NodeSource for High-Performance Applications

Common Industries:

Medical sciences, aerospace, video editing, online transaction processing

Applications with sustained high-volume workloads, various transaction sizes, and other I/O-intensive environments are prevalent across a broad swath of industries and businesses. Medical sciences and imaging, aerospace, online transaction processing, weather forecast and simulation, data migration, and video — both on-demand and post-production processing — are just a few examples of the diversity of data- and transaction-heavy use cases.

These high-performance environments can involve massive or minimal requirements for data storage, but they always have active workloads with either a large number of transactions of various sizes, or a smaller number of transactions that require high bandwidth of many megabytes per second. Optimizing for these varied environments is not straightforward.

Node.js with NodeSource

For many organizations with high-traffic environments, Node.js is tremendously useful — it's ideal for I/O-bound applications due to its single-thread event loop and asynchronous processing. For typical Node.js applications, a majority of processing time is spent waiting for network, file system, and database transactions to complete. Node.js is an elegant solution for handling high request volumes thanks to its asynchronous I/O methods, which allow simultaneous requests to be served during the time it takes for a read/write to complete.

Although Node.js is an excellent technology choice for this use case, there is only so much an application can do under continuous tremendous load, so visibility into the performance and health of these applications is critical. Most high I/O use cases develop scalability issues, so ensuring this visibility is critical to detecting and resolving issues before they cause a major system failure or outage. The solution to scaling gracefully may be to create more instances of an application, distributing across multiple Node.js processes, or other changes to architecture; without insight into the behavior of an application, it's nearly impossible for teams to identify and implement the best case-specific solution.

NodeSource provides visibility into application behavior and overall system health with performance metrics not captured by the open source Node.js runtime, offering your team an unparalleled view of how code behaves in a production environment. By capturing detailed Node.js-specific metrics, the N|Solid platform can help you find the root cause of performance issues, identify what broke, and where to go within the code to fix it — saving days or months of work and drastically improving time to resolution.

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N|Solid for High - I/O

N|Solid provides critical insight in cases where performance is critical by providing metrics on event loop lag, and task-per-second performance monitoring. It also provides critical metrics on open and active handlers to inform when and how to scale out infrastructure or services, pinpoint memory leakages, and when to free up resources.

N|Solid removes common friction points and makes it safe and simple to monitor and protect production applications. Make rapid incremental changes, debug issues faster, and make better architectural decisions as code continues to change. By using the N|Solid in high-volume environments, teams can stay ahead of potential scalability problems, memory, and resource management issues, ultimately driving savings on infrastructure costs as well as potential outages in production.

Maximizing the value of Node.js

Applications performance monitoring tools can provide insight into services, applications and infrastructure, but at a very high level, and without visibility into the inner workings of Node.js. Because the N|Solid runtime agent lives natively at the core of your application, it can capture highly detailed, Node.js-specific data with a negligible impact on performance. Watching from the inside out also delivers more metrics because it operates inside your applications.

Rigorous development processes help, as does testing in a staging environment, but production is where the heavy loads, unique use cases, and long tail anomalies occur. Visibility, insight, and post-mortem debuggability are essential in triaging and resolving problems quickly and effectively. NodeSource saves time, money, and resources in finding and fixing bugs that, if left unresolved, could threaten the success of legacy migration projects.

Key Considerations	How NodeSource Provides Value
Protecting critical data and services	N|Solid ships with configurable security policies to help harden your applications. Always-on vulnerability scanning makes you aware of emerging risks in real time, not just at runtime.
Fast and reliable performance for end users	N|Solid provides tools for profiling application performance and supports workflows that give the entire team insight into behavior.
Relevant, Node.js-specific metrics	The N|Solid runtime agent lives natively at the application core, where it captures highly detailed, Node.js-specific metrics with greater accuracy than popular APM tools and negligible impact on performance.
Ability to rapidly detect and remediate issues and reduce or eliminate outages	Customizable alerts give your team instant notice when a problem is detected, enabling remediation of issues before they escalate to a full-scale outage and reducing mean time-to-resolution (MTTR).
Increasing innovation velocity to maintain competitive advantage	The NodeSource platform provides a turnkey way to standardize and operationalize Node.js development across multiple teams within your organization.