A Guide to the ZFS ARC Stats Viewer

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1. Introduction

This guide explains how to read and interpret the data in the ZFS ARC Stats Viewer. The application is split into two main views: the **Stats Table**, which shows hundreds of detailed statistics, and the **Hits & Misses Chart**, which provides a real-time visual summary of your cache performance.

Understanding these views will help you quickly assess the health and efficiency of your system’s ZFS Adaptive Replacement Cache (ARC).

2. The "Hits & Misses Chart" View

The chart is designed to visualize your cache’s effectiveness over time and is the best tool for understanding performance at a glance.

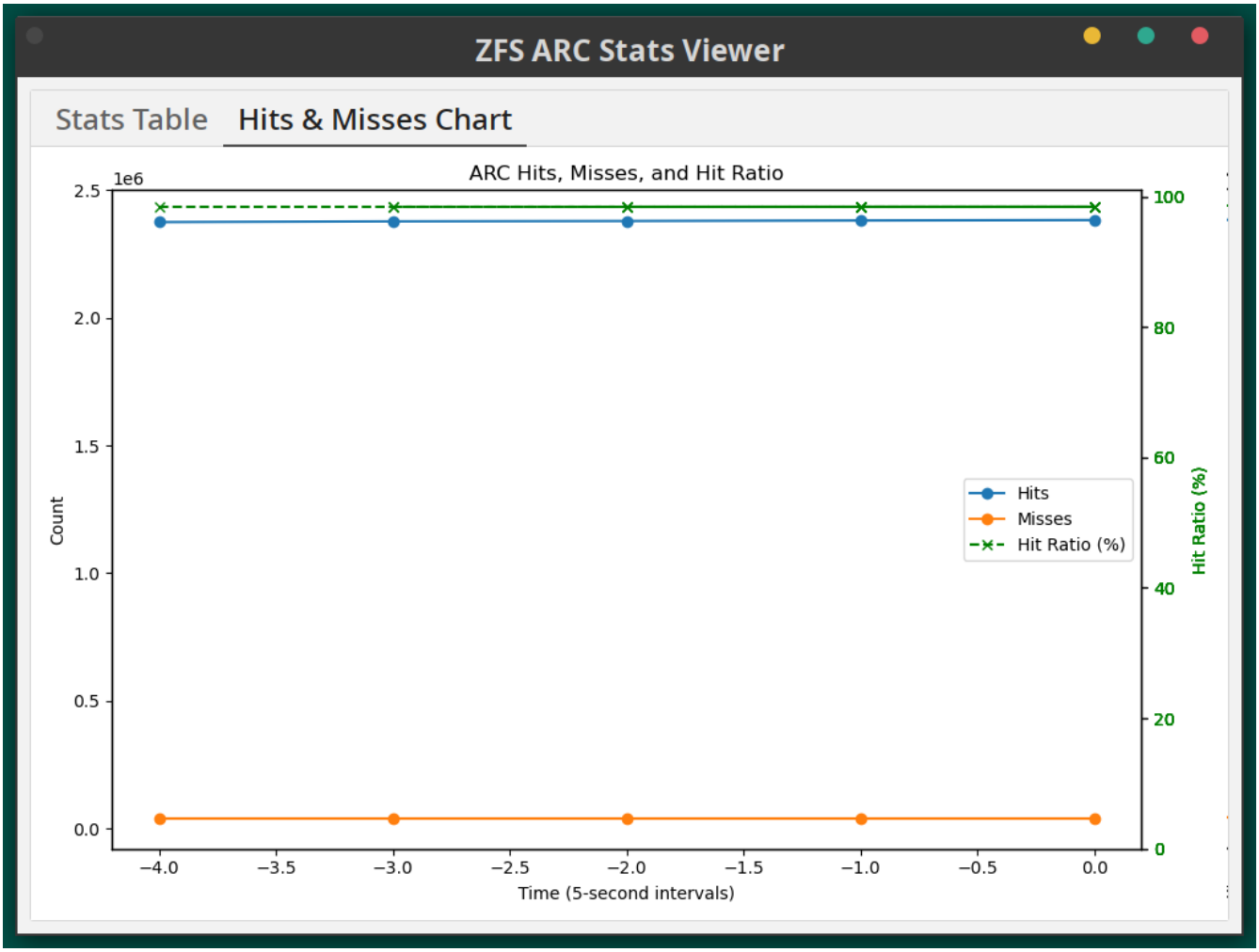

Figure 1. Image 1: The "Hits & Misses Chart" tab

2.1. Understanding the Chart's Components

The chart uses a dual-axis system to plot three key metrics on the same timeline.

The Axes (The Scales)

- **Horizontal Axis (Time):** This bottom axis represents the passage of time. The rightmost point, `0.0`, is the most recent measurement. Each step to the left (`-1.0`, `-2.0`, etc.) represents a data snapshot from a previous 5-second interval.
- **Left Vertical Axis (Count):** This axis provides the scale for raw event counts. It should only be used to measure the values for the "Hits" and "Misses" data lines.
- **Right Vertical Axis (Hit Ratio %):** This axis provides the scale for the cache hit ratio, represented as a percentage from 0% to 100%. It should only be used to measure the "Hit Ratio" data line.

The Data Lines

- **Hits Line (Blue):** This line tracks "cache hits." A hit occurs when the system needs data and finds it in the high-speed memory cache (the ARC).
- **Misses Line (Orange):** This line tracks "cache misses." A miss occurs when the system cannot find the needed data in the cache and must retrieve it from the much slower primary storage drives.

- **Hit Ratio (%) Line (Green):** This line tracks the overall cache efficiency. It is calculated as `(Hits / (Hits + Misses)) * 100`.

2.2. Interpreting Chart Performance

By observing the relationship between these three lines, you can diagnose the performance of your ZFS cache.

A Healthy System

In a well-performing system, you will see a high and stable **Hit Ratio** (the green line), ideally remaining above 95%. The **Hits** line (blue) will be significantly higher than the **Misses** line (orange). The chart in Image 1 above is a perfect example of a healthy system.

Signs of Potential Issues

You should investigate your system's configuration or workload if you observe a falling **Hit Ratio** and a rising **Misses** line. This often indicates that the ARC is too small for the system's workload.

3. The "Stats Table" and Summary View

While the chart is excellent for viewing trends, the **Stats Table** tab provides the precise numerical values for the most recent data point.

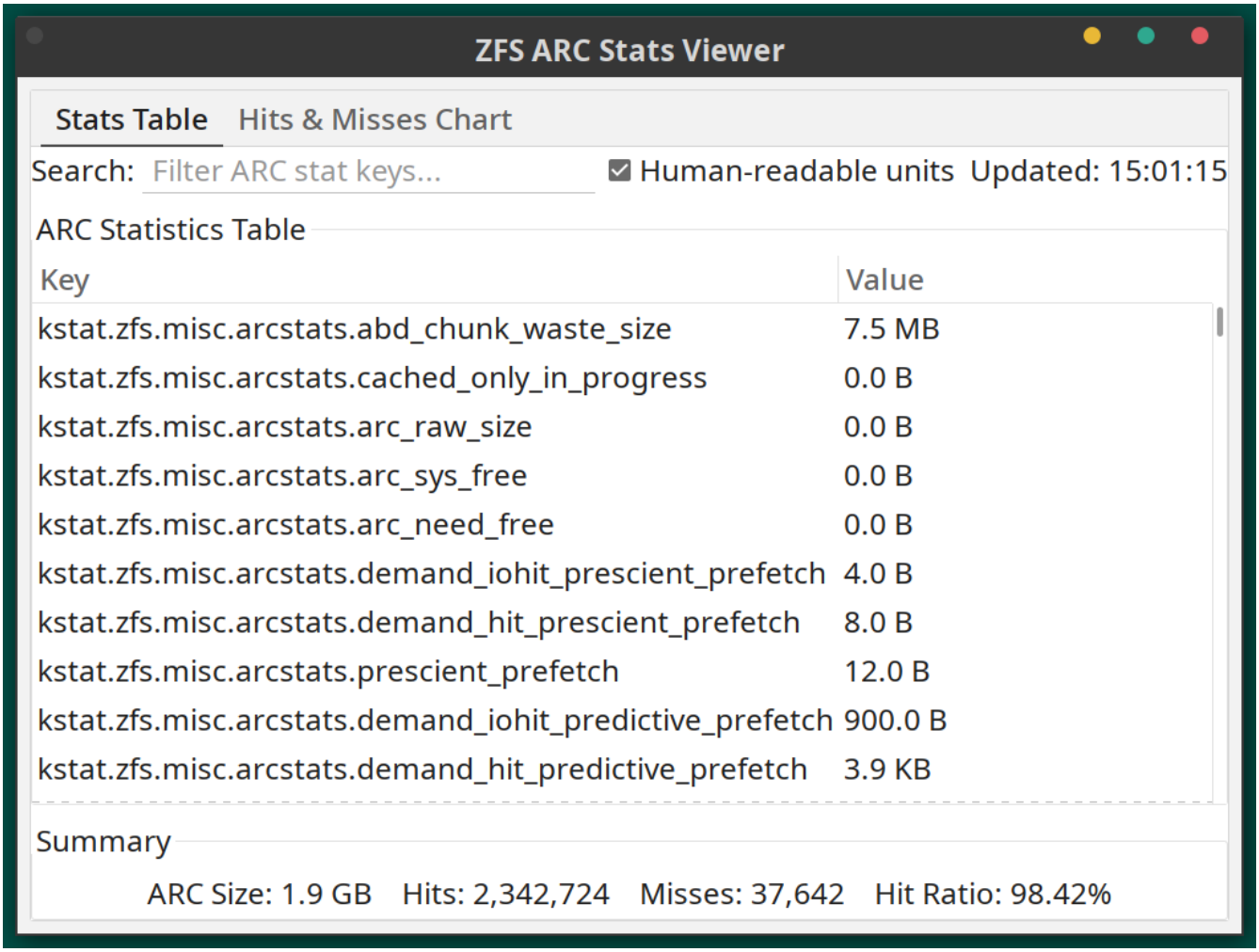

Figure 2. Image 2: The "Stats Table" tab with the Summary section

The **Summary** bar at the bottom of this view is particularly useful. It gives you the exact figures that correspond to the `0.0` point on the chart:

- **ARC Size:** The total current size of the memory cache.
- **Hits:** The total accumulated cache hits.
- **Misses:** The total accumulated cache misses.
- **Hit Ratio:** The precise, up-to-the-second hit ratio percentage.

Use this view when you need the exact numbers for your analysis.