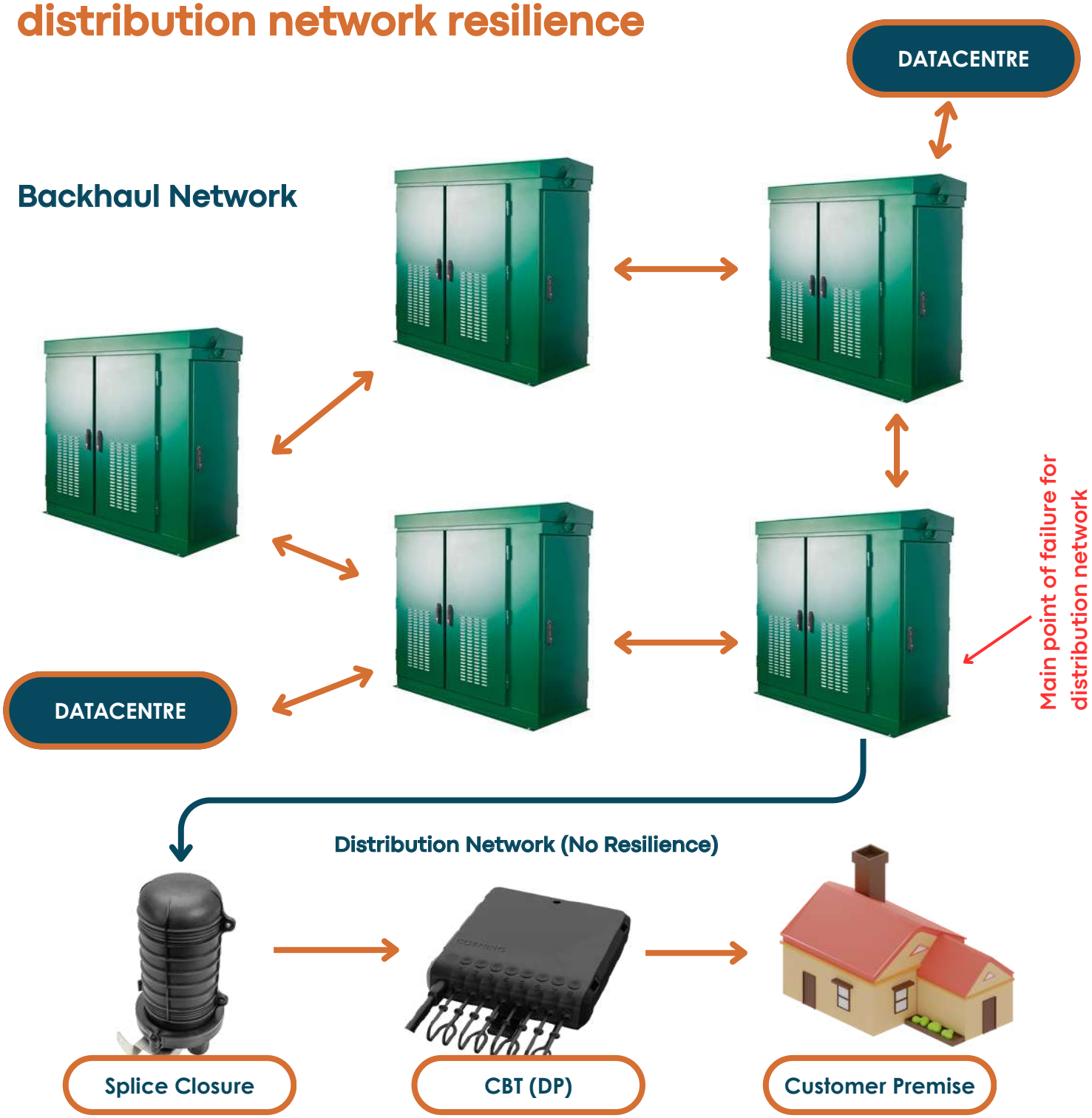
Network Resilience Case Study

CMS: The importance of cabinet and distribution network resilience



Securing and monitoring street cabinets is crucial, as issues within them could impact thousands of customers as the customer base grows. Despite improved backhaul network resilience, each cabinet remains a single point of failure for all customers it serves.

Network monitoring and security

With the Altnet model, network-critical active equipment and optical distribution frames are now housed within street cabinets rather than in traditional data centers, PoP sites, or exchanges. This shift makes the access, security, and resilience of these cabinets a high priority for all operators.

Given the industry-wide challenges of limited engineering resources, the ability to remotely monitor and manage cabinets is crucial for maintaining and improving network reliability. Furthermore, OFCOM guidelines require operators to implement measures that ensure these safeguards are effectively in place.

Cost Avoidance

The figures below, from an ISP, reveal that service issues are significantly impacting customer churn. Improved monitoring, control, and network resilience could help reduce this impact, alleviate strain on engineering resources, and enhance operational efficiency in the day-to-day management of the network.

In the first half (H1) of 2024 they installed approx. 3000 new customers. **907 customers cancelled their service.**

Of the new customers installed in H1 of 2024, 48 customers left due to service issues. In H1 they lost a total of 264 customers due to service issues with another 156 changing provider (some of which could also be related to service issues) . For this ISP, the average cost per install is approx £1000, this represents a significant financial loss.

The below figures are from 1st Jan 2024 until 30th June 2024:

Row Labels	ISP Withdrew Service	Changing Provider	Finance Admin	Misc	Moved Address	Service Issues	Grand Total
Fibre	34	57	16	6	170	108	391
Wireless	49	99	15	3	194	156	516
Grand Total	**83**	**156**	**31**	**9**	**364**	**264**	**907**

The Solution

Cabinet Management System (CMS)

The CMS is designed to maintain the reliability and performance of your cabinet based active & passive infrastructure by efficiently monitoring and detecting anomalies/degradation caused by environment, connectivity & security conditions. The CMS offers a scalable and versatile solution for organisations seeking to efficiently manage and monitor their cabinet infrastructure, ensuring reliable performance, security, and environmental control.

CMS features utilised by the ISP

- Out of Band Management: Enable remote access to the cabinet equipment during network outages.
- SamKnows agent on internal PC: Test and monitor speeds on both backhaul and through OLT.
- Environmental sensors: Monitor temperature, humidity, particulates and water detection.
- AC/DC Power and Battery levels monitoring: Alerts when power down and shows run time left on batteries.
- Realtime alerts and cabinet status: Shown on a Single Pane of Glass dashboard
- Cabinet door alerts & iLOQ monitoring
- Camera for lone working
- Built in wifi
- SDWAN: Automated provisioning

*Sami Software works alongside the CMS allowing full visibility, reporting and control or your infrastructure.

Environmental & Energy Monitoring

Out-of-band Management

Supports MODBUS (TCP & RTU)

Network/Hardware Management

ONT Speed Tests

Internal PC with SDWAN capabilities

Dual SIM (OOB) 3/4G routers

Why Choose the CMS

The ISP asked their NOC for a report on how the CMS would have improved efficiencies around identifying and solving service issues.

Period - November 2023 to January 2024 Inclusive Including costings

195 Outages by Service Type
58: Fibre FTTP, 9: Fibre FWA
125: Wireless, 2: Third Party
1: Unknown

Power Outages
57 outages related to power. 28 of these involved engineer activity which could have been resolved remotely via CMS. 28 x £250 =£7000
5 could have been resolved quicker with remote testing via CMS.

Weather Outages
9 outages related to weather
All 9 could have been confirmed quicker via CMS alerting, which would have improved customer communication.

Signal Strength Outages
5 outages related to signal strength
3 of these restored without intervention - remote testing via CMS could have provided more insight into the cause.

Fibre Hardware Damage
60 outages related to fibre/cable/infrastructure damage
Average time to fix = approx. 2.5 days: £625
Remote testing via CMS could have located the fault and determined equipment/resource required to fix, resolving these issues much quicker.

Pinpointing issues before an engineer visit can eliminate the need for follow-up visits to retrieve replacement parts or testing equipment. Each visit costs approximately £250 on average, considering travel time and half a day's work. Additionally, resolving issues more efficiently reduces customer downtime, which helps minimise customer churn.