

# SARDINA



## Has The Banking Sector Run Out of Options for Further IT System Energy Savings?

Sardina FishOS

Private Clouds | Hosted/Managed Private Clouds

OpenStack | Kubernetes | Ceph

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# Hello!



Sardina is a SaaS cloud computing software firm, allowing its global customers to save money, energy and resource in respect to their cloud infrastructure.

I am Dr Kenneth Tan, the founder and our technology is a result of over 30 years of my technical development experience and that of my team.



Citicourt is a corporate finance firm in the City of London, providing services and independent advice to small and mid-market companies.

I am Jodi Bartin, the CEO. Following MBO of Citicourt, I am leading implementation of a growth strategy for the firm and its related merchant banking initiatives.

**1.**

# **The energy and carbon problem**

Impact on business,  
Impact of Sardina's solution

## Objective

1. The problem of energy consumption
2. Sardina's approach to solving the energy efficiency problem
3. The impact of solving energy efficiency problem
4. How an average Bank could save GBP 16.5 Million annually — simply by more efficiently managing workloads and intelligently powering down excess servers

We have a problem with energy and carbon

We have a problem with IT infrastructure costs

# Can we not just move to public cloud?

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Green  
ESG

## Hidden Emissions From Cloud Computing Pose Net-Zero Threat

Regulators push back against cloud providers including Google, Amazon and Microsoft.



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Huawei Cloud Data Center in Guiyang, China. Photo by Wu Dongjun/VCG via Getty Images

By Gautam Naik  
November 17, 2022 at 9:00 AM GMT+1

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Emissions linked to cloud computing aren't being properly

Moving to public cloud is clearly **not** the answer!

## The energy problem

Energy is expensive, we need to improve on energy efficiency

We need to do more with each unit of energy used

Carbon footprint linked to energy consumption

Lowering energy consumption lowers carbon footprint



## Improving energy efficiency is ...

good for decreasing overall cost of IT

good for lowering carbon footprint

good for the environment

good for ESG rating

good for business

## Power Usage Effectiveness (PUE)

$$\text{PUE} = \frac{\text{total power entering a data center}}{\text{power used to run IT equipment}}$$

Metric used to determine the energy efficiency of a data center

With improvement of overall efficiency, PUE decreases toward 1.0

Of course, ideal PUE is 1.0

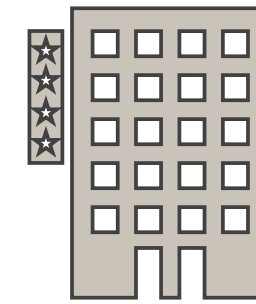
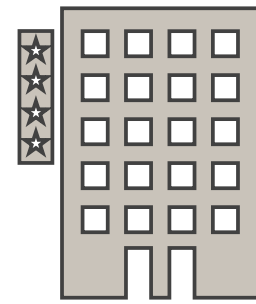
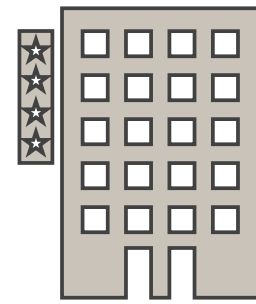
Where are we today?

Data centers are now running at PUE nearing 1.0

But are we already at the most optimal point?

Let's look at an analogous problem ...

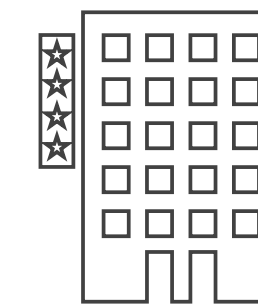
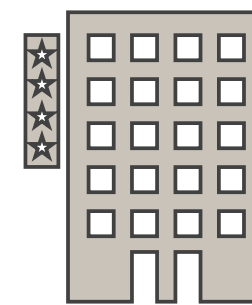
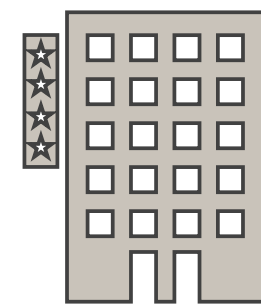
Consider: If we have 3 adjacent hotels



If electricity usage in each hotel is 100% efficient, does it mean that we are optimal?

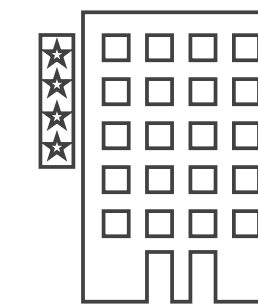
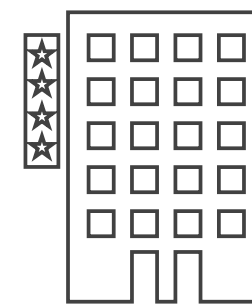
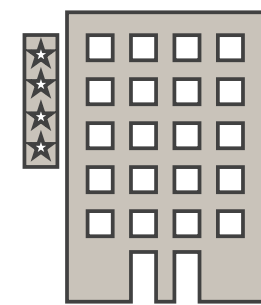
What about occupancy?

If based on the number of occupants, they can be placed into 2 buildings ...



we can turn off electricity in the other 1 buildings, overall energy efficiency will be improved

If the number of occupants change, and can be placed into 1 building ...



we can turn off electricity in the other 2 buildings, overall energy efficiency will be even further improved!

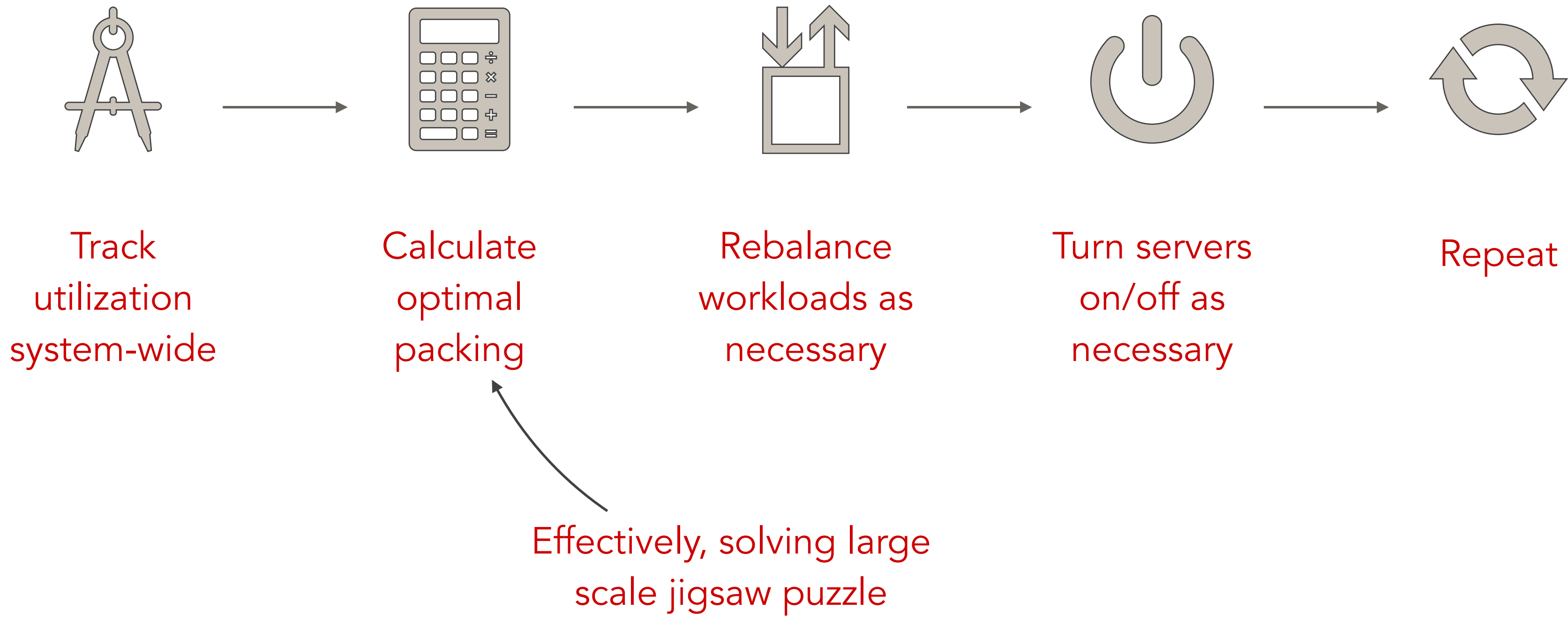
Energy consumption is most optimal when  
energy is not consumed!



## **2.** **Sardina's solution**

Impact on business,  
Impact of Sardina's solution

# Achieve automated optimality



## Sardina's technology

automatically + optimally packs workload onto servers at all times

improves energy efficiency by improving occupancy

energy not consumed = energy saved = money saved

# Cost savings by optimizing data center utilization

	Financial Institution (large)	Financial Institution (medium)	Financial Institution (small)
Number of servers	1,000	200	20
Base case energy used (kWh, daily, theoretical ideal)	180,000	36,000	3,600
Full operational period energy used (kWh, daily, theoretical ideal)	60,000	12,000	1,200
Power-down period energy use (kWh, daily, theoretical ideal)	24,000	4,800	480
<b>Yearly cost savings (GBP)</b>	<b>16,499,949</b>	<b>3,299,989</b>	<b>329,998</b>
Energy cost (GBP)	0.392	0.392	0.392

# Cost savings by optimizing data center utilization

	Financial Institution (large)	Financial Institution (medium)	Financial Institution (small)
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	180,000	36,000	3,600
	60,000	12,000	1,200
	24,000	4,800	480
Yearly cost savings (GBP)	<b>16,499,949</b>	<b>3,299,989</b>	<b>329,998</b>
Energy cost (GBP)	0.392	0.392	0.392

**... but energy cost is not (just?) 39.2p anymore!  
It is now 51.1p, 30% higher!**

# 3. **Sardina Systems**

Integrated cloud platform:  
Full-lifecycle automation

# SARDINA

## Smart Cloud Platform

OpenStack + Kubernetes +  
Ceph

Zero Downtime Operation  
Assurance — industry-first  
Data Centers to the Edge

## Award Winning

DCD Global Award

IDC HPC Innovation Award

EU H2020 winner

UK Data 50 Award

and more

## European Innovation

European cloud platform ISV  
with corporate presence in the  
UK, Luxembourg

Open Infrastructure  
Foundation Corporate Sponsor

## Young, Innovative

Founded in 2014

Day-1 Team: supercomputing,  
finance, defense, telco

Today: 40 people, PhDs

## Partners



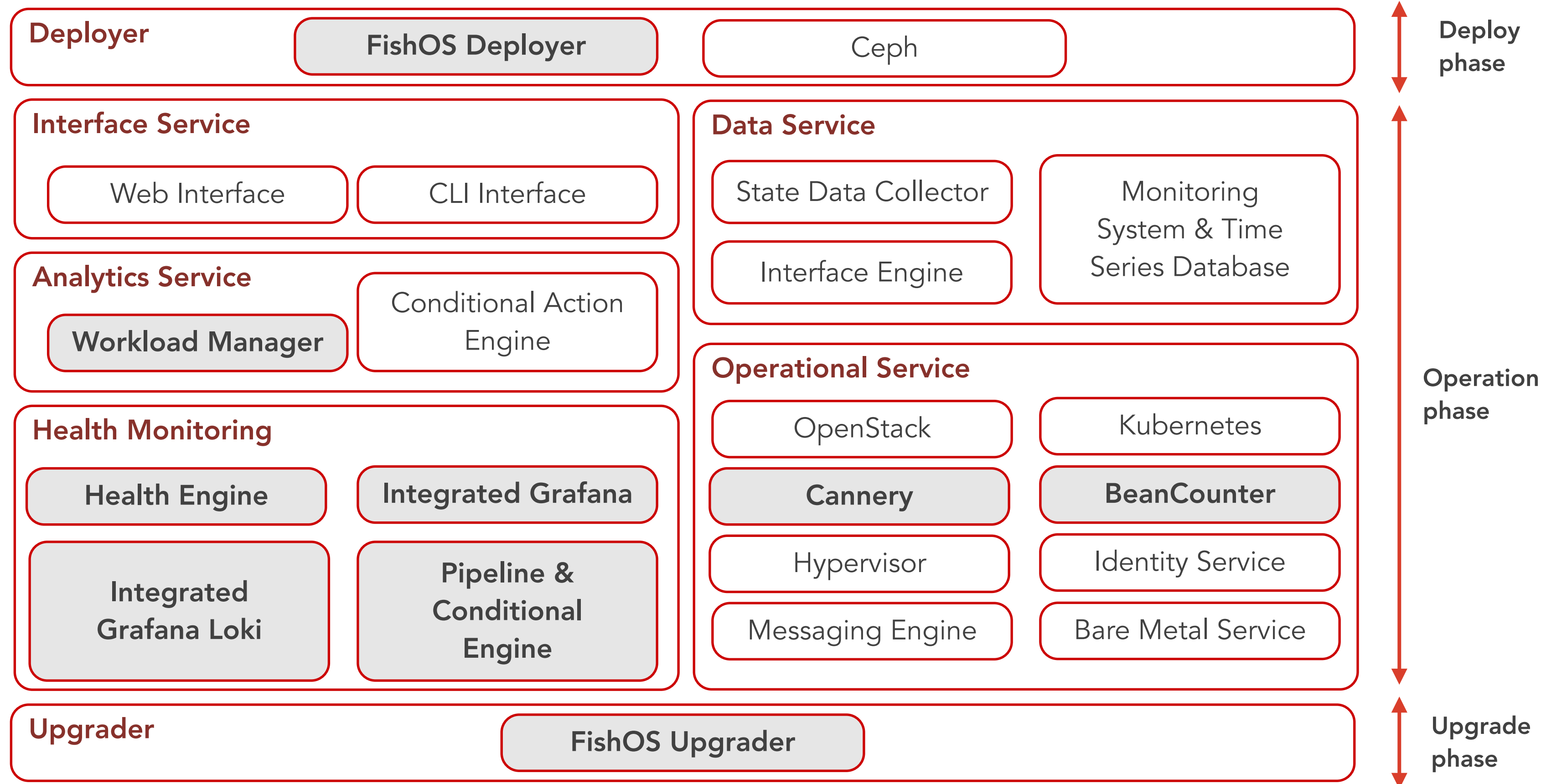
**4.**

# **Sardina FishOS**

Smart Cloud: Reliable, Scalable,  
Super-efficient, TCO-optimized



# FishOS: Solution structure



**The Product:** Cloud platform addressing full OpenStack lifecycle: Deploy, Operate, Upgrade

## Deploy

- Fast, flexible, lightweight deployer
- Simple: Ansible + RPM
- Zero-to-full-system-operation within hours
- Includes Ceph storage deployment
- High-availability configuration as default
- Infrastructure-as-Code: including add/remove nodes

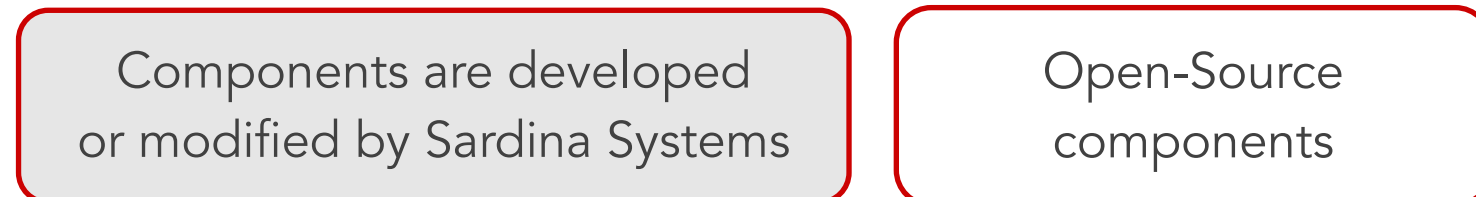
## Operate

- Efficient utilization-based resource management: automated with Workload Manager
- AI-enabled high reliability, scalable, flexible operation: Preemptive Service Management
- Flexible, programmable Conditional engine
- Monitoring, Health, Capacity Planning, Log Management

## Upgrade

- Market-unique Zero-Downtime upgrade
- Ansible-based

### Notes:



This is the world's first Zero-Downtime Upgrader for #OpenStack [buff.ly/2Wduron](https://buff.ly/2Wduron) #OpenInfraSummit #Sardina via @Medium #DevOpsLinks

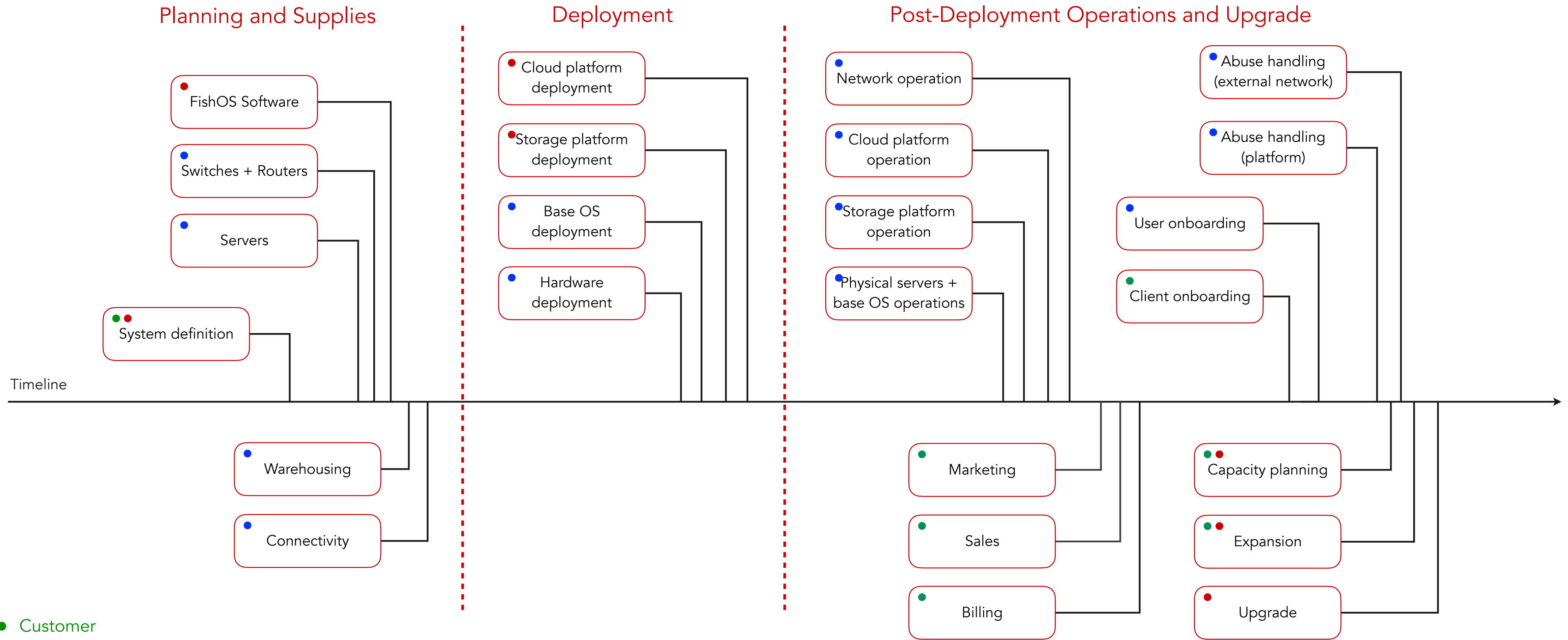


## Cloud Platform Automation — Built by Operators for Operators

Fully automated Zero-Downtime operations

Flexible, scalable, reliable, efficient

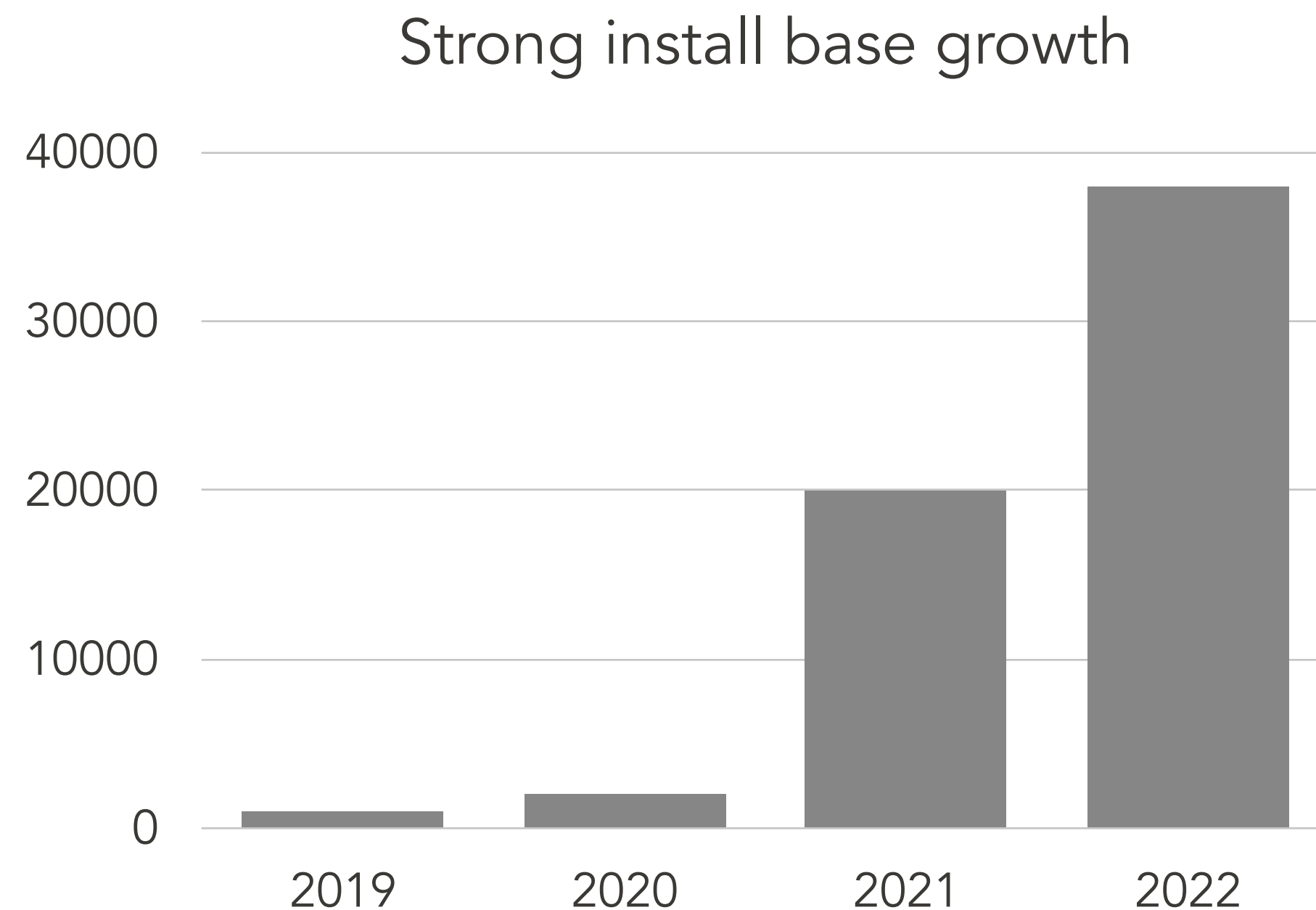
# Well traveled path from concept to production



- Customer
- Sardina
- Sardina, or Customer, or a supplier of Customer's choice

**SARDINA**

# Rapid growth, technology proven at prime cloud sites



## A selection of sites



# 5. Summary

Attain real cost saving and lower  
carbon footprint

## Summary

There is real value in better optimizing energy consumption

By optimizing system utilization, FishOS can deliver exceeding GBP 16.5M in energy savings

Clouds running Sardina FishOS can attain unmatched energy efficiency, translating to lower carbon footprint, better ESG rating

Sardina is currently completing an EIS round of up to GBP 5 Million, assisted by Jodi Bartin at Citicourt & Co ([jodi@citicourtandco.com](mailto:jodi@citicourtandco.com))

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Hyper-Efficient, Scalable, Reliable, Optimized Cloud  
OpenStack + Kubernetes + Ceph