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## **Are Utilities Heading Where Telco's Were Thirty Years Ago?**



It is difficult to imagine that only thirty years ago telephones were completely dumb. A Telephone Exchange, or Central Office Switch as it was called in USA, made all the call routing decisions. It was a large mechanical device that provided power all the way to each telephone handset, which itself did not know if it could actually make a call or not.

The 'network intelligence' was at the centre of the network. This voice telephone network provided an 'acceptable' service level during the predicted busiest hour of each day, which was often between 9am and 10am or sometimes 6pm to 7pm. Not everyone could make calls at the same time as there was a limited amount of routing equipment available hence the need for dial tone. The user, not the handset, heard the dial tone and without that nothing would happen. A little like turning the tap on and finding no water.

If necessary groups of telephone users could be disconnected to protect the service for key customers. Today's electricity supply networks shed load from groups of customers to avoid uncontrollable blackouts. Few water utilities can control their customers in the same way yet. The control for both is really at the centre of the network. In some cases electricity service can be disconnected from domestic devices such as water heaters as happens in parts of Australia but this requires a specific Smart Meter type. Rarely, however, is any information returned by the network edge device.

Both yesterday's voice networks and today's utility supply networks lack edge intelligence. This restricts options for predictive service planning. In electricity supply, the generator can only guess when certain kettles or air conditioners will draw power. In water supply the situation is no different with the same predictive service planning needing to take place for Winter vs Summer or Vacation vs Week Day. Meters don't need 'dial tone like' permission to draw on supply. In the future domestic devices will likely need permission to draw power or water but not today.

Smart edge devices arrived in the mid-1980s. Then telephone networks began evolving into self-healing voice and data networks. New companies including Newbridge Networks and Cisco Systems began offering end-to-end Network Management solutions. It was not an easy journey. Vendors selling complex Mesh Data Networks (ref) found themselves facing low speed management data channels. Sometimes as slow as 2.4kbs or 9.6kbs. A data bottleneck when events occur and fast decisions are necessary.

Today's electricity suppliers face similar challenges. Most Smart Meters cannot make intelligent decisions at the edge of the network. Instead that means they need to communicate with Head End Platforms some distance away. Again, the data channel is the bottleneck. There are many communications technologies but the challenge is still getting data between the Smart Meter and the Head End. High speed and low latency data.

Different industries thirty years apart but the same challenge...

Voice and Data vendors solved this through Policy Management by distributing intelligence to the edge of the network. Policy was set at the Core and the Smart Edge Device had rights to put in place that Policy without needing to reconfirm. The challenge of high speed management data channels was overcome.

Newbridge (now part of Alcatel-Lucent) called this Centre Weighted Network Management in 1988. Today Cisco, partnering with Itron, refers to Distributed Intelligence and Grid Edge Intelligence.

Developed in the 1980s for voice and data networks this architecture is finding a home today in utility networks for the same reasons.