

# Advanced Demand-Side Management Solutions



Trilliant helps utilities and energy retailers successfully deploy a broad set of smart grid initiatives – from advanced metering to distribution automation to consumer applications such as demand response and distributed energy resources. The breadth and depth of the Trilliant Connected Energy Platform deliver the flexible and proven smart grid solutions needed for utilities and energy retailers to deploy mission-critical applications to achieve their business goals.

Trilliant leads the industry in helping a utility manage overall energy demand by offering demand-side management (DSM) solutions built upon the [SecureMesh™ Communications Network](#) and [UnitySuite™ Application Platform](#).

Trilliant offers end-to-end demand-side management solutions that can be deployed today. With the Trilliant solution, a utility can expand cost-effective service to the consumer, smooth its load curve, potentially delay the need for additional power plants, and avoid disruptive local or system-wide brownouts and blackouts.

## A Single System for a Wide Range of DSM Programs

Trilliant allows a utility to introduce both consumer-choice and utility-controlled demand-side management programs with a single system. Trilliant supports leading DSM programs, including:

- **Real-Time Energy Information.** Trilliant DSM solutions enable a utility to distribute real-time energy information directly to residences and businesses. As a result, energy users can see their current demand and pricing as well as historical energy consumption data, where demand and consumption information comes directly from each consumer's electric meters and pricing comes from the utility, both via the [SecureMesh Communications Network](#).
- **Consumer Choice of Energy Usage.** Trilliant's DSM solutions make it easy to roll out [Critical Peak Pricing \(CPP\)](#) programs, letting consumers actively conserve energy during CPP events that are either scheduled or initiated on a peak-load basis.
- **Utility Control of Demand Peaks.** Trilliant lets a utility directly control electric usage during peak demand periods. During such periods, consumers who sign up for demand-side management programs agree to allow the utility to turn off or cycle high energy-use appliances like pool pumps, and central air conditioning in the summer or water heaters and electric heating in the winter.

### End-to-End Demand-Side Management

- [UnitySuite Applications](#) to manage DSM programs
- [SecureMesh Communications Network](#) for communications and control
- Broad choice of meters, thermostats, in-home displays and load controllers

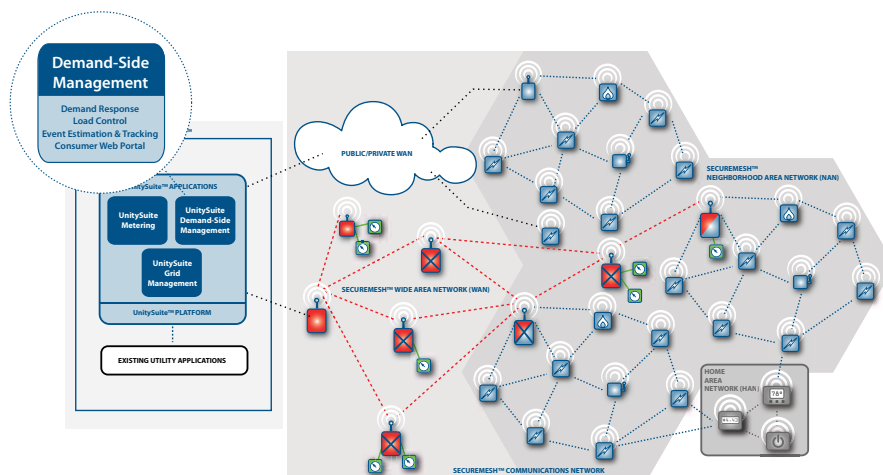
### Support for Primary DSM Programs

- [Real-Time Energy Information](#)
- [Consumer Choice:](#) real-time energy information, [Critical Peak Pricing](#) events
- [Utility Control:](#) direct load control, [Negawatt power](#), and/or [kW demand](#) on a consumer-by-consumer basis

### Granular DSM Program Control

- Easily develop pre-event scenarios
- Track load in real-time during events
- Manage curtailment events down to specific consumers, zip/postal codes, pre-defined groups, substations, etc.

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SecureMesh Communications Network

The UnitySuite Application Platform and Trilliant's DSM solution offer an open architecture with a SOAP (Simple Object Access Protocol) API to permit seamless integration with existing utility applications. With Trilliant, a utility can invest in a single network with a single software suite at the headend to manage demand across multiple dimensions.

## Granular Control Throughout the DSM Program

Trilliant's DSM solutions allow a utility to manage their DSM programs at a level of detail previously unattainable. Various different DSM programs can be trialed and their results analyzed at a fine-grained level to determine the optimal mix of program features. During rollout, programs can be introduced by usage type, by the appliance type to be controlled, by specific neighborhoods, postal codes, or substations, or by practically any desired criteria.

After a program's introduction, a utility can track the results over time, better understanding the program's impact on overall demand. For example, Trilliant demand-side management solutions enable monitoring of where load shedding has been most effective or which consumers have most often overridden the controls.

## Trilliant Demand-Side Management: Solution Overview

Trilliant offers a complete set of capabilities to enable a utility to deploy, manage, and optimize comprehensive Demand-Side Management programs. These capabilities are easily deployed end-to-end as part of a comprehensive Trilliant solution, from the UnitySuite Applications at the network headend through the SecureMesh Communications Network down to each meter, consumer display, thermostat, and load control device.

### Demand Response

- **Consumer Information:** Real-time power consumption and cost information delivered directly to consumers; information includes current and historical energy consumption, rate plans, and billing



UnitySuite Demand-Side Management Provides Granular Control of DSM Programs

- Real-Time Utility Messaging: Demand response event notifications (e.g., notice of imminent Critical Peak Pricing events) via the UnitySuite Web-based Consumer Portal or via the SecureMesh network to consumer displays, thermostats, or other enabled devices
- Rate Plan Support: A wide variety of rate plans, including time-of-use, critical peak pricing, multiple-tier, and real-time pricing

### Direct Load Control

- Curtailment Events: Events initiated on demand, by time of day, by demand level, via emergency SCRAM, or other criteria
- Automated Load Shedding: Direct appliance on-off control, including duty-cycle configuration
- Consumer Notifications: Messages pushed to consumers via the UnitySuite Consumer Portal or via the SecureMesh network to consumer displays, thermostats, or other devices
- Granular Control: Events can be applied to customized groups; e.g., by customer, by neighborhood, by substation, by feeder, by arbitrary geographic area, or by specific appliance types

### Event Estimation & Tracking

- Load Estimation: Pre-event load estimates to predict the impact of demand management before the events begin
- Real-Time Load Tracking: Real-time load data during events, not just group sample estimates

### Reporting

- Summary Reports: Data summaries, including DSM program rollout, consumer uptake, and results
- Detailed Reports: Demand event performance and comparisons (e.g., load containment vs. TOU vs. voluntary action)
- Interfaces: Standard interfaces to common SCADA, OME, metering, billing, and CIS systems; custom views and feeds to facilitate utility analysis

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SecureMesh™  
Thermostat



SecureMesh™  
In-Home Display



SecureMesh™  
Remote Appliance Controller



Trilliant's Family of Consumer Devices for Demand-Side Management

## Supported Devices

- Native SecureMesh NAN Devices: Devices with embedded SecureMesh Neighborhood Area Network (NAN) radios to provide upgradeable and customizable DSM support over the SecureMesh network
- ZigBee Smart Energy Profile Devices: SEP-compliant devices, supported over the SecureMesh Communications Network

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