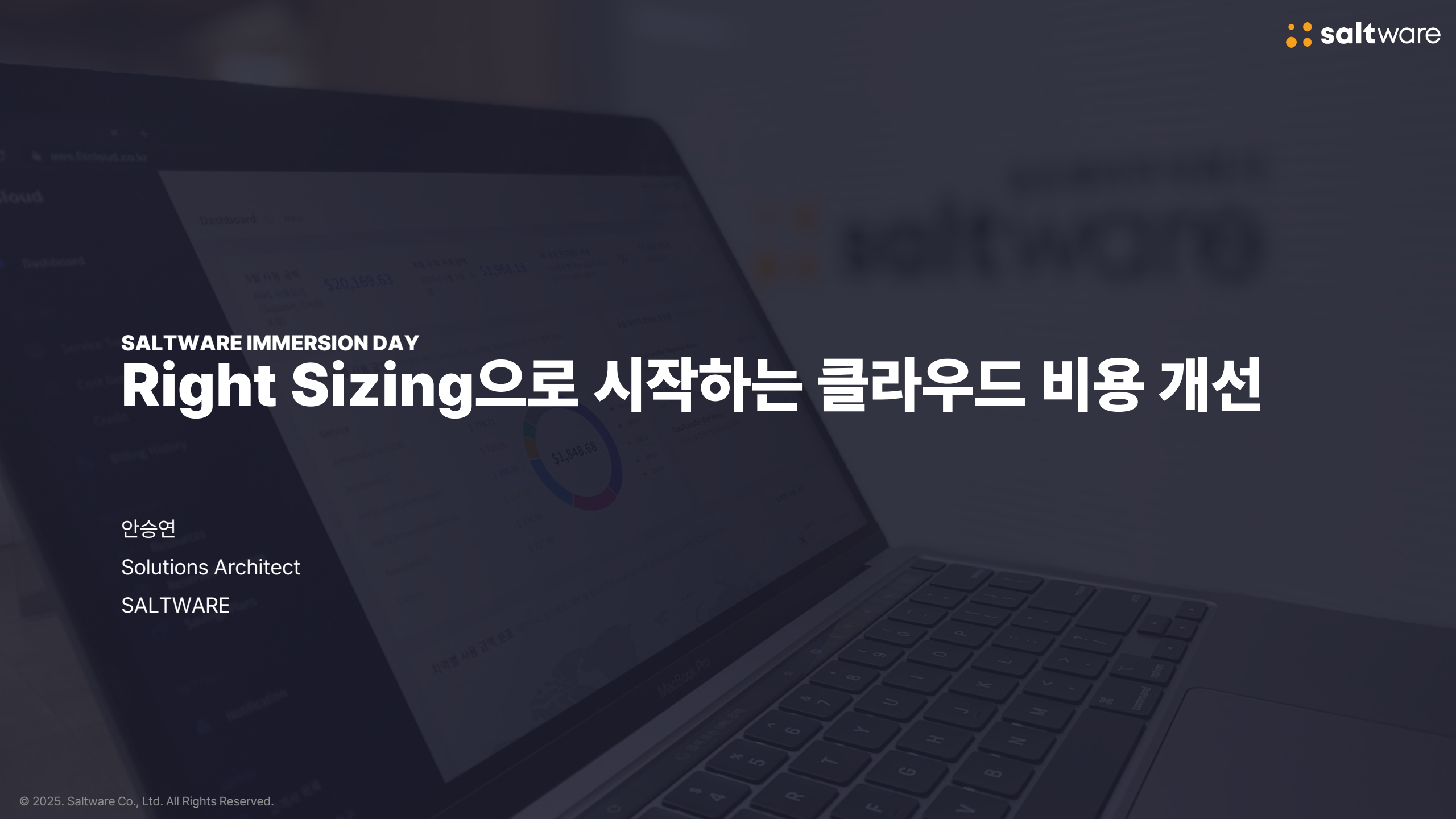

SALTWARE IMMERSION DAY

Right Sizing으로 시작하는 클라우드 비용 개선

안승연

Solutions Architect

SALTWARE

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Agenda

PART 1	Compute Right Sizing
PART 2	Database Right Sizing
PART 3	Storage Right Sizing

Compute Right Sizing

PART 1

Amazon EC2 – 비용 최적화 전략

Amazon EC2 – 비용 최적화 전략

1. ***Instance Specification***
   - Instance Type
     - General · Compute · Memory Storage · Accelerated
     - Burstable · EBS-Optimised
   - Cost Optimisation tips

2. ***EC2 License & Tenancy***
   - License Usage · Tenancy
     - Dedicated Instances · Dedicated Hosts

3. ***Purchasing Strategy***
   - Purchasing Strategy
     - Spot · On-demand · Savings Plans

4. ***EC2 Optimization Tools***
   - Fitcloud : Rightsizing Recommendations
   - AWS Compute Optimiser
   - Fitcloud : Cost & Usage Report (CUR)
   - AWS Trusted Advisor
   - Manages Stopped Maintenance
     - Save EBS Cost
     - AWS Instance Scheduler
     - Stop & Start
   - EC2 Architectural Optimisation
     - Scaling : Hotizontal(AutoScaling), Vertical Scales
     - Network Transfer
     - Inter Regions & Azs
     - Considering
     - Containers, Fuctions & Managed Service

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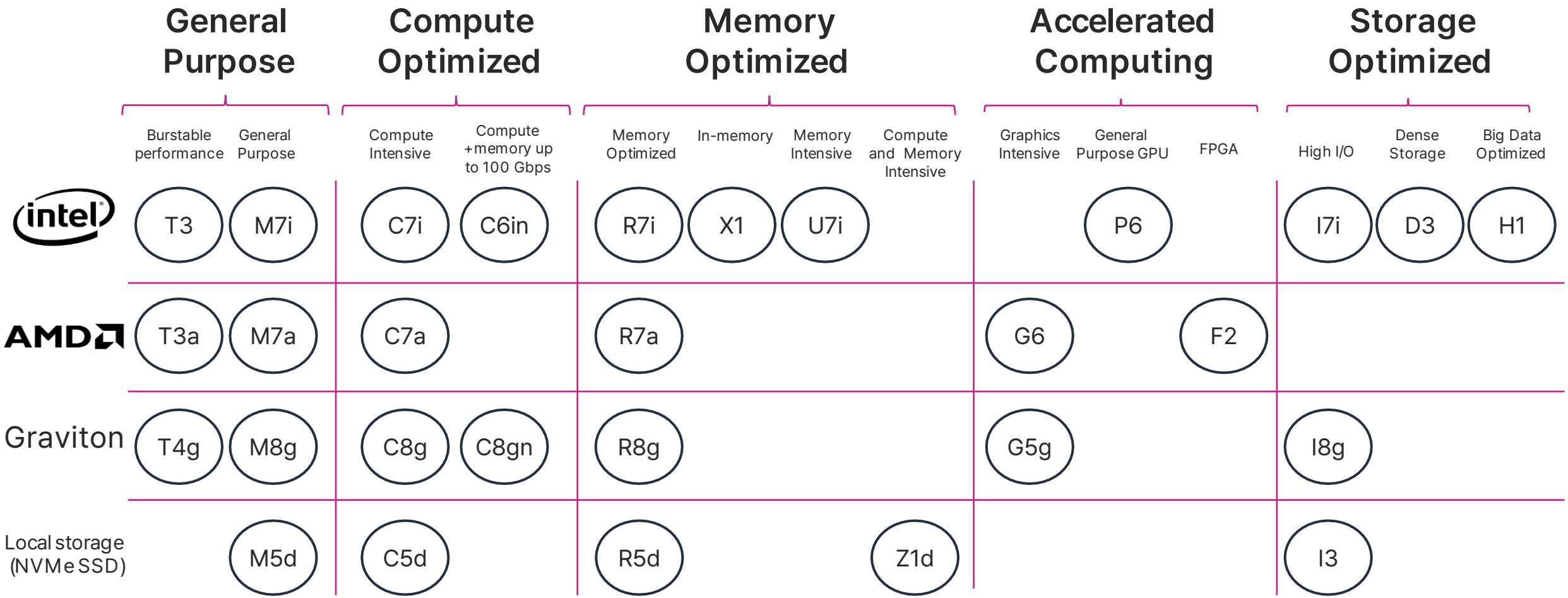
처음부터 올바른 (EC2) 인스턴스 제품군을 선택하세요



https://aws.amazon.com/ec2/instance-types/

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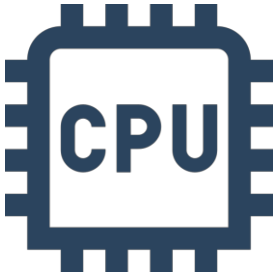
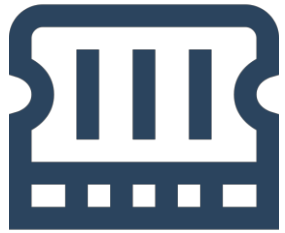
EC2 인스턴스 구성

운영 체제



CPU 코어 수



시스템 메모리(RAM) 용량

저장 공간

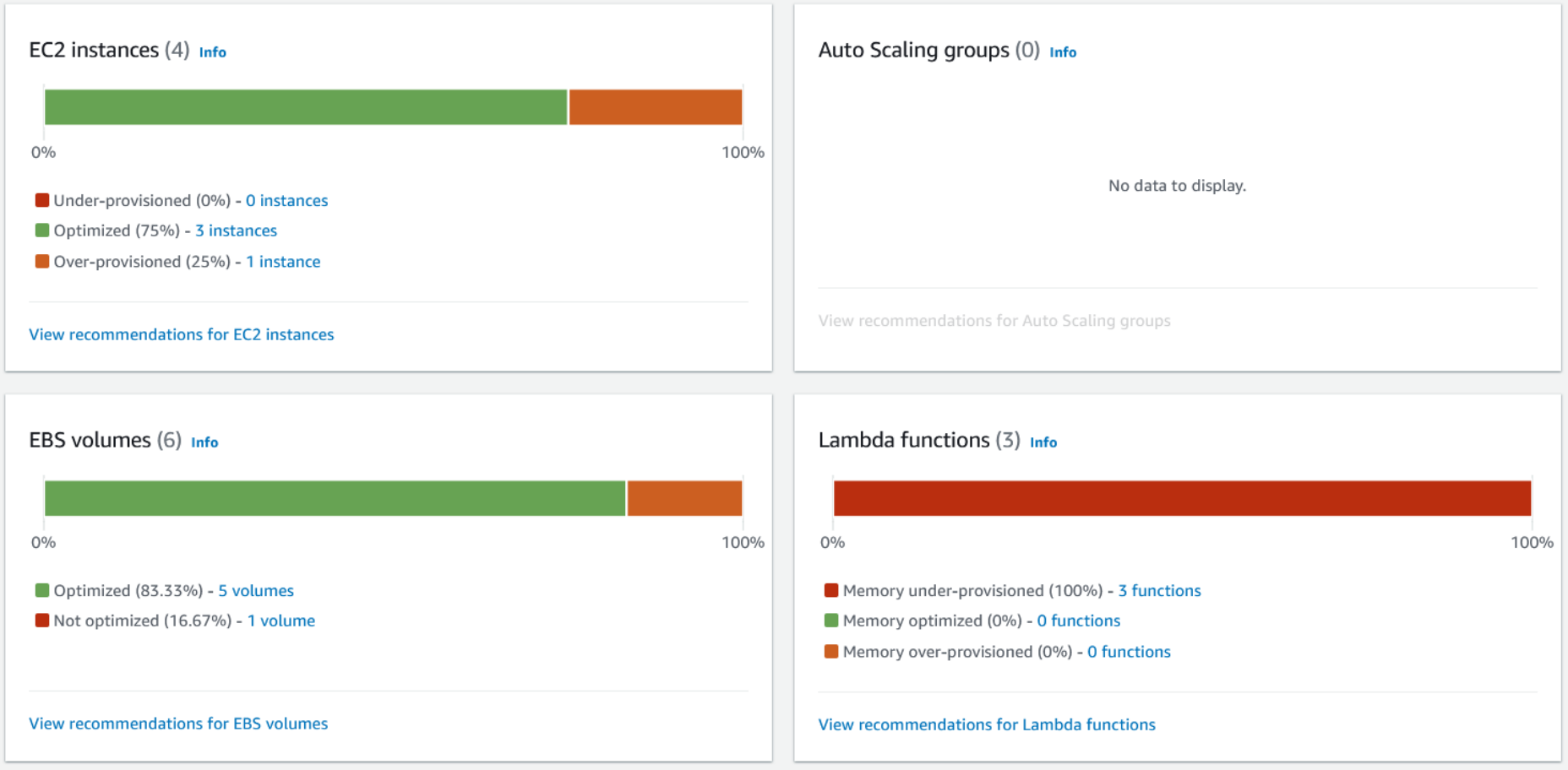
GPU 코어

네트워크 대역폭 요구 사항

CostOps Tips : 최신 세대로 마이그레이션

Benefits :	**더 낮은 비용으로 더 나은 성능을 제공하는 새로운 세대의 인스턴스 유형**
Actions :	새로운 워크로드를 위한 차세대 인스턴스 선택 권장사항 : 예약 인스턴스(RI) 구매 전, 최신 세대로 마이그레이션 우선 수행
Tools :	**FitCloud**

CostOps Tips : Compute Optimizer Recommendations : Cost vs Performance



https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-instance-recommendations.html

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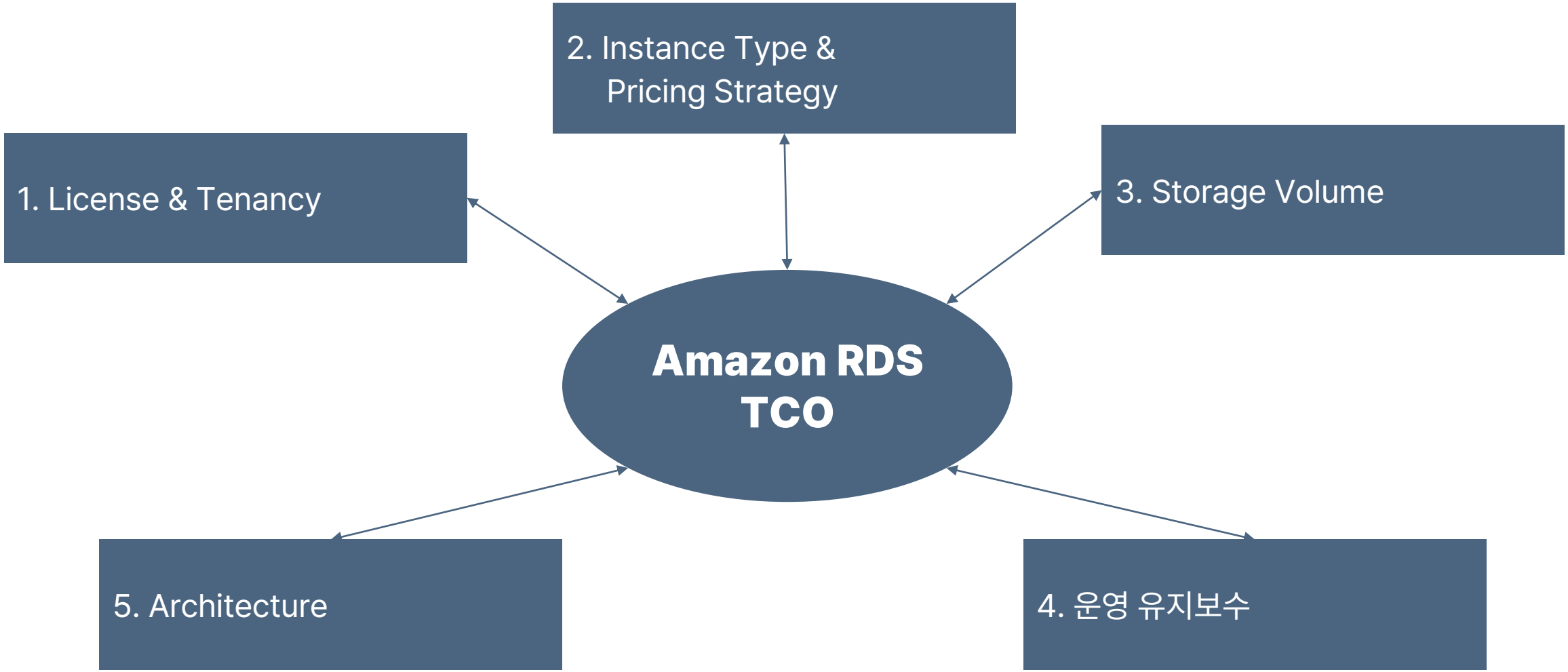
Database Right Sizing

PART 2

RDS – 총 소유 비용 (TCO)



RDS – 총 소유 비용 (TCO)

1. ***RDS Database License & Tenancy Cost***
   - MySQL · PostgreSQL · MariaDB
     Oracle · SQL Server · Aurora
   - BYOL (자체 라이선스 가져오기) · 라이선스 포함됨

2. ***Instance Type & Pricing Strategy Cost***
   - General Purpose · Memory Optimized
   - On-Demand · Reserved Instances (RI)
   - Amazon EC2 Dedicated Hosts
     (For Windows Server BYOL)

3. ***Storage Volume Cost***
   - Storage Type (GP3 · IOPS)
   - Storage Amount · Storage Auto Scaling

4. ***RDS Operational Maintenance Cost***
   - Backup · Snapshot
   - Enhanced Monitoring · Performance Insights
   - Scheduling
   - Database Migration Services (DMS)

5. ***Architecture Cost***
   - Horizontal (Read Replicas) · Vertical Scales
   - Network Transfer (Inter Regions & Azs)
   - Multi-AZ
   - ElastiCache
   - RDS Proxy

RDS – Instance Optimizations

Benefits :	인스턴스 용량 최적화
Actions :	대부분의 EC2 비용 최적화가 적용됩니다. • 유휴 RDS Instancce • Right Sizing • Migrating to new generation instances - Consider using Graviton2 instances where applicable • Stop/Start instances as needed
Tools :	Trusted Advisor, CloudWatch, RDS Instance Scheduler, RDS Enhance Monitoring

Storage Right Sizing

PART3

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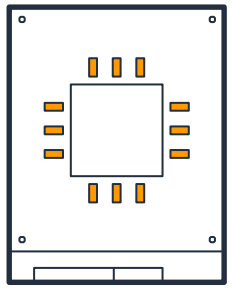
애플리케이션용 블록 볼륨 유형

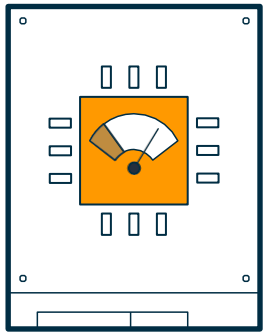


General-purpose SSD

NoSQL databases

트랜잭션 워크로드,
저지연 애플리케이션

Cassandra,
MongoDB, CouchDB

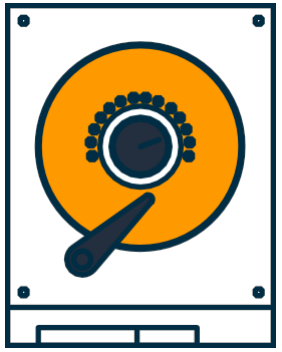


Provisioned IOPS SSD

Relational databases

I/O-intensive database applications

MySQL, SQL Server,
PostgreSQL, SAP, Oracle

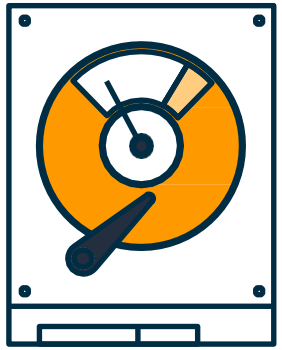


Throughput-optimized HDD

Big data, analytics

대규모 데이터 세트와
큰 I/O 크기

Kafka, Splunk, Hadoop
data warehousing



Cold HDD

File, media

대용량 콜드 데이터 세트로
액세스 빈도가 낮은 워크로드

Transcoding,
encoding, rendering

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gp2 vs gp3

	gp2	gp3
Performance	**Up to 250 MB/s** throughput **3,000 IOPS (burst)** baseline performance **3 IOPS / GB** scaled performance	**Up to 2,000 MiB/s** throughput **Up to 80000** IOPS **3,000 IOPS (no burst)** baseline performance **Independently scale** IOPS and throughput
Pricing	**$0.10/GB-month** of provisioned storage	**$0.08/GB-month** of provisioned storage 3,000 IOPS free and $0.005/provisioned IOPS-month over 3,000 IOPS 125 MB/s free and $0.04/provisioned MB/s- month over 125 MB/s

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과금 예시 : gp2 vs gp3

gp2				gp3				gp3 cost benefit	
Volume Size in GiB	Max IOPS	Throughpu MiB/s	gp2 Cost (US$/Month)	IOPS		Throughput MiB/s		gp3Cost (US$/Month)	Cost reduction compared to GP2
				Baseline	Provisioned	Baseline	Provisioned		
30	3000	128	$3.00	3000	0	125	0	$2.40	20%
100	3000	128	$10.00	3000	0	125	0	$8.00	20%
500	3000	250	$50.00	3000	0	125	125	$45.00	10%
1000	3000	250	$100.00	3000	0	125	125	$85.00	15%
2000	6000	250	$200.00	3000	3000	125	125	$180.00	10%
6000	16000	250	$600.00	3000	13000	125	125	$550.00	8%

Ex : 500GB EBS gp2 to gp3

- 125MiB/s 처리량을 gp2 성능에 맞추기 위한 추가 비용
- 이 특정 사례의 비용 이점 10%

Pricing related to N.Virginia (December 2025)

Considering 1 volume for 730 hours/month

EBS 볼륨 수정하기

- EBS Elastic Volume를 사용하면 볼륨을 분리하거나 인스턴스를 다시 시작하지 않고도 EBS 볼륨을 수정 가능
- 수정하기 전에 볼륨 스냅샷 찍기
- Linux로 볼륨의 파일 시스템 확장 (크기가 커진 경우)
- 프로덕션 환경에 배포하기 전에 애플리케이션으로 새 볼륨(변환중에도)을 테스트
- EBS 시간 변환 평가 (TB당 약 6시간, 더 오래 걸릴 수 있음)

제한 사항

- Elastic Volume 작업은 multi-attachment io1, io2에서는 작동하지 않으며 EBS 볼륨 제한을 준수해야 합니다.
- 볼륨을 수정한 후에는 최소 6시간 동안 기다렸다가 볼륨이 사용 중이거나 사용 가능한 상태인지 확인한 후 동일한 볼륨을 추가로 수정하세요.

https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/modify-volume-requirements.html

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NEXT

할인도 전략이다: RI vs SP

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- Public Sector
- Immersion Day
- Amazon RDS Delivery
- Amazon CloudFront Delivery
- AWS Control Tower Delivery
- DevOps Services Competency
- Migration Services Competency
- Financial Services Competency
- Well-Architected Partner Program
- Amazon EC2 for Windows Server Delivery

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