SOLUTIONS FLYER

ALTAIR MISTRAL™ – LIVE HPC SYSTEM TELEMETRY AND I/O MONITORING

Altair Mistral™ is the leading application monitoring tool for HPC and scientific computing. It's lightweight enough to run in production but flexible enough to ensure that you get the most from on-premises HPC and have the information to manage your hybrid cloud. It monitors I/O, CPU, and memory, quickly locating rogue jobs and storage bottlenecks and keeping track of what's running on clusters day-to-day.

As distributed systems and compute clusters become more complex, the need for monitoring is increasingly important. To run compute efficiently and to forecast and design for the future, it's important to have visibility into what is being run today. By allowing you to control information gathered, Mistral ensures that you know about important events without being overwhelmed by too much data. Mistral is a storage-agnostic solution for monitoring I/O bandwidth, metadata, I/O performance, CPU, and memory.

Managing Workloads With Great Analytics

I/O profiling is about understanding the way applications access data:

Performance – Understanding I/O patterns for debugging, resource sharing, and tuning
Portability – Understanding application dependencies for migration and containerization
Planning – Understanding what you are using today so you can plan for tomorrow as well as deploying system-wide best practices such as user education and chargeback

Monitoring I/O means you can make better decisions about how to deploy applications both on-premises and in the cloud.

Mistral Delivers Unrivaled Insight

Mistral live-streams read, write, and metadata use as well as storage performance for every job and mount point or file system.

- Lightweight footprint for production monitoring
- Per-job I/O and compute metrics
- System- and storage-agnostic
- Understand storage requirements for procurement and planning

> By using Mistral, we have been able to reduce the impact of noisy neighbours, reduce runtime and identify applications with bad I/O.
>
> Frederik Ferner, Senior System Administrator, Diamond Light Source

Learn more at
altair.com/mistral

Operations Telemetry With Per-job Metrics and Storage Performance

Find rogue jobs and bottlenecks quickly with per-job I/O, CPU, and memory data. Data streams to a live dashboard so you can see what is happening on your system now as well as look back at historical trends. Track normal usage and file system performance for planning and tuning. Mistral shows I/O per job, user group, host, and mount point. It tracks:

- Read(), write(), and metadata operations such as open() and delete()
- File system performance looking at the time spent in I/O for each application and the performance delivered by the file system
- Total, mean, and max time spent doing I/O per job
- CPU and memory utilization

Finding Noisy Neighbors that Overload Shared Storage

In HPC systems it is easy for a single user or application to overload shared storage with bad I/O. Often applications are tested on one machine, but the I/O patterns don't scale well. This can harm file system performance and can slow down the HPC cluster for all users. With Mistral is is easy to find these noisy-neighbor applications. It will show file system performance dropping and will also show the overall load on the file system and which jobs are contributing to it. Within seconds you can identify the user, job, and host that is causing the problem and can act quickly.

Hybrid Cloud Telemetry

Mistral can form a common language across local and cloud compute environments. With the right monitoring solution you can make better decisions about cloud scheduling and deployment.

Deploying Mistral in Your HPC Environment

There is no need to recompile applications or install kernel modules because Mistral collects data in user space with no modification to your applications or machines. It collects data on a per-job and per-mount-point basis and works automatically with different file systems, so each file system in your HPC cluster will have separate metrics. Mistral is usually integrated with the scheduler and is injected into each job through a prologue or starter method.

Mistral comes with sample integration for Altair® Grid Engine®, Altair Accelerator™, and Altair® PBS Professional®, as well as third-party workload managers. You can also run Mistral on login nodes and other machines without a scheduler. It is scheduler- and system-agnostic so you can have one solution for both on-premises and cloud analytics, and it integrates with existing monitoring data pipelines so you can combine Mistral data with the metrics from your scheduler or file system. Mistral works out-of-the-box with Elastic Search, InfluxBD, Grafana, and Splunk. Through an integration with FluentBit, it can push data to a wide range of databases and messaging systems.

METRICS

FOR EACH JOB AND MOUNT POINT

INSIGHT

FOR SMART PLANNING

SAVINGS

BY USING THE RIGHT RESOURCES