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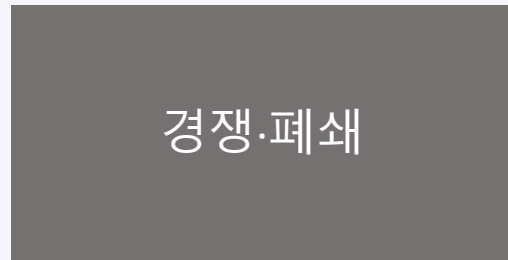
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2019

오픈소스 DBMS의 진화, 플랫폼을 통한 업무 혁신 사례

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노웅영 이사

기업활동 변화

과거



현재



4차 산업혁명의 주요 특징

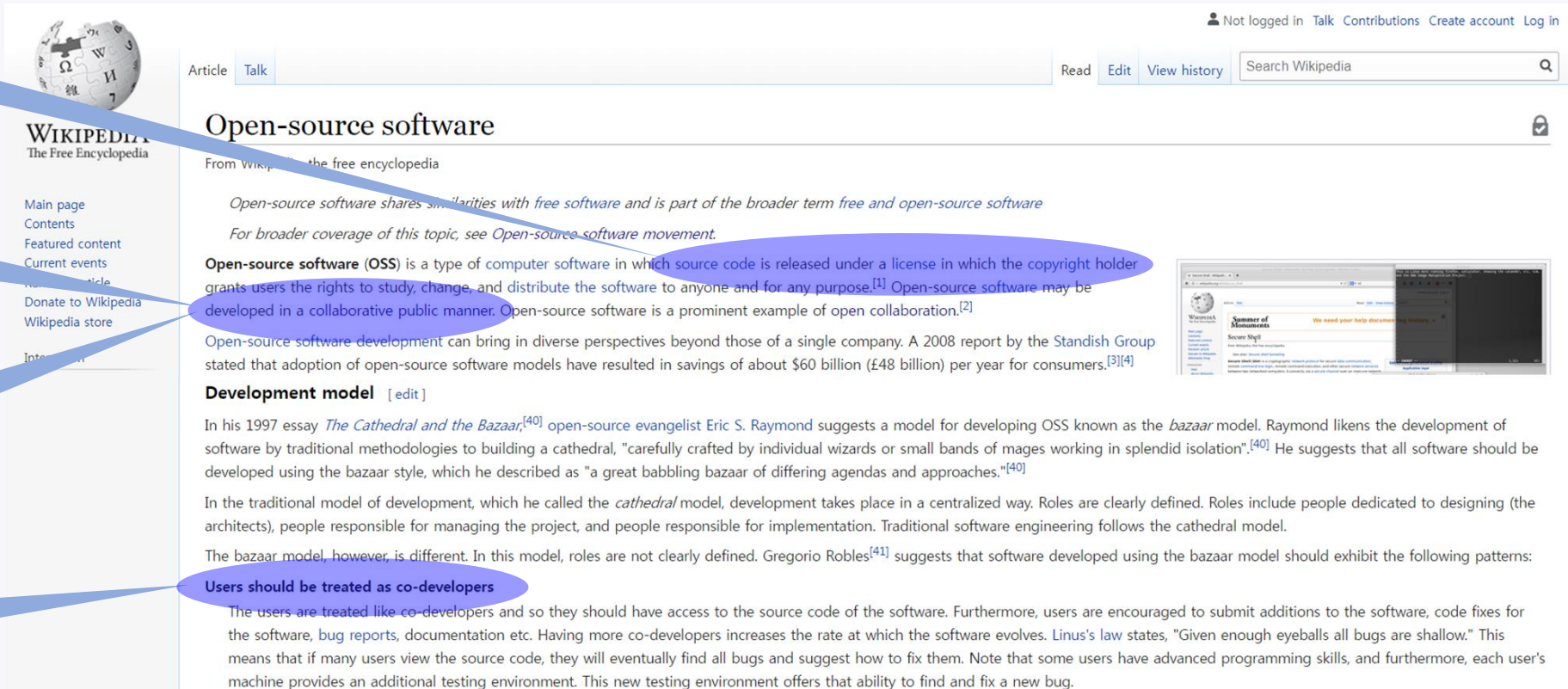
오픈소스 SW의 산업 · 경제 키워드 수렴

개방

공유

협업

수평



The screenshot shows the Wikipedia article for "Open-source software". On the left, a sidebar contains links: Main page, Contents, Featured content, Current events, Random article, Donate to Wikipedia, Wikipedia store, and an "Interwiki" section. The main content area has tabs for "Article" and "Talk". The article title is "Open-source software". Below the title, it says "From Wikipedia, the free encyclopedia". A summary line reads: "Open-source software shares similarities with free software and is part of the broader term free and open-source software. For broader coverage of this topic, see Open-source software movement." The main text defines Open-source software (OSS) as a type of computer software in which source code is released under a license in which the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose.^[1] Open-source software may be developed in a collaborative public manner. Open-source software is a prominent example of open collaboration.^[2] It then discusses development models, contrasting the traditional "cathedral" model with the "bazaar" model. A callout bubble points to the text "Users should be treated as co-developers" under the bazaar model section. Another callout bubble points to the sentence "Open-source software shares similarities with free software and is part of the broader term free and open-source software". A third callout bubble points to the sentence "Open-source software may be developed in a collaborative public manner." A fourth callout bubble points to the sentence "Users should be treated as co-developers". A fifth callout bubble points to the sentence "The users are treated like co-developers and so they should have access to the source code of the software." A small image of a "Summer of Open Source" banner is visible on the right side of the article.

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Open-source software

From Wikipedia, the free encyclopedia

Open-source software shares similarities with free software and is part of the broader term free and open-source software. For broader coverage of this topic, see Open-source software movement.

Open-source software (OSS) is a type of computer software in which source code is released under a license in which the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose.^[1] Open-source software may be developed in a collaborative public manner. Open-source software is a prominent example of open collaboration.^[2]

Open-source software development can bring in diverse perspectives beyond those of a single company. A 2008 report by the Standish Group stated that adoption of open-source software models have resulted in savings of about \$60 billion (£48 billion) per year for consumers.^{[3][4]}

Development model [edit]

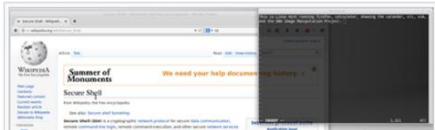
In his 1997 essay *The Cathedral and the Bazaar*,^[40] open-source evangelist Eric S. Raymond suggests a model for developing OSS known as the *bazaar* model. Raymond likens the development of software by traditional methodologies to building a cathedral, "carefully crafted by individual wizards or small bands of mages working in splendid isolation".^[40] He suggests that all software should be developed using the bazaar style, which he described as "a great babbling bazaar of differing agendas and approaches."^[40]

In the traditional model of development, which he called the *cathedral* model, development takes place in a centralized way. Roles are clearly defined. Roles include people dedicated to designing (the architects), people responsible for managing the project, and people responsible for implementation. Traditional software engineering follows the cathedral model.

The bazaar model, however, is different. In this model, roles are not clearly defined. Gregorio Robles^[41] suggests that software developed using the bazaar model should exhibit the following patterns:

- Users should be treated as co-developers**

The users are treated like co-developers and so they should have access to the source code of the software. Furthermore, users are encouraged to submit additions to the software, code fixes for the software, bug reports, documentation etc. Having more co-developers increases the rate at which the software evolves. Linus's law states, "Given enough eyeballs all bugs are shallow." This means that if many users view the source code, they will eventually find all bugs and suggest how to fix them. Note that some users have advanced programming skills, and furthermore, each user's machine provides an additional testing environment. This new testing environment offers that ability to find and fix a new bug.

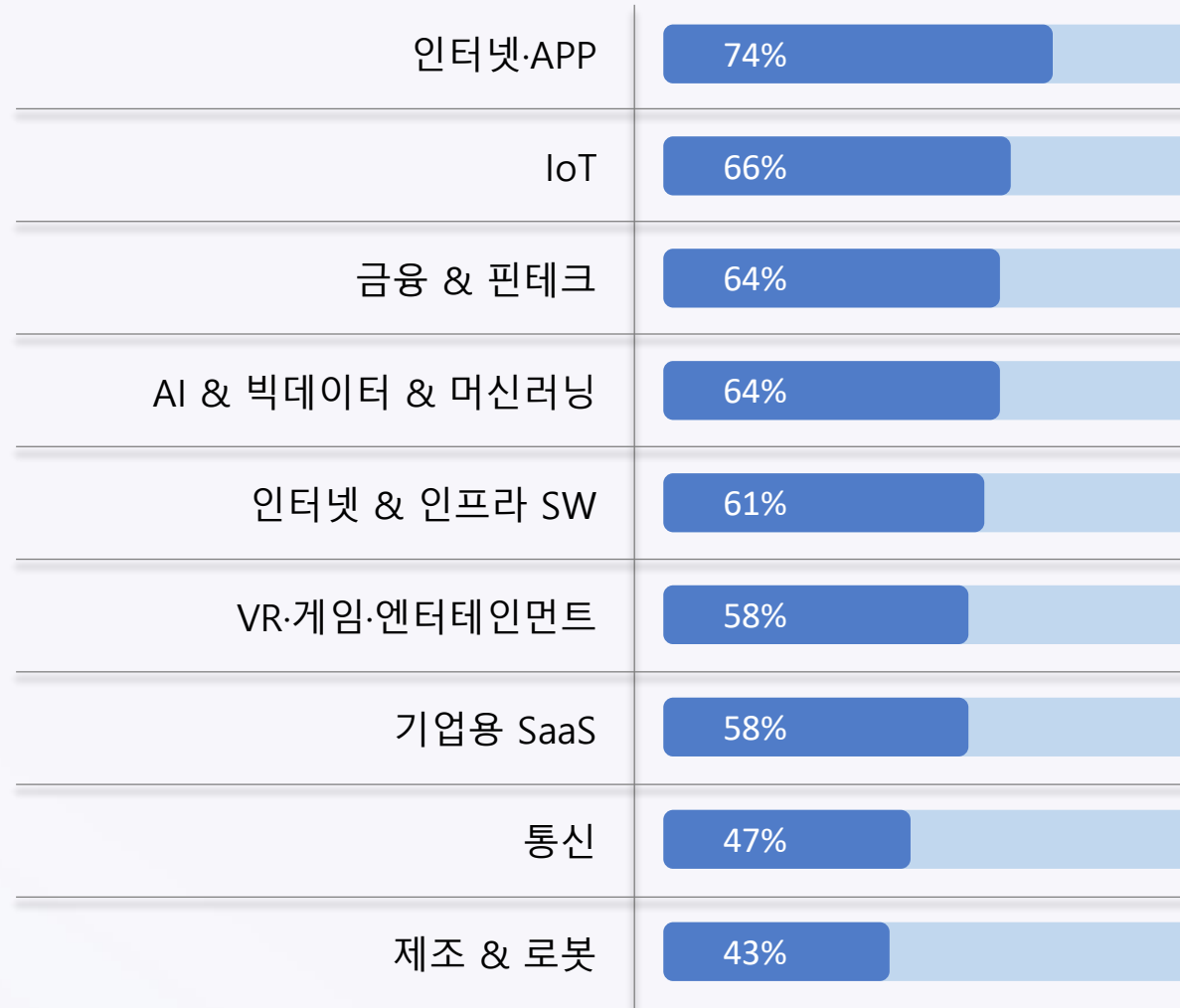


4차 산업 혁명, 변화를 주도하는 오픈소스 SW



산업별 오픈소스 SW 사용 비중

2018년, 미국 기준



조사기준

- Black Duck Software 조사
- 2018년 약 1,200개 이상의 Commercial Codebase 대상 분석 결과
- 1,000개 이상의 파일로 구성된 Codebase 대상
- 전체 코드 중 오픈소스가 차지하는 비중

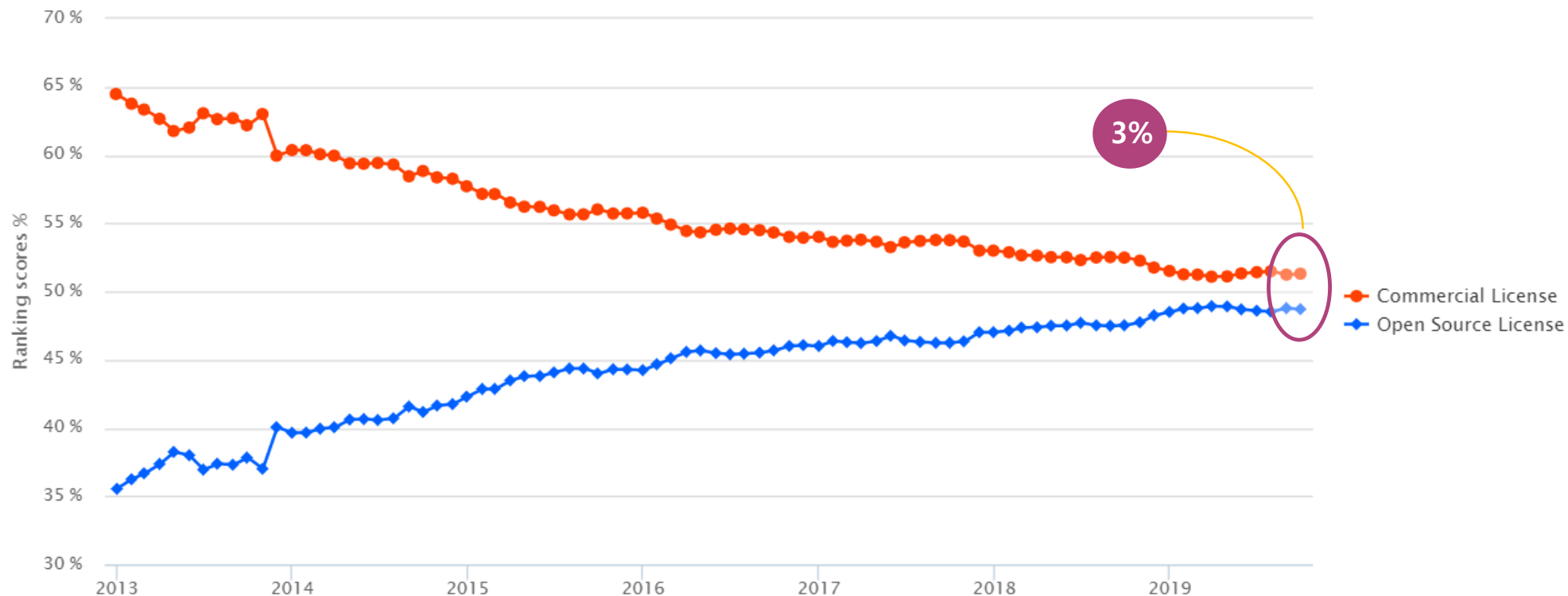


오픈소스, 선택이 아닌 『필수』

DBMS에 부는 오픈소스 바람

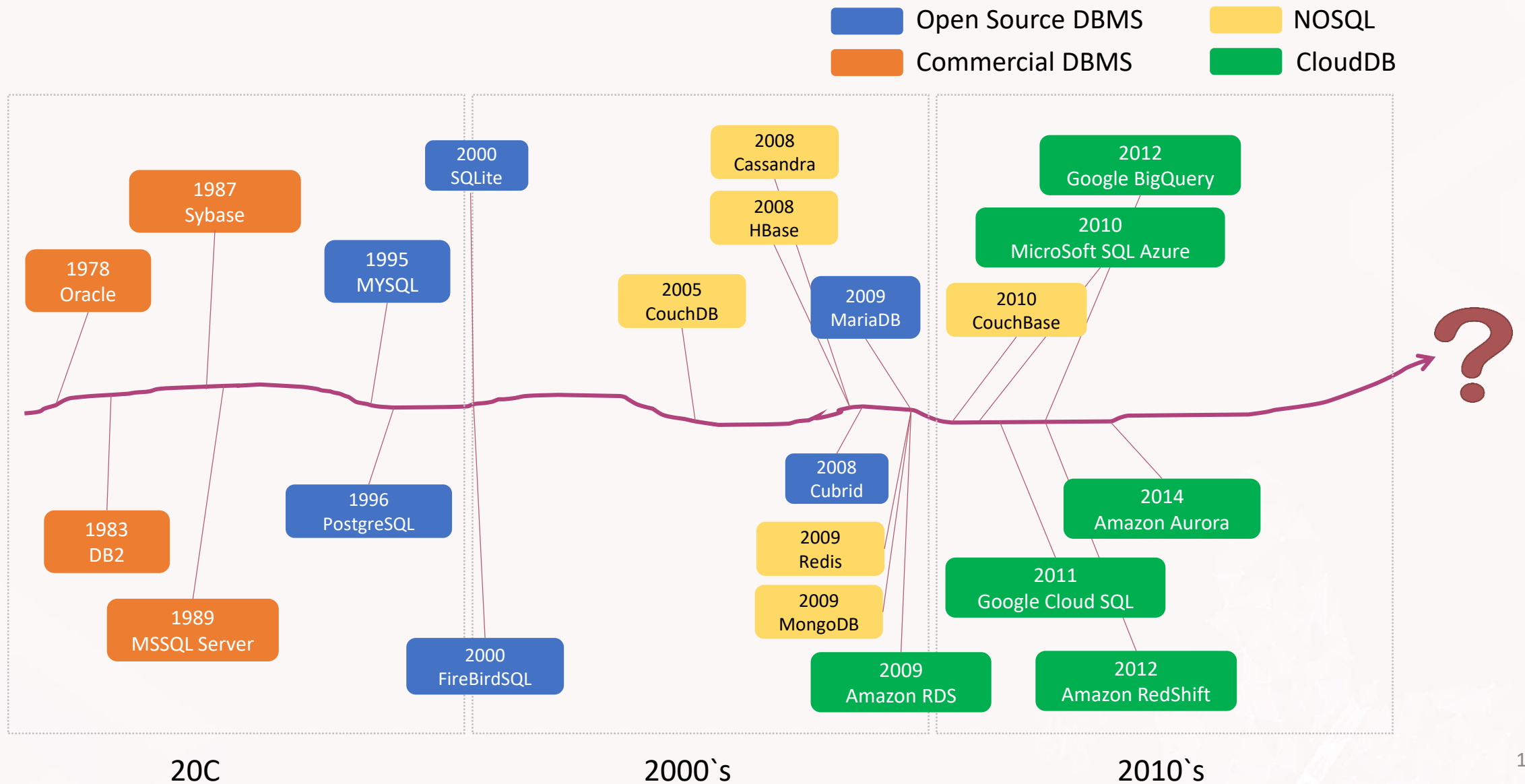
Popularity trend

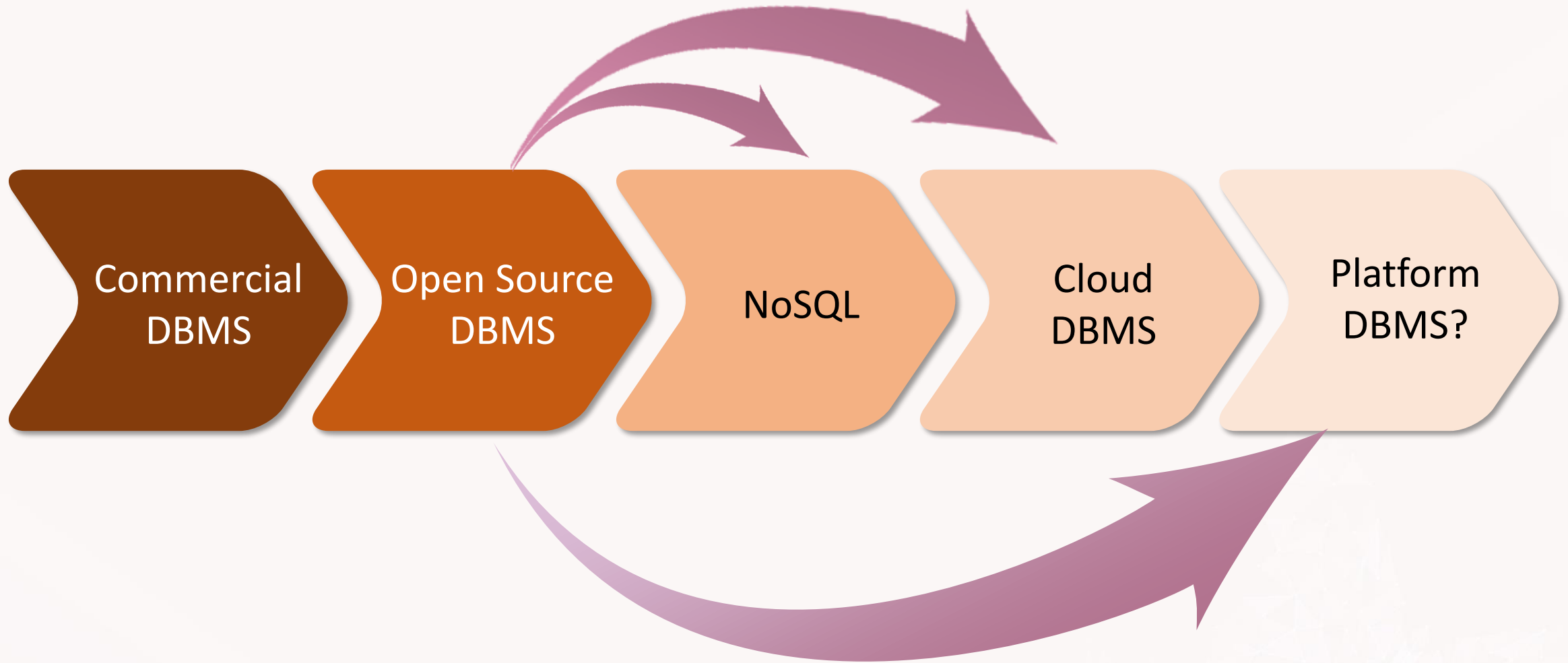
최근 5~6년간 오픈소스 DBMS 인지도 지속 상승



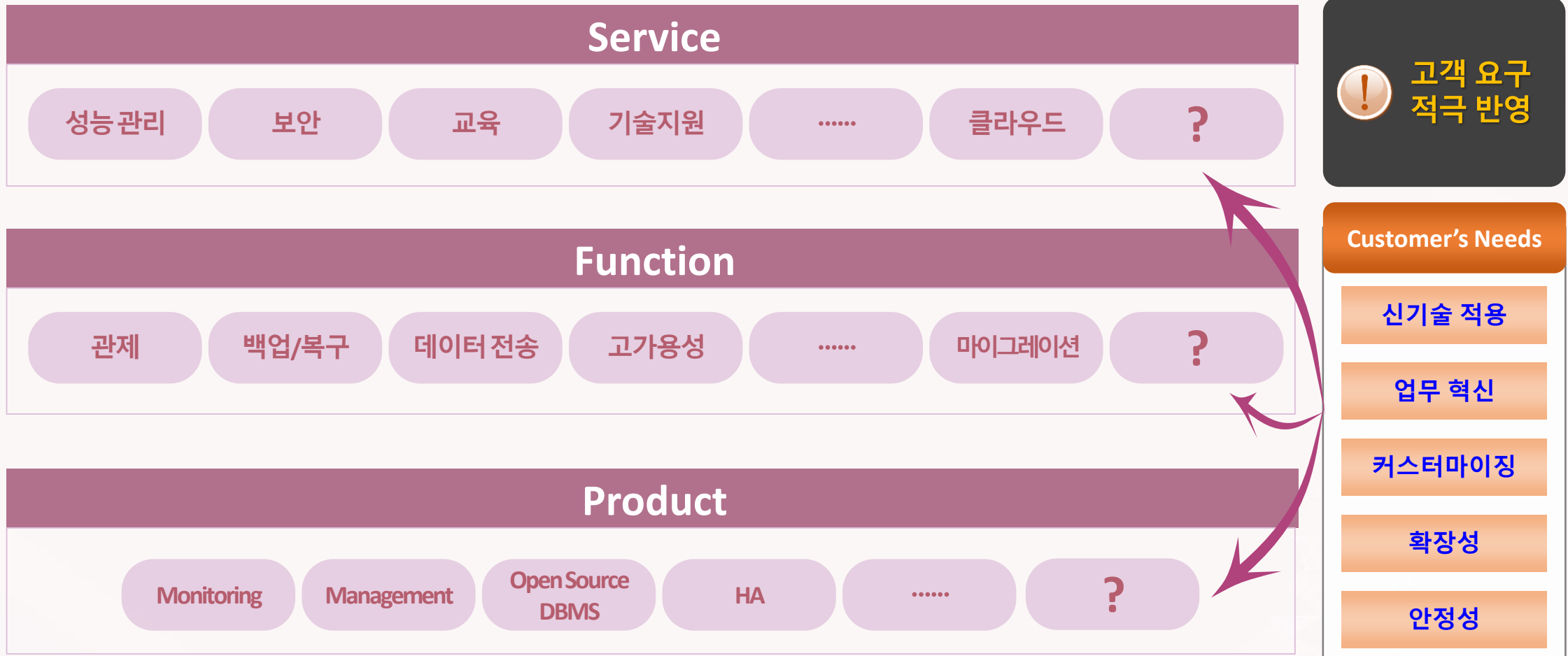
<https://db-engines.com>

시대별 DBMS 흐름





데이터베이스 플랫폼?



DBMS Deployment Strategy in the Cloud

DBMS를 Cloud에서 활용하는 이유?

확장
용이성

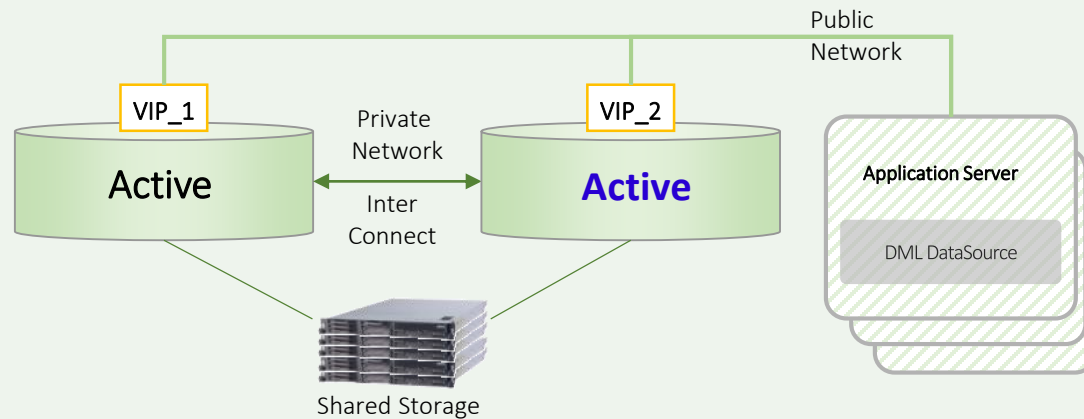
비용
절감

신기술
활용

지역
탈피

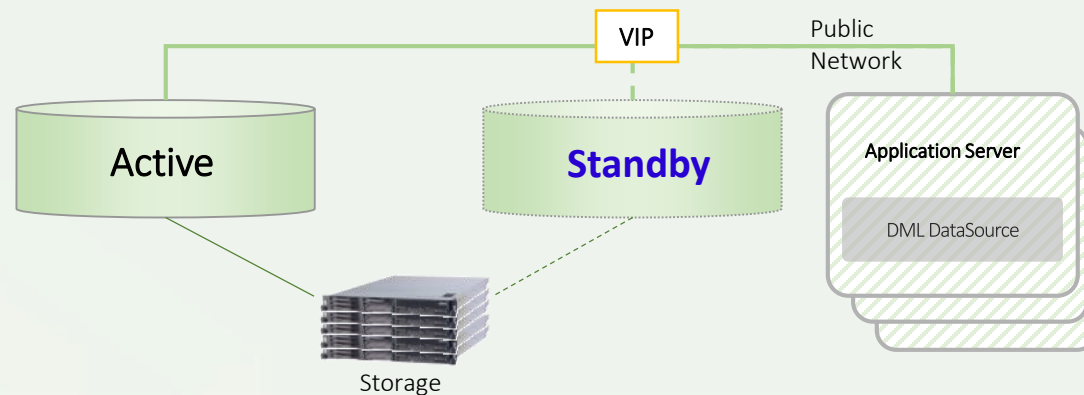
과거 DBMS 구성을 Cloud에서는?

Application Clustering



Cloud 에서
고비용 저효율

Active-Standby

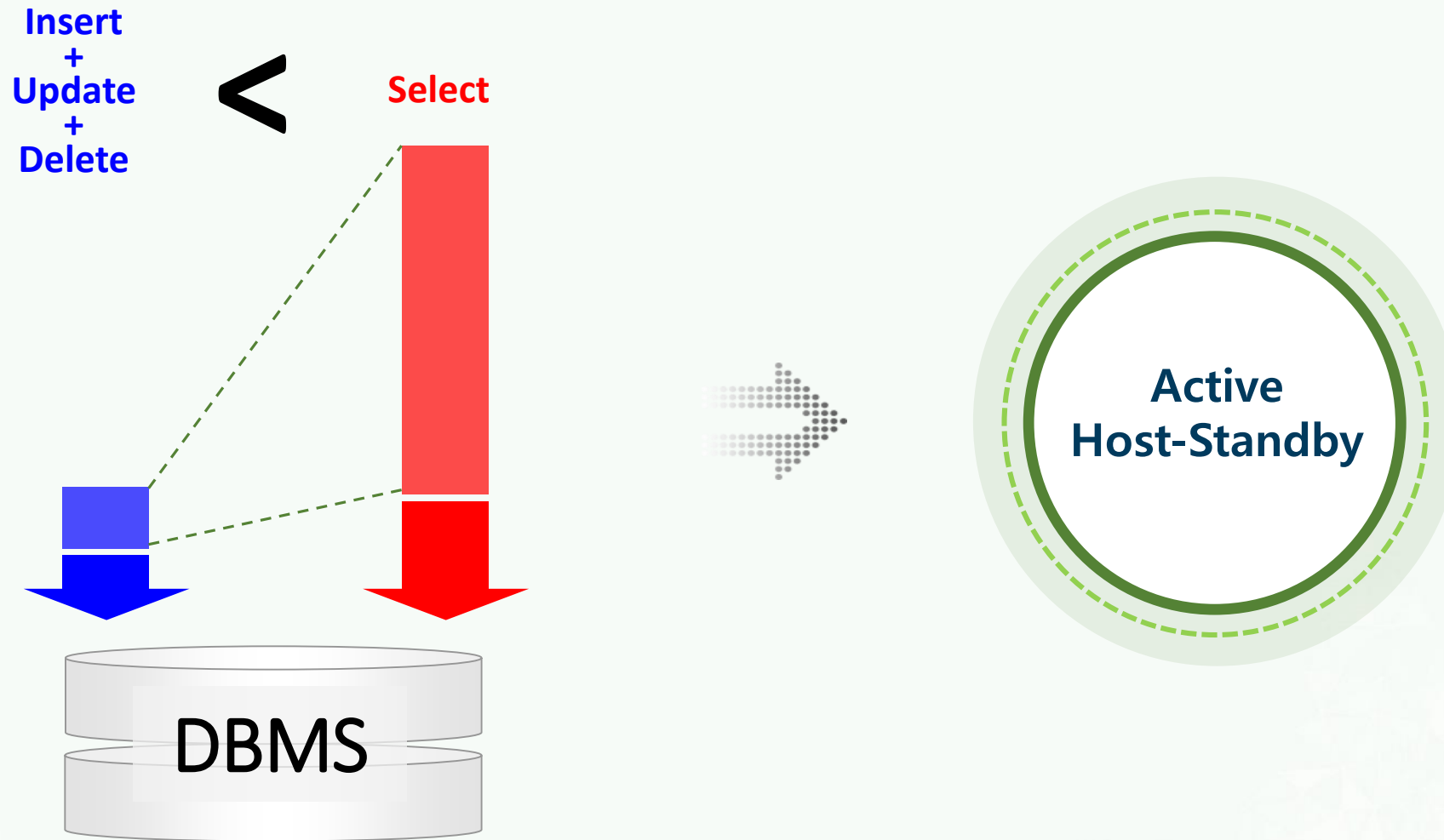


Cloud 에서
확장의 의미는?

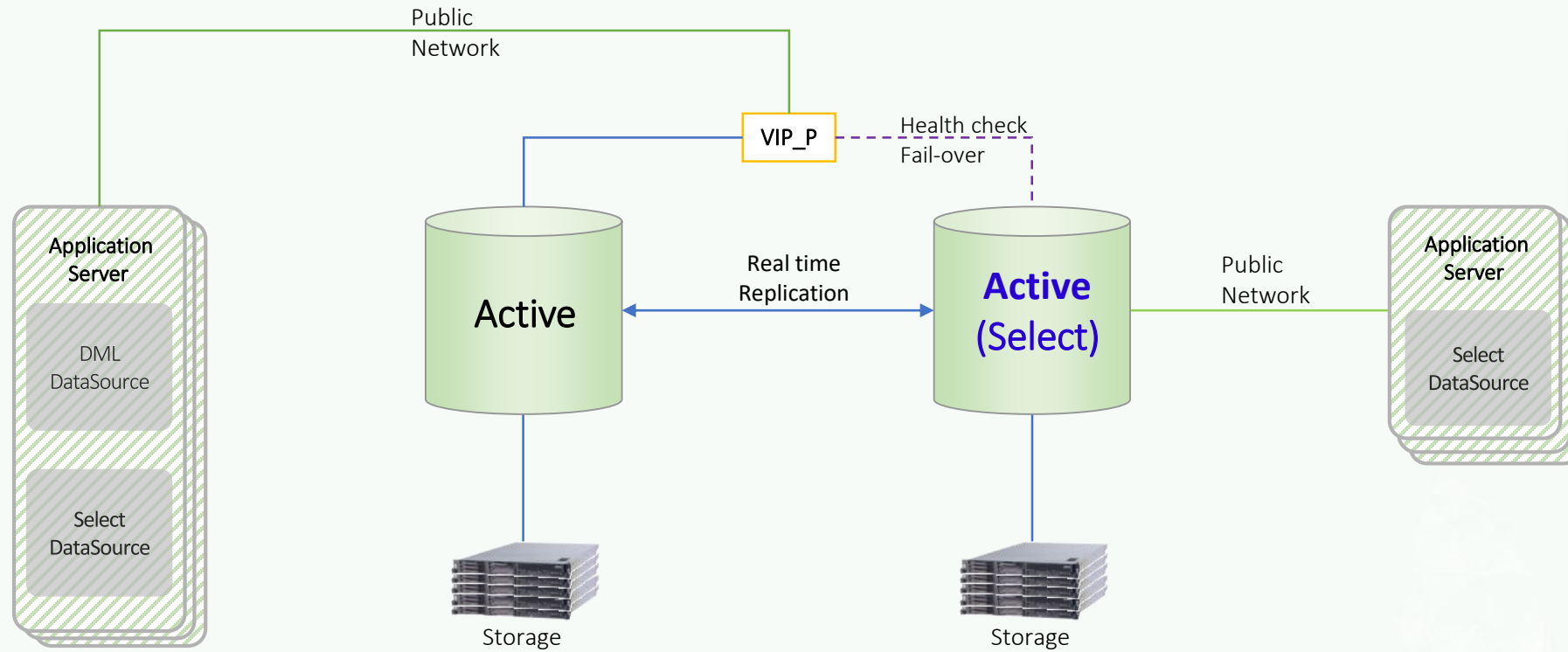
다수의 비즈니스 트랜잭션 비율은?



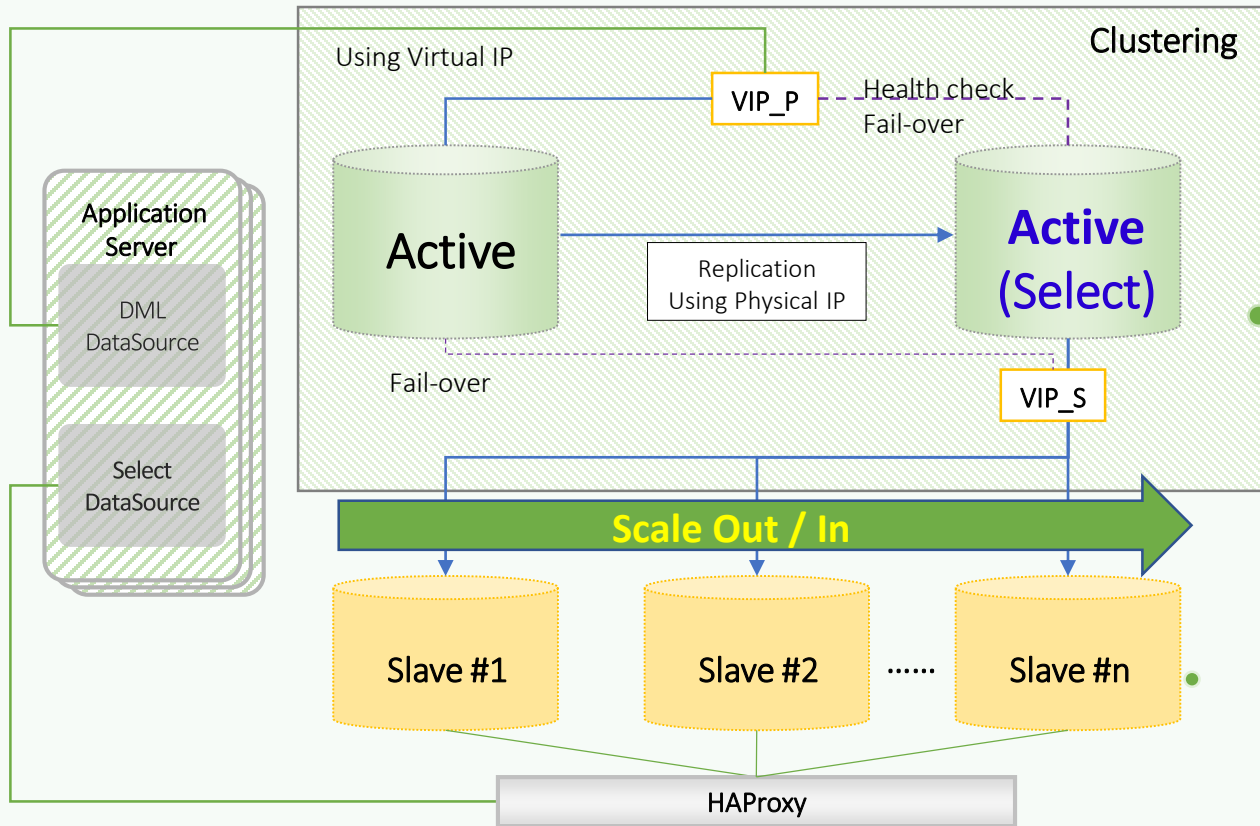
Active - Hot Standby 구조



일반적인 오픈소스 DBMS 구성



On-Premise에서 확장을 해본다면?



최대 거래량을 고려한
선 H/W장비, 네트워크 등
구축 비용 고려

수동적인
Scale In/Out 관리

유연한 확장 관리와
비용을 고려하여

Public Cloud로 이동~

Public Cloud의 또 다른 고민?

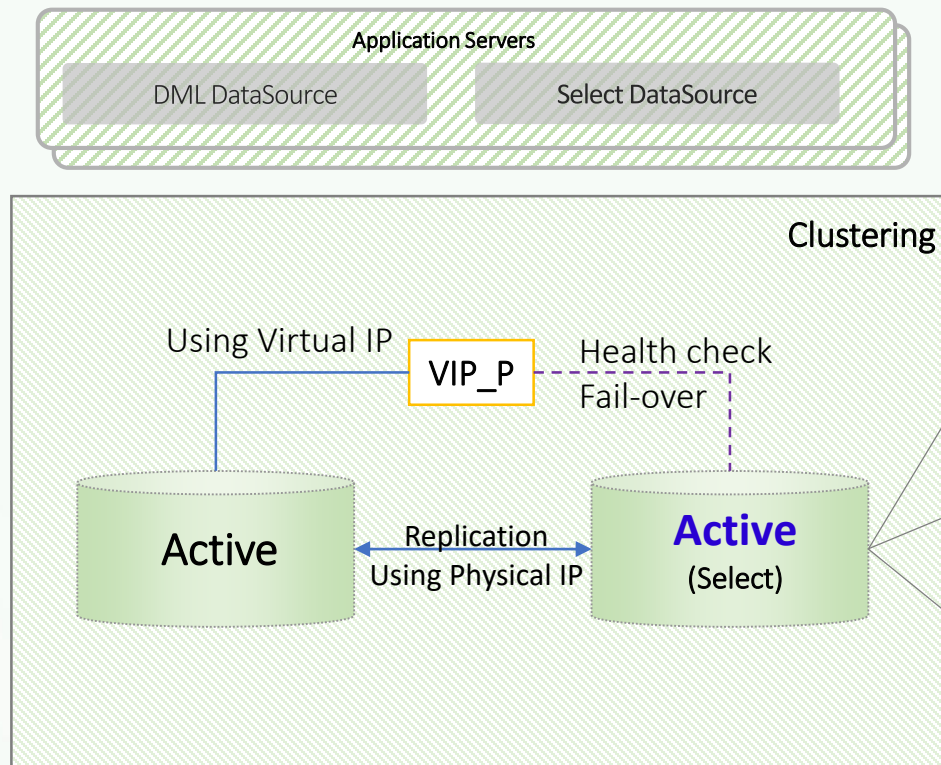
데이터
소유권?

다운로드
비용?

Hybrid Cloud!

On-Premise or Private Cloud Zone

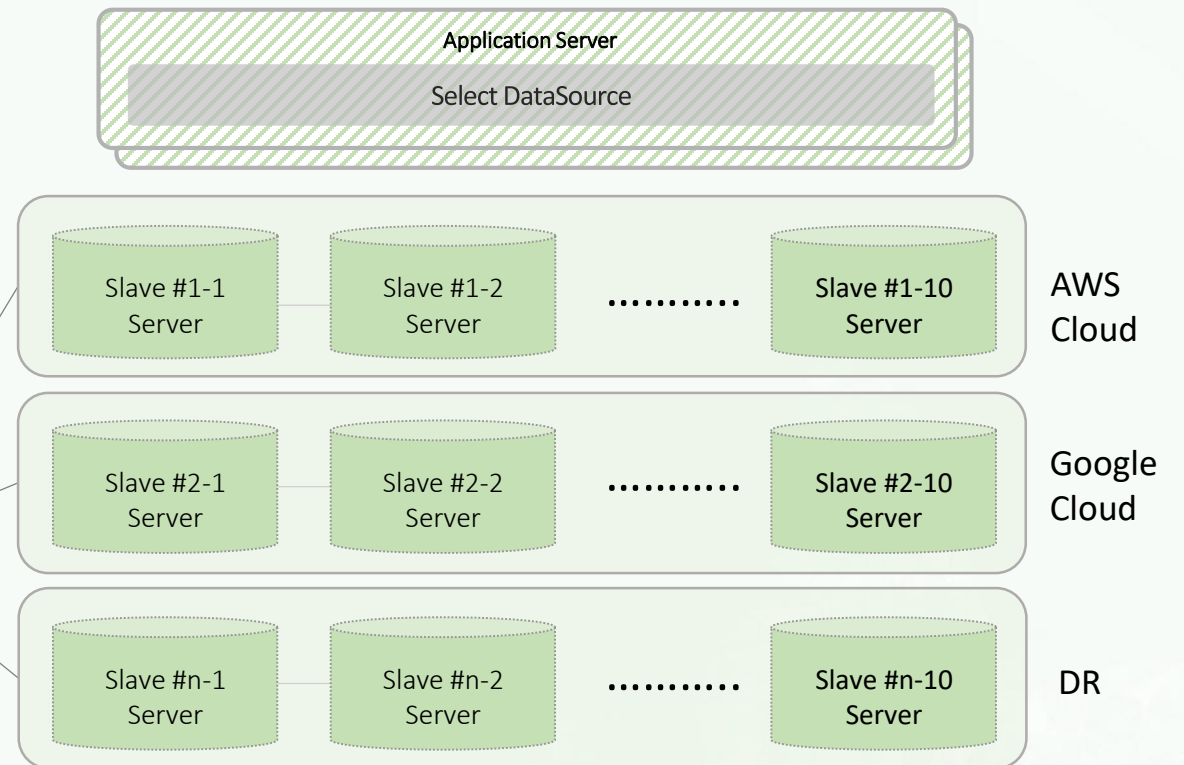
- 평균 거래량 기준의 시스템 구축으로 비용 최적화
- Clustering 기능으로 안정성 확보



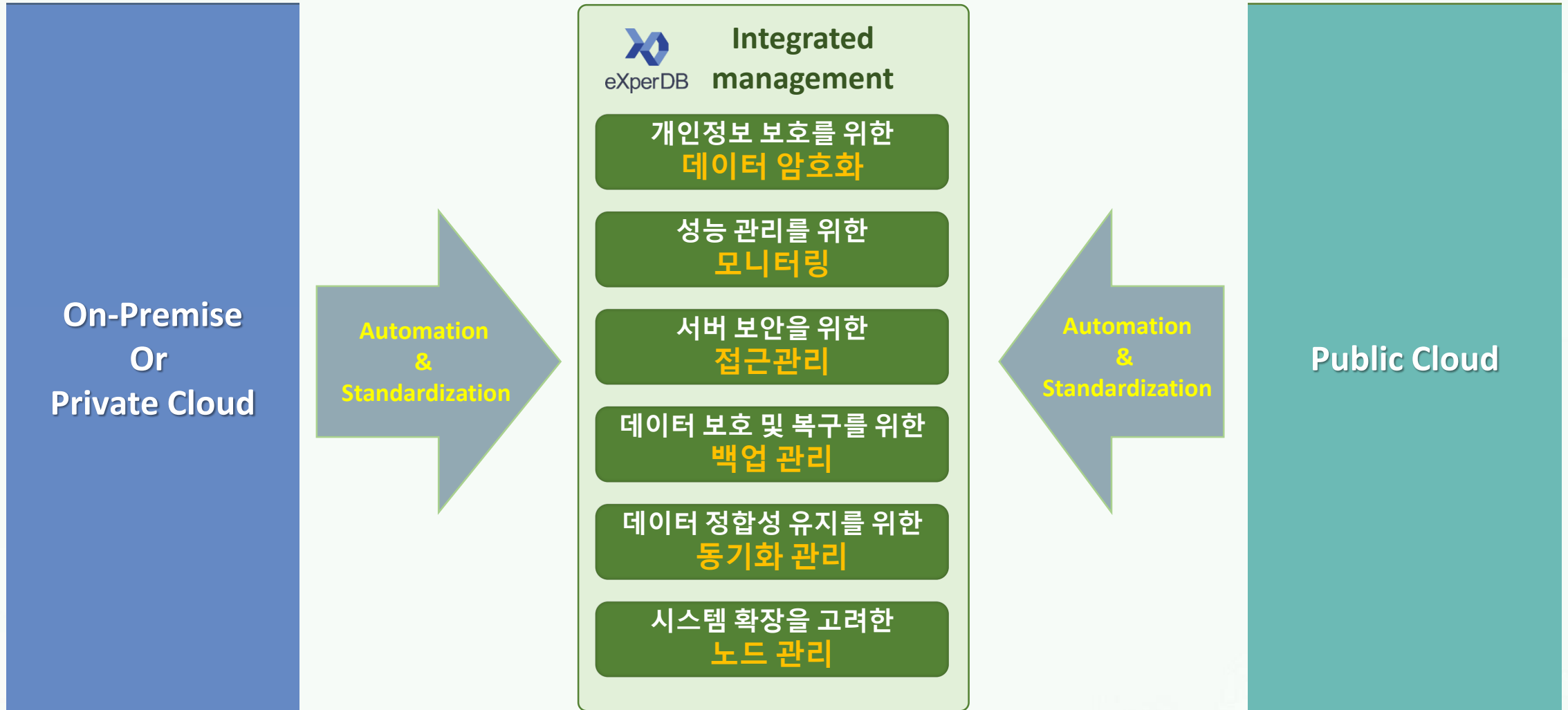
Public Cloud Zone

특정 대량 이벤트 발생시
Auto Scale-out

특정 대량 이벤트 종료시
Auto Scale-in

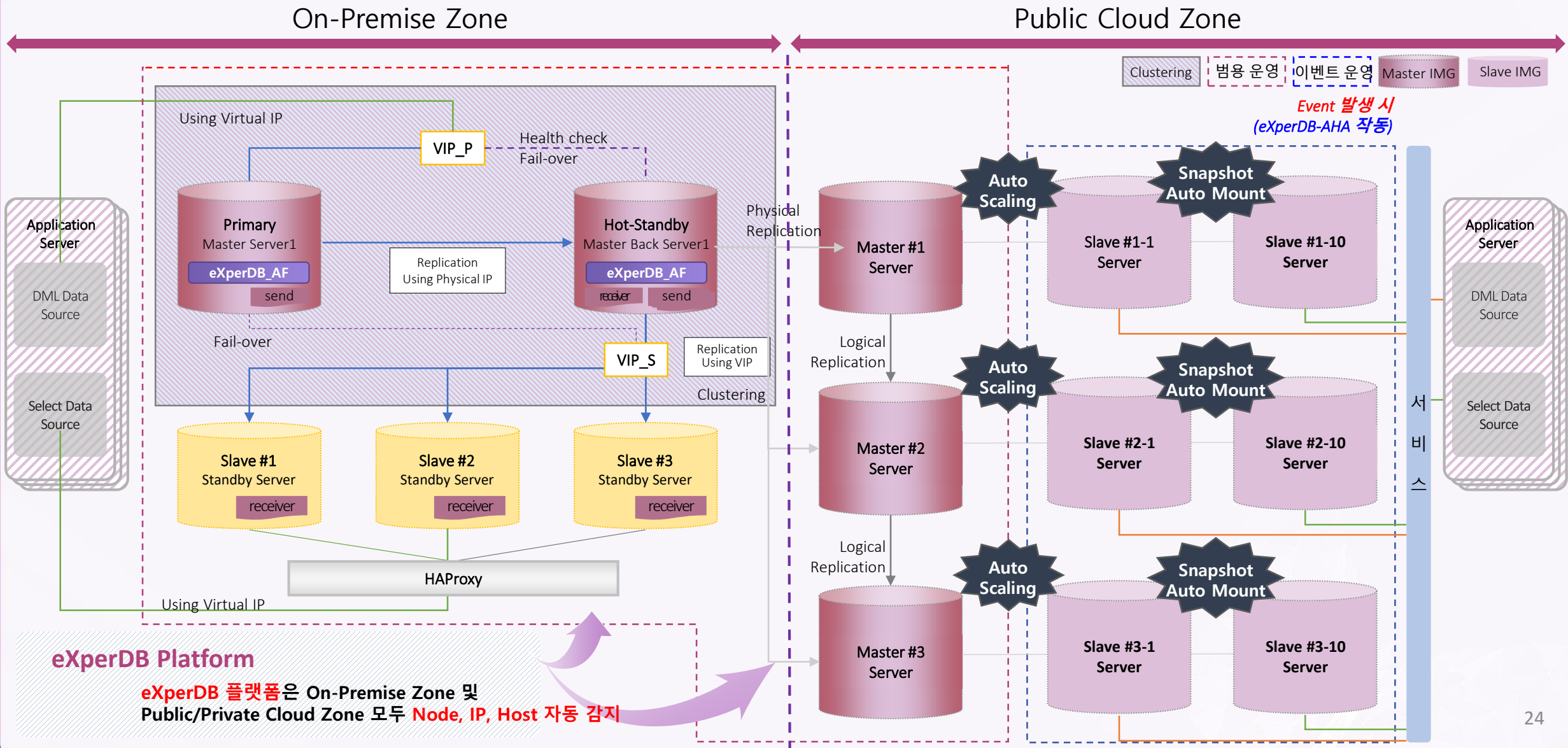


Hybrid Cloud에서 DBMS 관리



Use Case

S사 Hybrid Cloud 구축 사례



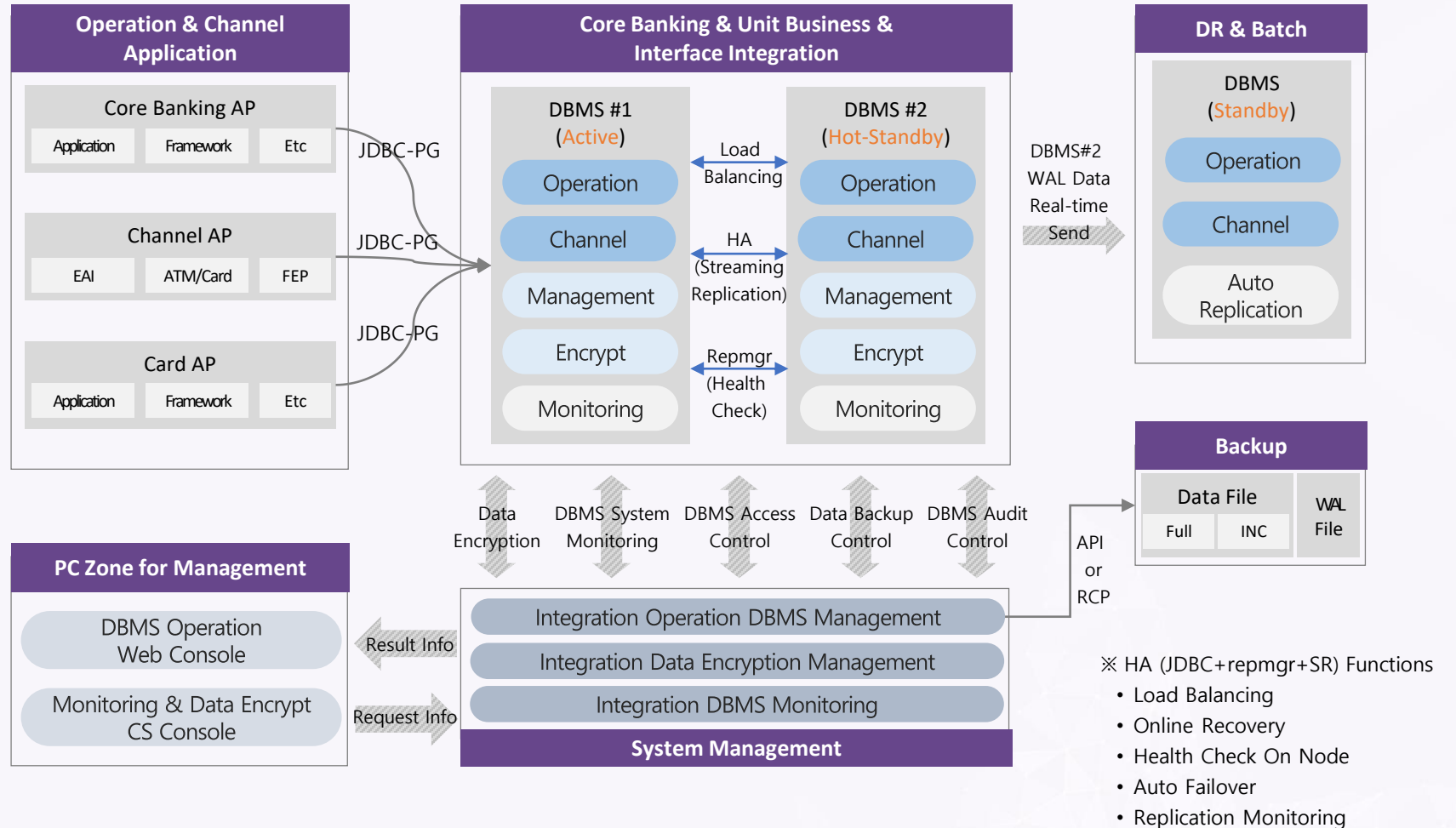
P은행 Cloud 기반 계정계 시스템 구축 사례

요구사항

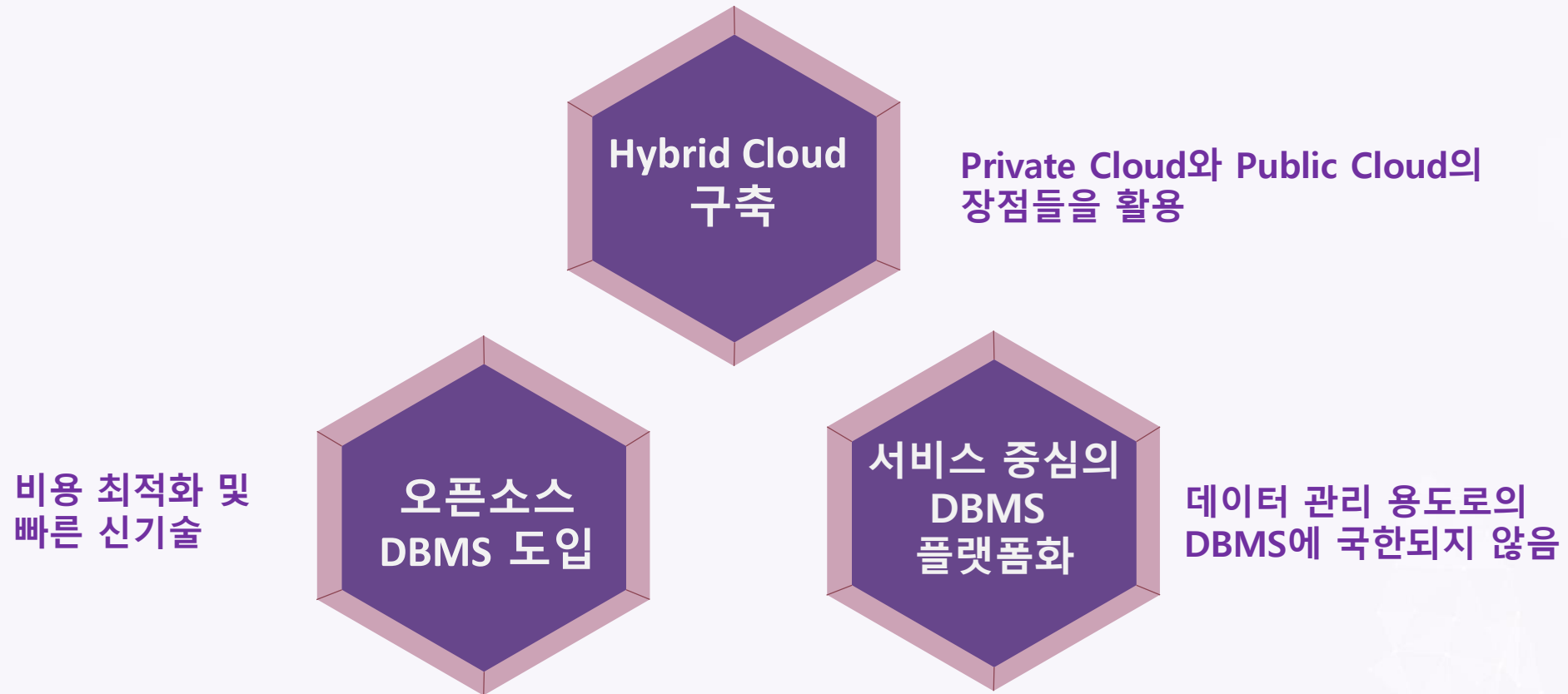
- 상용 DBMS에서 오픈소스 DBMS로 전환
- 시스템 안정성 확보와 데이터 손실 방지
- 향후 지속적인 트랜잭션 증가로 유연한 시스템 확장 지원
- 실시간 DR 및 데이터 백업 관리
- 조회 업무 분산
- 해외 특성상 DBMS 관리 일원화 필요

구축방향

- 오픈소스 DBMS를 활용한 계정계 시스템 구축
- HP Cloud 시스템구성의 이미지 복제 기능을 활용한 HA 구성
- 데이터 손실 방지를 위한 eXperDB-HA 기능을 활용한 증분 데이터 Sync Mode 복제 구성 과 DR 구성
- 모니터링, 데이터암호화, 백업 등 eXperDB-Management로 통합관리



Takeaway messages for DBMS





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