








Allo E1/T1 PRI card Installation Guide

About this manual

This manual describes the Allo product application and explains how to work and use its major features. It serves as a means to describe the user interface and how to use it to accomplish common tasks. This manual also describes the underlying assumptions and users make the underlying data model.

Document Conventions

In this manual, certain words are represented in different fonts, typefaces, sizes, and weights. This highlighting is systematic; different words are represented in the same style to indicate their inclusion in a specific category. Additionally, this document has different strategies to draw User attention to certain pieces of information. In order of how critical the information is to your system, these items are marked as a note, tip, important, caution, or warning.

Icon	Purpose
	Note
	Tip/Best Practice
	Important
	Caution
	Warning

- **Bold** indicates the name of the menu items, options, dialog boxes, windows and functions.
- The color blue with underline is used to indicate cross-references and hyperlinks.
- Numbered Paragraphs - Numbered paragraphs are used to indicate tasks that need to be carried out. Text in paragraphs without numbering represents ordinary information.
- The Courier font indicates a command sequence, file type, URL, Folder/File name
- e.g. www.allo.com

Support Information

Every effort has been made to ensure the accuracy of the document. If you have comments, questions, or ideas regarding the document contact online support: <http://support.allo.com>

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1. Introduction

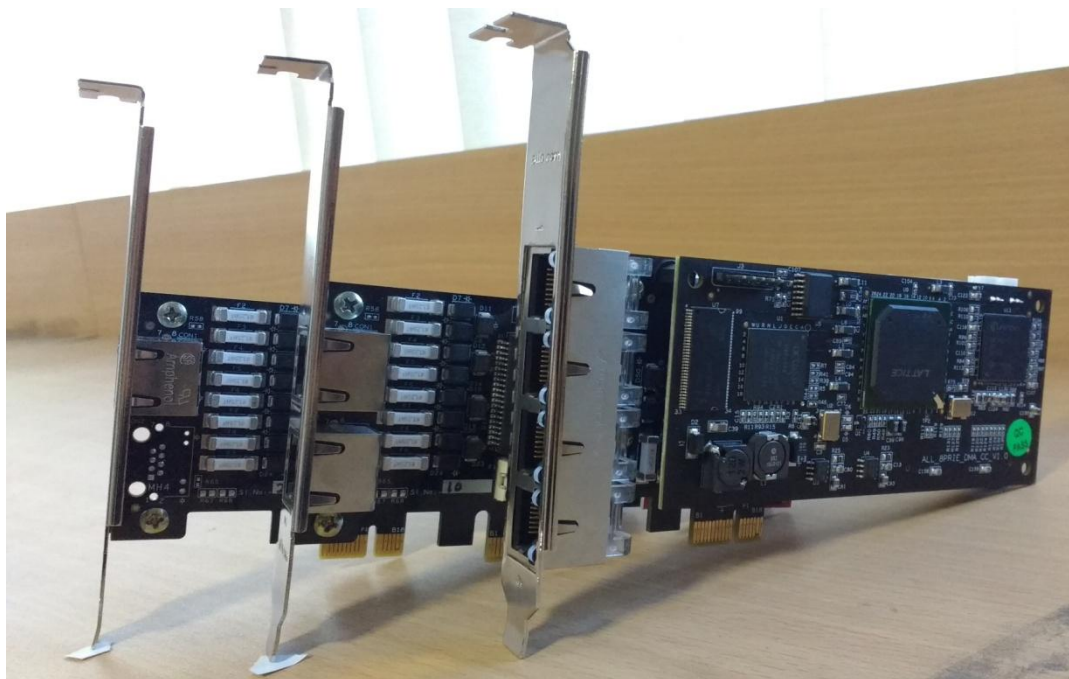
In an industry that is ever changing, Allo has introduced a new series of digital cards that are high-performance and cost effective digital telephony interface cards which support T1/E1 interfaces. Allo cards have an optional hardware base Octasic™ DSP Line Echo Cancellation that can help you achieve the highest voice quality with today's technology.

This is a card with an affordable price tag proven to handle very high density of calls in hardcore call center/Telco environments. Allo cards (DAHDI) are compatible with Asterisk®, FreeSWITCH®, Yate™, Elastix, Trixbox, as well as other open source and proprietary PBX, Switch, IVR, or VoIP gateway applications.

Model No	Product Description
4aCP1e/4aCP2e/4aCP4e/4aCP8e	1/2/4/8 Port PRI PCIe card
4aCP1eL/4aCP2eL/4aCP4eL/4aCP8eL	1/2/4/8 Port PRI PCIe card with Line Echo Cancellation

1.1 Overview

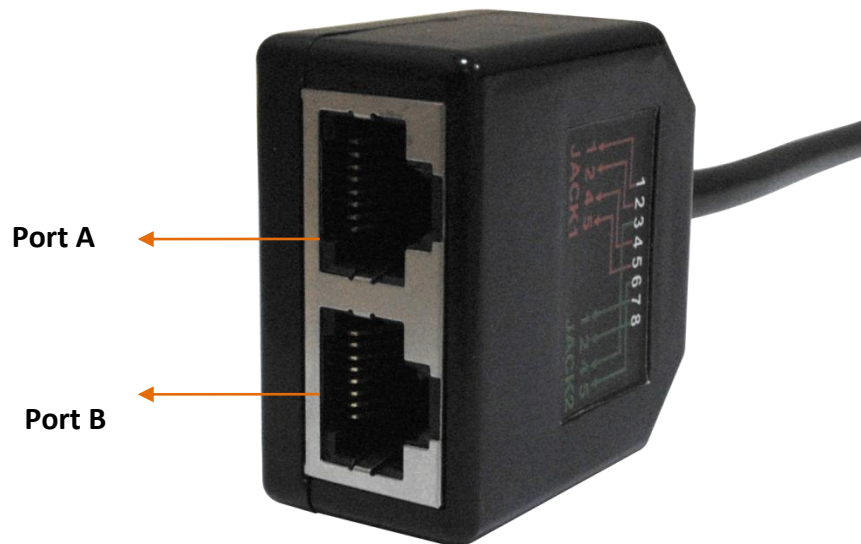
Allo digital cards allow users to field upgrade the firmware based on their requirements. These cards are available with RJ45 ports which provide E1/T1 interfaces and can be extended E1/T1 interfaces by using splitters.



Allo Digital Card 1/2/4/8 port

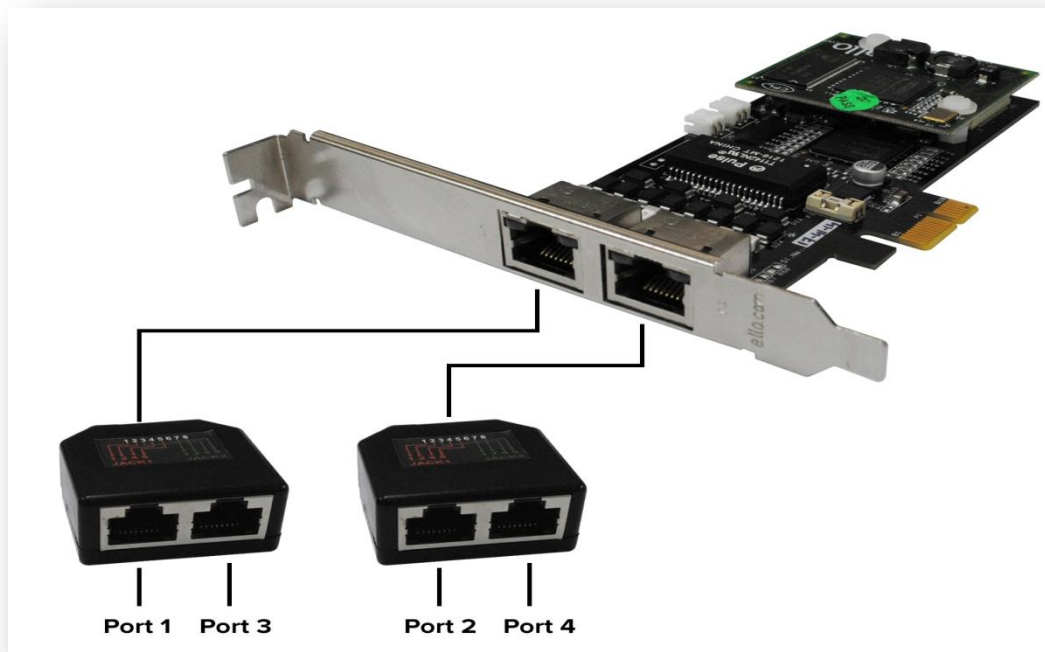
1.2 Y- Splitter

The Y-splitter is provided for accessing all four ports on the Allo digital series cards. The following figure helps to identify a splitter and its end ports.

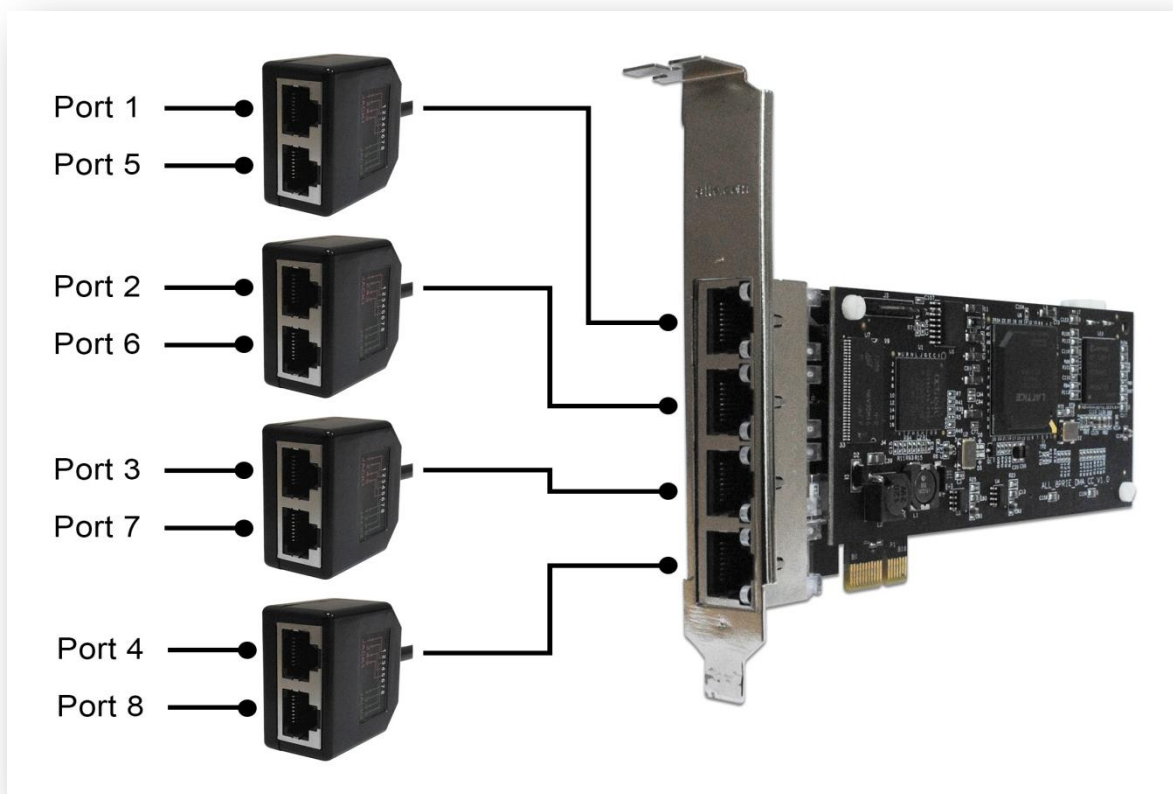


Splitter End

1.3 Connection Diagram







4 Port-Connection Diagram



8 port -Connection Diagram

1.4 Slot Compatibility

Check your motherboard to verify that a compatible slot is available for an Allo digital E1/T1 card. To determine which slots you have on your motherboard.

PCI Express 1-lane (x1) Slot	
PCI Express 4-lane (x4) Slot	
PCI Express 8-lane (x8) Slot	
PCI Express 16-lane (x16) Slot	

Motherboard slots

The Digital E1/T1 cards work with PCIe slot like x1, x2, x4, x8 and x16.

1.5 PRI Card LED Indications

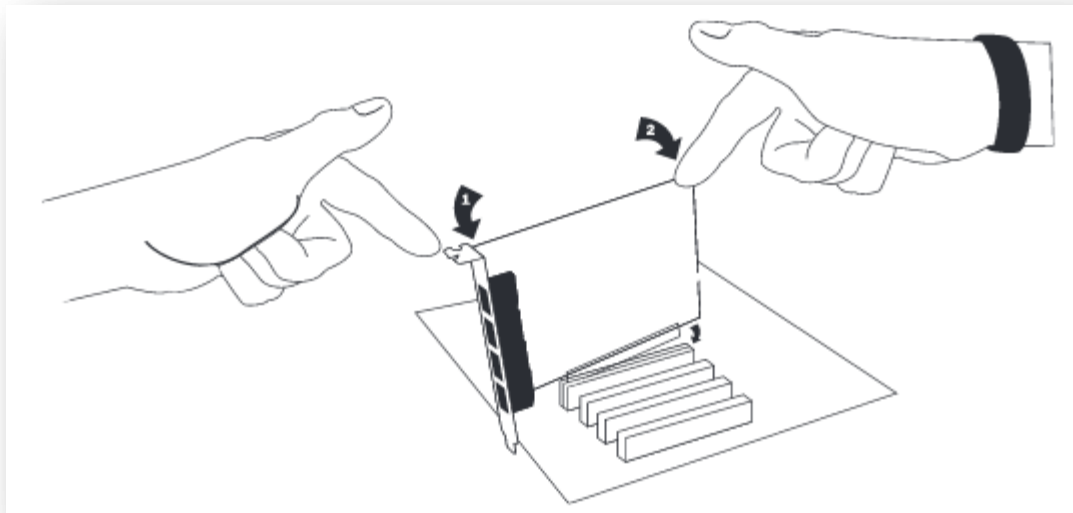
Red LED Rolling/Moving : When Dahdi is not loaded

Red LED Blinking : When Dahdi is loaded

Green LED ON : When PRI lines are connected

1.6 Hardware Installation

1. ***Now that you are acquainted with the ALLO PRI cards, power down your computer and unplug it from its power source.***
2. Attach a static strap to your wrist and open the case.
3. Take away the section place holder and addition the card into a PCI Express Slot.



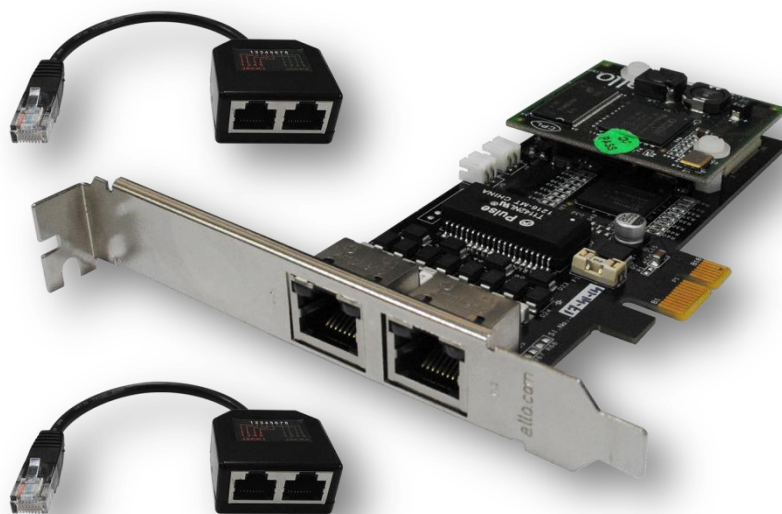
Insert Card

4. Plug the T1 or E1 equipment cable into the RJ45 port.



Use only shield cables to ensure compliance with the international EMC standards.

2. Hardware Setup



Digital Card

1. Insert the Digital E1/T1 card in the PCIe slot of the Server.
2. Check if the installed PRI card is detected using the “lspci” command.
3. If the card is recognized, the following output will be displayed. Please search for Allo ID (1d21).

lspci

```
10:00.0 Communication controller: Device 1d21:1410 (rev 01)
15:00.0 Communication controller: Device 1d21:1420 (rev 01)
1a:00.0 Communication controller: Device 1d21:1440 (rev 01)
1f:00.0 Communication controller: Device 1d21:1480 (rev 01)
```

Below Table lists the device ID and the number of ports supported.

Device Id	Model Number	Card Type
1410	4aCP1e	1 port PRI Card
1420	4aCP2e	2 port PRI Card
1440	4aCP4e	4 port PRI Card
1480	4aCP8e	8 port PRI Card



If the PRI card is not recognized by the system, you have to power off and take out the card, and re-insert it in another PCIe slot.

3. Software Installation Steps

This section describes about the installation of LibPRI, Dahdi and Asterisk.

Test Environment (Example)

Libpri-1.4.14

ALLO Dahdi Driver - 2.9.1

asterisk-11.4.0

centos 6.2 (kernel version: 2.6.32)

Telephony Card : 4 port PRI PCIe card (Model:4aCP4e)

Installation of dependency packages

Install Asterisk's dependencies that are required to compile asterisk. Run the following commands to install the required packages.

```
[root@localhost ~]# yum install bison bison-devel ncurses ncurses-devel zlib  
zlib-devel openssl openssl-devel gnutls-devel gcc gcc-c++ libxml2
```

3.1 Installation of Dahdi Driver

Download latest ALLO Dahdi Drivers from Allo web site and install the Dahdi version as per your requirement. Please find the link here for download <http://www.allo.com/3rd-GEN-1-2-4-8-Port-PRI-Card/> in that Guides & Drivers to get the dahdi driver by executing the following command.

```
#wget http://www.allo.com/dahdi/011416/dahdi-linux-complete-2.10.2+2.10.2.tar.gz
```



If the server is already up & running, please check the existing dahdi version and download the same from ALLO website or contact support for further assistance.

Extract the downloaded file by executing the below command.

```
#tar -xvzf dahdi-linux-complete-2.10.2+2.10.2.tar.gz
```

Use the following commands to install DAHDI drivers

```
#cd dahdi-linux-complete-2.9.1.1+2.9.1
```

```
#make
```

```
#make install
```

```
#make config
```

Successful Dahdi Driver installation shows the similar output & lists the detected Dahdi devices

```
#####
###
### DAHDI tools installed successfully.
### If you have not done so before, install init scripts with:
###
###   make config
###
#####
make[1]: Leaving directory `/home/common-dahdi/dahdi/dahdi-linux-complete-2.10.1+2.10.1/tools'
make -C tools config
make[1]: Entering directory `/home/common-dahdi/dahdi/dahdi-linux-complete-2.10.1+2.10.1/tools'
install -D dahdi.init /etc/rc.d/init.d/dahdi
/usr/bin/install -c -d /etc/udev/rules.d
/usr/bin/install -c -D -m 644 dahdi.rules /etc/udev/rules.d/
install -D ifup-hdlc /etc/sysconfig/network-scripts/ifup-hdlc
/sbin/chkconfig --add dahdi
DAHDI has been configured.

List of detected DAHDI devices:

pci:0000:10:00.0      alloPL4xxp+  1d21:1410 Allocard 4aCP1e (3rd Gen)
pci:0000:15:00.0      alloPL4xxp+  1d21:1420 Allocard 4aCP2e (3rd Gen)
pci:0000:1a:00.0      alloPL4xxp+  1d21:1440 Allocard 4aCP4e (3rd Gen)
pci:0000:1f:00.0      alloPL4xxp+  1d21:1480 Allocard 4aCP8e (3rd Gen)

run 'dahdi_genconf modules' to load support for only
the DAHDI hardware installed in this system.  By
default support for all DAHDI hardware is loaded at
DAHDI start.
make[1]: Leaving directory `/home/common-dahdi/dahdi/dahdi-linux-complete-2.10.1+2.10.1/tools'
```

Dahdi driver Installation output log

3.2 Installation of LibPRI package

Go to /usr/src directory and Download LibPRI by running the following command

```
#wget http://downloads.asterisk.org/pub/telephony/libpri/libpri-1.4.14.tar.gz
```

After downloading LibPRI extract the LibPRI tar file by the following command

```
[root@localhost src]# tar -xvzf libpri-1.4.14.tar.gz
```

Install the LibPRI by the following commands

```
[root@localhost src]# cd libpri-1.4.14
# make clean
# make
# make install
```

3.3 Installation of Asterisk

Download the latest asterisk version from:

<http://downloads.asterisk.org/pub/telephony/asterisk/> and extract the asterisk tar file by giving following command.

```
#wget http://downloads.asterisk.org/pub/telephony/asterisk/asterisk-11-current.tar.gz
```

Go to asterisk folder and compile the packages as following

To install asterisk give the following commands:

```
[root@pbx1 asterisk-11.4.0]#./configure
# make
# make install
# make config
```

If this is your first Asterisk Install, you should install the sample configuration files, to do this run:

```
# make samples
```

4. Software Configurations

Add “alloPL4xxp” at the end of /etc/dahdi/modules file, so that while starting dahdi driver Allo card modules will load automatically.

Add the line `<include "dahdi-channels.conf">` in /etc/asterisk/chan_dahdi.conf file.



By default the card is ready to use in E1 mode

4.1 T1 mode settings

To configure the card in T1 signaling mode, please add the following,

- (i) Add “**options alloPL4xxp default_linemode=t1**” at the end of /etc/modprobe.d/dahdi.conf

4.2 Dahdi Configuration

After Dahdi driver installation run the following commands

```
# /etc/init.d/dahdi start
```

```
# dahdi_genconf -vvvvv
```

By running "**dahdi_genconf**", it will generate /etc/dahdi/system.conf and etc/asterisk/dahdi-channels.conf automatically. Check whether the generated files information agrees with your hardware setup, if not, you should modify to your specific requirements.

```
[root@go ~]# dahdi_genconf -vv
Default parameters from /etc/dahdi/genconf_parameters
Generating /etc/dahdi/span-types.conf
Generating /etc/dahdi/assigned-spans.conf
Generating /etc/dahdi/system.conf
Generating /etc/asterisk/dahdi-channels.conf
You have new mail in /var/spool/mail/root
```

Dahdi_genconf-vvv channels configure with Asterisk



Do not forget to include "dahdi-channels.conf" in "chan_dahdi.conf" to configure Dahdi channels with asterisk, if not, run command:

```
# echo "#include dahdi-channels.conf" >> /etc/asterisk/chan_dahdi.conf
```

Execute the following command:

```
# dahdi_cfg -vvvvv
```

This command is used for the entire spans channels configuration.

To check dahdi hardware devices run the command "*dahdi_hardware*" from the command prompt a sample output is shown below.

```
pci:0000:10:00.0    alloPL4xxp+  1d21:1410 Allocard 4aCP1e (3rd Gen)
pci:0000:15:00.0    alloPL4xxp+  1d21:1420 Allocard 4aCP2e (3rd Gen)
pci:0000:1a:00.0    alloPL4xxp+  1d21:1440 Allocard 4aCP4e (3rd Gen)
pci:0000:1f:00.0    alloPL4xxp+  1d21:1480 Allocard 4aCP8e (3rd Gen)
```

After compiling and installing DAHDI and Asterisk, load the Dahdi driver by running:

Check alloPL4xxp show with + symbol "+ shows module loaded "

Start the Asterisk by executing

```
# asterisk -gvvvvvvvvvvc
```

Make sure that PRI spans are up and active, before making calls. Here is the command to check the PRI span status

CLI>pri show spans

```
*CLI> pri show spans
PRI span 1/0: In Alarm, Down, Active
PRI span 2/0: In Alarm, Down, Active
PRI span 3/0: Up, Active
PRI span 4/0: In Alarm, Down, Active
*CLI> █
```

PRI Span Status (4 Ports PRI Card)

Allo Support Information:

For further assistance please contact us through

Support Skype ID: allo.support

Support Direct Numbers:

0091 9739497566

0091 9739497551



Support hours available for direct call & Skype chat, Timings: Monday –Friday 9.00 AM to 7.30 PM (GMT+5.30) Indian standard time.

Support will be available for Saturday based on request & prior schedule

Support ticket is mandatory for all support sessions and prior schedule

Submit support ticket on: <http://support.allo.com/Tickets/New>

Customer knowledge base <http://support.allo.com/KB>

Thank you for choosing



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