



# RADIUS

remote authentication dial in user service

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## About the Tutorial

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Radius is a protocol for carrying information related to authentication, authorization, and configuration between a Network Access Server (NAS) that desires to authenticate its links and a shared Authentication Server.

This tutorial starts off with an overview of Radius followed by its features, operations, packet format, and attributes. Subsequently, the tutorial provides a few examples of Radius request and response, and terminates with a brief introduction to Diameter, a planned replacement of Radius.

## Audience

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This is an introductory tutorial designed for beginners to help them understand the basics of Radius.

## Prerequisites

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There are no prerequisites as such, however it would help if you have a basic understanding of client/server environment.

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# 1. RADIUS — AAA AND NAS

Before you start learning about Radius, it is important that you understand:

- What is AAA?
- What is NAS?

So let us first have a basic idea about these two topics.

## What is AAA?

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AAA stands for Authentication, Authorization, and Accounting.

### Authentication

- Refers to confirmation that a user who is requesting a service is a valid user.
- Accomplished via the presentation of an identity and credentials.
- Examples of credentials include passwords, one-time tokens, digital certificates, and phone numbers (calling/called).

### Authorization

- Refers to the granting of specific types of service (including "no service") to the users based on their authentication.
- May be based on restrictions, for example, time-of-day restrictions, or physical location restrictions, or restrictions against multiple logins by the same user.
- Examples of services include IP address filtering, address assignment, route assignment, encryption, QoS/differential services, bandwidth control/traffic management, etc.

### Accounting

- Refers to the tracking of the consumption of network resources by users.
- Typical information that is gathered in accounting include the identity of the user, the nature of the service delivered, when the service began, and when it ended.
- May be used for management, planning, billing, etc.

AAA server provides all the above services to its clients.

## AAA Protocols

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Radius is an AAA protocol for applications such as Network Access or IP Mobility. Besides Radius, we have the following protocols in AAA:



## Terminal Access Controller Access Control System (TACACS)

TACACS is a remote authentication protocol that is used to communicate with an authentication server commonly used in Unix networks. TACACS allows a remote access server to communicate with an authentication server in order to determine if the user has access to the network.

## TACACS+

TACACS+ provides access control for routers, network access servers, and other networked computing devices via one or more centralized servers. It uses TCP and provides separate authentication, authorization, and accounting services. It works on port 49.

## DIAMETER

Diameter is a planned replacement of Radius.

## What is Network Access Server?

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The Network Access Server (NAS) is a service element that clients dial in order to get access to the network. An NAS is a device having interfaces both to the backbone and to the POTS or ISDN, and receives calls from hosts that want to access the backbone by dialup services. NAS is located at an Internet provider's point of presence to provide Internet access to its customers.

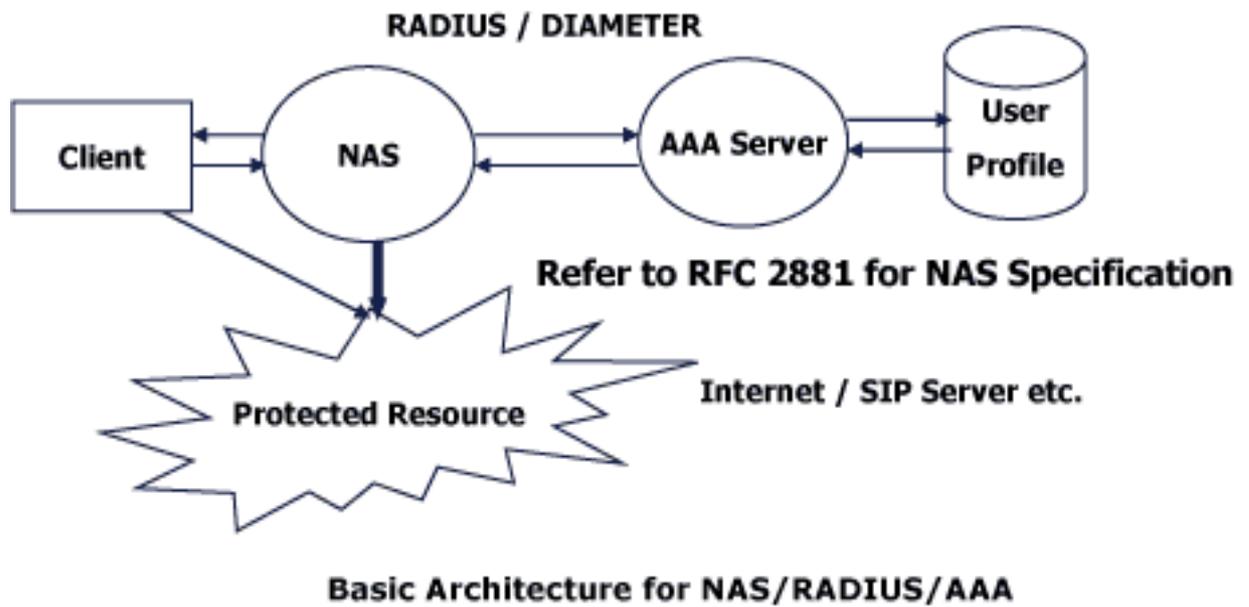
A Network Access Server is:

- A single point of access to a remote resource.
- A Remote Access Server, because it allows remote access to a network.
- An Initial Entry Point to a network.
- A Gateway to guard to protected resource.

Examples include:

- Internet Access Verification using User ID and Password.
- VoIP, FoIP, and VMoIP require a valid Phone Number or IP Address.
- Telephone Prepaid Card uses Prepaid Card Number.

The following figure shows a basic architecture of Radius.



End of ebook preview

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