0/1 * * ?	165	165	0	0	FREE	2019-05-13 10:24:00		
501	PERIOD	Контроль соответствия сос...	nas_treeobj_fit...	0 0 12 * * ?	6	6	0	0	FREE	2019-05-13 12:00:00		
12	MANUAL	Контроль температуры	temperature_s...		0	0	0	0	FREE			
605	PERIOD	Монитор для отправки увед...	ssid_pwd_chan...	0 0 3 * * ?	7	7	0	0	FREE	2019-05-14 03:00:00		
602	PERIOD	Опрос списка конкурентных ...	wifi_alien_monit...	0 0/10 * * * ?	986	986	0	0	FREE	2019-05-13 09:30:00		
15	PERIOD	Отправка уведомлений по E...	account_expire	0 0 1 * * ?	7	7	0	0	FREE	2019-05-14 01:00:00		
9	PERIOD	Очистка базы syslog сервера	syslog_clean	0 0/30 * * * ?	328	328	0	0	FREE	2019-05-13 09:30:00		
600	PERIOD	Проверка и исправление SSI...	ssid_link_check	0 0 0 * * ?	7	7	0	0	FREE	2019-05-14 00:00:00		
603	PERIOD	Проверка массовых обрывов ...	wifi_loss_comm...	0 0/10 * * * ?	985	985	0	0	FREE	2019-05-13 09:30:00		
400	PERIOD	Проверка портальных SSID`o...	ssid_apb_check	0 0 0/1 * * ?	164	164	0	1781	FREE	2019-05-13 10:00:00		
601	MANUAL	Проверка расписания работ...	ssid_scheduler		0	0	0	0	FREE			
10	PERIOD_AND_S...	Проверка соединения с БД	check_db	0 0/10 * * * ?	986	986	0	0	FREE	2019-05-13 09:30:00		
500	MANUAL	Резервное копирование БД ...	radius_backup		0	0	0	0	FREE			
6	MANUAL	Резервное копирование СУ	system_backup		0	0	0	0	FREE			
2	MANUAL	Синхронизация событий	alerts_sync		0	0	0	0	FREE			
7	PERIOD	Синхронизация устройств	sync_pon	0 0/20 * * * ?	493	493	0	0	FREE	2019-05-13 09:40:00		
604	PERIOD	Сканирование OTT default до...	ott_overdue	0 0 10 * * ?	6	6	0	0	FREE	2019-05-13 10:00:00		
4	MANUAL	Сканирование версий ПО	fw_reports		0	0	0	0	FREE			
11	PERIOD	Удаление старых лог-файлов	logsdir_clean	0 0 5 * * ?	7	7	0	0	FREE	2019-05-14 05:00:00		
3	PERIOD	Экспорт журнала сообщений	alerts_archiving	0 0 4 * * ?	7	7	0	0	FREE	2019-05-14 04:00:00		

v1.18_

, EMS.

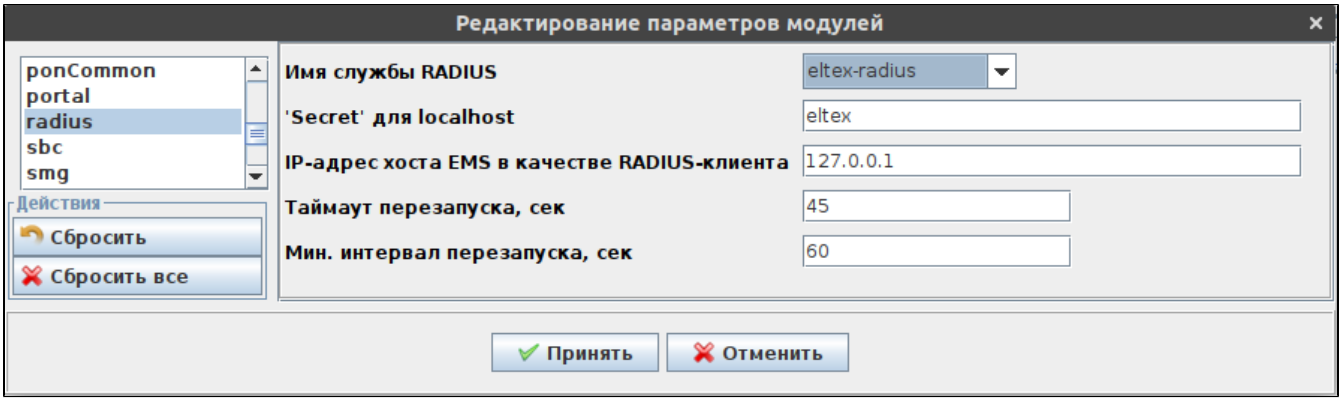
pcrf



eltex-pcrf. :

- - /.
- **URL** - eltex-pcrf.
- - eltex-pcrf.
- **/** - eltex-pcrf.

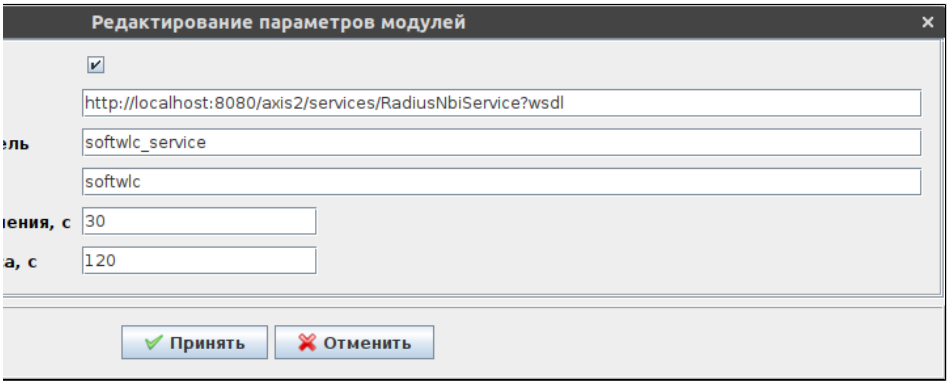
radius



RADIUS. RADIUS NAS.

- **RADIUS** - .
- **"Secret" localhost** - , EMS RADIUS.
- **IP EMS RADIUS-** - EMS , RADIUS-.
- - RADIUS .
- **.** - .

softwlc.nbi



SoftWLC.NBI.

- - /.
- **URL** - WSDL .
- - SoftWLC.NBI.
- - SoftWLC.NBI.
- - .
- - .

system

EMS.

	, .
	. "".
IP EMS	IP- , EMS .
	, EMS.
Tomcat URL	URL- EMS . HTTP.
TOMCAT URL	URL- EMS c . HTTP.

	, EMS , .
	, , , , .
	EMS ( ). : DEBUG, INFO, WARN, SEVERE, ERROR, FATAL
	.
SNMP ' '	.
SNMP	.
Syslog	(SNMP trap) Syslog.
	. False, .
	.
"	, .
ICMP/SNMP	/ .
(ICMP, SNMP ping)	. , .
ping-	ping- , .
1 ping- fping	1 ping- , .
	, .
ICMP, SNMP	, EMS. .
GUI "	.
	, (**",** **"**), .
	, .
,	, .
ACS.GUI	ACS.
	, , .
HTTP	HTTP.
	. . .
	hostname . hostname .
	, ( ).
	, , , , .
	.
	.
	.

	.
IP	IP- .
	.

(GUI)

	.
""	.
""	.
	, , " ".
	.
' '	" ".
	, .
(RRD)	/ RRD.
	. .
	.

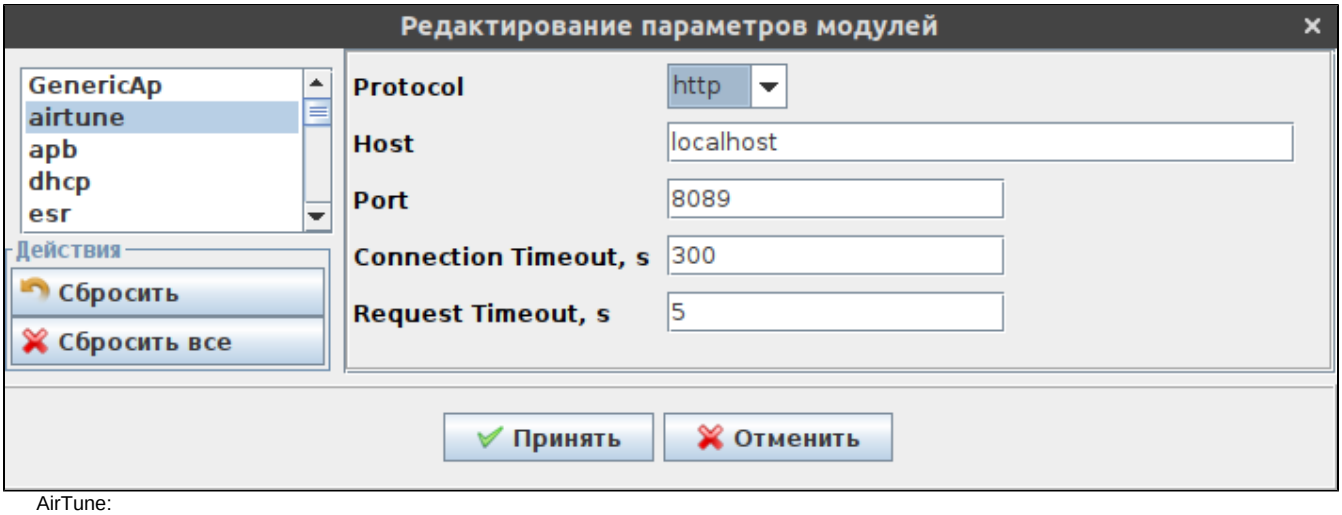
	.
EMS	EMS.
	trap/inform.
	IP- , EMS.
	, -.
informv2	, .
informv2	.
OID,	.
OID,	.
	.
SNMP trap community	.
	DEBUG, INFO, WARN, SEVERE, ERROR, FATAL.

SMTP.

	.
	IP- SMTP-.
	, SMT-.
	SMTP-.
	SMTP-.
	, (, STARTLS, SSL TLS).
	SMTP-.
	, .

( )	mail . .
EMail	, .

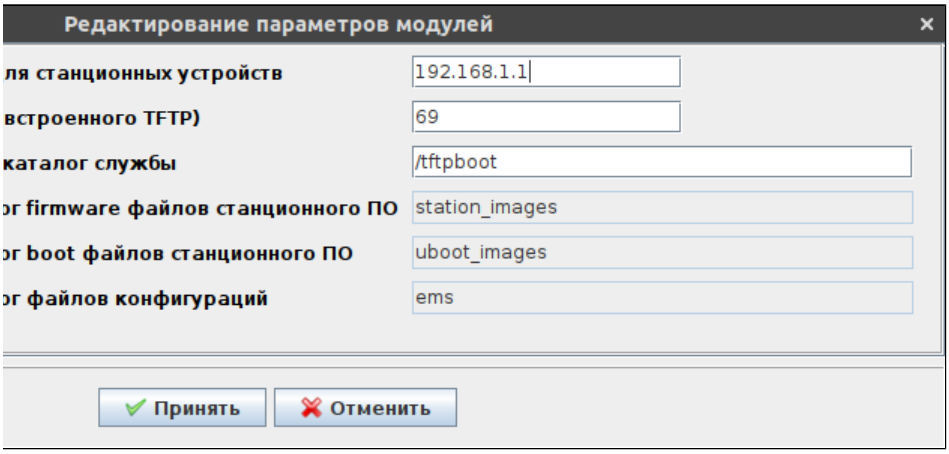
airtune



AirTune:

- *Protocol* - ;
- *Host* - IP- , ;
- *Port* - , ;
- *Connection Timeout, s* - , ;
- *Request Timeout, s* - , .

tftpserver



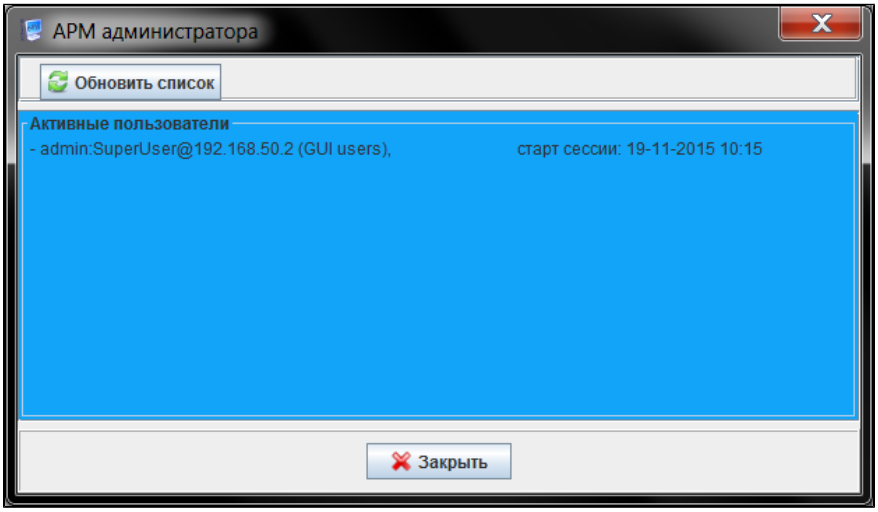
TFTP-:

- *IP* - , ;
- *(TFTP)* - (EMS) TFTP , 1..65535 (69);
- - tftpd;
- *firmeare/boot* - ( );
- - , / .

wirelessCommon

	. .
IP DHCP	IP DHCP , , .
	, . IP- .
	.
	, .
SSID WDS	, .. SSID WDS .
SSID	SSID SSID, SSID.
	.
uplink	, eth0 . ' ' - , .
AssociateClients, .	.
WPA2 Personal VAP, RADIUS accounting	WPA2 Personal VAP, RADIUS accounting. .
, .	.
	.
URL	URL .
Secret POST	.
Timeout ,	, .
	HTTPS .
SSID	
SSID	.
E-mail	.

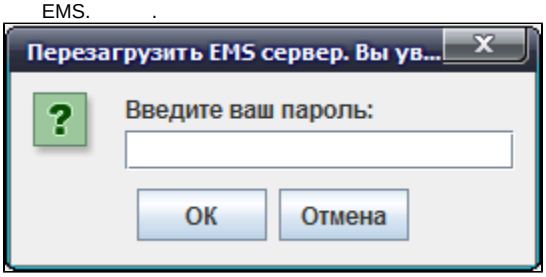
.



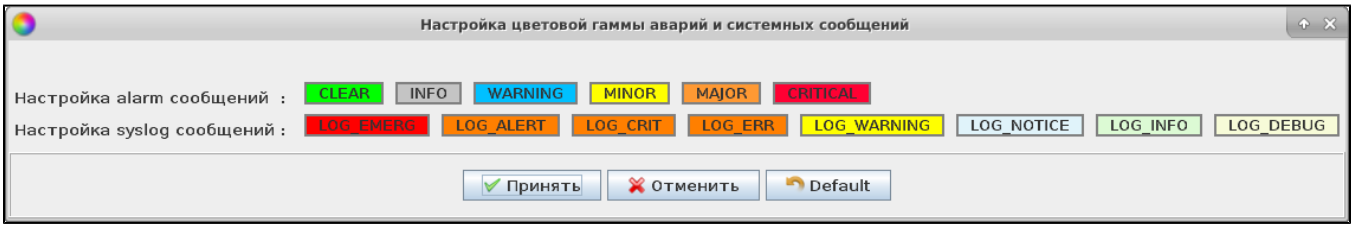
« », « ».

EMS

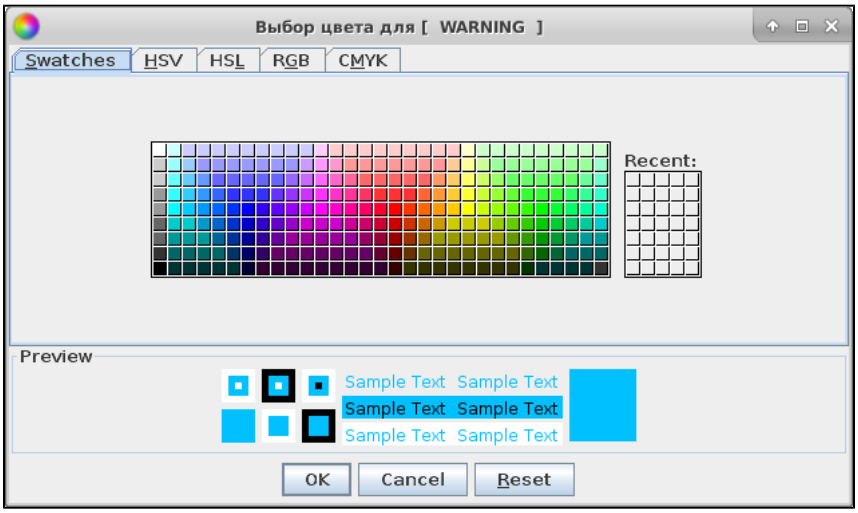
EMS. .



«/ / ».



, .
, .

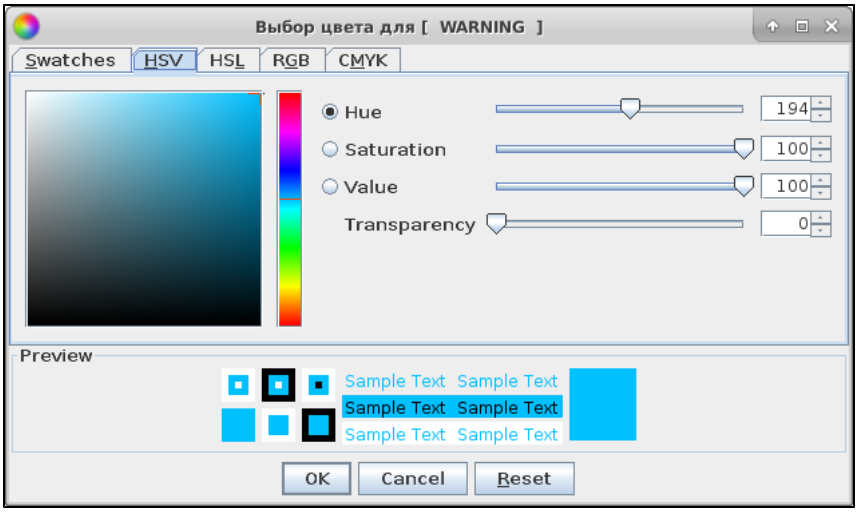


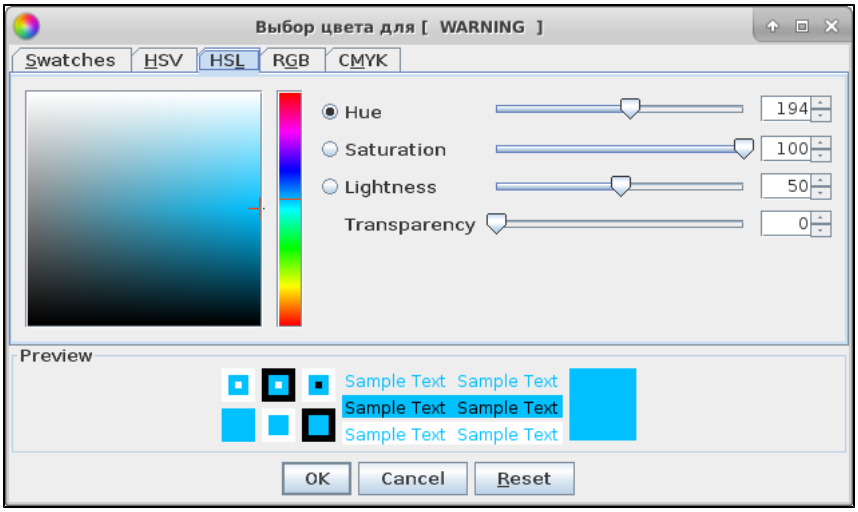
(*Preview*) – .

Swatches

Swatches – . , .

HSV HSL



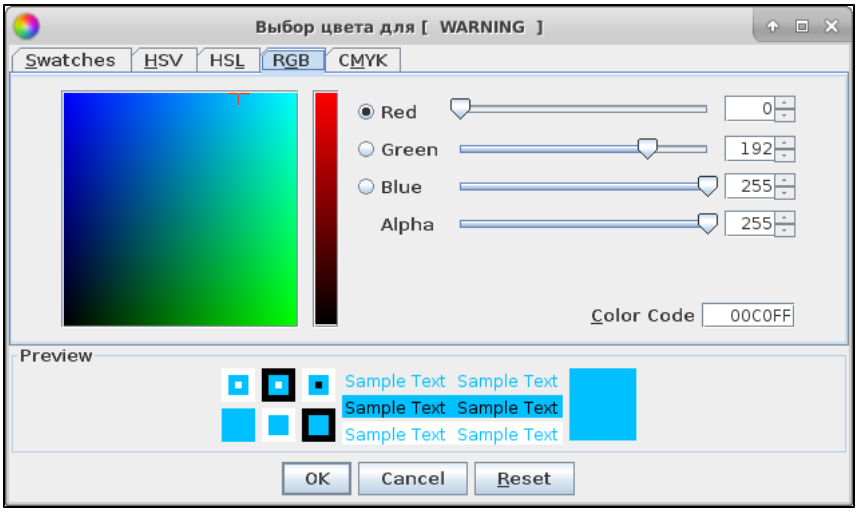


HSV (HSB) *HSL-* (), , (HSL –).
:

- *Hue* — . 0—360.
- *Saturation* — . 0—100. , «» , , .
- *Lightness*— ( ). 0—100.
- *Value* – . 0—100.
- *Transparency* — . 0—100.

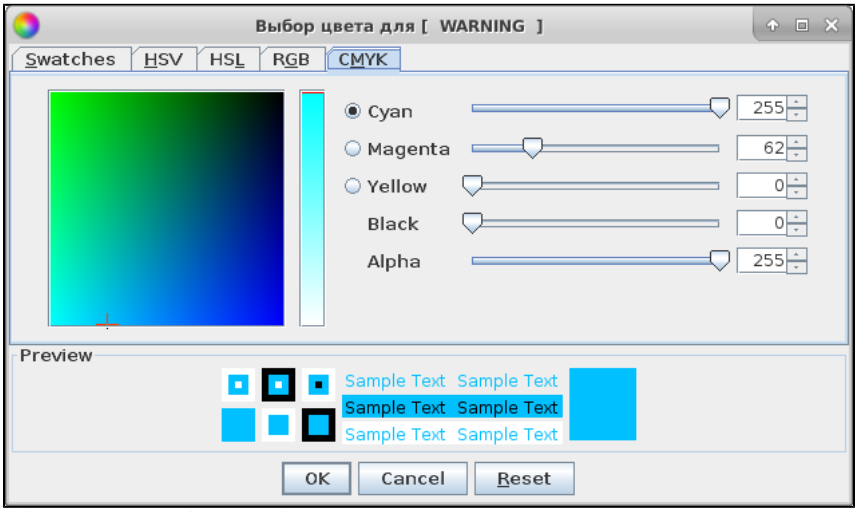
, , .

RGB



RGB – , . – , , .
, .

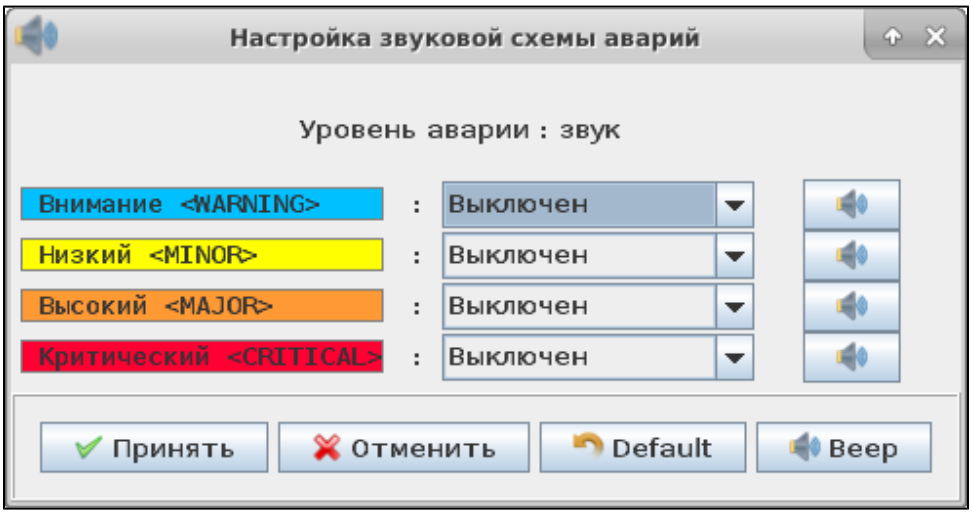
CMYK



CMYK – , . CMYK RGB .
, .

«», – «Cancel». «Reset» .
«», – «». «Default» , .

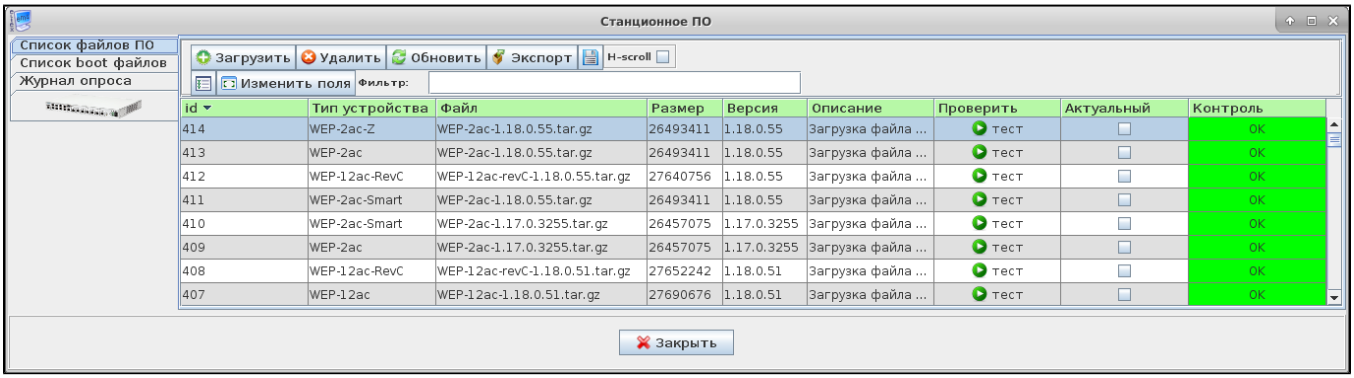
«/ / ».



/ .

«», – «». «Default» , .

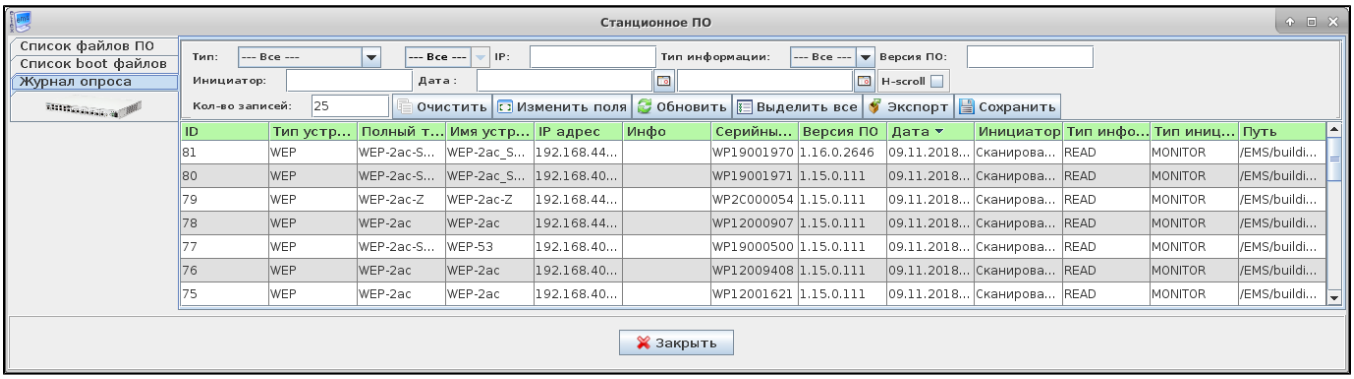
/boot



EMS .

«» .

.



, ( ). " FW", , , . FW . " "=READ.

.

:

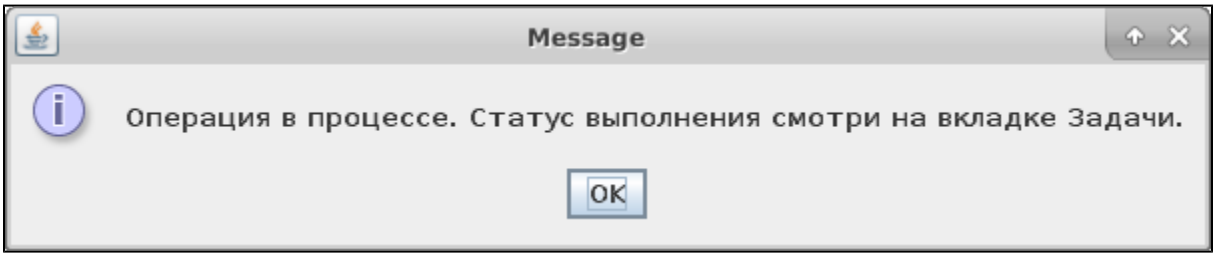
- – ;
- – , ;
- */P* – IP- ;
- – /UNKNOWN/UPLOAD/READ;
- – ;
- : /– .. .. .;
- .

« » , . .
« ».

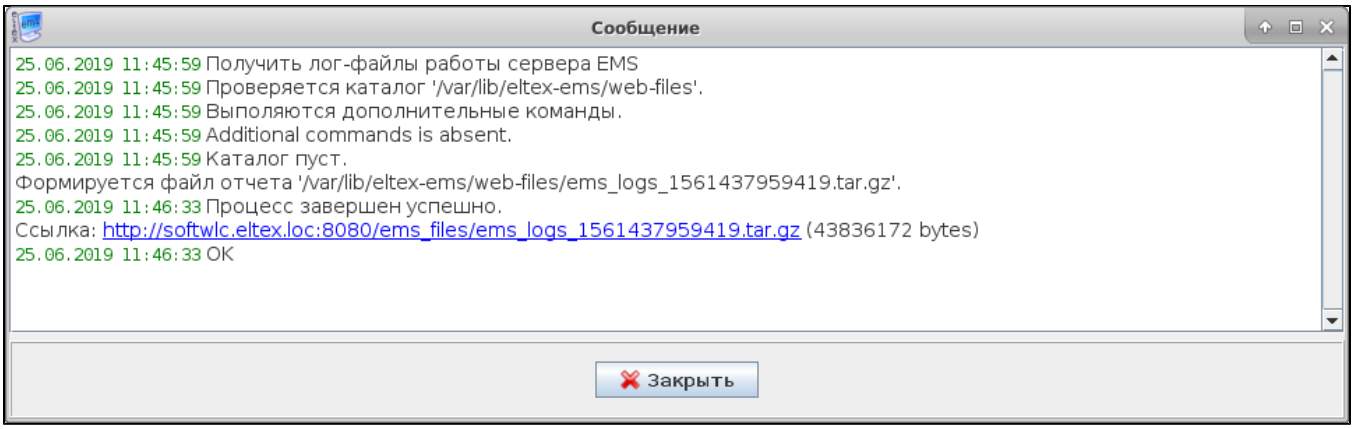
EMS

EMS, captive portal:

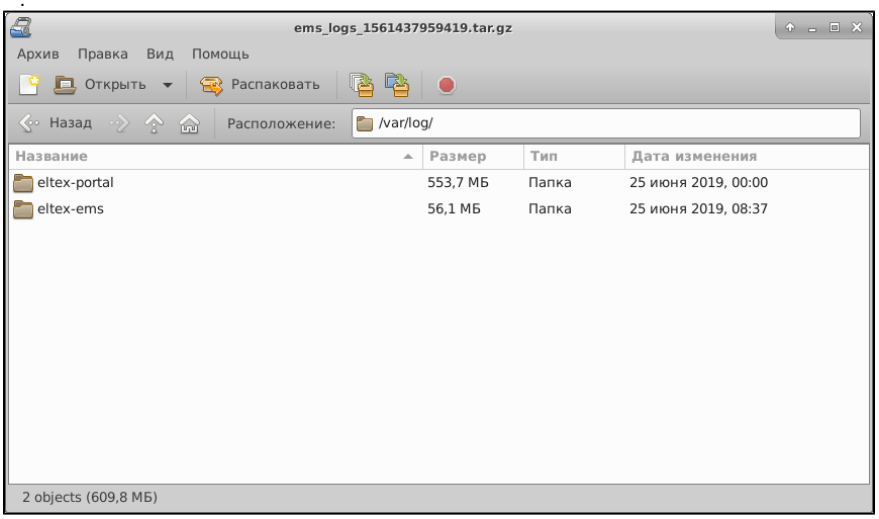
- `/var/log/eltex-portal/debug_ep.txt`
- `/var/log/eltex-portal/error_ep.txt`
- `/var/log/eltex-portal/sms_ep.txt`
- `/var/log/eltex-ems/black_box.txt`
- `/var/log/eltex-ems/ems_error.txt`



.



.



, , ,

EMS :

- SNMP trap, ;
- SNMP trap EMS (, Keepalived);
- , , EMS (, – ping,) ;
- EMS (,), « » .

:

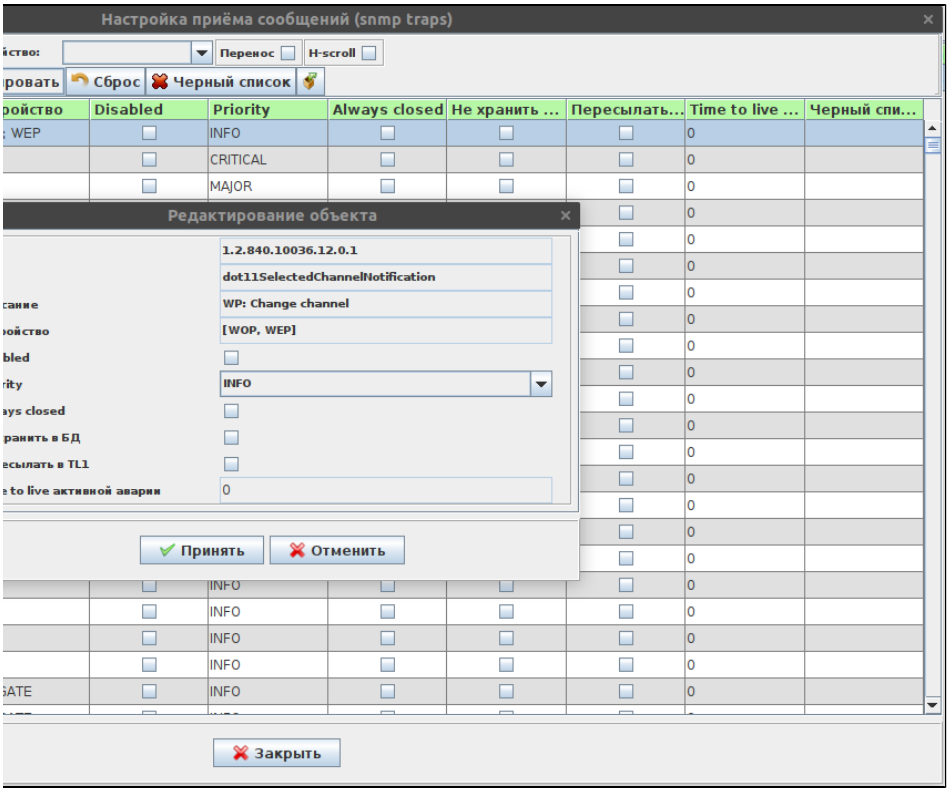
- ();
- (ONT, Wi-Fi).

MySQL.
(..) GUI (.).
«/ » .
EMS «/ », EMS.

().

SoftWLC TrapRules.xml .

, , GUI («/ / SNMP ») . , TrapRules.xml.



«OID» .
«» , .
«ALL» , .
«KEEPALIVED» .
«EMS_SERVER» EMS.
(*«»)* :

- *Disabled* – «true» - (,);
- *Priority* – ; EMS;
- *Always closed* – « » - «true» , « ».
- – «true» , EMS.

, .
«» , **TrapRules.xml.**
« » , . , , *« » « ».* . .

, (, , cron)

« (alerts_archiving)».
( ).
«enable_export», csv-.

GUI: (,)

SoftWLC «/ »:

- – (syslog) (**13.1**);
- – (**13.2**).

, *« ».* INFO CLEAR *« »* , .
:

- – , ;
- – , .

.
, , .

(OID,)

, INFO, « ».
– , . .
(, OID1, 3), *« »* MAJOR. , . *« ».* ID , OID . . **TrapRules.xml** OK- . , OID2 ( ) NormalizesOID. ID , NormalizesOID EMS OID1 *« ».* EMS . *(« »)* CLEAR, , 3 . , , ( ). .

(log)

« » - EMS, . « » - , .
« » , GUI .
, *«»* .
« » : ( ) ( ), ( ).
« » . *« »* GUI , . , . ( ) *«»* *« ».* .
«» ( ) , , .
« » .
« » -.
«» , . *«»* *« ».*
« ». *« ».* : , , , .

« » , , , .
«/ » .

: ( ) ( )

« » .
:

- – GUI . . csv. (MS Office Excel, OpenOffice Calc).
- – csv. . , , . MySQL . *«»* (,). . .

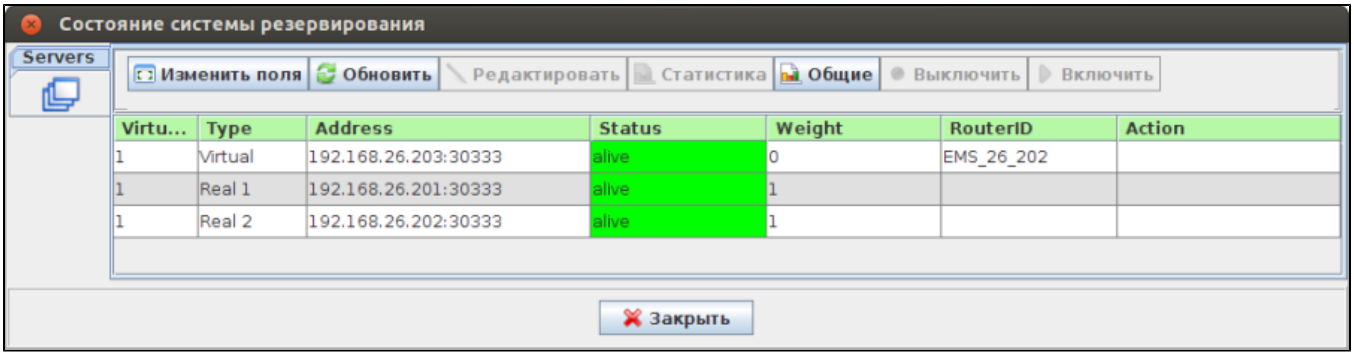
Syslog

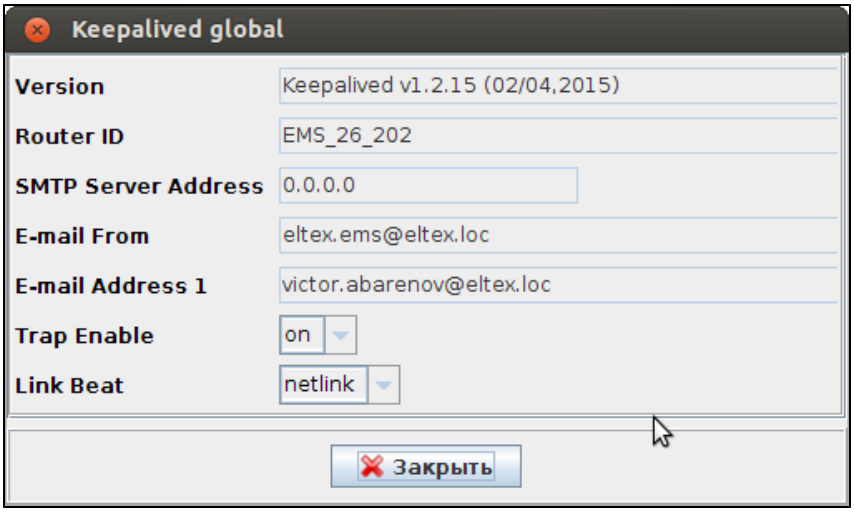
«Syslog» syslog- .
rsyslog, , **rsyslog-mysql,** .
Syslog , .

.

EMS *« ».*
(*«/ /»*) system *« (ICMP, SNMP ping)».*
ICMP SNMP SNMP-.
SNMP GET OID 1.3.6.1.2.1.1.3.0 (SNMPv2-MIB::sysUpTime.0).
«/ ICMP», « SNMP» .
« » - « ».
(LTP, MA4000, WEP, WOP). SNMP system *« SNMP».*

GUI *«/ »* .
Keepalived GUI *«/ ».*

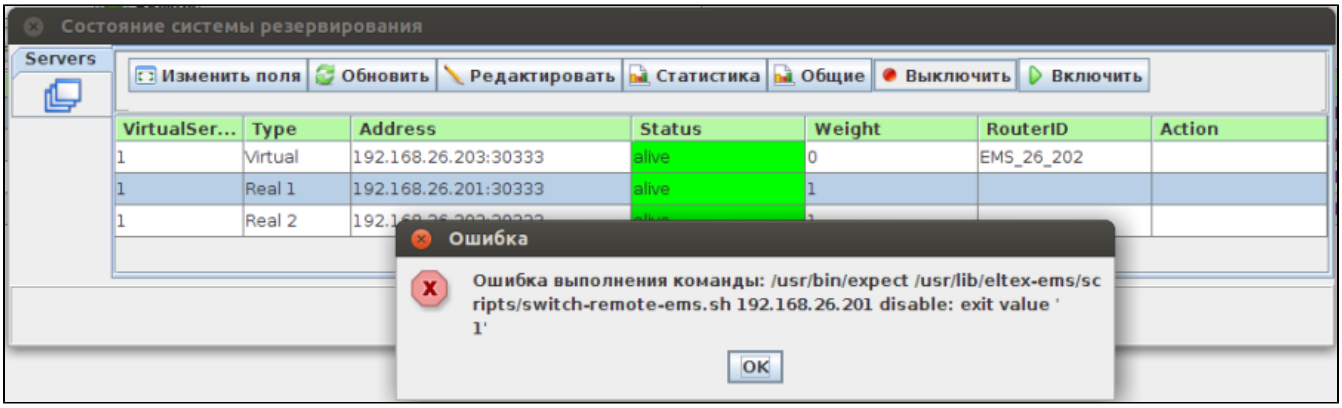




«» :

- *Version* - Keepalived;
- *Router ID* – , IP- (*RouterID*). Router ID keepalived.conf, IP-;
- e-mail
- SNMP-trap;
- .

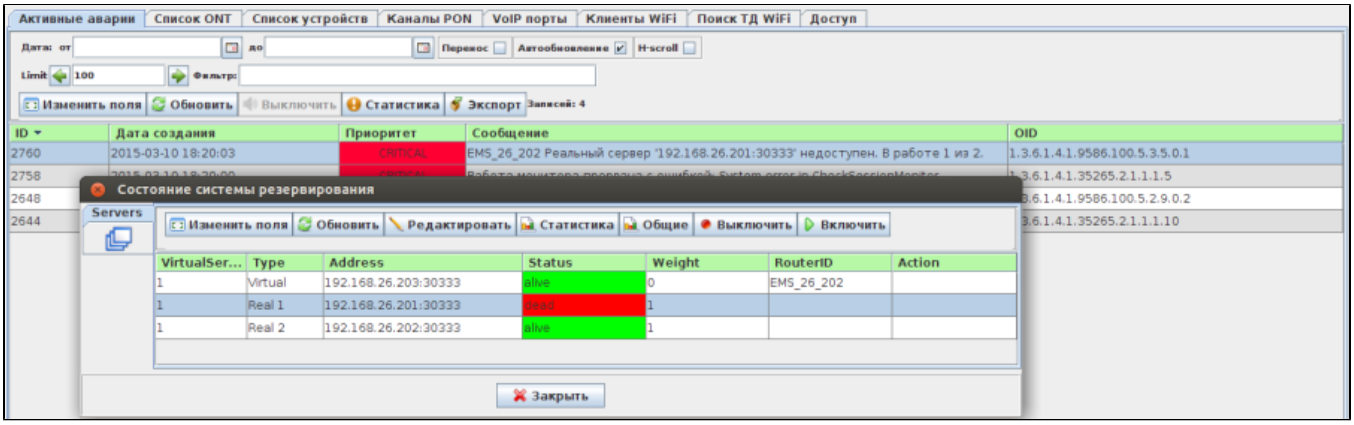
«» .



:

- *VirtualServerIndex* – ;
- *Type* – (N);
- *Address* – IP- / ;
- *Status* – / (alive dead);
- *Weight* – ;
- *Router ID* – , IP- ( );
- *Action* – .

«»/«» eltex-ems .
/usr/lib/eltex-ems/scripts/switch-remote-ems.sh.
switch-remote-ems.sh SSH (login, password).
; .
(, -) GUI .



- , . SNMP- .

« » :

- ;
- master ().

: **mysql**, **rsync**, **keepalived** .
:

- ;
- eltex-ems;
- tomcat6;
- ;
- EMS GUI.

, (, , . .).
:

- Master- ;
- (,);
- IP-;
- Master- Master ;
- , eltex-ems (, , ,), () ;
- .

:

- **ifconfig** vip;
- **MySQL** ;
- **SoftWLC GUI** , vip, ;
- **mc** , .

(watchdog)

SoftWLC . (GUI) . (Server) ( ). , (, . Watchdog). . , , , eltex-ems, – WEB- tomcat6.
, : *http web service.* eltex-ems , , DHCP- (dhcpd-eltex), OLT, .
, Linux cron. :

```
/usr/lib/eltex-ems/scripts/check_ems_srv.sh
```

cron :

```
/etc/cron.d/ems-backup
```

:

```
*/5 * * * * root /usr/lib/eltex-ems/scripts/check_ems_srv.sh
```

:

- cron 5 ;
- . 10 ;
- . tomcat6 eltex-ems tomcat6.

, eltex-ems ( ), WEB- tomcat6, :

1. **GUI- ;**
2. **(http web service);**
3. **Northbound SOAP/XML.|**

:
/var/log/eltex-ems/check/ems-check.<current-date>.txt
:

```
----------------------------- (START) -----------------------------
14-06-2017         15:45:01: System information:
14-06-2017         15:45:01: Linux ubuntu 4.4.0-78-generic #99~14.04.2-Ubuntu SMP Thu Apr 27 18:49:46 UTC 2017
x86_64 x86_64 x86_64 GNU/Linux
14-06-2017         15:45:01: java version "1.8.0_131"
Java(TM) SE Runtime Environment (build 1.8.0_131-b11)
Java HotSpot(TM) 64-Bit Server VM (build 25.131-b11, mixed mode)
14-06-2017         15:45:01: LoadAverage info
14-06-2017         15:45:01: 1min 5min 15min
14-06-2017         15:45:01: 0.01 0.04 0.03 1/571 4244
14-06-2017         15:45:01: RAM MemFree: 91596 kB
Disk info
Disk                        Size         Used        Available         Used %         Mount
/dev/sda1                 15G         11G         3,1G                 79%         /
14-06-2017         15:45:01: EMS status: Eltex.EMS Server is running with pid 30258
14-06-2017         15:45:01: Tomcat status: * Tomcat servlet engine is running with pid 30891
14-06-2017         15:45:01: ports (9310, 9340, 8080) status:
tcp6                 0 0 :::9310 :::* LISTEN 30260/java
tcp                 0 1 192.168.15.106:33608 192.168.26.201:8080 SYN_SENT 4216/curl
tcp6                 0 0 :::8080 :::* LISTEN 30891/java
14-06-2017: Northbound is working
14-06-2017: EMS and Northbound are working
```

, SoftWLC ( ).
, : , , . , , .
, eltex-ems :

```
sudo service eltex-ems stop
```

.
:

```
EMS service disabled. No checks will be performed.
```

:

```
sudo /usr/lib/eltex-ems/scripts/check_ems_srv.sh
```

SoftWLC :

```
curl -shttp://localhost:8080/northbound/getVersion
```

xml- .

```
$ curl -s http://localhost:8080/northbound/getVersion
```

Master Backup .

SNMP

OID		
1.3.6.1.4.1.2021.10.1.3.1	OctetString	Load average 1
1.3.6.1.4.1.2021.10.1.3.2	OctetString	Load average 5
1.3.6.1.4.1.2021.10.1.3.3	OctetString	Load average 15
1.3.6.1.4.1.2021.4.6.0	Integer	, ,
1.3.6.1.4.1.2021.4.5.0	Integer	, ,
1.3.6.1.4.1.2021.4.4.	Integer	Swap ,
1.3.6.1.4.1.2021.4.3.0	Integer	Swap ,
1.3.6.1.2.1.25.2.3.1.5.31	Integer	, (.)
1.3.6.1.2.1.25.2.3.1.6.31	Integer	, (.)
1.3.6.1.2.1.25.2.3.1.4.31	Integer	,
1.3.6.1.4.1.9586.100.5.2.3.1.4.1	Integer	. : 1 — backup 2 — master

hrStorageTable (1.3.6.1.2.1.25.2.3) MIB Host Resources (RFC1514).
:

```
HrStorageEntry ::= SEQUENCE {
        hrStorageIndex INTEGER,
        hrStorageType OBJECT IDENTIFIER,
        hrStorageDescr DisplayString,
        hrStorageAllocationUnits INTEGER,
        hrStorageSize INTEGER,
        hrStorageUsed INTEGER,
        hrStorageAllocationFailures Counter
}
```

. , , .
:

- `hrStorageDescr` — , *«Swap space»* *«/»* - ;
- `hrStorageAllocationUnits` — , . — ;
- `hrStorageSize` — ();
- `hrStorageUsed` — ().

IP-.