ATLASSIAN

Building the perfect plan for your future home

A fool-proof guide for your Data Center upgrade

Contents

Overview

Buying software is not that different from buying a house. It requires a lot of decision making and planning. Why are you buying in the first place? Is this your first home? Are you outgrowing your current home? Is your current home damaged or outdated?

Understanding your primary goals for the move is important for making the right decision. It isn't just about the why. It is also about nailing the right timing for your move.

As you make these decisions, it requires a lot of research and planning - understanding your requirements, cleaning out your home, preparing it for the move, and most importantly ensuring a seamless moving day. But of course, things never go as planned and there are a number of unexpected hiccups in the road, pleasant surprises, and new ideas to help you improve your new home to exceed the goals and expectations of your original plan.

Use our guide and get advice from customers on their upgrade experience to build a fool-proof plan for a seamless upgrade to Atlassian Data Center.

Understanding your needs:

Why move to Data Center?

There are a number of reasons why you may choose to move to Data Center. Two of the primary drivers of this decision is to either solve existing problems your organization is currently experiencing or to get ahead of challenges that you expect to arise as your organization grows and matures. Some of these challenges include:

- **Availability:** Downtime, planned or unplanned, is extremely detrimental to your business, especially as you grow. If Atlassian tools are mission-critical.
- **Performance at scale:** As the number of users, issues, spaces, or other factors grow within your instance, performance can quickly degrade without the right infrastructure or administrative tools to help you manage that growth.
- **Equal support for your global or distributed workforce:** Distributed teams are the norm for enterprise organizations today. As your organization opens new offices and grows your distributed teams, providing these teams the same level of service can prove to be quite difficult without the right tools in place.
- **Security or compliance policies and regulations:** As your organization matures, the number of security and compliance policies or regulations you need to meet also tends to grow. Doing so with your existing server instance(s) can sometimes be quite cumbersome or expensive.
- **Administrative control at scale:** The larger your organization grows, the more users administrators are responsible for managing. Users can be unpredictable and can wreak havoc on your instance without the right controls in place.

WHAT OUR CUSTOMERS SAY

> *We decided to move to Data Center partially in response to some problems we were experiencing, and partially to plan ahead for future growth. At the time, we had over 700 employees and were in the process of moving into a new, larger building with a steady growth rate of new employees. We were already pushing the limits of our server applications, especially Crowd and Jira, and were had to undergo outages for maintenance during regular business hours. We didn't want a bandaid. We needed to get the right infrastructure in place so that we wouldn't find ourselves looking back, wishing we planned ahead.*
>
> **- UHUB**

Now you might be wondering, how does Data Center solve these challenges? Why should I move to Data Center instead of optimizing my existing Server instance?

Atlassian Data Center provides a number of enterprise-grade features, many of which can easily be unlocked after the migration.

Availability:

- **Active-active clustering:** Eliminate downtime and ensure uninterrupted access to get work done.
- **Zero downtime upgrades:** Perform planned or unplanned administrative tasks, maintenance or updates on one node at a time, while your end-users continue to work on the other active nodes in your cluster.
- **Read-only mode:** Limit the impact of downtime due to maintenance or updates by putting Confluence into read-only mode so that users can still view pages. (Note: Users can't create or edit pages while Confluence is in read-only mode).
- **Rate limiting:** Control the rate of incoming and outgoing traffic to prevent bad actors from taking down your instance.
- **External process pool:** Minimize the impact of memory or CPU intensive actions by handling them separately.

Performance at scale:

- **Active-active clustering:** Add additional nodes to horizontally scale and adapt to traffic changes.
- **Custom field optimizer:** Surface the custom fields that are taxing your instance's performance and removes their global context with one click.
- **Project and issue archiving:** Archive projects or issues to reduce their impact on performance and to de-clutter your instance, making it easier for your users to find the right information.
- **Data Center approved apps program:** Ensures that apps are purpose-built to maintain consistent performance, stability, and security in enterprise environments.

Equal support for your global or distributed workforce:

- **Support for a Content Delivery Network (CDN):** Improve geo-performance and speed up response time for your distributed teams.
- Smart mirroring: Set up one or more live mirror nodes to operate with read-only copies of repositories in remote locations, which are automatically synchronized from the primary instance to reduce the impact distributed teams spend waiting on a request to be processed.
- **Mirror farms:** Scale CI/CD and reduce time spent waiting on build results by clustering mirrors into "farms", grouped behind a load balancer.

Security or compliance policies and regulations:

- **SAML:** Simplify login experience and ensure compliance by using your existing identity provider for authentication.
- **Disaster Recovery:** Partial or complete system outage? Avoid chaos and keep business running smoothly with a disaster recovery strategy.
- **Rate limiting:** Understand who or what is impacting your instance and set controls to prevent threats from impacting your instance with capabilities like allow/block listing.

Administrative control at scale:

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- **External process pool:** Minimize the impact of memory or CPU intensive actions by handling them separately.
- **Centralized license visibility:** Visualize inactive users and export this information for reporting purposes or to optimize license use.

WHAT OUR CUSTOMERS SAY

Uhub:

> *Zero downtime upgrades and rolling restarts were a major selling point for us. With multiple nodes, we can easily deploy updates (whether it was for an operating system or the application) that require a restart without stopping service for our users. With the flexibility to segment heavier than normal traffic to a dedicated node (an admin only node or API node), you can eliminate the risk of downtime or degraded performance.*

Note: This is dependent on your load balancing hardware or software. We were using AWS in our instance and had the ability to divide up traffic and direct admin heavy traffic to its own nodes, while end-user activity was directed to the remaining nodes in the cluster.

> *At the time we were making the decision to upgrade, there were a number of company-wide initiatives around employee productivity, which meant we had a lot of eyes on Jira Software. Being able to deliver consistent uptime and performance was critical to gaining stakeholder buy-in for the cost of the upgrade.*

> *The ability to spin up a new node within 30 mins was also a major selling point. We already use an immense amount of plugins and custom fields. Our growth plans included a material growth in employee count, which required more plugins, more projects created, more issues, and more custom fields. Having the flexibility to scale our instance along with tuning our environment to handle such growth at a moment's notice without needing to worry about performance degradation was a huge benefit for us.*

A high-growth healthcare technology company:

> *Project archiving really just sped up to our decision to move forward with Data Center. We had a very large index because in Server we had a lot of projects that we were "archiving," or hiding. We would go through projects and update the permission scheme and relabel that project as archived, but they were still part of the index. Having project archiving makes things so much easier.*
>
> *We can now actually archive a project. Our index is a lot smaller and we're only showing users the projects they need instead of old irrelevant projects, improving both the user experience and system performance.*

Deciding the right time:

When is the right time to upgrade to Data Center?

It depends. It is different for every customer. The most important thing is for you to evaluate how many of the challenges in the previous section you are currently experiencing and understanding your future growth patterns or upcoming changes to your organization.

CUSTOMER SPOTLIGHT:

How Uhub decided it was the right time

From a system performance perspective, we were probably needed to move to Data Center a lot sooner than we did but from a process perspective, it was the right time as we had built the business case for the budget and resources for the migration. When a substantial amount of teams are using the tools and they are mission-critical to your organization's production of work, then the business case itself isn't a hard fight, it just makes sense.

Additionally, we were also in the process of implementing new company-wide time tracking initiatives and migrating teams from another system to our Jira Software instance. We needed to be able to support the upcoming demands from these changes. These were a few of the external driving forces contributing to our decision on when to move to Data Center.

Getting your house in order:

How do you prepare for an upgrade to Data Center?

There are many important steps in preparing for a Data Center upgrade. We'll simplify it to the most important steps.

1. **Research & utilize your Atlassian resources:** Before starting anything, it is important to research Data Center and map out your upgrade plan. Are you deploying on a single node or multiple? Are you also going to make other changes like a database migration or a migration to AWS? Understand your goals and the requirements (i.e. resources, budget, infrastructure) to limit delays in your upgrade experience.

   In addition to comprehensive documentation, Atlassian has several resources that you can potentially use to help you prepare.

   a. **Elevated support offerings:** Get access to elevated levels of support, like Priority or Premier Support, to support you with your unique needs.

   b. **Technical Account Manager:** Experienced solutions advisors from Atlassian who partner with customers to shape successful outcomes.

   c. **Enterprise Advocate or Solutions Engineer:** Get recommendations during your evaluation or purchase period to help you make the right decisions.

   d. **Enterprise Solution Partners:** Get access to consulting, best practices, and technical support with both your migration efforts, hosting efforts, or alignment to solutions like DevOps, ITSM or Agile.

   e. **Customer Success Manager:** Gain access to a dedicated resource during your first year of your Data Center purchase.

2. **Clean your house:** You can't use Data Center to hide a performance problem. Throwing more servers at your performance challenges is usually just a bandaid. Without proper cleaning, technical debt can weigh you down. Plus, when you move to Data Center you get several new tools such as custom fields optimizer, project archiving, and issue archiving to help with this cleanup.

3. **Test it out:**

    a. Set up a dev environment to verify that any new infrastructure requirements work and are optimized for performance. Additionally, it is useful to do full regression testing as well as test upgrades and how to revert back as needed.

    b. Quality assurance (QA) testing is also key, especially if you are choosing to deploy on multiple nodes. Consider incorporating unit tests, integration tests and performance tests to compare your existing Server instance against the new Data Center instance.

    c. User Acceptance Testing (UAT) is one of the most critical components. Ensure your users are comfortable in their new environment, get their feedback and gain their trust before rolling it out into production.

4. **Assemble your team:** Making sure you have the right team in place to perform the upgrade is one of the most critical components to success. Again, there is no specific set of team members or the size of team you need. A few competencies you should consider having in your team are:

    a. Network Engineering: Networking provides the connections between the different pieces of the Data Center infrastructure. Optimizing these connections will ensure you have a well-tuned deployment.

    b. Database Management: Database experts ensure the database is running smoothly. They understand the complexities and tuning required to operate Data Center at scale.

    c. Site Reliability: Site Reliability experts ensure that each application is running at peak performance. They help ensure uptime and bring systems back online in the event of an outage.

*The competencies needed will depend on the scope of your upgrade.

Planning a seamless move:

How can you successfully roll out Atlassian Data Center on a global scale?

Deploying Atlassian Data Center on a global scale has a number of implications. Let's take a look at how Uhub did this.

CUSTOMER SPOTLIGHT:

Uhub

Uhub's deployed Data Center on a single node to start because it allowed them to get up and running quickly and it also allowed them to monitor incremental changes. For example, in Confluence, they moved the attachments to shared storage, then moved the database to a shared database service and ran each for a week so they could monitor any change.

Uhub deployed on AWS and during their testing period, they found Postgres to be the most optimal database for the scale they needed.

When supporting a global team, you always want to consider the physical location of your servers and what team uses the products the most. For example, Uhub originated in Australia and New Zealand, and their servers were located physically in the Sydney office.

However, when they went global, their European users started to experience performance degradation due to their physical proximity to the servers. Uhub quickly implemented smart mirroring in Bitbucket Data Center to help solve for this, and is now considering deploying mirror farms.

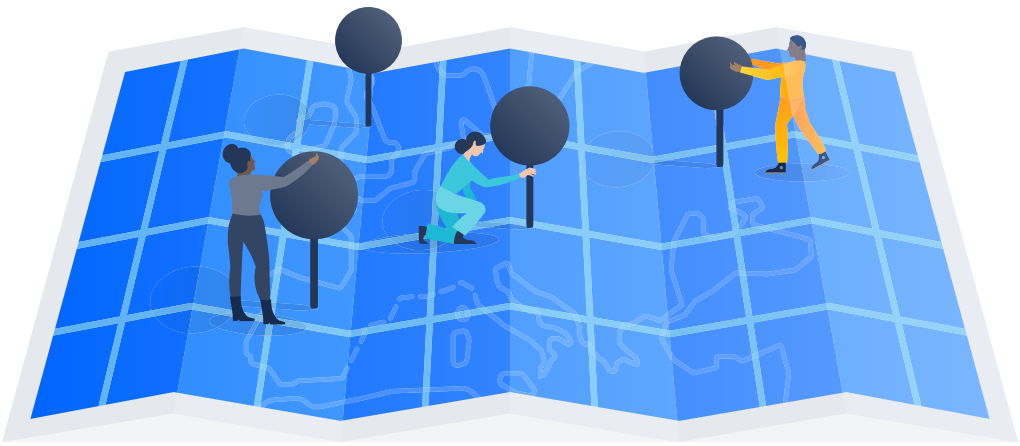
Smart mirroring allows you to set up one or more live mirror nodes to operate with read-only copies of repositories in remote locations, which are automatically synchronized from the primary instance.

One of these mirrors can host all or a subset of the primary's git repositories. Distributed teams can request from the mirror nodes rather than having to request back to the primary node, significantly reducing the time it takes to get their work done.

Smart mirroring isn't the only Data Center feature that helps distributed teams. There is also the following:

- **Content Delivery Network (CDN):** Improve geo-performance and speed up response time for your distributed teams using a CDN, a globally distributed network of edge servers that cache static resources locally, such as CSS, JavaScript, or fonts.
- **Mirror Farms:** Scale CI/CD and reduce time spent waiting on build results by clustering mirrors into "farms", grouped behind a load balancer.

To learn more about other customer's roll-out experiences, check out our resource hub.



The bumps in the road:

What are unexpected hiccups you may experience during the upgrade process?

Marketplace applications
Third-party applications don't operate in isolation. Apps need regular updating too. Consider how you can automate or simplify the management of your third-party apps to reduce administration as you scale.

Traffic patterns
Understanding traffic patterns is critical, especially of your apps including your network file-sharing or load balancer configuration. If you've deployed in a clustered setup, it is important to remember that the database and file systems have to go into shared storage or a shared device, which can impact performance.

For example, one action (deleting a project), could initiate 15,000 database queries. An additional 1-2 milliseconds of latency could significantly impact performance.

Shared file systems
Default parameters should be customized to your unique environment. You need to determine what is most important to your organization and teams. Speed? Data integrity? Allocating enough time to understand these goals and to tune your shared file system so that it is optimized for your environment.

The best-kept secrets:

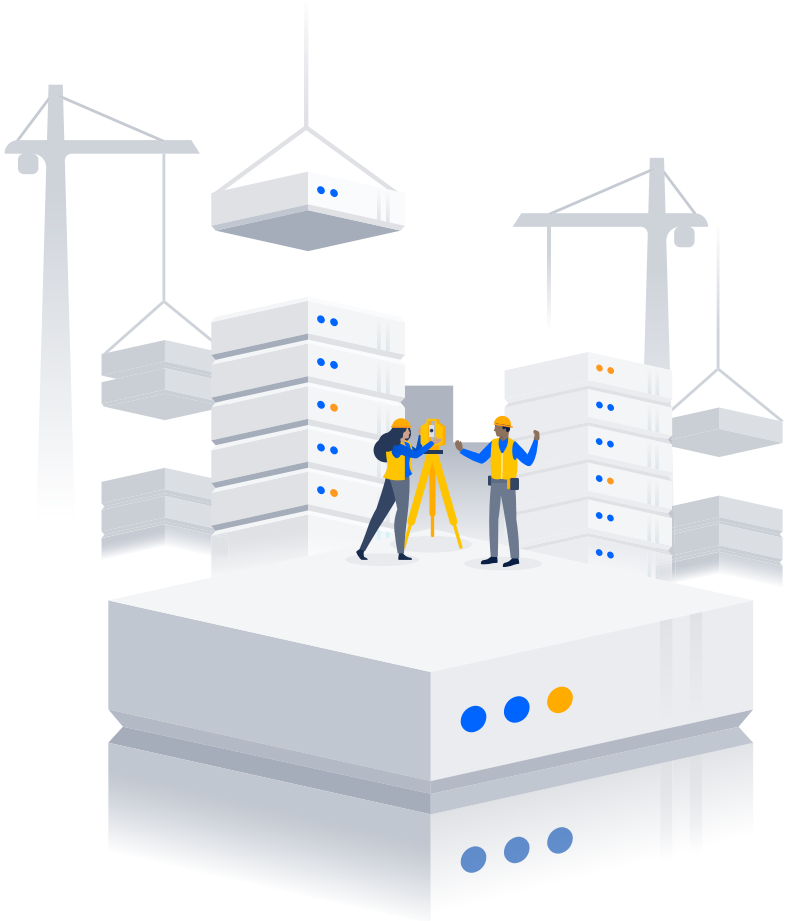
What were the expected (and unexpected) benefits of upgrading to Atlassian Data Center?

One of the first things you'll look to measure is whether you met your original goals. Can you better support your growing organization? Has performance improved? Have there been fewer outages? Many of these are common benefits most organizations experience. But what you hear less about are some of the unexpected benefits.

- **Reducing the impact of planned and unplanned maintenance:** Many customers report that they no longer experience pains due to maintenance with features like zero-downtime upgrades, read-only mode, or other values they've been able to unlock due to a clustered architecture.
    - For example, one customer reported that they could pull a node down, patch it and then add it back to the cluster to eliminate any downtime during maintenance periods, especially since they are global and there are no true weekends when they can easily schedule maintenance.
    - Another customer reported that they now have the time to properly execute upgrades rather than having to rush upgrades, which they previously had to do to stay within the upgrade window.
- **Flexibility:** In a clustered architecture, you can easily deploy a new node for a number of purposes.
    - For example, one customer was asked to deploy encryption at rest on all of their application nodes. They were able to do this without having to wait for the weekend since they could pull one node down at a time and roll it out while the others remained in production.

- **Removing the drag from custom fields:** One customer reported they were able to remove global context from 750 out of the 1500 custom fields, which significantly improved application uptime and allowed them to patch and update their nodes more frequently with less impact. Another administrator reported that this feature has made their job so much easier. Previously, one of the primary tasks of their role was cleaning up the system and a lot of that time was spent reviewing custom fields to eliminate duplicates or global context. Now they can get this clean up done with just a few clicks.

And it doesn't stop there, Atlassian consistently invests in new features for Data Center to provide additional business value and to make administrators lives easier.



If I could go back and do it again:

What do you wish you knew before upgrading to Atlassian Data Center?

No upgrade is perfect. There are always learnings that you can take away from your upgrade experience. Here are a few that customers have shared:

- **Tidy up your instance:** Don't just move. Invest the time upfront cleaning up your instance ahead of time so that the move to Data Center is that much more worthwhile.
- **Consolidate your network transactions:** You can't default to relying on nominal latency making up for unnecessarily high network traffic as databases and shared storage become required.
- **Test and set benchmarks:** Understand your performance bottlenecks and have a thorough testing plan in place for your migration, especially against those bottlenecks.
- **The benefits of a well-implemented logging system:** Setting up a robust logging system and documenting what to expect of your logging behavior to maximize the business value from your log files.
- **Get involved in the Atlassian Community:** There are many other customers just like you who are currently upgrading or who have previously upgraded and are willing to share more about their experiences. Join the community to ask questions, find answers, and engage with both colleagues and Atlassian employees along your journey.

The journey doesn't end: How can you optimize your Data Center instance after the initial deployment to production?

After your upgrade to Data Center, there are many additional features you can take advantage of, optimizations you can put in place and much more.

Check out our resource hub to get consistent updates on the latest and greatest.