

Installation Instructions for Xorcom TwinStar Plus Servers

Document version: 1.2

Overview

This document describes the configuration process which must be performed at the customer site for pre-configured TwinStar Plus CTS2000/CTS3000/CXTS3000/CXTS4000 servers. For a detailed description of how TwinStar Plus works go to:

<http://www.xorcom.com/files/techdocs/pm0630-twinstar-plus-how-it-works.pdf>

Server Information

	Server-A	Server-B
S/N		
Hostname	srv-a	srv-b
IP address	DHCP	DHCP

Before you power on the servers:

1. Connect the `nic1` interfaces of the servers with straight Ethernet CAT5E or CAT6 cable.
2. Connect the `nic0` interfaces of the servers to the office LAN.
3. If Astribank devices will be used in the system then connect them to both Server-A and Server-B.

The Astribank USB socket marked as "Main" must be connected to Server-A. The Astribank USB socket marked as "Backup" must be connected to Server-B.

4. Power-on the servers.
5. If the Astribank devices are used then power them on. Make sure that all of them appear in the `lsusb` command output on Server-A. Each device must appear as `e4e4:1162`. For example:

```
# lsusb
Bus 004 Device 001: ID 0000:0000
Bus 001 Device 007: ID e4e4:1162 Xorcom Ltd. Astribank 2 series
Bus 001 Device 006: ID e4e4:1162 Xorcom Ltd. Astribank 2 series
Bus 001 Device 001: ID 0000:0000
```

The following actions must be performed for both servers:

6. Configure IP addresses, host names (optionally) and DNS on each server.

6.1 The `nic1` interface configuration.

The `nic1` interfaces on both servers are pre-configured for IP `172.16.200.1/24` and `172.16.200.2/24`. If the pre-configured addresses conflict with the LAN IP configuration where the `nic0` interface must be connected change the `nic1` settings. In this case you have to edit the `/etc/sysconfig/network-scripts/ifcfg-nic1` file. Reference the next topic for the further details.

6.2 The `nic0` IP address should be defined in the `/etc/sysconfig/network-scripts/ifcfg-nic0` file. For example:

```
HWADDR=54:BE:F7:0A:74:EB
BOOTPROTO=static
IPADDR=192.168.0.166
NETMASK=255.255.240.0
NAME=nic0
DEVICE=nic0
ONBOOT=yes
ZONE=public
```

Important! Don't change the HWADDR, NAME and DEVICE parameters!

6.3 The default gateway must be defined in the `/etc/sysconfig/network` file. For example:

```
GATEWAY=192.168.0.1
```

The default gateway should be defined with the IP address suitable for the LAN where the `nic0` interface is connected.

If you want to change the hostname than you must use the following command:

```
hostnamectl --static set-hostname srv-a
```

6.4 DNS server settings must be defined in the `/etc/resolv.conf` file. For example:

```
nameserver 8.8.8.8
```

If you don't want to configure a real DNS server then define the loop-back IP address as the DNS server:

```
nameserver 127.0.0.1
```

Important! Make sure that you do not have any non-existent name servers defined.

6.5 Define the hostnames and `nic1` IP addresses in the `/etc/hosts` file if they have been changed. For example:

```
172.16.200.1 srv-a
172.16.200.2 srv-b
```

6.6 Apply the new IP settings.

On Server-A:

```
systemctl restart network.service
```

On Server-B:

```
systemctl restart network.service
```

The following actions must be performed on Server-A only:

1. Configure the parameters in the `/usr/share/twinstar/twinstar_config.conf` file. Each parameter there is accompanied with an explanation. Usually it is necessary to define the `CLUSTER_IP` parameter that contains the IP address that will be activated on the active server only. For example:

```
CLUSTER_IP=192.168.0.253/24
```

Please note that the cluster IP address must be defined in the CIDR (Classless Inter-domain Routing) notation.

If the `nic1` IP addresses have been changed (ref. p. 6.1 “The `nic1` interface configuration.”) then it is necessary to change also the following parameters:

```
SRV_A_IP=172.16.200.1
SRV_B_IP=172.16.200.2
COROSYNC_BINDNETADDR=172.16.200.0
```

Please note the `COROSYNC_BINDNETADDR` parameter network address of `nic1`.

2. Generate the public/private keys for SSH communication:

```
cd /usr/share/twinstar/
./twinstar_config keys
```

3. Configure the Servers.

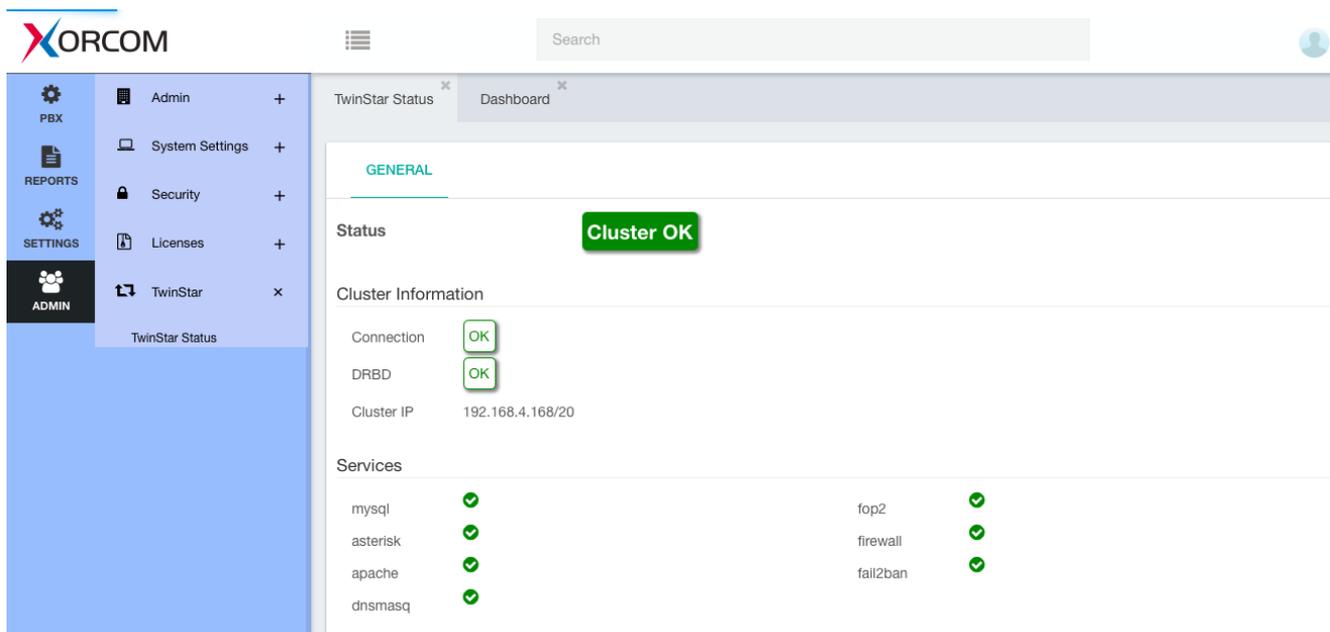
If you have received the servers pre-configured for a particular set of Astribank devices then you have to configure the IP addresses only:

```
cd /usr/share/twinstar
./twinstar_config reconfigure -i
```

If the connected Astribank devices set is different then add option `'-a'`. The script will perform the DAHDI hardware detection and configuration, configure DRBD and cluster IP address on both servers. ***Again, you must run this script on Server-A only.***

```
cd /usr/share/twinstar
./twinstar_config reconfigure -i -a
```

4. Restart the servers.
5. Point your web browser to the Cluster IP address.
6. Log in
7. Go to ADMIN -> TwinStar -> TwinStar Status
8. Verify the following:
 - 8.1. Status is Cluster OK green status
 - 8.2. If Astribanks being used in the system verify that the number of connected Astribanks appear in Server Information - Astribanks at the bottom of the dialog.



TwinStar Plus system is now ready for use!

For video tutorial go to: <https://xorcom.com/twinstar/video>



9. TwinStar Plus status verification via command line.

The cluster status can be checked via the command line. It can be useful for remote system administration or scripting.

9.1 Checking the DRBD status:

```
# cat /proc/drbd
version: 8.4.5 (api:1/proto:86-101)
GIT-hash: 1d360bde0e095d495786eae2a1ac76888e4db96 build by
    phil@Build64R6, 2014-10-28 10:32:53
0: cs:Connected ro:Primary/Secondary ds:UpToDate/UpToDate A r-----
    ns:10712 nr:4796 dw:21548 dr:10541 al:17 bm:0 lo:0 pe:0 ua:0...
```

Under certain circumstances, DRBD communication between two servers can malfunction:

```
# cat /proc/drbd
version: 8.4.5 (api:1/proto:86-101)
GIT-hash: 1d360bde0e095d495786eae2a1ac76888e4db96 build by
    phil@Build64R6, 2014-10-28 10:32:53
0: cs:WFConnection ro:Primary/Unknown ds:UpToDate/Inconsistent ...
    ns:117476856 nr:924 dw:21364 dr:117500022 al:29 bm:0 lo:0 ...
```

Most likely, the following command issued on srv-b will solve the problem:

```
# drbdadm connect r0
```

9.2 Checking the server role via command line:

```
# twinstar-ctl status
AtribanksCount:      0
FrozenMaster:       0
InTransition:       false
IsMaster:           true
LocalNodeId:        1
MasterNodeId:       1
NodeCount:          2
PreferredMaster:    true
Version:            1.0
```

9.3 Checking Atribank devices and DAHDI spans registration:

```
# dahdi_hardware -v
usb:001/002          xpp_usb+[T]  e4e4:1162 Atribank-modular FPGA-
    firmware
MPP: TWINSTAR_PORT=0
MPP: TWINSTAR_WATCHDOG=0
MPP: TWINSTAR_POWER[0]=1
MPP: TWINSTAR_POWER[1]=1
LABEL=[usb:X1037123] CONNECTOR=@usb-0000:00:03.3-5
    XBUS-00/XPD-00: FXS      (14) Span 1 DAHDI-SYNC
    XBUS-00/XPD-10: FXS      (8)  Span 2
usb:001/003          xpp_usb+[T]  e4e4:1162 Atribank-modular FPGA-
```

```

firmware
MPP: TWINSTAR_PORT=0
MPP: TWINSTAR_WATCHDOG=0
MPP: TWINSTAR_POWER[0]=1
MPP: TWINSTAR_POWER[1]=1
LABEL=[usb:X1037124]          CONNECTOR=@usb-0000:00:03.3-6
    XBUS-01/XPD-00: E1        (31)  Span 3
    XBUS-01/XPD-10: FXS       (8)   Span 4
    XBUS-01/XPD-20: FXS       (8)   Span 5
    XBUS-01/XPD-30: FXS       (8)   Span 6
    
```

As you can see the DAHDI spans are registered. ("Span 1", Span 2" etc.).

The dahdi_hardware output provides the following useful information:

TWINSTAR_PORT=0	means that Astribank is working with the "Main" USB socket (0). When Astribank is connected to the Server- B (backup server) then you will see TWINSTAR_PORT=1.
TWINSTAR_WATCHDOG=0	means that the TwinStar watch dog is currently disabled. This is normal after twinstar_config script finish.
TWINSTAR_POWER[0]=1	Astribank senses voltage on USB socket 0. Therefore, Server- A is powered on.
TWINSTAR_POWER[1]=1	Astribank senses voltage on USB socket 1. Therefore, Server- B is powered on.
LABEL=[usb:X1037123]	X1037123 is the Astribank serial number
CONNECTOR=@usb-0000:00:03.3-5	USB connector ID where the Astribank is connected.

9.4 Checking DAHDI channels configuration in Asterisk:

```

# lsdahdi
### Span 1: XBUS-00/XPD-00 "Xorcom XPD #00/00: FXS" (MASTER)
  1 FXS      FXOKS      (In use) (EC: OSLEC - INACTIVE)
  2 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
.....
### Span 2: XBUS-00/XPD-10 "Xorcom XPD #00/10: FXS"
 15 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
 16 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
.....
### Span 3: XBUS-01/XPD-00 "Xorcom XPD #01/00: E1" HDB3/CCS/CRC4 RED
 23 E1      Clear      (In use) (no pcm) (EC: OSLEC - INACTIVE) RED
 24 E1      Clear      (In use) (no pcm) (EC: OSLEC - INACTIVE) RED
.....
    
```

```

### Span 4: XBUS-01/XPD-10 "Xorcom XPD #01/10: FXS"
 54 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
 55 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
.....
### Span 5: XBUS-01/XPD-20 "Xorcom XPD #01/20: FXS"
 62 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
 63 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
.....
### Span 6: XBUS-01/XPD-30 "Xorcom XPD #01/30: FXS"
 70 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
 71 FXS      FXOKS      (In use) (no pcm) (EC: OSLEC - INACTIVE)
.....

```

The "(In use)" labels mean that Asterisk "uses" the channel.

9.5 Checking cluster IP address is activated and the IP routing table is re-built correctly:

```

# ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: nic0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
    state UP qlen 1000
    link/ether 38:60:77:9c:6c:88 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.166/20 brd 192.168.15.255 scope global nic0
    inet 192.168.0.253/20 brd 192.168.15.255 scope global secondary nic0
    inet6 fe80::3a60:77ff:fe9c:6c88/64 scope link
        valid_lft forever preferred_lft forever
3: nic1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
    state UP qlen 1000
    link/ether 38:60:77:9c:6c:89 brd ff:ff:ff:ff:ff:ff
    inet 172.16.200.1/24 brd 172.16.200.255 scope global nic1
    inet6 fe80::3a60:77ff:fe9c:6c89/64 scope link
        valid_lft forever preferred_lft forever

```

As you can see, the cluster IP address 192.168.0.253 appears as the secondary nic0

```

# ip route show
172.16.200.0/24 dev nic1 proto kernel scope link src 172.16.200.1
192.168.0.0/20 dev nic0 scope link src 192.168.0.253
169.254.0.0/16 dev nic0 scope link metric 1002
169.254.0.0/16 dev nic1 scope link metric 1003
default via 192.168.0.1 dev nic0 src 192.168.0.253

```

Note that the source address for cluster interface (nic0 in our case) and for the default route should be equal to the cluster IP (192.168.0.253).