



P.U.R.E, s.r.o., BRATISLAVA CITY CENTRE TOWER,
Karadžičova 8/A, 821 08 Bratislava, Slovakia, the EU
Priceless Unlimited Renewable Energy
www.go-pure.eu, info@go-pure.eu, GSM: +421 915 40 44 40
Company ID: 46609725 VAT No.: SK2023471252
Bank details: VÚB banka, Bratislava,
IBAN: SK2302 0000 0000 3022926254, SWIFT: SUBASKBX

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P.U.R.E. and Applied meters presents:

Exclusive distributor of VONSCH® for Africa and Middle East



Smart Prepayment Solution for DIN Meter

Energy Metering & Energy Saving Expert



Prepayment and AMR Solution

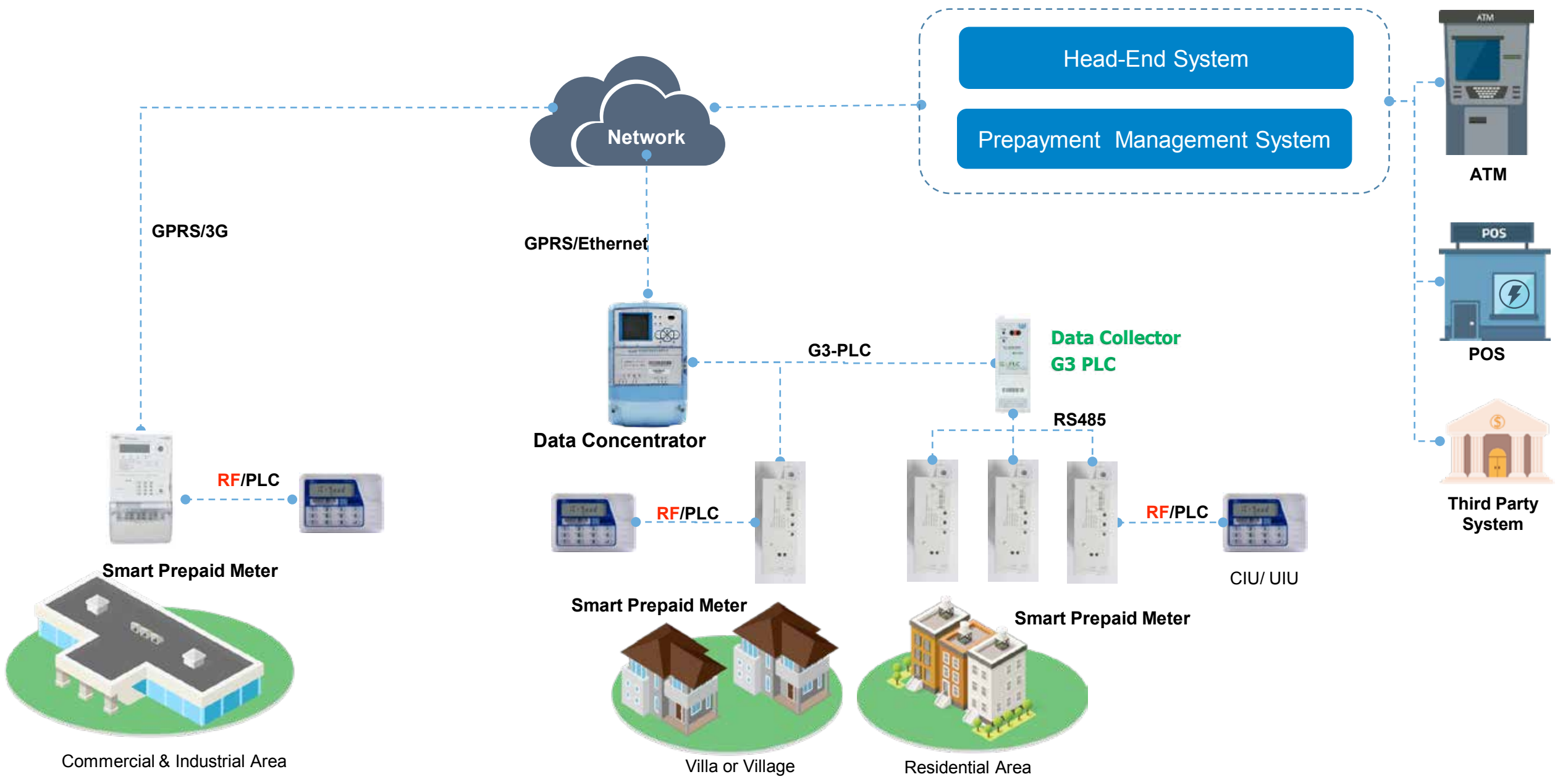
Applied Meters provides an integrated solution for prepayment and automatically meter reading (AMR). It applies to electricity enterprises for accounting management, intelligent meter reading, and remote control of meters. This solution improves revenue and user experience, improves enterprise operation efficiency, and reduces operation & maintenance costs.

Highlight

- Comprehensive prepayment management
- Strong communication stability
- Standard protocol provides interoperability
- Effective kinds of anti-tamper functions
- Remote O&M capability
- Flexible and integrated deployment
- Meeting different requirements



Typical Solution for Smart Prepaid Meter



Communication solution and security

This solution is based on smart prepayment meter that can integrate communication module as an option. A smart meter can maximum integrate two communication modules, one is used to communicate with UIU, another communicates with data concentrator or HES. According to different scenarios, the solution provides flexible deployment:

- Data Concentrator Unit could communicate with HES by GPRS or 3G or Ethernet, and could communicate with meter or Data collector by G3 PLC.
- The Data Collector could communicate with Data Concentrator by G3, and could communicate with meter by RS485.
- The meters could communicate with CIU/UIU by RF or PLC.

The solution also provides different communication technology as requirement:

- G3-PLC
- LORA RF
- GPRS/3G

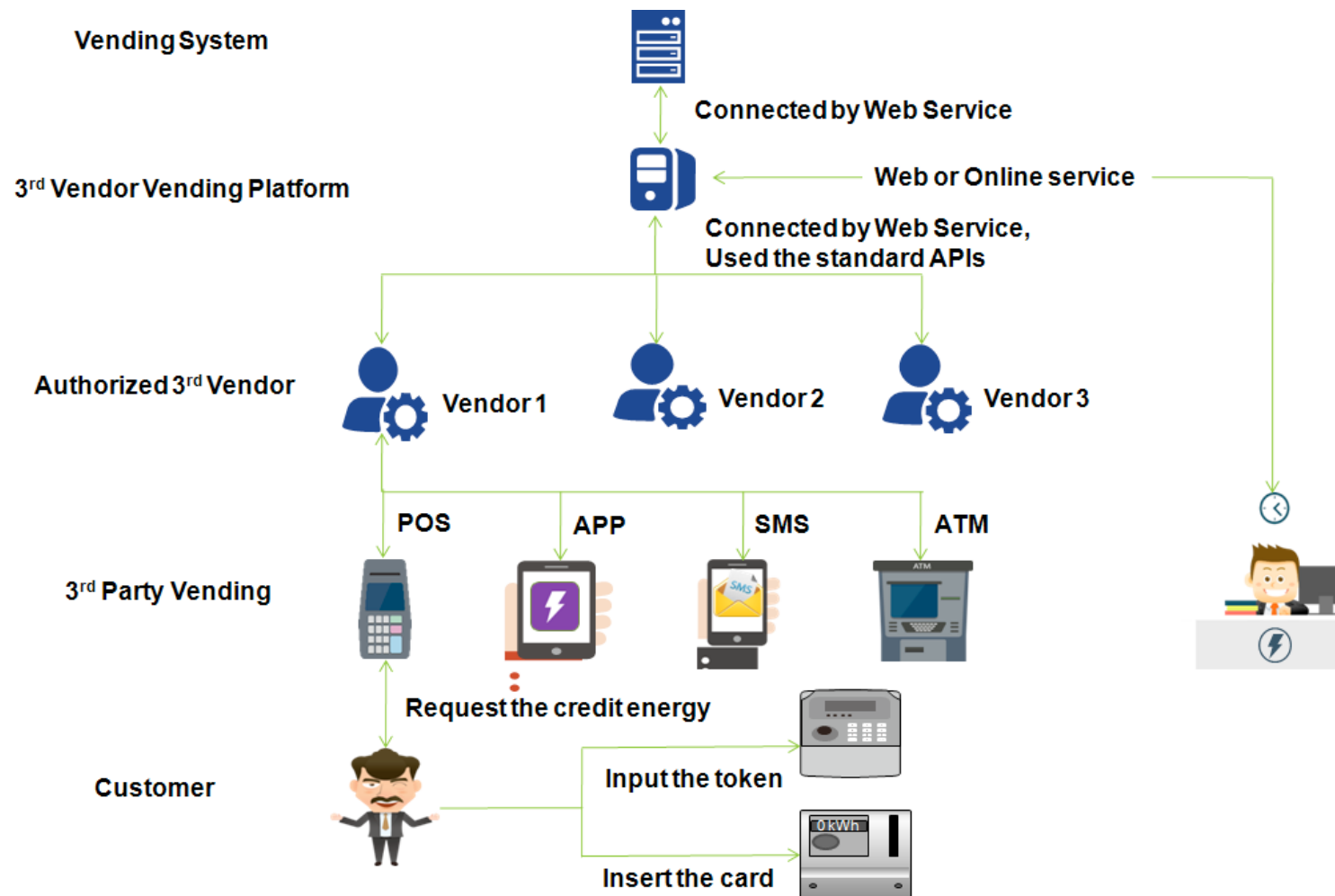
The 3rd party vendor – Main functions

Main functions

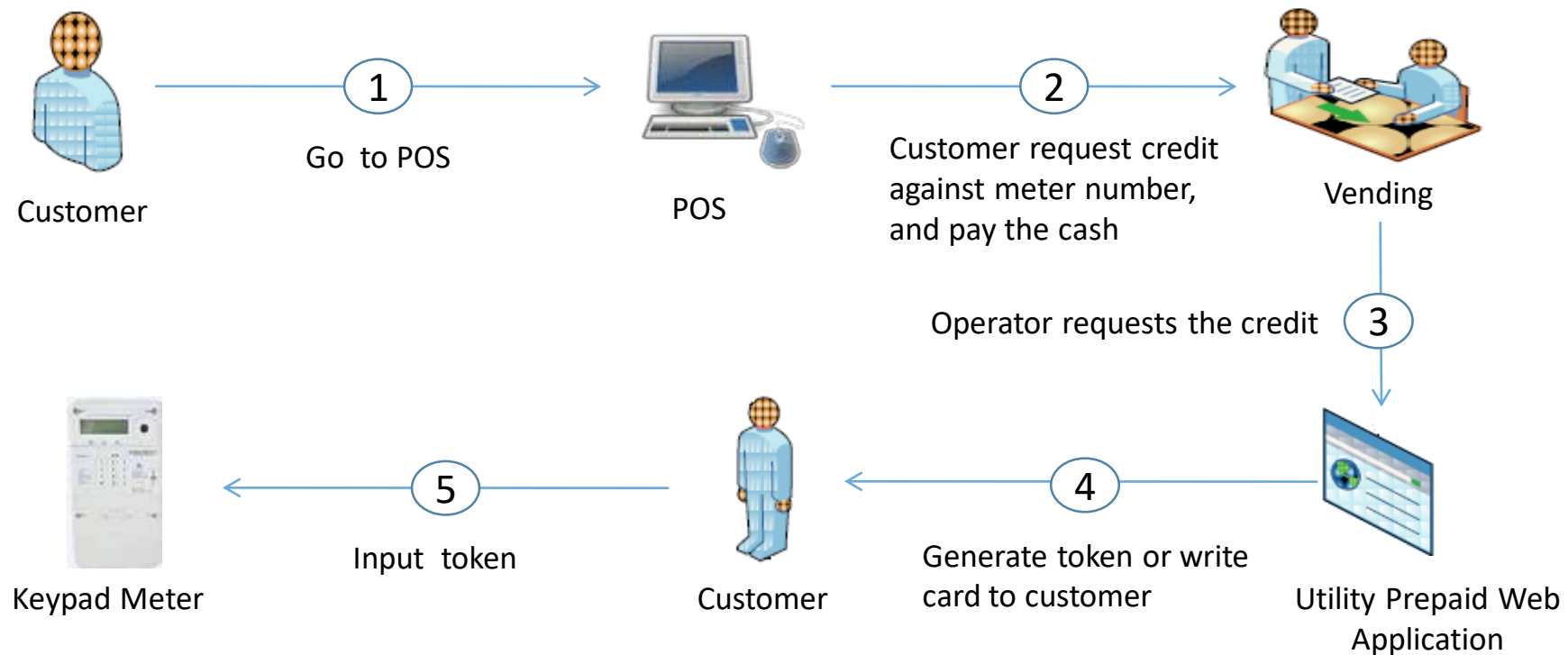
- The vending systems manages the 3rd party vendor information in the database.
- The 3rd vendor will buy the credit amount from the utility.
- The 3rd vendor will provide the vending service to sale the energy to the customers through the 3rd vending system platform under the credit amount.
- The 3rd vendor will recharge the prepaid meter for the customer by the POS, Mobile SMS, Mobile APP, ATM and online service etc, via the SOAP Web Service by the standard APIs.
- The 3rd vendor will issue prepaid meter token via the POS, Mobile SMS, Mobile APP, ATM and online service etc.
- The 3rd vendor will recharge prepaid meter token via the POS, Mobile APP, ATM and online service etc.
- The 3rd vendor will sign contract and manage with retail vendors.
- The 3rd vendor will sign contract with the bank for ATM services.
- The vendor will record all of the transaction data, and send the data to the vending system.
- The 3rd party vendor will provide the monthly vending report to the utility; the utility can check the report with the vending system.
- Vendor will provide the sale service on 24*7.

The 3rd party vendor – System Architecture

The third party vendor will be integrated with the third party vending system data interface of the vending system by a standard APIs via SOAP web services. The system architecture as following:

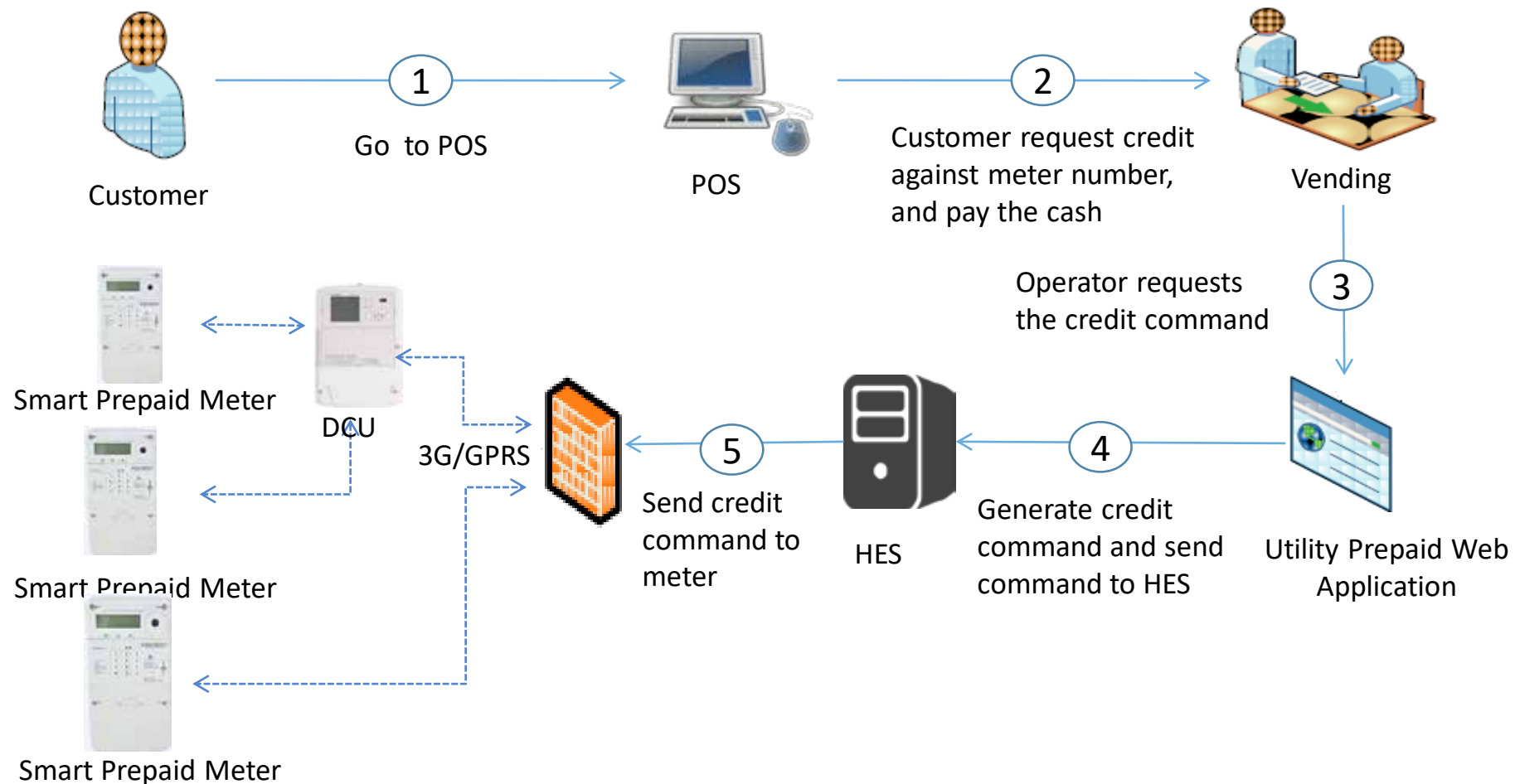


POS Vending Process



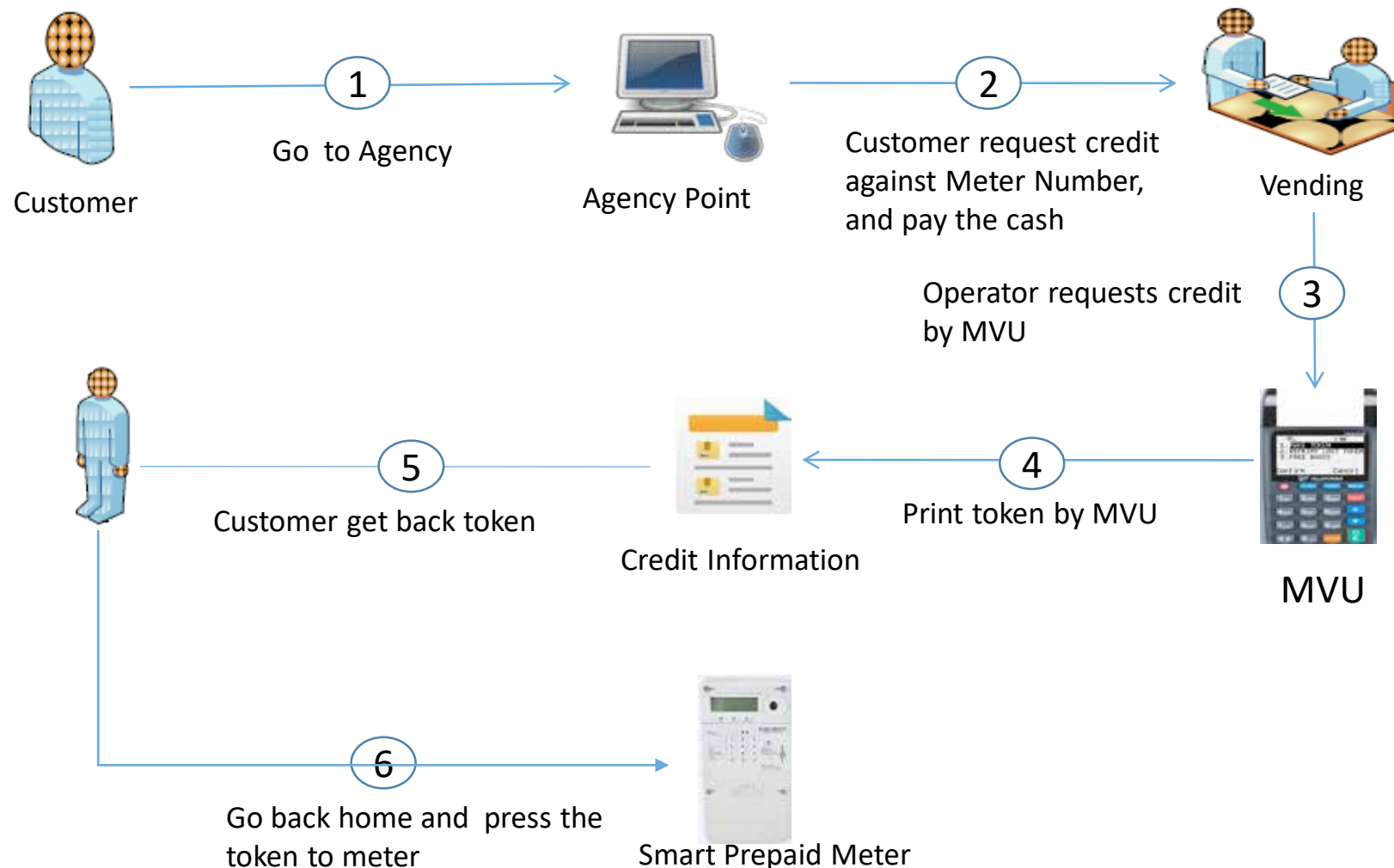
- ① Firstly, the customer should go to a Point of Sale, requests credit against meter number and pay the cash.
- ② The operator of utility then print Token via system application.
- ③ After input, the credit will be transferred to meter to finishing charge process.

On-line Vending Process



- ① Firstly, the customer should go to a Point of Sale, requests credit against meter number and pay the cash.
- ② The operator of utility then requests credit command, and send it to meter via communication directly.
- ③ By this way, the credit information will be sent to meter automatically instead of manually.

Mobile Vending Process



- ① The customer go to an agency point, requests credit against meter number and pay the cash.
- ② The operator generates token or write card via MVU, and give back to the customer.
- ③ MVU can be deployed at an agency point, also can be handled by operator of utilities for door-to-door service.

Tariff, Credit and Load management function

- **Tariff management function**

Up to 8 tariffs of each TOU scheme.

Up to 10 tariffs of each step tariff scheme.

Maximum demand and power factor correction.

Deduct special tariff on monthly, yearly, or each time.

Deduct special tariff as fixed value or percent.

- **Credit and friendly function**

Friendly function consist of daily friendly time, friendly weekend and holiday. In case the meter is in friendly period, it will not disconnect until credit limit is reached or disconnect function is disabled.

Emergency credit is only used in case emergency, after that , the customer should repay it at next time. The system can manage this case.

- **Load management function**

Load limits on daily period.

Alarm mechanism when over load limit.

Load limit is configurable via locally and remotely.

Remotely management function

Smart prepayment meter provides communication function, the system can manage meters remotely:

- **Collect meter data on schedule:** The system can configure schedule to reading meter data automatically.
- **Read meter data on demand:** The system can get meter data on demand as requirement.
- **Time synchronization:** The RTC of meter and Data concentrator can be configured remotely by system; in case synchronizing date and time of meter, the system should configure data concentrator 's time, and then data concentrator will synchronizes meter's date and time automatically; in case meter connect to HES via GPRS, the system should synchronizes meter's date and time directly.
- **Remotely relay control:** For load management and power consumption management purpose, the system can connect /disconnect meter remotely.
- **Remotely firmware upgrade:** The firmware of meters or data concentrator can be upgraded remotely, the system sends firmware file to devices, and then activates it immediately or it's activated automatically in a configured time. The device will validate firmware file, in case any abnormal conditions, it will recover to last version.



Devices





Smart Prepayment Solution for DIN Meter

Energy Metering & Energy Saving Expert

Three phase smart prepayment meter specification

Features and Benefit

- Remote connect/disconnect
- TOU or Step tariff (optional)
- Anti-tamper feature
- Automatic (daily and monthly) billing

Specification

- Class 1.0 for Active, Class 2.0 for Reactive
- IEC 62052-11 (2003), IEC 62053-21 (2003), EN50470-1/3
- Nominal voltage: 3*220v
- Current range: 10(100) A
- Rated frequency range: 50Hz
- Import and export of active energy
- Instantaneous value measurement of voltage, current, active power, reactive power and frequency
- Power factor
- Maximum demand

Clock accuracy: ± 0.5 s / day (at +23° C

Synchronized through communication

A battery for power failure

Main Functions

- Credit transferred by TOKEN
- Charge credit by UTS/CTS comply with STS
- Support TOU/step tariff
- Load limit management
- Friendly time, weekend, holiday management
- Load profile
- Anti-tamper, LED/buzzer alarm

Communication

- G3-PLC
- RS485 (optional)
- Optical port for local maintenance
- RF/PLC for CUI/ UIU
- Protocol: DLMS/COSEM

Security

- STS standard TOKEN encryption



Data Collector Specification

Specification

- Operating voltage: 220V
- Frequency: 50Hz
- RTC accuracy : $\pm 0.5\text{s/day}$

Communication

- RS485 for downlink
- G3 for uplink

Communication Protocol

- IEC 62056 with meter

Security mechanism

- SSL encrypted data transfer with system
- Access from all ports should be authenticated

Main functions

- Time synchronization from system
- Time synchronization with meters automatically
- Meter management for poly phase
- Remotely firmware upgrade
- Remotely control meter disconnect and connect
- Report alarm event
- Meter box open detection

Data concentrator specification

Specification

- Operating voltage: 1*220V/ 3*220V
- Frequency: 50Hz
- RTC accuracy : ± 0.5 s/day

Communication

- G3-PLC/RF for downlink
- GPRS/Ethernet for uplink

Communication Protocol

- IEC 62056 with meter
- Web-service with system

Security mechanism

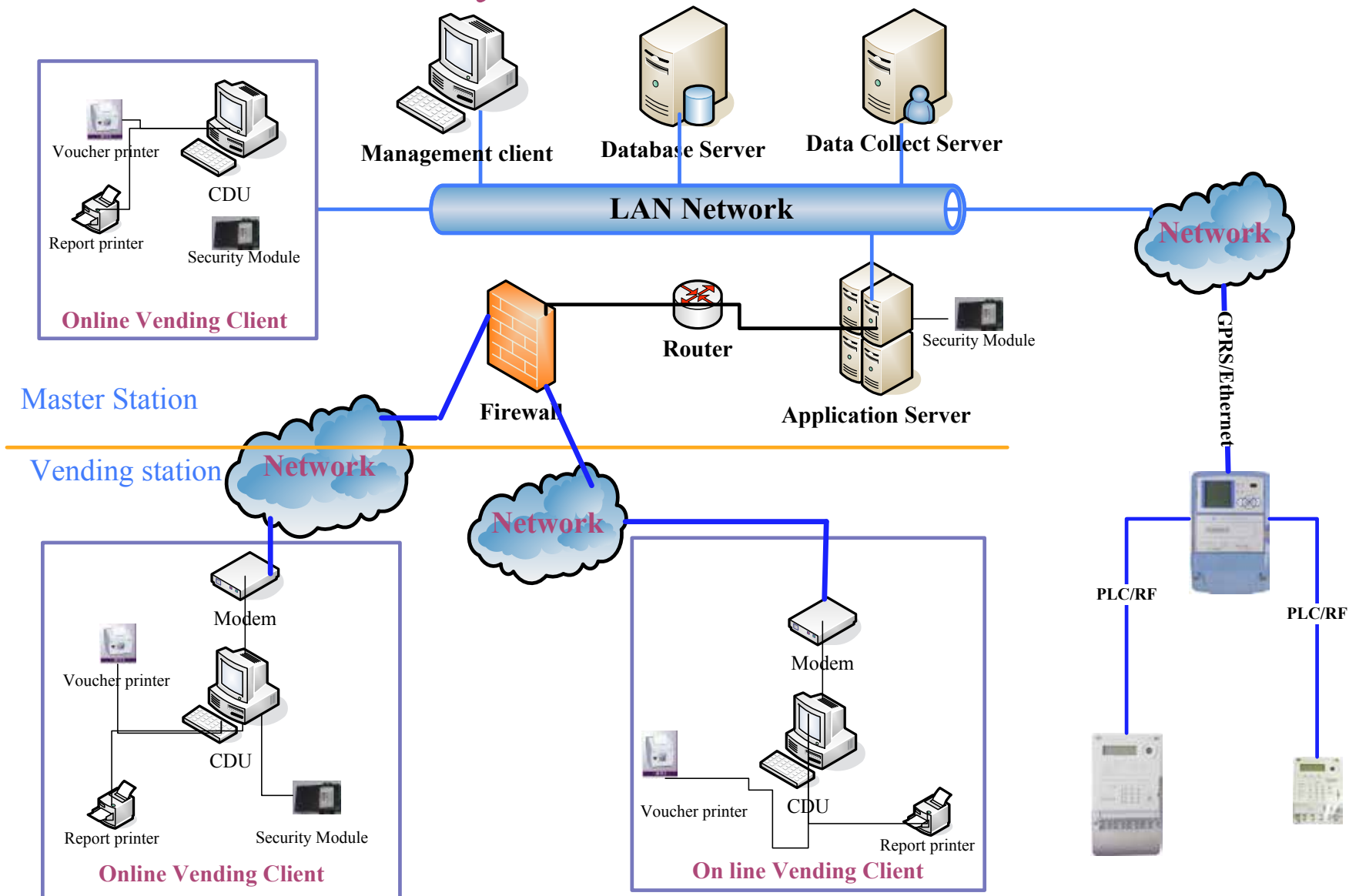
- SSL encrypted data transfer with system
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Main functions

- Standard web service interface to system
- Configurable meter data collection schedule
- Meter directory management
- Time synchronization from system
- Time synchronization with meters automatically
- Automatically discover meters
- Remotely firmware upgrade
- Remotely control meter disconnect and connect
- Report alarm event

System Structure

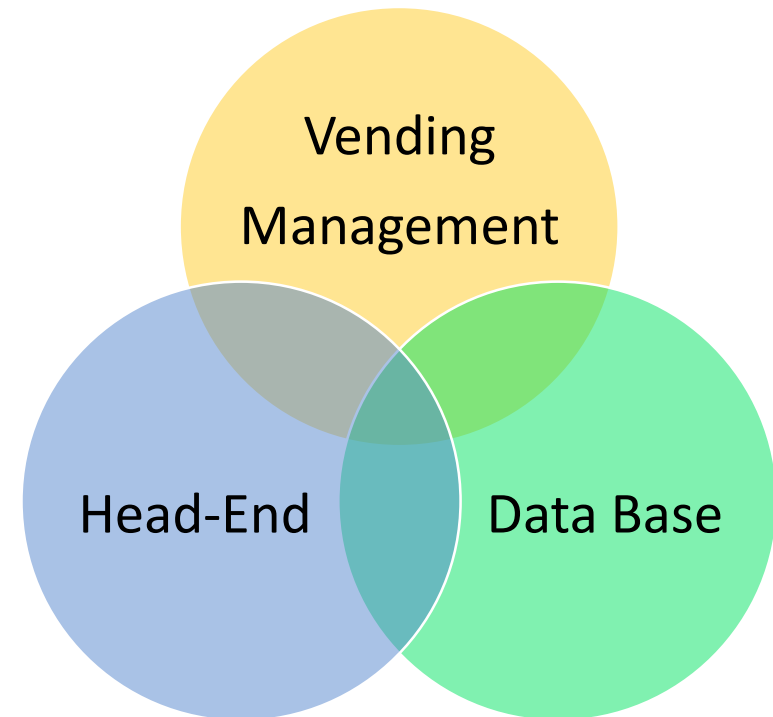
System Architecture



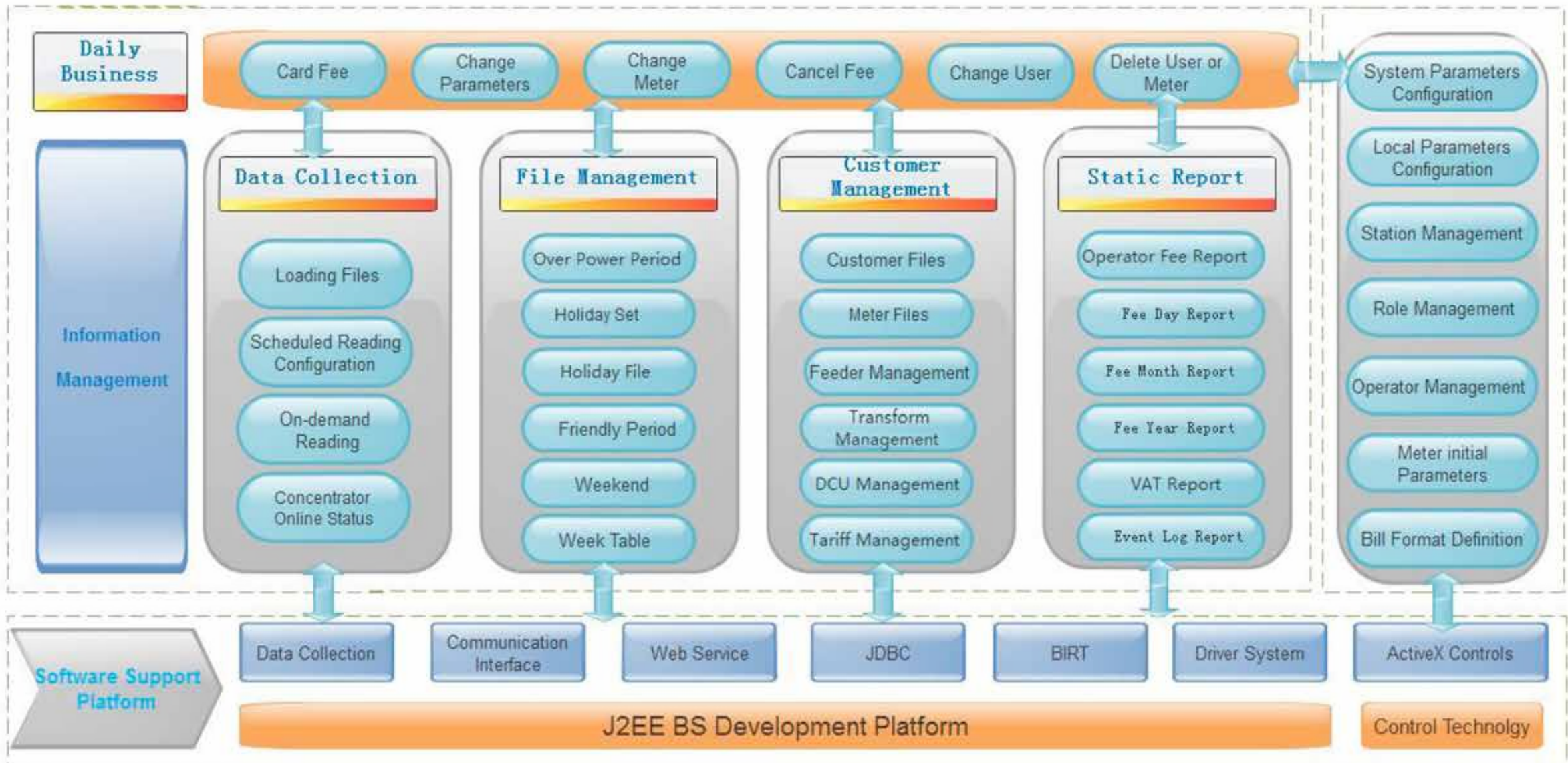


System Component

- **Vending Management:** Manage customer and devices profile, Charge management, Report charging and meter data, Interface to 3rd party system
- **Head-End:** Manage schedule reading and on demand reading, manage online status of devices, detects alarm
- **Data base:** Data interface for vending management and Head-End, stores all data of customer and devices



Vending Management Specification





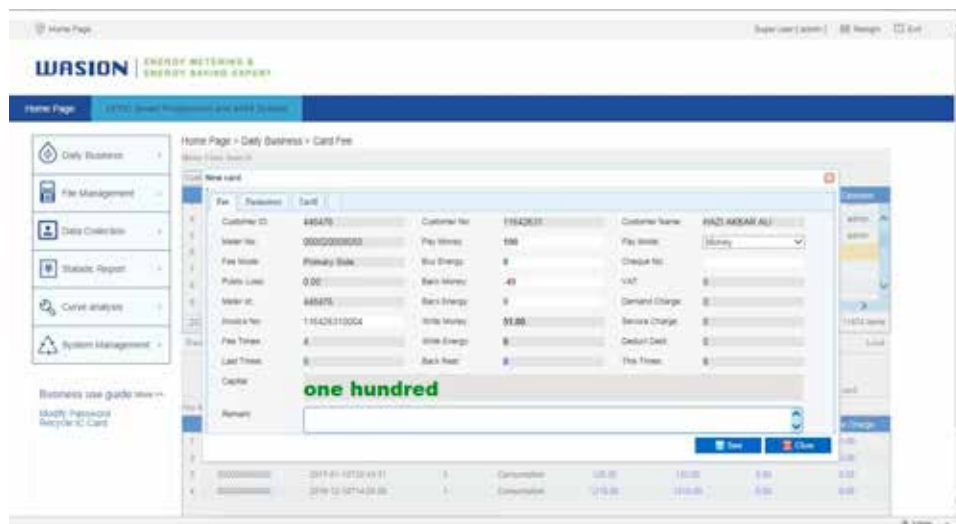
Vending Management Specification

Features and Benefit

- Support local prepaid and remote prepaid
- Prepayment and statistic in one system
- Complex and flexible tariff management
- Bill customizing and report customizing
- Multiple report function, multi dimension statistics
- Support calculation loss between the master and slave meters
- System parameters and local parameters support custom configuration

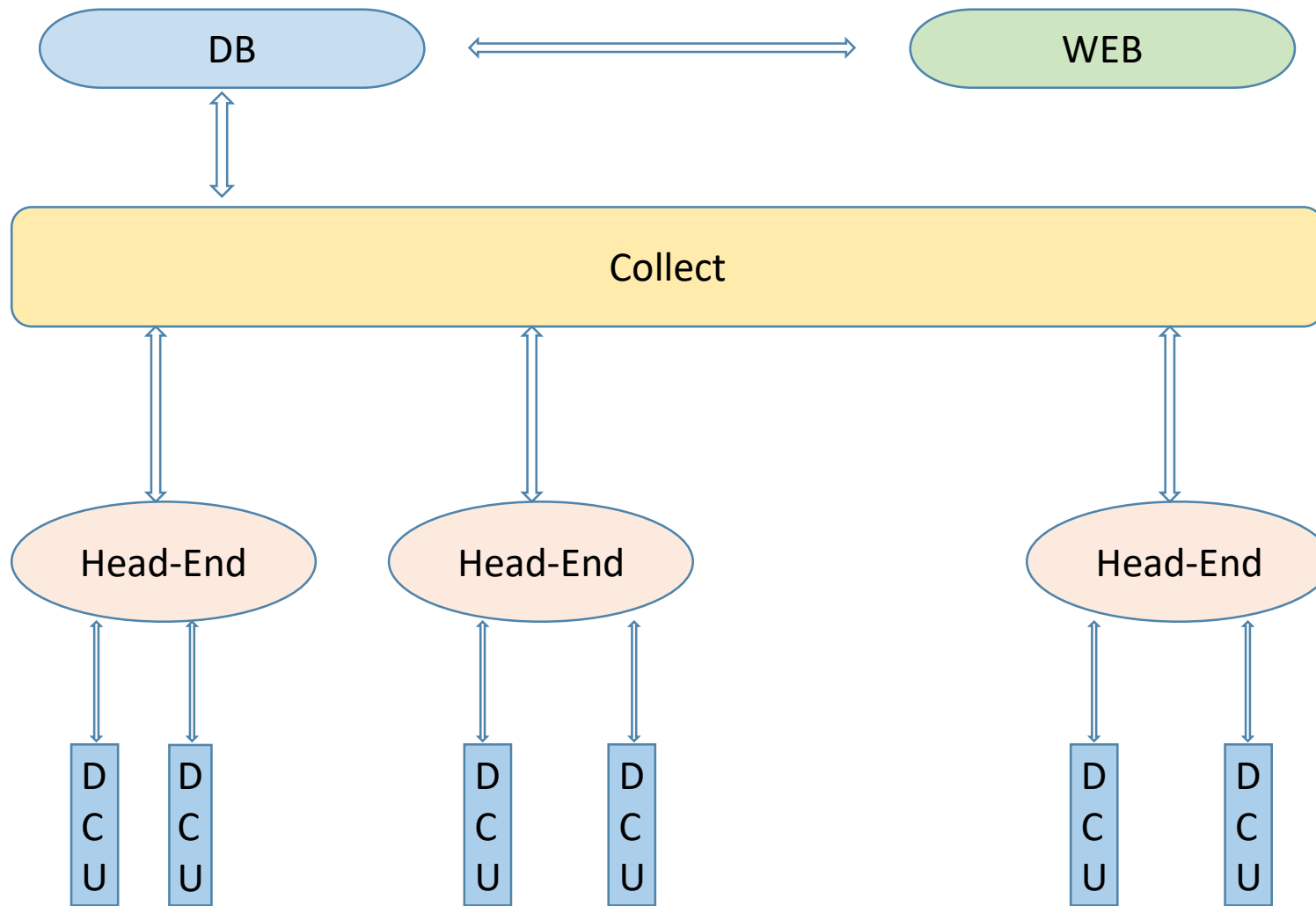
Main function

- Daily business: Open account, local charge, Remote charge, Change parameters, Change meter, Change user, Excel file import
- File management: Feeder management, Transformer Management, DCU Management, Tariff Management, Friendly Period, Weekend, Week Table
- Data collection: Loading Files, On-Demand Reading, Scheduled Reading Configuration, Concentrator Online Status
- Statistic report: Operator Fee Report, Fee Day Report, Fee Month Report, Fee Year Report, Customer Cost Detailed Report, VAT Report, Mother-Child Relation Query, Monthly Frozen Data Query, Monthly Block Data Query
- System management: System Parameters Configuration, Local Parameters Configuration, Role Management, Operator Management, Bill Format Definition





Head-End Specification



Head-End Specification

- Maximum Number of Meters for Each DCU: 300, depend on the environment
- Maximum Number of DCUs for Each Head-End: 20000
- Maximum Number of Head-End: 3
- Configurable Schedule Reading
- On-demand Reading/Setting
- Remotely Connect/Disconnect
- Devices Status Management
- Coordinate multiple Head-End Task



In the Future,
Every City,
Every Enterprise and Every Family
Will Benefit from our Technologies,
Products and Services.

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