

ASR5000 (5K) Console Cable Configuration Example

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Introduction

This document describes how to interconnect the Switch Processor Input/Output (SPIO) console of a Cisco Aggregation Services Router (ASR) 5000 Series to a Cisco Terminal Server (TS).

Note: This document is only relevant for the ASR5000. The ASR5500 has a standard Cisco console pinout. Official documentation is provided in the **Connecting to the Serial Console Port** section of the [Cisco ASR 5000 Installation Guide](#).

The console uses an RS232 serial communications port to provide local management access to the CLI. A 9-pin-to-RJ45 console cable is supplied with each SPIO card. This cable can be used in order to connect to a PC or another terminal device that has a standard 9-pin serial interface. However, things become more complex when you must connect the SPIO console interface to a Cisco (or third-party) TS.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Pinout of SPIO

The SPIO has this pinout (taken from official documentation):

RJ-45 Pin	Signal	Signal Type
1	Clear to Send (CTS)	Input - HW flow control
2	Data set Ready (DSR)	Input - RS232 control
3	Receive Data (Rx)	Input - Data Transfer
4	Signal Ground (Grnd)	N/A
5	Ready to Send (RTS)	Output - HW flow control
6	Transmit Data (Tx)	Output - Data transfer
7	Data Carrier Detect (DCD)	Input - RS232 control
8	Data Terminal Ready (DTR)	Output - RS232 control

The pinout numbering is shown here (the image shows female RJ45 connector on SPIO):

Figure 31. SPIO Ethernet RJ-45 Interface



Default Configuration of SPIO Console Port on ASR5000

This is the default SPIO port configuration on the ASR5000:

```
port rs232 24/3
terminal speed 115200
terminal stopbits 1
terminal parity none
terminal databits 8
terminal flowcontrol hardware off
terminal carrierdetect off
```

Here are some important points to note:

- Carrier Detect is off, and you should leave it off.

The installation guide specifies that if the console cable is to be used in a null-modem configuration, the workstation or terminal server must provide a carrier-detect signal. However, this is no longer a requirement with the previously-stated default command.

- Hardware flowcontrol is also off by default.

Despite these two input signals being disabled in the configuration of the SPIO, you can see the hardware state in the output of this command:

```

[local]st40-3# show port datalink counters 24/3
Counters for port 24/3:
SPIO RS232 Serial Console
Counter Data | Counter Data
-----+-----
RX Bytes 547 | TX Bytes 106014
Frame Errors 0 |
Overrun Errors 0 |
Parity Errors 0 |
DCD Inactive |
CTS Active |
-----+-----

```

Connect to a Cisco TS That Contains Cab-Octal-Async

This pinout for the Octal cable (8 Port Breakout Cable) is taken from [CAB-OCTAL-ASYNC Cable Pinouts](#):

Rj-45 pin	Signal name	Signal Type
8	RTS	Output
7	DTR	Output
6	TX Data	Output
5	TX ground	N/A
4	Rx ground	N/A
3	RX Data	Input
2	DSR	Input
1	CTS	Input

When you connect SPIO to the Octal cable of the TS, you have to make a null-modem cabling.

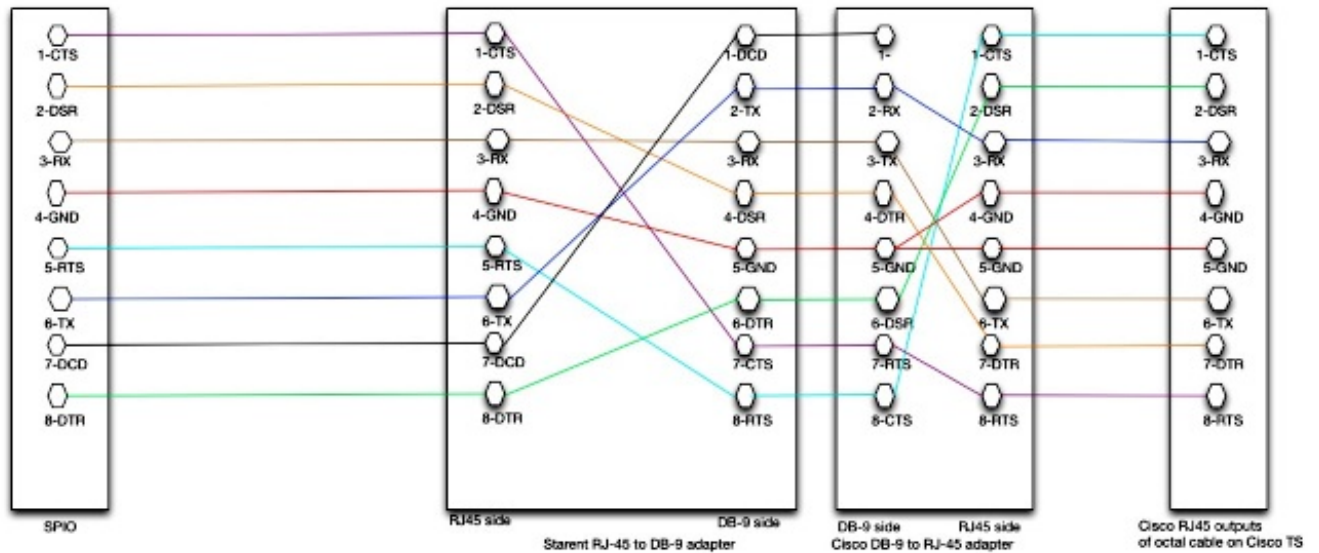
This means:

- RTS should be connected to CTS (and vice versa) - hardware flow control.
- DTR should be connected to DSR (and vice versa) - modem control.
- Tx should be connected to Rx (and vice versa).
- Ground should be connected to ground.
- DCD (on SPIO side) should not be connected (no corresponding signal on TS side).

Caution: Do NOT under any circumstances use a rolled RJ45 cable or a straight RJ45 cable to connect an SPIO directly with a Cisco TS. It will not work. The reason is that the ground voltage of the TS will be non-0. This can give very unpredictable results.

There are several options.

- The **preferred option** is to use the custom SPIO RJ45-DB-9 cable that was shipped with the SPIO:



You interconnect the custom Starent cable (RJ45+DB-9) with a standard Cisco DB-9 connector. This Cisco DB-9 connector can be attached to the RJ45 outputs of the Octal cable on the Cisco TS.

- The **alternative** is a full RJ45 cable that does not require DB-9 connectors.

This is suboptimal for two significant reasons:

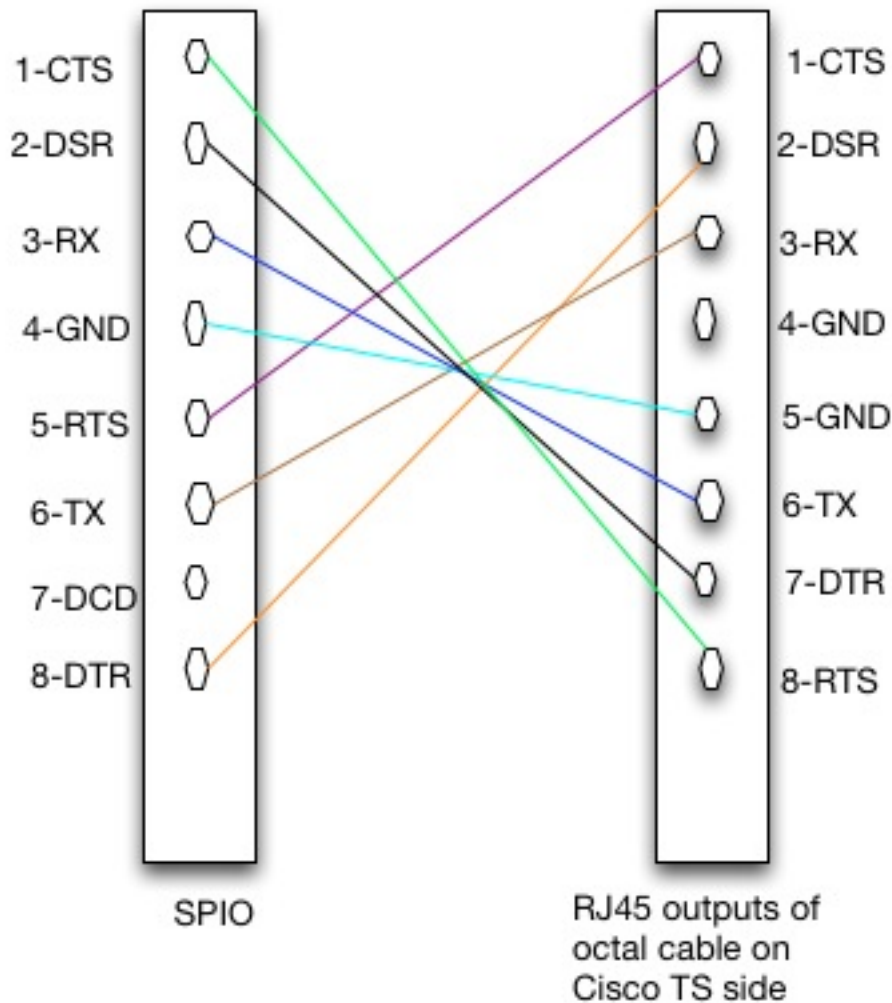
You have to leave one of the grounds on the Cisco TS side unconnected. The cable is asymmetrical so care has to be taken to label the cable correctly.

Here is the pinout and drawing:

```

SPIO side --> TS side
  1----> 8
  2 --> 7
  3 --> 6
  4 --> 5
  5 --> 1
  6 --> 3
  7 --> unconnected
  8 --> 2

```



- Some customers only want to use the **3 signals** that are relevant to the ASR5000: RX, Tx, Ground.

This results in this pinout:

```
SPIO side --> TS side
    3 --> 6
    4 --> 5
    6 --> 3
```

Disadvantages:

The Hardware (HW) signals (CTS) in **show port datalink 24/3 counters** always show as Inactive. It is an asymmetrical cable. One of the grounds of the Cisco TS is unconnected.

Configuration of Cisco TS

In order to match the default SPIO configuration, this configuration must be applied on a Cisco TS:

```
line 0/1/0 0/1/7
```

```
exec-timeout 0 0
no exec
transport input all
stopbits 1
speed 115200
```

This configuration ensures that:

- RS232 control is disabled (so DTR is raised at all times).
- Hardware flow control is disabled (so the CTS is raised at all times).

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.