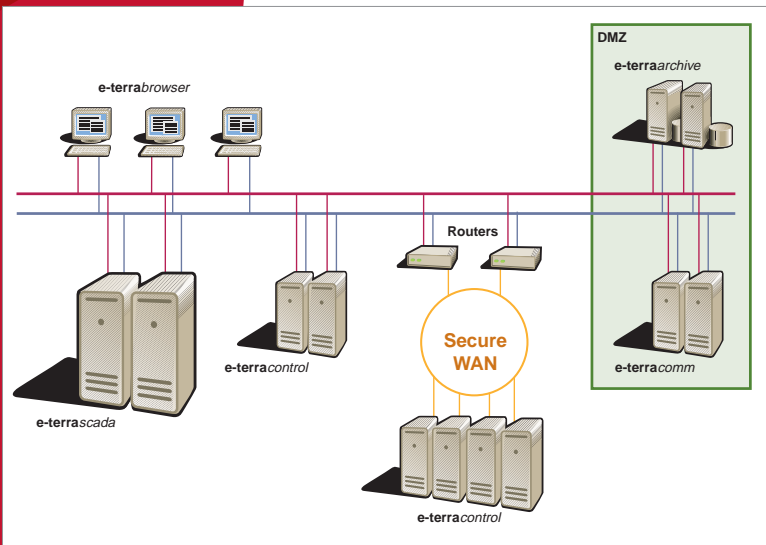




e-terrascada

The Power to Control!

The first requirement of a Supervisory Control and Data Acquisition (SCADA) system is that it functions properly when needed under normal conditions and the extremes of catastrophes.



SCADA System Configuration

AREVA T&D's e-terrascada's first focus is system reliability. Through heat waves, freezing rain, storms, and even several dozen hurricanes, e-terrascada has greatly exceeded the 99.95% industry standard availability. e-terrascada will not let you down; it will be there when you need it most.

The e-terrascada design is such that system scalability is not an issue. AREVA T&D's e-terrascada has been delivered to customers with hundreds of thousands of SCADA points and hundreds of operator console display units. The same architecture has been delivered to customers with hundreds of points and only a few console display systems. The ability to add capacity and expand to meet a customer's changing needs is available with e-terrascada.

Customer Benefits

- Reliable and highly available SCADA to keep you operational 24 x 7 x 365 x years
- Extremely scalable architecture to fill today's and tomorrow's needs
- Flexible configuration and tools allowing you to adapt to your changing needs quickly
- Standards based solution using off-the-shelf technologies to minimize current and future operation costs
- Graceful degradation when the system is stretched beyond its design goals

In today's changing SCADA world a system must be more than reliable and scalable, changes to the system must be able to be integrated quickly without impacting systems performance or availability. e-terrascada's design allows for changes to occur on-line to both the database and displays.

AREVA T&D has adopted a product development philosophy of using standard off-the-shelf technologies to lower your total cost of ownership and to benefit from 3rd party investment in technology research and development. e-terrascada is written in object-oriented C++ using the latest software development best practices in terms of quality and security.

THE STORY

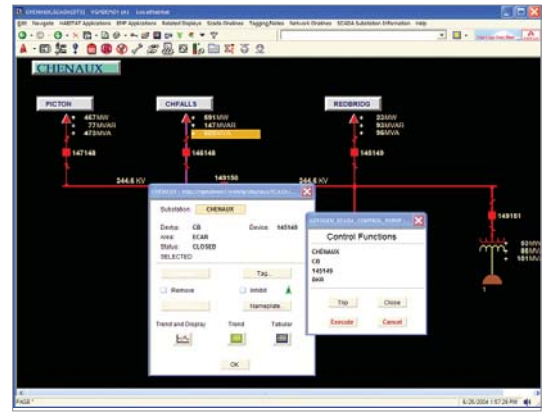
AREVA T&D's **e-terrascada** is designed as a suite of applications built on a common core technology. **e-terrascada** is generally integrated with multiple **e-terracontrol** data acquisition front-ends and **e-terracomm** ICCP (TASE.2) gateways for data exchange with other utilities. **e-terrascada** is often part of AREVA T&D's complete EMS solution **e-terraplatform**.

THE CORE TECHNOLOGY

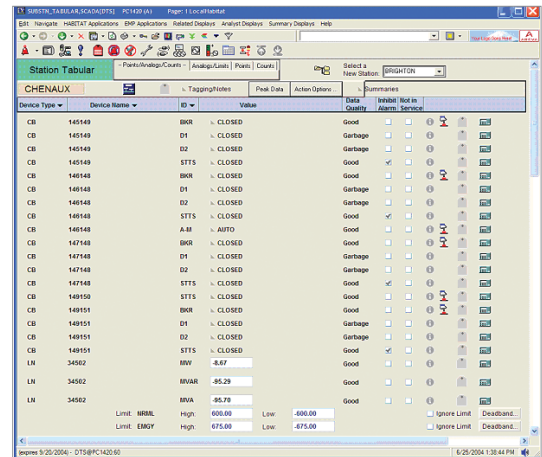
e-terrascada's core technology provides your control room with a solid foundation for high availability and performance:

- > **e-terrabrowser** provides all graphical user interface services including alarming, tagging, and advanced viewers for intelligent visualization of grid's behaviors
- > **e-terrahabitat** provides the real-time data and process management services, including the centralized alarm management and an open access API for desktop applications
- > **e-terraarchive** is the enterprise historical information system and data analysis environment
- > **e-terramodeler** is the system modeling environment, including an optional CIM Model Manager for Common Information Model (CIM) management
- > **e-terratruster** is the cyber security environment for authentication, authorization, and audit for all your real-time systems in use at the control center

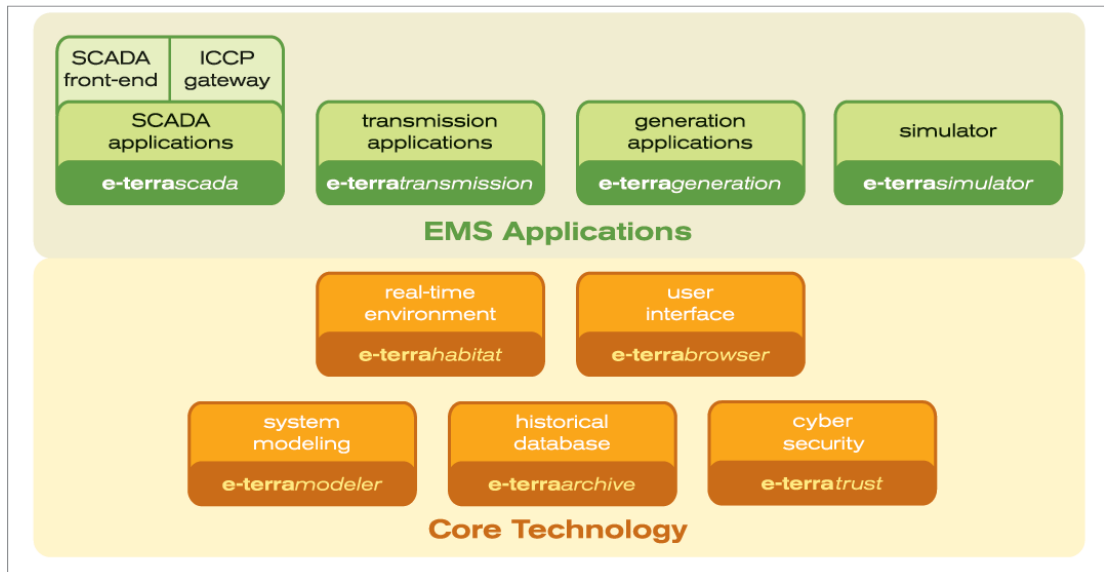
The core technology is evolving with each release of **e-terrascada**. AREVA T&D offers long-term commitments to upgrade and migration plans, so you always benefit from today's proven technology.



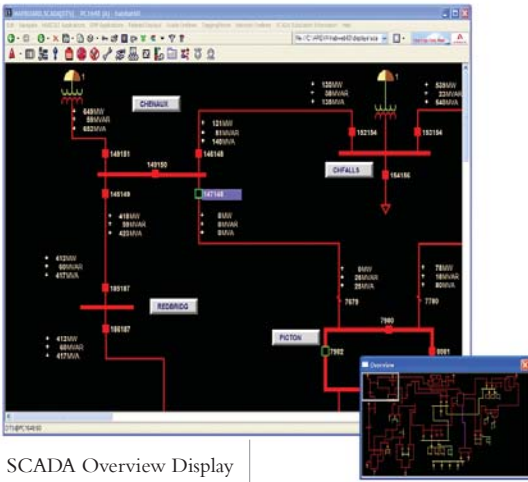
Detailed Station Display with Control Dialogs



Station Tabular Display



e-terrascada has been delivered to customers with hundreds of thousands of SCADA points and hundreds of operator console displays.



SCADA Overview Display

e-terrascada utilizes software centric front-end data acquisition processors, **e-terracontrol**, that can be installed in your control center or distributed within your substations.

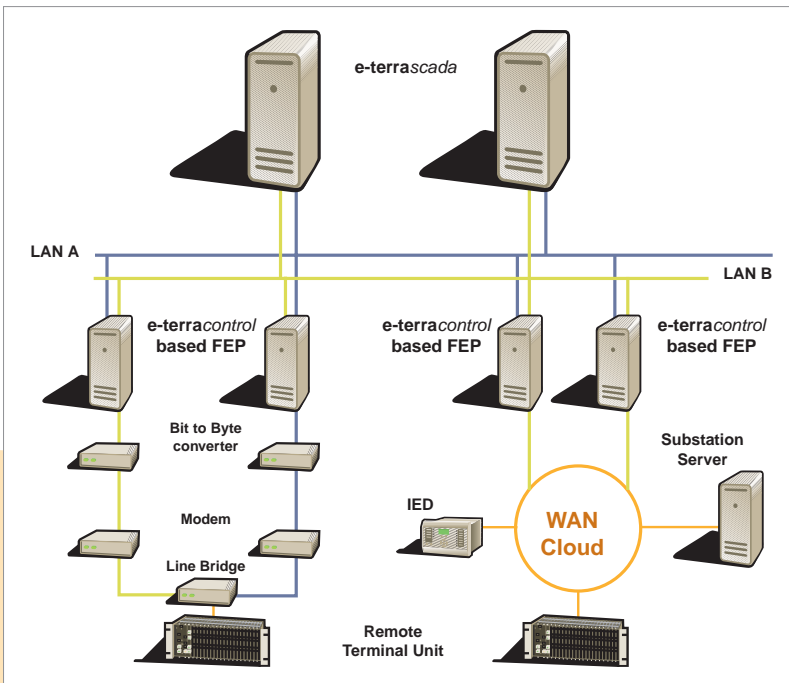
The **e-terracontrol** front-ends collect all data from Intelligent Electronic Devices (IEDs), field devices and Remote Terminal Units (RTUs). All data can be scanned and reported to multiple sites using our optimized data transfer protocol, InterSite Data (ISD). Our distributed front-ends can also act as multi-system servers and be queried by other systems for substation data using standard protocols.

AREVA T&D offers a state-of-the art ICCP gateway called **e-terracomm**. Integrated with **e-terrascada**, **e-terracomm** is fully compliant with the latest standards critical in today's business environment. In short, with **e-terracomm** you can communicate reliably in real-time with your business partners without opening security breaches inside your control center.

e-terrascada is a high performance flexible and scalable SCADA system designed for the needs of the power industry. **e-terrascada** supports most major legacy protocols as well as all standard protocols over both IP networks and serial communications.

e-terrascada is designed to manage large scale SCADA systems, encompassing interconnected transmission, sub-transmission and distribution networks. High performance communication and data transfers are achieved using a distributed architecture. Increased frequency of changes is accommodated with the SCADA on-line editor: when device settings change, operators can change their configurations centrally and propagate SCADA changes through the network without downtime and failover.

e-terrascada includes advanced applications and provides real-time data for custom applications through its published API. Standard applications include disturbance analysis, load shedding, complex calculation, automated control and intelligent alarm processing.



Distributed Communication Architecture

The *e-terracontrol* front-ends collect data from Intelligent Electronic Devices (IEDs), field devices and Remote Terminal Units (RTUs)

- > **e-terrascada** is AREVA T&D's standalone SCADA product. It is also integrated within AREVA T&D's EMS solution (**e-terra**platform), and DMS solution (**e-terra**distribution).
- > **e-terrascada** is a SCADA system specially designed for utilities, with communication requirements to remote terminal units and need for advanced real-time applications for monitoring the security of the electrical network and for dispatching time-critical resources.
- > **e-terrascada** is used worldwide for managing electrical grids, gas pipelines and other utility and industrial networks.
- > **e-terrascada**'s users are part of a global community, sharing best practices and actively participating in product development. Users come together to the AREVA T&D Users Group for a week of informational exchange with AREVA T&D's experts.

With e-terrascada, operators can perform all real-time data acquisition and supervisory actions required in today's control rooms, such as:

>> Monitoring electric and gas assets
>> Regulating generation units
>> Controlling reactive power compensation and voltages
>> Switching transmission and distribution devices
>> Shedding loads
>> Understanding and mitigating disturbances
>> Preparing for tomorrow's operations

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