INTRODUCTION TO CACTI:

Cacti কী?

- Cacti হলো **RRDTool-based graphing & monitoring software**
- SNMP ব্যবহার করে ডিভাইস থেকে ডেটা সংগ্রহ করে
- খুব সুন্দর **customizable graphs** তৈরি করতে পারে
- Templates ব্যবহার করে দ্রুত ডিভাইস যোগ করা যায়
- Web-based interface, lightweight & simple

কেন Cacti ব্যবহার করবেন?

- **Lightweight** — কম রিসোর্সে চলে
- **Easy Graphing System** — Beginnerদের জন্য simple
- **RRDTool Integration** — Graph তৈরি খুব powerful
- **Device & Interface Graphing** — Bandwidth monitoring এ খুব ভালো
- **Templates Available** — MikroTik, Cisco, Linux সাপোর্ট
- **Open-source & Free**

Cacti Architecture

- **Web UI (PHP):** Graph, templates, devices manage
- **Poller:** SNMP দিয়ে data collect করে
- **RRDTool:** Graph store এবং draw করে
- **Database:** device info, templates, data sources
- **SNMP-enabled Devices:** routers, switches, servers

Basic Concepts (Beginner-Friendly)

- **Device:** মনিটর করা router/switch/server
- **Data Source:** কোন ডেটা collect হবে (traffic, CPU)
- **Graph:** visual output (bandwidth graph)
- **Template:** pre-built device profile
- **Poller:** প্রতি 5 মিনিটে data update

System Requirements

Hardware Requirements:

- CPU: 1–2 core
- RAM: 1–2GB
- Disk: 5–20GB (RRD files grow slowly)

Software Requirements:

- Ubuntu/Debian recommended
- Apache or Nginx
- PHP 7.2+
- MySQL/MariaDB
- RRDTool
- SNMP tools package

Installation Overview (High-Level Steps)

1. Ubuntu update এবং required packages install
2. Apache + PHP + MariaDB install
3. SNMP & RRDTool install
4. Cacti package install or tarball download
5. Database import + config update
6. Web installer run করুন
7. Poller cron job সেট করুন

SNMP Configuration (Target Device)

Router/Switch/Linux server এ:

1. SNMP enable
2. Community string (public / custom) সেট করুন
3. UDP port 161 allow করুন
4. Cacti server থেকে SNMP walk test
5. Device discover হবে

Adding Devices in Cacti (Step-by-Step)

1. Web UI → **Devices**
2. **Add** এ ক্লিক
3. IP address দিন
4. SNMP community দিন
5. Template select করুন (যেমন Cisco, Linux, etc.)
6. Save করে **Create Graphs for this Host** ক্লিক
7. Traffic/CPU/Memory graphs add করুন
8. Graph Trees-এ arrange করুন

Cacti Installation and Configuration on Ubuntu 24.04

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PART 1 — Update System

sudo apt update -y

sudo apt upgrade -y

PART 2 — Install Required Packages

Install Apache + PHP 8.3 + Extensions

sudo apt install apache2 \

php php-mysql php-snmp php-xml php-gd php-mbstring php-json php-cli php-intl php-zip \

libapache2-mod-php -y

sudo apt install -y php-gmp php-ldap

Install MariaDB Server

sudo apt install mariadb-server mariadb-client -y

Install SNMP + RRDTool

sudo apt install snmp snmpd rrdtool librrds-perl -y

PART 3 — Configure MariaDB

Secure MariaDB

sudo mariadb-secure-installation

Choose:

Remove anonymous users → y

Disallow remote root login → y

Remove test DB → y

Reload privileges → y

Create Cacti Database & User

Login:

sudo mysql -u root

Create DB + User:

```
CREATE DATABASE cacti DEFAULT CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_ci;
GRANT ALL PRIVILEGES ON cacti.* TO 'cactiuser'@'localhost' IDENTIFIED BY 'Cacti@123';
FLUSH PRIVILEGES;
EXIT;
```

PART 4 — Configure PHP for Cacti

Edit Apache PHP settings

sudo nano /etc/php/8.3/apache2/php.ini

Change:

```
memory_limit = 512M
max_execution_time = 300
date.timezone = Asia/Dhaka
```

Edit CLI PHP settings

sudo nano /etc/php/8.3/cli/php.ini

Same settings:

memory_limit = 512M

max_execution_time = 300

date.timezone = Asia/Dhaka

Restart Apache:

sudo systemctl restart apache2

PART 5 — Download & Install Cacti

Go to /var/www:

cd /var/www

sudo wget https://www.cacti.net/downloads/cacti-latest.tar.gz

Extract:

sudo tar -zxvf cacti-latest.tar.gz

sudo mv cacti-*/ cacti

Assign ownership:

sudo chown -R www-data:www-data /var/www/cacti

PART 6 — Import Cacti Default Database

sudo mysql -u root cacti < /var/www/cacti/cacti.sql

PART 7 — Configure Cacti Database Settings

cd /var/www/cacti/include/

sudo cp config.php.dist config.php

sudo nano /var/www/cacti/include/config.php

Update:

$database_type = "mysql";

$database_default = "cacti";

$database_hostname = "localhost";

$database_username = "cactiuser";

$database_password = "Cacti@123";

$database_port = "3306";

PART 8 — Configure Apache Virtual Host

sudo nano /etc/apache2/sites-available/cacti.conf

Paste:

```
Alias /cacti /var/www/cacti
<Directory /var/www/cacti>
   AllowOverride All
   Require all granted
</Directory>
```

Enable config:

sudo a2ensite cacti.conf

sudo systemctl reload apache2

Enable Apache rewrite:

sudo a2enmod rewrite

sudo systemctl restart apache2

PART 10 — Setup Cron Job for Polling

sudo nano /etc/cron.d/cacti

Add:

*/5 * * * * www-data php /var/www/cacti/poller.php > /dev/null 2>&1

Restart cron:

sudo systemctl restart cron

PART 11 — MariaDB Optimization for Cacti

Edit MySQL config file:

sudo nano /etc/mysql/mariadb.conf.d/50-server.cnf

Under [mysqld] add:

character-set-server = utf8mb4

collation-server = utf8mb4_unicode_ci

max_heap_table_size = 256M

tmp_table_size = 128M

join_buffer_size = 128M

innodb_buffer_pool_size = 2G

innodb_flush_log_at_timeout = 3

innodb_read_io_threads = 10

innodb_write_io_threads = 10

Restart MariaDB:

sudo systemctl restart mariadb

Populate TimeZone Database

sudo mysql_tzinfo_to_sql /usr/share/zoneinfo | sudo mysql -u root -p mysql

Grant Cacti user access

```
sudo mysql -u root -p
GRANT SELECT ON mysql.time_zone_name TO 'cactiuser'@'localhost';
FLUSH PRIVILEGES;
EXIT;
```

Verify population

```
mysql -u root -p -e "USE mysql; SELECT COUNT(*) FROM time_zone_name;"
```

- Should return a number > 0.

Restart MariaDB

```
sudo systemctl restart mysql
```

Access Cacti Web Installer

- Open in browser: http://YOUR-SERVER-IP/cacti

Default login:

Username: admin

Password: admin