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Product description

Infrastructure as a Service.

Expert in Private Clouds.

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1.
Introduction.

A flexible and secure Cloud platform for growth and innovation: that's Fundaments IaaS. It combines the advantages of a physical data center with scalability and configurability. We manage your IT infrastructure so you can focus on your core business. Fundaments IaaS is always up-to-date, accessible everywhere, and affordable on a pay-as-you-go basis.

Fundaments IaaS consists of compute, storage, and network components, accessible through a self-service portal. Fundaments IaaS can be combined with other services from the Fundaments portfolio, such as Managed Cloud, Firewall as a Service, Backup as a Service, and Disaster Recovery as a Service.

Fundaments' services are offered from within the Netherlands, ensuring sovereignty. Fundaments operates a fully Dutch platform, distributed across eight data center locations in the eastern, central, and western regions of the Netherlands.

1.1   The Benefits of Fundaments IaaS

Flexible Building Blocks
Flexible building blocks for servers, applications, and services that can be easily scaled up or down.

High-Quality Tier 3+ Data Center Locations
Exclusively offered from high-quality Tier 3+ data center locations in the Netherlands.

Own Network
A own (internet) network with maximum control over the accessibility of production environments.

Fully Certified
Fully certified: NEN 7510, ISO 9001, ISO 14001, ISO 27001, and ISAE 3402 Type I and II.

Pay as You Go
Pay based on usage with maximum cost control, even with hourly usage options.

Cloud Verified
Fundaments is one of the cloud providers in the Netherlands recognized with VMware's 'Cloud Verified' certification, acknowledging Fundaments' expertise in implementing VMware products.

24/7 Availability
Enterprise Support: our support desk is available 24/7, ensuring maximum availability.

High-Level Security
Advanced security designed to support business-critical services.

Fundaments IaaS delivers flexibility, reliability, and scalability, **ensuring your organization always performs at its best.**

2.
Our Cloud buildingblocks.

Within its production data centers, Fundaments utilizes solutions for compute, networking, and storage. These are then made available through Fundaments IaaS, using VMware Cloud Director. This online management portal, combined with the administrative Fundaments Customer Portal, ensures ease of use, cost control, and 24/7 access to Virtual Data Center services.

2.1 Compute

Compute, alongside storage and connectivity, forms the foundation of infrastructure services. Fundaments relies on the latest generation of Dell PowerEdge rack servers, utilizing the most up-to-date standards for CPU-to-RAM ratios.

Fundaments ensures double the computing power compared to the measured industry average. Memory is not overbooked: allocated memory is fully reserved, with N+1 redundancy guaranteed.
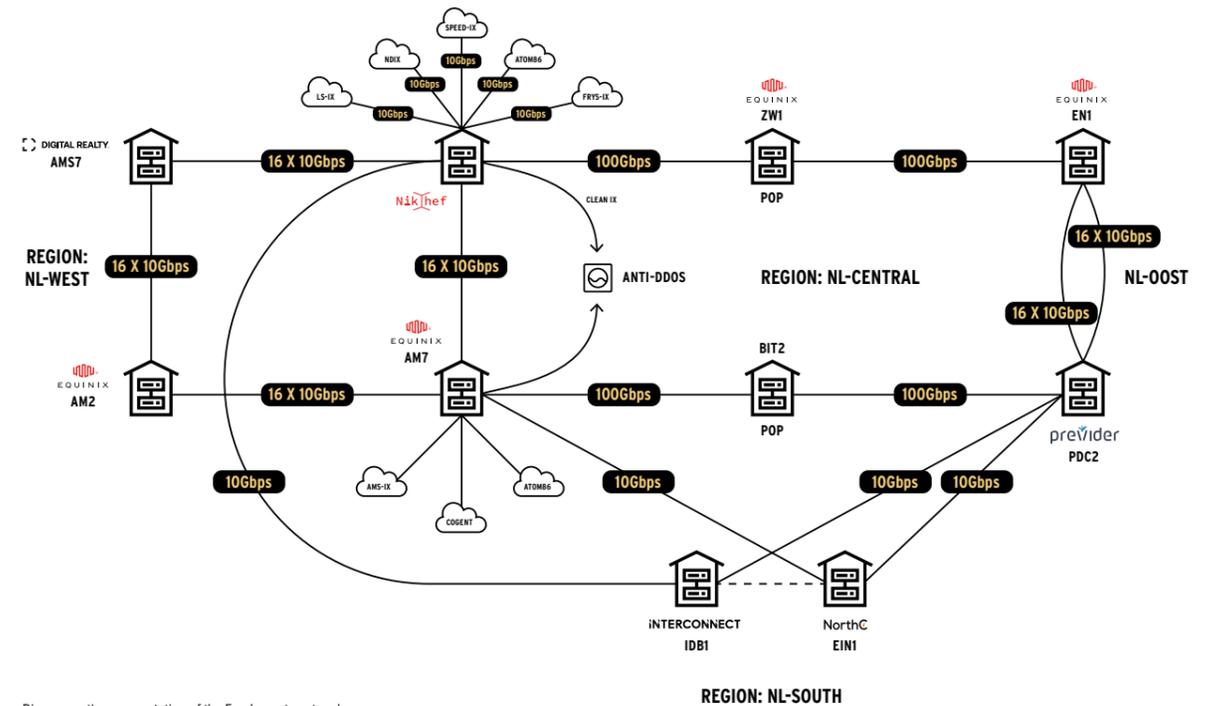
2.2 Networking

The Fundaments network offers internet connections with providers such as AMS-IX, NL-IX, and NDIX. Through the Fundaments Cloud Gateway, connectivity with public cloud providers like Azure, AWS, and Google is also possible. This enables access to the Fundaments IaaS platform without using the internet, ensuring stable latency and bandwidth.

External locations connect networks to the Virtual Data Center (VDC) via a Virtual LAN (VLAN). Networks within the VDC are offered based on Virtual Extensible LANs (VXLAN/Geneve).

Datacenters

Hardware

Software

Suppliers to Fundaments' IaaS

Diagrammatic representation of the Fundaments network

At the Points of Presence (POP) locations Nikhef and Equinix AM7, all major telecom providers are available. Fundaments integrates these services and data with the Fundaments IaaS platform. The internet provided by Fundaments is also protected by the Anti-DDoS solution (NaWas) from NBIP, which mitigates DDoS attacks.

For detailed information, refer to the service description for Cloud Connectivity as a Service.

Each Virtual Data Center can be equipped with a Network Edge featuring Firewall as a Service. This virtual appliance handles network management and services such as firewalling, IPSEC, and routing. The firewall protects and manages the available networks within the VDC. Fundaments delivers the Network Edge using VMware NSX Edge Gateway or Fortigate Next-Generation Firewall.

2.3 Storage

Fundaments offers four types of storage within the VDC, allowing the most efficient Tier to be selected for each application. Switching between tiers can be done without technical impact. The compute clusters are connected to the storage systems via redundant, modern standards, ensuring that in the event of a compute failure, workloads are quickly restarted on another part of the cluster.

Tier	Toepassing	Techniek	Performance Characteristic	Burst (max.)	Latency*
Archive	Archive data: large volumes with low access frequency. Used for Veeam Cloud Connect.	SATA	13 IOPS/TB	1500 IOPS	Best effort
Regular	Generic workloads: such as domain controllers and application servers with limited I/O demand.	SSD	475 IOPS/TB	20.000 IOPS	< 10 ms
Fast	Performance workloads	SSD	895 IOPS/TB	30.000 IOPS	< 5 ms
Fast Plus	Write-intensive workloads: such as databases or applications with heavy logging components.	NVMe-SSD	2000 IOPS/TB	50.000 IOPS	< 5 ms

Storage Tiers used

*Latency measurements are approximate and may vary depending on workloads.

With Fundaments IaaS, you benefit from powerful compute, stable networks, **and seamless storage for a future-proof infrastructure.**

3.
Management of Fundaments IaaS.

Fundaments' IaaS is supplied with a management portal for technical management of the VDC. Fundaments offers its self-developed portal for administrative matters and support.

- The use of snapshot back-ups.
- Monitoring of IaaS components, such as compute and storage features.
- Management of templates and ISO files for rollout of workloads.
- Administration of networks (Network Edge services).

3.1   VMware Cloud Director: technical management of the VDC
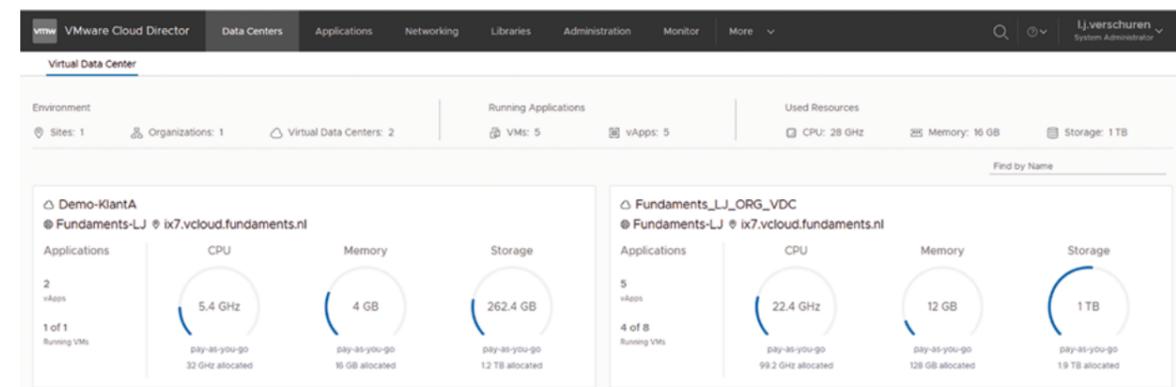
Fundaments' IaaS is connected to VMware Cloud Director: the portal for the technical management of Virtual Data Centres (VDC). A separate configuration can be created for each VDC in respect of compute, storage and network. Every administrator can simply log in via the handy web interface and carry out day-to-day administration of the following elements:

- Configuration and rollout of servers.
- Starting and stopping of virtual servers.
- Use of the console functionality for server administration.
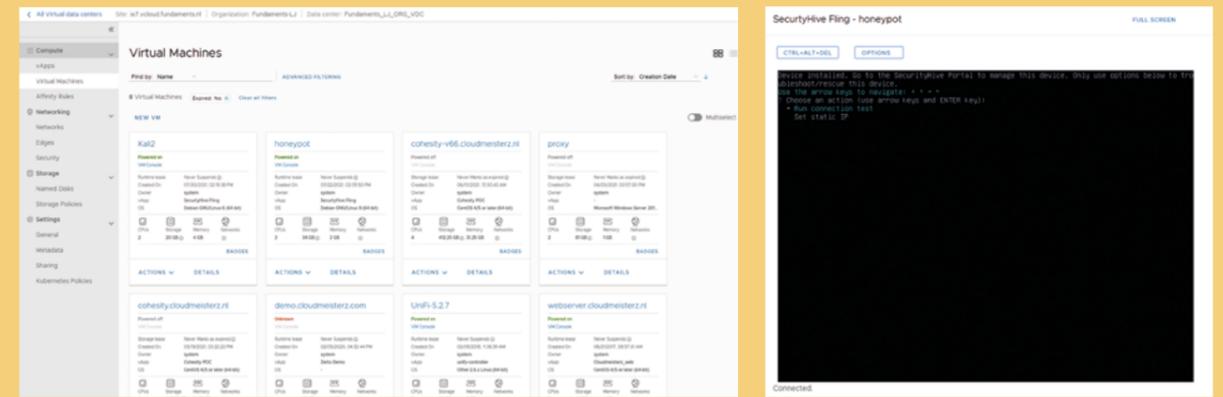
3.2   The Fundaments Client Portal: administration and support

Fundaments offers its own Fundaments Client Portal for administrative matters and support. This portal gives an insight into points of contact, subscription and use of the various VDCs, amongst others.

VDC contents

Console

Usage statistics

Fundaments' IaaS resources settings

Overview of VDCs

> "Fundaments offers unmatched infrastructure services with double computing power, guaranteed memory reserves, stable network connections, and flexible storage options, all designed for maximum reliability and performance."
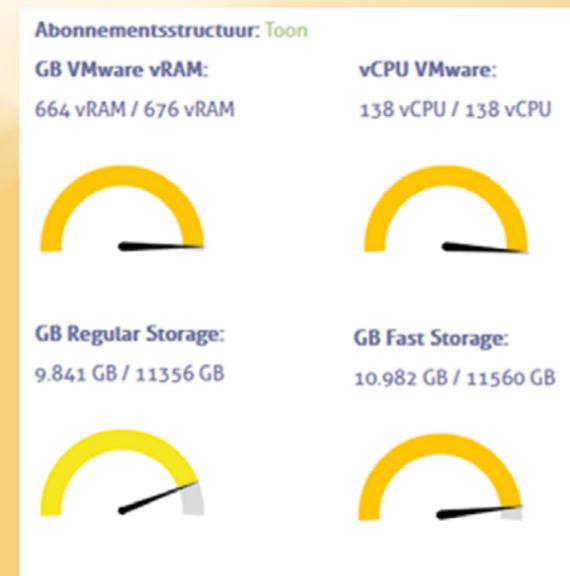

Usage

3.3   Pay-as-You-go it infrastructure

All variable components of Fundaments' IaaS, such as compute and storage, can be used via a pay-as-you-go model. This means you can select IaaS from Fundaments without any commitment and that you can use all Cloud resources on a pay-per-hour basis. If predictability of costs is an important element of your operation, you can also commit to purchase the resources. A combination is possible too. This gives you maximum control of both costs and flexibility.

4.
Guarantees.

The guarantees for Fundaments' IaaS are based on a responsibility model. Availability and responsiveness in the event of major incidents are guaranteed as standard for the elements of which Fundaments is responsible. See the Enterprise Support description of services for more information.

4.1 Service Level Agreement

Infrastructure as a Service from Fundaments comes with a guarantee of availability. The IaaS service is available for 99.95% of each month.

4.2 Responsibility Model

Fundaments' IaaS uses a shared responsibility model. This RASCI-based model is essential for defining responsibilities.

- **Responsible (R) -** responsible for the service component.
- **Accountable (A) -** accountable for the service component.
- **Supportive (S) -** supportive of the service component.
- **Consulted (C) -** consulted on the service component.
- **Informed (I) -** informed of the service component.

Fundaments' IaaS consists of a number of components, and there is a clear division of responsibilities for these components.

Task	Fundaments	Client
Application of (usage) data	-	A
Application user management	-	A
Application and Operating System management	-	A
Server configuration, including Operating System	-	A
Cloud Director	R, A, S	I
Network Edge – configuration	S	A
Network Edge – availability	A	-
Network	A	-
Virtualisation	A	-
Servers & Network infrastructure	A	I
Data centre location; racks and access	A	-
Vulnerability Management	I	R, A

RASCI responsibility model

5.
Additional services.

Premium Enterprise Support
Support with changes and information requests

Back-up as a Service
24/7 protection of your workloads

Disaster Recovery as a Service
Guaranteed continuity of your organisation

Security Add-ons
Security for your Cloud solutions