PrimeStone Solutions





PrimeStone: Our Company

- Privately held company founded in 1990
- North American office in Alpharetta, Georgia
- Over 200 customers in 27 countries (utilities + end users)
- We develop software solutions for power utilities for:
 - Data collection (remote and on-site)
 - Data Analytics
 - Data management
 - Alarms + notifications
 - Energy balance
 - Integration with other corporate applications
- Fully focused on developing our software, the PrimeEnergy suite since 1995







PrimeStone: NA Customer Base

USA

- Southern Company
- Georgia Power
- Alabama Power
- Eversource Energy (Formerly NU)
- Black Hills Power
- Chicopee Electric
- Electric Cities of Georgia
- ITC Transco
- Entergy Nuclear
- GRDA
- Marietta Power & Water
- Montauk Energy
- UGI Electric Services
- KAMO
- Bryan Texas Utilities
- Accenture
- The Irvine Company
- Pedernales Electric Coop
- SWPA
- First Point Energy

- Oakdale Electric Coop
- Michigan Power Agency
- IMPA
- City of Richland
- Idaho Falls Power
- Applied Metering
- LEP Systems

Canada

- EnerCare Connections
- Oakville Hydroelectric
- Maritime Electric
- EnerSource Hydroelectric Mississauga
- Toronto Hydro

Mexico

CFE (10 divisions)



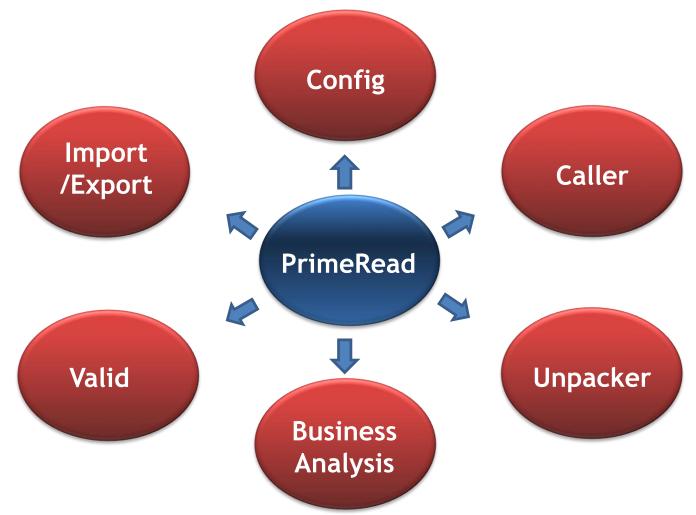


PrimeStone: Tools that Empower Prime Mobile • On-Site Data Collection Internet • Wired or Wireless Tech Customizable Terms · Facilitates Accurate Optical Prime Guard Prime Web • RS232/RS485 Web Service Prime PrimeGrid Bluetooth Setup of Alarms & Notify • Web Presentment Tool Zigbee Powerful Formula • Single Line Diagrams • Definable Engine • CentralizeD Data for Real-Time Monitoring Graphs Choose Parameters Energy Balances • Presentment Tool Call Evens Email or SMS Messages Calculates Losses at any Automated Notifications • Detects Critical Losses **PRIME** Elster Energy Axis Elster Energy Axis Web Service SQL Server / Oracle OpenSGC Databases **OpenStack** SAP SCADA Itron Openway Itron Openway Web Service Windows **Application Server** Cell Modem or TCP/IP **PrimeRead** LOAD CENTER METERS - SATELLITE Meter Data Collection - TCP/IP **GE Trilliant** Ge Trilliant Vendor & Network GPRS -Agnostic Validation Engine - PSTN · Reporting Tool





PrimeRead: Modules







PrimeRead: Key Benefits

- Automatic and unattended data collection
- If it can be read, we can read it
- Multi-vendor + multi-network = flexibility
- VEE Validation Estimation Editing
- Supports over 200 meter models
- Independence from the meter manufacturers
- 30+ canned reports and option to customize
- Supports the most popular databases:
 - Oracle
 - SQL Server

- Data engine collects all meter information:
 - Load profile (mass memory)
 - Registers
 - Events
 - Power quality
- Simple license model based on meter points
- Multiple commodities (electric, gas, and water)
- Supports multiple network topologies
- Interface with other corporate applications + AMI headend systems or standalone headend





PrimeRead: Meter Vendor Agnostic (representative sample)

Support for 200+ meter models.. If it's readable, we can read it.

- Elster ABB
 - Alpha I
 - Alpha II or Plus
 - Alpha 3
 - AIN
 - EAGas
 - EAWater
 - Garnet
 - REX MAS Residential (XML)
 - IEC A-1xxx series
- Actaris
 - SL-7000, 6000, INDIGO & 5000
- American Innovations
- Arteche DM9000 Series
- Cewe
 - Prometer
 - Prometer W
- Cirwatt B & IEC 870-5-102
- Complant
 - CCE16
 - General DL/T 645 & SSC16
 - Multiusers 8 SSC16, 9+1 DL/T 645 & 9+1 DL/T 645 Generation
 - SLD16
- Concentrador CIF-RMQP

- Datapro
 - Datapower
- DCU-DLMS Kalkitech
- Eagle Research AE5000
- EDMI
 - MK10A, D & E
 - MK6, 6E, 6N & Genius
- Electroindustries
 - Nexus 1250 DNP and Modbus
 - Nexus 1270 DNP and Modbus
 - Nexus 1500 Series / Modbus
 - Shark 200 / Modbus
- ELO
 - 2106, 2113, 2180SE & 2180SP
- EMH
 - Elgama, Elgama EPQS & LZQJ
- E-MON / MeterSmart Device
- Enerlux T Aldana
- EXA
 - Biphasic
 - CP
 - CS
 - Single Phase
 - Three Phase
- First Point
 - TDS-2/TDS-4M

- Exelec Totalogger M3P10
- General Electric
 - DR-87
 - Phase 3
 - KV
 - KV2
 - KV2c
 - Phase 3
- Genus
- HPL
- Idosde Tecun DTS949
- Intech HXE34
- Iskra
 - MT174
 - MT831
 - MT831 Custom
 - MT851
 - MT860S
 - Poreg 4P
- Landis & Toubro



PrimeRead: Vendor Agnostic (representative sample)

Support for 200+ meter models.. If it's readable, we can read it.

- Landis & Gyr
 - Altimus
 - ANSI S4
 - AXRS4
 - Dialog ZMD
 - Dialog ZMG
 - Focus AX
 - Qualigrid ZMQ
 - RXRS4
 - RXS4
 - SAGA1000
 - SAGA1000 International
 - SAGA1000 MultiPort
 - ZMC
 - ZMD IEC 870-5-102
 - ZMG IEC 870-5-102
 - ZMU220C
 - Maxsys 2510, Elite
- Mercor
 - ECAT
 - Mini-AT
 - Mini-MAX
- Mercury Instruments Gas Device
- Metretek AE6000 EFCV
- MTC Epsilon
- Nansen Spectrum

- Power Measurement / PowerLogic / Square D / Schneider Electric
 - ION7300 series
 - ION7550, ION7650
 - ION8800 Series
 - ION8300, ION8400, ION8500
 - ION8600A, ION8600B, ION8500C
 - PM710 / PM870 / PM1200
- Power Sentinel
 - 1133A
- Premier PRI
- Prodelec Tipo 1
- Quad Logic
 - MiniCloset-5 Metering Point
 - S-20
 - Scan Transponder-5
- Remote Terminal Unit
- Satec
 - EM920
 - PM175
- Schweitzer
 - SEL734
 - SEL735
- Scientific Columbus Ametek
 - Jem10
 - JemStar

- Schlumberger Itron
 - Datastar Recorder
 - Fulcrum SL 320 / SQ-400
 - Q-1000
 - Quantum (Q100 & Q200 series)
 - Quantum QDIP
 - Sentinel
 - Vectron
- Siemens
 - Maxsys 2410 / 2510
 - Quad 4 Plus (w/o Superboard)
 - Quad 4 Plus (Superboard)
- Sentry Recorder 200
- Transdata
 - Mark V
 - SSR-5000
- Triacta Powerhawk
- ZIV
- Standard Protocols
 - IEC 61107 / 870-5-102
 - DLMS
 - ANSI C12.19 / C12.22



PrimeRead: Networking Agnostic

- Landlines (POTS)
- Line Simulators
- Line splitters
- Cellular (TDMA, CDMA & GSM)
- Cellular digital CDMA 1X-RTT, GPRS
 - Fixed IPs
 - Dynamic IPs
- CDPD (point to point and TCP/IP)
- **Satellite** (TCP/IP)
- Power line carrier (PLC)
- Optical Probes
 - ANSI
 - IEC

- Radios
 - Utilinet Cellnet
 - TCP/IP
- Serial
 - RS232 (Direct)
 - RS485 (Multidrop)
 - Daisy Chain (master-slave)
- Ethernet
 - Modbus
- X25
- Wireless
 - BlueTooth
 - Zigbee





PrimeRead: Validation, Estimation and Editing

The Big Four:

| Validation check | Description |
|--------------------------|-------------------------------------------------------|
| Interval Tolerance Check | Counts missing readings |
| Time Tolerance Check | Compares the meter's clock vs the workstation's clock |
| Profile Tolerance Check | Sum of load profile readings ≈ Delta registers |
| Zero Tolerance Check | Counts number of zero values per channel per day |





PrimeRead: Validation, Estimation and Editing

| Validation check | Description | | | | | | | |
|--------------------------------------|--------------------------------------------------------------------|--|--|--|--|--|--|--|
| Overflow Tolerance Check | Detects readings above a user defined threshold | | | | | | | |
| Underflow Tolerance Check | Detects readings below a user defined threshold | | | | | | | |
| Consecutive Zero Tolerance Check | Counts number of consecutive zero values per channel per day | | | | | | | |
| Non-Zero Tolerance Check | Counts number of non-zero values per channel per day | | | | | | | |
| Consecutive Non-zero Tolerance Check | Counts number of consecutive non-zero values per channel per day | | | | | | | |
| Active-Reactive Tolerance Check | Detects readings where Reactive energy / Active energy > Threshold | | | | | | | |
| TOU Load Profile tolerance check | Checks that ∑LP ≈ ∑ TOU Registers | | | | | | | |
| TOU Registers tolerance check | Checks that ∑Register ≈ ∑TOU Registers | | | | | | | |

There are 12 validation checks altogether





PrimeRead: Reports

- 1. Based on industry-standard Crystal Reports reporting tool
- 2. Unlimited number of reports can be designed and added to the report repository
- 3. Reports can be scheduled and delivered through several output options:
 - 1. Screen
 - 2. File
 - 3. Email attachment
 - 4. FTP site
- 4. Reports can be generated in a variety of formats including:
 - EU
 - Lotus PRN
 - EDI 867
 - Lodestar

- BDF
- Excel
- HTML
- Word
- CSV



PrimeRead: ES Licensing Model

The licensing model **DOES NOT** depend on the number of:

- 1. Communication ports
- 2. Different protocols
- 3. Installed/Named clients
- 4. Workstations



The license model focuses **ONLY** on the number of meters in the database.

Install as many clients and mobile users as needed!

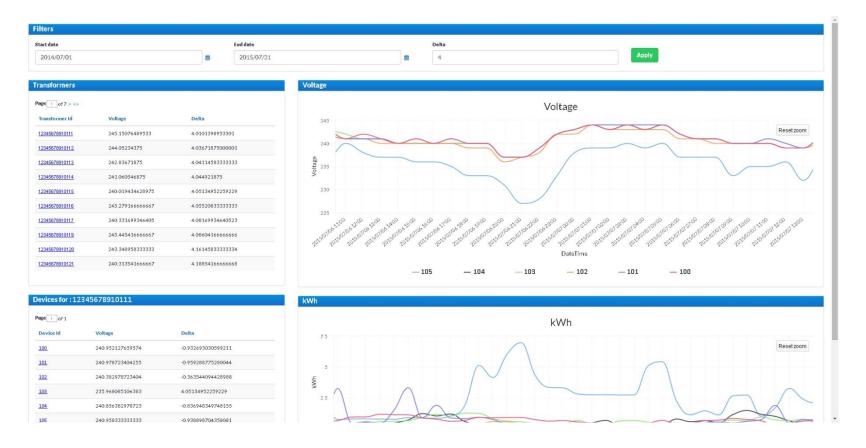




PrimeAnalytics: Revenue Assurance Use Case

Detect Potential Theft

- Establish date range
- Sort meters by transformer
- Utilize voltage and kWh
- Determine avg voltage per transformer
- Set deltas for determining potential issues
- Look for loss of voltage/kWh correlation
- Dashboard all pertinent information



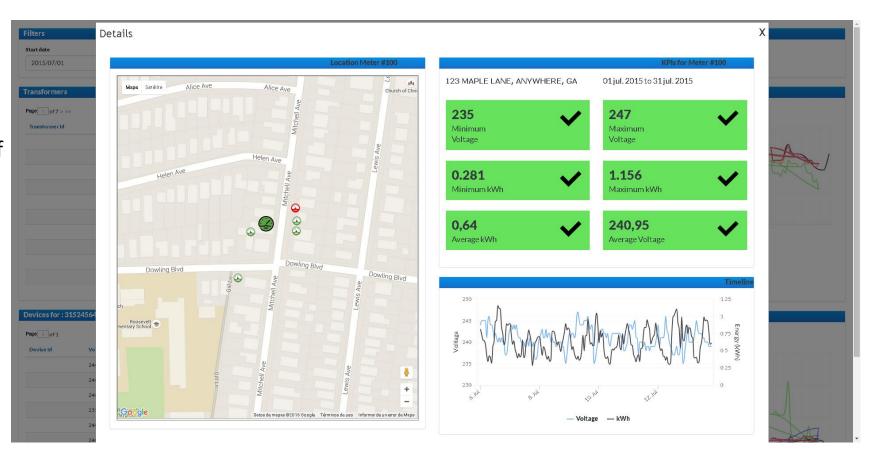




PrimeAnalytics: Revenue Assurance Use Case

Drill Down

- Map meters per transformer
- Indicate potential areas of concern
- Street level satellite view
- Meters with potential tamper condition in Red



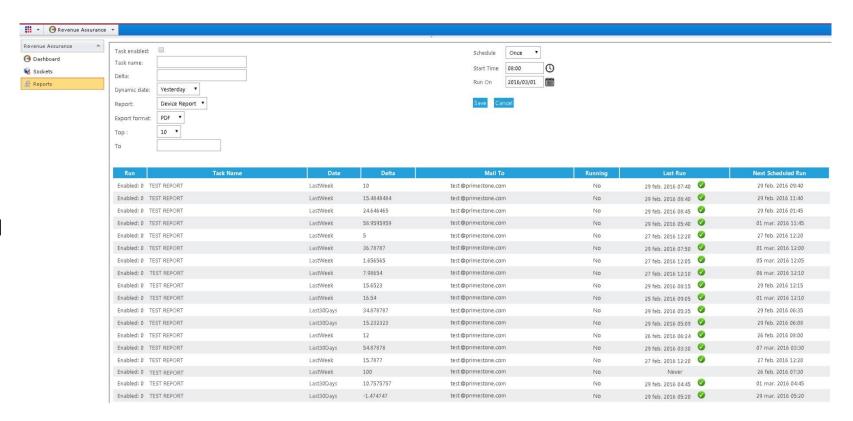




PrimeAnalytics: Revenue Assurance Use Case

Reports

- Schedule reports to proactively notify appropriate utility staff to potential theft and other conditions
- Create custom reports based on utility-specific criteria
- Built-in scalability to analyze all meters for tamper conditions







PrimeMobile

- On-site data collection for handhelds (PDAs or Laptops)
- Route management
- PDA management
- Connect to the meter using:
 - Optical probe
 - RS-232
 - Bluetooth
 - Zigbee
- Support for over 200 meter models
- Protocol updates during synchronization
- Standard ANSI and IEC optical probes may be used
- Helps control energy loss, too!











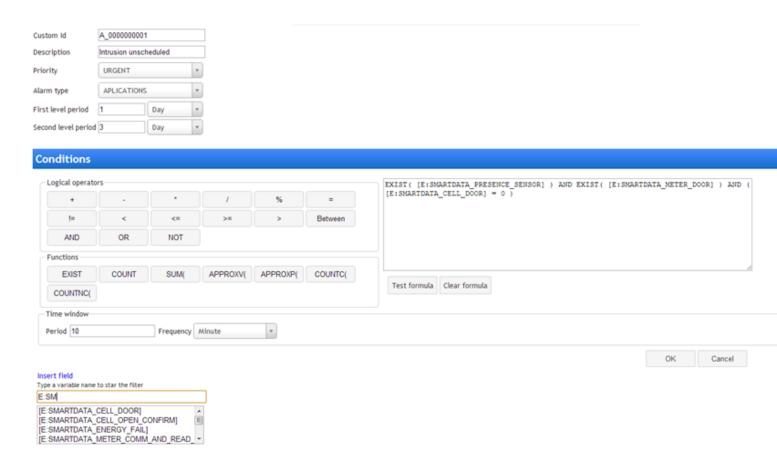






PrimeGuard: Alarms and Notifications

- Flexible formula engine for detecting incidents across:
 - Load profile (mass memory)
 - Events
 - Registers
- Trigger work orders + notifications to contact groups
- Three escalation levels
- Filters + graphs
- On-line alarms via:
 - SMS
 - Email
 - Local inbox



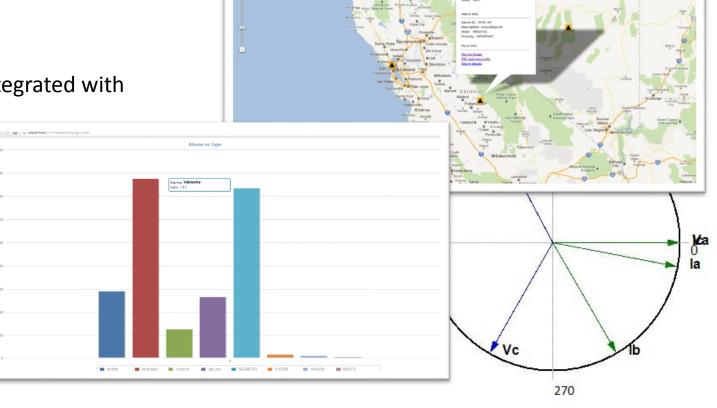




PrimeGuard: Alarms and Notifications

- Integration with Google Maps
- Customizable dashboards
- Drill up/down options
- Web application
- Phasor diagrams
- Stand-alone or integrated with PrimeRead

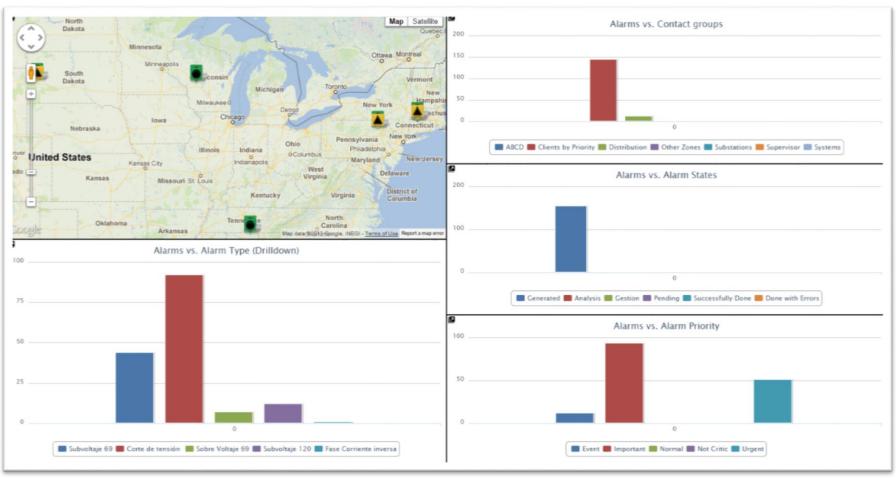








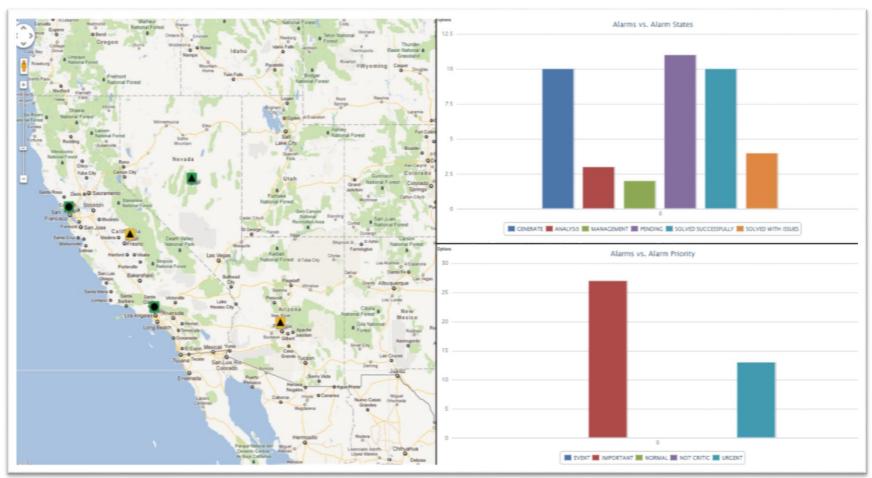
PrimeGuard: Dashboards







PrimeGuard: Dashboards







PrimeWeb

- Web portal designed for end users
- Publish readings on the internet or an intranet



02/03/2014 | 0 | 00:00:00 | Virtual | | kWhR | 28,50



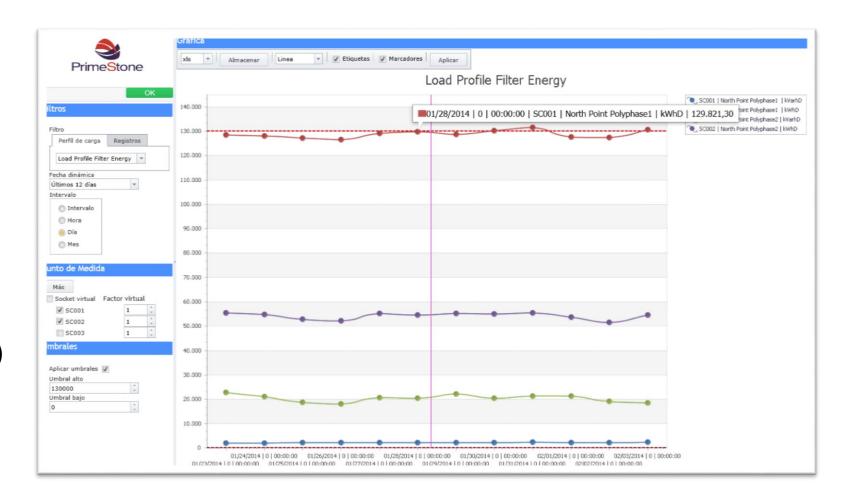
PrimeWeb: Modules

Administrator

- System settings
- Add, edit or delete meters
- Reports
- User access

Users

- Filters
- Graphs
- Decision cube (pivot table)







PrimeGrid: Energy Balances

Utilities are looking for a system that...

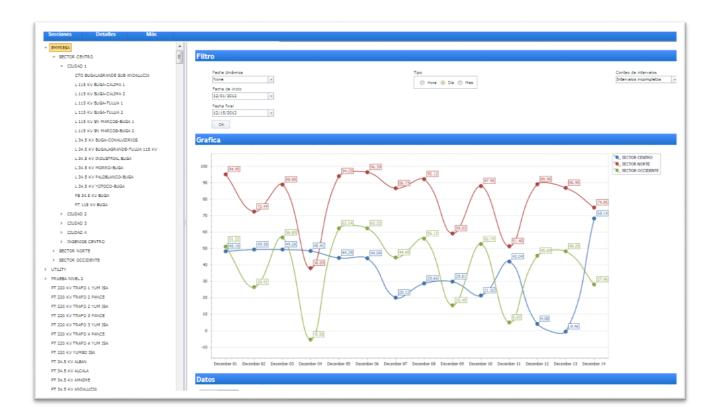
- centralizes and gathers all the information required for weekly, daily and monthly balances.
- detects the electrical structures with the most critical energy losses.
- calculates balances at all levels (tension levels / distribution system).
- generates single phase diagrams with a view of the results of the balance.
- offers tools to follow up on the exchange/intertie points with other utilities.





PrimeGrid: Energy Balances

- Define a hierarchy where you view all your electrical structures. This is the starting point for all reports, graphs and tables
- Drill up/down features
- Multiple data sources
- Historical record and versions of the balances for review and monitoring
- Certification of the final balance
- Support for SSO (Open DS, Active Directory)
- Built in report design tool
- Web application
- Detect and report structures by level of energy losses in order to focus efforts where they are needed





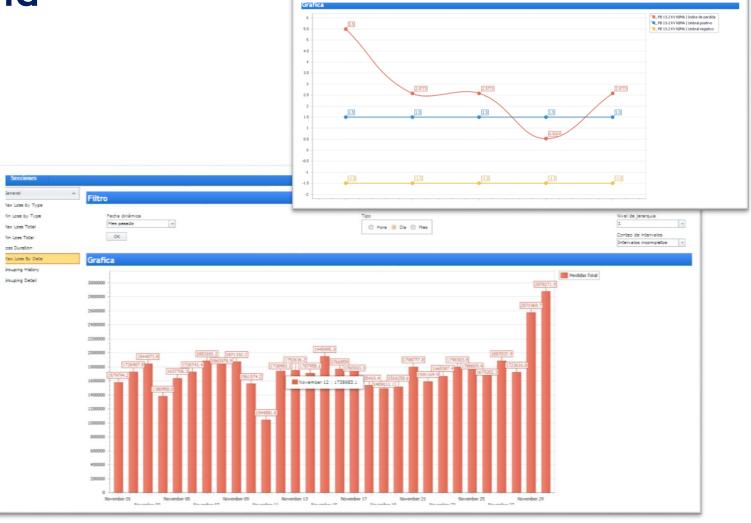


PrimeGrid

Reports

- Max / min losses by date
- Max / min losses by type
- Loss duration
- Grouping history
- Grouping detail





Stand-alone or integrated with PrimeRead



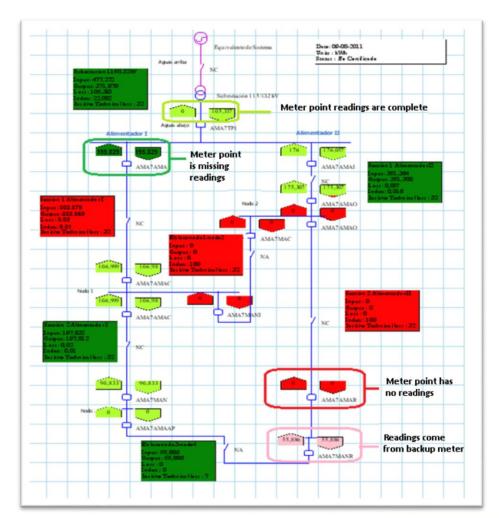


PrimeGrid

Single phase diagram

Shapes and colors are customizable

- Balances that have been properly closed are shown in green
- Balance that have not been properly closed are shown in red
- Meter points with full readings are shown in light green
- Meter points with missing readings are shown in dark green
- Meter points where the readings come from the backup meter are shown in pink
- Meter point with no readings are shown in red







PrimeGrid: Energy Balances

Summary tables per day

Summary tables with the energy balance

| Perdidas | Dia | | | | | | | | | |
|-------------------------------------------|-----------|-----------|---------|------------------|---------------------------------------------------|------------|------------|-----------|------------|--------------|
| Area energetica | 2 | 3 | 4 | Nivel de Tension | Estructura | Entrada | Salida | Perdidas | % Perdidas | # Intervalos |
| L 34.5 kV ALCALA-CARTAGO | -124.8 | -128.64 | -45. | 34.5 kV | L 34.5 kV ALCALA- | 27616.8 | 27741.6 | -124.8 | -0.452 | 288 |
| L 34.5 kV ANSERMANUEVO CARTAGO | 109.595 | 110.233 | 250.7 | 34.5 kV | CARTAGO L 34.5 kV ANSERMANUEVO CARTAGO | 36010.801 | 35901205 | 109.595 | 0.304 | 288 |
| L 34.5 kV BUGA-CONALVIDRIOS | 49002.811 | 48095.251 | 47831.7 | 1 (14/4) | | | | | | |
| L 34.5 kV BUGALAGRANDE-TULUA 115 kV | 2634.456 | 2676.679 | 2302.5 | 34.5 kV | L 34.5 kV BUGA- | 73453.201 | 24450.39 | 49002.811 | 66.713 | 288 |
| L 34.5 kV CAICEDONIA-ZARZAL | 712.4 | 732.1 | 64 | 34.5 kV | CONALVIDRIOS L 34.5 kV BUGALAGRANDE- TULUA 115 kV | 88169.4 | 85534.944 | 2634.456 | 2.988 | 288 |
| L 34.5 kV CALIMA-LOBOGUERRERO | 884.4 | 9042 | 89 | | | | | | | |
| L 34.5 kV CAN-CRUC-PALM-FLO-SBA | 18908.357 | 19465.815 | 16641.8 | 34.5 kV | L 34.5 kV CAICEDONIA- ZARZAL | 46684.801 | 45972.401 | 712.4 | 1.526 | 384 |
| L 34.5 kV CANDELARIA-PRADERA | 967.8 | 988.28 | 1087.3 | 34.5 kV | L 34.5 kV CALIMA- | 59715.001 | 58830.601 | 884.4 | 1.481 | 384 |
| L 34.5 kV CANDELARIA-TUNAL | 5339.21 | 5147.896 | 5159.8 | 246137 | LOBOGUERRERO | 216120206 | 207211.040 | 10000 257 | 6.001 | 1024 |
| L 34.5 kV FARFAN - RIOFRIO I - RIOFRIO II | -10.892 | -87.882 | | 34.5 kV | L 34.5 kV CAN-CRUC- PALM-FLO-SBA | 316120.205 | 297211.848 | 18908357 | 5.981 | 1824 |
| L 34.5 kV INCAUCA ORTIGAL CANDE | 2150.398 | | | 34.5 kV | L 34.5 kV CANDELARIA PRADERA | 85975 201 | 85007.401 | 967.8 | 1.126 | 672 |



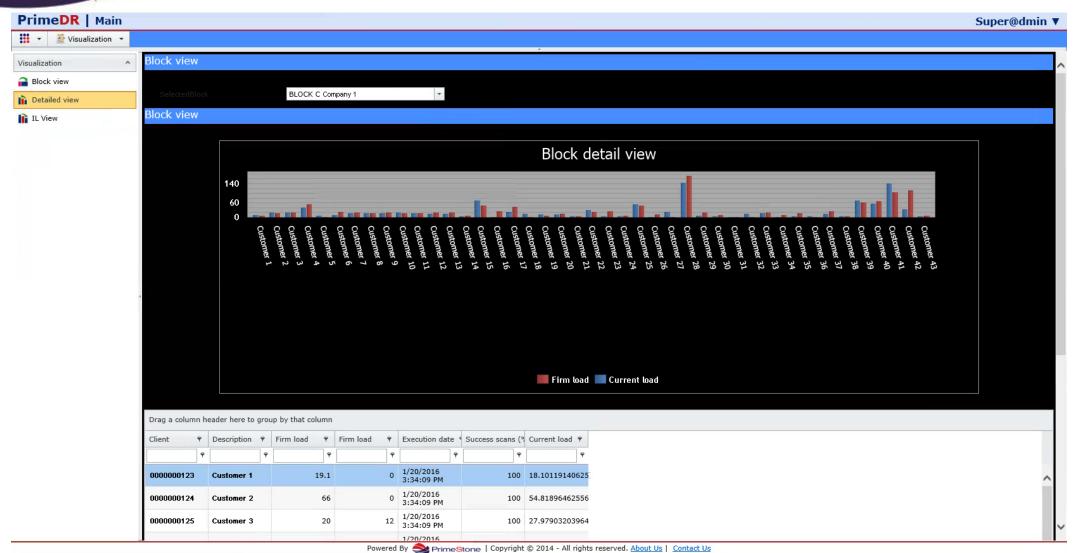




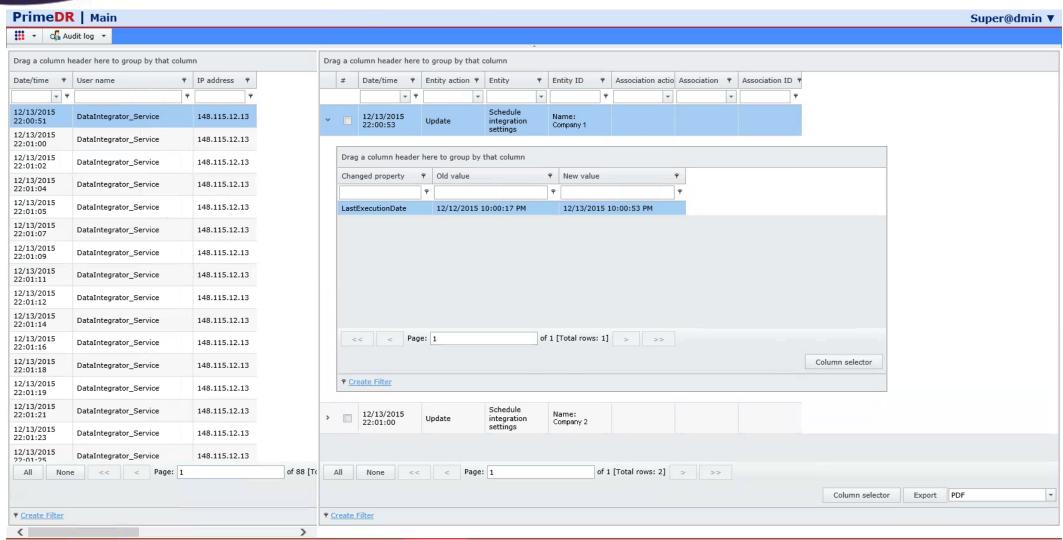




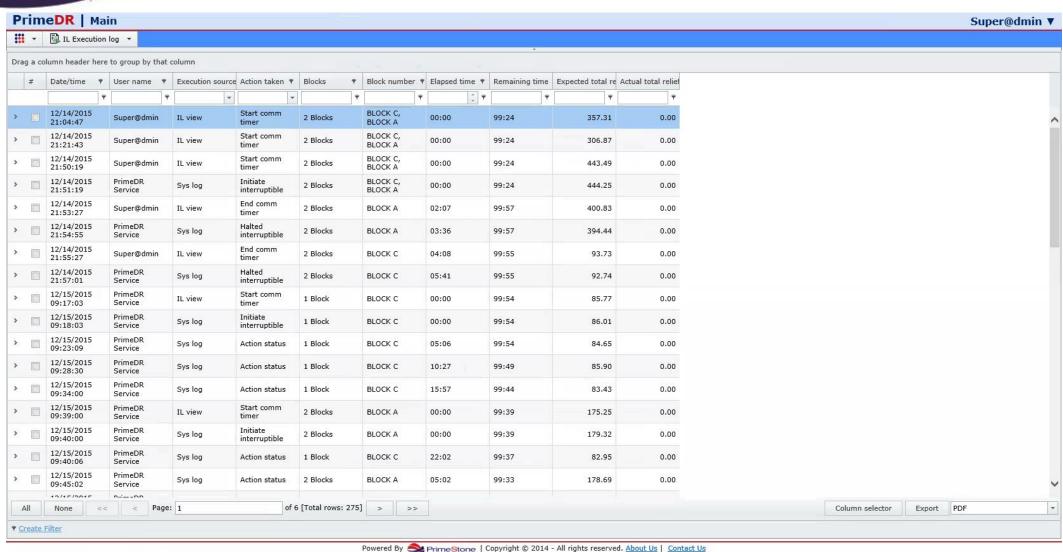














PrimeStone: Worldwide Customer Base





Thank you!

