

# Microsoft Windows 2000 PCs with MPPP Connections Experience Low Throughput

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## Introduction

This document explains how to resolve low throughput on Microsoft Windows 2000 PCs that have Multilink Point-to-Point Protocol (MPPP) connections.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

The information in this document is based on these software and hardware versions:

- Cisco AS5300 Access Server
- Cisco IOS® Software Release 12.0(7)T

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.

### Conventions

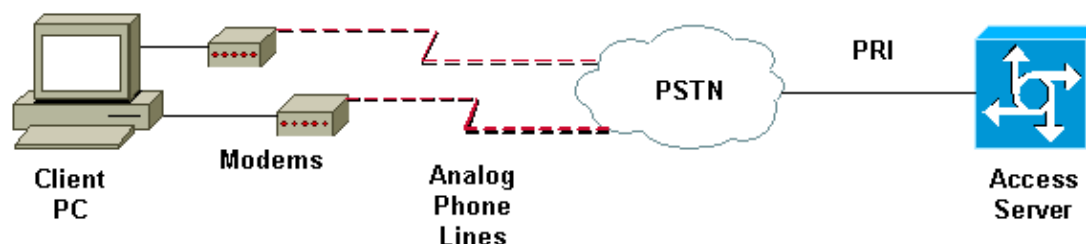
For more information on document conventions, refer to the Cisco Technical Tips Conventions.

## Problem

A Microsoft Windows 2000 PC with multiple modems using MPPP to connect to the provider experiences low throughput, or cannot pass traffic across the combined link. For example, a Windows PC with two modems using MPPP to dial into the provider has an effective throughput that is lower than it would be with one connection to the provider. If each modem trains up at 45kbps, then one would expect the effective throughput to be 90kbps, but this is often not the case.

## Solution

Low throughput occurs due to a Point-to-Point Protocol (PPP) multilink fragmentation problem. Enabling fragmentation reduces the delay latency among bundle links, but adds some load to the CPU. However, when you implement Microsoft MPPP, disabling fragmentation results in better throughput. Use the **no ppp multilink fragmentation** command to disable multilink fragmentation on the interface virtual template for multilink connection.



The section of configuration below shows how to disable multilink fragmentation:

```
multilink virtual-template 1

!--- use virtual-template 1 for multilink connections

interface Virtual-Template1
description Template for Async Multilink Users
ip unnumbered Loopback0
no ip directed-broadcast
peer default ip address pool addr-pool
ppp authentication chap
no ppp multilink fragmentation

!--- disables fragmentation for multilink ppp connections

ppp multilink
```

Refer to Async MPPP Dialup from Microsoft Windows Clients for more detailed information on configuring your router to accept MPPP calls.

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## Related Information

- [Async MPPP Dialup from Microsoft Windows Clients](#)
- [Troubleshooting Async MPPP Operations](#)
- [Router-to-Router Async MPPP](#)
- [Technical Support – Cisco Systems](#)

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