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 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 ECPUs?**

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

ECPUs provide the benefit of a lower entry price. For example, the smallest Autonomous Database configuration is 2 ECPUs or $0.672 or $0.1614 per hour, depending on the workload type. ECPUs 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 ECPUs. For example, concurrent with the introduction of ECPUs, 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 Serverless also offers Elastic Resource Pools for database consolidation, which helps lower costs by up to 87%.

**Should I use ECPUs as the billing metric for my new Autonomous Database?**

Yes, ECPUs are recommended for new Autonomous Databases. For Autonomous Database Serverless, ECPUs 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.

**Will OCPUs 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 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, Oracle will offer an online conversion capability with no downtime to update existing OCPU AVMs, as well as their respective Autonomous Container Databases and Autonomous Databases, to the ECPU billing metric via the OCI console and API in Q3 CY2024.

You may clone an OCPU-based database to an ECPU-based database on all above workload types.
How should I size my database using ECPUs?

For the conversion of an existing Autonomous Database using OCPUs to ECPUs, 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 ECPUs ($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 OCPUs, then they can fully leverage their previous OCPU sizing estimate and convert to ECPUs on a cost basis as illustrated above.

Do ECPUs-based databases have different features or performance characteristics from OCPUs-based databases?

The introduction of ECPUs is simply a new pricing metric. Using an ECPUs Autonomous Database is essentially identical to an OCPUs Autonomous Database. Customers choose the number of ECPUs or OCPUs at provisioning time, and they can re-size their database at any time. Both ECPUs and OCPUs 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 ECPUs and OCPUs.

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

There are also differences in backups between OCPUs and ECPUs. ECPUs backup storage is billed separately, and the backup retention period may be selected between 1 and 60 days. With OCPUs, 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 ECPUs to avoid pricing complexity as hardware systems change (please see price lists for other cloud vendors as examples of this complexity).

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

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