



# STS enhancements

## NRS049-2 smart meter standard

**Don Taylor**

**Chair - STS Association**

**Expert on IEC TC13 WG15 payment metering systems**

**Expert on IEC TC13 WG14 smart meter communications**

**Expert on IEC TC57 WG14 distribution automation**

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# STS SECURITY ENHANCEMENTS

- meter key increased from 64 bit to 128 bit
- vending key increased from 112 bit to 192 bit
- HSM does not need to visit the KMC
  - remote initialization and key load
- programmable vending limits: amount per service type
- vending key expiry by time
- remote authenticated vending key reactivation

# STS FUNCTIONAL ENHANCEMENTS

- water + gas meters
- currency vending
- complex tariffs
- complex account, credits and charges
- complex load control
- 4 digit manufacturer code → 13 digit meter number

# TOKEN ID ROLL-OVER

- every token has a unique TID = 24 bits at 1 min per bit
- replay prevention – meter keeps last 50 TIDs in a register
- base date = 00h00 01/01/1993
- TID window = 31 years: 1993 → 2024
- reset TID stack to ZERO + new key + new base date
- 3 base dates defined 1993/2014/2035
- every meter must be key changed before TID window expires
- COP published by STSA: STS 402-1 Edition 1.1 – 2015
- can be batch processed
- utilities should start planning the logistics now
- HSM support by Q1 2016
- vending system support by Q4 2016 ?
- this will also eliminate ghost vending

# STS/DLMS/COSEM INTEGRATION

- DLMS/COSEM is a Client/Server protocol for smart meters
- STS 101-2 is vending system interface to DLMS Client
- STS token over DLMS/COSEM to remote online Server (meter)
- uses a COSEM Token Gateway as online channel A
- standard STS keypad as off-line channel B
- some additional DLMS/COSEM features:
  - additional security on top of STS security
  - calendar / clock / special days
  - scheduled / on demand meter readings
  - alarm / event push notifications
  - import / export energy registers
  - multiple clients per server with unique authentication

# NRS049-2 SPECIFICATION

- mandate to write up smart meter national specification for SA
- scope covers low-end to high-end functionality
- guideline for option selection at tender stage
- draft is in progress
- delivery to NRS WG = 15 September 2015
- utilities are then able to go out on tender

# NRS049-2 SYSTEM ARCHITECTURE

- ERP System integration
- 3<sup>rd</sup> Party System integration
- Vending System integration
- Smart Meters – split and single
- Appliance Control devices with local and remote control
- Home Automation System integration
  - energy storage systems
  - electric vehicles
- Sub-meter support for water and gas
- HHU support for field operators

# NRS049-2 MAIN FEATURES

- on-line 2 way communication network
- on-line / off-line token transfer
- currency credit transfer
- TOU and BLOCK tariff
- calendar / clock activity schedules with special days
- import energy credit accounting
- export energy charges
- auxiliary charges
- remote programmable power limit
- remote load control
- remote / local meter reading – on demand / scheduled





**THANK YOU FOR YOUR ATTENTION**