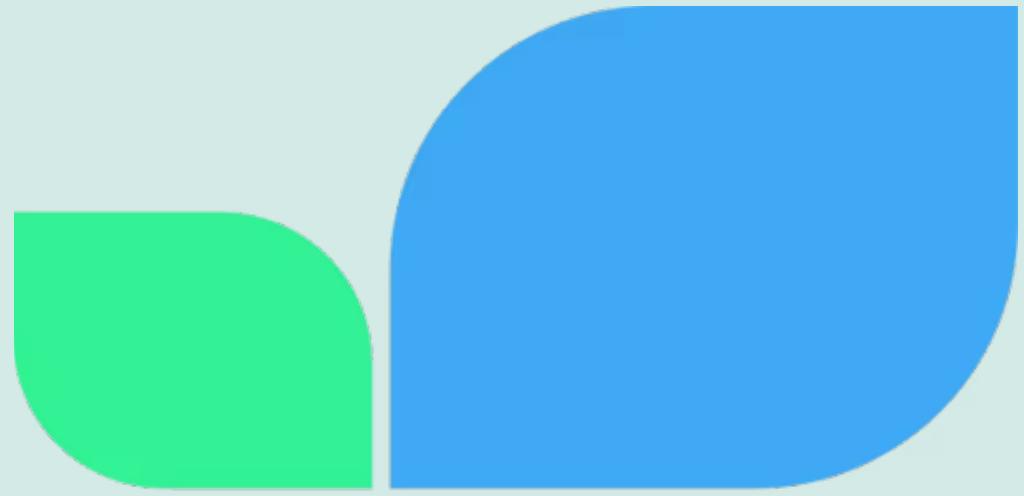




**How to build truly
sustainable cloud,
the easy way**



leafcloud

www.leaf.cloud

What will you learn?!

By the end of this presentation you'll understand how to build truly sustainable (with heat reuse) infrastructure at low cost using widely available off the shelf components.

Story time

Where it all started



Current State of sustainability in Cloud/Hosting

- 🌿 Use of Green Energy is somewhat adopted
- 😊 We have gotten really good at throwing heat away (efficient cooling)
- 🌳 Offsetting is used at scale
- ⚡ We place datacenters near energy more often

- ✖ Heat re/use is a widely avoided subject
- 👤 PUE 1 = you threw all the heat away
- 📈 AI will grow the energy used for compute
- 💰 Datacenter costs are out of control



Current State of sustainability in Cloud/Hosting



Current State of sustainability in Cloud/Hosting

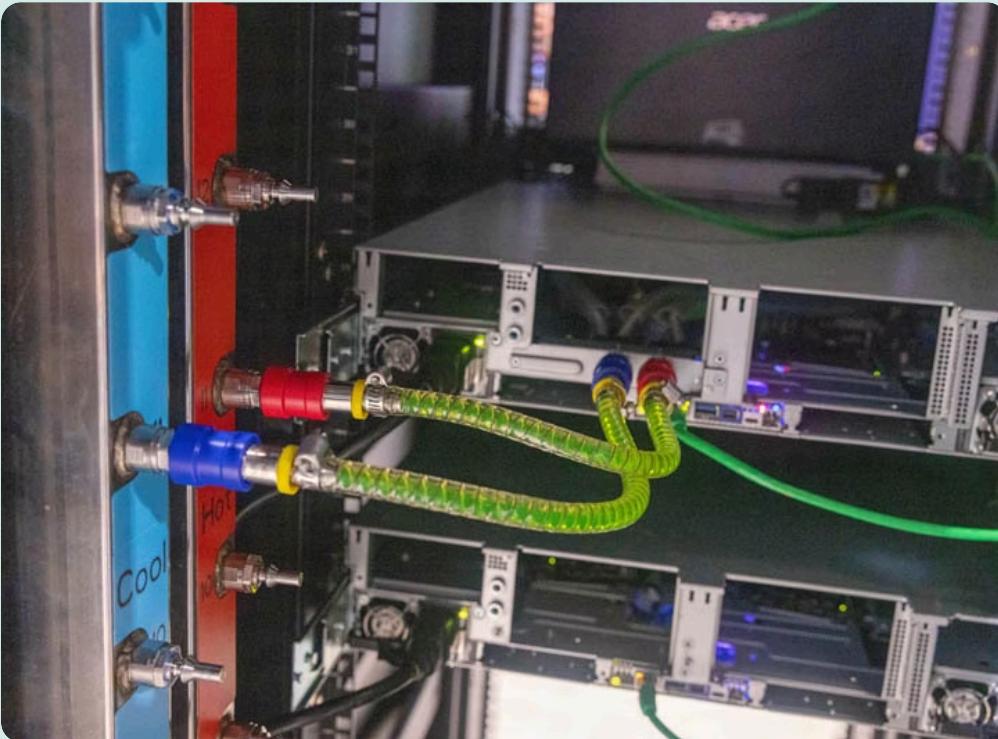
- Centralized approach is hitting its limits
- We need to use waste heat
- What's next?

15 =	$Building \equiv \frac{(P_{it} \cdot T \cdot PUE_{Leafsite})}{(Gasenergy \cdot \eta_{boiler})} \cdot CO2_{gas}$	→ 239.125.0 kg
16 =	<i>GreenDatacenter</i>	→ 82.880.8 kg
17 =	<i>Datacenter</i>	→ 619.568.0 kg
18 =	<i>Leafsitesolo</i>	→ 61.512.3 kg
19 =	$Buildingsavings \equiv \frac{(P_{it} \cdot T \cdot PUE_{Leafsite})}{(Gasenergy \cdot \eta_{boiler})} \cdot \frac{1 \text{ EUR}}{1 \text{ m}^3}$	→ 114.688.0 EUR
These combined allow us to show the real emissions of servers in a Leafsite per kwyear		
20 =	$Leafsite \equiv Leafsitesolo - Building$	→ -177.613.0 kg
The delta between running in a "gray" datacenter and a leafsite per kwyear		
21 =	$\Delta_{Dc} \equiv Leafsite - Datacenter$	→ -797.181.0 kg
The delta between running in a green datacenter and a leafsite per kwyear		
22 =	$\Delta_{Gdc} \equiv Leafsite - GreenDatacenter$	→ -260.494.0 kg

Current Options for Waste Heat Utilization

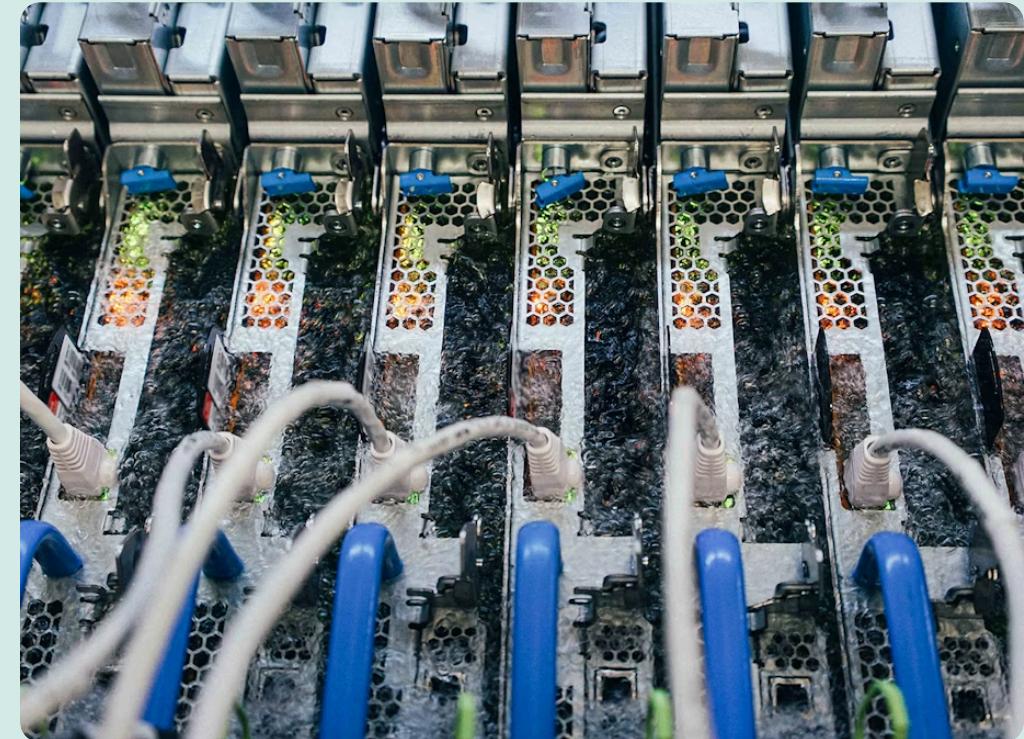
Water Cooling

- Effective for high-density data centers, but can be expensive to implement and maintain.
- Low heat reuse potential



Immersion Cooling

- Computing equipment is submerged in a non-conductive liquid to dissipate heat.
- Requires specialized equipment and careful liquid management to prevent leaks and corrosion.



Convergent Evolution in Tech, from eco home to mini datacenter

Power backup = UPS

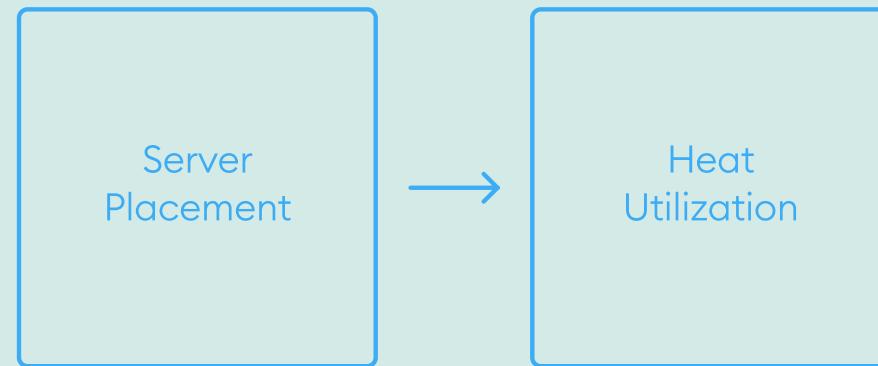
Energy = Grid

Cooling = Airco



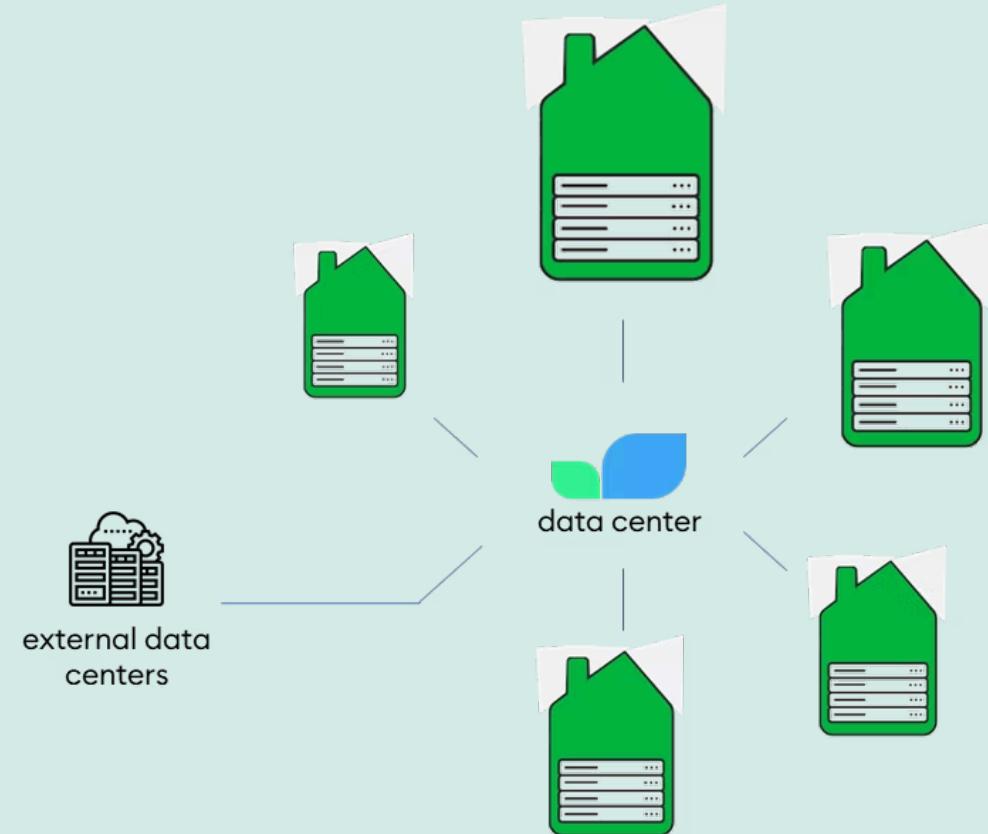
Waste Heat Utilization

By placing servers where heat is used this all comes together



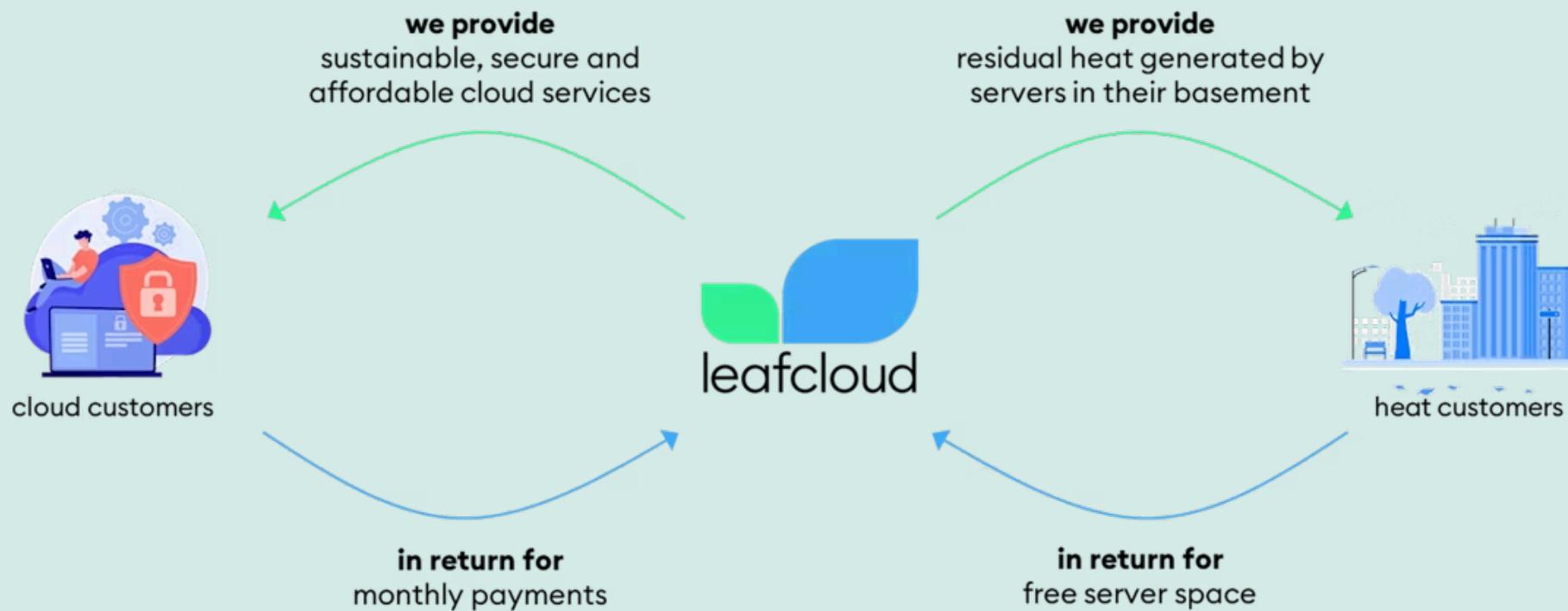
Separation of Data and Compute Locations

Put compute where heat is needed, and store where its safe



Leafcloud's Approach

- Leafcloud utilizes a decentralized approach to waste heat utilization in cloud computing.
- We employ a central datacenter for storage and leafsites for compute where waste heat is needed.
- This approach allows us to maximize the efficiency of waste heat utilization and minimize energy waste.





Now you know it can be done

Do it!

Or

Contact us, we are scaling this out as we speak and
will help you on board



leafcloud

www.leaf.cloud

David Kohnstamm