APPLICATION PERFORMANCE MONITORING FOR WORDPRESS

WHITE PAPER

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INTRODUCING APPLICATION PERFORMANCE MONITORING

New Relic®

Here at WP Engine, we've partnered with New Relic, leaders in Digital Intelligence, to include New Relic APM Pro as part of a new Application Performance solution.

APM gives development and IT operation teams the visibility they need to build and maintain great WordPress digital experiences.

Application Performance is a tool built to help you combat application and website bottlenecks so you can provide an optimized WordPress experience.

Application Performance provides code-level visibility to help teams troubleshoot faster, optimize their WordPress experiences, and increase development agility.

Through real-time data and detailed charts, your development and IT operations team will be able to gain actionable insights at any time through detailed performance metrics and deep root-cause analysis, as well as monitor alerts when a site deviates.

This visibility is key for giving your teams increased agility and productivity. With APM, you can quickly identify the source of the problem, such as issues with themes, plugins, and APIs.

Discover the root cause of site issues by drilling down into slow queries, transaction traces, and errors. It gives your teams the actionable data to pinpoint problems and keep your sites fast and stable, ultimately providing a satisfying user experience.

In addition, you can set a baseline to know when a server is steady and then create alerts if a program goes off track.

You'll be able to attain current and historical information about various performance metrics, including:

- Database query performance
- Web browser rendering performance
- App availability and error analysis
- External services
- And more...

TOUR NEW RELIC® APM

Upon logging into Application Performance, you will see a list of "applications" to choose from, which should all correlate to your account's install names. This list will provide you with a quick high-level info overview at a glance about all of your websites.

The table displaying your apps will be color-coded to show overall performance help based on the thresholds you have set. Red indicates that a critical threshold alert has been violated. You can then hover over the red to determine what the issue could be.

Orange (or yellow) means a warning violation has been set off. Green indicates that there are no warning or violation processes that have been alarmed.

You also have the ability to sort column headers by:

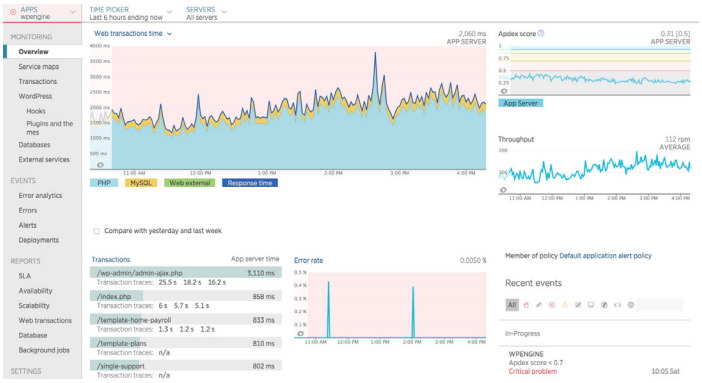
- End user response time
- Page views per minute

- App server response time
- Throughput requests per minute
- Percentage of errors

Next, choose the install you would like to view.

DASHBOARD OVERVIEW

On the Overview page, you will see a number of graphs with data, similar to the image below.



These are all key performance metrics that allow you to quickly determine the health of your website. You can also drill down into more detail if you need to troubleshoot a performance problem.

Here are some various tools you can find within the Dashboard:

Overall Load Time

At the top left, the largest graph displays the overall load time of the site, sorted by which elements took the longest to load at any given time. Usually you will see PHP taking the majority of the load time, unless your site runs very heavily on custom queries or makes lengthy external calls to other sites.

Apdex score

In the top right corner you will see a graph of your site's Apdex score over the time period selected. This graph shows user satisfaction with the performance of the application or site. In this example, with .5 seconds as a threshold, only about 30 percent of users receive a page in under the threshold time, meaning the Apdex score is low. If you see similar results, this could indicate your Apdex threshold is set too low. Please contact WP Engine Support to edit this threshold if needed.

Throughput

Just under Apdex you will see the Throughput graph, which tracks the number of requests per minute. Often you will observe throughput and load time trending in the same pattern, since the number of concurrent requests can affect the application response time. If this is the case, it could mean your content isn't scaling well with the amount of traffic your site is receiving. For help with scaling your site's content to support more traffic, check out WP Engine's Support Garage article: Improving Scalability with Traffic Spikes.

Transactions

In the lower left corner you will see a Transactions bar graph which lists the slowest transactions, and underneath a list of three transactions for each grouping. You can click any grouping in the list to get a list of transactions for the group, or click the trace time underneath to see the specific transaction.

Error rate

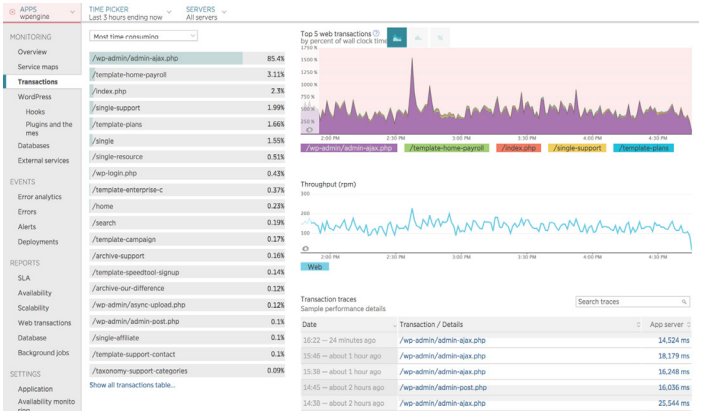
Next to the Transactions bar graph you can find the Error rate, which indicates any PHP Warnings or Fatal errors which have been triggered. Clicking this graph will take you to the Error Analytics tab to investigate your site's errors further.

Recent events

Last, you will find Recent events at the lower right side. Alerts show any warnings or alerts for Apdex scores higher than the set threshold. In this example, since Apdex is set to .5 seconds, the site will show an alert if it hits over 0.7 seconds as an average for over 5 minutes

TRANSACTIONS

In the transactions tab you can find meaningful performance data, including full traces of requests to help pinpoint performance bottlenecks.



Top 5 web transactions

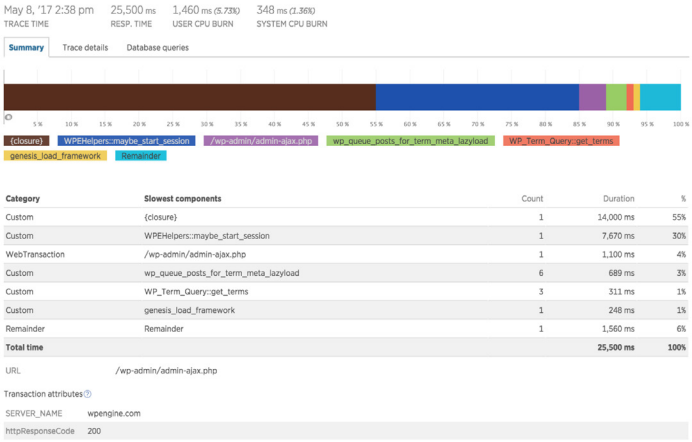
In the top right corner you will find a graph of the Top 5 web transactions, which shows the top web transactions by the time consumed. This graph also takes throughput of requests into account, so if you prefer to see data solely considering the total length of request, change the dropdown menu at the top left to "Slowest average response time." Just under this option you will find the total throughput for all transactions.

List of transaction types

On the left side you will see a list of transaction types, grouped typically by the template used for each page. By default the list will show "Most time consuming" which accounts for frequency and length of time of each request. To see results sorted only by average length of time, change the dropdown menu to "Slowest average response time." Choose any item in this list to view throughput specifically for these transactions, and a breakdown of the components by time consumption.

Transaction traces

On bottom right you will find a list of Transaction traces. Full transaction traces are taken when a request is at least four times the Apdex threshold set for your site. Clicking an option from this list will bring up a bar graph and waterfall view of the calls being made from this transaction, to identify bottlenecks. The slowest areas are highlighted in red on the Trace details tab.

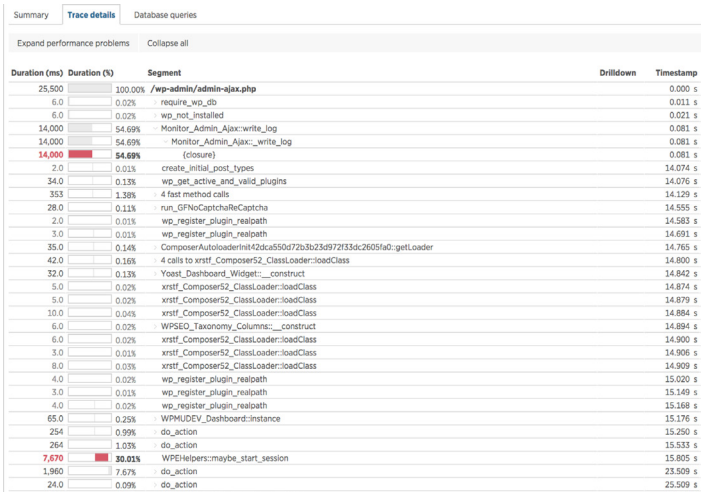


Category	Slowest components	Count	Duration	%
Custom	{closure}	1	14,000 ms	55%
Custom	WPEHelpers::maybe_start_session	1	7,670 ms	30%
WebTransaction	/wp-admin/admin-ajax.php	1	1,100 ms	4%
Custom	wp_queue_posts_for_term_meta_lazyload	6	689 ms	3%
Custom	WP_Term_Query::get_terms	3	311 ms	1%
Custom	genesis_load_framework	1	248 ms	1%
Remainder	Remainder	1	1,560 ms	6%
Total time			**25,500 ms**	**100%**

URL /wp-admin/admin-ajax.php

Transaction attributes

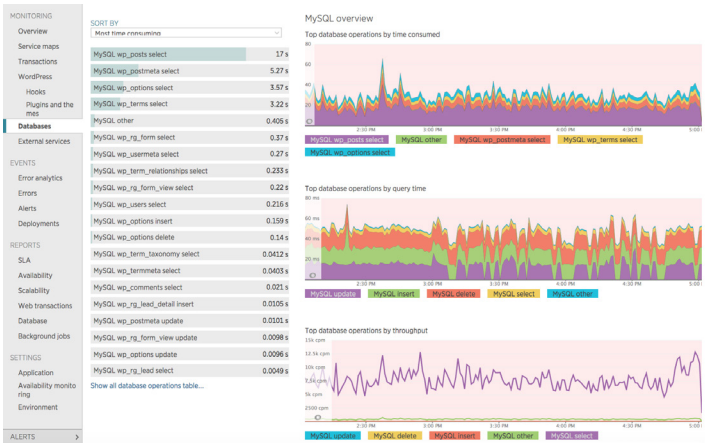
SERVER_NAME	wpengine.com
httpResponseCode	200



Duration (ms)	Duration (%)	Segment	Drilldown	Timestamp
25,500	100.00%	/wp-admin/admin-ajax.php		0.000 s
6.0	0.02%	require_wp_db		0.011 s
6.0	0.02%	wp_not_installed		0.021 s
14,000	54.69%	Monitor_Admin_Ajax::write_log		0.081 s
14,000	54.69%	Monitor_Admin_Ajax::_write_log		0.081 s
14,000	54.69%	{closure}		0.081 s
2.0	0.01%	create_initial_post_types		14.074 s
34.0	0.13%	wp_get_active_and_valid_plugins		14.076 s
353	1.38%	4 fast method calls		14.129 s
28.0	0.11%	run_GFNoCaptchaReCaptcha		14.555 s
2.0	0.01%	wp_register_plugin_realpath		14.583 s
3.0	0.01%	wp_register_plugin_realpath		14.691 s
35.0	0.14%	ComposerAutoloaderInit42dca550d72b3b23d972f33dc2605fa0::getLoader		14.765 s
42.0	0.16%	4 calls to xrstf_Composer52_ClassLoader::loadClass		14.800 s
32.0	0.13%	Yoast_Dashboard_Widget::__construct		14.842 s
5.0	0.02%	xrstf_Composer52_ClassLoader::loadClass		14.874 s
5.0	0.02%	xrstf_Composer52_ClassLoader::loadClass		14.879 s
10.0	0.04%	xrstf_Composer52_ClassLoader::loadClass		14.884 s
6.0	0.02%	WPSEO_Taxonomy_Columns::__construct		14.894 s
6.0	0.02%	xrstf_Composer52_ClassLoader::loadClass		14.900 s
3.0	0.01%	xrstf_Composer52_ClassLoader::loadClass		14.906 s
8.0	0.03%	xrstf_Composer52_ClassLoader::loadClass		14.909 s
4.0	0.02%	wp_register_plugin_realpath		15.020 s
3.0	0.01%	wp_register_plugin_realpath		15.149 s
4.0	0.02%	wp_register_plugin_realpath		15.168 s
65.0	0.25%	WPMUDEV_Dashboard::instance		15.176 s
254	0.99%	do_action		15.250 s
264	1.03%	do_action		15.533 s
7,670	30.01%	WPEHelpers::maybe_start_session		15.805 s
1,960	7.67%	do_action		23.509 s
24.0	0.09%	do_action		25.509 s

DATABASES

In the databases tab you can identify any slow-performing queries, as well as view the number of queries being executed by MySQL or Memcached, and how each is performing.

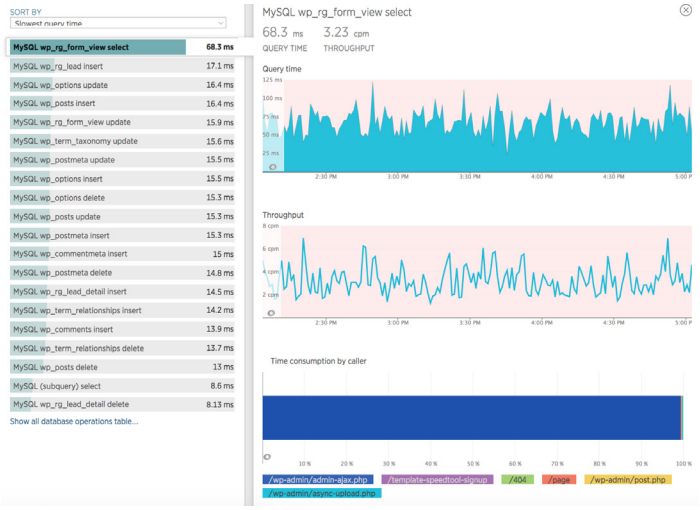


Time and throughput graphs

On the right side of the page you will see a few graphs displaying the time consumed by each type of query, the total database operations sorted by query time, and the throughput of each type of request. The default view shows "Most time consuming" which accounts for throughput as well as time to complete the query. To view only the slowest queries, use the option for "Slowest query time" in the dropdown menu.

Drill Down graphs

Choose any item in the list to see the throughput, average query time, and the template calling this query the most. In this example, we can see the slowest query is being called by the /wp-admin/admin-ajax.php template the most.

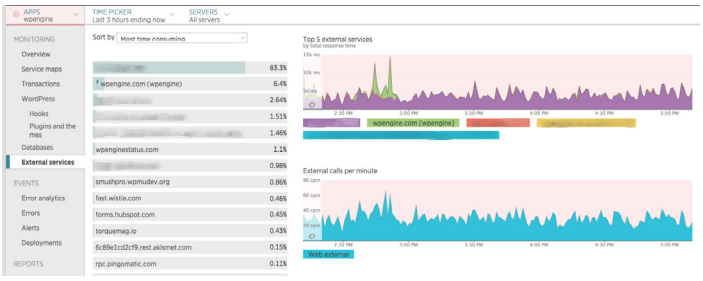


Queries by template

Click the template in the list to see the full transaction trace, or if there are example traces showing at the bottom you may see a stack trace showing where your site's code is calling this query.

EXTERNAL SERVICES

In the External services tab you'll find an overview of the external calls your site is making to other domains or URLs. If you see a large percentage of your graph on the Overview screen being taken by "Web external," this is the tab to focus on



Drill Down by URL

When you select an option from the list at the left, it will further dissect the information into throughput and time per call, as well as which template group makes each external call the most frequently. Click the template group in the bar graph to view full transaction traces from this group.

TOUR NEW RELIC® INSIGHTS

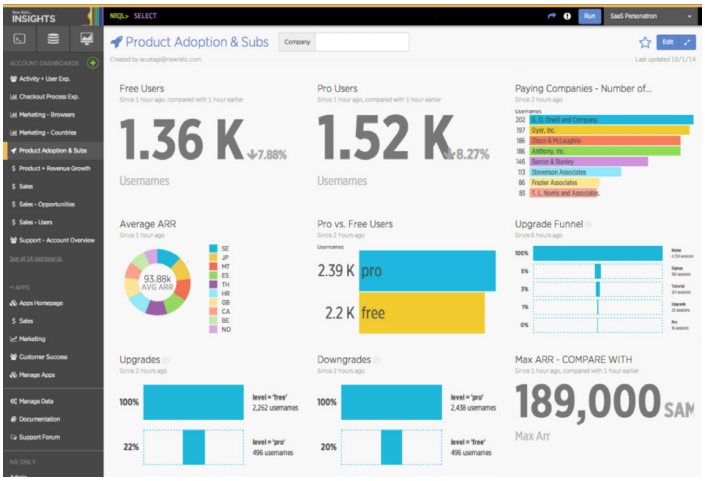
In addition to New Relic APM, your license comes with access to New Relic Insights: a query system for all data stored within New Relic, to build custom reports and dashboards.

NRQL QUERIES

Using New Relic Insights, all your site's data is stored in New Relic's database. You can use their custom query system (NRQL) to query the database and pull custom information for your own reporting. To view sample queries click Query at the top left, then navigate to Overview, Collect, Analyze, Present, or Manage to see example queries you can use to show the data you want.

DASHBOARDS

Once you run a query, you have the option to add the query to a custom dashboard. You can create a new dashboard, or add the query to an existing dashboard to see your site's data in realtime.



DATA EXPLORER

If you have a hard time using the NRQL query tool, you can navigate to the visual Data Explorer, where you can use the dropdown menus to select which fields you want to view and by what time frame. At the top of the screen, NRQL will update to show you the query running with each example, so you can save it for later.

24/7 SUPPORT FROM WP ENGINE

WP Engine is available 24/7 to help with your questions about Performance Monitoring with New Relic. As the Owner of the New Relic license, we can:

- Add users to your account*
- Add or change alerts*
- Change Apdex threshold*
- Offer insights into site performance issues using APM
- Offer resources from New Relic
- General usage questions

* indicates WP Engine Support PIN required

NEW RELIC® RESOURCES

New Relic is a robust performance monitoring tool, and there are many aspects to learn if you are not familiar with the interface. Luckily, their team has provided many resources to help.

COURSES ON LEARN.NEWRELIC.COM

New Relic offers full courses complete with video webinars, showing how to use their tools. Below are two courses which might be useful when using your New Relic license with WP Engine:

Intro to APM (1hr 40min)

Intro to Insights (57min)

DOCUMENTATION ON DOCS.NEWRELIC.COM

In addition to the courses offered, New Relic also boasts a robust documentation site. Here you can find resources spanning their entire lineup of products, so we've provided a shortened list of articles you may find helpful when using New Relic on WP Engine.

APM page functions

Apdex: Measuring user satisfaction

Alert information in APM

Troubleshooting password and login issues

About the User role

About WP Engine

WP Engine powers amazing digital experiences for websites and applications built on WordPress. The company's premium managed hosting platform provides the performance, reliability and security required by the biggest brands in the world, while remaining affordable and intuitive enough for smaller businesses and individuals. Companies of all sizes rely on WP Engine's award-winning customer service team to quickly solve technical problems and create a world-class customer experience. Founded in 2010, WP Engine is headquartered in Austin, Texas and has offices in Limerick, Ireland, San Francisco, California, San Antonio, Texas, and London, England.

www.wpengine.com

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