ISO-NE Demand Resource New Dispatch & Real-Time Data

Robert B. Burke, Principal Analyst – Market Development
ISO New England Inc.
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ISO new england

Definitions

- Baseline Telemetry System (BLTS): new system developed by ISO-NE to calculate asset baselines on a daily basis
- Communications Front End (CFE): the new communication design for transmission of dispatch instructions and receipt of near real-time data
- Customer Asset Management System (CAMS):
  - Data system where an LP would register their assets
- DR Market User Interface (DR MUI): interface for DDE to update and download meter data (5 minute interval)

Definitions (cont)

- Demand Designated Entity (DDE):
  - The organization contractually responsible to the Enrolling Participant to supply dispatch, communication (voice/data) and meter data services for Demand Resources
- Lead Participant (LP) : Market Participant registering the DR asset (includes Enrolling Participants)
- Internet Based Communication System Open Solution (IBCS OS)
- IBCS Provider: Company providing IBCS services to a Lead Participant for their Demand Resources. Some LPs are there own IBCS Provider.

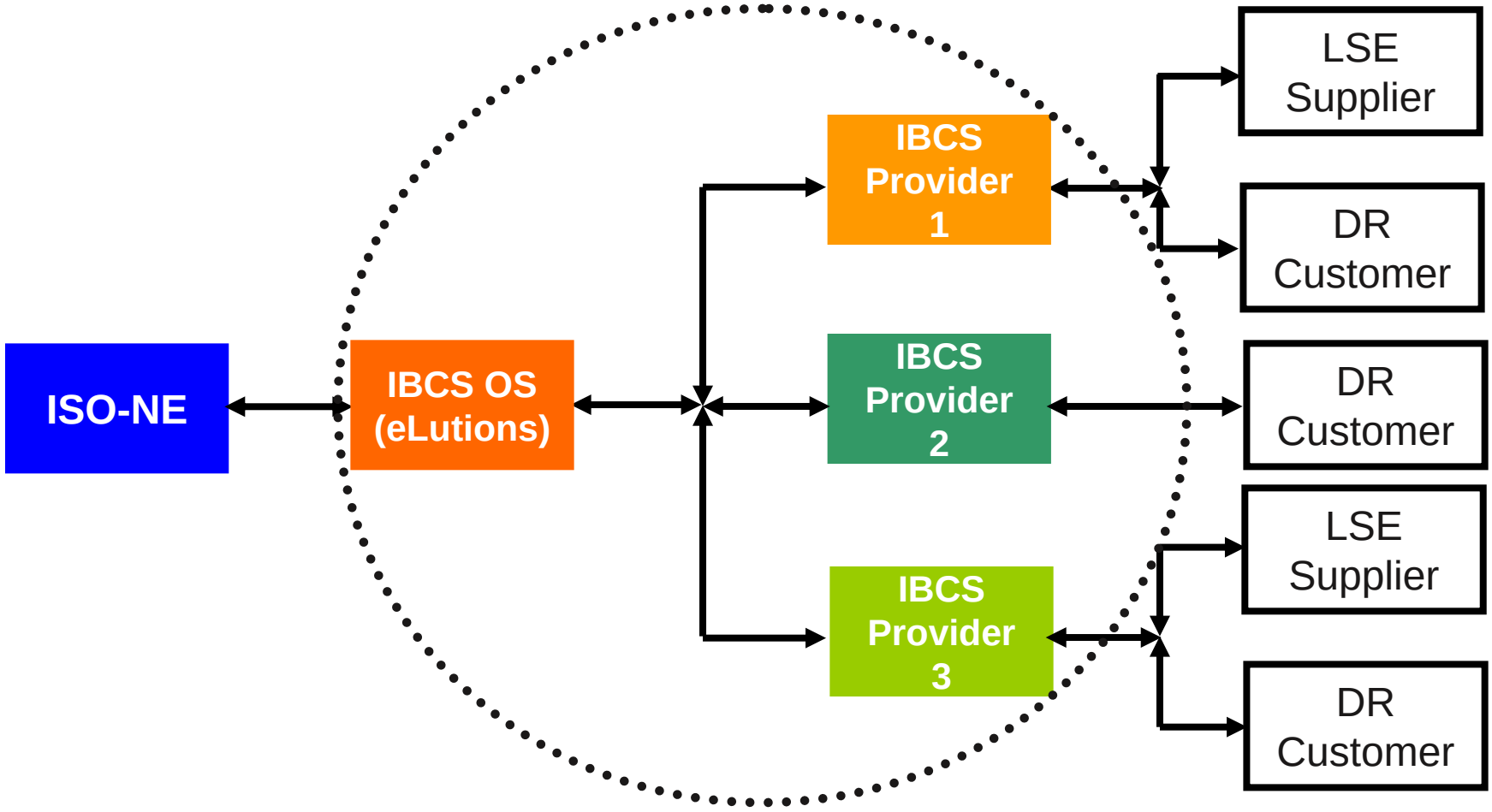
Internet Based Communication System Open Solution (IBCS OS)

- 2-Way Communications between ISO New England and the Customer.
  - Event notification
  - 5-Minute meter readings
  - Web access to meter data, wholesale prices and demand response performance
  - Required for 30-Minute and 2-Hour Demand Programs, Optional for Price Program
- "Open Solution" because it allows multiple suppliers of reporting and information services.

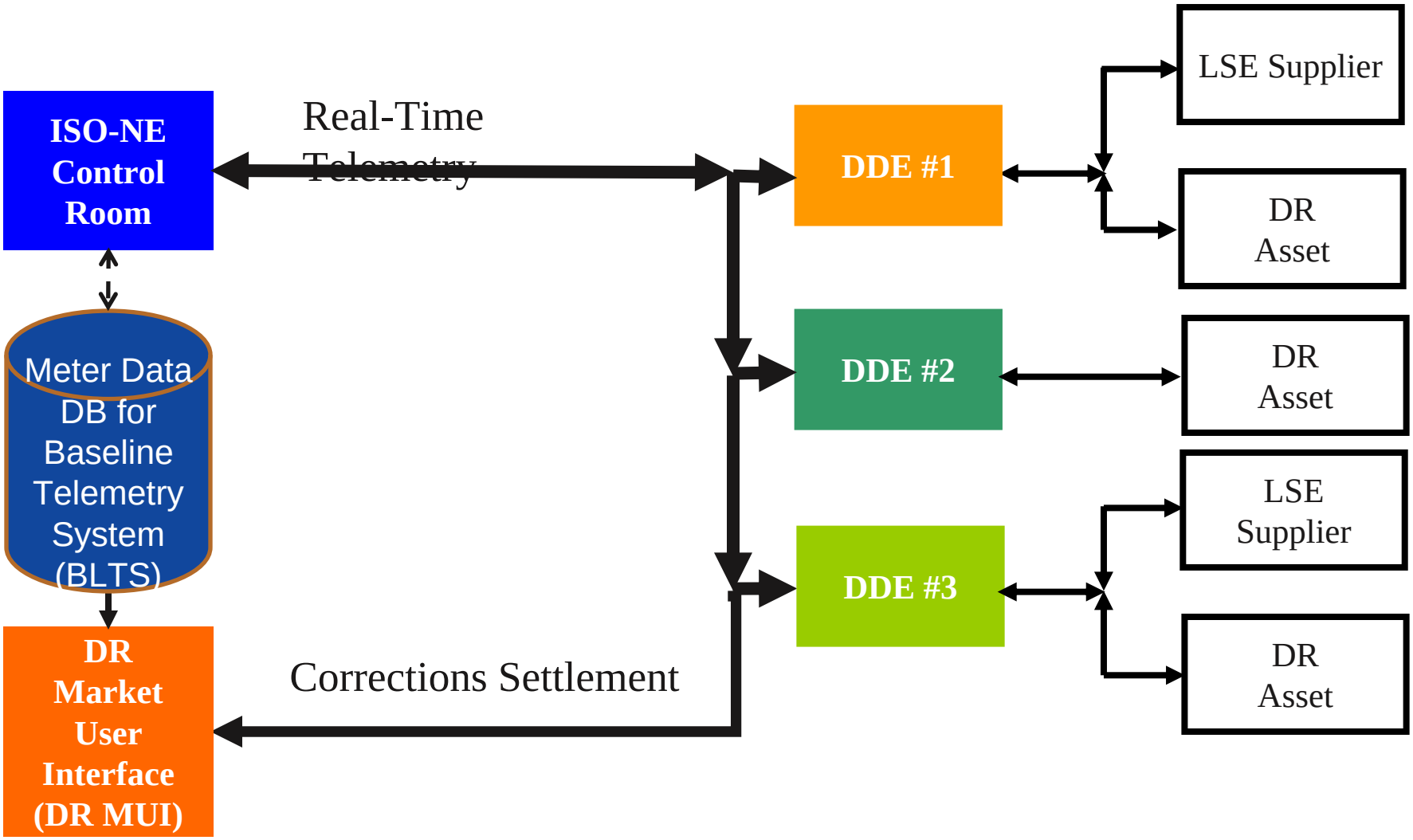
IBCS OS

- Event Activation or Termination
  - Commences with ISO to IBCS OS
  - IBCS OS communicates with IBCS Provides
  - IBCS Providers communicate with Demand Resources and Enrolling Participants
- 5 Minute Real-Time Meter data
  - From Demand Resource customer to IBCS Provider
  - IBCS Provider to IBCS OS
  - IBCS OS to ISO
    - Visible to ISO control room in near real-time

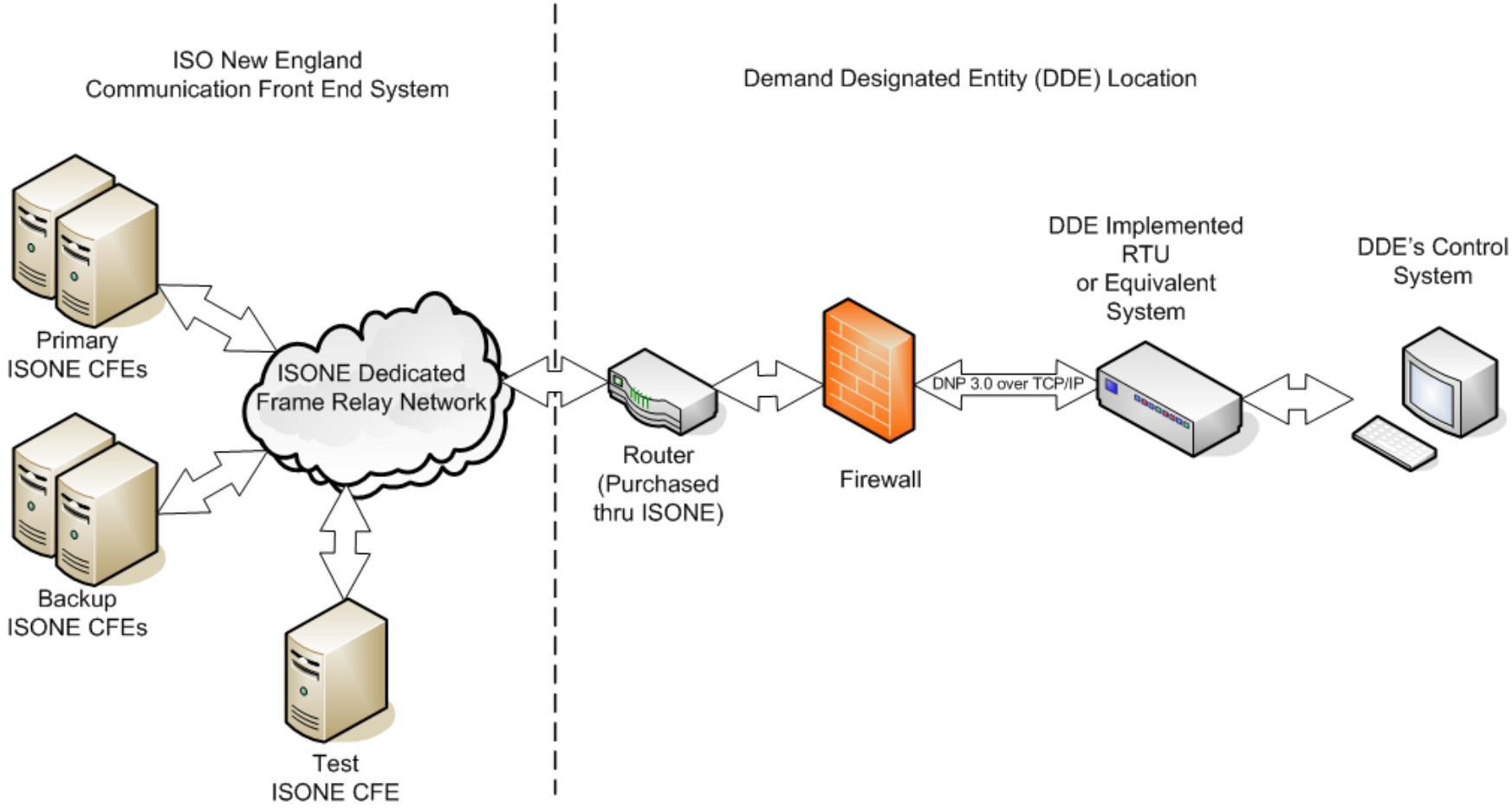
Internet Based Communication System Open Solution



Dispatch and Meter Data Communication



Integration of DR Assets within SCADA



DNP3 Protocol Compliance

3.3 Protocol Compliance

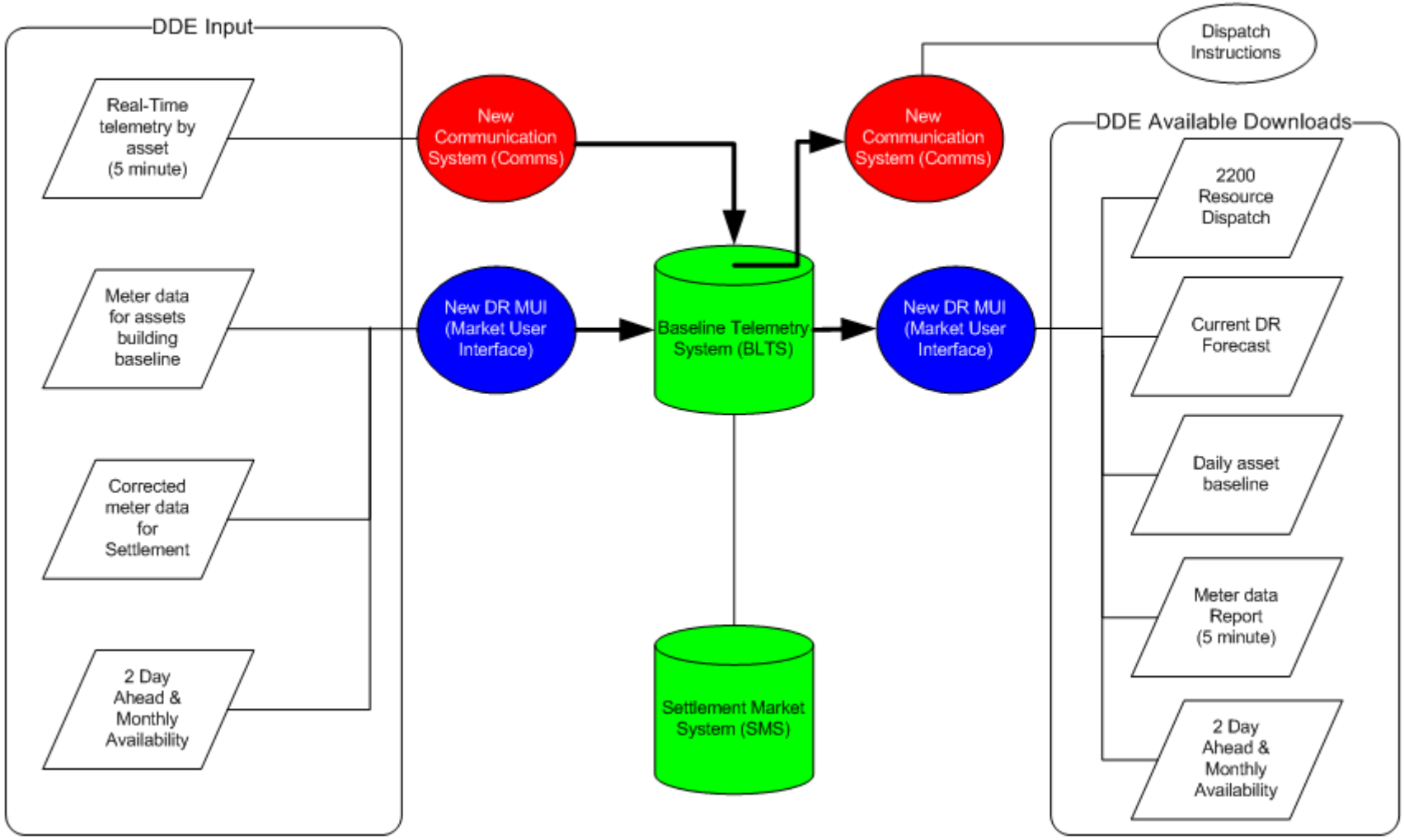
The data is processed internally in the RTU as data points in a DNP 3.0 compatible database structure. For each RTU system, the participant must submit a DNP Device Profile and evidence of certification for DNP 3.0 Level Two conformance (See www.dnp.org for Subset definitions, Conformance Test Procedures, DNP Device Profile and complete development documentation). The RTU is required to support polling by Class. Some object types and variations required by ISONE are beyond that of DNP Level Two conformance and are annotated as such below. The data objects and variations supported by the RTU must include, but are not limited to:

- Static: Object 1 Variation 2 (Binary Input with Status)
  Object 10 Variation 2 (Binary Output with Status)
  Object 30 Variation 1 (32 Bit Analog Input with Flag)
  Object 40 Variation 1 (32 Bit Analog Output)
- Event: Object 2 Variation 2 (Binary Input Change with time)
  Object 32 Variation 3 (32 Bit Analog Input with time, **DNP Level Four**)
- Time: Object 50 Variation 1 or 3 (Date and Time)
- Controls: Object 12 Variation 1 (Control Relay Output Block)
  Object 41 Variation 1 (32 Bit Analog Output, **DNP Level Three**)
- Counters: Object 21 Variation 5 (Future: 32 Bit Frozen Counter with time)
- Secure Authentication: Object 120 Variation 1-7 **(Suggested)**
- Octet String: Object 110 Variation 1-255 **(Required)**

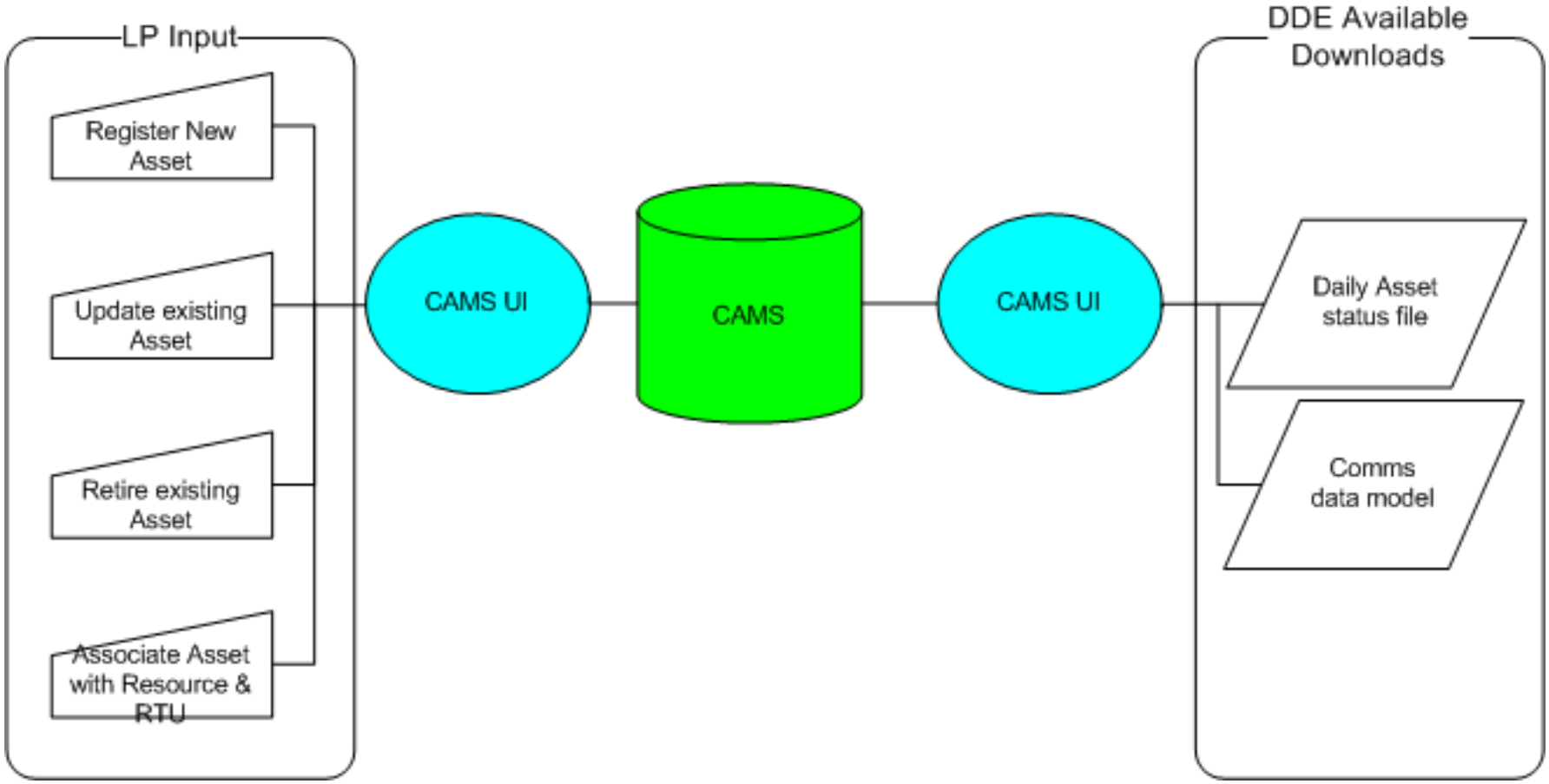
NOTE

ISONE will support DNP3.0 Secure Authentication (object 120) via the CFE as soon as RTU vendors support the emerging DNP specification in this area. **RTU owners should work with vendors that are committed to implement this important security feature.**

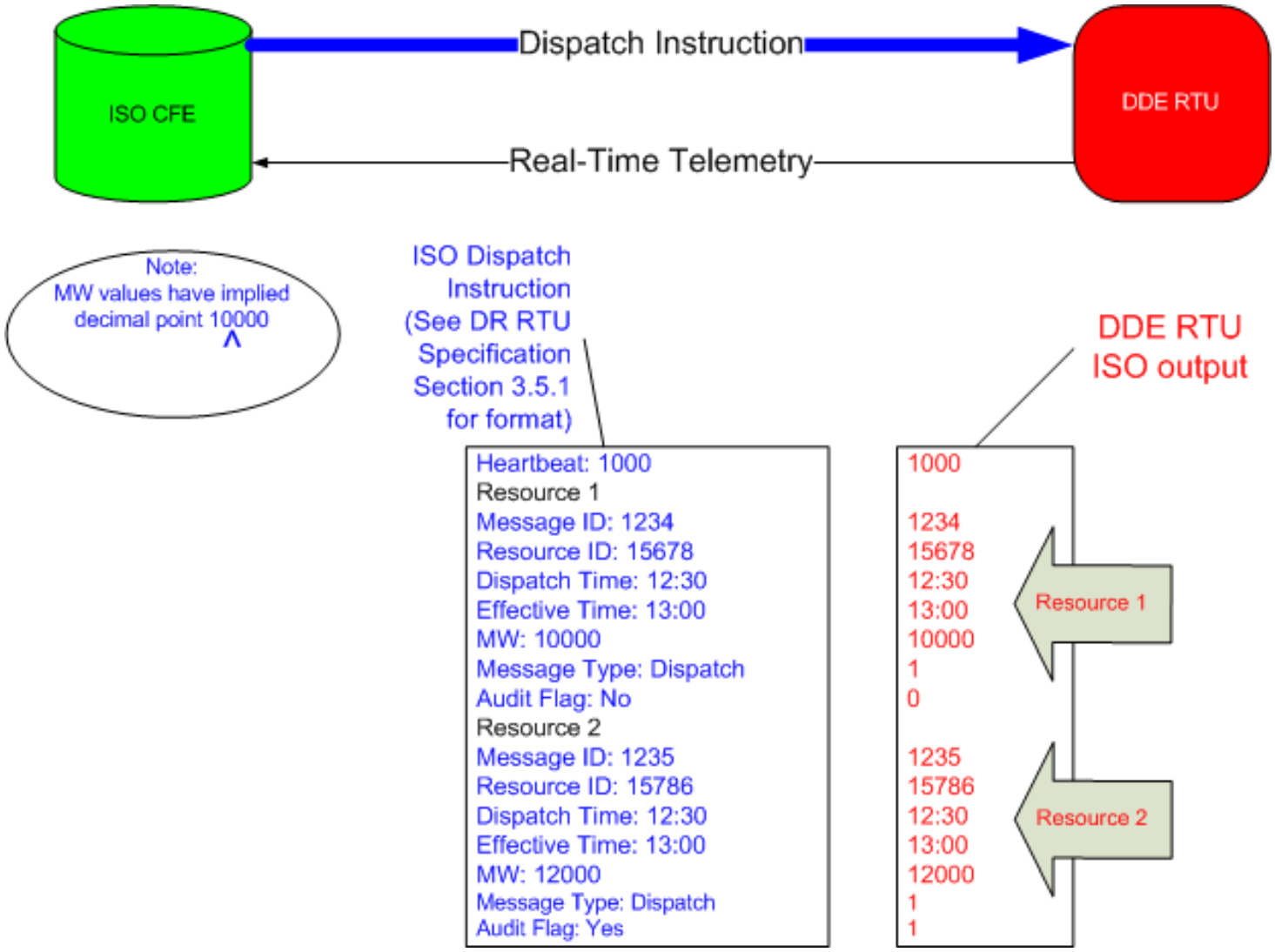
Baseline Telemetry System



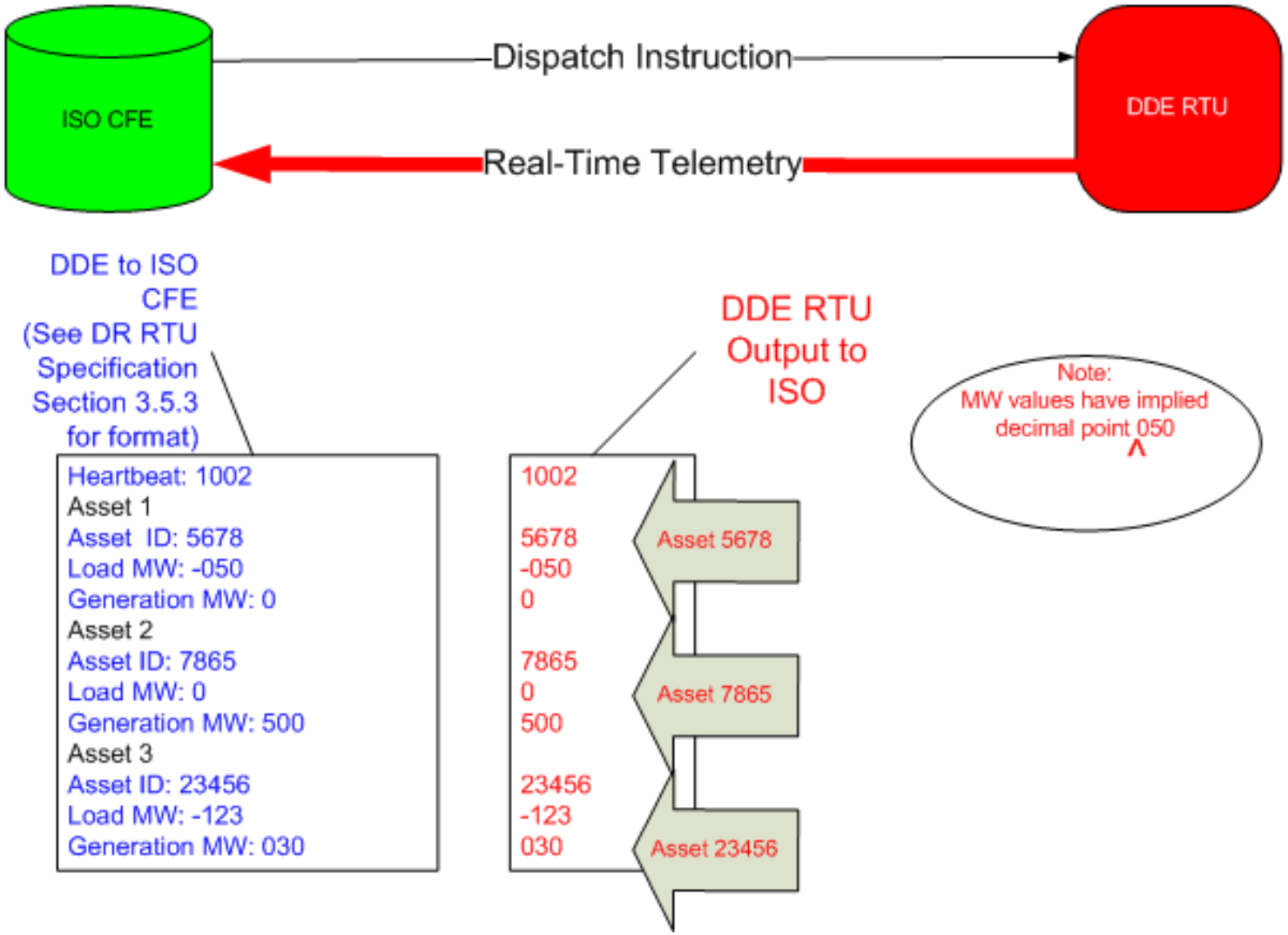
Asset To Resource Data



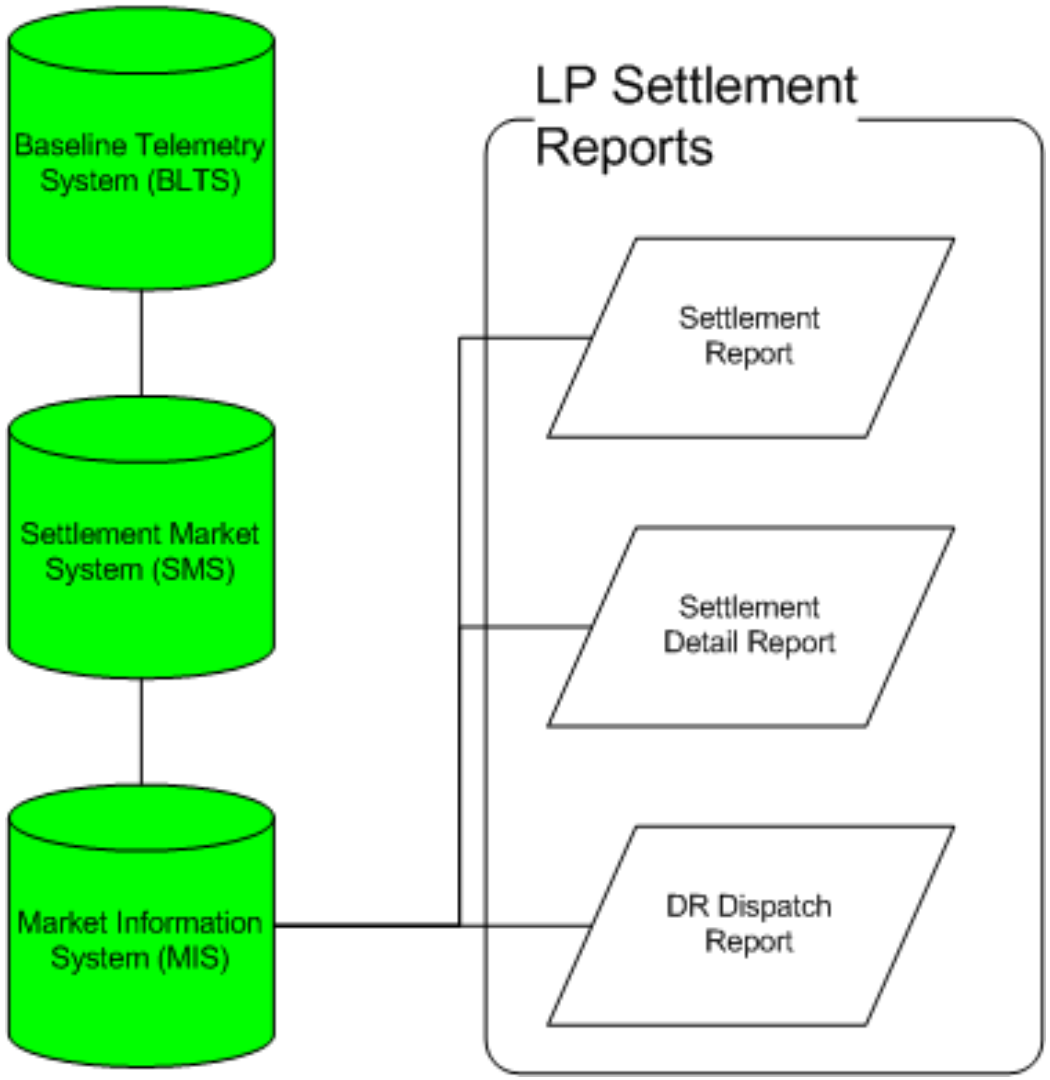
Real-Time Dispatch Instruction



Real-Time Telemetry - Assets

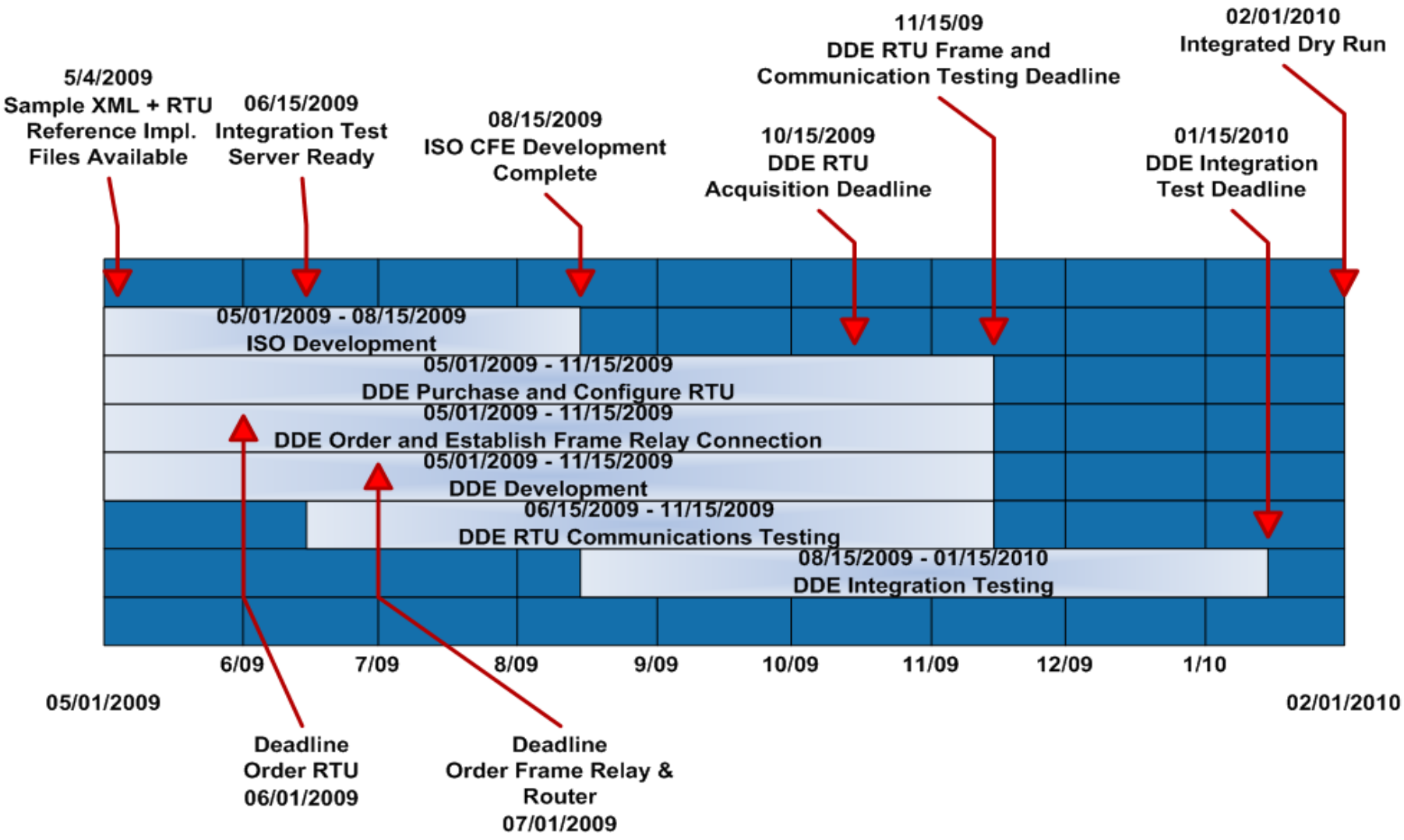


Settlement Reports



RTU Communications Implementation Timeline

As of January 12, 2010



Implementation Process Summary

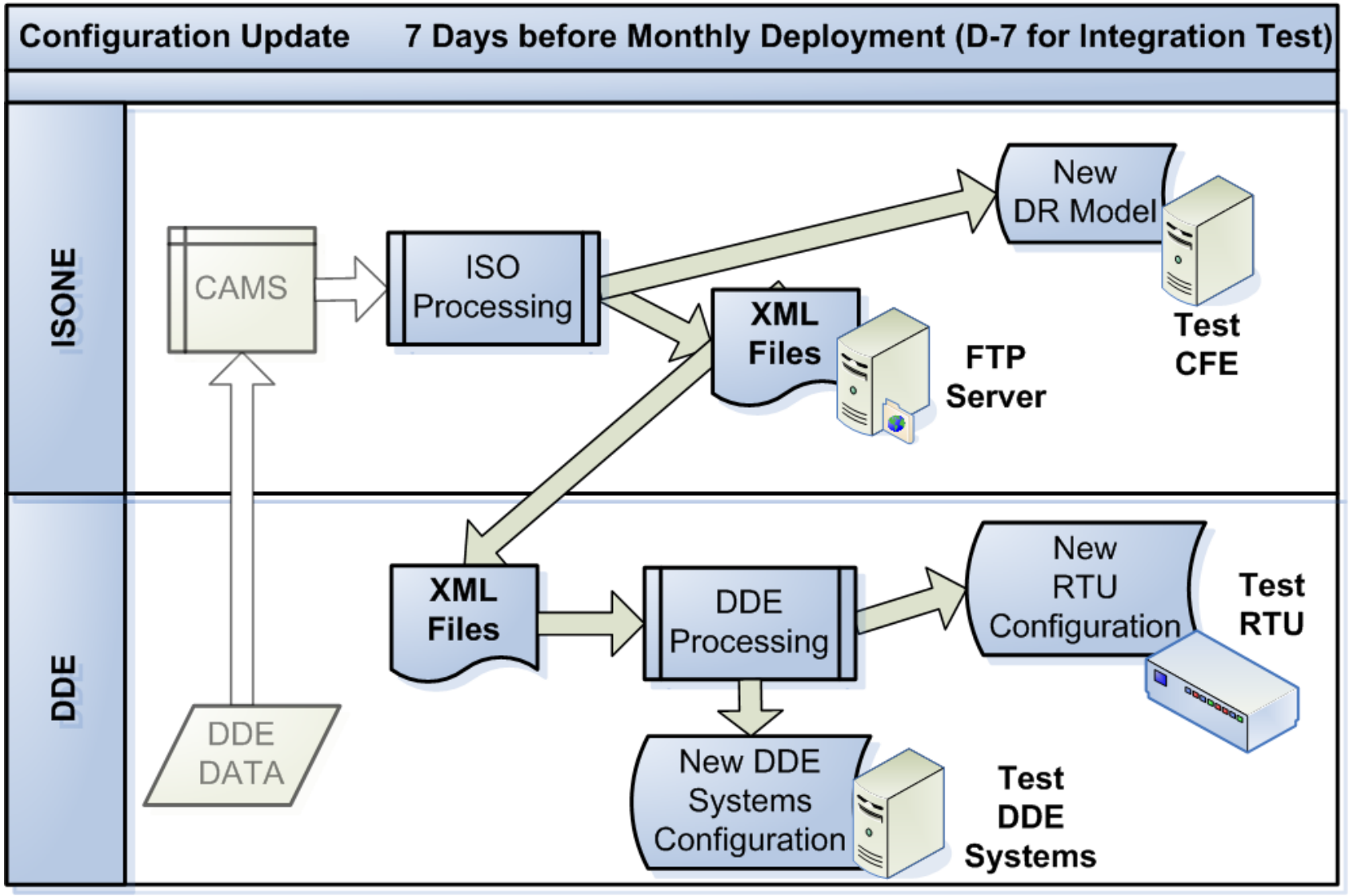
As of January 12, 2010

Step	Description	Begin	Complete
1	Contact ISONE Customer Service	Now	07/01/2009
2	Order RTU	Now	06/01/2009
3	Site Preparation	Now	11/15/2009
4	Establish Communications (Frame)	Now	11/15/2009
5	Participant Acquires RTU	06/01/2009	10/15/2009
6	Development and RTU Integration	Now	11/15/2009
7	RTU Configuration	After 5	11/15/2009
8	RTU Basic Testing	After 4 and 7	11/15/2009
9	RTU Integration Testing	08/15/09	01/15/2010
10	DDE RTU Integration Final Testing	2/1/10	4/1/2010
11	RTU Activation	After 9	5/15/2010

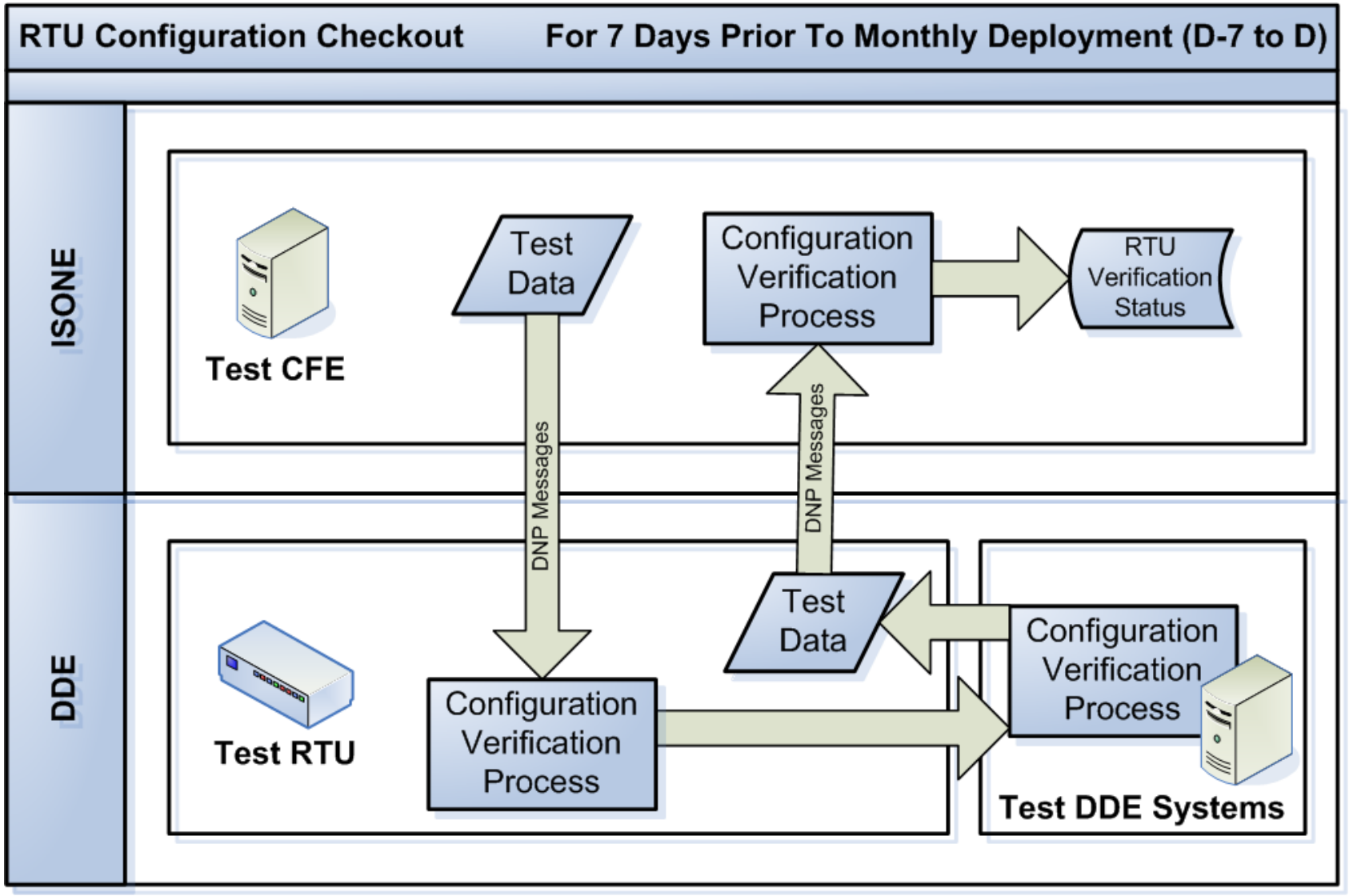
DDE RTU Integration Test #1 Schedule

Date	Day	Event Description
02/01 10:00	D-7	Update Released for Test
		CFE Test Server Updated
		XML Files Sent to DDE
02/01 thru 02/08	D-7 thru D	RTU Verification Period
		DDE Updates Test RTU
		Verification of Test RTU Config
02/08 10:00	D	Update of Production CFE/RTUs
		ISO Updates Production CFE
		DDE Updates Production RTU
02/10 10:00	D+2	Dispatch Simulation
		ISO Simulates Dispatch
		DDE Simulates Data (optional)
02/11 10:00	D+3	Audit Simulation
		ISO Simulates Audit
		DDE Simulates Data (optional)

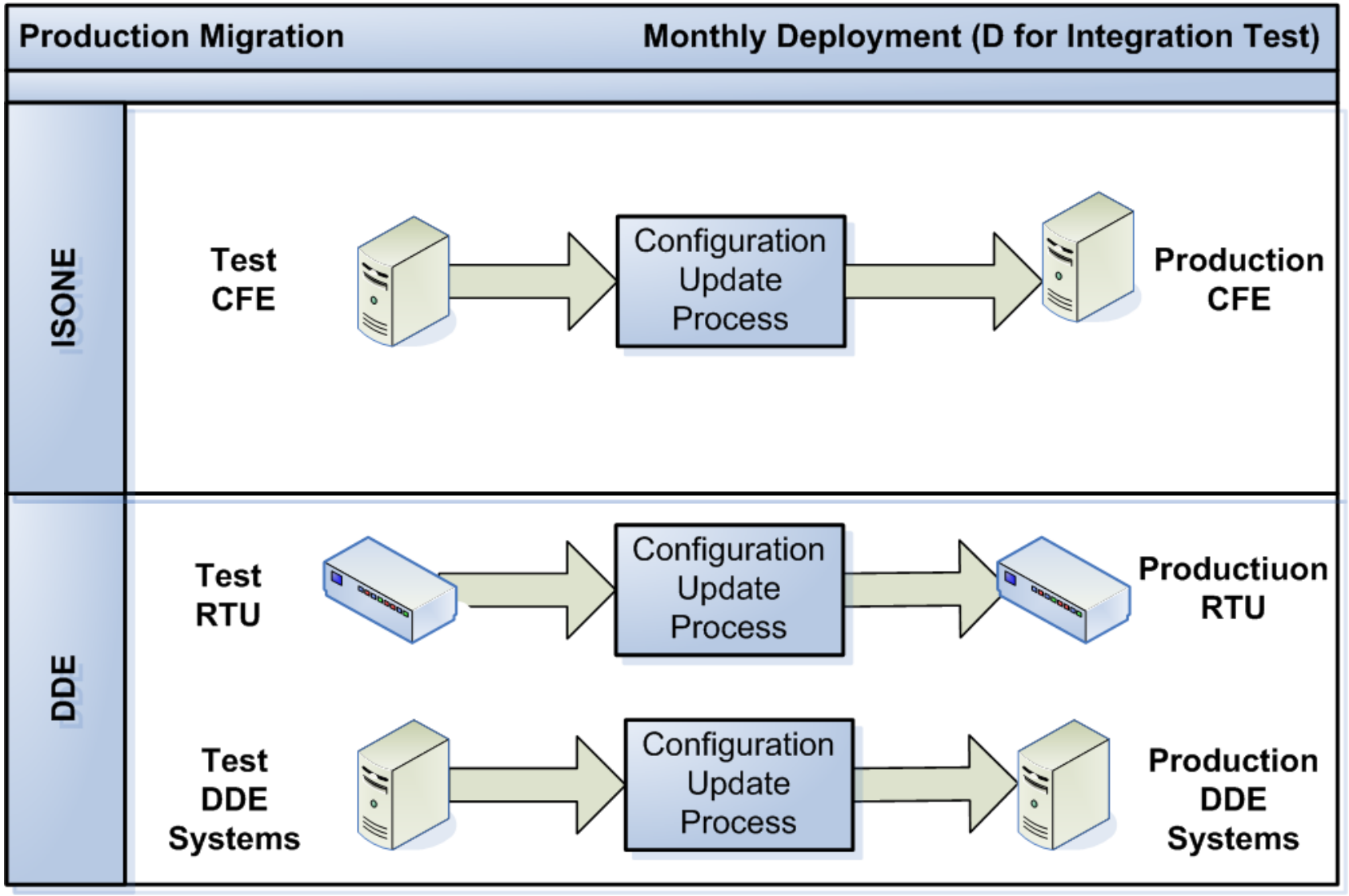
Integration Test Process 1of4



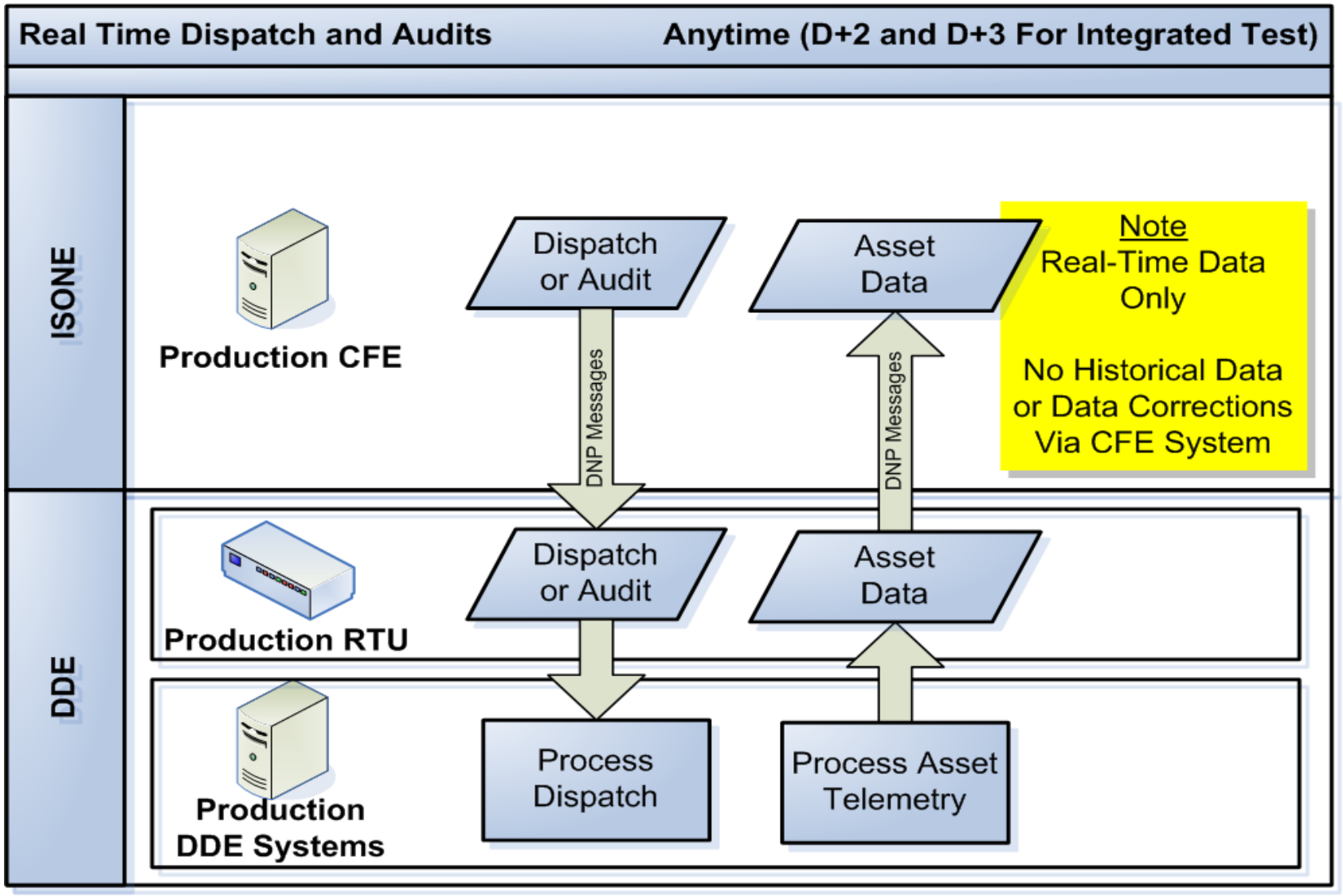
Integration Test Process 2of4



Integration Test Process 3of4



Integration Test Process 4of4



RTU Communications Testing Status

As of April 14, 2010

DDE	Frame Relay Installed	Router Installed	RTU Installed	Passed Test Mode	Passed Live Mode	Passed Dispatch	Passed Telemetry
1	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Yes	Yes	Yes	Yes	Yes	Yes	No
6	Yes	Yes	Yes	Yes	Yes	Yes	No
7	Yes	Yes	Yes	Yes	Yes	Yes	No
8	Yes	Yes	Yes	Yes	No	No	Yes
9	Yes	Yes	Yes	Yes	No	No	No

DR Market User Interface (DR MUI)

		Interactive GUI for data entry	XML Upload/ Download
1	Upload/Download of Hourly Resource Availability	X	X
2	Upload/Download of Resource Monthly Maximum Demand Reduction	X	X
3	Download of 5-Minute Asset	X	X
4	Upload of 5-Minute Asset Telemetry Corrections	X	X
5	Download of 2200 Hours Demand Resource Forecast	X	X
6	Download of Current Demand Resource Forecast	X	X
7	Download of Current Asset Baselines	X	X

DR RTU Specification Latest Version as of 04/30/2009

Dispatch Zones Under FCM

Load Zone	Dispatch Zone	Nodes
CT	Eastern CT	35
	Northern CT	25
	Norwalk - Stamford	34
	Western CT	125
ME	Bangor Hydro	24
	Maine	82
	Portland Maine	34
NEMA	Boston	76
	North Shore	36
NH	New Hampshire	80
	Seacoast	13
RI	Rhode Island	57
SEMA	Lower SEMA	33
	SEMA	81
VT	Northwest Vermont	44
	Vermont	14
WCMA	Central MA	38
	Springfield MA	33
	Western MA	82
Total		946

Dispatch Zones Under FCM