



CASE STUDY | DRYAD NETWORKS

Preventing wildfires through ultra-early detection

"Swarm will provide the backbone of connectivity for our entire network."

Carsten Brinkschulte, Dryad CEO

OVERVIEW

[Dryad Networks](#) is a Berlin-based company whose mission is to fight wildfires through ultra-early detection and alert. Their sophisticated sensing devices are able to detect new fires within 60 minutes of starting and send alerts to local authorities who can intervene before the blazes grow out of control.

To send these alerts from some of the world's most remote forests, Dryad turned to Swarm to provide reliable satellite connectivity. Swarm's low price point also makes it affordable for Dryad to deploy their sensors at scale and protect more of the world from the consequences of wildfires.

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WHERE THERE'S SMOKE, THERE WILL BE FIRE

The devastation caused by wildfires makes headlines every year and, in many parts of the world, “fire season” is getting [longer and worse](#). Large-scale blazes cause not only enormous humanitarian and economic hardship, but also have a massive environmental impact. In addition to wiping out animal and plant life, wildfires emit between [5 and 30 tons of carbon](#) per hectare. Add up all the land that burns globally in an average year, and wildfires can add up to 13 billion metric tons of carbon to the atmosphere annually.



A Dryad Silvanet sensor

Traditional wildfire monitoring systems rely on ground-based cameras or satellite imaging to see smoke or flames and alert local firefighters. By the time they detect them, however, it's often too late. Dryad's solar-powered sensing system, [Silvanet](#), uses artificial intelligence to track abnormal changes in gas patterns in the air. Using this method, Dryad is able to detect a new fire within 30 to 60 minutes of it starting, usually while the fire is still smoldering and before it becomes dangerous open flames.

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TRANSMITTING DATA FROM FOREST TO FIRE BRIGADE

Dryad's solution is specifically designed to address the outstanding need for fire sensing in remote areas, where there are no passersby to report early signs of a fire. This means that Dryad's sensors typically operate in regions without cellular coverage. To solve the challenge of how to transmit data in such remote areas, Dryad turned to Swarm for a reliable and affordable connectivity solution.

Dryad pairs their own proprietary LoRa-based mesh network with Swarm satellite modems to create a reliable connectivity system that can operate anywhere. "Swarm will provide the backbone of connectivity for our entire network," says Carsten Brinkschulte, Dryad's CEO and co-founder. "We operate in such remote areas that there is often no mobile infrastructure, so we can't even use 2G, let alone 4G. As we deploy our devices, Swarm will be our gateway to the Internet, via space."



A Dryad gateway with embedded Swarm modem (black Swarm antenna visible)

Swarm's [low-cost hardware and data service](#) also make it the perfect solution for Dryad. With 10 billion acres of forest globally and Dryad's plans to deploy around the world, there's a tremendous amount of land to cover. Traditional satellite solutions were prohibitively expensive for such large-scale deployments, limiting the area Dryad could cover. Swarm makes it economically feasible for Dryad to place as many sensors as are needed in a given area - in some cases, up to one sensor every 100 meters.

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THE FUTURE OF WILDFIRE PREVENTION

Dryad is currently deploying its Silvanet system throughout Europe, the United States, and Australia, utilizing Swarm as the connectivity link between its sensor gateways and the Internet. With Dryad, local authorities and fire brigades will be alerted to fires while they are still manageable. Whether lightning strikes a tree or a camper fails to extinguish their cooking fire, Dryad's IoT sensors will be the first line of defence in avoiding some of the headline-making wildfires we are all-too-familiar with. With Swarm's help, Dryad can deploy their sensors everywhere they're needed, without worrying about whether a region lacks connectivity infrastructure, or about breaking the bank.



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