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Autonomous Database ECPU FAQ

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What is an ECPU?

ECPU's are the standard billing metric for Autonomous Database Introduced in early 2023, an ECPU is based on the number of cores per hour elastically allocated from a pool of compute and storage servers. ECPU's replaces the prior OCPU metric.

What is the difference between ECPU's and OCPU's?

An OCPU is defined as the equivalent of one physical core with hyper-threading enabled. In contrast, an ECPU is not explicitly defined in terms of an amount of physical hardware. By introducing ECPU's, Oracle is providing a durable pricing metric which is not tied to the exact make, model, or clock speed of the underlying processor.

What is the price of a database using ECPU's?

The prices for ECPU's are (in US dollars; For additional currencies, please refer to the pricing list at https://www.oracle.com/cloud/price-list/):

- Autonomous Data Warehouse: $0.336 per ECPU per hour
- Autonomous Transaction Processing: $0.336 per ECPU per hour
- Autonomous JSON Database: $0.0807 per ECPU per hour
- APEX Service: $0.0807 per ECPU per hour

Note that ECPU databases need to be provisioned with a minimum of 2 ECPUs.

The Autonomous Database Serverless storage pricing in the ECPU billing metric is as follows:

- Autonomous Data Warehouse: 1 GB at $0.0244, with 1 TB increment
- Autonomous Transaction Processing, Autonomous JSON Database, and APEX Service: 1 GB at $0.1156 with 1 GB increment (minimum of 20 GB)
- Autonomous Database Backup Storage: 1 GB at $0.0244, with 1 GB increment

Additionally, Bring-You-Own-License pricing is available with ECPU's:

- Autonomous Data Warehouse: $0.0807 per ECPU per hour
- Autonomous Transaction Processing: $0.0807 per ECPU per hour

(Up to 8 ECPU's may be activated for each supported Processor license of Oracle Database Enterprise Edition and up to 16 ECPU's for each supported Processor license of Oracle Database Standard Edition)

Why has Oracle introduced ECPU's?

With ECPU's, Oracle introduced its billing metric for the long-term future. ECPU's provide a consistent price metric independent of the underlying hardware. This avoids the possibility of complex billing metric in the future (for example, as new hardware architectures are introduced).

Note that ECPU's have also already been introduced for MySQL Heatwave on AWS, and other services may also offer ECPU's in the future.

What are the benefits of ECPU's?

At their introduction, ECPU's provide similar or better price-performance than OCPU's for a given Autonomous Database workload. Over time, ECPU's will continue delivering continuous improvements in price performance.

ECPU's provide the benefit of a lower entry price. For example, the smallest Autonomous Database configuration is 2 ECPU's or $0.672 or $0.1614 per hour, depending on the workload type. ECPU's also provide finer-granularity pricing for Autonomous Database since the increment for resizing or autoscaling the database is 1 ECPU.

Additionally, new features for Autonomous Database may only be available with ECPU's. For example, concurrent with the introduction of ECPU's, Oracle has lowered the price of storage for Autonomous Data Warehouses Serverless from $118.40 to $25.00 per TB-month and provided per-GB storage granularity for the other Autonomous Databases. ECPU's on ADB also offers Elastic Pools for database consolidation, which helps lower costs by up to 87%.

Should I use ECPU's as the billing metric for my new Autonomous Database?

Yes, ECPU's are recommended for new Autonomous Databases. For Autonomous Database Serverless, ECPU's are the default pricing metric during database provisioning. On Autonomous Database on Dedicated Infrastructure, ECPU's will be the default pricing metric when creating a VM Cluster.

Will OCPU's be retired?

The OCPU billing metric has been retired on Autonomous Data Warehouse and Autonomous Transaction Processing as of January 2024 (see MOS note 2998742.1 for Autonomous Database Serverless and MOS note 2998755.1 for Autonomous Database On Dedicated Infrastructure and Exadata Cloud@Customer). It will be retired on Autonomous JSON Database and APEX Service soon thereafter.

Existing Autonomous Databases using OCPU's are not modified and will continue to use OCPU's, but Oracle recommends that customers update all existing OCPU databases on Autonomous Database Serverless to the ECPU billing metric, via the available simple UI or API call.

ECPU's is the default pricing metric for new Autonomous Databases, but customers can optionally choose to create their new databases using the OCPU pricing metric until January 2025.

How do I convert an existing OCPU-based database to an ECPU-based database?

You may convert a database from OCPU's to ECPU's without any downtime on Autonomous Database Serverless via the database console UI or APIs.

For Autonomous Database on Dedicated and Cloud@Customer Infrastructure, customers can request Oracle to update their OCPU Autonomous VM Clusters and their respective Autonomous Databases to the ECPU billing metric with no downtime via service request (SR) in My Oracle Support starting in 2025.

You may clone an OCPU-based database to an ECPU-based database on all above workload types.

How should I size my database using ECPU's?

For the conversion of an existing Autonomous Database using OCPU's to ECPU's, a customer can ensure the same or better performance by sizing their database based on costs. For example, a 4 OCPU Autonomous Data Warehouse has a list price of $5.36 per hour. An Autonomous Data Warehouse with similar costs would use 16 ECPU's ($5.376 per hour).

This is a conservative sizing approach to provide similar or better performance.

For a new database or for the migration of an existing Oracle Database to Autonomous Database, customers can work with their Oracle sales teams. If customers have previous experience with sizing an Autonomous Database based on OCPU's, then they can fully leverage their previous OCPU sizing estimate and convert to ECPU's on a cost basis as illustrated above.

Do ECPU-based databases have different features or performance characteristics from OCPU-based databases?

The introduction of ECPU's is simply a new pricing metric. Using an ECPU Autonomous Database is essentially identical to an OCPU Autonomous Database. Customers choose the number of ECPU's or OCPU's at provisioning time, and they can re-size their database at any time. Both ECPU's and OCPU's fully support auto-scaling (up to 3x of the base compute capacity), autonomous data guard, cloning, and all other core features. The billing policies for auto-scaling and Autonomous Data Guard are unchanged across ECPU's and OCPU's.

Starting in August 2023, some new Autonomous Database features may be available only on ECPU's. For example, Elastic Pools on Autonomous Database are only available with ECPU's.

There are also differences in Autonomous Database Serverless backups between OCPU's and ECPU's. ECPU's backup storage is billed separately, and the backup retention period may be selected between 1 and 60 days. With OCPU's, 60-days of backup storage is included in the storage price. For more information, please refer to the About Backup and Recovery on Autonomous Database section in the Autonomous Database documentation.

So what is the big picture here?

Oracle introduced its long-term price metric with ECPU's to avoid pricing complexity as hardware systems change (please see price lists for other cloud vendors as examples of this complexity).

ECPU-based databases provide the same user-experience as OCPU-based databases, and you may convert existing OCPU databases to ECPU databases without disruption or downtime.

Customers should to adopt ECPU's with confidence that they will get the same or better price-performance with no significant changes to their Autonomous Database experience.

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