



How to Get Started with Digital Employee Experience Management

Top use cases

Table of contents

Executive summary	3
Intended audience	3
Phase 1: Low-effort use cases	4
1. Pinpoint poorly performing apps	4
2. Identify devices with low RAM	5
3. Locate devices with low storage capacity	6
4. Find rogue applications running in your environment	7
5. Monitor adoption, engagement and performance of critical apps	8
6. Plan app support and migration	10
7. Monitor OS updates	11
Phase 2: High-effort use cases	12
1. Monitor OS crashes	12
2. Identify unexpected shutdowns and hard resets	15
3. Address long boot and shutdown durations	17
4. Monitor app adoption trends	19
5. Augment data using Workspace ONE Sensors	20
Summary and additional resources	21

Digital employee experience management enables IT to measure, analyze and remediate digital employee experience. It gives IT admins end-to-end visibility into app performance and adoption, desktop and mobile device health, OS stability and network performance with actionable insights to improve the employee experience, regardless of location, device or app.

Executive summary

With Digital Employee Experience Management, powered by VMware Workspace ONE® Intelligence, you can continuously monitor and measure the overall user experience with a holistic user experience score, contextual dashboards and reports. With this information and analysis, you can proactively identify and resolve issues, as well as uncover and remediate issues that might otherwise remain hidden. Additionally, you can track app and OS adoption and optimize licensing, maintenance, and other IT processes, such as device refresh.

You can use these key insights to:



Proactively
identify issues



Efficiently
troubleshoot



Remediate with
automation



Measure adoption
and engagement

While the advantages of digital employee experience management are clear, where to start might seem less so. This paper shows you how to get started by breaking key use cases into two phases—low effort and high effort—to help you prioritize tasks and gain value as you go along.

Low Effort: Do It Now

Address widespread issues with big impact on your environment that are relatively easy to fix

- Monitor usage
- Get visibility across your entire organization
- Tackle widespread issues

High Effort: Do It Next

Tackle issues that require more time for analysis and troubleshooting

Invest more time in root cause analysis:

- Create sensor scripts to get additional data
- Dive deeper into performance issues
- Address device health

Intended audience

You should have an initial understanding of the VMware Workspace ONE Intelligence platform and be able to create basic dashboards, reports and workflows. If you need more details on these features, see the [Creating Dashboards and Reports in Intelligence](#) tutorial.

Phase 1: Low-effort use cases

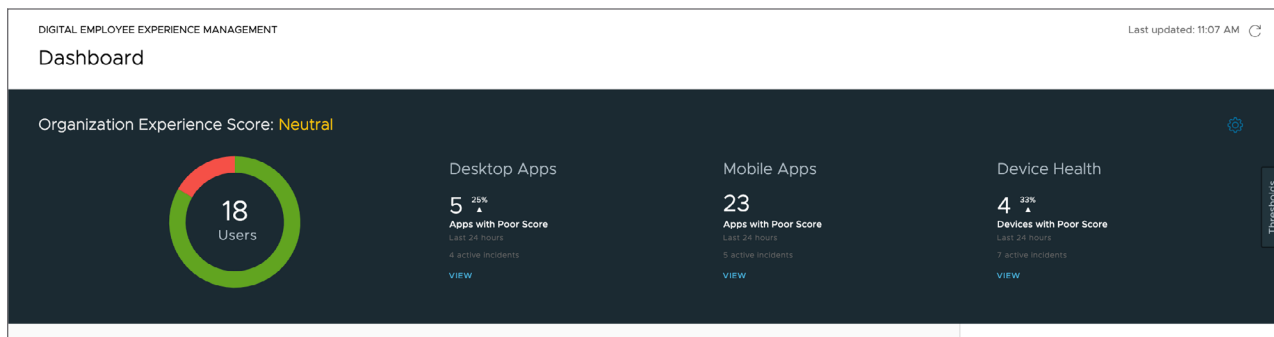
These low-effort tasks give you visibility across your entire organization and help tackle widespread issues. Each use case takes only a few minutes to set up.

- Pinpoint poorly performing apps
- Identify devices with low RAM
- Locate devices with low storage capacity
- Find rogue applications running in your environment
- Monitor adoption, engagement and performance of critical apps
- Plan app support and migration
- Monitor OS updates

1. Pinpoint poorly performing apps

A large environment typically has over 175 applications. On top of that, you could have many unsanctioned or shadow IT applications. To keep your employees productive and deliver an optimal experience, your critical apps must perform well. But sometimes, due to the volume of apps, you cannot monitor each app's health. Digital Employee Experience Management resolves this issue for you.

The Digital Employee Experience Management dashboard provides at-a-glance details of apps that are performing poorly. The apps are ranked in order of impact so you can prioritize your root cause analysis (RCA) efforts based on the impact level. For example, this dashboard shows that five desktop apps have a poor experience score.

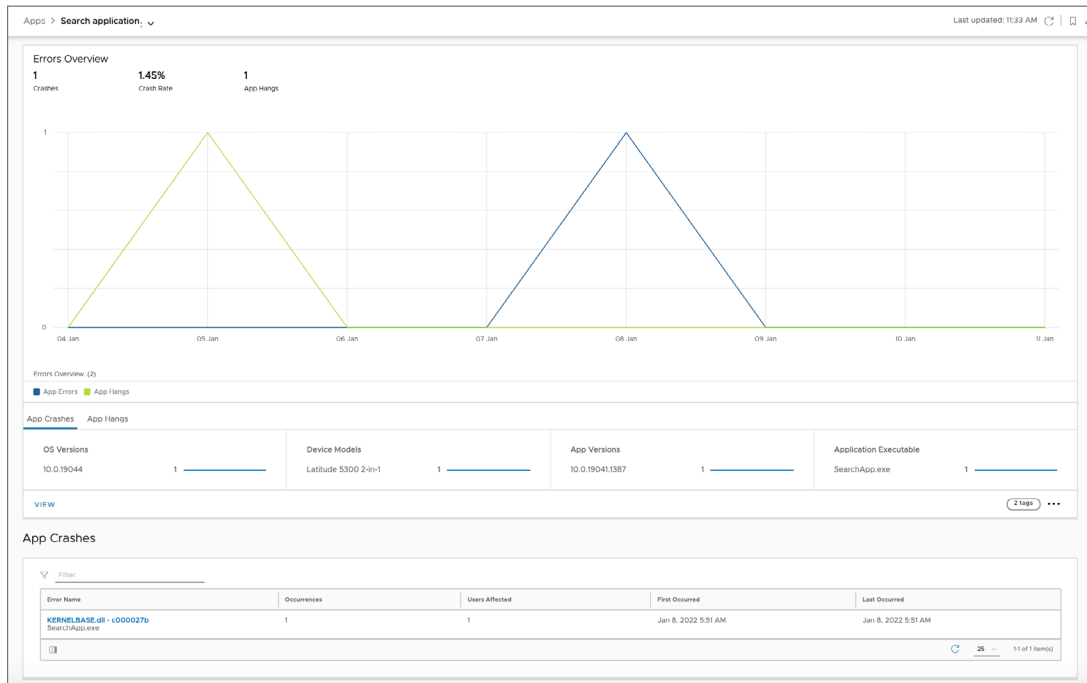


To get a list of the apps and their impact, click **View**.

The table displays a list of applications and their impact on the organization. The 'Impact' column includes a legend for 'Total impacted devices', 'Total devices using the app', and 'Total active devices'. The table is filtered to show 5 items, with 25 items in total.

App Name	Platform	Impact
AwWindowslpc	Windows Desktop	Total impacted devices: 2 (6.67%)
Search application	Windows Desktop	Total devices using the app: 11 (36.67%)
DRVUpdate.exe	Windows Desktop	Total active devices: 30 (100%)
HxOutlook.exe	Windows Desktop	
invcol.exe	Windows Desktop	

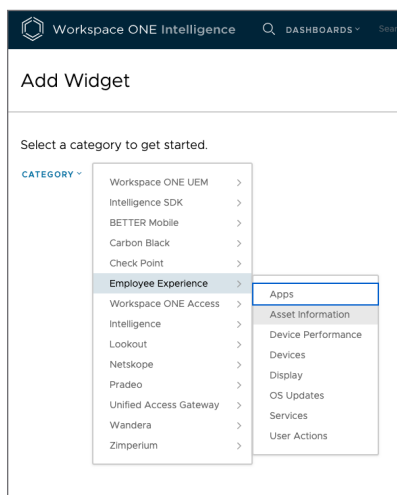
From here, you can drill down into the app performance dashboard to identify the root cause of the problem.



2. Identify devices with low RAM

Poorly performing devices is one of the most common issues that affect digital employee experience. These devices are often slow to respond and need frequent restarts. You can sidestep these performance issues by using Digital Employee Experience Management to track device resources, such as RAM and battery life, and identify when performance is below a certain range. You can then proactively contact users and encourage them to upgrade their devices or procure newer versions.

To identify devices with low RAM, you can create a widget to quickly visualize data. Using the Add Widget wizard, select the **Employee Experience** category and the **Asset Information** sub-category.



Use these settings to create the dashboard. From there, you can dig deeper to find the issue by device make and model.

The screenshot shows the 'Add Widget' configuration interface. At the top, it indicates the template is 'Custom Widget' and the category is 'Employee Experience: Asset Information'. The widget title is 'Devices with RAM less than 4GB'. Under 'Data Visualization', the 'SNAPSHOT' tab is selected. The 'Chart Type' section shows 'TABLE' as the chosen option. The 'Measure' is set to 'Distinct Count' of 'Device Name'. The 'Group by (Optional)' is 'Device Name'. The 'Results per group' is set to '10'. The 'Filter' section at the bottom shows a filter for 'Physical Memory in Bytes less than 4294967296', with a detailed view showing 'Physical Memory in Bytes' less than '4294967296'.

3. Locate devices with low storage capacity

In addition to impacting employee experience, a device's low storage capacity can also cause security concerns. If a critical update is required and a device does not have enough storage capacity to deploy it, the update fails, and the device is no longer compliant.

With Digital Employee Experience Management, you can create a widget to find devices with low storage capacity. Using the Add Widget wizard, select the **Employee Experience** category and the **Device Performance** sub-category. Then configure the recommended widget settings as shown in the screenshot.

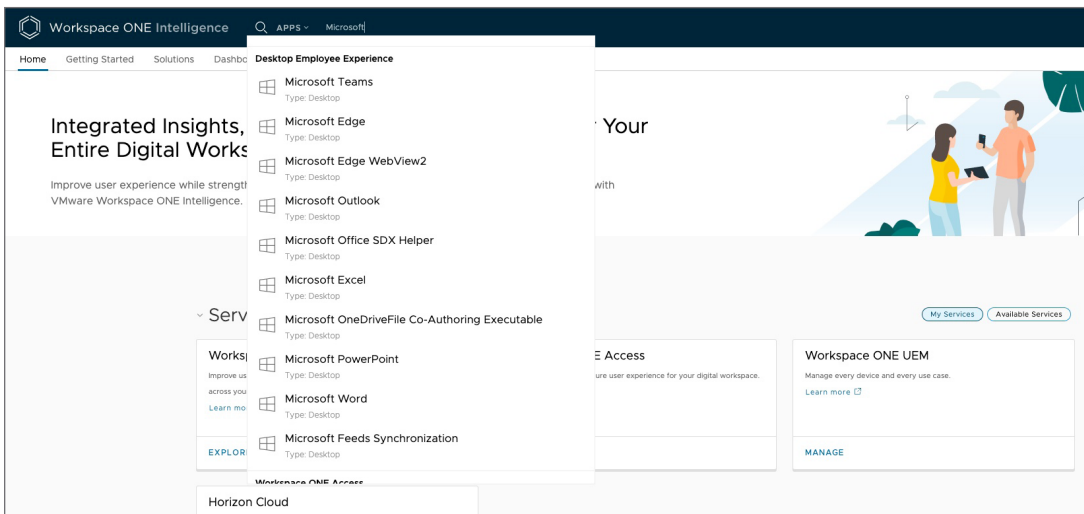
The screenshot shows the 'Add Widget' configuration interface for 'Devices with Low Storage Capacity'. The title is 'Devices with Low Storage Capacity'. Under 'Data Visualization', the 'HISTORICAL' tab is selected. The 'Chart Type' section shows 'TABLE' as the chosen option. The 'Measure' is set to 'Distinct Count' of 'Device Name'. The 'Results per group' is set to '100'. The 'Date Range (Optional)' is 'Last 28 days' and the 'Frequency (Optional)' is '1 day'. The 'Filter' section at the bottom shows a filter for 'Logical Disk Percentage Free Space less than 10', with a detailed view showing 'Logical Disk Percentage Free Space' less than '10'.

You can also set up automated notifications to users to recommend moving unnecessary files to cloud storage. On the Automations tab, create a workflow. Out-of-the-box integrations include email and Slack. And if it is time to upgrade or replace the device, you can set up a workflow to open a ServiceNow ticket for a new device and notify the user.

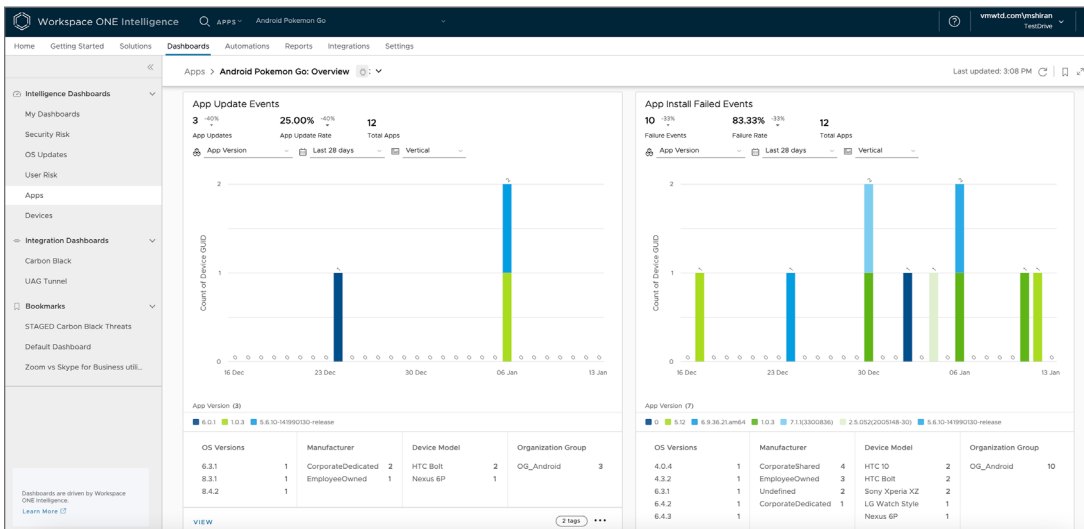
4. Find rogue applications running in your environment

You can get performance, stability, adoption and engagement data for all desktop apps using the out-of-the-box dashboards. You can also quickly identify sanctioned and unsanctioned apps running in your environment. You can drill down into any app to get more information about adoption and engagement.

To get started, use the global search at the top bar to find the application that you are looking for.



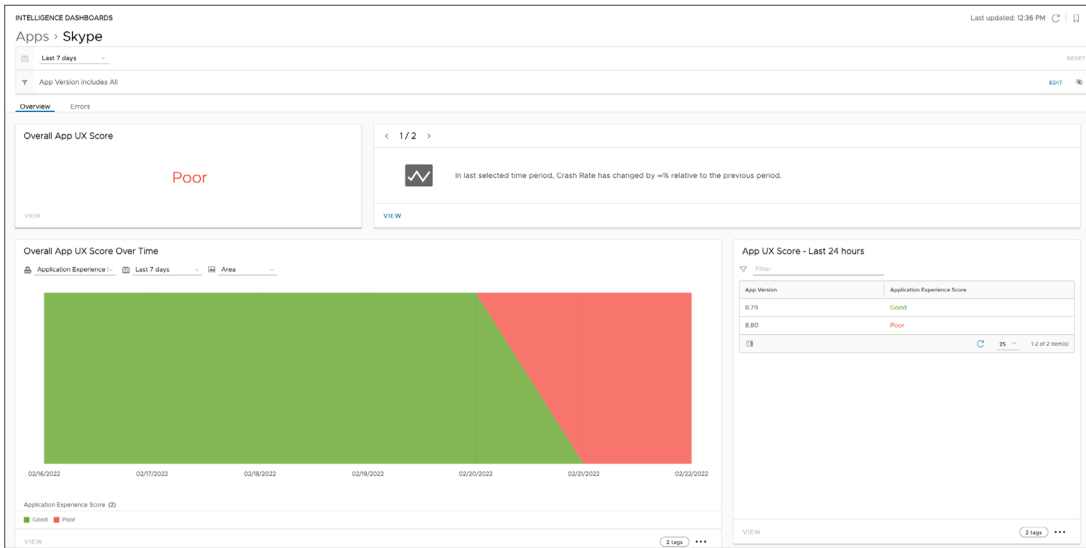
From there, you can view data about the selected app, such as daily and monthly active users, installs and loads.



You can also create a custom dashboard for selected applications to identify who is using them. You can then notify users that they need to remove the application or take other actions as needed.

5. Monitor adoption, engagement and performance of critical apps

App performance is critical to employee productivity, engagement, and the overall digital experience. You can monitor app performance, such as crashes and hangs, and the overall user experience with the app. In the following dashboard, you can see app experience over time and that the score has gone down over the last day.



You can then look at the Error tab to get more details about what is going on. The following screenshot shows the crash and hang trends over time along with the current crash rate. Crashes are further grouped by OS version, device models, app version and executable to show anomalies.



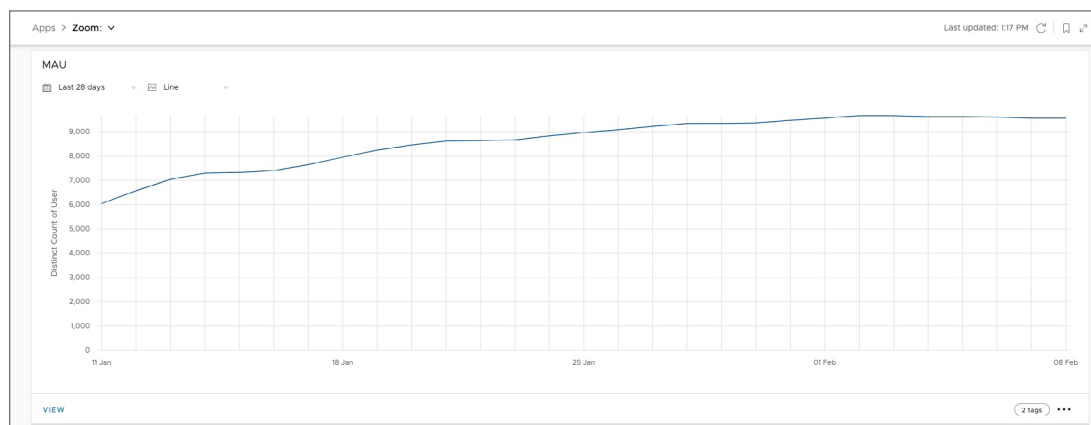
To get better insights into what sort of crashes are occurring most often and impacting employees, scroll down to the table, which groups similar crashes together.

App Crashes

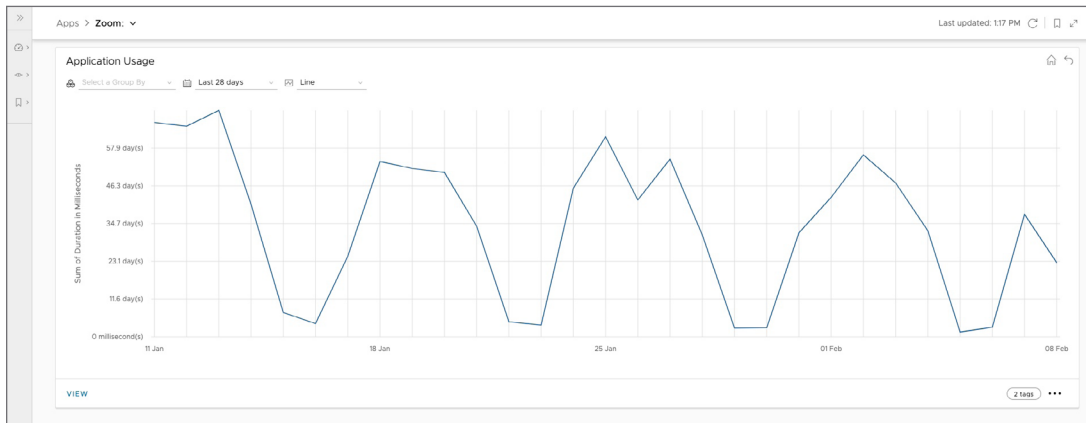
Filter

Error Name	Occurrences	Users Affected	First Occurred	Last Occurred
unknown - c0000005 Teams.exe	239	9	Feb 1, 2022 1:15 PM	Feb 8, 2022 12:41 PM
KERNELBASE.dll - c0000602 Teams.exe	204	108	Feb 1, 2022 2:02 PM	Feb 8, 2022 12:04 PM
KERNELBASE.dll - e0000008 Teams.exe	27	13	Feb 1, 2022 2:53 PM	Feb 8, 2022 10:05 AM
KERNELBASE.dll - c0100119 Teams.exe	1	1	Feb 5, 2022 11:03 PM	Feb 5, 2022 11:03 PM
Teams.exe - c0000602 Teams.exe	56	34	Feb 1, 2022 3:15 PM	Feb 8, 2022 1:01 PM
Teams.exe - c0000005 Teams.exe	40	12	Feb 1, 2022 9:47 PM	Feb 8, 2022 5:48 AM
Teams.exe - c00000fd Teams.exe	2	1	Feb 7, 2022 10:06 PM	Feb 7, 2022 10:06 PM
Teams.exe - 80000003 Teams.exe	1	1	Feb 4, 2022 2:14 PM	Feb 4, 2022 2:14 PM
Teams.exe - c000041d Teams.exe	1	1	Feb 7, 2022 6:33 PM	Feb 7, 2022 6:33 PM
slimcore.node - c0000005 Teams.exe	32	20	Feb 1, 2022 2:34 PM	Feb 8, 2022 12:11 PM
ntdll.dll - c0000374 Teams.exe	7	6	Feb 3, 2022 9:33 AM	Feb 7, 2022 5:05 AM
ntdll.dll - c00000fd Teams.exe	6	2	Feb 6, 2022 6:54 PM	Feb 6, 2022 9:39 PM
ntdll.dll - c0000005 Teams.exe	3	3	Feb 1, 2022 10:58 PM	Feb 7, 2022 6:39 PM
ntdll.dll - c0000409 Teams.exe	2	2	Feb 2, 2022 9:36 PM	Feb 4, 2022 3:33 PM
RTMCodecs.dll - c0000005 Teams.exe	3	3	Feb 2, 2022 3:39 AM	Feb 3, 2022 4:48 AM
skypept.dll - c0000005 Teams.exe	2	2	Feb 3, 2022 3:59 AM	Feb 6, 2022 7:50 AM

On the Overview tab, you can track adoption and engagement KPIs, such as daily active users (DAU), monthly active users (MAU) and the ratio between them, to measure engagement.



You can also monitor application usage and duration.



6. Plan app support and migration

The Apps dashboard provides you with an overall application experience score. You can also drill into an experience score to see how it applies to each app version. Use this dashboard to strategize version support and migration. To minimize disruption, use the Application Usage dashboard (shown in the previous section) to choose the best migration time. Then, [set up automation](#) to upgrade the application to the latest version.

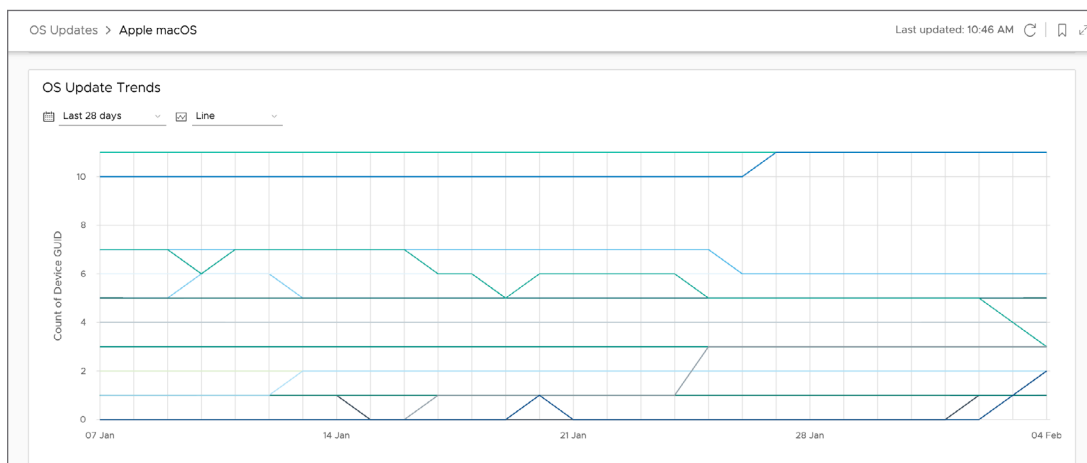
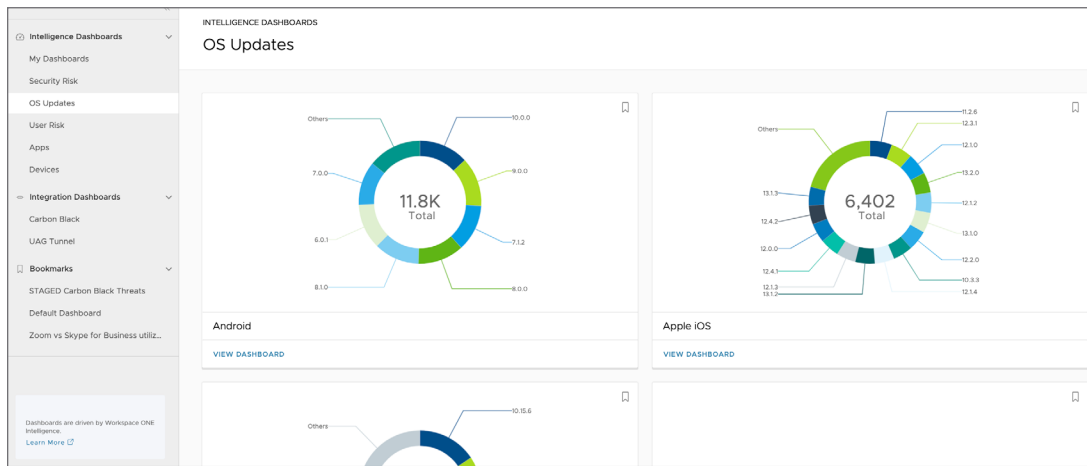
The 'App UX Score - Last 24 hours' dashboard displays a table of application experience scores. The table has two columns: 'App Version' and 'Application Experience Score'. The scores are categorized as 'Good' (green) or 'Poor' (red). The dashboard includes a 'VIEW' button and a '2 tags' indicator.

App Version	Application Experience Score
10.0.19041.1202	Good
10.0.19041.1387	Poor
10.0.19041.546	Good

7. Monitor OS updates

Every IT organization has to support a myriad of OS platforms running on a wide range of device models from desktop to mobile. Each vendor releases OS updates on a different schedule, which adds to the complexity. Workspace ONE Intelligence helps you manage that complexity. It provides trends for OS update adoption for Windows, macOS, iOS, tvOS, Android and Chrome. Visibility into OS adoption helps you prioritize OS support, run upgrade campaigns, enforce upgrades for laggard users and more.

OS adoption dashboards are provided out of the box and you can find them in the OS Updates section under Intelligence Dashboards. Here is an example of the Windows OS Update Trends dashboard.



You can monitor how OS updates are impacting employee experience by correlating risk scores and when the OS updates occurred.

Phase 2: High-effort use cases

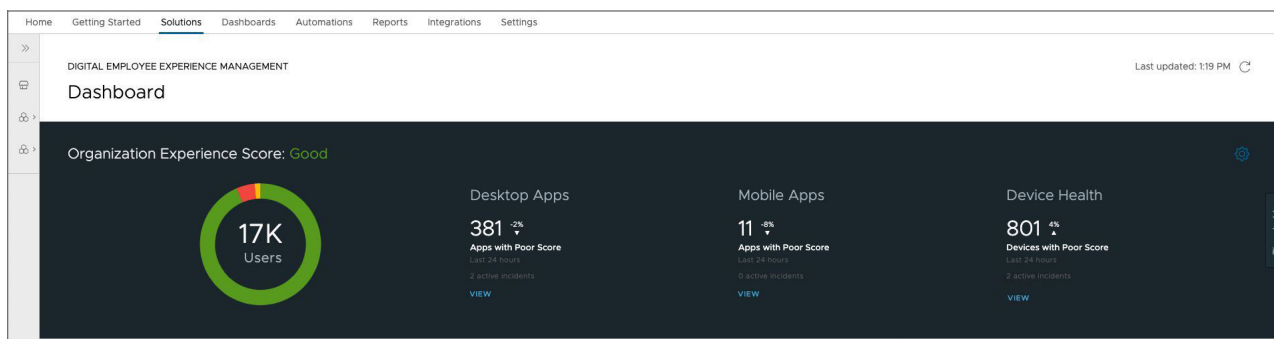
These tasks dive deeper with more advanced dashboards to find the root cause of an issue. You can set up automated remediation or reach out to an OEM or third-party developer for remediation.

- Monitor OS crashes
- Identify unexpected shutdowns and hard resets
- Address long boot and shutdown durations
- Monitor app adoption trends
- Augment data using Workspace ONE sensors

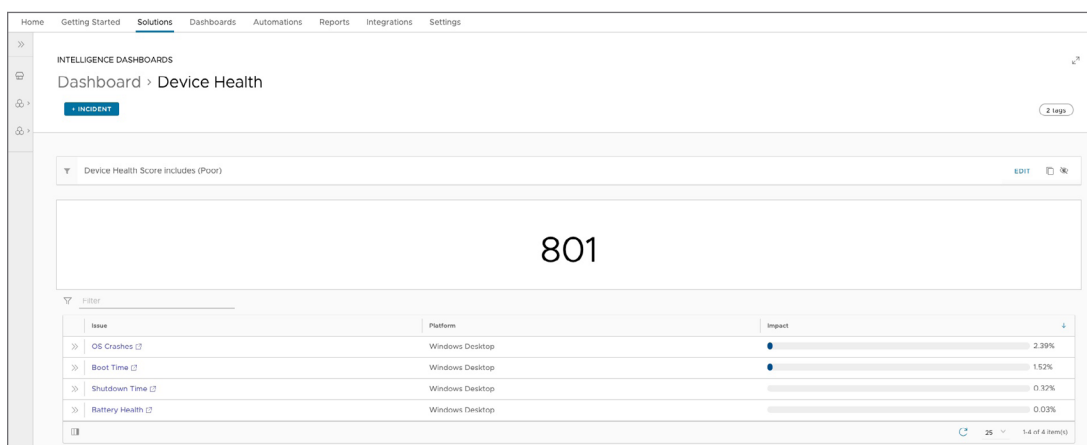
1. Monitor OS crashes

Because OS crashes are one of the main symptoms of poor device health and negatively impact employee experience, they are included as one of the default parameters that factor into the device health score. The device health score is based on predefined thresholds, but you can change the threshold values based on your business needs and organizational goals.

To start, look at device health on the main dashboard. In the following example, the dashboard identifies 815 devices with a poor score. To get more information, click **View**.

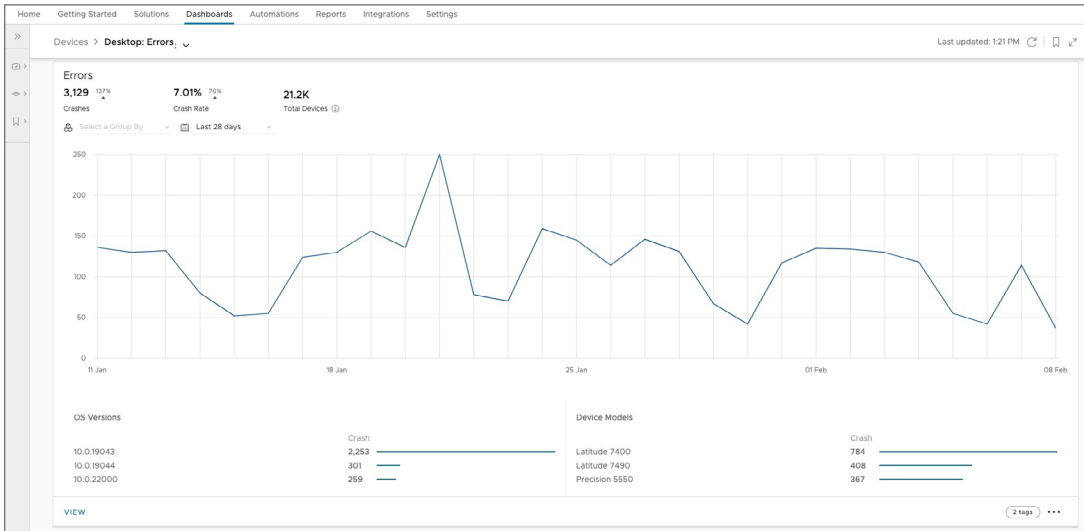


The page lists the top device health issues in order of impact. You can see that OS crashes impact 2.39 percent of total devices in this organization. For a more detailed view, click **OS Crashes**.



How to Get Started with Digital Employee Experience Management

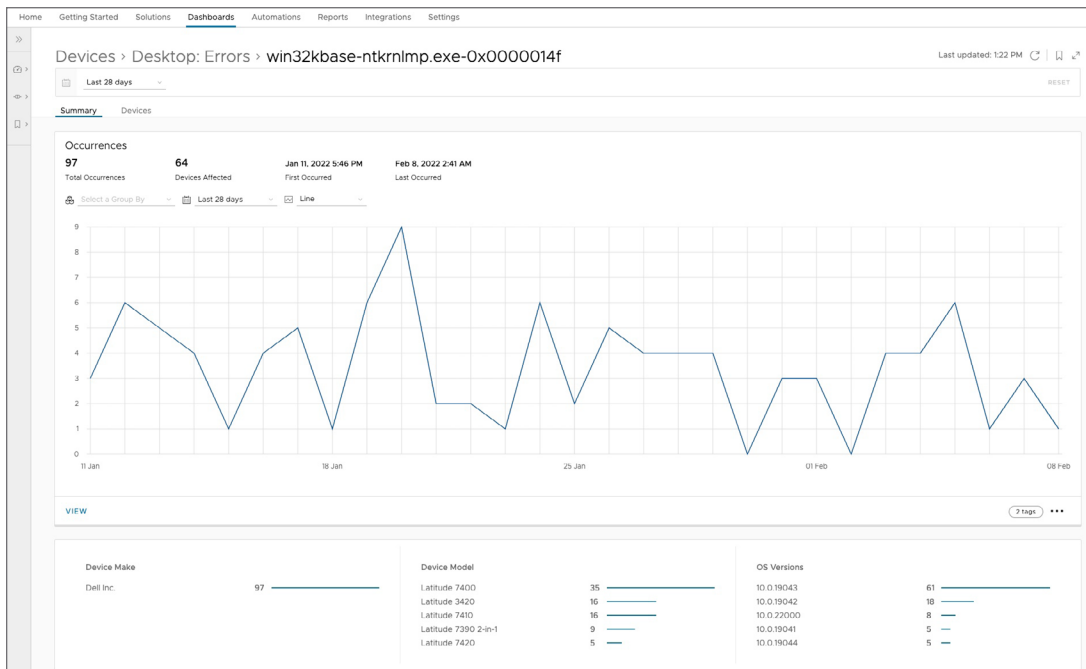
This view displays the total number of crashes that occurred in the last 28 days. You can change the period using a global filter. The crashes are also grouped by OS version and device model so you can quickly identify anomalies and see if the crashes are occurring with specific OS versions or devices.



Digital Employee Experience Management buckets these crashes into error codes, crash modules and process. The following image shows this grouping along with how many times specific crashes occurred and how users were impacted. Click on an error name to drill further into a specific crash. For example, click **win32kbase**.

List of OS Crashes				
Filter				
Error Name	Devices Affected	Occurrences	Last Occurred	First Occurred
win32kbase 0x0000000f: ntkernel.exe	301	409	Feb 8, 2022 12:18 PM	Jan 11, 2022 2:35 PM
win32kbase 0x0000004f: ntkernel.exe	64	91	Feb 8, 2022 2:41 AM	Jan 11, 2022 5:46 PM
win32kbase 0x00000079: ntkernel.exe	91	95	Feb 7, 2022 7:30 PM	Jan 11, 2022 3:54 PM
win32kbase 0x00000018: ntkernel.exe	12	92	Feb 7, 2022 2:23 PM	Jan 11, 2022 2:02 PM
win32kbase 0x0000007e: ntkernel.exe	79	87	Feb 8, 2022 8:43 AM	Jan 12, 2022 6:21 AM
win32kbase 0x0000000a: ntkernel.exe	37	45	Feb 7, 2022 2:34 PM	Jan 11, 2022 2:30 PM
win32kbase 0x0000001a: ntkernel.exe	25	27	Feb 4, 2022 4:28 AM	Jan 11, 2022 11:11 PM
win32kbase 0x00000033: ntkernel.exe	27	27	Feb 7, 2022 9:23 AM	Jan 12, 2022 12:50 AM
win32kbase 0x0000001e: ntkernel.exe	23	24	Feb 5, 2022 7:51 AM	Jan 12, 2022 5:25 AM
win32kbase 0x000000ca: ntkernel.exe	8	24	Feb 7, 2022 11:13 PM	Jan 11, 2022 5:48 PM
win32kbase 0x000000a0: ntkernel.exe	19	21	Feb 8, 2022 5:11 AM	Jan 12, 2022 1:26 AM

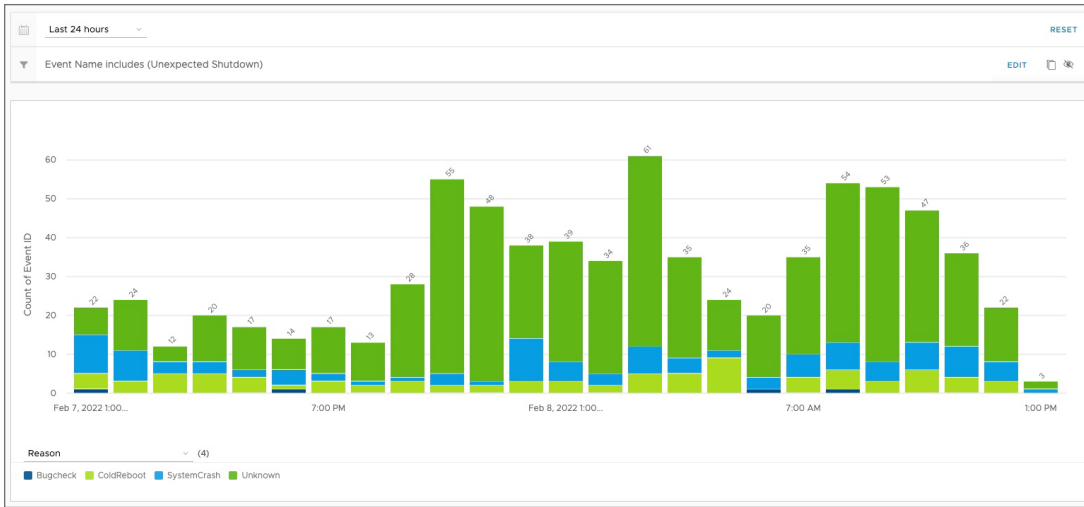
You can now view the details of the win32kbase crash over the past 28 days.



2. Identify unexpected shutdowns and hard resets

Unexpected shutdowns and hard resets are not only annoying and negatively impact employee experience, but they also affect productivity and risk losing unsaved data. You can configure a widget to get data from unexpected shutdown events logged by Windows, including all OS crashes.

The following chart shows unexpected shutdown events over the past 24 hours. Digital Employee Experience Management captures data about bugchecks, cold reboots, crashes and other serious issues. The Bugcheck label represents all OS crashes.



To create this view, add a custom widget.

Category: Employee Experience: Devices

Unexpected Shutdown

Create a widget from scratch

Data Visualization

SNAPSHOT HISTORICAL

Chart Type

VERTICAL AREA LINE METRIC TABLE HEAT MAP

Measure: Count of Event ID

Group by (Optional): Reason

Results per group: 10

Date Range (Optional): Last 24 hours

Frequency (Optional): 1 hour

Filter

Event Name includes (Unexpected Shutdown)

Event Name Includes Unexpected Shutdown

According to the Microsoft Bugcheck reference [site](#), you need two metrics to determine the root cause of an OS crash and correct the issue.

- Bugcheck code
- Crash parameter list

Although Digital Employee Experience Management collects this data automatically, it does not display in your widget by default. To view this data, you need to add the crash parameter list in the widget settings. Above the table, click **Edit Columns** and look for the crash data shown in the following screenshot.

Edit Columns

Available Columns

Search: crash

Others

- ☐ Crash Path
- ☐ Crash Address
- ☐ Crash dump Type
- ☒ Crash Parameters list

ADD (1)

Selected Columns

Search:

- Event Name
- User
- Device Make
- Device Model
- Device Name
- OS Version
- Module
- Error
- Event Time
- Event Received Time (Normalized)
- Event Status
- Workspace ONE UEM Device GUID (Normalized)

REMOVE (0) REMOVE ALL UP DOWN CANCEL SAVE

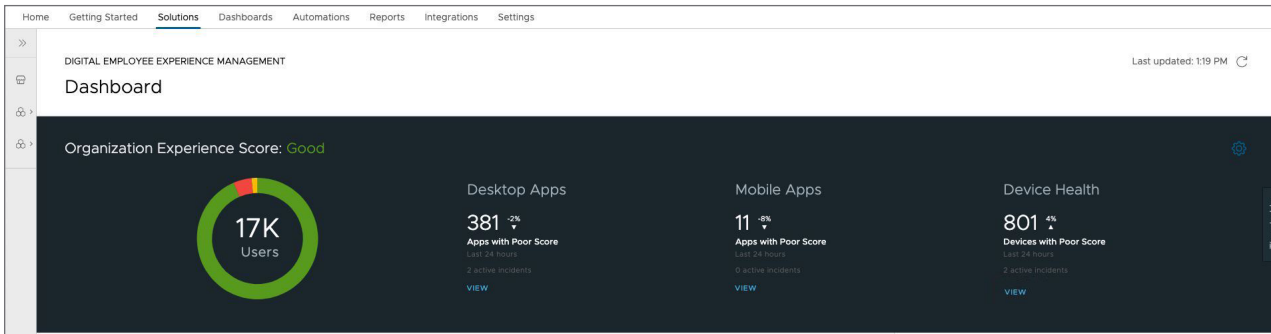
Select the columns relevant for you to continue the investigation. For example, we added the Crash Parameters list.

Crash Parameters list	Reason	Error
0,ffffb20e8696b050,10,1	SystemCrash	18
ffffffffffffffff,0,ffff80614be6734,2	SystemCrash	50
0,ffffd90ef2d49050,10,1	SystemCrash	18
0	Unknown	0
	Unknown	0
0	ColdReboot	0
0	Unknown	0
	Unknown	0
0	Unknown	0
4,12c,ffff9e04c17f3040,fffff184e2c3f780	SystemCrash	9f

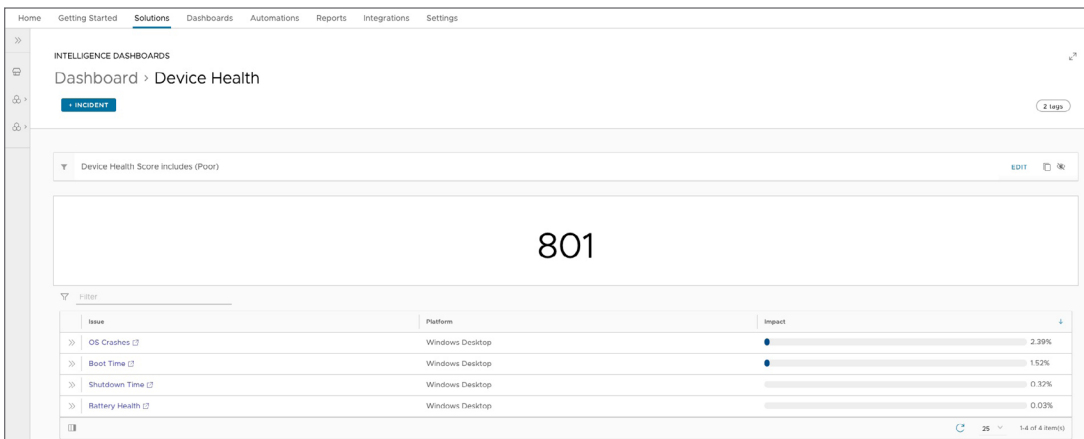
3. Address long boot and shutdown durations

Because long boot and shutdown durations negatively impact productivity and overall user experience, they are two of the parameters that factor into the device health score. You can change the default threshold values based on your business needs and organization goals.

To start, look at device health on the main dashboard. This example identifies 733 devices with a poor score. To get more information, click **View**.



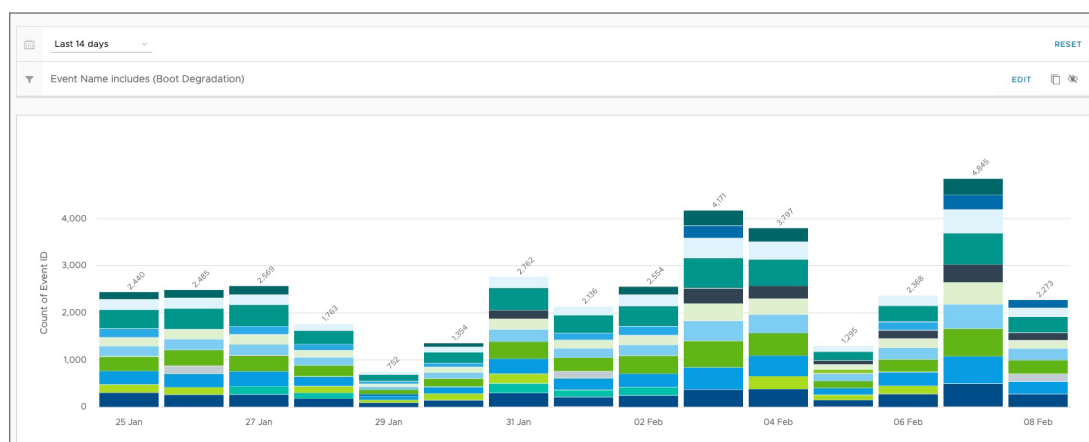
The page lists the top device health issues in order of impact. Shutdown Time is the second-most common issue affecting overall user experience. Click **Shutdown Time** to get a detailed view of the issue.



Boot and shutdown duration values are calculated based on these sub-process metrics, which you can also monitor to help identify the root cause of an issue:

- PNP Load Duration
- Logon Load Duration
- Logon Wait Duration
- System Session Duration
- Main Path Load Duration
- Boot Driver Load Duration

You can also get data from boot degradation and shutdown degradation events logged by Windows. The following dashboard shows boot degradation over the past 14 days and the applications involved.



To create this boot degradation dashboard, add a custom widget. To create a dashboard for shutdown degradation, enter **Shutdown Degradation** instead of Boot Degradation as the event name.

Category: Employee Experience: Apps

Boot Degradation

Add description (optional)

Data Visualization ④

SNAPSHOT **HISTORICAL**

Chart Type

VERTICAL AREA LINE METRIC TABLE HEAT MAP

Measure: Count of Event ID

Group by (Optional): App Name × ADD SUBGROUP

Results per group: 10

Date Range (Optional): Last 14 days

Frequency (Optional): 1 day

Filter ①

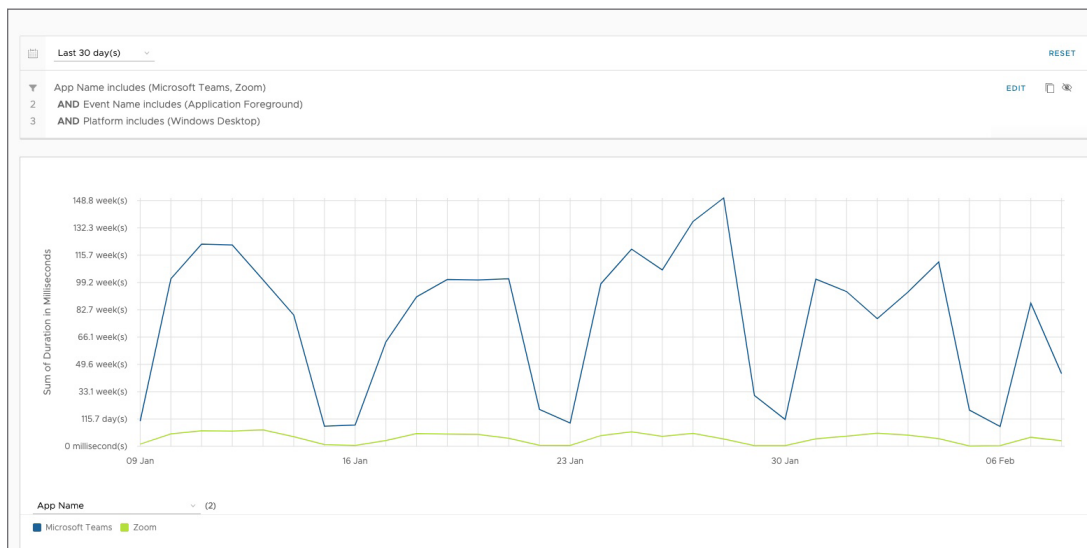
Event Name includes (Boot Degradation)

Event Name Includes Boot Degradation

CLOSE

4. Monitor app adoption trends

Organizations migrate from one application to another for a variety of reasons, from better pricing to more robust feature sets. Application usage metrics are an effective tool to ensure your app migration efforts are successful. If your organization is migrating apps, Digital Employee Experience Management can help you optimize migration and monitor adoption trends to ensure that usage grows. For example, the following widget shows usage data for two apps: Microsoft Teams and Zoom. While Microsoft Teams has higher usage than Zoom, both apps appear fairly stable in their usage stats, and neither appears to be adding users.



To create an app usage comparison chart, create a custom widget similar to the following.

Category: Employee Experience: Apps

Zoom vs Teams usage

Create a widget from scratch

Data Visualization ①

SNAPSHOT HISTORICAL

Chart Type

VERTICAL AREA LINE METRIC TABLE HEAT MAP

Measure: Sum of Duration in Milliseconds

Group by (Optional): App Name

Results per group: 10

Date Range (Optional): Last 30 day(s)

Frequency (Optional): 1 day

Filter ①

App Name includes (Microsoft Teams, Zoom)

AND Event Name includes (Application Foreground)

AND Platform includes (Windows Desktop)

App Name Includes 2 selected

Event Name Includes Application Foreground

Platform Includes Windows Desktop

5. Augment data using Workspace ONE Sensors

On top of the rich out-of-the-box telemetry that Digital Employee Experience Management collects, you can collect additional data points with Workspace ONE Sensors. A sensor can collect data from devices that Workspace ONE UEM does not natively collect with PowerShell scripts. This data is then ingested by Workspace ONE Intelligence.

To add a sensor, in the Workspace ONE UEM console, navigate to **Resources > Sensors**.

Workspace ONE UEM

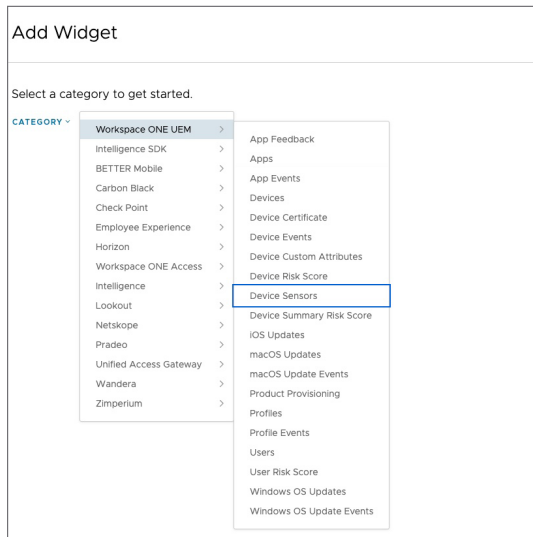
Sensors

Name	Language	Platform	Managed By	Last Modified	Assignment
○ sam_wt1	Powershell	Windows	Enterprise - Corporate Owned Demo	Modified on Jan 19, 2022, 7:27:13 AM by vmwtd.com\jaffgunung	1
○ demo	Bash	macOS	TM-Demo	Modified on Feb 26, 2021, 2:43:37 PM by vmwtd.com\pevans	0
○ enrollment_user	Bash	macOS	TM-Demo	Modified on Feb 26, 2021, 2:15:44 PM by vmwtd.com\pevans	1
○ macos_processor	Bash	macOS	TM-Demo	Modified on Feb 22, 2021, 7:52:09 PM by vmwtd.com\pevans	1
○ cbcloud_text	Bash	macOS	TM-Demo	Modified on Feb 22, 2021, 7:51:58 PM by vmwtd.com\pevans	1
○ hostname	Bash	macOS	TM-Demo	Modified on Feb 22, 2021, 7:50:54 PM by vmwtd.com\pevans	1
○ xp_date	Bash	macOS	TM-Demo	Modified on Jan 15, 2021, 8:58:02 PM by vmwtd.com\bbuchholtz	1
○ xp_version	Bash	macOS	TM-Demo	Modified on Jan 15, 2021, 8:55:56 PM by vmwtd.com\bbuchholtz	1
○ xp_source	Bash	macOS	TM-Demo	Modified on Jan 15, 2021, 8:54:53 PM by vmwtd.com\bbuchholtz	1
○ xp_macosver	Bash	macOS	TM-Demo	Modified on Jan 15, 2021, 8:52:55 PM by vmwtd.com\bbuchholtz	1

Page Size: 20 Items 1 - 20 of 69

After the sensor is set up and pushed to devices, Workspace ONE Intelligence collects the data. With this data, you can create dashboards and take actions using automation.

To visualize the data, create a widget that includes the Device Sensors category.



To learn more about setting up a sensor, see [Collect Data with Sensors for Windows Desktop Devices](#).

To download sample sensors, see [Windows 10 - Workspace ONE Sensors Samples](#).

Summary and additional resources

For more information about Digital Employee Experience Management:

- [Data Definitions](#)
- [Technical Overview Demo](#)

You can also check out these blogs.

- [Monitor Windows App Adoption and Stability with Workspace ONE Intelligence Digital Employee Experience Management \(DEEM\)](#)
- [Digital Employee Experience Management: Introducing User Experience Score](#)
- [Remediate device and app issues faster with Incidents, now GA in Workspace ONE Intelligence Digital Employee Experience Management](#)

