

Oracle Communications Elastic Charging Engine

As providers introduce 4G, 5G, digital, enterprise, and usage-based services, they need to turn service activity into responsive commercial outcomes without adding avoidable operational complexity or disrupting established systems. Oracle Communications Elastic Charging Engine (ECE) helps providers launch, monetize, and evolve these services with real-time online and offline converged charging, giving them the charging context needed to manage usage, entitlements, balances, and customer experiences as they occur.

ECE within Oracle Cloud Scale Monetization

Oracle Communications Elastic Charging Engine is the converged charging component of Oracle Cloud Scale Monetization, providing online and offline charging, 5G charging, balance management, charging gateway, and rating capabilities alongside the solution's billing, mediation, service-control, operations, and AI/ML framework capabilities.

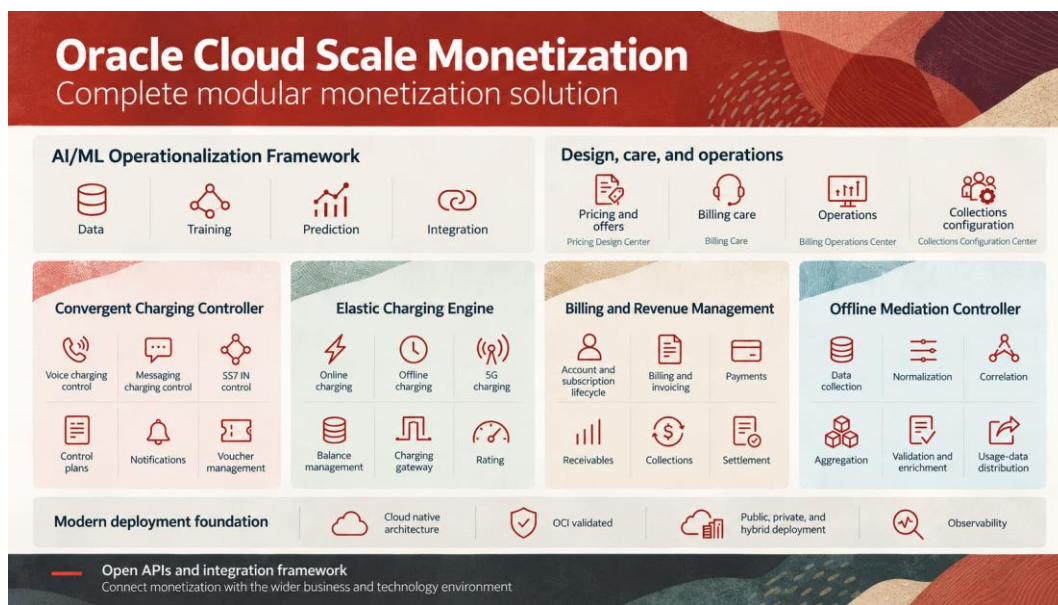


Figure 1. Oracle Communications Elastic Charging Engine within Oracle Cloud Scale Monetization.

Modernize charging while supporting service growth

- **Launch and evolve services with greater agility.** Support new consumer, enterprise, digital, and usage-based propositions with configurable online and offline converged charging.
- **Create more responsive customer experiences.** Use real-time balance, quota, and usage context to support usage awareness, spend control, service entitlements, add-ons, and differentiated treatment.
- **Build trusted charging context for intelligent, governed operations.** Establish authoritative real-time charging and operational context that can contribute to future AI/ML use cases and the broader Autonomous Revenue Management direction.

Monetize services in real time

Customers expect greater clarity and control as they use digital and connectivity services. Providers, meanwhile, need charging decisions that can reflect the relevant offer, entitlement, balance, quota, and session context at the moment a service is consumed.

ECE is Oracle's strategic product for real-time, online and offline converged charging within Oracle Cloud Scale Monetization. It supports real-time rating, authorization, balance management, quota management, and session control. This helps providers connect network and service activity with immediate commercial and customer outcomes across prepaid, postpaid, and hybrid models.

By applying charging decisions in real time, providers can support consumer, enterprise, digital, and usage-based experiences with the responsiveness required for modern services.

Support 4G, 5G, and multigeneration service evolution

Providers commonly operate hybrid environments in which 4G, 5G, established intelligent-network services, and newer digital propositions coexist. Charging modernization therefore needs to support current priorities while providing a credible route to expand over time.

ECE supports converged online and offline charging across fixed, mobile, digital, and non-telco service environments. It provides 3GPP-aligned charging capabilities for 5G standalone and non-standalone architectures, including Charging Function capabilities for 5G standalone deployments. It also supports HTTP/2 and Diameter gateway integration for relevant core-network environments.

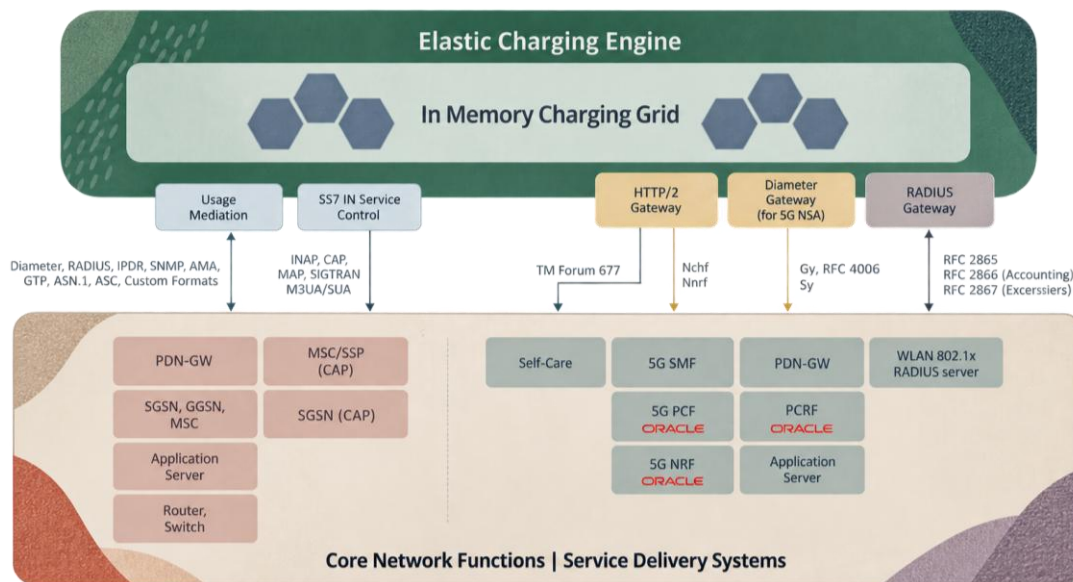


Figure 2. ECE core network integration for non telco, fixed, 2G- 5G mobile networks.

Where required, providers can extend ECE with optional Oracle Cloud Scale Monetization components to address a broader range of network and service requirements:

- **Oracle Communications Offline Mediation Controller** can provide controlled usage-data mediation across hybrid 4G/LTE/5G networks, other network types, and non-telco applications. It helps collect, normalize, validate, enrich, correct, aggregate, and correlate usage data before it is used in charging and adjacent monetization processes.
- **Oracle Communications Convergent Charging Controller** can provide continuing service control for established SS7-based intelligent-network voice, messaging, and voucher-management services. It also supports CAMEL over SIGTRAN for circuit-switched voice and SMS environments.

Together, these modular capabilities help providers support charging and service-control requirements across multigeneration networks and service types. Providers can introduce the capabilities needed for a priority domain, then expand as network, service, and migration priorities change.

Create flexible offers and responsive customer experiences

Commercial teams need to create offers that reflect how customers buy and use services. Operations teams need the charging controls to apply those offers consistently in real time, including across more complex account, payment, and sharing arrangements.

ECE supports configurable converged charging across services, segments, payment models, and charging dimensions. It can rate events using relevant metrics, attributes, and payment information in the event stream, while maintaining real-time balance and quota context.

These capabilities can support:

- Usage awareness and balance visibility
- Real-time spend control and thresholds
- Shared allowances and group-based arrangements
- Add-ons, bundles, and renewable offers
- Service entitlements and differentiated commercial treatment
- Prepaid, postpaid, and hybrid experiences

Pricing Design Center provides the broader design-time environment for configuring and managing offers, bundles, tariffs, and reusable pricing components across the monetization lifecycle. Where providers require subscription, billing, invoicing, and revenue-management capabilities, ECE can be deployed with Oracle Communications Billing and Revenue Management (BRM).

Build a stronger foundation for charging operations

Real-time charging is a critical operational function. Providers need an architecture that can process charging requests efficiently, maintain consistent charging context, and adapt as traffic, subscriber volumes, and service portfolios change.

ECE uses an in-memory charging grid based on Oracle Coherence technology to process real-time charging transactions close to the customer, session, balance, and pricing data needed for each decision. Its distributed architecture supports automatic partitioning and rebalancing of data as grid capacity changes. Asynchronous persistence supports downstream revenue processing without placing that work in the core charging path.

ECE can be deployed as a cloud-native application in a containerized and orchestrated environment, using cloud infrastructure and DevOps CI/CD tooling to support service design, testing, deployment, and operational change. It can also be deployed as a non-containerized application where required.

For business continuity requirements, ECE supports an active-active dual-site deployment architecture. Charging requests can be processed across both geographic locations, with charging-grid updates replicated between sites through Coherence cache federation. If one site becomes unavailable, the remaining site can continue to process usage requests while the affected site is restored.

ECE also provides operational controls and observability capabilities, including monitoring metrics and alerting support for charging components and sessions.

Connect charging to the wider monetization environment

When a provider requires an integrated charging, billing, and revenue-management environment, ECE can be deployed with BRM. ECE provides rated-usage and balance context for downstream billing and revenue-management processes, while BRM manages broader subscriber, account, billing, invoicing, payment, collections, and revenue-management requirements. OCOMC can be added where controlled usage-data mediation is required.

ECE also provides an API framework and alignment with TM Forum Open APIs, helping providers connect charging context with digital channels, product catalog environments, customer care, and other external systems.

Operationalize AI/ML using trusted charging context

ECE provides trusted real-time charging, balance, quota, session, and usage context that helps explain how customers and services are consuming an offer. When combined with the broader account, offer, billing, and revenue context available through BRM, this information can provide a strong foundation for focused, domain-grounded AI/ML use cases.

The Oracle Cloud Scale Monetization AI/ML Operationalization Framework helps customers and partners use this trusted monetization context to build AI/ML use cases on their preferred AI infrastructure. Its Data, Training, and Prediction services support the preparation of monetization data, development and management of models, and delivery of model outputs into appropriate applications or workflows.

The framework's next-best-offer reference template demonstrates how trusted real-time charging, usage, account, offer, pricing, and billing context can support relevant recommendations for customers or business users. Customers and partners can extend the framework for their own use cases, subject to their data, models, integrations, validation, business rules, permissions, and governance.

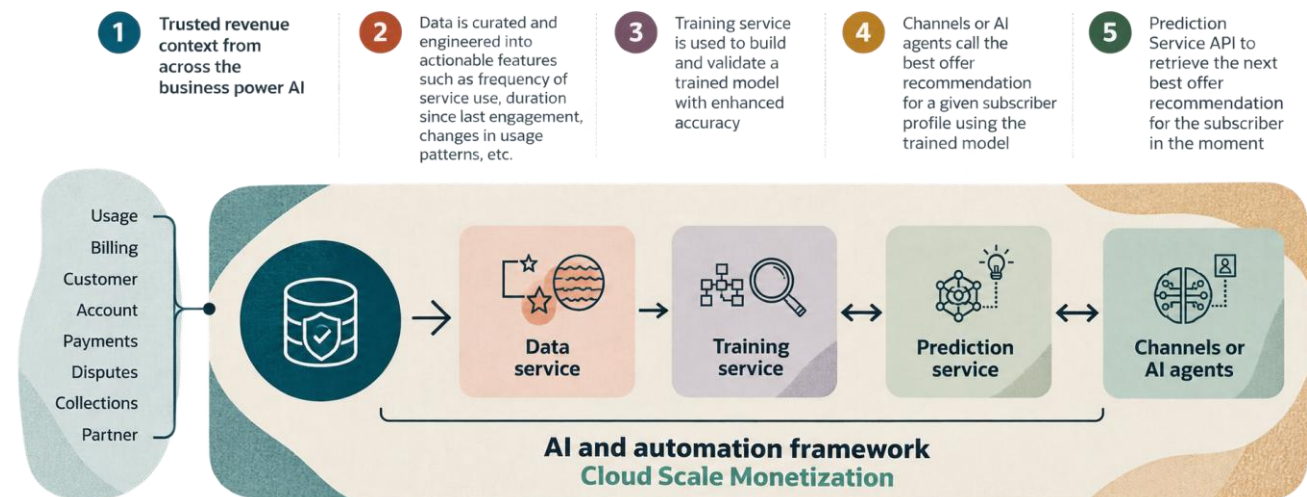


Figure 3. AI-enabled Next Best Offer (NBO) in action using the AI / ML Operationalization Framework.

Deploy and evolve at a pace that fits the business

Charging modernization does not need to start with full transformation of the monetization estate. Providers can introduce ECE for a priority charging domain while established billing systems and surrounding applications remain in service.

For example, ECE can support real-time charging for a new 4G or 5G service, a digital proposition, or a growth-focused enterprise offer, while pre-rated usage is passed to existing downstream billing environments. This lets providers focus investment on immediate service and commercial priorities while continuing to use established systems.

As business needs and migration readiness change, providers can expand toward a broader Oracle Cloud Scale Monetization environment. BRM can be introduced where integrated billing and revenue-management capabilities are needed, while OCOMC and OC3C can be added where their respective mediation and established service-control capabilities are required.

Part of Oracle Cloud Scale Monetization

Oracle Cloud Scale Monetization is a complete, modular monetization solution that brings together converged charging, billing and revenue management, usage-data mediation, and service control.

Within the solution:

- **Oracle Communications Elastic Charging Engine** is the strategic product for real-time, online and offline converged charging across 4G, 5G, digital, enterprise, and usage-based services.
- **Oracle Communications Billing and Revenue Management** provides billing, revenue management, account, invoicing, payment, collections, and related commercial-lifecycle capabilities.
- **Oracle Communications Offline Mediation Controller** provides optional usage-data mediation and controlled usage-data input where required.
- **Oracle Communications Convergent Charging Controller** provides service control for established SS7-based intelligent-network voice, messaging, and voucher-management services.
- **Oracle Cloud Scale Monetization AI/ML Operationalization Framework** provides an open foundation for customers and partners to operationalize appropriate AI/ML use cases using trusted monetization data.

These products and capabilities can be deployed independently or together, then expanded as needs change.

Summary

Oracle Communications Elastic Charging Engine helps providers connect service activity with responsive commercial and customer outcomes through real-time online and offline converged charging. It supports a practical path to modernize charging for 4G, 5G, digital, enterprise, and usage-based services while allowing established systems to remain in service.

As part of Oracle Cloud Scale Monetization, ECE can be deployed independently or with BRM, OCOMC, Oracle Communications Convergent Charging Controller, and the AI/ML Operationalization Framework according to the provider's business, operational, and migration priorities.

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