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XL Service FW

Инструкция по установке

Версия 1

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1 Установка системы

Все команды должны выполняться от имени пользователя root. **Сору и paste. Соблюдайте точный порядок действий!**

1.1 Операционная система

1.1.1 Поддерживаемая ОС

Версия DEBIAN ≥ 10

ASTRA Linux

Версия CentOS = 7

Рекомендуется: DEBIAN

1.1.2 Предварительные условия

```
# stop and disable firewall
systemctl stop firewalld
systemctl disable -q firewalld > /dev/null
```

Чрезвычайно важно, чтобы вы перезагрузили систему, прежде чем продолжить работу с этим руководством!

```
reboot
```

Установите службу NTP:

```
apt -y install chrony
systemctl enable --now chronyd
```



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Откройте файл конфигурации Chrony и прокомментируйте (отключите) все, что начинается с "pool" или "server":

```
vi /etc/chrony.conf
```

и добавьте строку:

```
server IPOfCustomersNTPServer
```

перезапустите и проверьте chrony:

```
systemctl restart chronyd
```

Проверьте синхронизацию NTP с помощью команды `timedatectl` и найдите "NTP synchronized: yes".

1.1.3 Directory структура

1.1.3.1 Variables (Переменные)

```
# set the name of top-level directory (Leave this line as it is for
default.)
XL_DIR_DESTINATION="/"
```

1.1.3.2 Script (Скрипт)

```
# creating directory xl in destination
mkdir -p "${XL_DIR_DESTINATION}xl"

# creating /xl link
if [[ ! -d "/xl" ]]; then
    ln -s "${XL_DIR_DESTINATION}/xl" "/xl"
fi

# creating directory structure
```



```
mkdir -p /xl/bin/ifo_a
mkdir -p /xl/bin/scripts
mkdir -p /xl/bulk
mkdir -p /xl/cdr/archive
mkdir -p /xl/cdr/local_a
mkdir -p /xl/cdr/tmp
mkdir -p /xl/export/local_a
mkdir -p /xl/log/ifo_a
mkdir -p /xl/tmp
mkdir -p /xl/trace
```

1.1.4 Необходимые пакеты

Для установки операционной системы рекомендуются следующие пакеты:

- tcpdump
- cifs-utils
- nc
- nfs-utils
- psmisc
- net-snmp-utils
- nginx

1.1.5 NFS

1.1.5.1 Script (Скрипт)

```
apt -y install nfs-utils

# start and enable nfs
systemctl start nfs-server
systemctl enable -q nfs-server > /dev/null
```

1.2 Системные модули

1.2.1 Предварительные



```
touch
/xl/export/local_a/{carr_fas,carr_sk,carrier_list,category_section,destination_list,fas_prfx_crr}.csv
touch
/xl/export/local_a/{holidays,info_presets,mnp_list,normalization,numbers_lists,parameter_list}.csv
touch
/xl/export/local_a/{prefix_destination,regions,rules,state_domains,subs_data,time_templates,timezone}.csv
touch
/xl/export/local_a/{xlstate_domain_settings,xlstate_profile,xlapi_auth,xlapi_bank_query,xlapi_iw_settings}.csv
```

```
# install packages
apt -y install tcpdump cifs-utils htop nc perf psmisc net-snmp-utils unzip lsof net-tools traceroute

# add kernel parameters - Increase the default socket buffer sizes (On Debian write to /etc/sysctl.conf)
tee /etc/sysctl.conf > /dev/null <<EOT
net.core.netdev_max_backlog=10000
net.core.rmem_default=2097152
net.core.rmem_max=16777216
net.core.wmem_default=2097152
net.core.wmem_max=16777216
net.ipv4.vs.sloppy_sctp=1
net.ipv4.conf.default.rp_filter=0
net.ipv4.conf.all.rp_filter=0
EOT

sysctl --system

# sctp blacklist - Prevent 'sctp' kernel module from loading (it sends ABORT packets which results in associations oscillating in state between up and down)
# (To check for presence of currently loaded sctp kernel module run: lsmod | grep sctp, and search /var/log/messages for 'sctp')
tee /etc/modprobe.d/sctp-blacklist.conf > /dev/null <<EOT
blacklist inet_diag
blacklist sctp
blacklist sctp_diag
install inet_diag /bin/false
install sctp /bin/false
install sctp_diag /bin/false
EOT

if [[ ! -f /xl/bulk/partition_cdr_local_a.img ]]; then

    # creating image
    fallocate -l 10GiB /xl/bulk/partition_cdr_local_a.img
```



```
# formatting image
mkfs.ext4 -q -F "/xl/bulk/partition_cdr_local_a.img" > /dev/null

# adding fstab record
tee -a /etc/fstab > /dev/null <<EOT
$(realpath "/xl/bulk/partition_cdr_local_a.img") $(realpath
"/xl/cdr/local_a") ext4 rw,loop 0 2
EOT
fi

if [[ ! -f /xl/bulk/partition_export_local_a.img ]]; then
# creating image
fallocate -l 20GiB /xl/bulk/partition_export_local_a.img

# formatting image
mkfs.ext4 -q -F "/xl/bulk/partition_export_local_a.img" > /dev/null

# adding fstab record
tee -a /etc/fstab > /dev/null <<EOT
$(realpath "/xl/bulk/partition_export_local_a.img") $(realpath
"/xl/export/local_a") ext4 rw,loop 0 2
EOT
fi

mount -av
```

Чтобы применить новую конфигурацию в файле /etc/exports, запустите:

```
exportfs -ra
```

1.2.2 XLSIG установка

Скопируйте следующие файлы в /xl/bin/ifo_a:

- ifo_main
- start
- stop
- xlmon
- xlsig

в папку /xl/bin/ifo_a:



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```
chown root:root /xl/bin/scripts/*
chmod +x /xl/bin/scripts/*

chown root:root /xl/bin/ifo_a/*
chmod +x /xl/bin/ifo_a/*
```

При необходимости добавьте статические маршруты для служб Sigtrans и SMTP,SNMP и.....
Если возможно, добавьте с помощью nmtui.

Доступ к почтовому серверу (SMTP)

отправьте тестовое письмо, настройте SMTP в файле конфигурации для xlmon

Доступ к SNMP-серверу

отправить тестовый SNMP, настроить SNMP в файле конфигурации для xlmon

rc.local

```
/xl/bin/ifo_a/ifo_main -b &
```

```
chmod +x /etc/rc.local
```

Перезагрузите сервер,

проверьте, все ли сервисы online

1. Конфигурация переменных xlsig (XLSIG_CFG.INI)
2. Настройка ассоциаций STP (XLSIG_SS7.INI)
3. Настройка ассоциаций XLSIG-XLSTATE (XLSIG_SS7.INI)
- добавить/настроить ассоциацию XLSTATE
4. Подготовьте файл нормализации.csv.
5. Настройка переменных ifo_main (IFO_MAIN.INI)
6. Проверьте разрешения на исполняемые файлы для бинарных файлов в сценариях start и stop.
7. Запускаем сервисы
./start
8. Убедитесь, что файл /xl/log/ifo_a/ifo_app.csv содержит строку "LOADING RULE FILES SUCCESSFUL"
9. Проверьте статус ассоциаций в файле /xl/export/local_a/ifo_stat.csv file.



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10. Снимите трейс (если необходимо)

Пример:

1. trace_start.bash

```
#!/usr/bin/bash
```

```
tracedate=$(date +%Y_%m_%d)
```

```
tracetime=$(date +%H)
```

```
/usr/sbin/tcpdump -i any -G 3600 -W 1 -w /xl/trace/trace-RT11_${tracedate}-hour-  
${tracetime}.pcap -Z root -z gzip sctp
```

2. trace_cleanup.bash

```
#!/usr/bin/bash
```

```
find /xl/trace/trace*.gz -mtime +1 -exec rm -f {} \;
```

- добавьте скрипты в crontab

```
0 * * * * /xl/bin/scripts/trace_start.bash > /dev/null 2>&1
```

```
0 * * * * /xl/bin/scripts/trace_cleanup.bash > /dev/null 2>&1
```

1.2.3 XLSTATE установка

Перед установкой необходимо выполнить все шаги, описанные на странице «Предварительные требования».

Скопируйте следующие файлы в /xl/bin/ifo_a:

- xl/xl_main
- start
- stop
- xlmon
- xlstate

1. Настройка ассоциаций XLSTATE (XLSTATE_SS7.INI)
2. Настройка переменных xlstate (XLSTATE_CFG.INI)- csv file paths
- log file paths



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- log level

...

1.2.4 XLAPI установка

Перед установкой необходимо выполнить все шаги, описанные на странице «Предварительные требования».

Скопируйте следующие файлы в /xl/bin/ifo_a:

- ifo_main
- start
- stop
- xlmon
- xlapi

в папку /xl/bin/ifo_a:

```
chown root:root /xl/bin/scripts/*
chmod +x /xl/bin/scripts/*
chown root:root /xl/bin/ifo_a/*
chmod +x /xl/bin/ifo_a/*
```

1.2.5 XLRTA установка

Перед установкой необходимо выполнить все шаги, описанные на странице «Предварительные требования».

Скопируйте следующие файлы в /xl/bin/ifo_a:

- ifo_main
- start



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- stop
- xlmon
- xlrta

в папку /xl/bin/ifo_a:

```
chown root:root /xl/bin/scripts/*
chmod +x /xl/bin/scripts/*

chown root:root /xl/bin/ifo_a/*
chmod +x /xl/bin/ifo_a/*
```

1.2.6 XLMON установка

Перед установкой необходимо выполнить все шаги, описанные на странице «Предварительные требования».

Скопируйте следующие файлы в /xl/bin/ifo_a:

- ifo_main
- start
- stop
- xlmon

в папку /xl/bin/ifo_a:

```
chown root:root /xl/bin/scripts/*
chmod +x /xl/bin/scripts/*

chown root:root /xl/bin/ifo_a/*
chmod +x /xl/bin/ifo_a/*
```

1. Настройка переменных xlmon (XLMON_CFG.INI)

- настройки SMTP



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- Настройки SNMP

- уровень логов



2 Конфигурация системных модулей

XL Service Firewall управляется с помощью правил и фильтров, которые настраиваются в файлах конфигурации модулей, перечисленных в главах ниже.

2.1 Конфигурация XLSIG

2.1.1 Описание файлов конфигурации XLSIG

Файлы конфигурации хранятся в таблице файлов XLSIG в форматах INI и CSV. Некоторые из них обязательны, а некоторые генерируются автоматически при запуске программы XLSIG, если они не существуют, но их необходимо правильно отредактировать вручную. Все файлы конфигурации считываются при запуске XLSIG. Если вы измените содержимое файла Rules.csv, XLSIG будет читать и использовать все файлы конфигурации во время работы XLSIG. Однако некоторые параметры требуют перезапуска XLSIG и отмечены в этих таблицах. Выходные файлы и файлы журналов автоматически генерируются XLSIG.

Default Filename	Required	Type	Description
/xl/bin/ifo_a/XLSIG_CFG.INI	Autogenerated	Autogenerated configuration file	Configuration of XLSIG - general
/xl/bin/ifo_a/XLSIG_SS7.INI	Autogenerated	Autogenerated configuration file	Configuration of XLSIG - associations
/xl/bin/ifo_a/XLSIG_PROXY.INI	Autogenerated	Autogenerated configuration file	Configuration of XLSIG - proxy and monitoring
/xl/bin/ifo_a/XLSIG_SIP.INI	Autogenerated	Autogenerated configuration file	Configuration of XLSIG - SIP
/xl/export/local_a/fas_prfx_crr.csv	Yes		Prefix File (number prefix to carrier map)
/xl/export/local_a/mnp_list.csv	Yes	mnp_update.sh	MNP list (number transfers)
/xl/export/local_a/subs_data.csv	Yes	mnp_update.sh	Subscriber data
/xl/export/local_a/timezone.csv	Yes	Static file (copied)	Timezone descriptions (global)
/xl/export/local_a/normalization.csv	Yes	Copied/manually edited	Normalization descriptions (global)
/xl/export/local_a/info_presets.csv	Yes	Manually edited	Presets for Info field exporting to State server
/xl/export/local_a/state_domains.csv	Yes	Manually edited	State domains description
/xl/export/local_a/suspend_state.csv		Autogenerated	Status of suspended rules
/xl/cdr/local_a/cdr.csv		Output	CDR output (CDR file for import to database) (optionally periodically moved to timestamped file)
/xl/export/local_a/ifo_hash.csv		Output for ximon	MD5 hashes and age of loaded files (for ximon)



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Default Filename	Required	Type	Description
/xl/log/ifo_a/ifo_log.csv		Log	Log (M3UA, SCCP)
/xl/log/ifo_a/ifo_app.csv		Log	Log (GENERAL, RULE, TCAP, SIP)
/xl/log/ifo_a/sctp_log.csv		Log	Log (SCTP)
/xl/log/ifo_a/event_log.csv		Log	Event log (rule activation, TCG update)

2.1.1.1 XLSIG_CFG.INI

Красный цвет обозначает параметры, которые необходимо проверить и изменить вручную.

Parameter	Description	Must set	Need restart
GLB:RULE_FILE_EXT=/xl/export/local_a/rules.csv	Rules file filename		
GLB:RULE_COUNT_MAX=25000	Storage size for rules		
GLB:PREFIX_FILE=/xl/export/local_a/pfx.csv	Prefix file filename		
GLB:CARRIER_FILE=/xl/export/local_a/carr_sk.csv	Carrier (Carrier - Service key) list file filename		
GLB:NUMLIST_FILE_COUNT=1	Number of numlist files		
GLB:NUMLIST_FILE(2, 3,...)=/xl/export/local_a/numbers_lists.csv	Number lists file filename		
GLB:NUMLIST_COUNT_MAX=1000	Storage size for numberslists (max number of numberlist IDs)		Yes
GLB:TIME_TEMPLATE_FILE=/xl/export/local_a/time_templates.csv	Time templates file filename		
GLB:MNP_NUMLIST_FILE=/xl/export/local_a/mnp_list.csv	MNP list file filename		
GLB:REGIONLIST_FILE=/xl/export/local_a/regions.csv	Regions file filename		
GLB:CATEGORY_SECTION_FILE=/xl/export/local_a/category_section.csv	Category-section links file filename		
GLB:CARRIER_FAS_FILE=/xl/export/local_a/carr_fas.csv	Carrier FAS file filename		
GLB:SUBSCRIBER_DATA_FILE=/xl/export/local_a/subs_data.csv	Subscriber data file filename		
GLB:CARRIER_LIST_FILE=/xl/export/local_a/carrier_list.csv	Carrier list file filename		
GLB:DESTINATION_PREFIX_FILE=/xl/export/local_a/prefix_destination.csv	Destination prefix file filename		
GLB:DESTINATION_LIST_FILE=/xl/export/local_a/destination_list.csv	Destination list file filename		
GLB:HOLIDAYS_FILE=/xl/export/local_a/holidays.csv	Holidays file filename		
GLB:PARAMETER_LIST_FILE=/xl/export/local_a/parameter_list.csv	Parameter list file filename		
GLB:TIMEZONE_FILE=/xl/export/local_a/timezone.csv	Timezone description file filename		



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GLB:NORMALIZATION_FILE=/xl/export/local_a/normalization.csv	Normalization file filename		
GLB:SUSPEND_STATE_FILE=/xl/export/local_a/suspend_state.csv	Suspend state file filename		
GLB:SUSPEND_FILE=/xl/export/local_a/suspend.csv	Suspend file filename		
GLB:FILE_HASHES_FILE=/xl/export/local_a/ifo_hash.csv	File hashes file filename		
GLB:CDR_FILE=/xl/cdr/local_a/cdr.csv	XLSIG CDR filename		
GLB: CDR_MOVE_INTERVAL =0	if > 0 it enables moving (renaming) CDR file every `CDR_MOVE_INTERVAL` seconds, to a timestamped file, e.g.: `cdr.out-2020-09-16_111520`.	Yes	
GLB:CDR_EVENT_FILE=/xl/cdr/local_a/cdr_event.csv	XLSIG event CDR filename		
GLB:CDR_SIGNALLING_FILE=/xl/cdr/local_a/signalling.csv	XLSIG signalling CDR filename		
GLB:TRACKING_CDR_FILE=/xl/cdr/local_a/tracking_cdr.csv	Tracking CDR filename		
GLB:STAT_FILE=/xl/export/local_a/ifo_stat.csv	XLSIG stat file filename		
GLB:PERF_FILE=/xl/export/local_a/ifo_perf.csv	XLSIG perf file filename		
GLB:CARR_PERF_FILE=/xl/export/local_a/carr_perf.csv	XLSIG carr perf file filename		
GLB:LOG_FILE=/xl/log/ifo_a/ifo_log.csv	XLSIG log file filename		
GLB:APP_LOG=/xl/log/ifo_a/ifo_app.csv	XLSIG app log file filename		
GLB:SCTP_LOG=/xl/log/ifo_a/sctp_log.csv	XLSIG sctp log file filename		
GLB:EVENT_LOG=/xl/log/ifo_a/event_log.csv	XLSIG event log file filename		
GLB: MNP_OWN_CODE =0	Mnp code of current operator	Yes	
GLB: LOGGING =0	Logging level (0 = all off, 1 = only LOG_GENERAL on, 2 = all on)	Yes	
GLB:LOG_GENERAL=1	Log type for level GENERAL (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_SCTP=0	Log type for level SCTP (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_M3UA=0	Log type for level M3UA (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_SCCP=0	Log type for level SCCP (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_RULE=1	Log type for level RULE (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_CALL=1	Log type for level CALL (0 = off, 1 = file only, 2 = stdout and file)		



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GLB:LOG_SIP_CALL=1	Log type for level SIP (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_MAX_SIZE_MB=1024	Max file size for log files in megabytes before rotating, negative number = unlimited		
GLB:LOCALITY_ALG=0	1 = use Route origin as SK, 2 = use Route origin with SK as SK, 3 = 1000*SK + RO	Yes	
GLB:OWN_STATE_ROUTE=1	State route parameter for this server (origin route in State packets)		
GLB:NORMALIZATION_PREFIX=7	Country dependent number prefix (7 = Russia, 386 = Slovenia etc.)	Yes	
GLB:NATIONAL_DIAL=8	Country dependent national dial number	Yes	
GLB:INTERNATIONAL_DIAL=810	Country dependent international dial number	Yes	
GLB:BCD_ALGORITHM=1	2 = remove last digit on odd number of digits in BCD number decoding		
GLB:WORKER_COUNT=(CPU COUNT - 1)	Number of worker threads		Yes
GLB:STORE_SIGNALLING_CDR=0	1 = enable writing of signalling CDR, 2 = write Signalling CDRs but exclude IDPs using prefix	Yes	
GLB:SIGNALLING_CDR_IDP_EXCLUDE_CALLING_GT=7*	Prefix for CallingGT to exclude IDPs from Signalling CDR when STORE_SIGNALLING_CDR=2		
GLB:SIGNALLING_CDR_PACKET_DATA=1	1 = include packet ethernet frame data in Signalling CDR		
STATE:DOMAIN_FILE=/xl/export/local_a/state_domains.csv	Xlstate domains file filename	Yes	
ODB:ACTIVE=0	1 = OBD active		
ODB:NUMBER_LIST=0	Numlist ID to be used with OBD		
GLB:NUMLIST_MAX_SIZE=10000000	Numlist storage capacity. The size should be set to 100.000.000 (100 mio)	Yes	Yes
GLB:SUBSCRIBER_DATA_MAX_SIZE=10000000	Subscriber data capacity (subs_data.csv)	Yes	Yes
GLB:MNP_SIZE=30000000	Capacity for MNP entries (mnp_list.csv)		Yes
GLB:DESTINATION_PREFIX_MAX_SIZE=2000000	Capacity of Destination prefix		Yes
GLB:DESTINATION_LIST_ITEMS_MAX_SIZE=200000	Capacity of Destination list items		Yes
GLB:DESTINATION_LIST_MAX_SIZE=10000	Capacity of Destination lists		Yes



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GLB: STRING_SIMILARITY_ALGORITHM =0	Algorithm ID for String similarity	Yes	No
GLB: STRING_SIMILARITY_THRESHOLD =3	String similarity threshold	Yes	No
GLB:STRING_SIMILARITY_MAX_LIST_SIZE=100	Limit for numlist used with string similarity search (to prevent high CPU usage)		
GLB:STATE_SUBSCRIPTION_MAX_SIZE=500000	Capacity of State subscriptions (Event tracking)		Yes
GLB:STATE_SUBSCRIPTION_TIMEOUT_SECONDS=1800	Timeout for State subscription (Event tracking)		
GLB:CARRIER_LIST_MAX_SIZE=5000	Capacity for Carrier lists		Yes
GLB:CARRIER_LIST_ITEMS_MAX_SIZE=50000	Capacity for Carrier lists items		Yes
GLB:RESPONSE_DATA_MAX_COUNT=5000	Capacity for tracking calls with actions which require delayed response (54, 55, etc.)		Yes
GLB:STAT_FILE_VERBOSITY=1	2 = print additional data into ifo stat.csv		
NORMALIZE:COUNT=0	Count of NORMALIZE:PFX_ entries		
NORMALIZE:PFX_0=D????	Normalization prefix 0 (remove prefix during number normalization)		
GLB:USSD_SUB_MENU_ENABLED=0	Enable receiving of USSD RRL (reply) messages		
GLB:USSD_SUB_MENU_TIMEOUT_MS=25000	Timeout in ms for replies to an USSD Subscriber Menu message		
GLB:USSD_ALERTING_PATTERN=2	Value for alerting pattern field of USSD messages		
GLB:RT_SOCKET_ENABLED=0	1 enables listening on Unix domain socket ("RT" functionality)		
GLB:RT_SOCKET_PATH=/var/spool/xlsfw/xlsig	RT Unix domain socket file		
GLB:TRACKING_CDR_ENABLED=0	1 enables writing of tracking CDRs		
GLB:CDR_EVENT_ENABLED=0	1 enables writing of cdr_event		
GLB:ACTIVE_CHECK_TIMER_MS=50	Active check timeouting timer period		
GLB:PROFILECHECK_TIMEOUT_MS=2000	Profile check timeout		
GLB:REDIRECT_SPECIAL_HANDLING=0	if 1, in action 21 remove D??02 from BNum		
GLB:MAX_INPUT_QUEUE_SIZE=3000	Capacity for input packet (SCTP part) queue		Yes
GLB:PRN_RRL_ADVERTISE_DOMAIN_ID=-1	(RO only) if > 0, DomainID to advertise to PRN RRLs		



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GLB:ATI_REQUEST_TIMEOUT_MS=1000	Timeout for ATI requests (initiated by xlstate/xlapi)		
GLB:DYNAMIC_NUM_LIST_MAX_SIZE=2048	Capacity for dynamic number list items		Yes
GLB:SYSTEM_SUSPEND_CALL_THRESHOLD=0	if > 0, enable possible System suspend based, when calls per 10 sec exceed this threshold		
GLB:SYSTEM_SUSPEND_ACTION_PERCENT_THRESHOLD=30	Percentage of calls answered with action required for System suspend		
GLB:ROAMING_NUMBER_REQUESTS_MAX_SIZE=1024	Capacity for parallel Roaming number requests		Yes
GLB:ROAMING_NUMBER_REQUESTS_TIMEOUT_MS=500	Roaming number request timeout		
GLB:OPTIMIZE_QUESTIONMARK_NUMBERS=0	1 = use optimization for numbers ending with ?, requires different sorting on numbers_lists		
GLB:IW_REDIRECT_NUMBER=0	1 = use C number if present from IW IDP as C number in call processing instead of B		
GLB:ENABLE_EXTENSION_TG=0	1 = enable SK reading from TG field in IDP		
GLB:EXTENSION_TG_OFFSET=20000	Offset to use for SK from TG field		
HTTP:HTTP_HEADER_HOST=127.0.0.1	Host string used in HTTP requests		
HTTP:REQUEST_QUEUE_SIZE=100000	Queue size used for HTTP requests (max number of parallel requests)		Yes
HTTP:HTTP_RESPONSE_POOL_SIZE=1000	Max buffers used to recompose HTTP responses in multiple packets		Yes
HTTP:A2P_URL= http://127.0.0.1:5000/a2p_request	URL used for outgoing A2P requests		
HTTP:HTTP_TIMEOUT_MS=2000	Timeout used in HTTP requests and in HTTP active check request		
GLB:MAX_APPLY_CHARGING_TIME_DELAY_S=600	ApplyCharging max time (per 1 ApplyCharging request) for action 55		
GLB:EKEY_SETTINGS=1;aabccdd	Ekeys used in IW hash keys <id>;<key>[:<id>;<key>...]		
GLB:DEFAULT_NORMALIZATION_ID=-1	if > 0, Normalization ID to use in case carrier doesn't have a specified Normalization ID		
GLB:INFO_PRESET_DEFAULT_ID=-1	if > 0, ID of Info field configuration preset that is sent to State server		



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GLB:HLR_CACHE_ENABLED=0	if 1, enable HLR check result caching		
GLB:HLR_CACHE_MAX_SIZE=20000	determines the maximum number of HLR results that can be stored		
GLB:HLR_CACHE_TIMEOUT_S=3600	determines how long will a HLR result remain in the cache		
GLB:HLR_CACHE_A_NUMBER_TRANSFER_TIMEOUT_S=10	determines how long the information is stored when ATI request is sent before receiving result		

2.1.1.2 XLSIG_CFG.INI for xlsig (SMS Firewall)

Parameter	Description	Must set	Need restart
GLB:MACHINE_LEARNING_EXPORT_FILE=/xl/cdr/local_a/xlearn_export.csv	export file for data for processing by machine learning process (xlearn)		
GLB:SMSFW_SIGNALLING_CDR=/xl/cdr/local_a/smsfw_signalling_cdr.csv	CDR file for SMSFW signalling		
GLB:SRI4SM_STORAGE_MAX_SIZE=100000	storage capacity for SRI4SM		
GLB:IMSI_STORAGE_MAX_SIZE=15000000	storage capacity for IMSI		
GLB:FSM_STORAGE_MAX_SIZE=30000	storage capacity for FSM		
GLB:FSM_PACKET_STORAGE_MAX_SIZE=60000	storage capacity for FSM packet		
GLB:SMSFW_FSM_REQUIRES_SRI4SM=0	if 0 also process FSMs for which there is no SRI4SM/RRL SRI4SM session found (with those parameters empty), if 1 only process FSM for which there is an SRI4SM session		
GLB:SMSFW_SRI4SM_TIMEOUT=60	SRI4SM timeout		
GLB:SMSFW_SRI4SM_CACHE_TIMEOUT=14400	SRI4SM cache timeout		
GLB:SMSFW_FSM_TIMEOUT=900	FSM timeout		
GLB:SMSFW_FSM_NO_RRL=1	if 1 don't wait for RRL, send RRL, all FSMs and write CDR		
GLB:SMSFW_USE_OWN_GT_SRI4SM=0	if 1 insert OWN GT as calling GT in forwarded SRI4SM		



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GLB:SMSFW_USE_OWN_GT_FSM=0	if 1 insert OWN GT as calling GT in forwarded FSM		
GLB:SMSFW_OWN_SERVER_ID=0	ID of servers, IDs should start with 0 and increase by 1 for each next server		
GLB:SMSFW_SERVER_COUNT=1	number of servers		
GLB:SMSFW_DISCARD_ANONYMOUS_FSM=1	if > 0 and no IMSI or MSISDN, discard the MO-FSM		
GLB:MT-FSM_FOREIGN_GT=1	in case of CalledGT != ownGT: 0 = let through without dehoming, 1 = silent discard		
GLB:HOME_ZONE_ROUTING=1	0/1: disable/enable home zone routing (changing of IMSI in variable and buffer for further processing from fake to original)		
GLB:SMSFW_USE_OWN_OPC_DPC_IN_REPLY=1	if > 0 use SCTP association's OPC and DPC in FSM replies (and other packets)		
GLB:SMSFW_FORWARD_MULTIPART=0	if > 0 enable forwarding of multipart FSM without processing		
GLB:SMSFW_SYNC_SRI4SM_BETWEEN_SERVERS=0	if > 0 enable synchronization between smsfw servers		

2.1.1.3 XLSIG_PROXY.INI (SMS Firewall конфигурация)

Parameter	Description	Must set	Need restart
GLB:SMSFW_INPUT_TT=-1	if >= 0 provides an input filter for TT		
GLB:SMSFW_PROXY_NON_PROCESSED=1	if 0 don't proxy packets that don't enter rule processing (useful for debug and testing)		

2.1.1.4 XLSIG_SMPP.INI for xlsig (SMS Firewall конфигурация)

Parameter	Description	Must set	Need restart
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XL Service FW

General:SERVER_PORT=9000	server port		
General:SERVER_SYSTEM_ID=	server system ID		
General:SERVER_SYSTEM_PWD=PWD	server system password		
General:CLIENT_HOST_PEER=1.1.1.1	client host peer IP address		
General:CLIENT_HOST_OWN=0.0.0.0	client host own IP address		
General:CLIENT_PORT_PEER=9000	client peer port		
General:CLIENT_PORT_OWN=3000	client own port		
General:CLIENT_CLIENT_ID=SMPP	client client ID		
General:CLIENT_SYSTEM_PWD=PWD	client system password		
General:CLIENT_BIND_TYPE=9	client bind type: 2 = transmitter, 9 = transceiver		
General:CLIENT_HEARTBEAT_S=5	client heartbeat in seconds		
General:CLIENT_ACTIVITY_TIMEOUT_S=10	client activity timeout in seconds; for configuring SMPP client connection restart (0 to disable)		

2.1.1.5 XLSIG_SS7.INI

Parameter	Description	Must set	Need restart
GLB: OWN_GT =0123456789	GT global title used as CallingGT in outbound self-initiated packets or replies to packets depending on GLB:GT_OVERRIDE	Yes	
GLB: GT_OVERRIDE =1	1 - means that the system will answer with reversed GTs to the received message (regardless of the GT on which the message arrives, it will answer from this address). SCCP header in replies will have CallingGT and OPC from input packet (from CalledGT, DPC) 0 - means that it accepts a message to any address and in the answer writes it's address, as is specified in SS7.INI. It will use data from our configuration (GLB:OWN_GT and ASSOC#n:OPC)	Yes	
GLB: DPC_OVERRIDE =1	if 1 SCCP header in replies will have DPC from input packet (from OPC), if 0 it will use data from our configuration (ASSOC#n:DPC)	Yes	
GLB: ATI_SCF =0123456789	SCF-Address number used in ATI requests (HLR check). Write the GT number	Yes	
GLB:ATI_ALLOWED_PREFIX=*	Prefix which is allowed for ATI requests		



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GLB:ATI_TT=0	Destination TT for ATI requests		
GLB:HLR_CHECK_USE_ATI=1	if 0 use SRI4SM for HLR check, 1 = use ATI for current carrier, 2 = like 1 but for other carriers send SRI4SM		
GLB:HLR_CHECK_ASSOC=	Comma separated list of indices (1-based) of associations to be used for HLR check, if empty (default) incoming association of IDP is used. Associations are used equally using round-robin.		
GLB:OWN_CARRIER_ID=0[1,2...]	1 or more comma separated carrier IDs used for HLR check	Yes	
GLB:TIMER_ACTIVITY=10	If no RX on assoc for this many seconds, reinitialize SCTP assoc		
GLB:TIMER_HB=5	If no RX on assoc for this many seconds, send a heartbeat		
GLB:RRBE_ENABLE=0	0 = disable RRBE in general, > 0 enable		
GLB:RRBE_EVENTS=7,9	A list of RRBE events, default: answer, disconnect, if empty, RRBE events are not added		
GLB:RRBE_EVENTS_INTERRUPT=	A list of RRBE events (must be enabled in RRBE_EVENTS also) to use interrupt monitor mode		
GLB:RRBE_APPLICATION_TIMER=0	value > 0: add applicationTimer criteria with specified value into O_NOANSWER RRBE, 0 = not included		
GLB:SYNC_STATE_SUBSCRIPTION_ASSOC=-1	(xlsig_ro only) if > 0, index of association for the 2nd xlsig_ro with which it is necessary to synchronise Call progress tracking (State subscription) - necessary in installations where ERB events can arrive at a different xlsig_ro instance than the initial IDP for the same call		Yes
GLB:RRBE_EVENTS_IVR=7,9	RRBE events in case of IVR action		
GLB:RRBE_EVENTS_INTERRUPT_IVR=	RRBE events with interrupt in case of IVR action		
GLB:RRBE_APPLICATION_TIMER_IVR=0	Application timer value in case of IVR action		
GLB:RRBE_LEG_ID=1	if > 0 add LegID parameter into RRBE message		
GLB:SCTP_ASSOC_COUNT=1	Number of SCTP Associations. Verify if this number is the same as the number of associations that are written in this same file	Yes	Yes
ASSOC#n:DISPLAY_NAME=ASSOC	Display name for this association	Yes	
ASSOC#n:ASSOCIATION_ACTIVE=0	1 = enable this association	Yes	Yes
ASSOC#n:SERVER=1	0 = perform as client (send INIT), 1 = perform as server (wait for INIT)	Yes	Yes
ASSOC#n:PORT_LOCAL=0	Port number on this machine to use	Yes	Yes
ASSOC#n:PORT_REMOTE=0	Port number on the remote machine to use	Yes	Yes
ASSOC#n:IP_LOCAL1=0.0.0.0	First IP to use on this machine	Yes	Yes
ASSOC#n:IP_LOCAL2=0.0.0.0	Second IP to use on this machine (or 0.0.0.0 to disable multihoming)	Yes	Yes
ASSOC#n:IP_PEER1=0.0.0.0	First IP to use on the remote machine	Yes	Yes
ASSOC#n:IP_PEER2=0.0.0.0	Second IP to use on the remote machine (or 0.0.0.0 to disable multihoming)	Yes	Yes
ASSOC#n:ROUTING_CONTEXT=0	Routing context value if enabled	Yes	



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ASSOC#n:TRAFFIC_MODE=2	Value of traffic mode in ASPAC and ASPAC_ACK messages		
ASSOC#n: NETWORK_APPEARANCE =0	if > 0, add Network Appearance parameter in replies with the specified value	Yes	
ASSOC#n:ADDRESS_IND=67	Unused		
ASSOC#n: SSN =252	Calling (Own) SSN if GT_OVERRIDE=0	Yes	
ASSOC#n: OPC =1	Originating Point Code	Yes	
ASSOC#n: DPC =15033	Destination Point Code	Yes	
ASSOC#n:SEND_DAUD=1	if 1 send DAUD during association init sequence		
ASSOC#n:SEND_DAVA=1	if 1 send DAVA during association init sequence		
ASSOC#n:SEND_ASPUP=1	Unused		
ASSOC#n:SEND_NTFY=1	if 1 send NTFY during association init sequence after ASPAC_ACK		
ASSOC#n:SEND_NTFY_DOWN=1	Unused		
ASSOC#n:SEND_RC=0	if 1 add Routing Context parameter to data replies and DAVA		
ASSOC#n:NETWORK_INDICATOR=3	M3UA header Network Indicator value		
ASSOC#n:NP_CALLING=1	SCCP header CallingGT Numbering Plan value (if GT_OVERRIDE=0) - 1 = ISDN		
ASSOC#n:NP_CALLED=1	SCCP header CalledGT Numbering Plan value		
ASSOC#n:NP_CALLING_ATI=1	SCCP header CallingGT Numbering Plan value for ATI messages		
ASSOC#n:NP_CALLED_ATI=1	SCCP header CalledGT Numbering Plan value for ATI messages		
ASSOC#n: STATE_SERVER =0	1 = Association to primary State server, 2 = to secondary State server, 10 = internal Callback association. If this is about XLSTATE association it should be set to 1	Yes	Yes
ASSOC#n:DIAMETER=0	1 = This association receives DIAMETER protocol		
ASSOC#n:IW_GROUPS=1	0 or more comma separated IW_GROUPS for this association (to which IW groups it belongs to, values 0-19). For associations STATE_SERVER=1 it should be empty; Default value is empty if STATE_SERVER is a number other than zero, else the default value is 1		
ASSOC#n:RRBE_SINGLE_DISCONNECT=0	if 1, in RRBE send only a single Disconnect event request		
ASSOC#n:MULTIHOMED_MODE=0	if 1, accept packets with any src dst combination (including IP_PEER2 to IP_LOCAL1 or IP_PEER1 to IP_LOCAL2)		
ASSOC#n:HISTORY_PACKET_MAX_SIZE=500	History buffer for resend (outgoing) buffer size; Default value is 1700 if STATE_SERVER >0 else 500		Yes
ASSOC#n:HISTORY_PACKET_COUNT=2000	History buffer for resend (outgoing) number of buffers		Yes
ASSOC#n:QUIT_ON_SEND_HISTORY_FAILURE=1	If 1, quit if resend of history fails (requested packet not found in history)		
ASSOC#n:SMSFW_SERVER_ID=-1	SMSFW server ID		



2.1.1.6 XLSIG_PROXY.INI

Parameter	Description	Must set	Need restart
PROXY:COUNT=0	Number of PROXY:FILTER_GT_# entries		
PROXY:FILTER_GT_#=9999999999	Filter incoming messages by CalledGT (empty = match all)		
PROXY:FILTER_SK_#=-1	Filter incoming messages by SK (-1 = match all)		
PROXY:REWRITE_PROXY_GT_#=#	Rewrite proxy GT - CalledGT of the proxied IDP (empty = keep original)		
PROXY:REWRITE_PROXY_TT_#=-1	Rewrite proxy TT - CalledGT TT of the proxied IDP (-1 = keep original)		
PROXY:REWRITE_PROXY_SK_#=-1	Rewrite proxy SK - SK of the proxied IDP (-1 = keep original)		
PROXY:GT_0=<in_CalledGT>[,<out_CalledGT>[,<out_CalledTT>]]	Describe input CalledGT to be proxied, optionally define specific out CdGT and TT; OBSOLETE FROM 2022-09-27. PROXY:GT_ is now PROXY:FILTER_GT_		
GLB:PROXY_TT=0	Called TT for proxied messages		
GLB:PROXY_GT=123456789	CalledGT for proxied messages		
PROXY:PROXY_EXCEPTION_PREFIX_COUNT=0	Number of PROXY:PROXY_EXCEPTION_PREFIX_# entries		
PROXY:PROXY_EXCEPTION_PREFIX_0=-	For proxied IDP, if B number begins with this prefix, send continue instead of proxying		
MONITOR:COUNT=0	Number of MONITOR:GT_# entries		
MONITOR:GT_0=-	CalledGT for monitor mode processing (don't send a reply to IDP)		
MONITOR:COUNT_PC=0	Number of MONITOR:PC_# entries		
MONITOR:PC_0=0	Destination Point Code for monitor mode processing (don't send a reply to IDP)		
MONITOR:COUNT_SERVICE_KEY=0	Number of Service keys specified for monitor mode (TCAP traffic)		
MONITOR:SERVICE_KEY_0=0	Service Key for monitor mode processing (don't send a reply to IDP)		
MONITOR:SERVICE_KEY_REPLY_TCAP_END=0	1 = enable TCAP End replies (after 5 second delay) on monitor TCAP traffic		

2.1.1.7 XLSIG_SIP.INI



XL Service FW

Parameter	Description	Must set	Need restart
GLB:SIP_COUNT=0	Count of SIP associations (associations for Callback)		Yes
GLB:SIP-I_SK_ALGORITHM=1	1 = SIP-I messages with Called number beginning with E..., decode service key from the number, 0 = don't		
GLB:SIP-I_COUNT=0	Count of SIP-I associations (associations for receiving calls, eg. INVITE etc.)		Yes
GLB:SIP-I_USE_GLB_PREFIX=0	1 = for redirect prefix Redirect number with SIP-I_GLB_PREFIX, 2 = advanced method		
GLB:SIP-I_GLB_PREFIX=00	Prefix value for redirect		
GLB:SIP_ALLOWED_PREFIX=*	MSISDN filter for Callback Active Check SIP call		
GLB: SIP_OWN_ADDRESS =127.0.0.1	Own IP address	Yes	Yes
GLB:SIP_OWN_ALIAS=127.0.0.1	Own alias		
GLB: SIP_OWN_PORT =5060	Own port	Yes	Yes
GLB: SIP_PEER_ADDRESS =127.0.0.1	Peer IP address	Yes	
GLB: SIP_PEER_PORT =5060	Peer port	Yes	
GLB:SIP_VIA_ADDRESS=127.0.0.1	Via address for SIP call and OPTIONS		
GLB:SIP_VIA_PORT=5060	Via port for SIP call and OPTIONS		
GLB:SIP_REDIRECT_IP_ADDRESS=127.0.0.1	Unused		
GLB: SIP_TEST_NUM =0123456789	From number for SIP call and OPTIONS	Yes	
GLB: SIP_OPTIONS_TO_NUM =79101111111	Where to send OPTIONS (heartbeat) to	Yes	
GLB: SIP_DISPLAY_NAME =TRUNKGROUP	Association display name	Yes	
GLB:SIP_DEFAULT_SK=99	Unused		
GLB:SIP_PROCESSING_METHOD=1	Unused		
GLB: SIP-I_OWN_ADDRESS =127.0.0.1	Own IP address	Yes	Yes
GLB: SIP-I_OWN_PORT =5060	Own port	Yes	Yes
GLB: SIP-I_PEER_ADDRESS =127.0.0.1	Peer IP address	Yes	
GLB: SIP-I_PEER_PORT =5060	Peer port	Yes	
GLB:SIP-I_VIA_ADDRESS=127.0.0.1	Via address for OPTIONS		
GLB:SIP-I_VIA_PORT=5060	Via port for OPTIONS		
GLB:SIP-I_REDIRECT_IP_ADDRESS=127.0.0.1	Redirect IP used if SIP-I_PROCESSING_METHOD=2 instead of Peer IP address		
GLB: SIP-I TEST NUM =0123456789	From number for OPTIONS	Yes	
GLB: SIP-I_OPTIONS_TO_NUM =79101111111	Where to send OPTIONS (heartbeat) to	Yes	
GLB: SIP-I_DISPLAY_NAME =TRUNKGROUP	Association display name	Yes	



XL Service FW

Parameter	Description	Must set	Need restart
GLB:SIP-I_DEFAULT_SK=99	SK to use if SK not specified in SIP message		
GLB:SIP-I_PROCESSING_METHOD=1	1 = BASE method, 2 = VARIANT1 (RedirectIP etc.)		
GLB:SIP-I_IDENT_METHOD=0	if 1 read SK from Contact field (number, tgrp, trunk_context)		
GLB:SIP-I_PROXY_MODE=0	if 1 enable Proxy mode (and read more parameters), don't send replies, forward packets		Yes
GLB:SIP-I_PROXY_OWN_HOSTNAME=	if set use this hostname (besides own address) when doing substitutions and removals in SIP packets when proxying		
GLB:SIP-I_PROXY_OWN_ADDRESS=127.0.0.1	Proxy connection (peer 2) our address		Yes
GLB:SIP-I_PROXY_OWN_PORT=5060	Proxy connection (peer 2) our port		Yes
GLB:SIP-I_PROXY_PEER_ADDRESS=127.0.0.1	Proxy connection (peer 2) their address		
GLB:SIP-I_PROXY_PEER_PORT=5060	Proxy connection (peer 2) their port		
GLB:SIP-I_IVR=0	if 1 this trunk is used for proxying calls to IVR		Yes

2.2 XLSTATE конфигурация

2.2.1 Описание файлов конфигурации XLSTATE

Default Filename	Required	Type	Description
XLSTATE_CFG.INI	Autogenerated	Autogenerated configuration file	Configuration of XLSTATE - general
XLSTATE_SS7.INI	Autogenerated	Autogenerated configuration file	Configuration of XLSTATE - associations
/xl/export/local_a/xlstate_domain_settings.csv	Yes	Manually edited	Configuration of domains
/xl/cdr/local_a/xlstate_cdr.csv		Output	Xlstate CDR output
/xl/cdr/local_a/syslog_cdr.csv		Output	Xlstate syslog CDR output
/xl/cdr/local_a/xlstate_debug_cdr.csv		Output	Debug CDR output (disabled by default)
/xl/log/ifo_a/xlstate_log.csv		Log	Log (M3UA, SCCP)
/xl/log/ifo_a/xlstate_app.csv		Log	Log (GENERAL, RULE, TCAP, SIP)
/xl/log/ifo_a/xlstate_sctp.csv		Log	Log (SCTP)



2.2.1.1 XLSTATE_CFG.INI

Parameter	Description	Must set	Need restart
GLB:RULE_RELOAD_FILE=/xl/export/local_a/rules.csv	File which triggers rule/data reload		
GLB:NUMLIST_FILE_COUNT=1	Number of numlist files		
GLB:NUMLIST_FILE(_2,_3,...)=/xl/export/local_a/numbers_lists.csv	Number lists file filename		
GLB:NUMLIST_COUNT_MAX=1000	Storage size for numberslists (max number of numberlist IDs)		Yes
GLB:OPTIMIZE_QUESTIONMARK_NUMBERS=0	1 = use optimization for numbers ending with ?, requires different sorting on numbers_lists		
GLB:LOG_FILE=/xl/log/ifo_a/xlstate_log.csv	XLSTATE log file filename		
GLB:APP_LOG=/xl/log/ifo_a/xlstate_app.csv	XLSTATE app log file filename		
GLB:SCTP_LOG=/xl/log/ifo_a/xlstate_sctp.csv	XLSTATE sctp log file filename		
GLB:STAT_FILE=/xl/export/local_a/xlstate_stat.csv	XLSTATE stat file filename		
GLB:SYSLOG_CDR_FILE=/xl/cdr/local_a/syslog_cdr.csv	Xlstate syslog CDR filename		
GLB:XLSTATE_CDR_FILE=/xl/cdr/local_a/xlstate_cdr.csv	XLSTATE CDR filename		
GLB:XLSTATE_DEBUG_CDR_FILE=/xl/cdr/local_a/xlstate_debug_cdr.csv	XLSTATE debug CDR filename		
GLB:DOMAIN_FILE=/xl/export/local_a/xlstate_domain_settings.csv	XLSTATE domain settings filename		
GLB:PROFILE_FILE=/xl/export/local_a/xlstate_profile.csv	XLSTATE profile check settings filename		
GLB:LOGGING=0	Logging level (0 = all off, 1 = only LOG_GENERAL on, 2 = all on)	Yes	
GLB:LOG_GENERAL=1	Log type for level GENERAL (0 = off, 1 = file only, 2 = stdout and file)		



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Parameter	Description	Must set	Need restart
GLB:LOG_SCTP=0	Log type for level SCTP (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_CALL=1	Log type for level CALL (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_MAX_SIZE_MB=1024	Max file size for log files in megabytes before rotating, negative number = unlimited		
GLB:SERVER_ID=1	ID for this server	Yes	
GLB:WORKER_COUNT=4	Number of worker threads	Maybe	Yes
GLB:CLEANUP_THREAD_COUNT=4	Number of cleanup threads		Yes
GLB:NUMLIST_MAX_SIZE=10000000	Numlist storage capacity	Yes	Yes
GLB:CALLSTATE_MAX_SIZE=200000	Callstate (calls) storage capacity	Yes	Yes
GLB:DOMAIN_INFO_MAX_SIZE=10000	Domain info (call counters per domain) capacity		Yes
GLB:SYSLOG_SERVER=0	1 = enable Syslog server	Maybe	Yes
GLB:SYSLOG_DOMAIN=10	DomainID to use for advertises for Syslog calls		
GLB:SYSLOG_PORT=601	Unused		
GLB:SCTP_USE_RX_GAPS_REPORTING=0	1 = on SCTP associations report TSN gaps in SACK replies (request resend)		
GLB:EVENT_PROCESSOR_ENABLED=0	1 = enable connection to EventProcessor		Yes
GLB:EVENT_PROCESSOR_IP=0.0.0.0	EventProcessor IP		
GLB:EVENT_PROCESSOR_PORT=7601	EventProcessor port		
GLB:PROFILECHECK_MAP_SIZE=10000000	Profile check capacity (map with profiles)		Yes



XL Service FW

Parameter	Description	Must set	Need restart
GLB:PROFILE_CALLS_MAX_SIZE=100000	Profile check calls capacity (for detailed call profile tracking answer ratio, call duration etc.)		Yes
GLB:CALL_TRACKING_TIMEOUT_SECONDS=1800	Advertise timeout to use when Answer event arrives		
GLB:STAT_FILE_VERBOSITY=1	2 = print additional data into xlstate_stat.csv		
GLB:XLSTATE_CDR_ENABLED=1	1 = xlstate CDR writing enabled		
GLB:XLSTATE_DEBUG_CDR_ENABLED=0	1 = xlstate debug CDR writing enabled		
GLB:MAX_INPUT_QUEUE_SIZE=3000	Capacity for input packet (SCTP part) queue		Yes
GLB:ATI_REQUEST_TIMEOUT_MS=1200	ATI request timeout (originating from VerifyClientState)		
GLB:ROUTING_NUMBER_NUMLIST_ID=-1	if > 0, Routing number numlist ID		
GLB:ROUTING_NUMBER_MAX_SIZE=1024	Capacity for storing and tracking routing numbers		Yes
GLB:ROUTING_NUMBER_DOMAIN_ID=-1	DomainID where routing number requests are advertised to		
GLB:ROUTING_NUMBER_TIMEOUT_MS=15000	Timeout of routing number reservation (and advertise timeout)		
GLB:LOOKUP_LINKED_LIST_SIZE_LIMIT=-1	if > 0, only add calls when linked list is shorter than specified number of elements		
GLB:RTA_ENABLED=0	1 = enable connection to XLRTA	Maybe	Yes
GLB:RTA_PROXY=0	if > 0, send Dynamic numlist request to other XLSTATE instead of to all XLSIGs	Maybe	

2.2.1.2 *XLSTATE_SS7.INI*



XL Service FW

Parameter	Description	Must set	Need restart
GLB:TIMER_ACTIVITY=10	If no RX on assoc for this many seconds, reinitialize SCTP assoc		
GLB:TIMER_HB=5	If no RX on assoc for this many seconds, send a heartbeat		
GLB:XLAPI_ASSOC=-1	Specify up to 2 indices for associations to xlapi (primary,secondary)	Yes	
GLB:XLSTATE_SYNCHRONISATION_ASSOC=-1	if > 0, index of association to other xlstate in the redundancy pair	Yes	
GLB:ATI_REQUEST_ASSOC=-1	if > 0, index of association to be used for ATI requests (to xlsig)		
GLB:DYNAMIC_LIST_ASSOC_LIST=	zero or more association indices to where dynamic list adds are updated to (all xlsigs)		
GLB:SEND_FALSE_HISTORY=0	1 = send false SCTP history as emergency workaround for lossy connections between xlsig and xlstate, 2 = send false history only if real history not found		
GLB:USE_RX_THREADS=0	1 = 1 rx thread per SCTP association listening on the socket, 2 = 1 thread per assoc taking from single queue	Yes	Yes
GLB:RX_QUEUE_STORAGE_COUNT=1024	Capacity for RX queue in case USE_RX_THREADS=2		Yes
GLB:SCTP_ASSOC_COUNT=1	Number of SCTP Associations	Yes	Yes
ASSOC#n:DISPLAY_NAME=ASSOC	Display name for this association	Yes	
ASSOC#n:ASSOCIATION_ACTIVE=0	1 = enable this association	Yes	Assocrestart
ASSOC#n:SERVER=1	0 = perform as client (send INIT), 1 = perform as server (wait for INIT)	Yes	Assocrestart
ASSOC#n:PORT_LOCAL=0	Port number on this machine to use	Yes	Assocrestart
ASSOC#n:PORT_REMOTE=0	Port number on the remote machine to use	Yes	Assocrestart
ASSOC#n:IP_LOCAL1=0.0.0.0	First IP to use on this machine	Yes	Assocrestart
ASSOC#n:IP_LOCAL2=0.0.0.0	Second IP to use on this machine (or 0.0.0.0 to disable multihoming)	Yes	Assocrestart



XL Service FW

Parameter	Description	Must set	Need restart
ASSOC#n:IP_PEER1=0.0.0.0	First IP to use on the remote machine	Yes	Assocrestart
ASSOC#n:IP_PEER2=0.0.0.0	Second IP to use on the remote machine (or 0.0.0.0 to disable multihoming)	Yes	Assocrestart
ASSOC#n:PEER_SERVER_ID=1	Unused		
ASSOC#n:HISTORY_PACKET_MAX_SIZE=1700	History buffer for resend (outgoing) buffer size		Yes
ASSOC#n:HISTORY_PACKET_COUNT=2000	History buffer for resend (outgoing) number of buffers		Yes
ASSOC#n:QUIT_ON_SEND_HISTORY_FAILURE=0	If 1, quit if resend of history fails (requested packet not found in history)		

2.3 Конфигурация XLAPI

2.3.1 Описание файлов конфигурации XLAPI

Default Filename	Required	Type	Description
XLAPI_CFG.INI	Autogenerated	Autogenerated configuration file	Configuration of XLAPI - general
XLAPI_SS7.INI	Autogenerated	Autogenerated configuration file	Configuration of XLAPI - associations
/xl/export/local_a/xlapi_auth.csv	Yes (Reload trigger)	Manually edited	Xlapi authentication data
/xl/export/local_a/xlapi_bank_query.csv	Yes	Manually edited	Bank query data (domain data)
/xl/export/local_a/xlapi_iw_settings.csv	Yes	Manually edited	IW settings (domains, service keys, GTs)
/xl/export/local_a/xlapi_configuration_profile.csv	Yes	Manually edited	Per Bank API behavior settings (configuration profiles)
/xl/cdr/local_a/xlapi_cdr.csv	Output	XLAPI CDR	XLAPI CDR output
/xl/log/ifo_a/xlapi_log.csv	Output	Log	Log (M3UA, SCCP)



XL Service FW

Default Filename	Required	Type	Description
/xl/log/ifo_a/xlapi_app.csv	Output	Log	Log (GENERAL, RULE, TCAP, SIP)
/xl/log/ifo_a/xlapi_sctp_log.csv	Output	Log	Log (SCTP)

2.3.1.1 XLAPI_CFG.INI

Parameter	Description	Must set	Need restart
GLB:NUMLIST_FILE_COUNT=0	Number of numlist files	Maybe	
GLB:NUMLIST_FILE(2...)=/xl/export/local_a/numbers_lists.csv	Number lists file filename	Maybe	
GLB:NUMLIST_COUNT_MAX=1000	Storage size for numberslists (max number of numberlist IDs)		Yes
GLB:AUTH_FILE=/xl/export/local_a/xlapi_auth.csv	Xlapi authorizations file filename		
GLB:BANK_QUERY_FILE=/xl/export/local_a/xlapi_bank_query.csv	Xlapi Bank query file filename		
GLB:IW_SETTINGS_FILE=/xl/export/local_a/xlapi_iw_settings.csv	Xlapi IW settings file filename		
GLB:CONFIGURATION_PROFILE_FILE=/xl/export/local_a/xlapi_configuration_profile.csv	Xlapi configuration profile file filename		
GLB:CDR_FILE=/xl/cdr/local_a/xlapi_cdr.csv	Xlapi CDR file filename		
GLB:STAT_FILE=/xl/export/local_a/xlapi_stat.csv	Xlapi stat file filename		
GLB:LOG_FILE=/xl/log/ifo_a/xlapi_log.csv	Xlapi log file filename		
GLB:APP_LOG=/xl/log/ifo_a/xlapi_app.csv	Xlapi app log file filename		
GLB:SCTP_LOG=/xl/log/ifo_a/xlapi_sctp_log.csv	Xlapi sctp log file filename		
GLB:LOGGING=0	Logging level (0 = all off, 1 = only LOG_GENERAL on, 2 = all on)	Yes	



XL Service FW

Parameter	Description	Must set	Need restart
GLB:LOG_GENERAL=1	Log type for level GENERAL (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_SCTP=0	Log type for level SCTP (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_M3UA=0	Log type for level M3UA (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_SCCP=0	Log type for level SCCP (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_RULE=1	Log type for level RULE (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_CALL=1	Log type for level CALL (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_MAX_SIZE_MB=1024	Max file size for log files in megabytes before rotating, negative number = unlimited		
GLB:SERVER_ID=1	ID for this server	Yes	
GLB:OWN_STATE_ROUTE=1	State route parameter for this server (origin route in State packets)		
GLB:WORKER_COUNT=4	Number of worker threads	Maybe	Yes
GLB:NUMLIST_MAX_SIZE=10000	Numlist storage capacity		
GLB:OPTIMIZE_QUESTIONMARK_NUMBERS=0	1 = use optimization for numbers ending with ?, requires different sorting on numbers_lists		
GLB:CDR_ENABLED=0	1 = enable writing of Xlapi CDR		
XLAPI:HTTP_PORT=8081	Port for HTTP server (incoming HTTP requests)	Yes	Yes
XLAPI:HTTP_AUTHENTICATION_REQUIRED=1	1 = require HTTP authentication (or return 403 Forbidden), 0 = don't		



XL Service FW

Parameter	Description	Must set	Need restart
XLAPI:HTTP_HEADER_HOST=127.0.0.1	Host HTTP header value to use for outgoing requests	Yes	
XLAPI:HTTP_VERIFYCALLSTATE_URI= http://127.0.0.1:5000/%s/VerifyCallState	URI for outgoing VerifyCallState requests, %s will be replaced by http_uri in xlapl_auth	Yes	
XLAPI:HTTP_EVENTOUT_URI= http://127.0.0.1:5000/%s/Event	URI for outgoing Event messages, %s will be replaced by http_uri in xlapl_auth	Yes	
XLAPI:HTTP_SOURCE_IP_FIELD=X-Forwarded-For	For incoming HTTP requests - HTTP header field to be used as source IP (for distinguishing banks)		
XLAPI:XLSTATE_TIMEOUT_MS=1300	Timeout for State server requests initiated by Api server		
XLAPI:VERIFYCALLSTATE_TIMEOUT_MS=1500	VerifyCallState request (and others) timeout in ms		
XLAPI:EVENT_OUT_BATCH_MODE=1	1 = send EventOuts in batches		
XLAPI:EVENT_OUT_BATCH_MODE_TIMER_MS=100	Period of sending of EventOut batches		
XLAPI:HTTP_PROCESS_INCOMING_CALL_URI= http://127.0.0.1:5000/ProcessIncomingCall	ProcessIncomingCall method URI		
XLAPI:HTTP_PROCESS_INCOMING_CALL_INFO_URI= http://127.0.0.1:5000/ProcessIncomingCallInfo	ProcessIncomingCallInfo method URI		
XLAPI:HTTP_NOTIFY_OUT_URI= http://127.0.0.1:5000/%s/Notify	NotifyOut method URI		
XLAPI:PROCESS_INCOMING_CALL_ENABLED=0	1 = enable ProcessIncomingCall and related methods		
XLAPI:PROCESS_INCOMING_CALL_DOMAIN=50	DomainID for incoming State requests which result in ProcessIncomingCall		
XLAPI:PROCESS_INCOMING_CALL_BLOCK_DOMAIN=51	DomainID where call is advertised in order to be blocked		



XL Service FW

Parameter	Description	Must set	Need restart
XLAPI:PROCESS_INCOMING_CALL_TIMEOUT_MS=1000	ProcessIncomingCall request timeout		
XLAPI:PROCESS_INCOMING_CALL_INFO_TIMEOUT_MS=1000	ProcessIncomingCallInfo request timeout		
XLAPI:PROCESS_INCOMING_CALL_DEFAULT_RELEASE_CODE=34	ProcessIncomingCall default release code when not in response		
XLAPI:PROCESS_INCOMING_CALL_CRYPTO_KEY=0123456789abcdef	Key used for encrypting/decrypting data		
XLAPI:VERIFY_CLIENT_PAYMENT_STATE_DOMAIN_ID=-1	VerifyClientPaymentState incoming method DomainID		
XLAPI:VERIFY_CLIENT_PAYMENT_STATE_NUMLIST_ID=-1	VerifyClientPaymentState incoming method NumlistID1		
XLAPI:VERIFY_CLIENT_PAYMENT_STATE_NUMLIST_ID2=-1	VerifyClientPaymentState incoming method NumlistID2		
XLAPI:ADD_TO_NUMBER_LIST_ENABLED=0	1 = enable AddToNumberList interface		
XLAPI:ADD_TO_NUMBER_LIST_URI= http://127.0.0.1:5000/xl-fraud-api/OnlineFraud/StateServerAdd?num=%s&domainid=%d&apiKey=xlapi&apiSecret=3j2kb364kn23b6k2j3	AddToNumberList URI		
XLAPI:ADD_TO_NUMBER_LIST_TIMEOUT_MS=2000	AddToNumberList request timeout in ms		
XLAPI:DYNAMIC_NUMBER_LIST_URI= http://127.0.0.1:5000/xl-fraud-api/OnlineFraud/NumListAdd	Add to Dynamic number list URI		
XLAPI:DYNAMIC_NUMBER_LIST_HTTP_HEADER_HOST=127.0.0.1	Add to Dynamic number list Host HTTP header value		
XLAPI:DYNAMIC_NUMBER_LIST_TIMEOUT_MS=2000	Add to Dynamic number list request timeout		
XLAPI:TIMER_EVENTS=	Specify 0 or more auto-events, format: period_ms,1,bankid,domaintype ,A,B,C		
GLB:MAX_INPUT_QUEUE_SIZE=3000	Capacity for input packet (SCTP part) queue		Yes



XL Service FW

Parameter	Description	Must set	Need restart
GLB:MAX_EVENT_OUT_COMPRESSION_STORAGE_SIZE=10000	Capacity of EventOut compression storage		Yes
GLB:EVENT_OUT_DELAYED_DISCONNECT_SIZE=50000	Capacity of EventOut delayed disconnect storage		Yes
GLB:VERIFY_CALL_STATE_HASH_SALT=BVNKNb3rsnr9wiut25	VerifyCallState hash salt (when using hashes)		
GLB:REQUEST_QUEUE_SIZE=100000	Capacity of total active requests		Yes
GLB:VERIFY_CLIENT_STATE_LIMIT_SIZE=50000	Capacity of VerifyClientState throttling storage		Yes
XLAPI:HTTP_VOLTE_STATUS_ENABLED=0	1 = on VerifyClientState request VoLTE and Multifon status		
XLAPI:HTTP_VOLTE_TOKEN_URI= http://127.0.0.1:5000/	VoLTE token retrieval URI		
XLAPI:HTTP_VOLTE_TOKEN_AUTHORIZATION=Token	VoLTE token request HTTP authorization		
XLAPI:HTTP_VOLTE_USERNAME=User	VoLTE query username		
XLAPI:HTTP_VOLTE_PASSWORD=Password	VoLTE query password		
XLAPI:HTTP_VOLTE_QUERY1_URI= http://127.0.0.1:5001/msisdn:%s	VoLTE query URI 1		
XLAPI:HTTP_VOLTE_QUERY2_URI= http://127.0.0.1:5001/msisdn:%s/?imsi=%s	VoLTE query URI 2		
XLAPI:VOLTE_REMOVE_PREFIX=1	1 = remove 7 from MSISDN when doing VOLTE query		
XLAPI:HTTP_MULTIFON_QUERY_URI= http://127.0.0.1:5002/sm/rest/subscribers/%s/current-state	Multifon query URI		
XLAPI:HTTP_MULTIFON_USERNAME_PASSWORD=SM_STATUS:password	Multifon query HTTP authentication		
XLAPI:HTTP_RESPONSE_POOL_SIZE=1000	Max buffers used to recompose HTTP responses in multiple packets		Yes
XLAPI:IW_QUERY_TIMEOUT_MS=2000	Query timeout for IW requests		



XL Service FW

2.3.1.2 XLAPI_SS7.INI

См. XLSIG_SS7.INI.

Параметры предназначены для внешних соединений SIGTRAN для IW и для соединений со state серверами (основными и вторичными).

Дополнительный параметр (*not in XLSIG_SS7.INI*):

Parameter	Description	Must set	Need restart
ASSOC#n:LOCAL_OWN_GT=	Alternative CallingGT (instead of GLB:OWN_GT) for this association when sending IW IDPs	Maybe	

2.3.1.3 xlapr_auth.csv - Данные банковской аутентификации

Field	Name	Full name	Description
1	bank_id	BankID	Number indicating which bank it is (must be between 1-31)
2	http_auth	HTTP Authentication	Authentication string for incoming requests (example user:password)
3	http_src_ip	HTTP Source IP	Source IP for incoming requests (in HTTP X-Forwarded-For header)
4	http_uri	HTTP URI	Outgoing URI part used in full URI specified by INI file
5	configuration_profile_id	Configuration Profile ID	Configuration profile ID used for this in/out connection (by convention same as BankID)

2.3.1.4 xlapr_bank_query.csv – Данные доменов банка



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Field	Name	Full name	Description
1	bank_id	BankID	Bank ID of the entry
2	domain_type	Domain Type	Number which determines the meaning of the Domain ID, see values below
3	domain_id	DomainID	State server DomainID

В случае использования банковских уведомлений настройте следующие значения для банковских доменов:

- DT_CALL_BANK_TO_CLIENT = 1
- DT_CALL_RESTRICTED_BANK_TO_CLIENT = 2
- DT_CALL_SPOOFED_BANK_TO_CLIENT = 3
- DT_CALL_CLIENT_TO_BANK = 4
- DT_CALL_CLIENT_TO_RESTRICTED_BANK = 5
- DT_CALL_CLIENT_TO_SPOOFED_BANK = 6
- DT_CALL_FRAUD_TO_CLIENT = 7
- DT_CALL_CLIENT_TO_FRAUD = 8
- DT_CALL_IN_PROGRESS = 9
- DT_CALL_TO_CLIENT_REDIRECTED = 10
- DT_CALL_BANK_FRAUD_LIST_TO_CLIENT = 11
- DT_CALL_CLIENT_TO_BANK_FRAUD_LIST = 12
- DT_CALL_SUBSCRIBER_IN_ROAMING = 13
- DT_CALL_PILOT1_NUM_TO_CLIENT = 15
- DT_CALL_PILOT2_NUM_TO_CLIENT = 16
- DT_CALL_PILOT3_NUM_TO_CLIENT = 17
- DT_CALL_CLIENT_FRAUD_LIST_TO_USER = 18
- DT_CALL_USER_TO_CLIENT_FRAUD_LIST = 19
- DT_CALL_TEST_OPERATOR_TO_CLIENT = 20
- DT_CALL_SPOOFED_TO_CLIENT = 21
- DT_MESSENGER_CALL = 22



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- DT_PHISHING_LINK = 23
- DT_CALL_GENERIC_TO_CLIENT_24 = 24
- DT_CALL_EVENT_25_TO_CLIENT = 25
- DT_CALL_GENERIC_TO_CLIENT_26 = 26
- DT_CALL_GENERIC_TO_CLIENT_27 = 27
- DT_CALL_GENERIC_TO_CLIENT_28 = 28
- DT_CALL_IN_PROGRESS_ALT = 29
- DT_CALL_GENERIC_TO_CLIENT_30 = 30
- DT_EVENT_OUT_CALL_BANK_TO_CLIENT = 51
- DT_EVENT_OUT_CALL_RESTRICTED_BANK_TO_CLIENT = 52
- DT_EVENT_OUT_CALL_SPOOFED_BANK_TO_CLIENT = 53
- DT_EVENT_OUT_CALL_CLIENT_TO_BANK = 54
- DT_EVENT_OUT_CALL_CLIENT_TO_RESTRICTED_BANK = 55
- DT_EVENT_OUT_CALL_CLIENT_TO_SPOOFED_BANK = 56
- DT_EVENT_OUT_CALL_FRAUD_TO_CLIENT = 57
- DT_EVENT_OUT_CALL_CLIENT_TO_FRAUD = 58
- DT_EVENT_OUT_CALL_TO_CLIENT_REDIRECTED = 60
- DT_EVENT_OUT_CALL_BANK_FRAUD_LIST_TO_CLIENT = 61
- DT_EVENT_OUT_CALL_CLIENT_TO_BANK_FRAUD_LIST = 62
- DT_EVENT_OUT_SIMULATE_BANK_EVENT = 63
- DT_EVENT_OUT_CALL_PILOT1_NUM_TO_CLIENT = 65
- DT_EVENT_OUT_CALL_PILOT2_NUM_TO_CLIENT = 66
- DT_EVENT_OUT_CALL_PILOT3_NUM_TO_CLIENT = 67
- DT_EVENT_OUT_CALL_CLIENT_FRAUD_LIST_TO_USER = 68
- DT_EVENT_OUT_CALL_USER_TO_CLIENT_FRAUD_LIST = 69
- DT_EVENT_OUT_TEST_OPERATOR_TO_CLIENT = 70
- DT_EVENT_OUT_CALL_SPOOFED_TO_CLIENT = 71
- DT_EVENT_OUT_MESSENGER_CALL = 72
- DT_EVENT_OUT_PHISHING_LINK = 73
- DT_EVENT_OUT_CALL_GENERIC_TO_CLIENT_24 = 74
- DT_EVENT_OUT_CALL_EVENT_25_TO_CLIENT = 75



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- DT_EVENT_OUT_CALL_GENERIC_TO_CLIENT_26 = 76
- DT_EVENT_OUT_CALL_GENERIC_TO_CLIENT_27 = 77
- DT_EVENT_OUT_CALL_GENERIC_TO_CLIENT_28 = 78
- DT_EVENT_OUT_CALL_GENERIC_TO_CLIENT_30 = 80
- DT_EVENT = 100
- DT_VERIFYCALLSTATE = 110
- DT_VERIFYCALLSTATE_INCOMING_HASH = 112
- DT_NOTIFY_OUT = 120

2.3.1.5 *xlapi_iw_settings.csv - Настройка возможностей IW*

Field	Name	Full name	Description
1	type	Entry type	Type of entry (affects interpretation of following fields), see values below
2	domain_start	DomainID First	First DomainID of the domain range or DomainID for a single domain
3	domain_end	DomainID Last	Last DomainID of the domain range or -1 for a single domain
4	mode	Mode	0 = query (IDP + response etc.), 1 = advertise
5	gt	GT	CallingGT in received IDP for type == 1 (SIGTRAN input) and CallingGT used in output IDP for type == 11 (SIGTRAN output)
6	service_key	ServiceKey	ServiceKey in received IDP for type == 1 (SIGTRAN input) and ServiceKey used in output IDP for type == 11 (SIGTRAN output)
7	output_group_index	Output Group Index	IW_GROUPS index used for output IDP for Entry type == 11 (SIGTRAN output)
8	query_type	Query type	if Entry type == 12 it is State server query type, otherwise unused

Тип:



XL Service FW

- 1 - SIGTRAN input (IW)
- 2 - XLSIG input (State server)
- 3 - HTTP input
- 11 - SIGTRAN output (IW)
- 12 - XLSIG output (State server)
- 13 - HTTP output

ПРИМЕЧАНИЕ. Идентификаторы доменов, используемые в этом файле, не обязательно должны существовать в конфигурации state сервера — они используются для внутренней трансляции между строками input - output. только если используется тип == 2 или тип == 12 (State server input/output) используется, когда DomainIDs соответствуют доменам State сервера.

2.3.1.6 *xlapi_configuration_profile.csv* – Конфигурация профиля для банка

Field	Name	Full name	Description
1	configuration_profile_id	Configuration Profile ID	number indicating profile ID, selected in xlapi_auth.csv, by convention the same as bank_id
2	event_type	Event Type	for Event scoped settings event type (1,2,3, etc.), for Global scope settings -1
3	setting	Setting Name	See Setting table below
4	value	Setting Value	See Setting table below

Таблица 1: Setting table

Setting	Scope	Default	Description
AllowEventOutgoing	Global	1	0 - disable Event Outgoing method for the bank
AllowEventIncoming	Global	1	0 - disable Event Incoming method for the bank



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Setting	Scope	Default	Description
AllowVerifyClientState	Global	1	0 - disable VerifyClientState method for the bank
AllowVerifyCallState	Global	1	0 - disable VerifyCallState method for the bank
AllowCallStateInEvent	Event	1	1 - callState can be included in event type
ApplicableForSendingHash	Event	1	1 - hashNumber for non client number can be sent as hash for this event type (if global setting is enabled)
VerifyClientStateThrottlingThreshold	Global	0	if > 0 sets the maximum number of VerifyClientState requests per second for a bank
VerifyCallStateThrottlingThreshold	Global	0	if > 0 sets the maximum number of VerifyCallState requests per second for a bank
EventOutThrottlingThreshold	Global	0	if > 0 sets the maximum number of EventOut messages per second for a bank
EventTranslation	Global	(empty)	a setting for Event type translation (e.g. 1,2,3,4,4,6,7,8,9,10 will translate events 5 to events 4 for EventOut messages)
VerifyCallStateMode	Global	1	Chooses format/behavior of VerifyCallState (1- phone number and calling number, 2 - call hash, 3 - phone number, 4 - recipient ID etc. (COUNTRYCOM))
VerifyCallStateRecipientId	Global	N/A	RecipientID when VerifyCallStateMode == 4
VerifyCallStateSenderId	Global	N/A	SenderId when VerifyCallStateMode == 4
VerifyCallStateEKey	Global	(empty)	EKey to be used when VerifyCallStateMode == 4 (used in CallHash1/2 calculations) - use 64 character xl number (256 bit) with lower letters
AllowVerifyClientStateCallState	Global	1	1 - enable callState field in VerifyClientState response
AllowVerifyClientStateConversationDuration	Global	1	1 - enable conversationDuration or conversationDurationRange tag in VerifyClientState response



XL Service FW

Setting	Scope	Default	Description
AllowVerifyClientStateVoLTECheck	Global	0	1 - enable sending VoLTE HTTP request to determine client busy state
VerifyClientStateConversationDurationDelayEnable	Global	1	1 - enable adding of a random delay to the value of conversationDuration and input to conversationDurationRange as per specification
VerifyClientStateConversationDurationCategories	Global	0	1 - use conversationDurationRange instead of (precise) conversationDuration in VerifyClientState response
VerifyClientStateOldCallState	Global	0	1 - use different callState enum in VerifyClientState response (0 no answer, 1 ended conversation, 2 active pending, 3 active in conv, 4 active in conv estimate, 5 unknown) if not ApiVersion >= 700
VerifyClientStateAllCategories	Global	0	1 - enable foundCodes field in VerifyClientState response (array of all found states)
VerifyClientPaymentStateMode	Global	0	1 - enable additional fields (payerRisk, recipientRisk etc.) in VerifyClientPaymentState reply
VerifyClientStateLimitEnabled	Global	0	1 - enable limiting of VerifyClientState requests per client number
VerifyClientStateLimitTime	Global	60	interval in seconds required between successful VerifyClientState requests for a particular client number if VerifyClientStateLimitEnabled == 1
AllowEventOutPing	Global	1	1 - enable sending of ping EventOut messages (eventType = 100) if no other events are sent in interval of 5 seconds
AllowEventOutCallingCalledNumber	Global	0	1 - enable sending of callingNumber and calledNumber fields in EventOut
AllowEventOutAdditionalCallingNumber	Global	0	1 - enable sending of additionalCallingNumber field in EventOut
AllowEventOutHashNumber	Global	0	1 - enable hashNumber field in EventOut to send hash of the non-client number involved in the call
AllowEventOutCallState	Global	1	1 - enable callState field in EventOut



XL Service FW

Setting	Scope	Default	Description
TimeRandomizeAlgorithmForConversationEnd	Global	0	1 - enable delaying callState 2 EventOuts (add a random time delay based on call duration)
ApiVersion	Global	-1	set to e.g. 700 to enable various 7.0 API features for a particular bank (and 710 for 7.1 etc.)
ClientNumberListId	Global	-1	if >= 0 it is the Numberlist ID used to determine if a number in VerifyClientState request belongs to a bank client (should be set to BankClients number list ID for a particular bank to enable the check)
EventOutCallState3	Global	0	1 - enable sending of callState 3 (all clear) instead of callState 2 events
UseEventOutCompression	Global	0	1 - enable EventOut compression
EventOutCompressionInterval	Global	15	interval in seconds used for EventOut compression
AllowEventOutFullCallDuration	Global	0	enable duration of the call (in seconds) [To be used together with AllowEventOutFullCallDurationDelayEnable.]
AllowEventOutConversationDuration	Global	0	enable duration of the conversation (in seconds) [To be used together with AllowEventOutConversationDurationDelayEnable.]
AllowEventOutSessionID	Global	0	enable unique call ID
AllowEventOutTime	Global	0	enable event time (in UTC format)
AllowEventOutConversationDurationDelayEnable	Global	1	enable the random time delay for the conversation duration [To be used together with AllowEventOutConversationDuration.]
AllowEventOutFullCallDurationDelayEnable	Global	1	enable the random time delay for the call duration [To be used together with AllowEventOutFullCallDuration.]
BankPingRequestTimeLimitS	Global	0	enable the bank ping request monitoring to check if the connection exists. API sends a notification if the ping request from the bank is missing for a specified amount of time. Set this time limit in seconds. If the value is zero, it is disabled. The bank should periodically send ping requests to API using a HTTP request "VerifyClientState" with a special number with 15 zeros: {"phoneNumber": "\0000000000000000\0"}. The API should return { "responseCode": 9999 }. The API sends alert PING_REQUEST_MISSINGX by xlmon for bank_id X. It sends an email to the email address MAIL_DESTINATIONS written in XLMON_CFG.INI. Multiple email addresses should be separated by a comma with no spaces (,).
AllowVerifyRoaming	Global	0	1 - enable VerifyRoaming (url /verify/) HTTP request processing



Setting	Scope	Default	Description
AllowForwardEvent	Global	0	1 - enable ForwardEvent (url /ForwardEvent) HTTP request processing (forwarding of events) [Parameter eventType must be bigger than 100.]

2.4 Конфигурация XLRTA

2.4.1 Описание конфигурационных файлов XLAPI

Default Filename	Required	Type	Description
XLRTA_CFG.INI	Autogenerated	Autogenerated configuration file	Configuration of XLRTA - general file
/xl/export/local_a/xlstate_analytical_profile.csv	Yes (Reload trigger)	Manually edited	Xlrta domain settings (analytical profiles)
/xl/cdr/local_a/xlrta_cdr.csv	Output	XLRTA CDR	XLRTA CDR output
/xl/cdr/local_a/xlrta_xai_cdr.csv	Output	XLRTA AI CDR	XLRTA AI CDR output
/xl/cdr/local_a/xlrta_records.bin	Output	Binary file	XLRTA record output file
/xl/log/ifo_a/xlrta_app.csv	Output	Log	Log (GENERAL, RULE, TCAP, SIP)

2.4.1.1 XLRTA_CFG.INI

Parameter	Description	Must set	Need restart
GLB:CDR_FILE=/xl/cdr/local_a/xlrta_cdr.csv	Xlrta CDR filename		
GLB:AI_CDR_FILE=/xl/cdr/local_a/xlrta_xai_cdr.csv	Xlrta ai CDR filename		
GLB:STAT_FILE=/xl/export/local_a/xlrta_stat.csv	Xlrta stat file filename		
GLB:DOMAIN_FILE=/xl/export/local_a/xlstate_analytical_profile.csv	Xlrta domain settings filename (analytical profiles)		



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Parameter	Description	Must set	Need restart
GLB:APP_LOG=/xl/log/ifo_a/xlrta_app.csv	Xlrta app log file filename		
GLB:RECORD_FILE=/xl/cdr/local_a/xlrta_records.bin	Xlrta record file filename		
GLB:LOGGING=1	Logging level (0 = all off, 1 = only LOG_GENERAL on, 2 = all on)	Yes	
GLB:LOG_GENERAL=2	Log type for level GENERAL (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_PROCESS=2	Log type for level PROCESS (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_RECORDS=0	if > 0, write a .bin file with all the input packets (for later replay)		
GLB:STORE_CDR=0	if > 0, store CDRs		
GLB:STORE_AI_CDR=0	if > 0, store CDR with xai requests and results		
GLB:MAX_TREE=60000000	Storage capacity for digital tree nodes (A number/first parameter)		
GLB:MAX_COUNT=40000000	Storage capacity for called number nodes (B number/second parameter)		
GLB:MAX_CALL=40000000	Storage capacity for call nodes		
GLB:XAI_SERVER_PORT=-1	if > 0, TCP server port for xai connection to xlrta	Maybe	Yes



2.5 Конфигурация XLMON

2.5.1 Описание конфигурационных файлов XLMON

2.5.1.1 XLMON_CFG.INI

Parameter	Description	Must set	Need restart
GLB:APP_LOG=/xl/log/ifo_a/xlmon_log.csv	xlmon log file filename		
GLB:LOGGING=1	Logging level (0 = all off, 1 = only LOG_GENERAL on, 2 = all on)		
GLB:LOG_GENERAL=2	Log type for level GENERAL (0 = off, 1 = file only, 2 = stdout and file)		
GLB:LOG_MAX_SIZE_MB=1024	Max file size for log files in megabytes before rotating, negative number = unlimited		
XLMON:APPLICATION_KILL_COUNT=0	Count of XLMON:APPLICATION_KILL_ entries		
XLMON:APPLICATION_KILL_0=/xl/export/local_a/ifo_stat.csv,xlsig,60	Application kill - format: file,exe,time_period - if file is not updated within the time period kill exe		
XLMON:SERVER_NAME=XLSFW-1	Server name (used in alarms)	Yes	
XLMON:STAT_FILE=/xl/export/local_a/ifo_stat.csv	xlsig ifo_stat.csv file filename		
XLMON:FILE_HASH_FILE=/xl/export/local_a/ifo_hash.csv	xlsig ifo_hash.csv filename		
XLMON:FILE_AGE_CHECK=[filename1,max_age1[,filename2,max_age2...]]	Monitor 0 or more files for their age		
XLMON:XLSTATE_STAT_FILE_ENABLED=0	1 = enable monitoring of xlstate parameters in XLSTATE_STAT_FILE	Maybe	
XLMON:XLSTATE_STAT_FILE=/xl/export/local_a/xlstate_stat.csv	xlstate_stat.csv filename		
SNMP:CACHE_FILE=/xl/export/local_a/snmp_state.csv	SNMP xlmon cache storage		



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Parameter	Description	Must set	Need restart
SNMP:ENTERPRISE_NUMBER=100	Enterprise number parameter used in SNMP	Maybe	
XLMON:SNMP_COMMUNITY=public	SNMP Community string		
SNMP:ALERT_CLEAR_MODE=1	2 = alternative SNMP format		
SNMP:SYNCHRONISATION_TIMEOUT=0	Timeout for synchronisation alarm (Last rule load in ifo_stat), deprecated, use FILE_AGE_CHECK		
SNMP:MONITORING=0	if > 0, send alarms to 1 or more SNMP endpoints	Yes	
SNMP:HOST_ADDRESS(_2,...)=127.0.0.1	SNMP endpoint IP address	Yes	
SNMP:HOST_PORT(_2,...)=162	SNMP endpoint port	Yes	
XLMON:KPI_THRESHOLD_CALLS=-1	if > 0, KPI threshold for alarm: Processed calls		
XLMON:KPI_THRESHOLD_CALLS_NO_REPLY=-1	if > 0, KPI threshold for alarm: Processed calls with no reply		
XLMON:KPI_THRESHOLD_CALLS_CONTINUE=-1	if > 0, KPI threshold for alarm: Processed calls with continue		
XLMON:KPI_THRESHOLD_CALLS_ACTION=-1	if > 0, KPI threshold for alarm: Processed calls with action		
XLMON:KPI_THRESHOLD_OTHER=-1	if > 0, KPI threshold for alarm: Processed other		
XLMON:STATE_STORAGE_THRESHOLD_PERCENT=90	if > 0, XLSTATE callstate storage percentage threshold		
XLMON:STATE_STORAGE_ROUTING_NUMBERS_THRESHOLD_PERCENT=90	if > 0, XLSTATE routing numbers storage percentage threshold		
XLMON:STATE_INPUT_QUEUE_THRESHOLD_PERCENT=0	if > 0, XLSTATE input queue percentage threshold		
XLMON:STATE_WORKING_QUEUE_THRESHOLD_PERCENT=0	if > 0, XLSTATE working queue percentage threshold		



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Parameter	Description	Must set	Need restart
XLMON:MAIL_ENABLED=0	1 = enable e-mail sending on alarms	Yes	
XLMON:MAIL_SERVER=mail.x-labs.ru	E-mail server	Yes	
XLMON:MAIL_SERVER_PORT=25	E-mail server port	Yes	
XLMON:MAIL_SERVER_USE_TLS=1	1 = use TLS encryption for sending e-mail	Yes	
XLMON:MAIL_SEND_BATCHES=1	1 = send e-mail in batches (group 1 or more alarms within a time interval)		
XLMON:MAIL_BATCHES_SENDING_INTERVAL=15	E-mail batch sending interval		
XLMON:MAIL_USER=alert	E-mail server username	Yes	
XLMON:MAIL_PASSWORD=passwd	E-mail server password	Yes	
XLMON:MAIL_SOURCE_EMAIL=alert @x-labs.ru	Source e-mail address	Yes	
XLMON:MAIL_DESTINATIONS=name.surname@x-labs.ru	Destination e-mail addresses (comma separated)	Yes	
XLMON:XLSFW_CAP_MONITORING_ENABLED=0	1 = enable monitoring of xlsfw_cap parameters in XLSFW_CAP_MONITORING_FILE		
XLMON:XLSFW_CAP_MONITORING_FILE=/xl/export/local_a/xlsfw_cap_stat.csv	xlsfw_cap_stat.csv filename (The value has to be the same as GLB:STAT_FILE inside the 'XLSFW_CAP_CFG.INI')		
XLMON:XLSFW_CAP_MONITORING_CDIR_CAPACITY_THRESHOLD_PERCENT=50	if > 0, xlsfw_cap CDIR capacity storage percentage threshold		

2.5.2 Временно отключить xlmmon



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Создайте файл с именем `xlmon_disable` в папке, где находится исполняемый файл `xlmon`. Если файл существует и был изменен в течение последних 10 минут, `xlmon` не будет читать `ifo_stat.csv` и т.д. чтобы обновить его состояние.

Это полезно для выполнения обновлений, чтобы предотвратить отправку оповещений об ассоциациях (особенно внутренних ассоциациях в `xlstate` и т.д.).

2.5.3 Перезагрузить `XLMON_CFG.INI` без перезапуска `xlmon`

Run

```
killall -SIGUSR1 xlmon
```

Это приводит к тому, что запущенный `xlmon` перезагружает `XLMON_CFG.INI` без выхода из системы и, возможно, перезапуска `ifo_main`.

2.5.4 Отправка электронной почты

Установите параметр `XLMON:MAIL_DESTINATIONS=` в `XLMON_CFG.INI` для адресов электронной почты, разделенных запятыми (без пробелов).

Чтобы проверить конфигурацию электронной почты, выполните:

```
./xlmon email
```

Он отправляет электронное письмо, используя текущую конфигурацию в `XLMON_CFG.INI` (включая адрес электронной почты получателя) и включает подробный анализ и отладки для выявления возможных проблем.

2.5.5 SNMP Trap Отправка тестового

Run:

```
./xlmon send <TrapName> <Value> <Priority> <EventType>
```

Пример:

```
./xlmon send "Application" 1 4 4
```

чтобы отправить SNMP trap для остановленного процесса (set trap). И

```
./xlmon send "Application" 0 4 4
```

чтобы отправить SNMP trap для запущенного процесса (clear trap).

Ниже приведены другие примеры SNMP trap (используйте `Value = 0` для очистки trap):

```
./xlmon send "LOAD_FAILURE" 1 4 5 # ошибка правил загрузки
```

```
./xlmon send "RULE123" 1 4 5 # RuleID 123 приостановлен
```



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```
./xlmon send "DOMAIN123" 1 4 5 # DomainID 123 приостановлен  
./xlmon send "SYNCHRONISATION_FAILURE" 1 4 4 # ошибка синхронизации  
./xlmon send "SS7-1/1 ASSOC-1 (192.168.6.140<->192.168.6.130)" 1 4 3 # ассоциация  
остановлена (SS7-1/1 ASSOC-1)
```

2.5.6 Запуск приложения.

Чтобы запустить приложение, выполните:

```
cd /xl/bin/ifo_a  
./start
```

Чтобы проверить проверить успешность запуска, выполните:

```
ps -ef | grep xlsig
```

Результат вывода д.б. следующий:

```
[...ifo_a]# ps -ef | grep xlsig  
root 112089 1 43 Oct26 ? 16:42:15 /xl/bin/ifo_a/xlsig
```

Для проверки успешность загрузки конфигурационных файлов в систему, выполните:

```
cat /xl/log/ifo_a/ifo_app.csv | grep SUCCESSFUL
```

Результат вывода д.б. следующий:

```
2023-10-27 15:03:45.128555 Rule GENERAL: LOADING RULE FILES SUCCESSFUL
```

Чтобы остановить приложение, выполните:

```
cd /xl/bin/ifo_a  
./start
```