

# Continuous Deployment for Cumulocity IoT

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## Abstract

As of July 2023, Cumulocity IoT is released four times a year. The de-facto standard for cloud-native software releases is to follow a Continuous Deployment model, which Cumulocity IoT is switching to, effective as of 2024. Additionally, for customers with a Cumulocity IoT Enterprise package, Cumulocity IoT will continue to be available as a traditional release once per year.

The Continuous Deployment model enables faster bug fix times, earlier access to new features, and no dedicated release update efforts. As a customer, you are requested to use synthetic monitoring to ensure availability of your specific solutions.

Opting for the Yearly Release ensures that you will reduce the number of upgrade projects from 4 times a year to once and gain unrivalled synchronicity with Cumulocity IoT Engineers to cooperate more efficiently. At the same time, it is possible to gain access to public cloud tenants on the latest CD version to allow for development and testing against the latest features.

In summary, customers that are innovative with new IoT technology and business models get even better business agility with Cumulocity IoT Continuous Deployment. Furthermore, customers with (for example) legal obligations regarding extensive validation of new releases, benefit from reduced upgrade efforts through yearly releases.

## Cumulocity IoT Releases Today

As of July 2023, Cumulocity IoT is available as a software release update four times a year. In 2023, we originally planned to release the four following releases: 10.16, 10.17, 10.18 and 10.19. These releases are used both in the Cumulocity IoT SaaS offerings as well as in customer managed installations.

The three-month cadence was originally selected as a compromise between a cloud-native model and a more traditional software release model.

## Continuous Deployment and Yearly Releases

Moving forward, Cumulocity IoT will be available in two release models:

- Continuous Deployment (CD) model: Small incremental improvements will be deployed multiple times a week. The CD model provides customers with a cloud-native upgrade experience, similar to other pure SaaS offerings in the market.
- Yearly Release model: A traditional software release will be available once a year, that requires an upgrade of all components.

Customers can select one of the two models, depending on the product they have purchased:

Cumulocity Product Package	Continuous Deployment	Yearly Release
<b>Cumulocity IoT Basic</b>	Yes	No
<b>Cumulocity IoT Advanced</b>	Yes	No
<b>Cumulocity IoT Enterprise as SaaS</b>	Yes, after 2024 release	Yes
<b>Cumulocity IoT Enterprise as Self-Hosted</b>	No, in future consideration	Yes
<b>Cumulocity IoT Edge</b>	No, in future consideration	Yes

The described change has an impact on the upcoming releases as follows:

Quarter	Original Plan	CD	(Yearly) Release	Comments
<b>2023 Q3</b>	Release “10.18”	n/a	No change: Release “10.18”	No change, this is the last quarterly release
<b>2023 Q4</b>	Release “10.19”	CD	n/a	New features available via CD only.
<b>2024 Q1</b>	Release “10.20”	CD	Release “2024”	Includes changes originally planned in 10.19 and 10.20
<b>2024 Q2</b>		CD	n/a	
<b>2024 Q3</b>		CD	n/a	
<b>2024 Q4</b>		CD	n/a	
<b>2025 Q1</b>		CD	Release “2025”	Release includes changes during 2024

### Advantages of Continuous Deployment and Yearly Release models

Customers selecting the Continuous Deployment model benefit from the following advantages:

**Higher software quality with faster bug fixes.** Currently taking several weeks from accepting a bug until a fix is available, customers opting to go with a Continuous Deployment model can expect this wait time to reduce substantially, to even just a few days. This is made possible due to a reduction in the effort to bring fixes to all releases under maintenance, furthermore, the upgrade effort becomes smaller as only the affected component is upgraded, and full deployment is now automated.

**Early Feature Access with Private and Public Previews.** With CD, new features will be enabled in three steps:

1. Private Preview Features are only available for customers selected by the product team,
2. Public Preview Features are available for all customers via an opt-in approach,
3. GA features are automatically available for all customers.

This approach means that new features can be tested early by customers and feedback can be included in the final GA functionality.

**Less risky updates.** Changes to the system are done in numerous small “micro” updates. Down the line, we envision multiple changes per day, reducing the high effort and risk for traditional full release upgrades.

Customers selecting the Yearly Release model benefit from the following advantages:

**Reduction of upgrade effort:** With Yearly upgrades, customers will only need to plan for one upgrade per year. In the past we got feedback from many customers that quarterly releases overload their capacity and as a result, would prefer the number of releases to be reduced **NB** - releases cannot be skipped.

**Early access to new releases:** Customers on the Yearly Release model, can (and should) test a new Cumulocity IoT feature on a Continuous Deployment instance. This will reduce surprises and make early feedback on a feature possible. This approach is already available today by using the public cloud instance [eu-latest.cumulocity.com](https://eu-latest.cumulocity.com).

**More precise GA date and explicit upgrade support:** As a part of the Yearly Release model, releases are planned to take place on the 31<sup>st</sup> of March of each year (“GA date”). This is possible because the Yearly Release does not provide any new features, instead it is a “snapshot” of the Continuous Deployment model. Additionally, we expect that as a customer you do plan and execute your upgrades accordingly and Cumulocity IoT reserves upfront support and engineering effort to make the upgrade a smooth experience.

## Details on Continuous Deployment

The Continuous Deployment model, a new model for Cumulocity IoT users, brings about many changes. The following section describes the changes for all customers that will use the Continuous Deployment model. *For the yearly release model, see the next section.*

**Feature Rollout:** As of July 2023, new features have been made available as soon as new software releases were installed. With Continuous Deployment, all code changes will be continuously deployed. However, new features might initially be hidden behind feature flags, and depending on the complexity of the feature, might be introduced in several steps:

- Feature Private Preview: The feature is only made available to selected customers.
- Feature Public Preview: Customers can opt-in to have the feature activated.
- Feature GA: The feature will be available for all customers.

To note - feature availability is not directly linked with software upgrades: With CD, many micro updates will ultimately result in the Private Preview availability of a new feature. After customer feedback and additional micro updates, the feature will be promoted to “Public Preview”. During "Public Preview" the feature is available to all customers on the CD model. Further feedback might lead to further upgrades of the feature, before transitioning the feature into "Feature GA". Only then the feature is ready for production usage.

Additionally, different features can be in different feature release status: Some features might be in Private Preview, others might be in Public Preview, and still others are in GA. Also note that the “Feature GA” is different from the GA date of the Yearly Release.

**Zone based Deployment:** The sequence of deploying micro updates is typically performed in at least two steps:

- Upgrades to **developer zone**, which includes all instances that are used for developing and testing Cumulocity IoT based solutions.
- Upgrades to **production zone**, which includes all production instances.

The shared SaaS instances belong to the following zones:

Instance	Zone
<b>eu-latest.cumulocity.com</b>	Developer Zone
<b>cumulocity.com</b>	Production Zone
<b>us.cumulocity.com</b>	Production Zone
<b>emea.cumulocity.com</b>	Production Zone
<b>jp.cumulocity.com</b>	Production Zone
<b>apj.cumulocity.com</b>	Production Zone
<b>Cumulocity IoT Enterprise</b>	Selected by customer

Between the deployment from the developer zone and the production zone, there is a minimum delay of 2 working days before the first instance in production zone is upgraded. This allows customers to react to findings. In practise, the process is more detailed: It might change based on customer needs (urgent hot fixes), upgrade complexity, or upgrade risk. Also, the upgrades inside developer and production zone will be done taking a staggered approach, rather than all at once.

Private / Public Previews are available in both Developer Zone and Production Zone: All micro update changes are deployed to all zones.

**Documentation:** The public documentation of Cumulocity IoT, available on <https://cumulocity.com/guides/>, always reflects the latest deployments. For the Continuous Deployment model, there is no concept of versioning.

Documentation of features in “Private Preview” is not available publicly but is available on request.

Documentation of features in “Public Preview” is available publicly and marked accordingly.

**Release Notes:** Public documentation will include a changelog with relevant information on features available through Public Preview and GA.

**Development of customer solutions:** Customers with their own applications need to monitor their applications. It is good practice to use [synthetic monitoring](#) (among other monitoring techniques). With synthetic monitoring, artificial requests are sent periodically to the customer solution and the result is compared with the expected outcome. Note that traditional monitoring (for example) of CPU utilization might not detect end-user related problems and is not sufficient.

Cumulocity IoT is internally using the same approach, for example, to update the status on [status.cumulocity.com](https://status.cumulocity.com). Internally this is based on the service “Statuspage” from Atlassian, but other tools are equally suitable. Please consult Cumulocity IoT Professional Services (PS) in case you need support for implementing synthetic monitoring.

It is a good practice for customer solutions to have at least two environments available: one development environment and one production environment. Because of the zone-based deployment (see above), these should be in the development and production zone, respectively.

While synthetic monitoring is important for all environments, it is especially important in the developer environment: If a problem is detected in the developer environment, the issue can be solved before the update reaches the production environment.

## Details on Yearly Releases

The Yearly Release model is essentially fairly similar to the existing quarterly releases, including documentation, release notes, etc... This is also the case pertaining to upgrade testing. When upgrading from one yearly release to the next one, we recommend testing the upgrade on a pre-prod instance, like how this was previously done with the quarterly release model.

The following differences apply:

**Yearly Releases are Snapshots:** A yearly release is a snapshot of all software components running in production of Cumulocity IoT instances under Continuous Deployment at one point in time. A “Yearly Release Freeze” period is planned each year, taking up a few weeks where the Software AG team focuses on activities specific to yearly releases such as upgrade testing, rather than working on features, ensuring that you as a customer have the best experience.

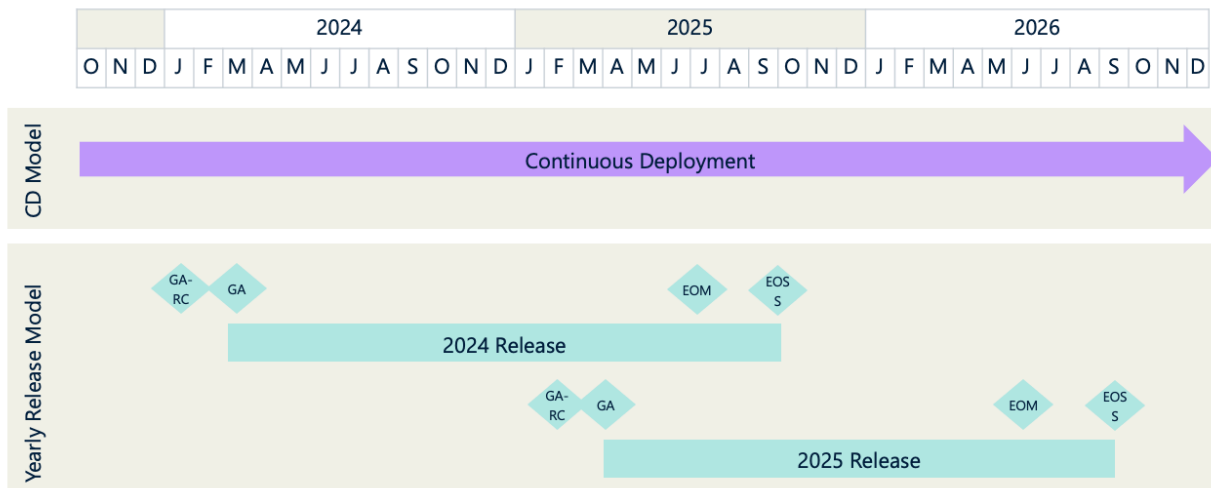
**Yearly update release dates are more accurate:** Because of the above process, we don’t expect to deviate from the previously mentioned Yearly Release date of the 31<sup>st</sup> of March. To note -



the release date has been moved to the beginning of a year to avoid conflicts with holiday season freezing periods, which are a reality for many of our customers.

**Customer upgrade planning:** As a customer using the Yearly Release model, we encourage you to pro-actively plan your upgrades and synchronize your plans with our plan to have a Release Candidate (RC) available on January 31<sup>st</sup> and GA release available on March 31<sup>st</sup>. After the release of the RC, no functional changes or new features will be added to the yearly release. Instead, the quality of upgrade scripts and operations documents will be improved based on our upgrade testing experience. In addition, we will implement bug fixes based on your feedback. For this, Cumulocity IoT Engineering will reserve capacity during this time to deal with customer requests related to the Yearly Release.

See the below details pertaining to the scheduling of yearly releases:



The following milestones are relevant:

- GA-RC: Public **release candidate** available for testing by customers. Provided feedback during this time gets prioritized for the GA version.
- GA: Release is available for upgrade from previous Yearly Release and is **ready production use**.
- EOM: Until the **End of Maintenance**, our global support and research and development staff fully support GA releases by delivering defined product support services and service release or fixes that address customers' needs. The EOM date for a yearly release occurs 3 months after the GA date of the next release. If the next release has a GA 12 month later, then the EOM date is 15 month (12+3) after its GA date.
- EOSS: Until the **End of Sustained Support** customers running products will receive web-based and telephone assistance from Software AG global support, but no new fixes will be created for the software. Customers who require support for more active environments are encouraged to upgrade to the latest GA release. The EOSS date for a yearly release occurs 6 months after the GA date of the next release.



**Solution Development:** You might be developing your own solutions on top of Cumulocity IoT. To ensure that your solution stays operational when upgrading to the next Cumulocity IoT yearly release, next to the upgrade testing, we do recommend testing your solution against a Cumulocity IoT instance on the Continuous Deployment model in order to identify potential problems upfront.

## FAQ

### Continuous Deployment

**Q: How do I report versions number in tickets?**

You report the Cumulocity IoT instance and incident time that shows the problematic behavior. Software AG will use this information to work on the ticket and lookup related information.

**Q: How do I know if a reported bug is fixed?**

You will be informed as part of the ticket answer if the fix is provided.

**Q: If a customer selects the CD model, can the customer select to skip an upgrade?**

No, that is not possible. In case you want to decide about the upgrade schedule yourself, you must use the Yearly Release model.

**Q: When can self-hosted customers jump on the CD train?**

This is under planning currently. Please check with us about your needs so that we can plan it accordingly.

**Q: How are the What's New trainings impacted by CD?**

We will continue to provide regular What's New trainings to inform our customers and users about new features of Cumulocity IoT. The main difference is that enhancement and new features might already be available prior to the release of the What's New training.

**Q: Will maintenance windows still be communicated at least one week prior to the maintenance event?**

Yes. Note that most component upgrades can be performed without downtime and hence do not require a maintenance window. For maintenance events that can lead to a system downtime, we will continue to communicate maintenance windows at least one week prior to the event.

**Q: How are breaking changes communicated and executed?**

As in the past, breaking changes are announced at least 6 months before they become effective.

Background: As stated in the documentation (see section on API compatibility), with the old 3 monthly releases, breaking changes are "announced at least one GA release ahead of the GA release where the change becomes effective.". With 3 months between releases, breaking changes were announced 6 months in advance.

**Q: As a Cumulocity IoT Edge customer, will I be able to benefit from continuous delivery model?**

Currently we are only planning to publish yearly Cumulocity IoT Edge releases. We welcome feedback from customers on using Continuous Delivery for Cumulocity IoT Edge.

### Yearly Releases

**Q: As a Cumulocity IoT Edge customers, will I still get two yearly releases?**

No, there will be only one Cumulocity IoT Edge release per year.

**Q: How are breaking changes communicated for Yearly Releases?**

Breaking changes for CD are announced at least 6-months in advance. Given that yearly releases are snapshots based on CD, the same is also the case for Yearly Releases.

**Q: What documentation will be provided for yearly releases?**

The same documentation as Today for quarterly release will be provided for yearly releases: Documentation, release notes, etc.

**Q: Can I also activate preview features on yearly releases?**

No, preview features are only available on CD instances.