

# VBR–NRT ATM Traffic Shaping Limitations on Cisco 3810 and Cisco 2600 Series Routers Using Software SAR

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## Introduction

This document explains how to configure Cisco 3810 and 2600 series routers for ATM traffic shaping with use of software segmentation and reassembly (SAR).

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

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

### Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

## Background Information

When you configure the Cisco 3810 and 2600 routers for ATM traffic shaping with software SAR, be aware of an important limitation. The variable bit rate–nonreal time (VBR–NRT) peak cell rate (PCR) value is always the line rate over an integer. The line rate is equal to 1920 for E1, or 1536 for T1. If you configure this differently, the Cisco IOS® Software rounds the PCR to an acceptable value.

**Note:** No formula restricts the sustainable cell rate (SCR) and maximum burst size (MBS).

# Set the PCR Value

Set the ATM PCR according to this formula:

$$\text{PCR} = \text{Line Rate} / n$$

In other words, the PCR equals the line rate divided by n, where:

- n equals any integer, such as 1, 2, 3, 4, 5, and so on
- the line rate is 1920 for E1 or 1536 for T1

For example, possible PCR values for T1 are 1536, 768, or 512.

## Configuration

```
interface ATM0.1 point-to-point
description LAB ROUTER
bandwidth 256
ip address 11.39.18.249 255.255.255.252
pvc 73/33
    vbr-nrt 512 512
    oam-pvc manage
    protocol ip inarp
```

## Verification

```
Router# show atm pvc 73/33
ATM0.1: VCD: 1, VPI: 73, VCI: 33
VBR-NRT, PeakRate: 512, Average Rate: 512, Burst Cells: 0
AAL5-LLC/SNAP, etype:0x0, Flags: 0x20, VCmode: 0x0
OAM frequency: 10 second(s), OAM retry frequency: 1 second(s), OAM retry frequency:
1 second(s)
OAM up retry count: 3, OAM down retry count: 5
OAM Loopback status: OAM Received
OAM VC state: Verified
ILMI VC state: Not Managed
VC is managed by OAM.
InARP frequency: 15 minute(s)
InPkts: 608789, OutPkts: 612122, InBytes: 31658148, OutBytes: 31751480
InPRoc: 20, OutPRoc: 27
InFast: 0, OutFast: 0, InAS: 0, OutAS: 0
CrcErrors: 0, SarTimeOuts: 0, OverSizedSDUs: 0, LengthViolation: 0, CPIErrors: 0
OAM cells received: 608769
F5 InEndloop: 608769, F5 InSegloop: 0, F5 InAIS: 0, F5 InRDI: 0
F4 InEndloop: 0, F4 InSegloop: 0, F4 InAIS: 0, F4 InRDI: 0
OAM cells sent: 956860
F5 OutEndloop: 956860, F5 OutSegloop: 0, F5 OutRDI: 0
F4 OutEndloop: 0, F4 OutSegloop: 0, F4 OutRDI: 0
OAM cell drops: 0
Compress: Disabled
Status: UP
```

## Cisco IOS Software Releases

The problems that this restriction causes depend on the version of Cisco IOS Software that you run.

This defect has Cisco bug ID CSCdm50432 ( registered customers only ) .

## Cisco IOS Software Releases 12.0(6) and Later

If you do not follow the guidelines in the section Set the PCR Value and you run Cisco IOS Software Release 12.0(6) or later, the controller picks the next available **lower** value instead.

For example, if you have configured the PCR for T1 as 900, the controller sets the working PCR to 768.

## Releases Earlier Than Cisco IOS Software Release 12.0(6)

If you run a release earlier than Cisco IOS Software Release 12.0(6) and you do not follow the guidelines in the section Set the PCR Value, the controller picks the next available **higher** value instead.

This action can oversubscribe the traffic policing at the intermediate ATM switches.

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## Related Information

- [Overview of the Cisco MC3810 Series](#)
- [Cisco MC3810 Access Concentrators](#)
- [ATM Software Segmentation and Reassembly \(SAR\)](#)
- [ATM Technical Support](#)
- [Technical Support & Documentation – Cisco Systems](#)

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