Data For the Project (9/30/25)

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1) Describe the data you will be using for your project.

1. Types of Data Collected:

Our Zabbix setup will collect system performance metrics from monitored servers and services. The primary categories of data include:

- **CPU Usage (%)** – tracks processor load over time.
- **Memory Utilization** – measures RAM consumption to detect potential saturation.
- **Disk Usage** – monitors storage space, read/write activity, and forecasts disk exhaustion.
- **Network Traffic** – captures inbound/outbound data transfer and packet rates.

These metrics are collected as items within Zabbix and form the foundation for alerts, dashboards, and predictive analysis.

2. Data Storage and History:

Zabbix maintains two levels of historical data in its database (PostgreSQL/MySQL):

- **Raw History Data:** High-resolution values (seconds/minutes) used for short-term monitoring.
- **Trend Data:** Aggregated hourly/daily summaries used for long-term analysis and forecasting.

This dual structure allows the system to support both real-time alerts and predictive insights.

3. Data Processing in Zabbix:

- **Triggers:** Logical conditions applied to items.
- **Events:** Logged when triggers change state.
- **Alerts:** Sent to administrators via email or other integrations.
- **Forecasting:** Zabbix can apply trend functions to estimate future resource exhaustion, such as predicting when a disk will reach full capacity.

4. Data Usage in the Dashboard:

The collected and processed data will be visualized on a custom dashboard:

- **Graphs:** CPU, memory, disk, and network usage trends over time.

- **Status Widgets:** Current health of each monitored host.
- **Predictive Panels:** Forecasted dates when thresholds will be exceeded.
- **Alerts Overview:** Active issues requiring administrator response.

This enables both reactive monitoring (responding to issues) and proactive monitoring.

5. Data Relevance to Project Goals:

By using Zabbix to collect, process, and visualize this data, the project demonstrates how predictive monitoring reduces downtime and improves infrastructure reliability. The dataset provides actionable insights for system administrators.

- **Enhance Monitoring**

Alerts that allow for early intervention before failing services.

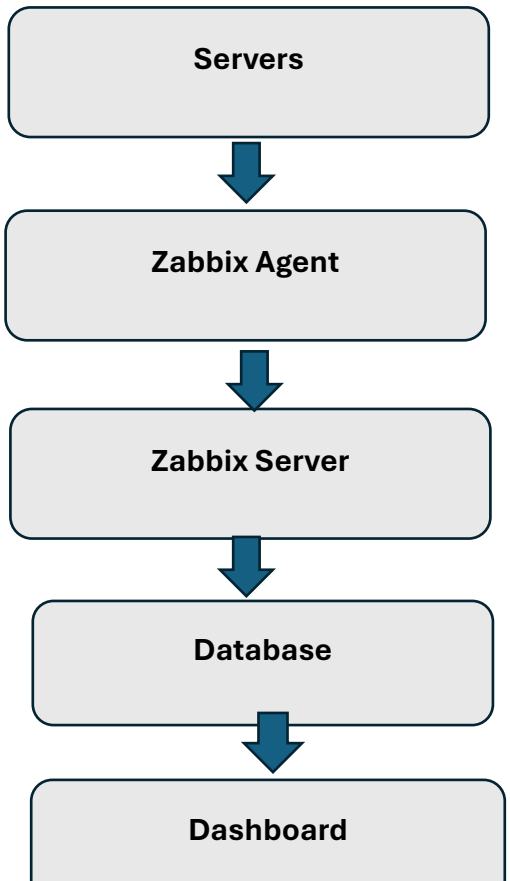
- **Reduce Downtime**

Early detection to prevent failing services and abnormal activities on the network.

- **Improve infrastructure reliability**

Having regular reports to enable a plan update

Data Flow in Zabbix Monitoring system:



- **Servers (Data Source):** Generate raw performance data from CPU, memory, disk, network.
- **Zabbix Agent (Data Collection):** Collects system metrics in real time.
- **Zabbix Server (Data Processing):** Processes the data, applies thresholds, and triggers alerts if necessary.
- **Database (Data Storage):** Stores both real-time and historical performance data.
- **Dashboard (Visualization & Alerts):** Provides real-time graphs, trends, and customizable dashboards for administrators.

2) Upload or send the link where your data is stored (if applicable).

We will be using Zabbix to collect and process the data within the program; however, we do not have specific data source links available at this time. The information we are inputting into Zabbix when creating our dashboard may also change as we progress further into the project.