File version: 2.0.0.0

Installation of Sangoma A101/A102/A104 card Drivers on Windows 2000/XP/2003.
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STEP 1 – installing the card

The new card is sealed in anti-static packaging before shipping.
Before removing the card from it's packaging, please ensure that you are grounded (touch a well grounded object such as your PC chassis).
Handling only the mounting bracket, insert the card into a PCI slot.
Make sure that the card is properly seated,
and that the fasteners are tightened properly.

Plug in A101/2/4 PCI adapter and turn on your system.
The "New Hardware Wizard" will start automatically.

Click on "Next", choose "Display a list of the known drivers for this device...",
click "Next".

In "Hardware Types:" choose "Network adapters", click "Next" then "Have Disk..."
and browse to the “card” directory on distribution disk,
e.g. \A101_A102_A104\card.

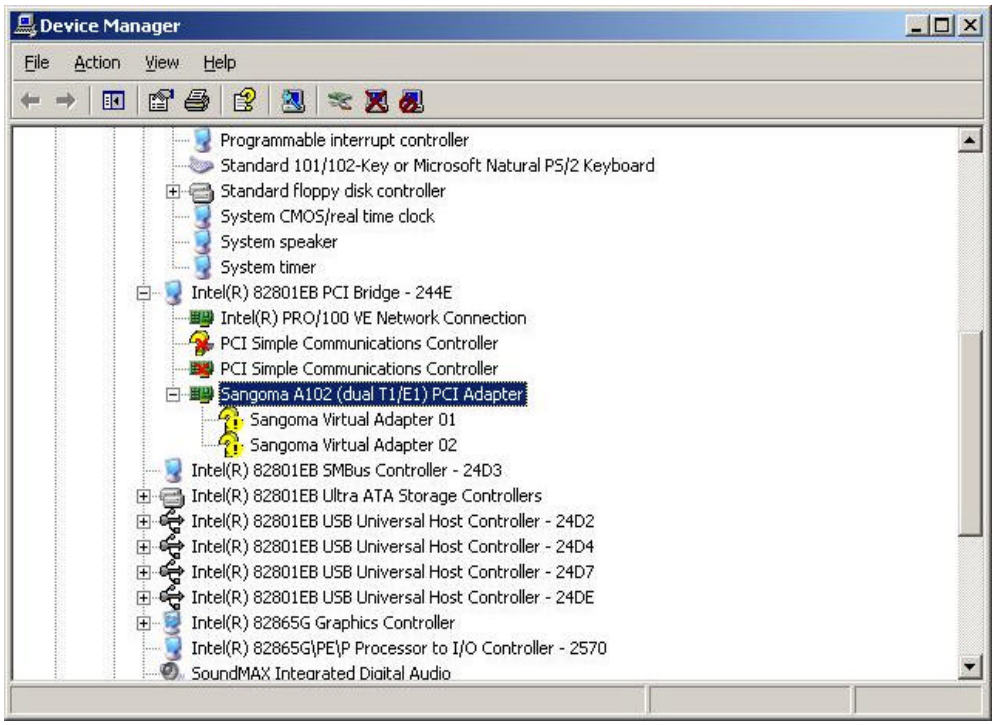
Click "Ok" and a list of AFT card types will be presented.

Choose the correct card from the list.
For example: "Sangoma A102 (dual T1/E1) PCI Adapter".
Click "Next".

If "Update Driver Warning" ("Installing this device driver is not recommended because Windows cannot verify that it is compatible with your hardware...") appears, ignore the warning and continue installation.

If the "Digital Signature Not Found" warning appears, ignore the warning and continue installation.

Open “Device Manager”, switch “View” to “Devices by Connection”,
you should see picture similar to this:



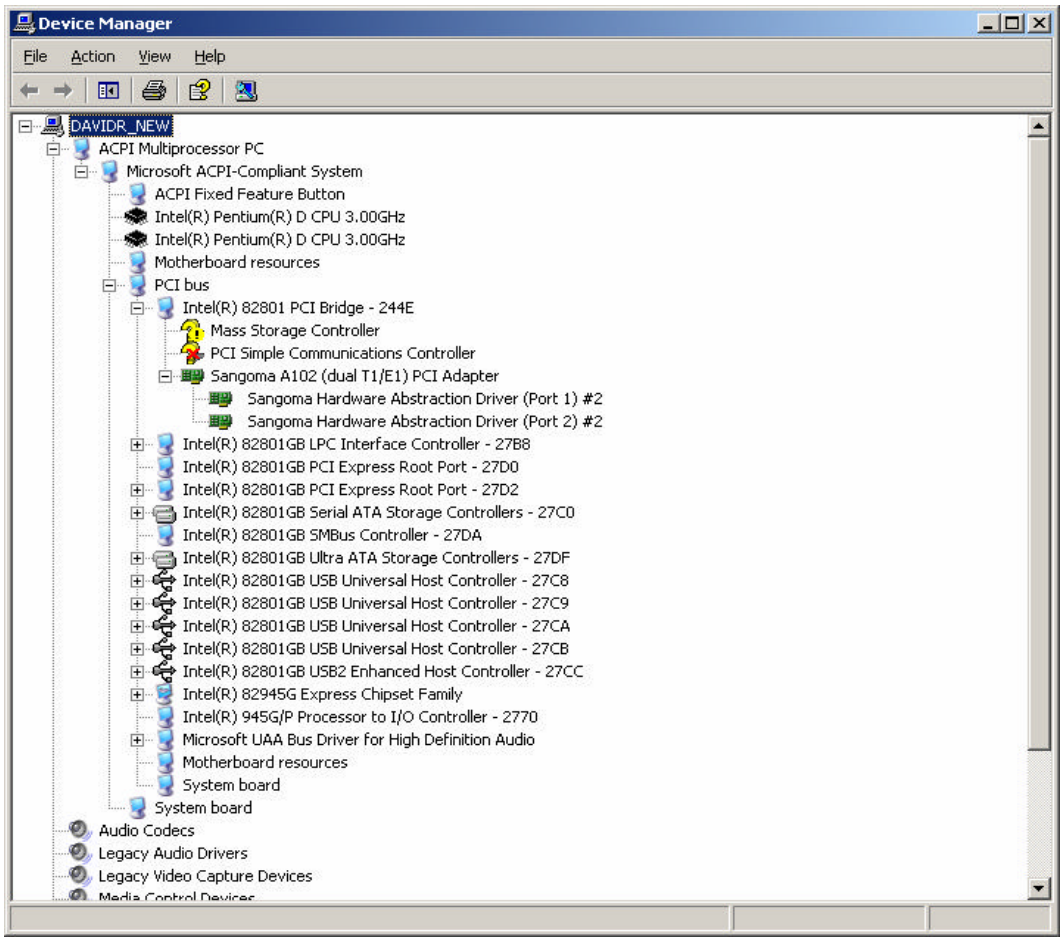
If you don't see any Sangoma adapters, you may need first to locate the PCI Bus it is connected to.

At this point the first level driver will be installed and started.
When the driver starts, one or two (on dual CPU cards) "Sangoma Virtual Adapters" will be enumerated and the system will ask for drivers for these new devices.
Please proceed to **STEP 2**.

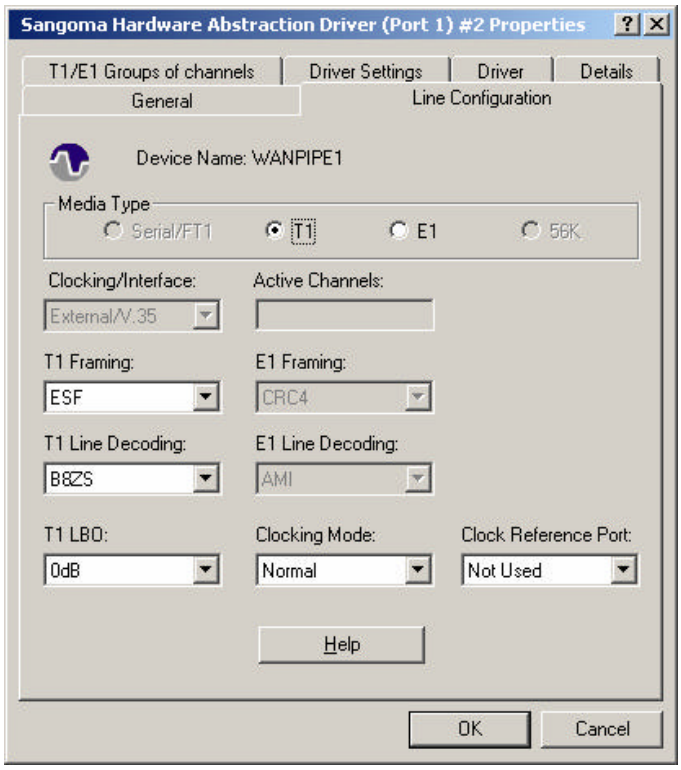
STEP 2 – installing the "Hardware Abstraction Driver"

Let the "New Hardware Wizard" to search for
Drivers in \A101_A102_A104\card\hw_abstraction_driver directory .

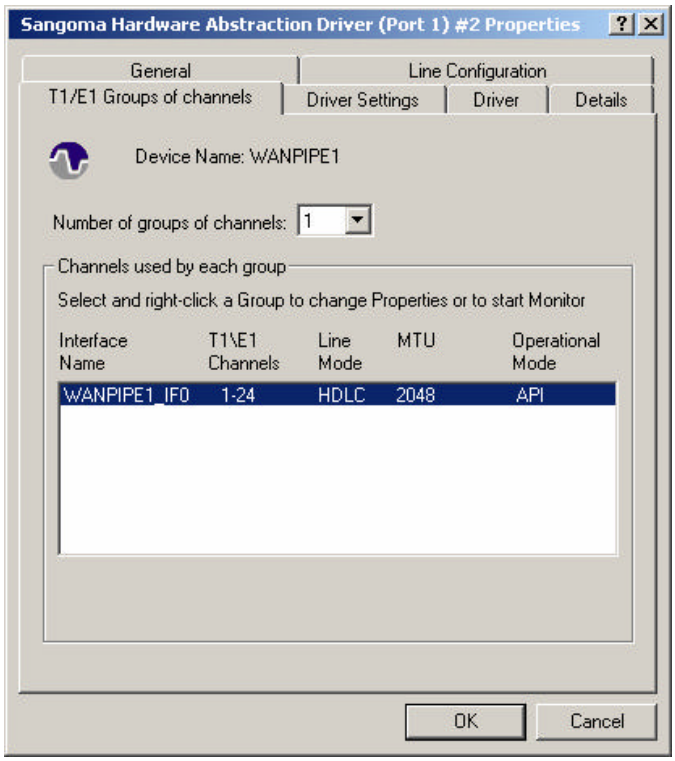
After drivers found and installed, in the "Device Manager"
you should see picture similar to this:



Open the properties of "Sangoma Hardware Abstraction Driver (Port 1)",
switch to "Line Configuration" page to choose T1/E1 settings.



Switch to "T1/E1 Groups of Channels" page.



If you purchased channelized version of AFT card,
you may set “Number of groups of channels”
to something different than 1.

Select and right-click on a Channel Group,
You will see the following options:

1. “Group Properties…”
2. “Start WANPIPE Monitor”

Select “Group Properties…” from the menu.
You should see the following:

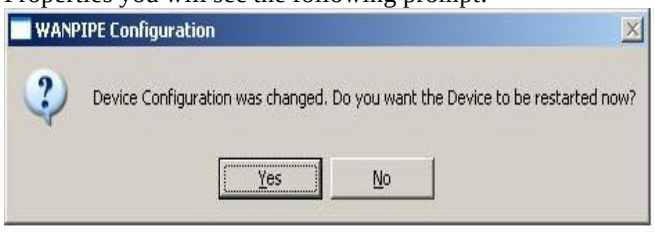
If you need BitStream or HDLC API,
the Operational Mode should be set to API.
If you need Frame Relay, CHDLC (CiscoHDLC) or PPP
router or API, the Operational Mode should be set to STACK.
For STACK Mode the “Sangoma WAN Protocol Driver” will
have to be installed.

Note: if you select “Start WANPIPE Monitor” option,
the WANPIPEMON application will start and will
automatically connect to the driver.
This application can be used to:

1. Read T1/E1 alarms
2. Run Line Trace in Hex Dump or Interpreted Mode.
   The Interpreted Mode capable of interpreting
   Frame Relay, PPP and CHDLC protocols.
   The TCP/IP V4 interpretation is possible too.
3. Read Driver statistics

It is recommended to use the WANPIPEMON after
all installation steps are complete.

If anything was changed in “"Sangoma Hardware Abstraction Driver (CPU A)"
Properties you will see the following prompt:



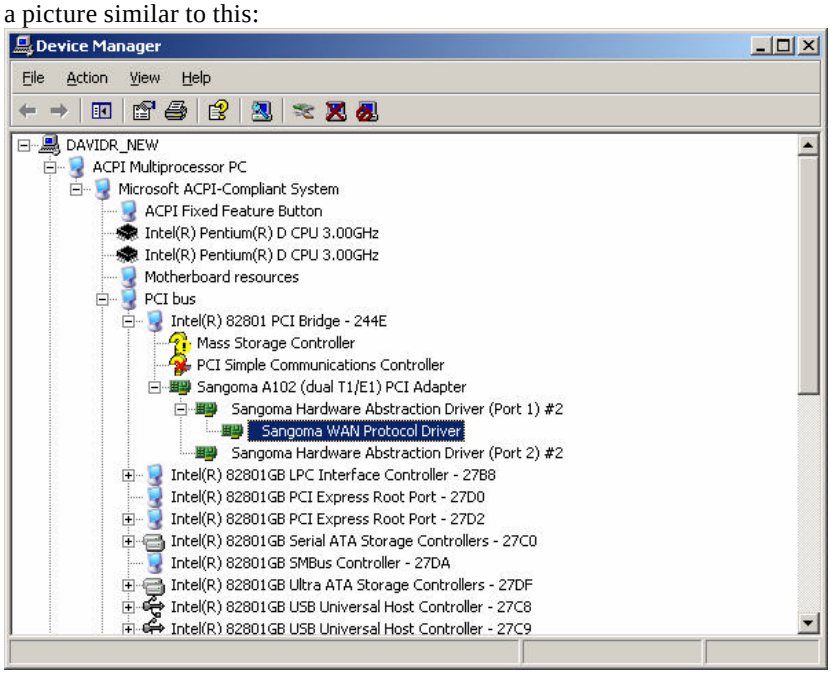
If you want the changes to take effect, click “Yes”.
If STACK was selected, the "New Hardware Wizard" will start
automatically.
Please proceed to **STEP 3**.

STEP 3 – installing the “Sangoma WAN Protocol Driver”

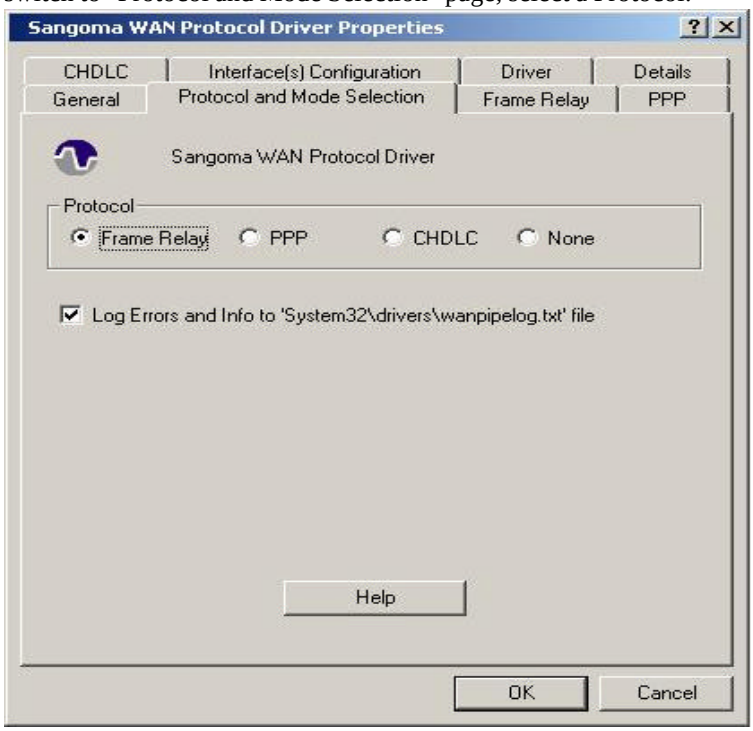
Let the "New Hardware Wizard" search for drivers in

\A101_A102_A104\card\hw_abstraction_driver\protocol directory .

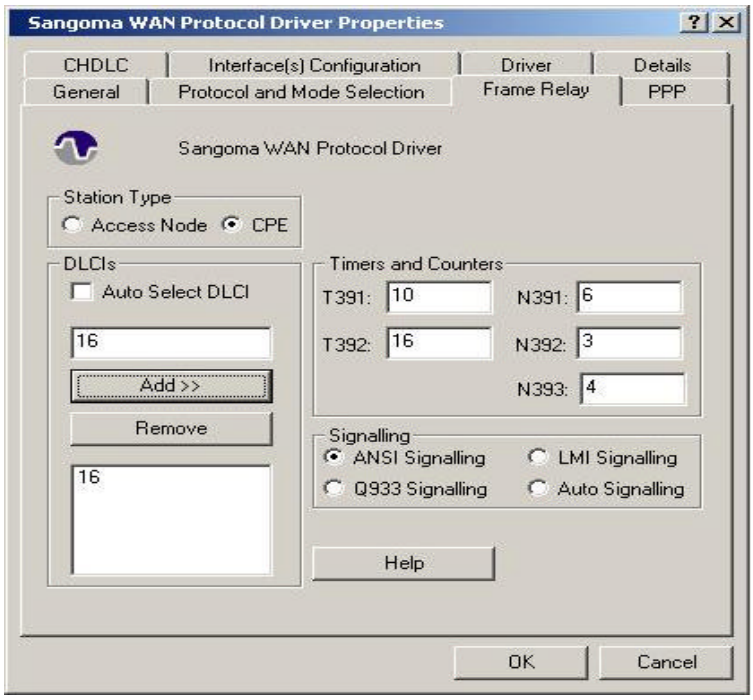
After driver was found and installed, you should see
a picture similar to this:



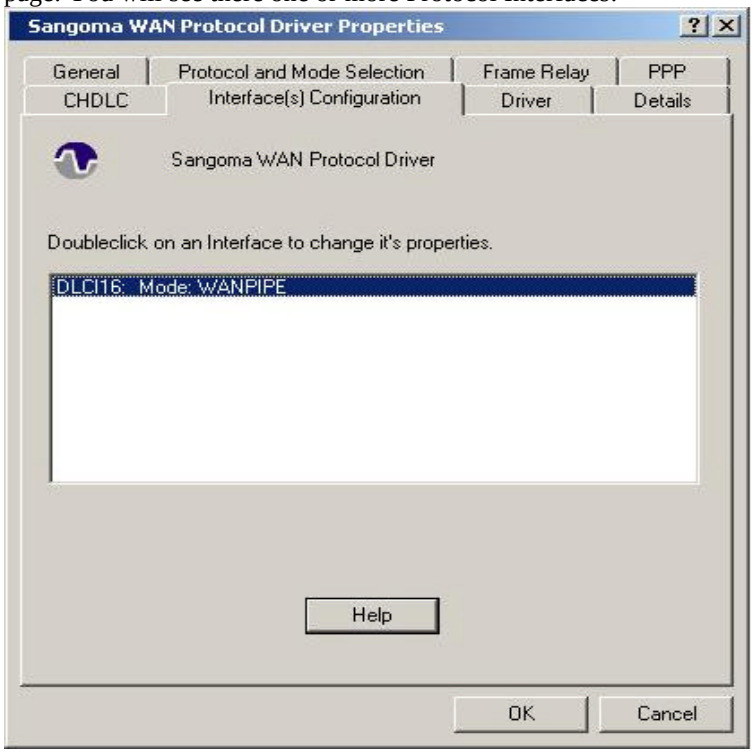
Open the properties of "Sangoma WAN Protocol Driver",
switch to "Protocol and Mode Selection" page, select a Protocol.



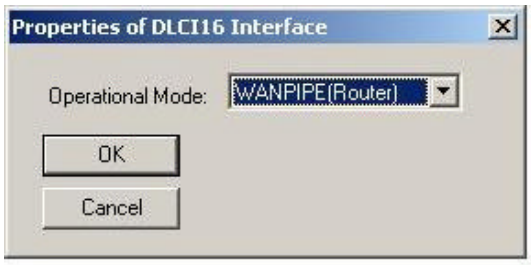
Once a protocol choice is made, you can switch to its property page.



When the protocol configuration is done switch to “Interface(s) Configuration” page. You will see there one or more Protocol Interfaces:



Set Operation Mode of each interface as needed.

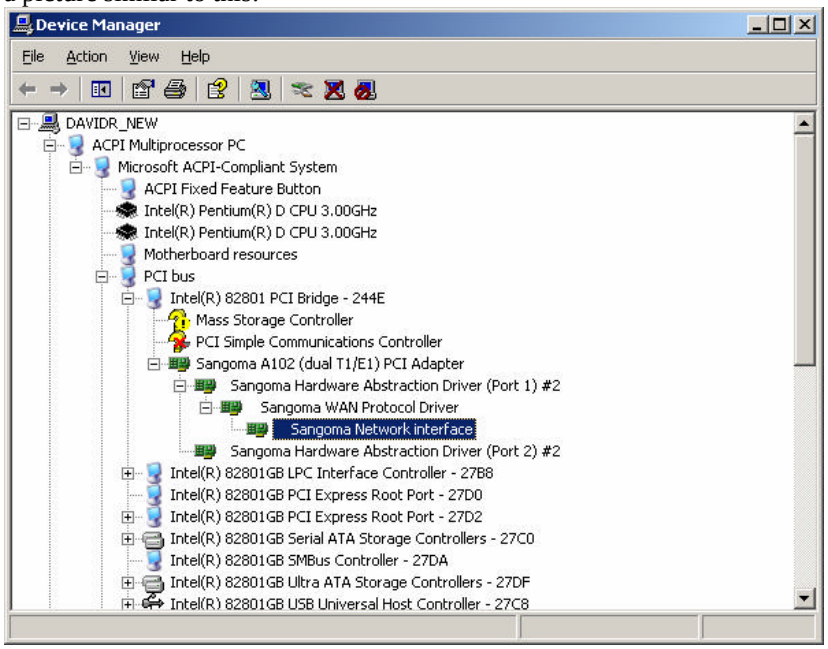


For example, if you need to run a Router over Frame Relay,
select WANPIPE(Router) mode and click OK and
click OK on "Sangoma WAN Protocol Driver" page too.
The "New Hardware Wizard" will start automatically.
Please proceed to **STEP 4**.

STEP 4 – installing the "Sangoma Network interface"

Let the "New Hardware Wizard" search for drivers in
\A101_A102_A104\card\hw_abstraction_driver\protocol\network directory .

After driver was found and installed, you should see
a picture similar to this:



At this point the installation is complete and you can proceed to configure
the network properties for the WAN interface.
It is done from the "Network and Dial-up Connections" applet.

To Uninstall:
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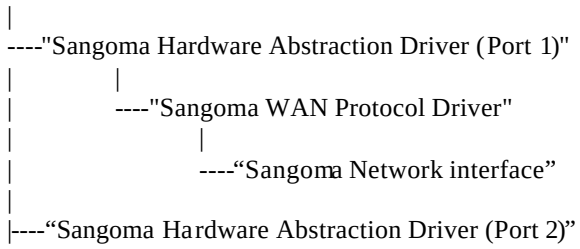
The uninstall process is done in order opposite to the install process.

Open "Device Manager" and switch to "Devices by Connection" view.
You will see a "devices tree" similar to this:

"Sangoma A102 (dual T1/E1) PCI Adapter"



1. The uninstall process should start “from the bottom up” :
   the "Sangoma Network interface" should be uninstalled first,
   then the "Sangoma WAN Protocol Driver",
   then both “Sangoma Hardware Abstraction Driver” drivers,
   then the "Sangoma A102 (dual T1/E1) PCI Adapter ".

2. In “HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\busenum”
   and in “HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\Services\busenum”
   please remove “last_serial_number_range” value.

3. Shutdown your system.

4. Unplug the card from PCI slot.

Sangoma Technical Support
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Phone (905) 474-1990 during business hours Eastern Time, or email at

TechDesk@sangoma.com if you are having problems the product.