Archimate
Technology Layer

Specifica ArchiMate

https://pubs.opengroup.org/architecture/archimate3-doc/ch-Technology-Layer.html

< Previous ▲ Home Next >

ArchiMate® 3.1 Specification
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Previous versions: [3.0.1 | 3.0 | 2.1]

THE Open GROUP

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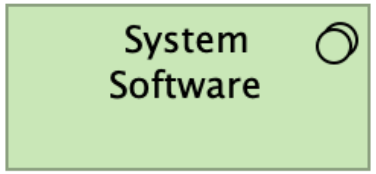
Welcome to the ArchiMate® 3.1 Specification, *a Standard of The Open Group*

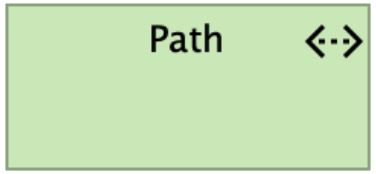
Elementi attivi

Una risorsa fisica IT su cui è possibile eseguire del software e/o trovare degli artefatti (artifacts, elementi passivi)

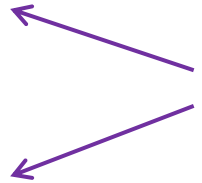


Software di sistema che fornisce delle funzionalità di base (store, execute) utili per costruire applicazioni

Struttura di comunicazione con a cui è possible mettere in interazione due o più dispositivi

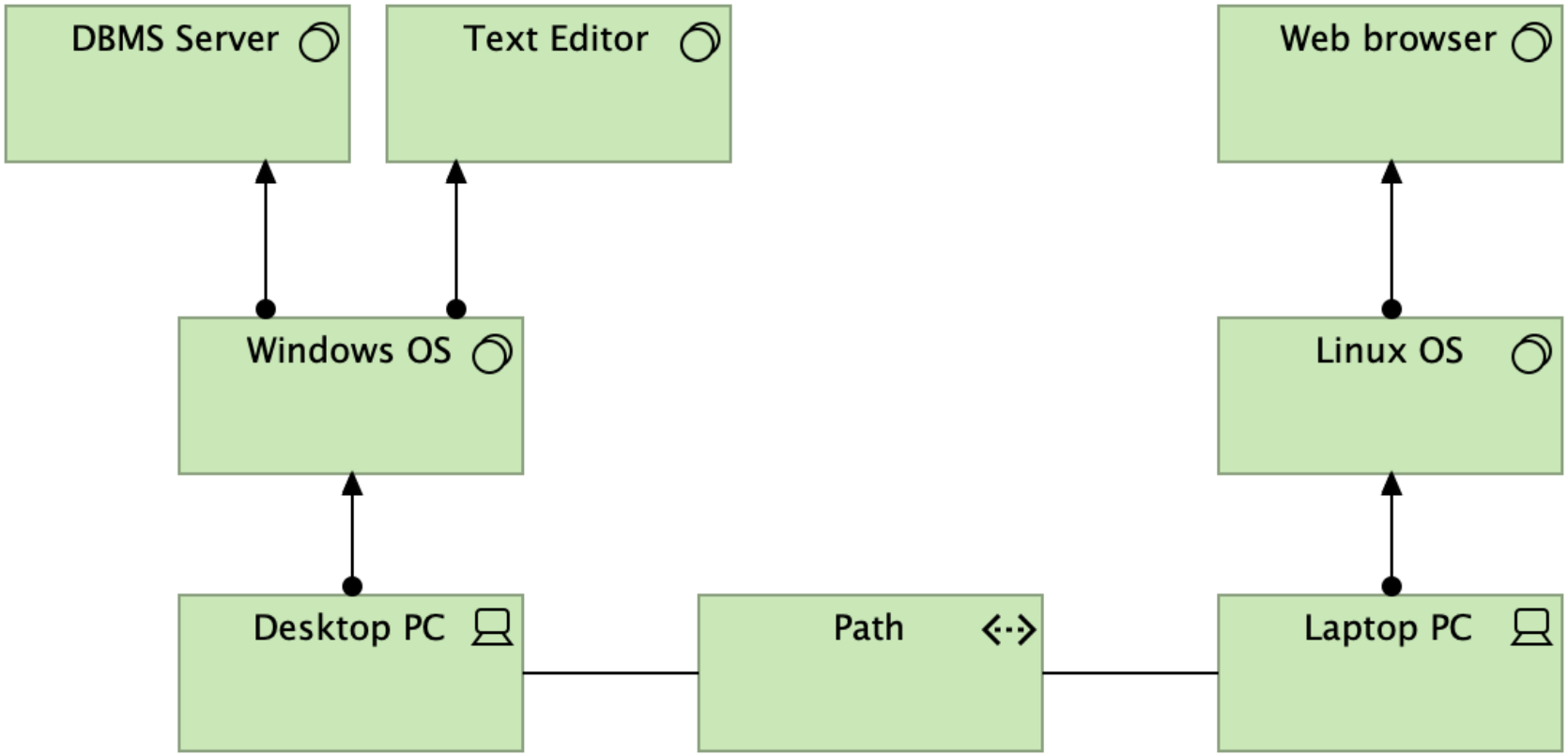


Astrazione della comunicazione end-to-end: è possible identificare una connessione tra nodi (senza entrare nel dettaglio tecnologico dell'implementazione)

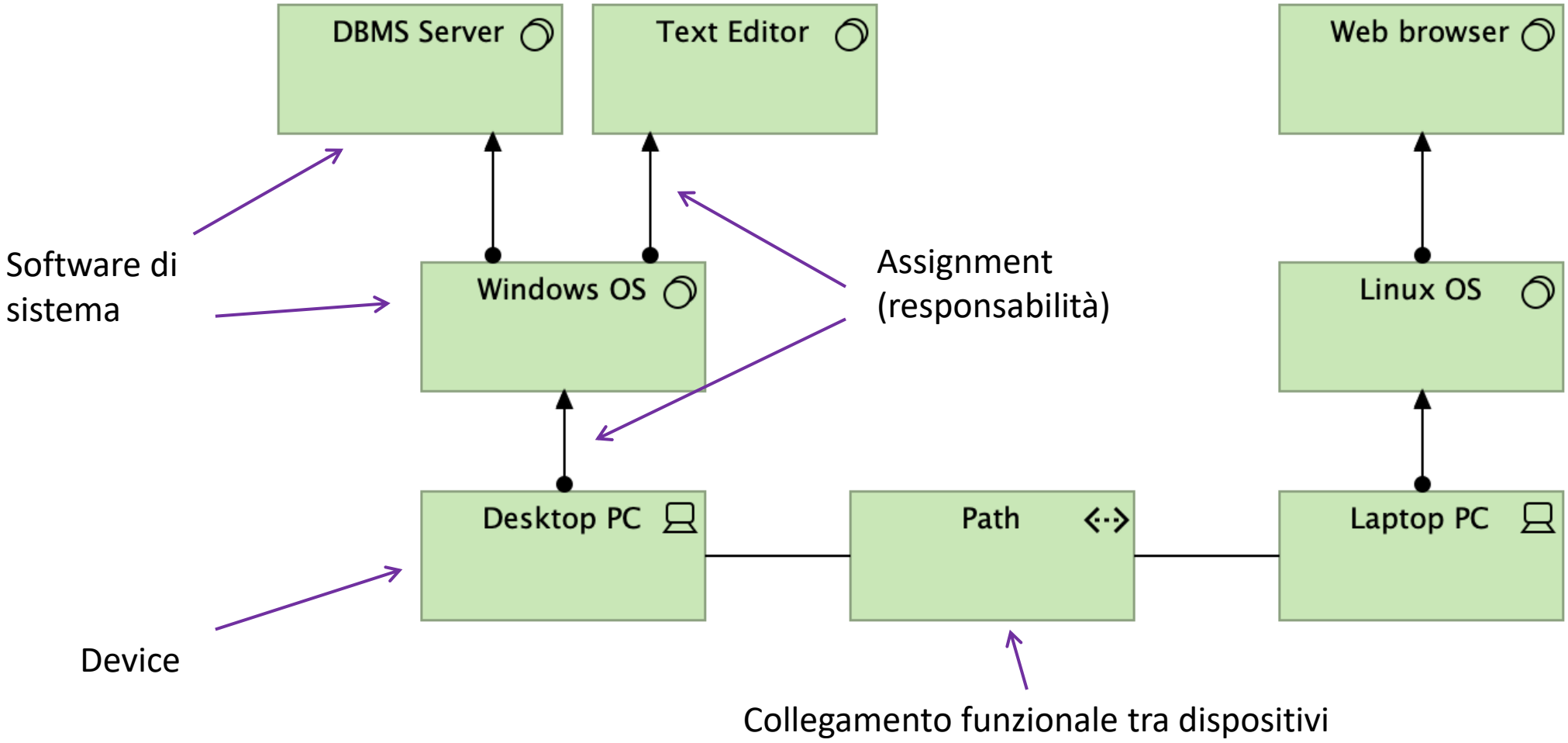


Association generica (linea continua)

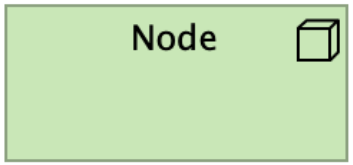
Elementi attivi: esempio



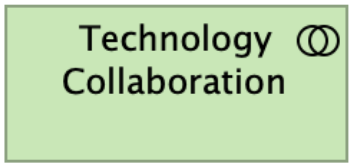
Elementi attivi: esempio



Elementi attivi



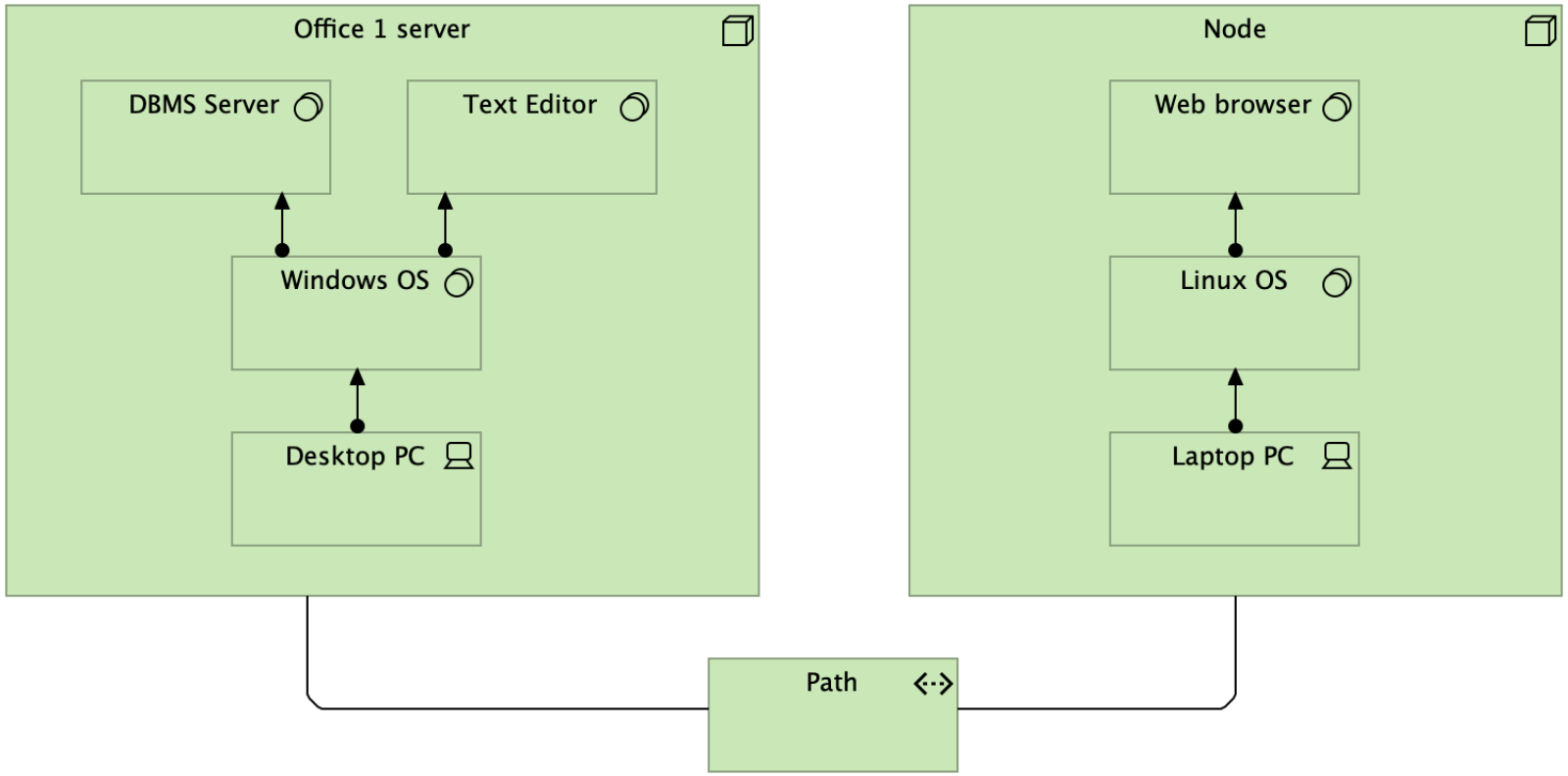
Una risorsa fisica o computazionale (anche composta) rilevante per la nostra infrastruttura IT che ospita, manipola o interagisce con altre risorse



Un aggregato di due o più nodi che lavorano insieme per raggiungere un determinato obiettivo

Il punto di accesso che permette di utilizzare le funzionalità messe a disposizione da un nodo

Elementi attivi: esempio



I nodi possono essere usati per raggruppare logicamente gli elementi (vedi esempio precedente device + software di base); tipicamente si aggregano elementi legati da assegnamento

Elementi comportamentali

Una sequenza di comportamenti tecnologici che ottengono un risultato specifico

Un gruppo di comportamenti infrastrutturali che può essere eseguito da un nodo

Un comportamento collettivo svolto da uno o più nodi

Un'unità funzionale esternamente visibile, fornita da uno o più nodi, esposta attraverso interfacce ben definite, che svolge un compito specifico. Può essere usato da altri elementi a livello tecnologico, o al livello successivo

Un cambiamento di stato a livello tecnologico

Elementi comportamentali

La complessità / granularità / sfumatura a livello tecnologico è maggiore rispetto ai layer business e application

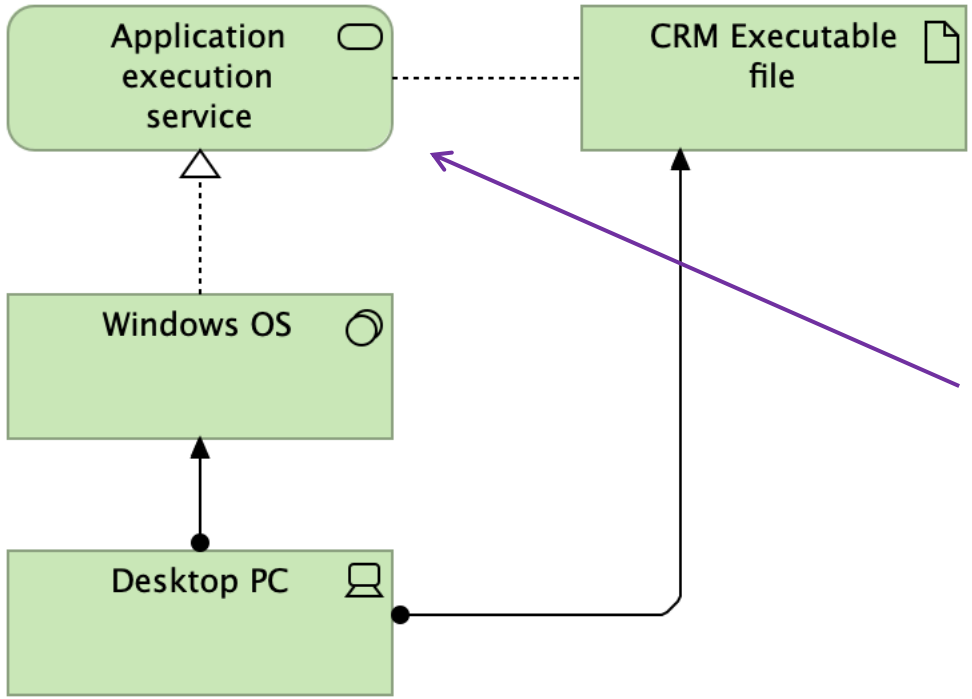
Nel livello technology non c'è un unico "pattern base" ma lavoreremo su esempi tipici di deployment di infrastrutture IT da utilizzare come punti di riferimento (applicazioni a tier / layer)

Elementi passivi

Un dato o frammento (es. file) che può essere prodotto o utilizzato all'interno di un'infrastruttura IT (siamo al livello "fisico" dell'architettura)

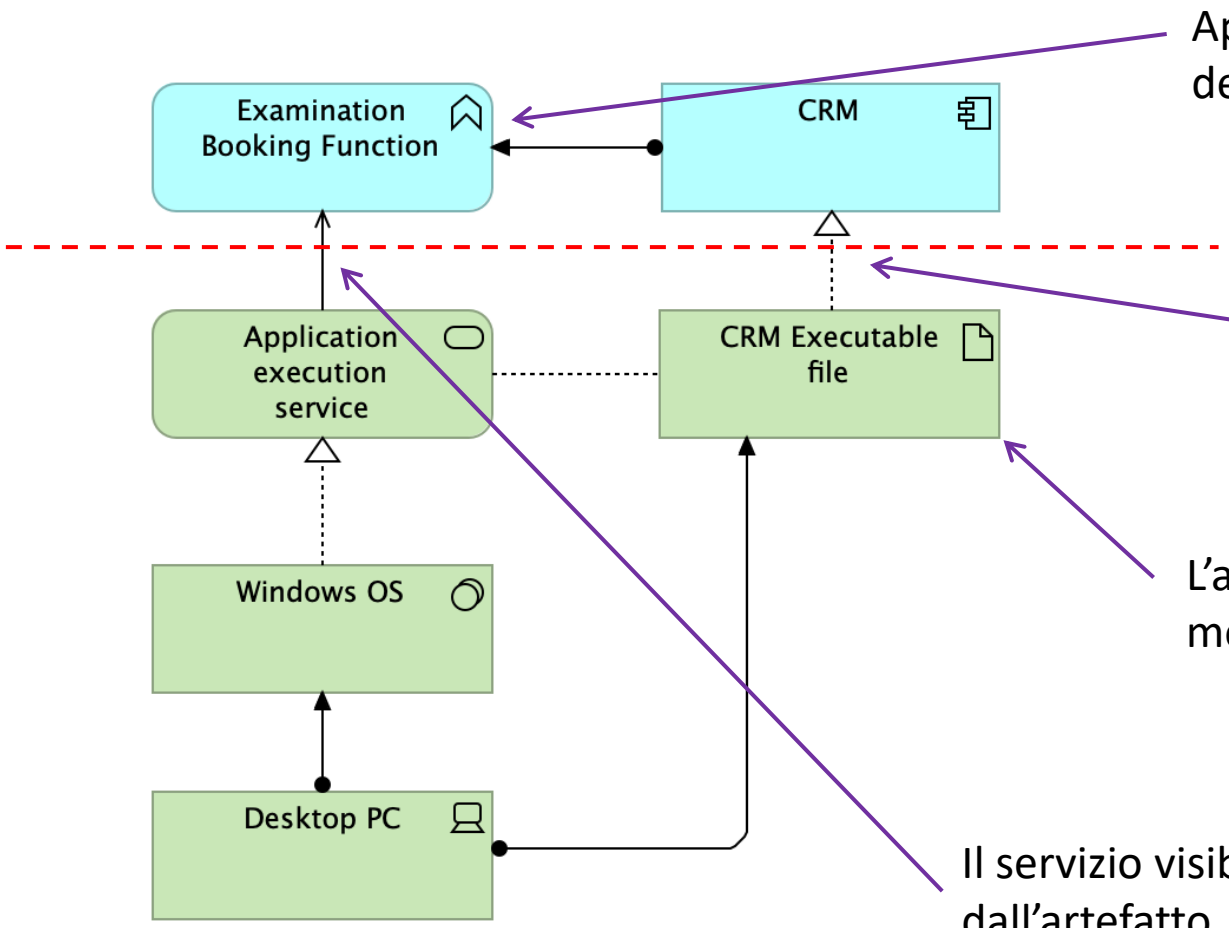
"An artifact represents a piece of data that is used or produced in a software development process, or by deployment and operation of an IT system"

Software system vs application



OS mi permette di eseguire un file per esporre un determinato servizio(esecuzione dell'artefatto che rende disponibile un servizio)

Software di sistema vs applicazione



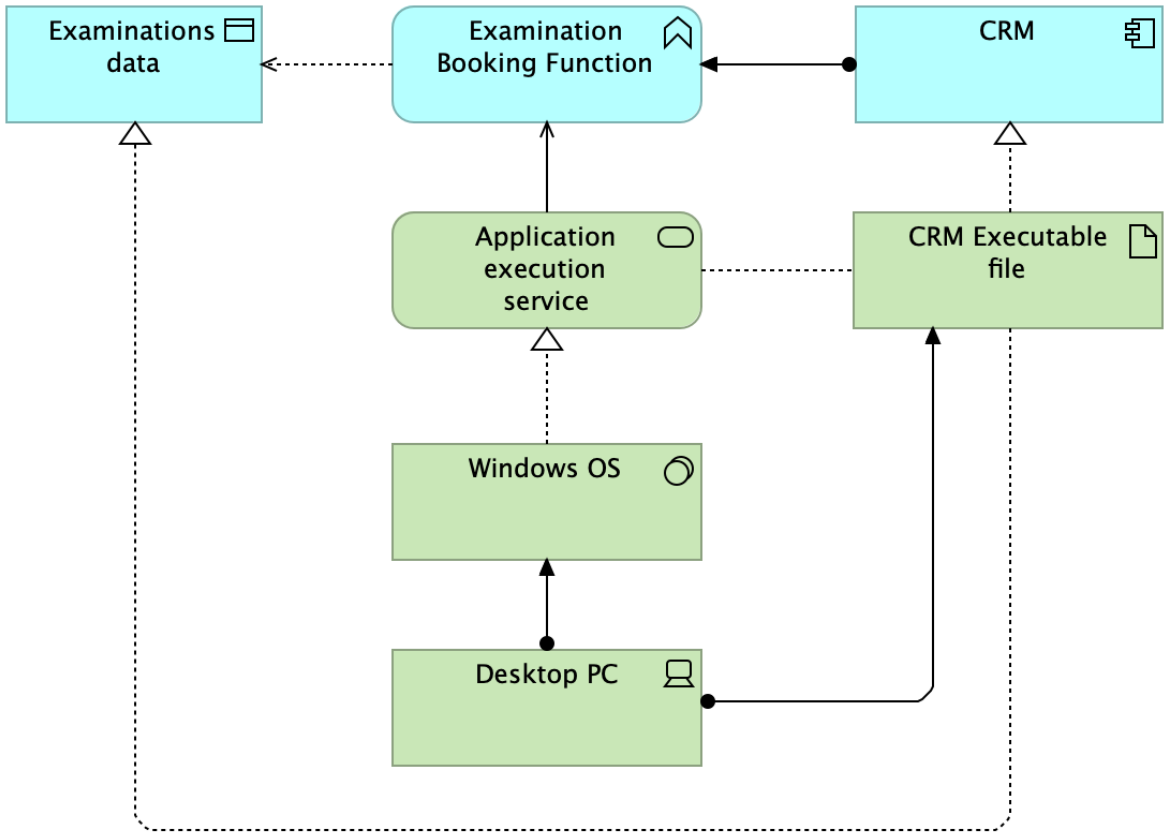
Applicazione caratterizzante dell'architettura (vs sistema)

Realizza il componente

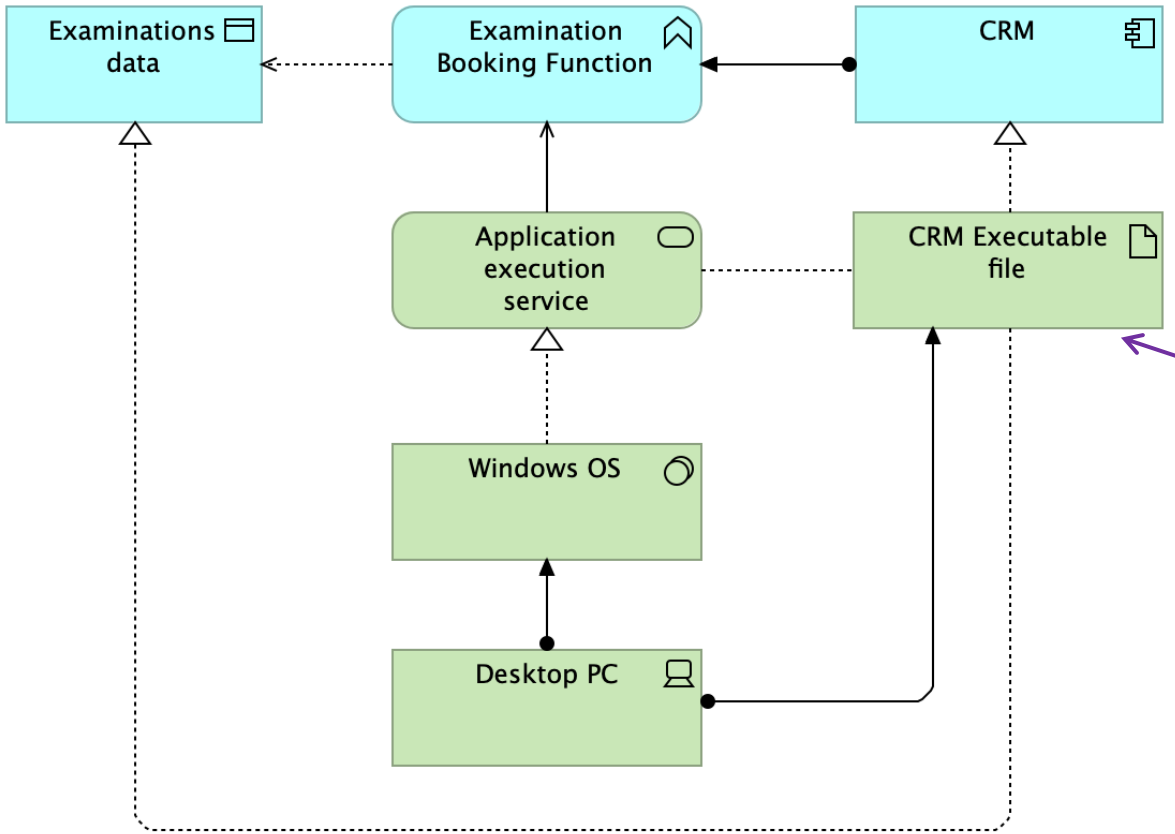
L'artefatto svolge in qualche modo il ruolo di «interfaccia»

Il servizio visibile, realizzato dall'artefatto, «serve» la funzione

Applicazione standalone



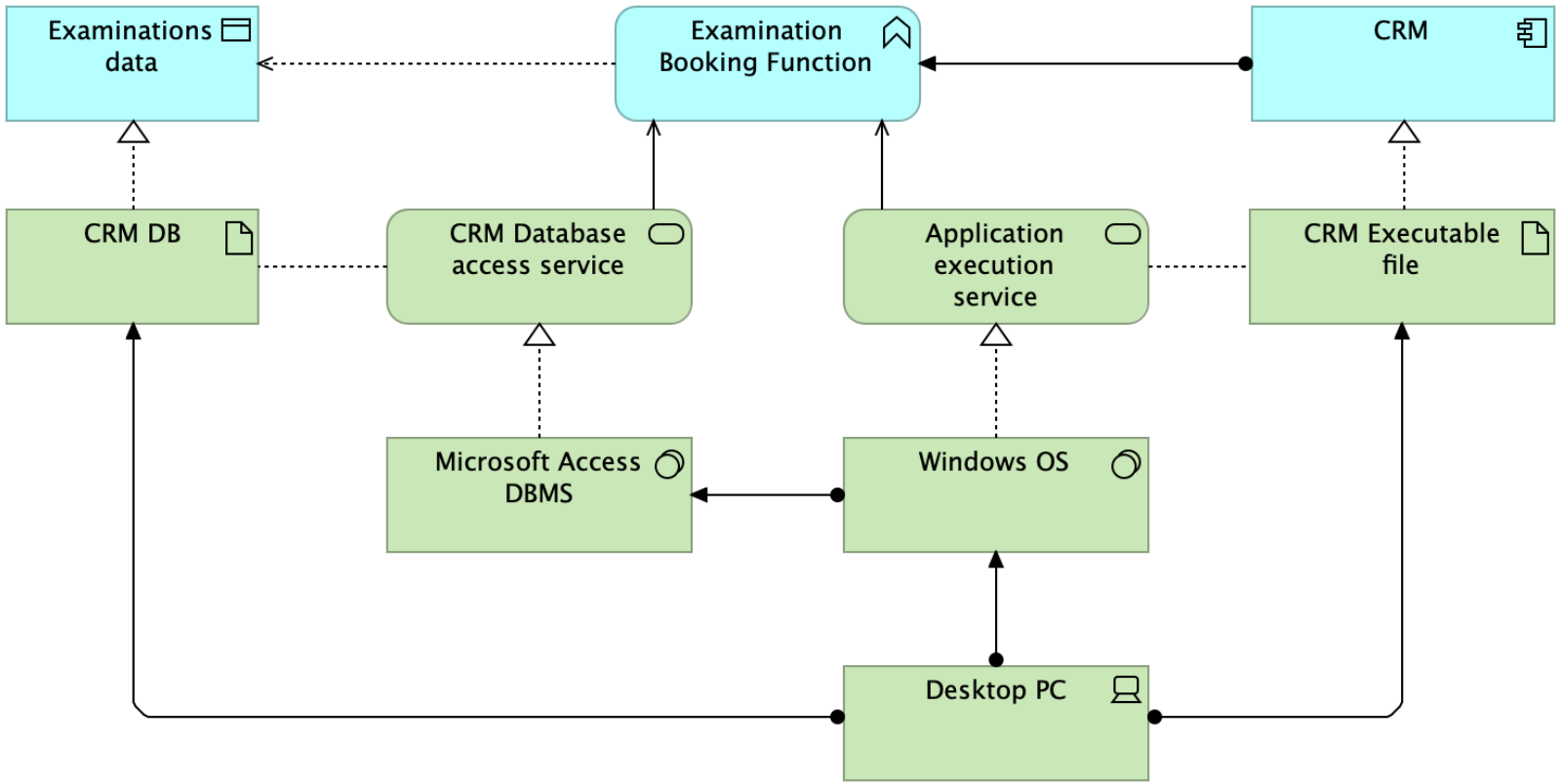
Applicazione standalone



Applicazione contenuta in un solo file eseguibile, che include anche i dati

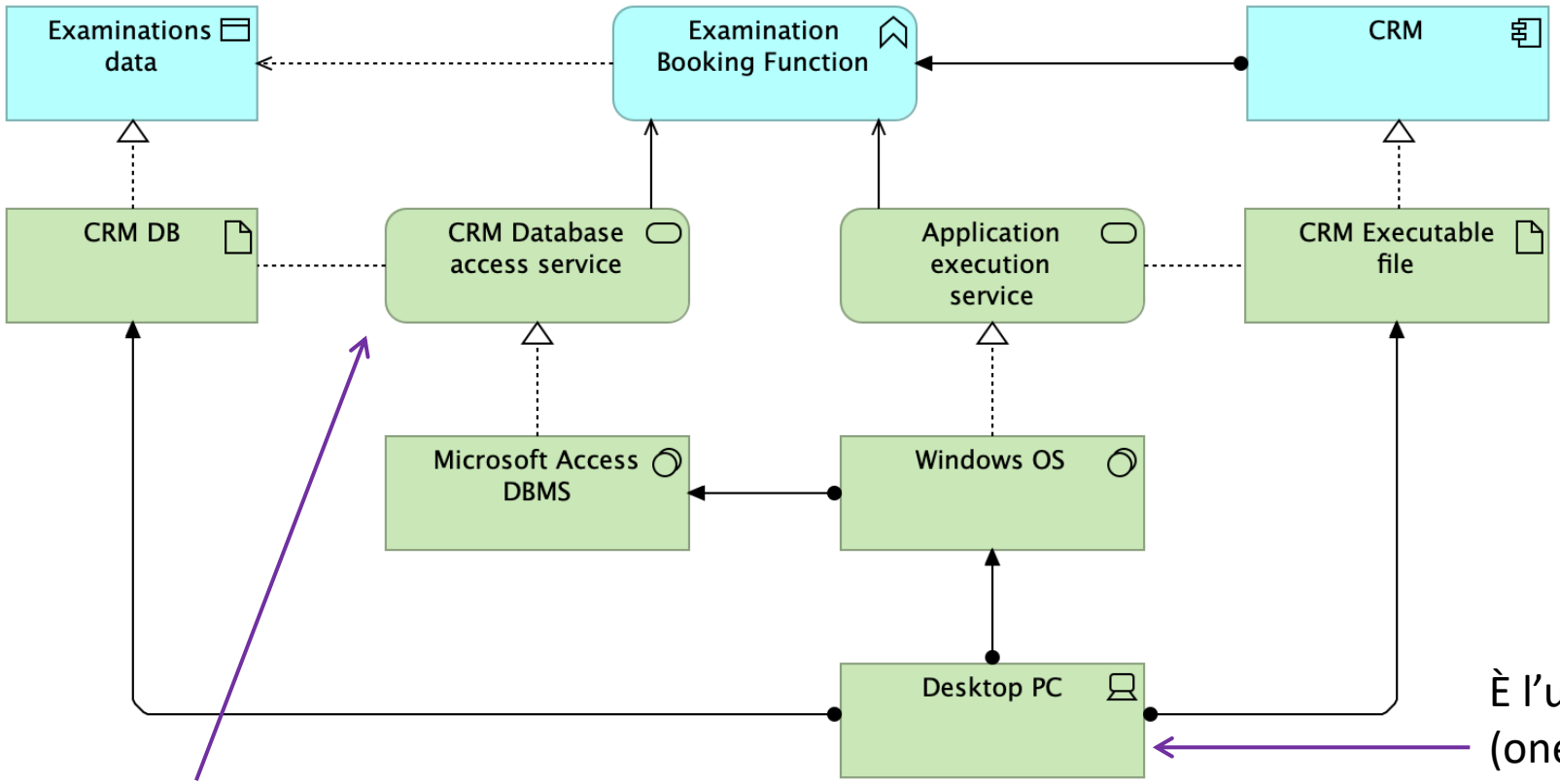
(poco realistico, come descrivere una situazione più realistica?)

Applicazione one-tiered (1)



L'applicazione è deployata all'interno di unico elemento fisico

Applicazione one-tiered (1)

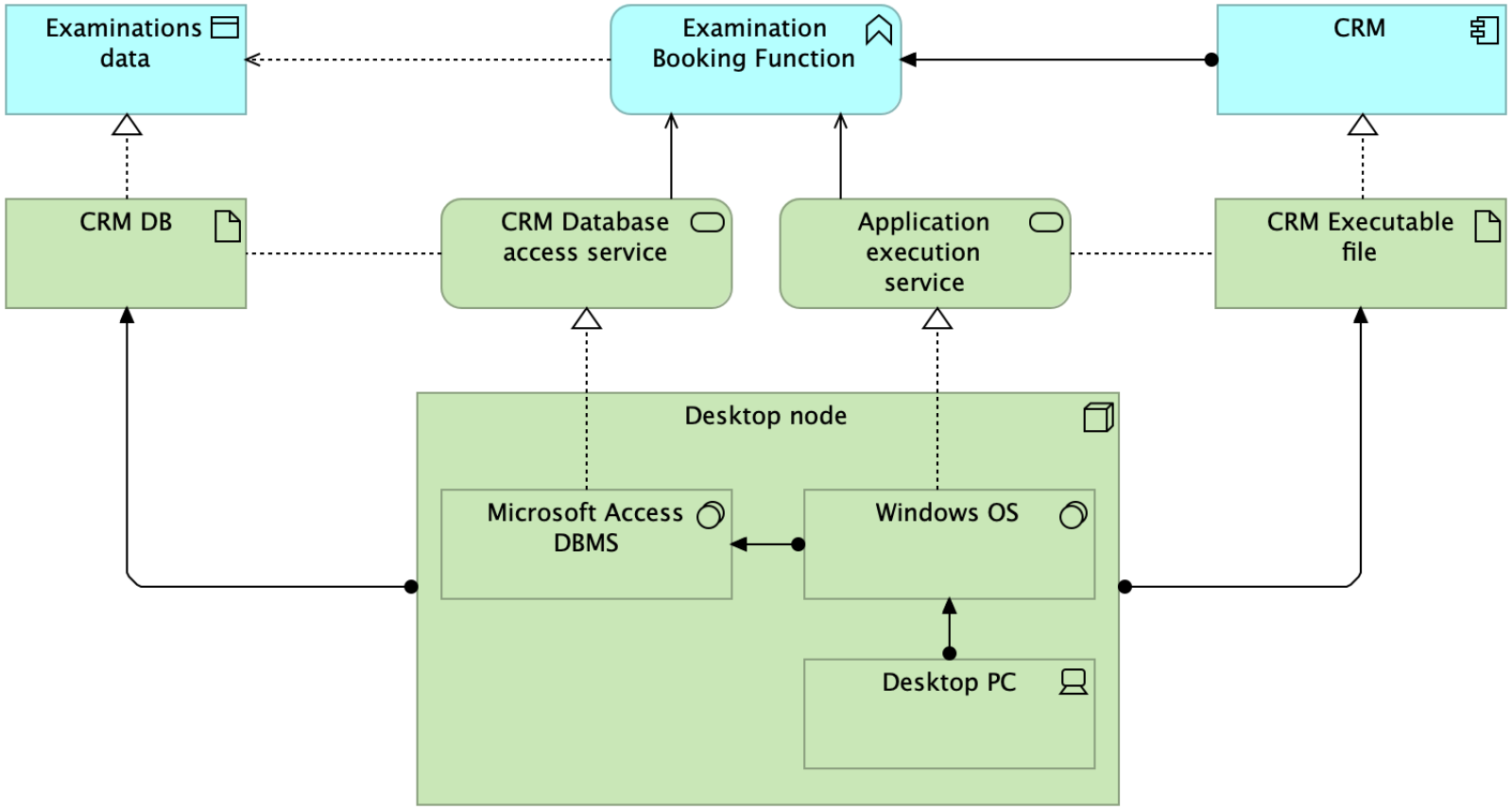


Porzione che contiene tutta la logica applicativa e di presentazione

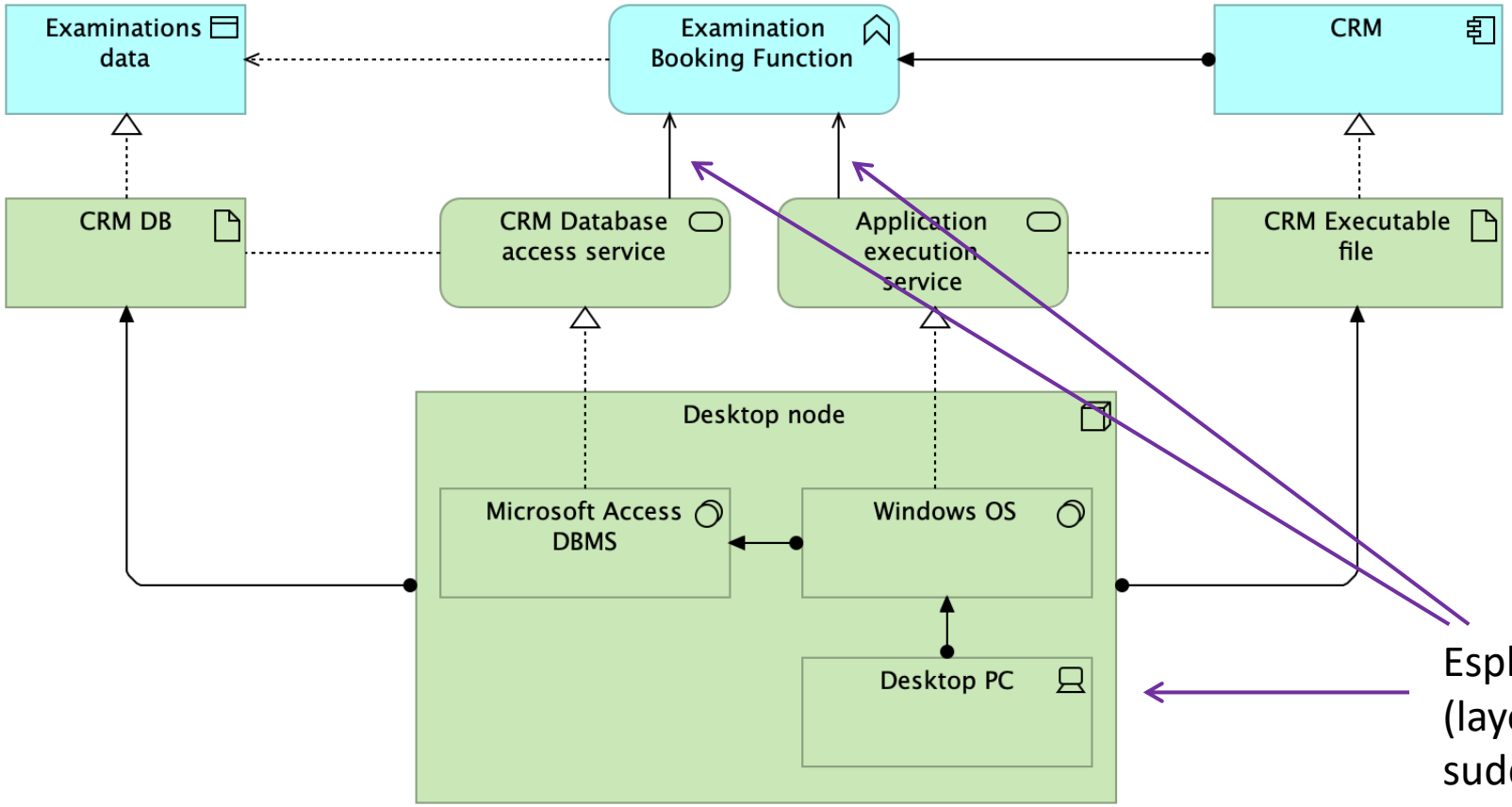
È l'unico elemento fisico (one-tiered) su cui si innestano gli altri moduli

Porzione che riguarda la logica di gestione dei dati, gestita da un DBMS

Applicazione one-tiered (2)

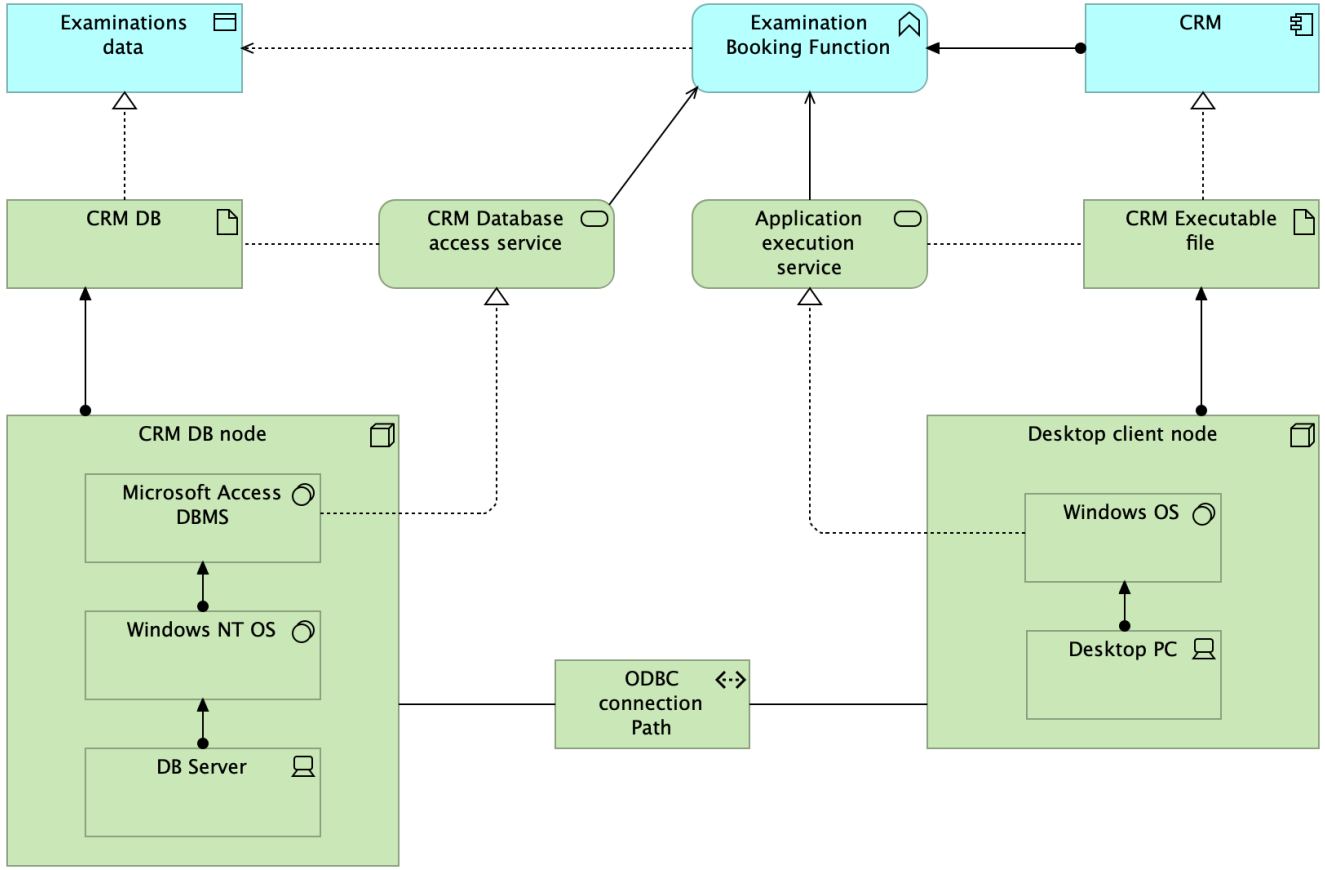


Applicazione one-tiered (2)

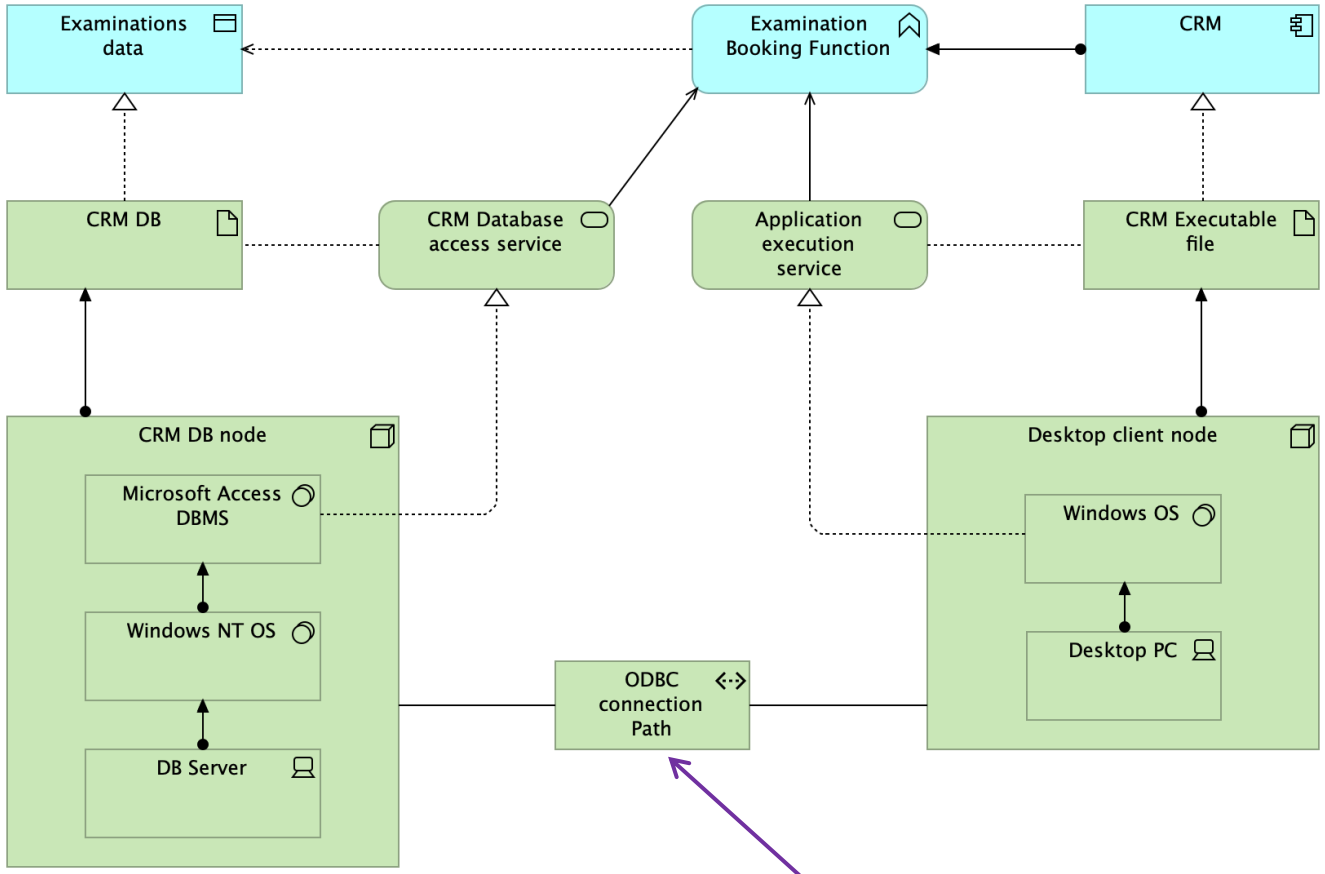


Esplicito che esiste un unico nodo (layer fisico) che offre un'applicazione suddivisa in due layer logici

Applicazione two-tiered



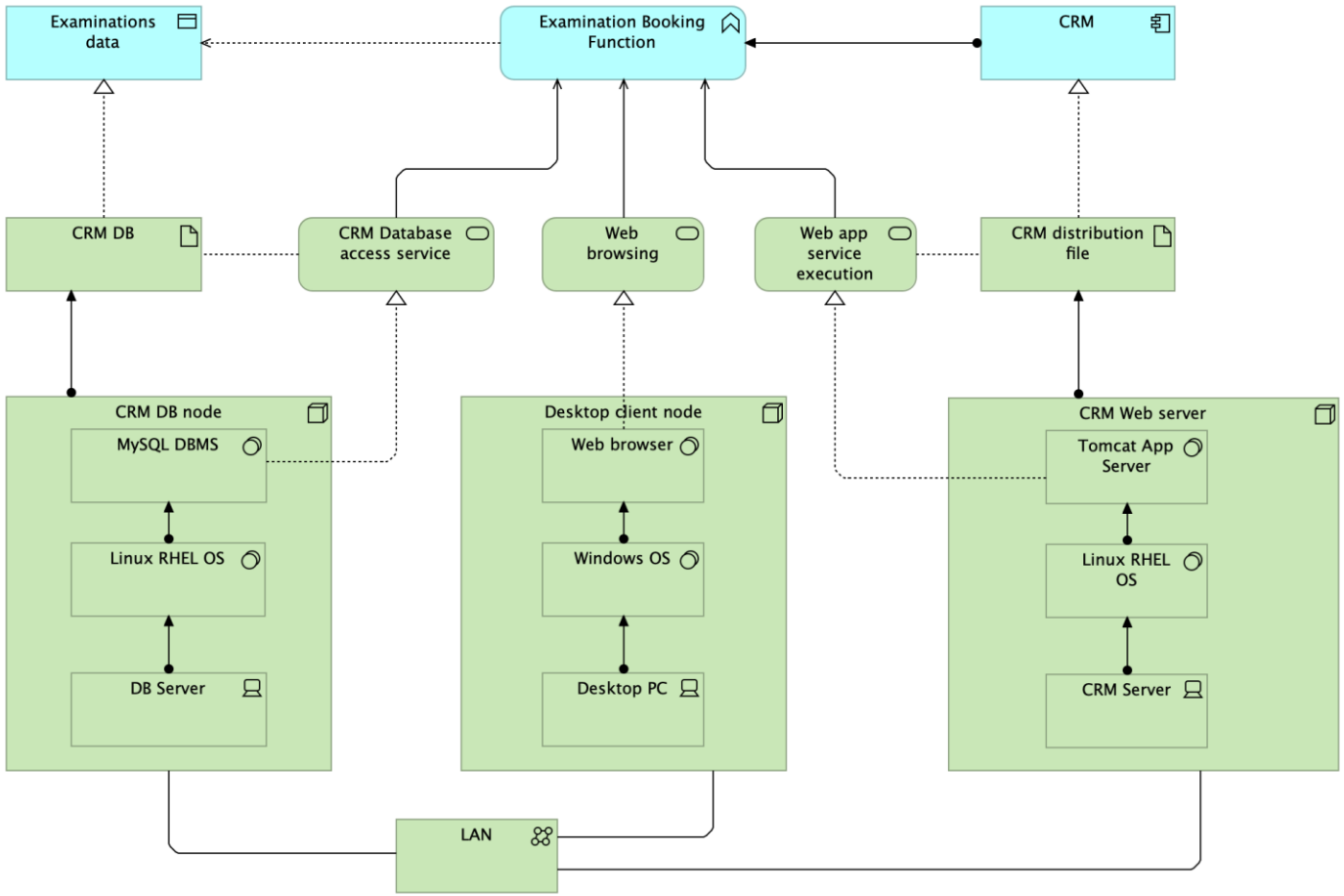
Applicazione two-tiered



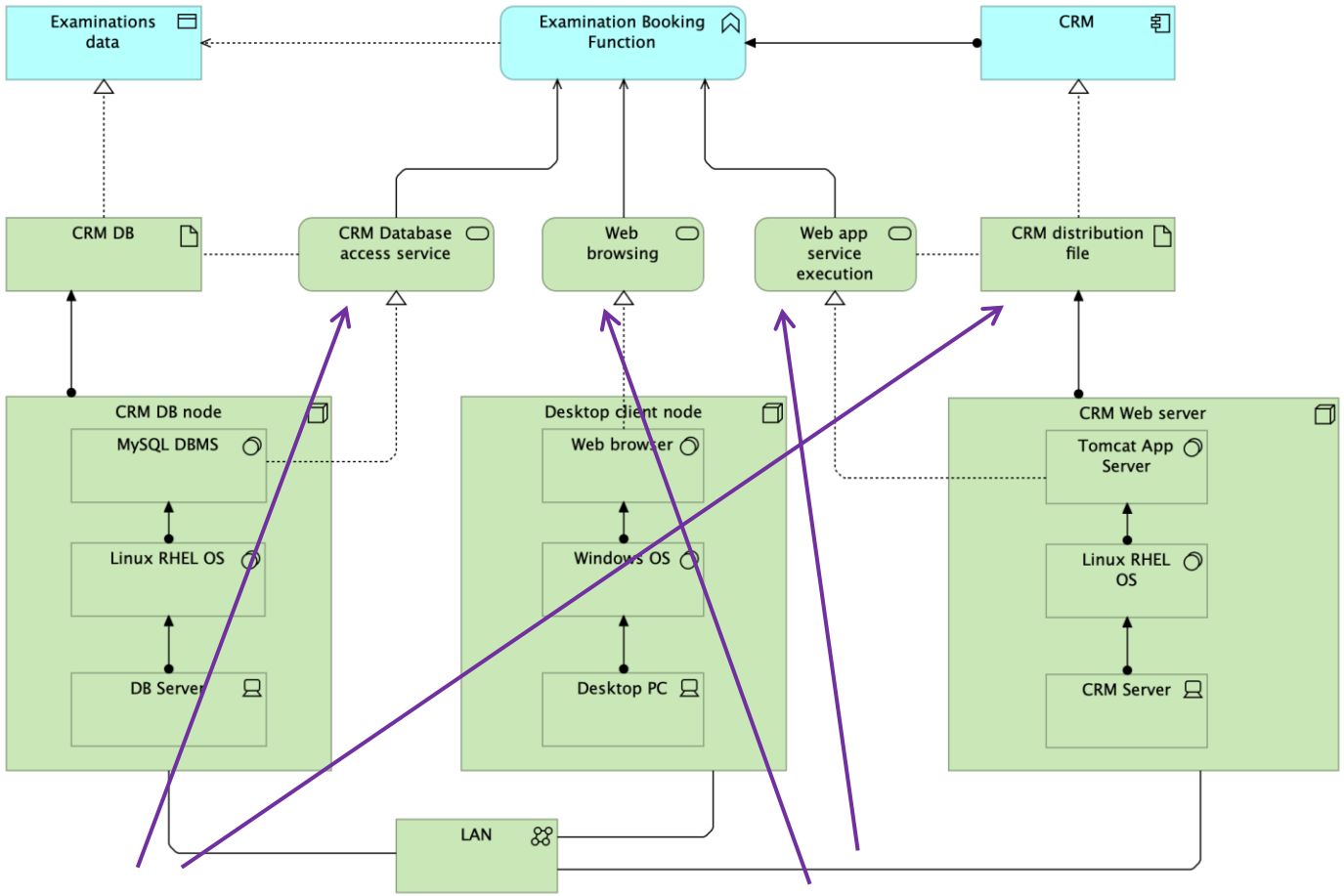
I due layer logici fanno riferimento a due a due tier fisici (nodi)

Comunicazione tra i due nodi

Applicazione three-tiered



Applicazione three-tiered



Invariati

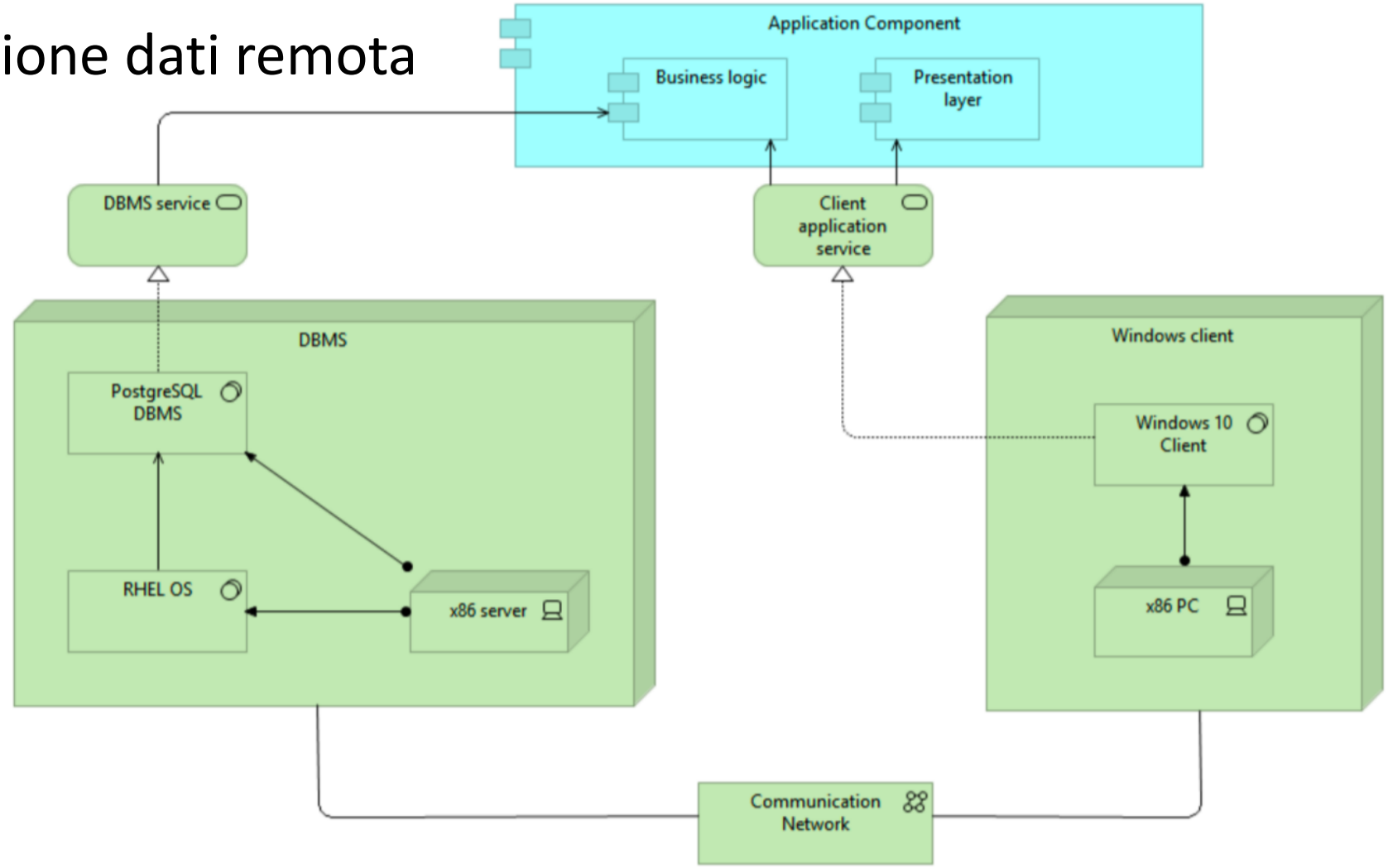
Suddivisione logica dei servizi

L'applicazione offre tre servizi:
1. DB / Accesso ai dati
2. Applicazione web
3. Layer di presentazione(browser)

I tre layer logici si basano su tre nodi fisici collegati da una LAN (intranet)

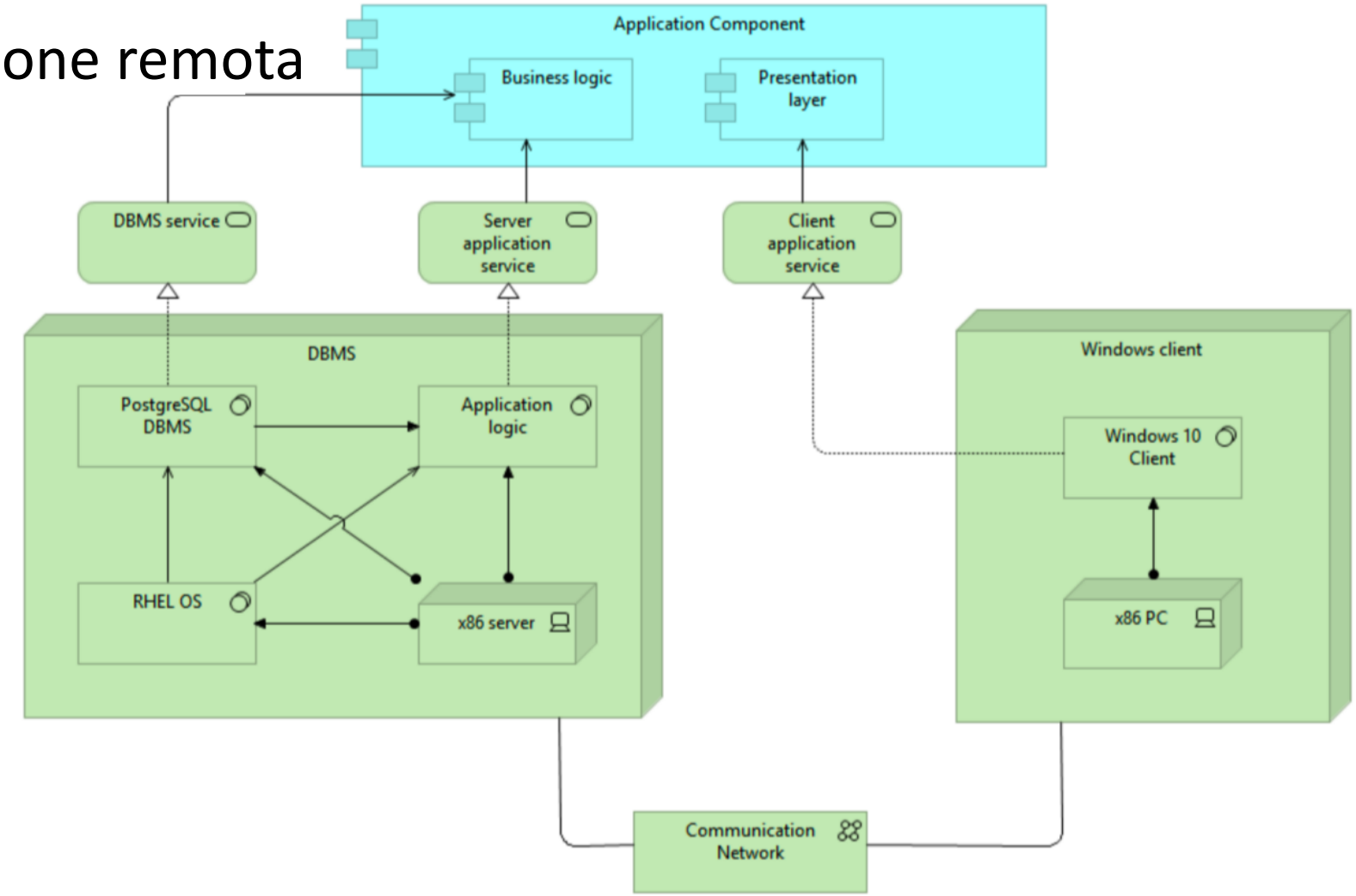
2-tier thick client

Gestione dati remota

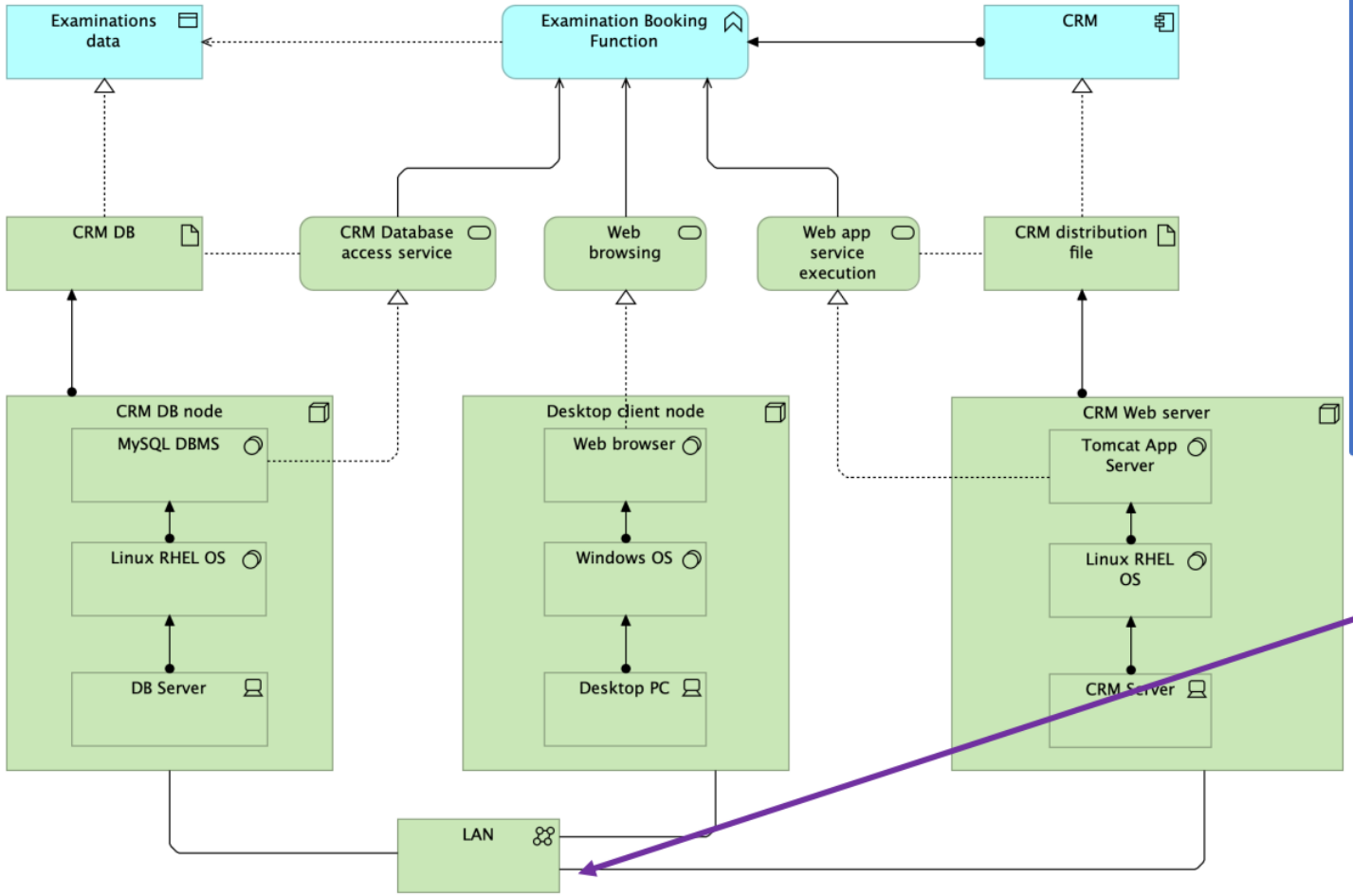


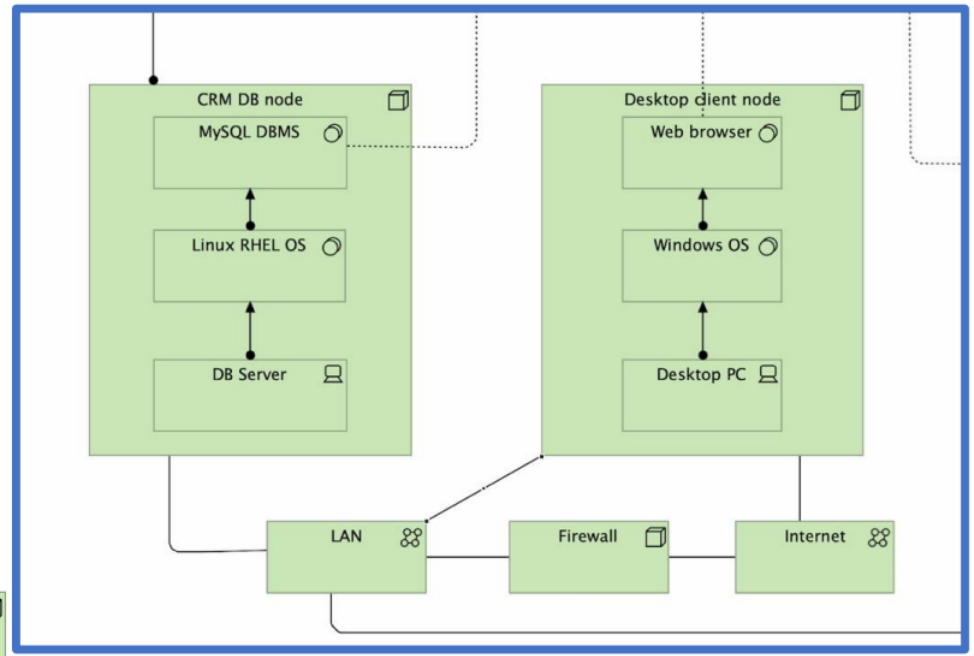
2-tier thin client

Presentazione remota



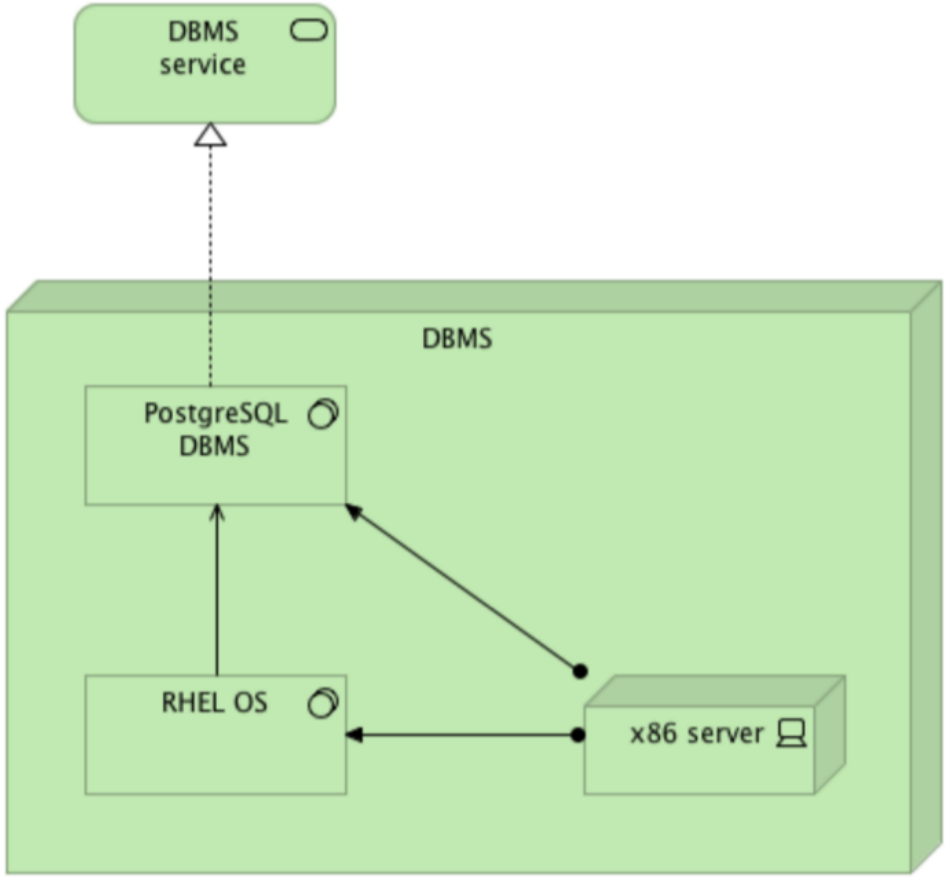
Connessione a internet

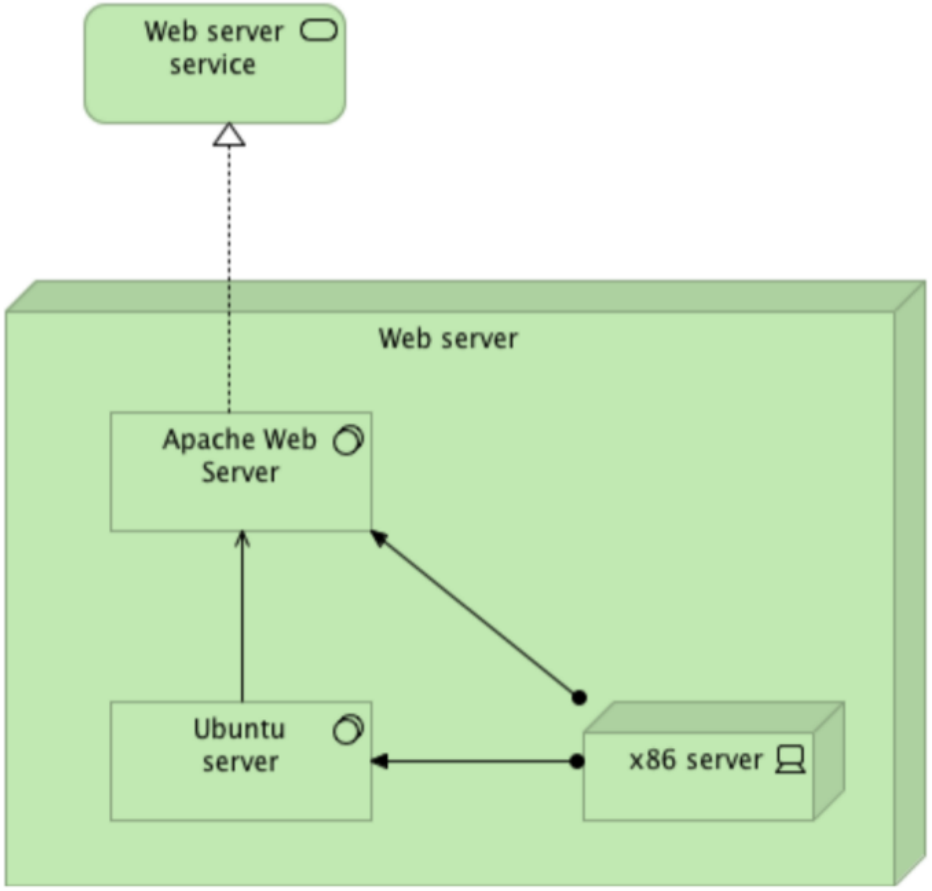




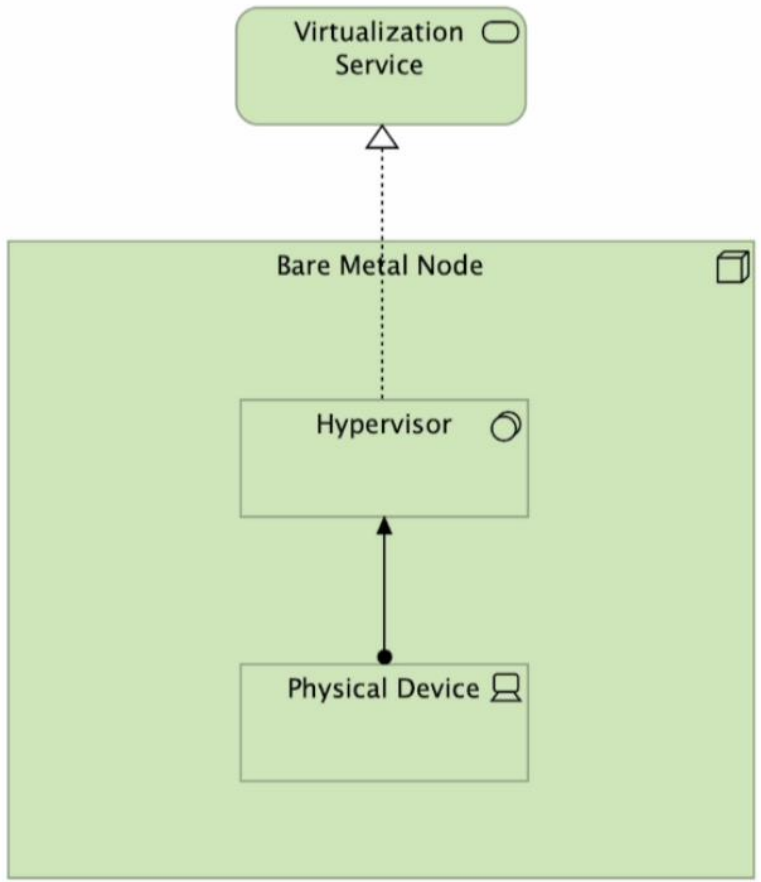
Client connesso ad internet

Server fisico

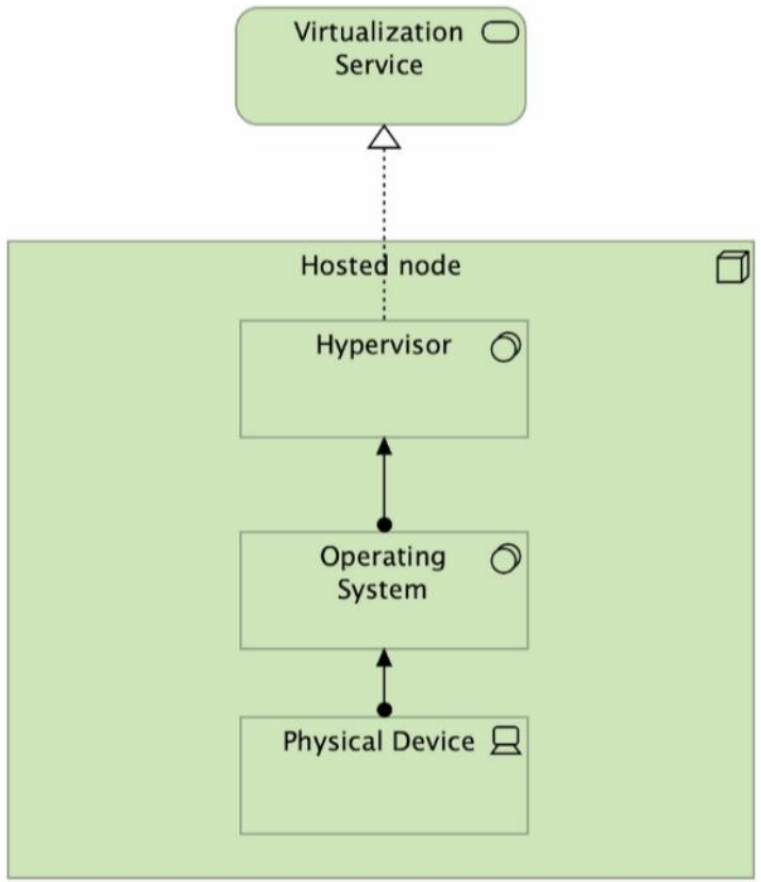




Virtualizzazione

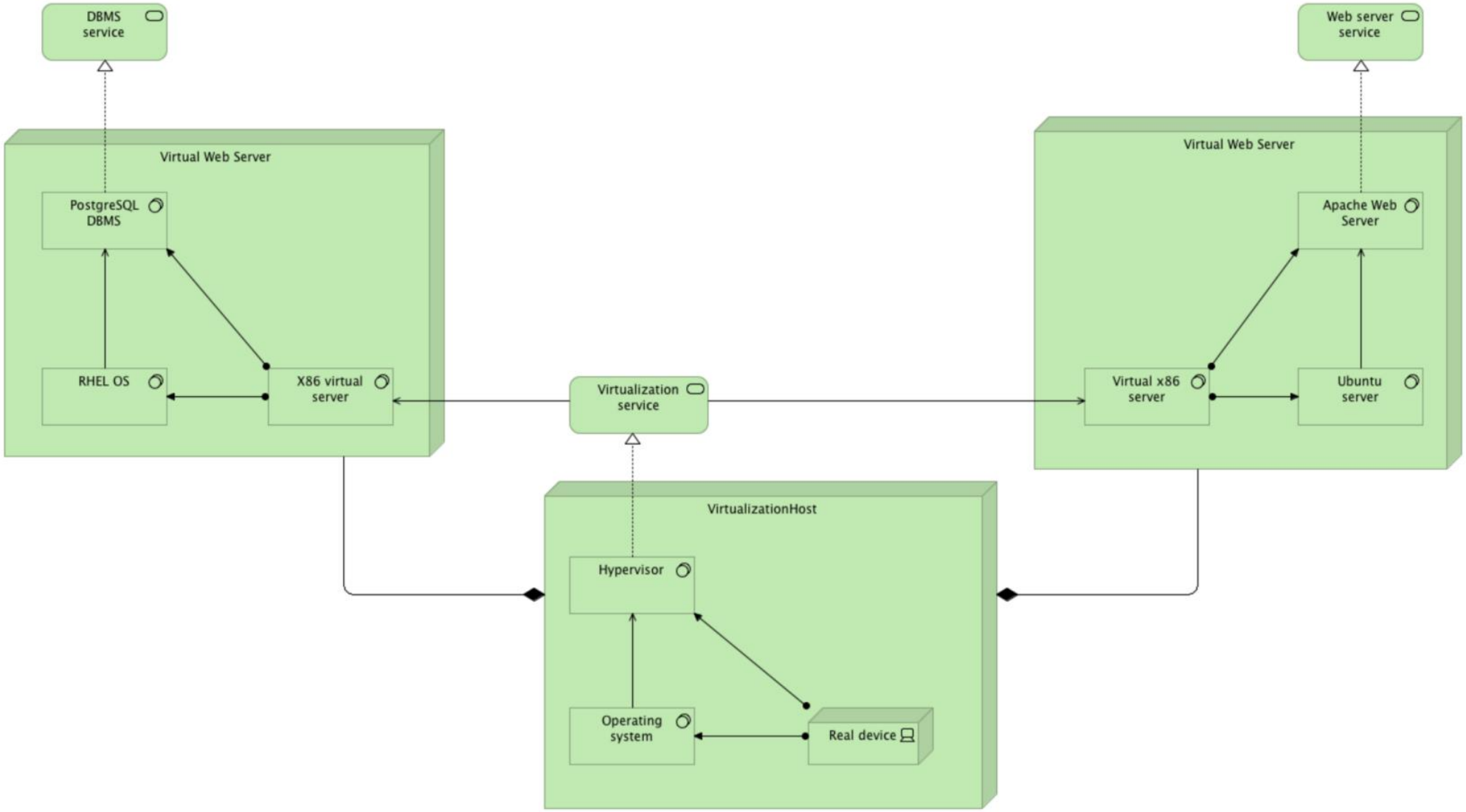


Bare – metal
(no OS)



Hosted

Server virtuale



Provisioning models nel cloud computing

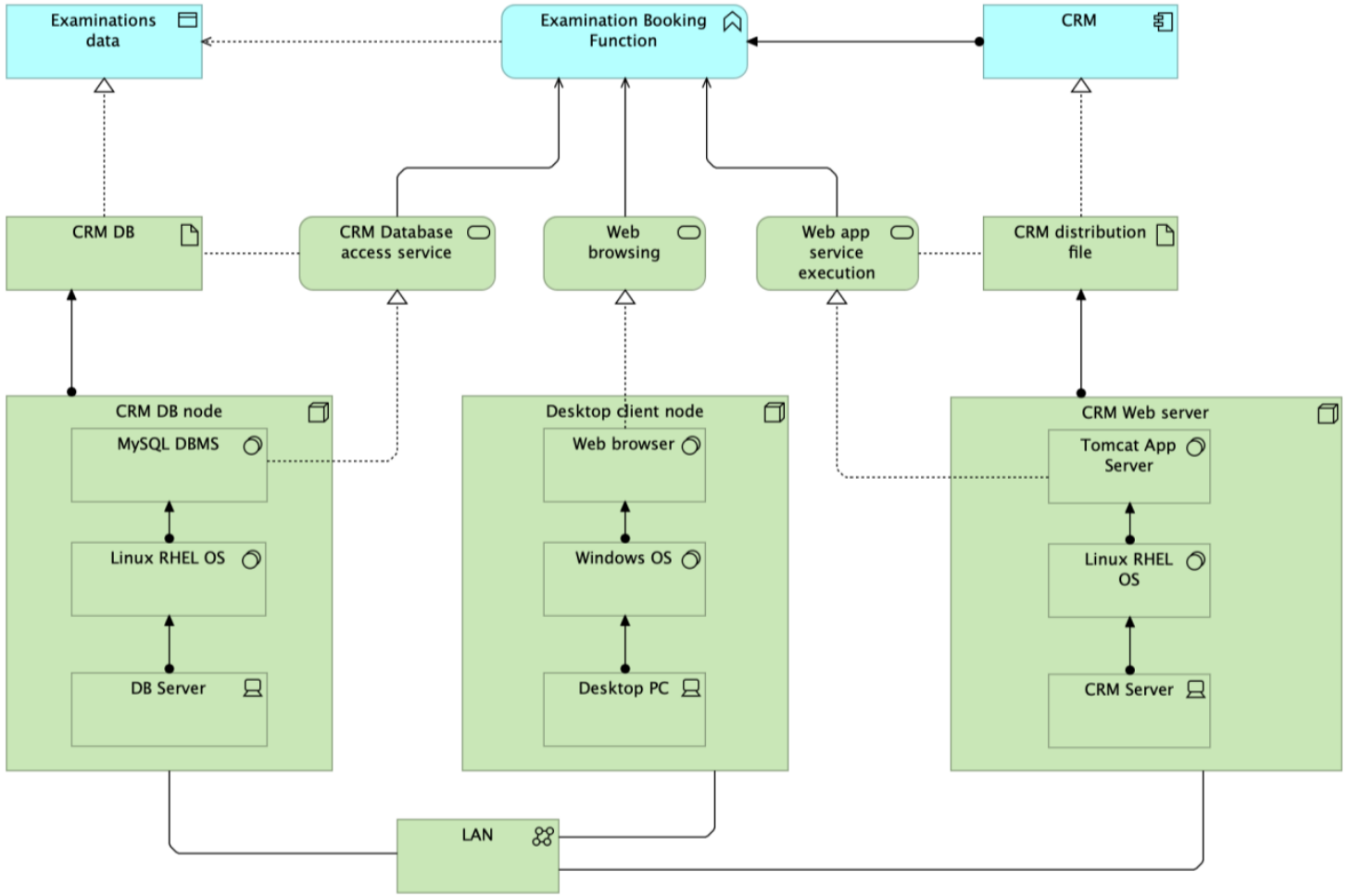
IaaS: provides virtualized computing resources; users manage applications, data, runtime, and OS, while the provider handles the hardware

PaaS: provides managed OS, middleware, and runtime; users focus on application development, without managing infrastructure

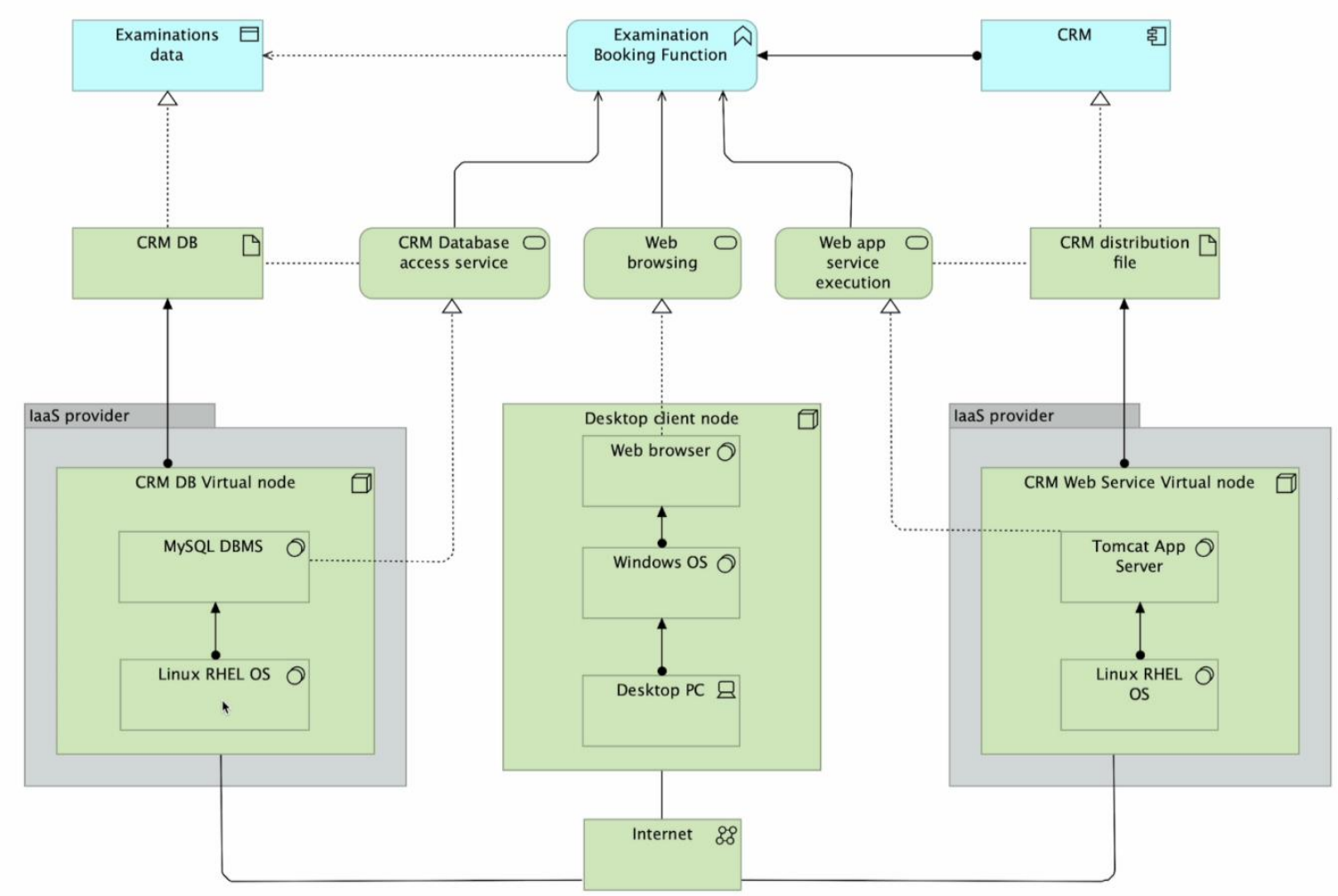
SaaS: offers fully managed software applications over the internet

Applicazione three-tiered (reprise)

(come fruitori)



Infrastructure as a Service

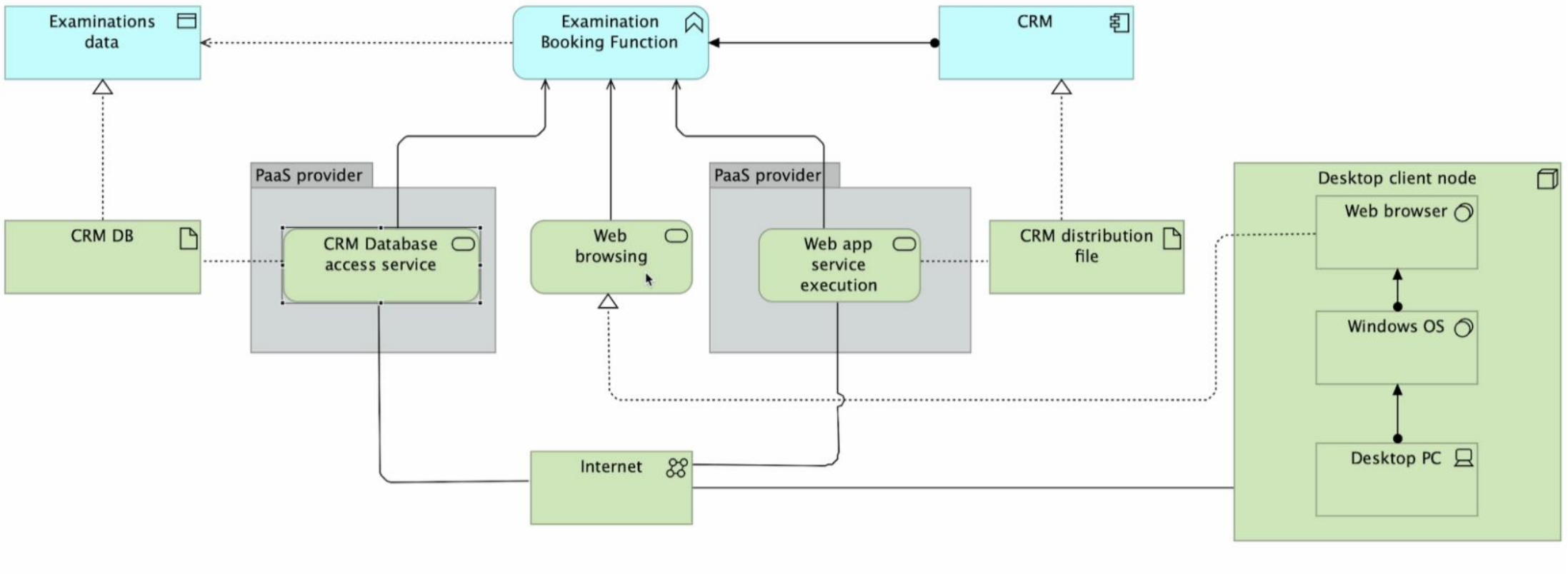


Non conosco i device fisici ma definisco soltanto OS / system software

Grouping per indicare il provider che offre il servizio

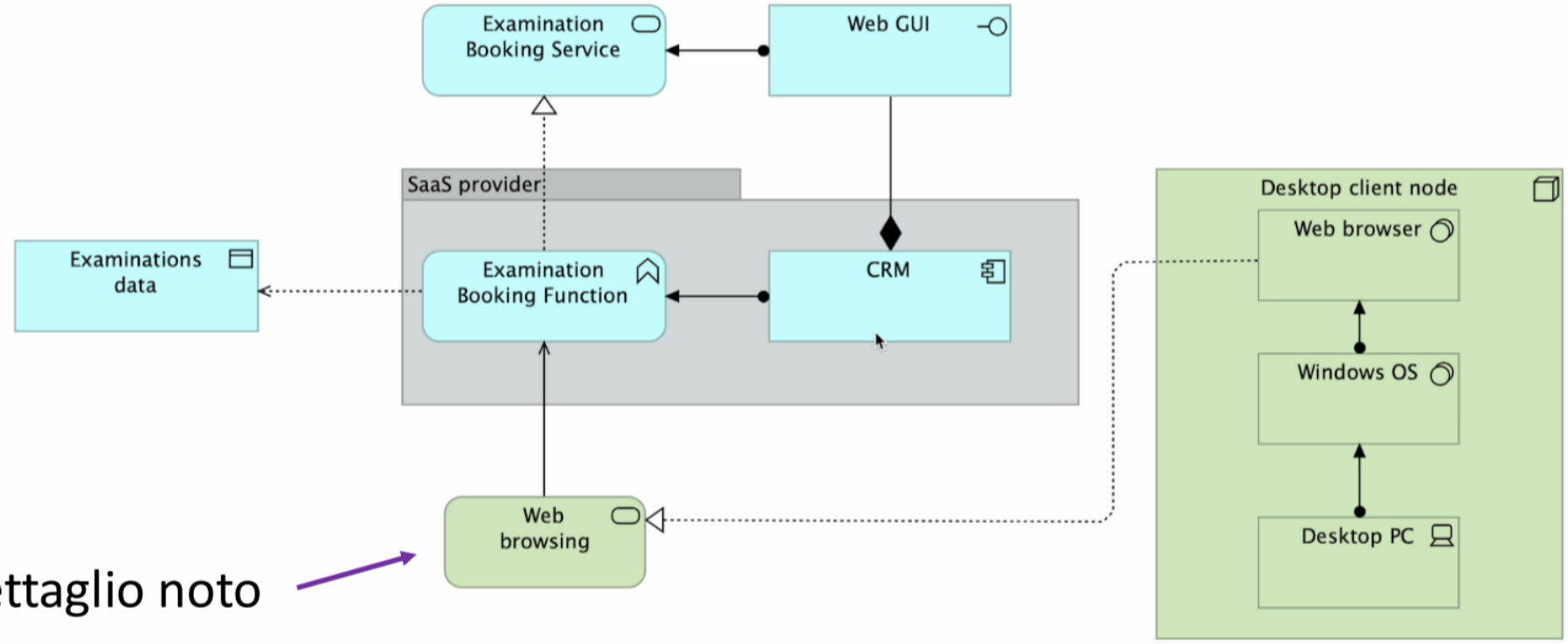
Platform as a Service

Modello più semplice: non siamo a conoscenza dei dettagli di piattaforma sottostanti ai servizi, rappresentiamo soltanto i servizi



Software as a Service

Dal momento che il servizio è SaaS servizi vengono collassati a livello applicativo.
A livello tecnologico si dettaglia soltanto il client



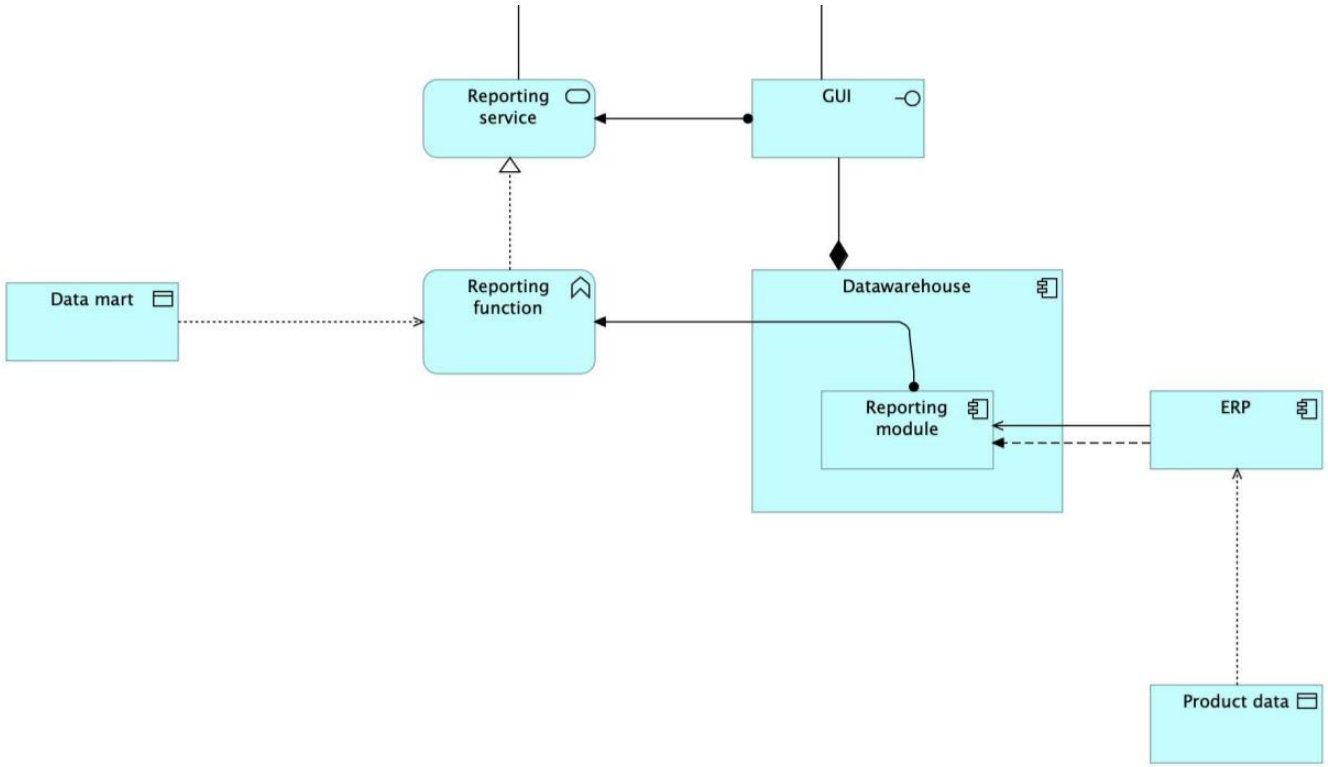
È l'unico dettaglio noto

Archimate
Esercizi con Archi

Archi

- Speedy 01 - Application layer

To offer this service, Speedy relies on a data warehouse.
Specifically, a reporting module, which is offered by the data warehouse, is in charge of interacting with the managed data marts to enable the activities which can be performed by the user. To this aim, the data warehouse periodically reads the data about the products from the organization's ERP system through an APl, to create the data mart that is used by the reporting module.



Archi

- Speedy 01 - Technology layer

From a technological perspective, the data which constitutes the data warehouse are stored in a dedicated node. This node is accessed by a data warehouse platform (that is in charge of implementing the ETL process) and also offers the possibility to navigated among the data marts and to generate the report. This platform is hosted on a server on which a Windows 2022 server instance is running. The ERP that offers the data about the product is a SaaS solution offered by the ACME cloud provider.

Archi

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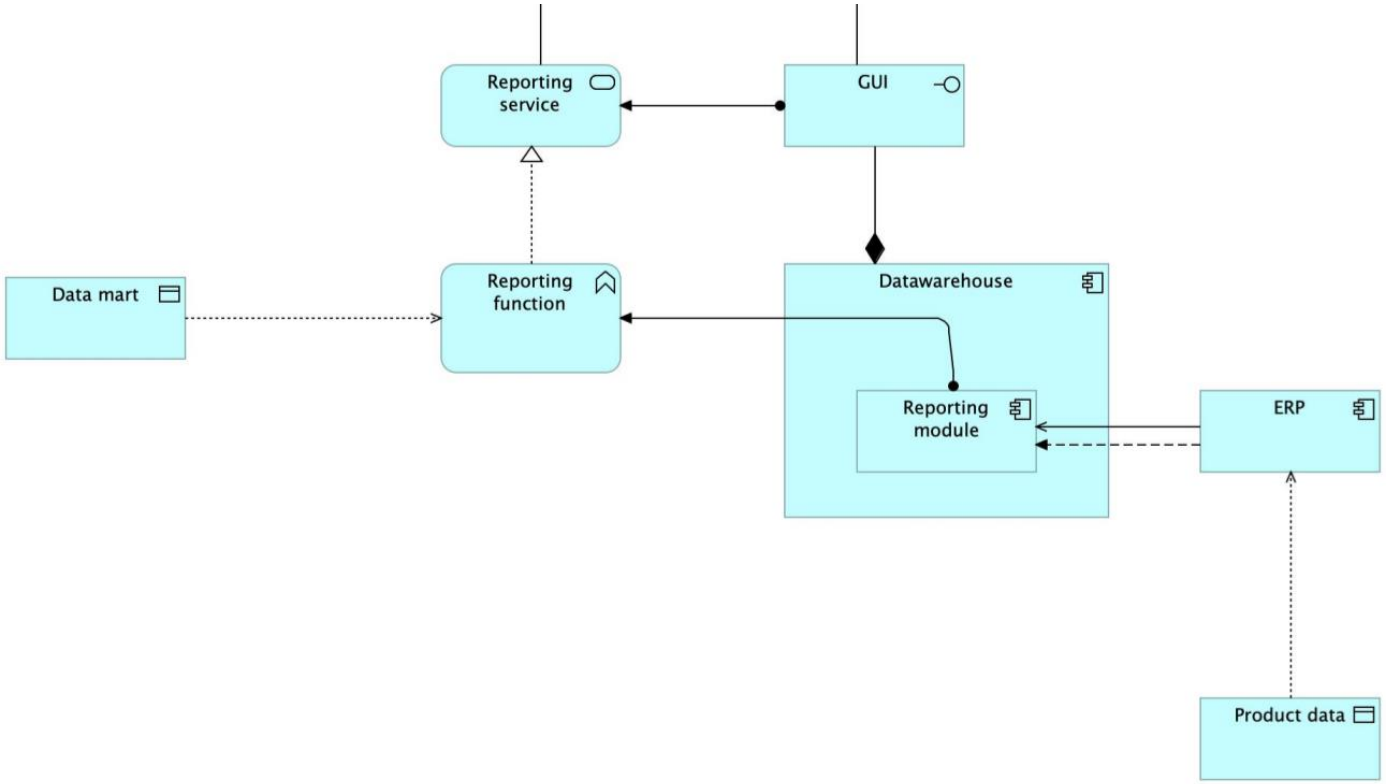

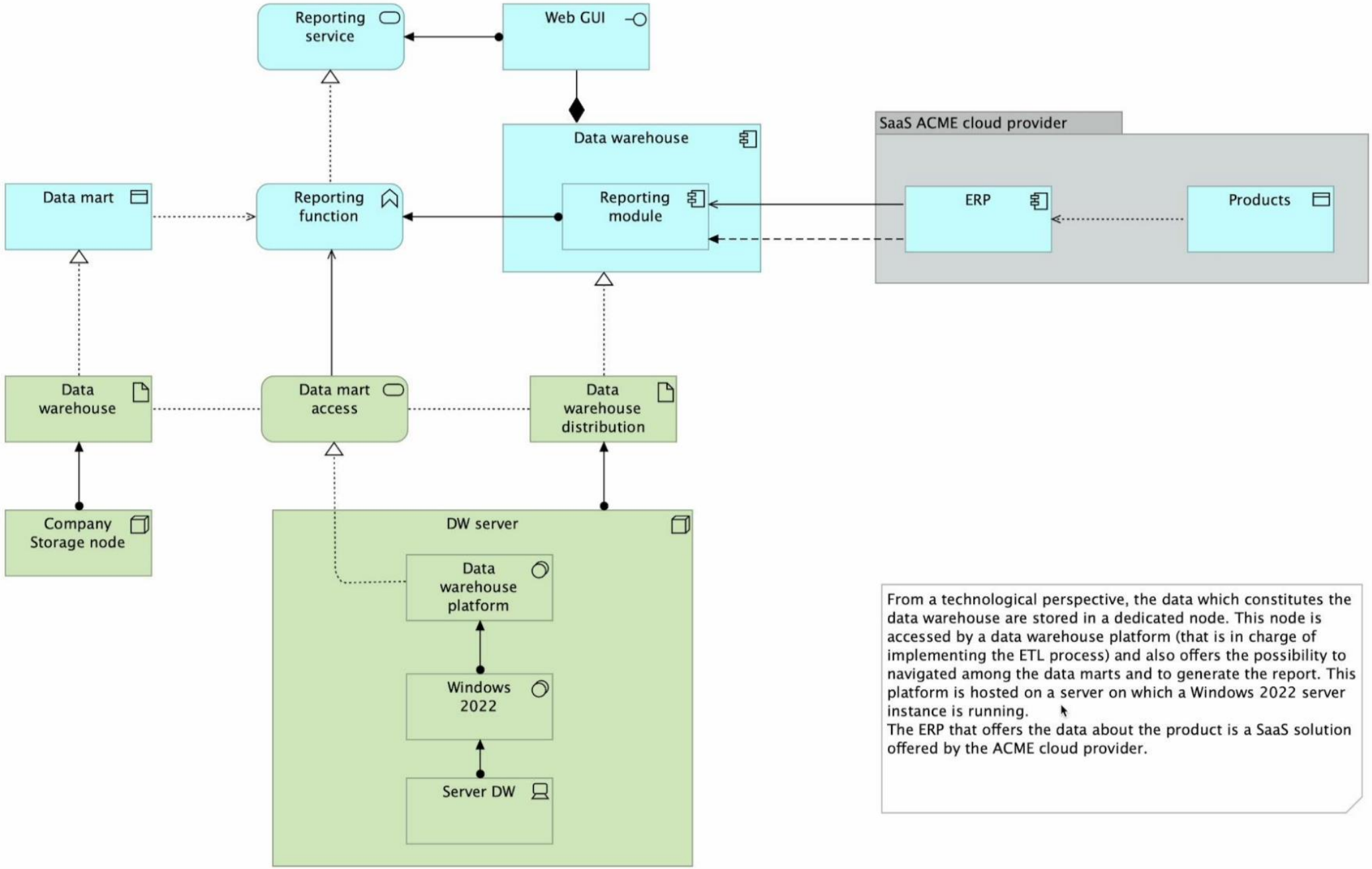
Reporting service
Web GUI
Data warehouse
Reporting module
SaaS ACME cloud provider
ERP
Products
Data mart
Reporting function
Data warehouse
Data mart access
Data warehouse distribution
Company Storage node
DW server
Data warehouse platform
Windows 2022
Server DW
From a technological perspective, the data which constitutes the data warehouse are stored in a dedicated node. This node is accessed by a data warehouse platform (that is in charge of implementing the ETL process) and also offers the possibility to navigated among the data marts and to generate the report. This platform is hosted on a server on which a Windows 2022 server instance is running.
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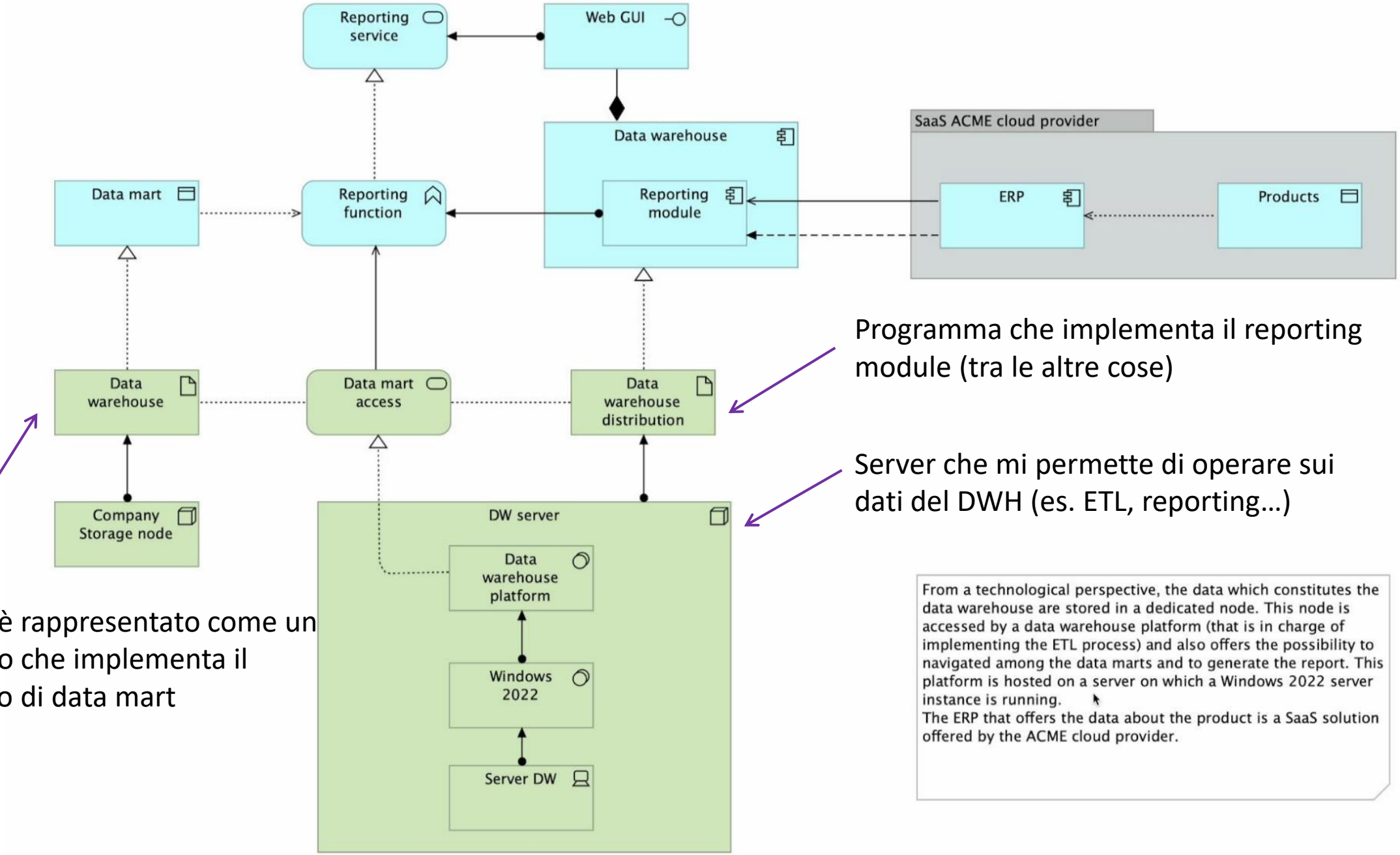
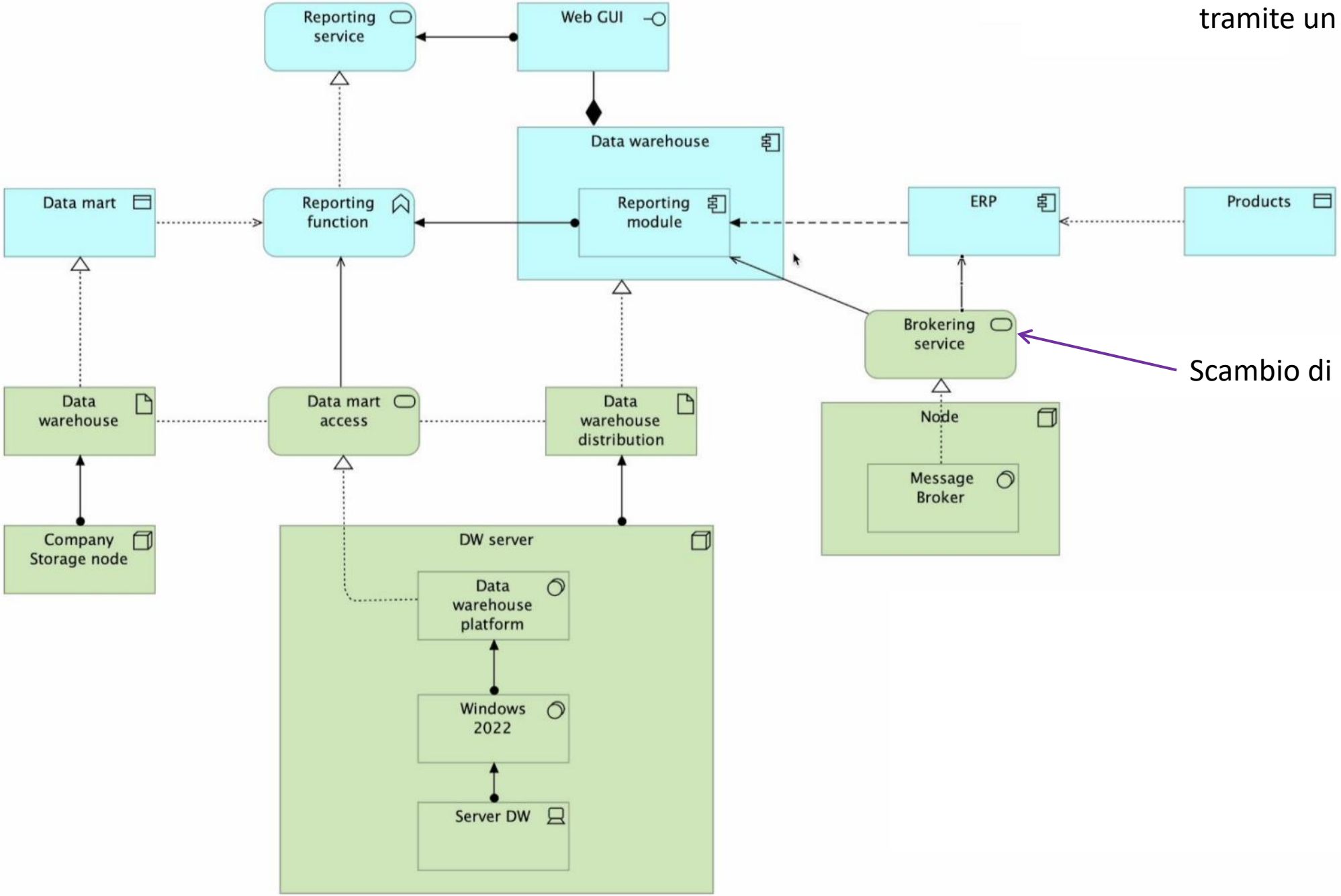


Programma che implementa il reporting module (tra le altre cose)

Server che mi permette di operare sui dati del DWH (es. ETL, reporting…)

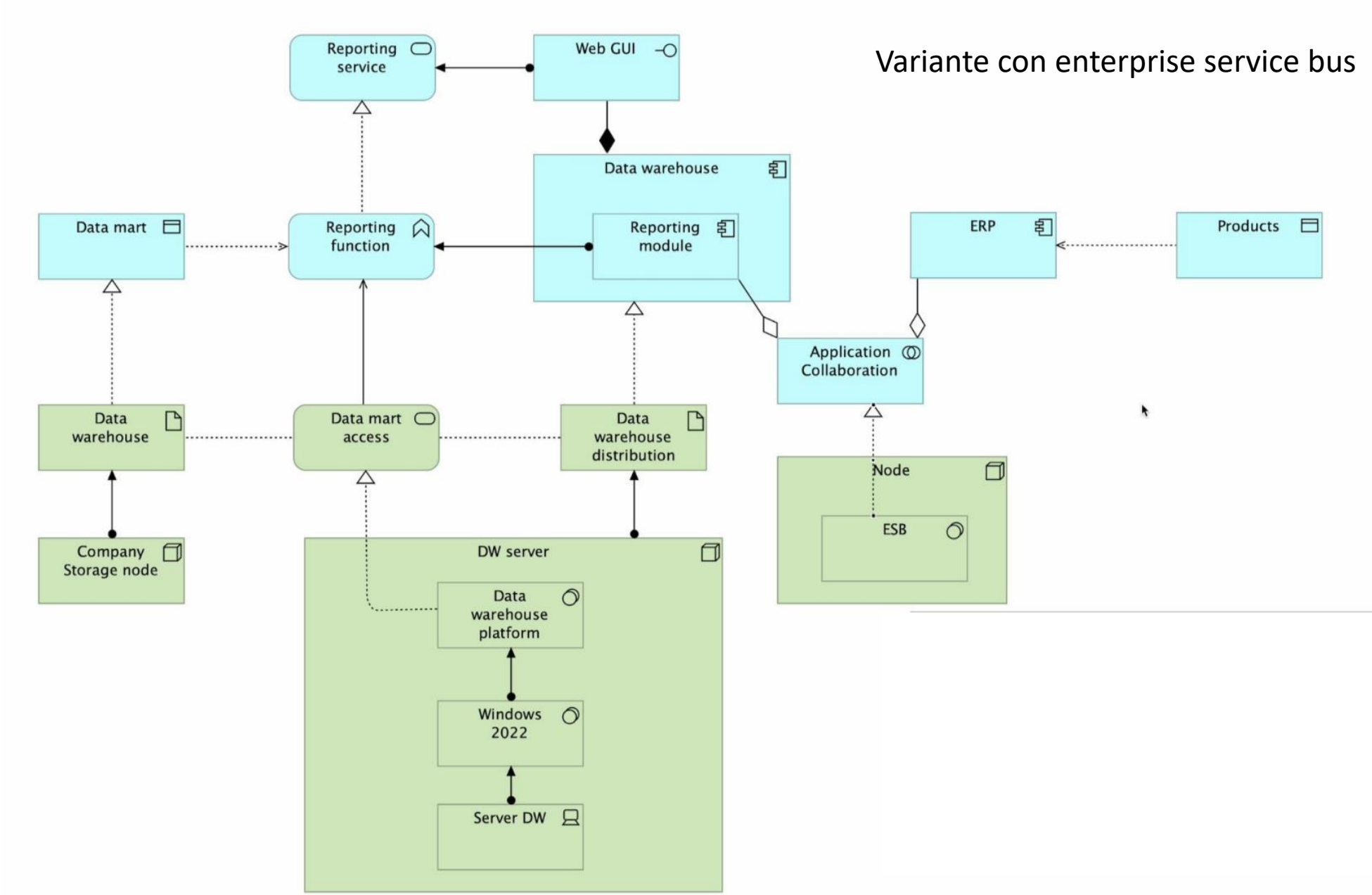
Il DWH è rappresentato come un artefatto che implementa il concetto di data mart

Variante: no connessione diretta tra ERP e reporting module, ma c'è un passaggio di messaggi loosely coupled, tramite un middleware



Scambio di messaggi

Variante con enterprise service bus



AutoMI

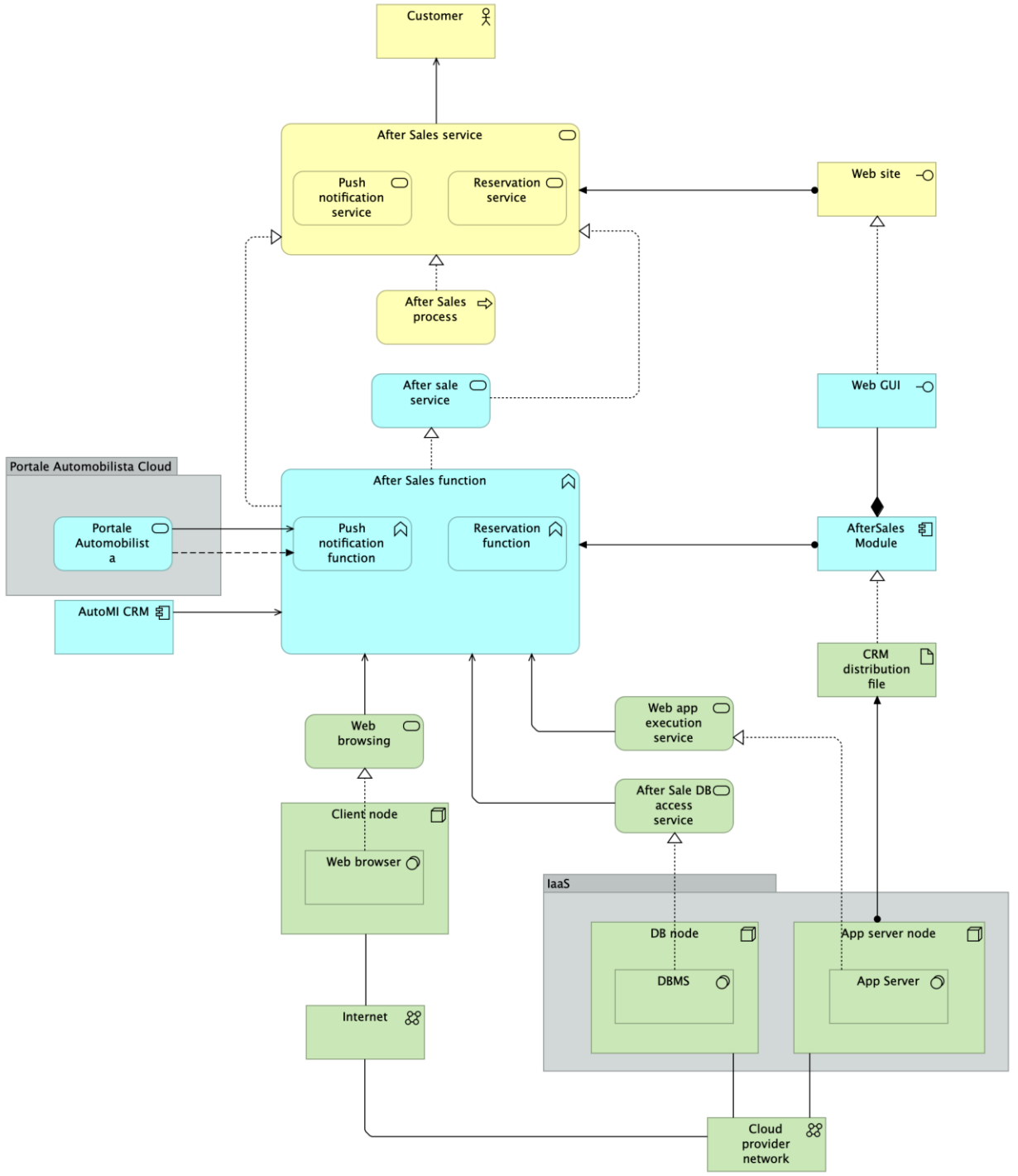
AutoMI is a chain of multi-brand auto body shops that intends to offer its customers a new online service for managing post-sales activities (e.g., inspections, servicing). This service allows AutoMI to send notifications to inform the customer about the need to perform periodic inspections required by law, and also allows the customer to book an appointment for servicing when a certain mileage is reached.

To provide this service, AutoMI will adopt a new software module that will interact via API, both in read and write mode, with AutoMI’s internal CRM, and in read-only mode with the so-called "Portale dell'Automobilista" (Driver’s Portal) made available via cloud by the Ministry of Transportation. It should be noted that the information obtained from the Portale dell'Automobilista is used only for notifications.

From a technological standpoint, the new system will be a three-tiered system deployed on virtual machines running on external cloud providers.

With reference to the previous text, define the Archimate diagram consisting of the Business Layer, Application Layer, and Technology Layer. The modeling of data objects and the technological level for AutoMI’s CRM is not required.

AutoMI


Customer
After Sales service
Push notification service
Reservation service
Web site
After Sales process
After sale service
Web GUI
Portale Automobilista Cloud
Portale Automobilista
After Sales function
Push notification function
Reservation function
AfterSales Module
AutoMI CRM
CRM distribution file
Web app execution service
Web browsing
After Sale DB access service
Client node
Web browser
IaaS
DB node
DBMS
App server node
App Server
Internet
Cloud provider network