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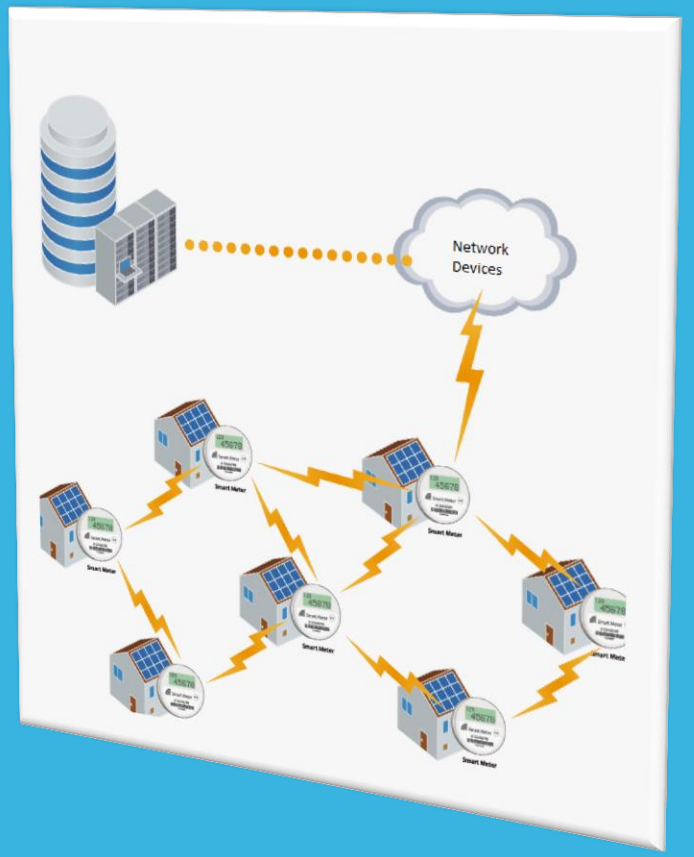
Growing Legacies

CESC LIMITED

AMI – A JOURNEY FROM THEORY TO REALITY

BY : SUSMITA SEN



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Choice of Technology

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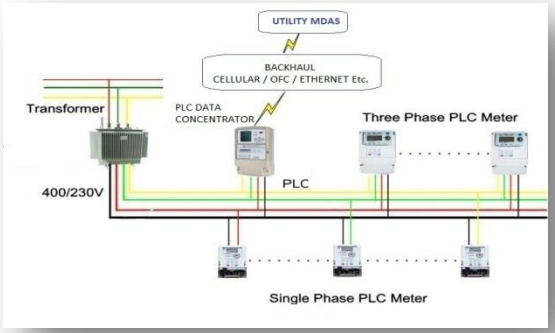
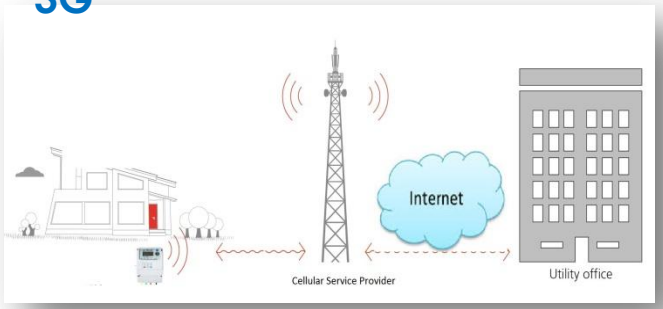
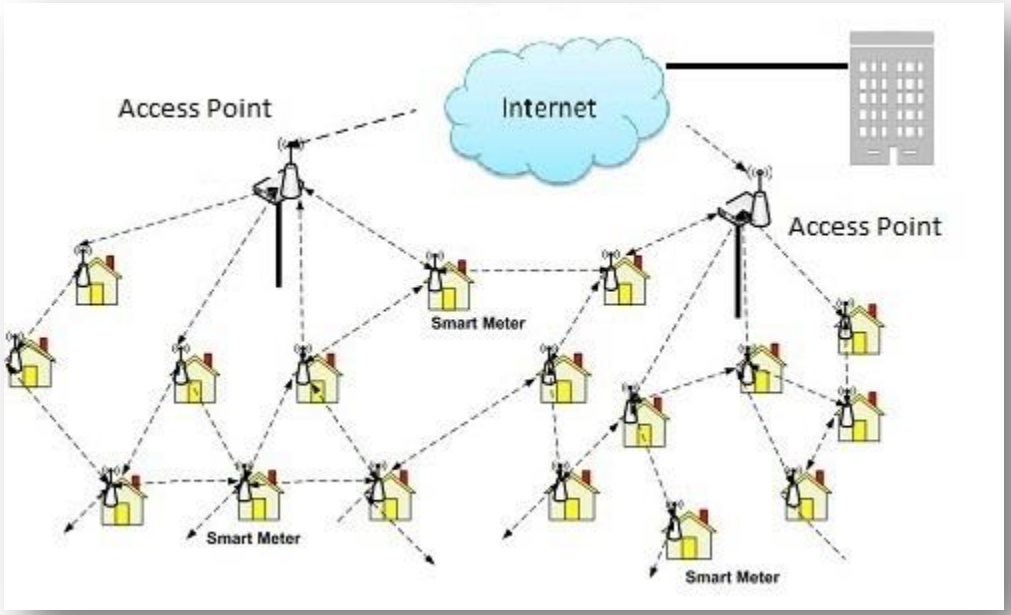
Power Line Communication



Point to Point GPRS / 3G

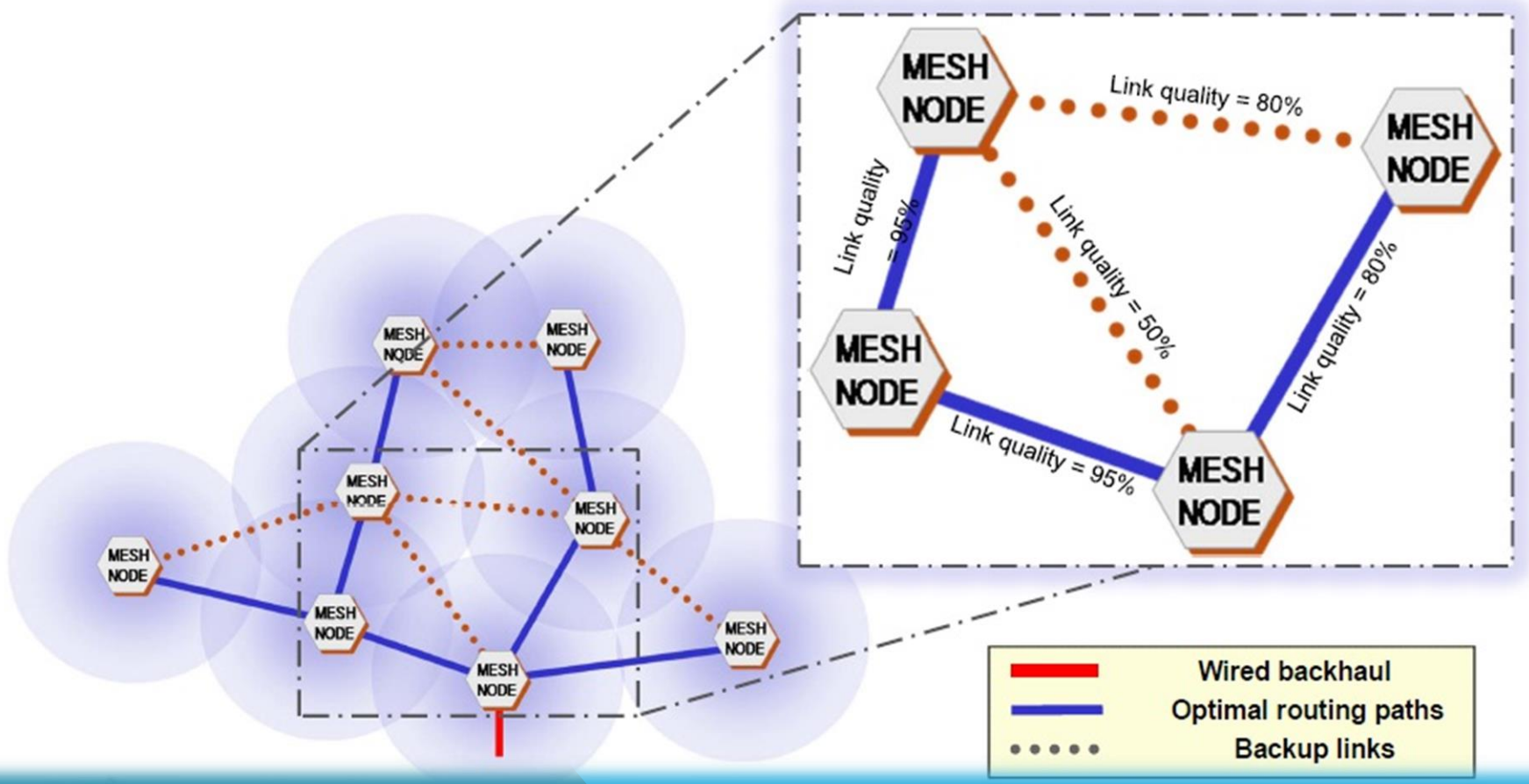




RF Mesh Communication

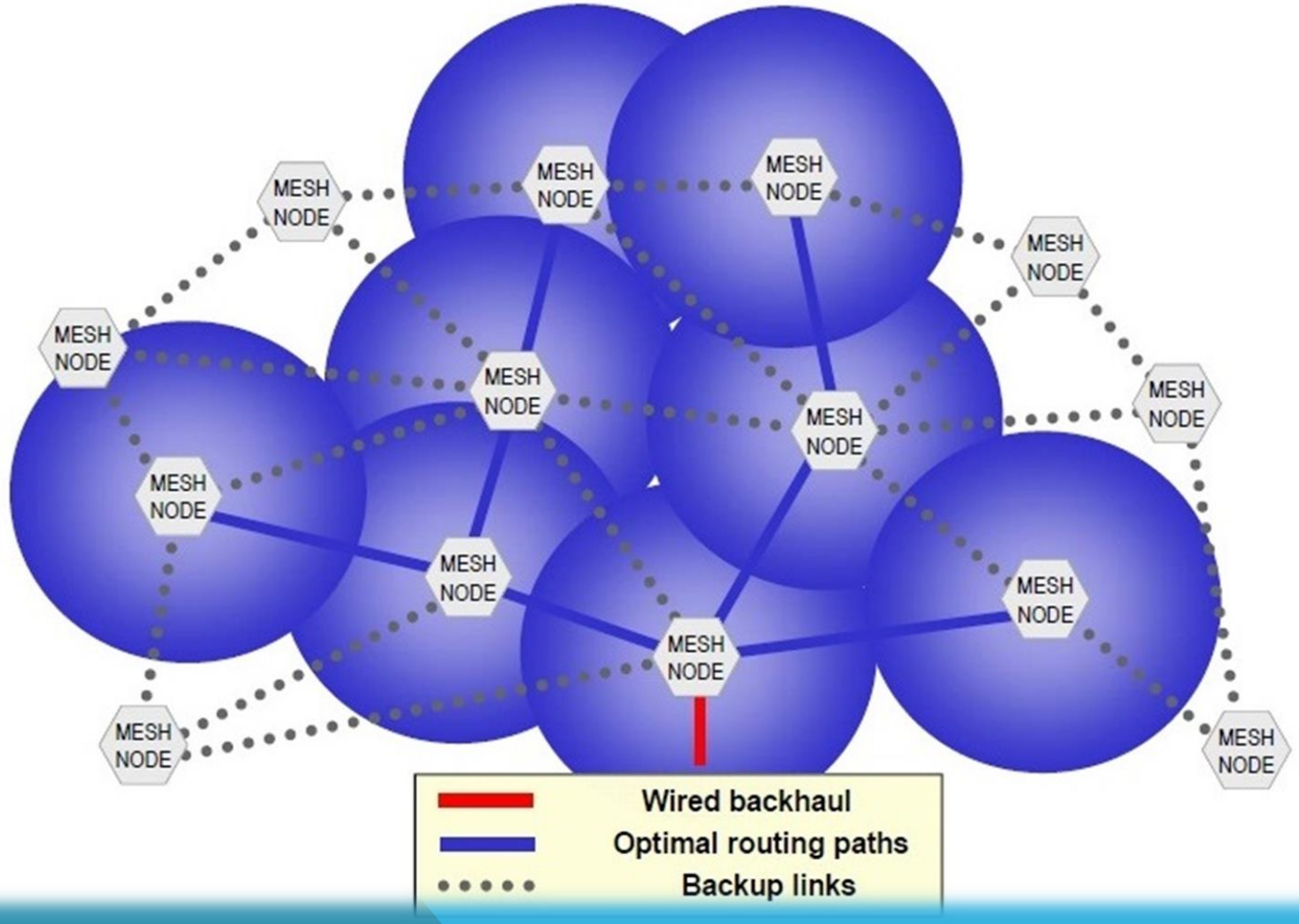
Optimal path selection

Optimal path is determined by end-to-end quality, not hops.



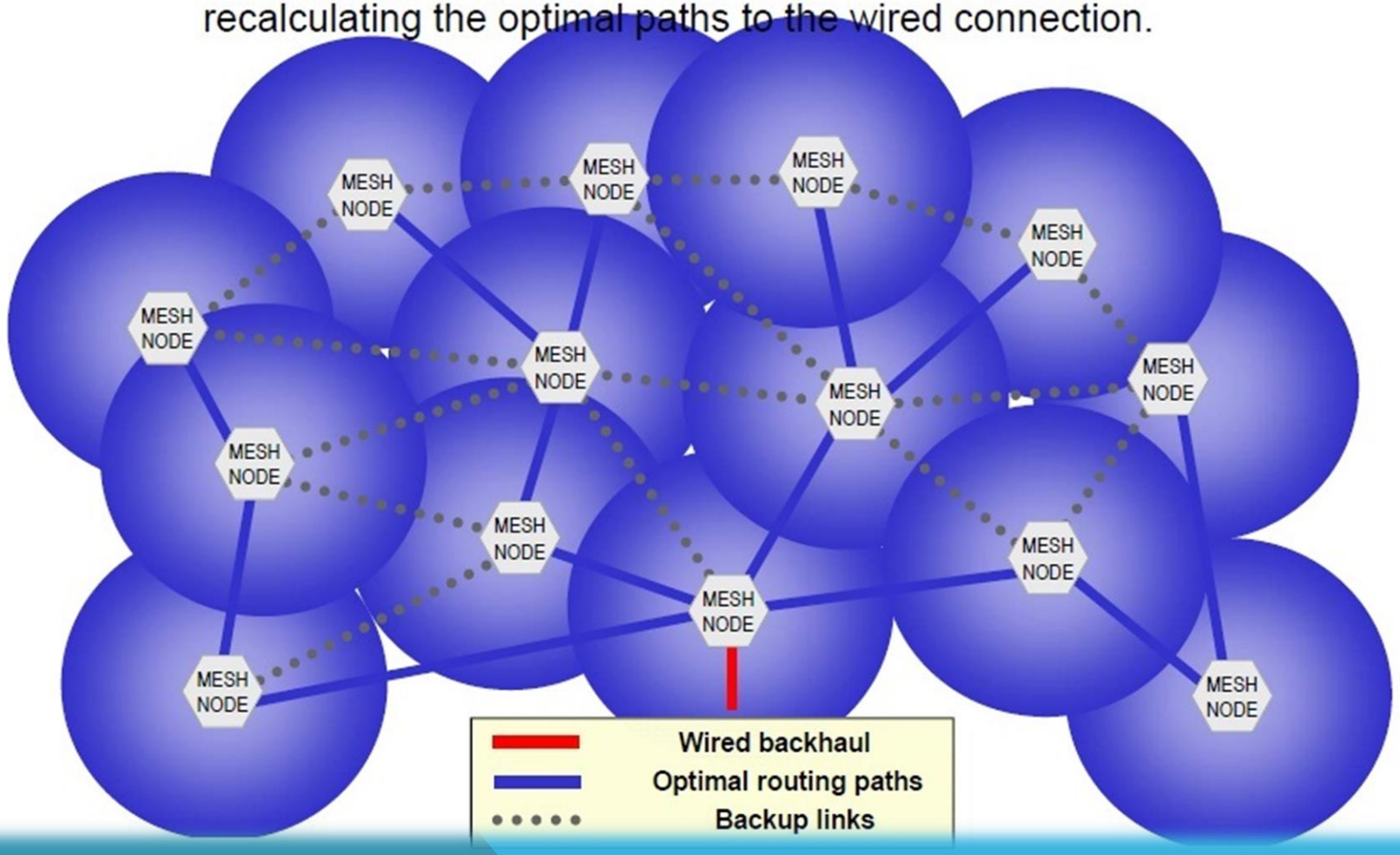
Auto-discovery

Newly added routers participate in auto-discovery,



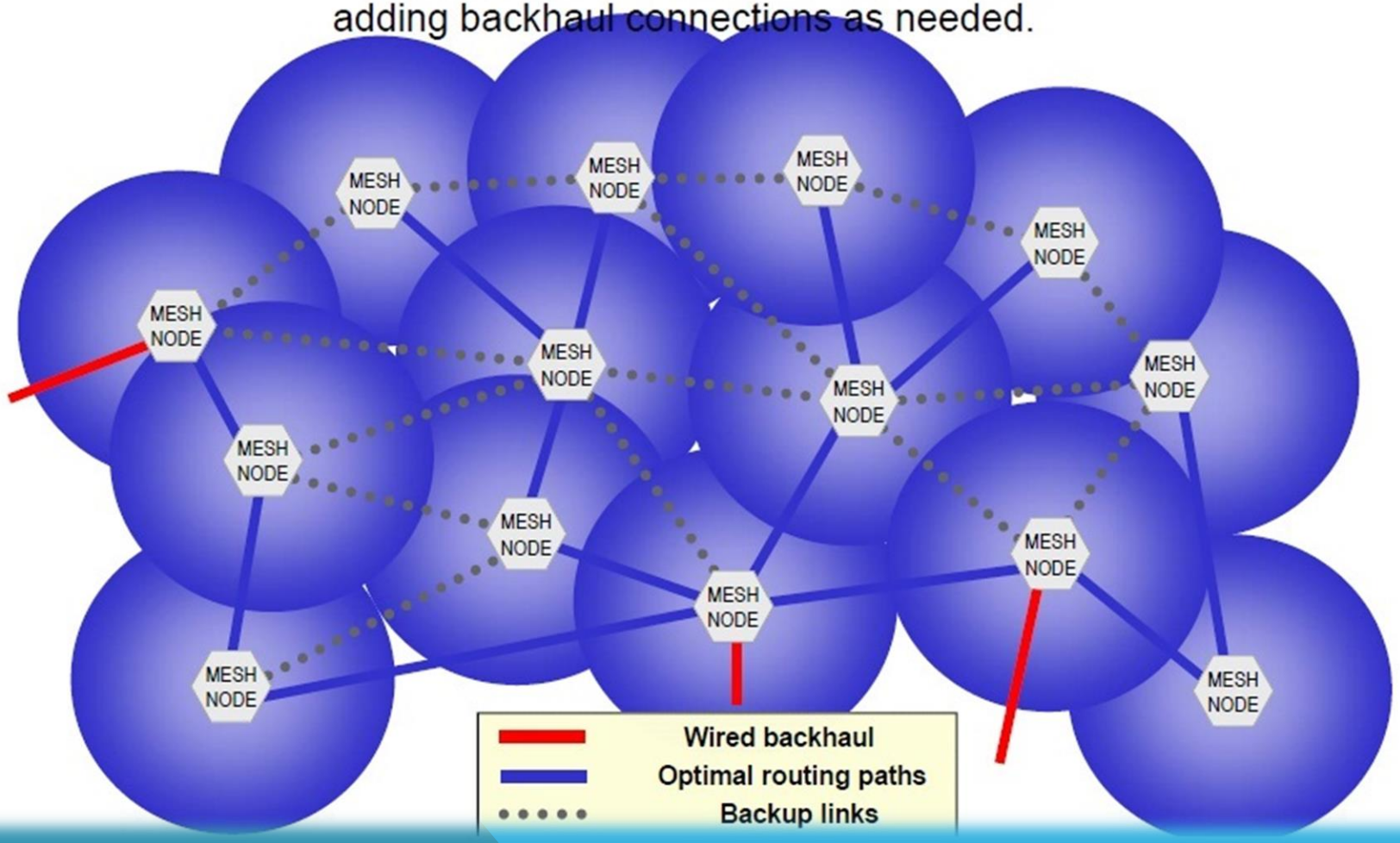
Optimal path recalculation

Newly added routers participate in auto-discovery, recalculating the optimal paths to the wired connection.



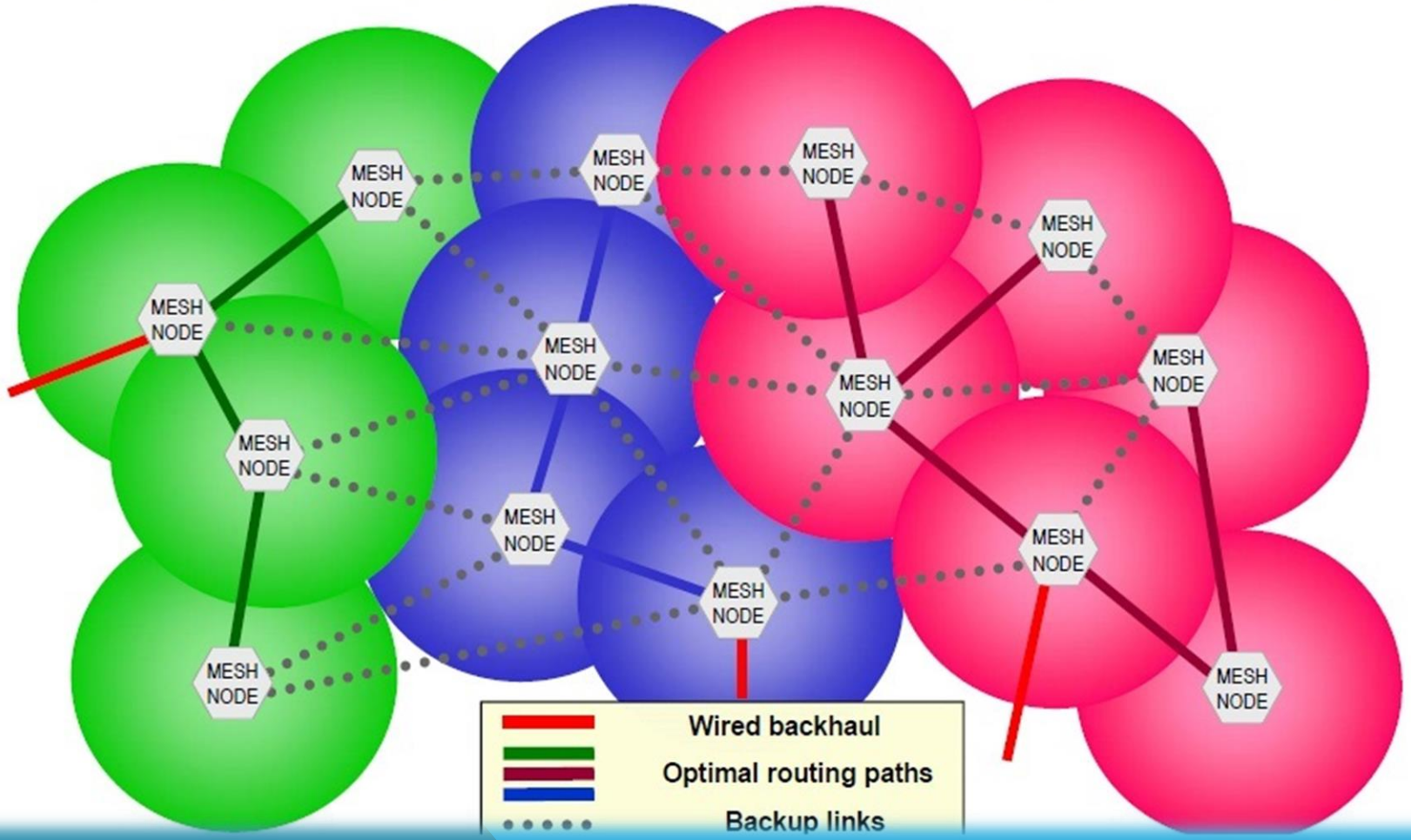
Adding backhaul adds capacity

Capacity can be dynamically upgraded by adding backhaul connections as needed.

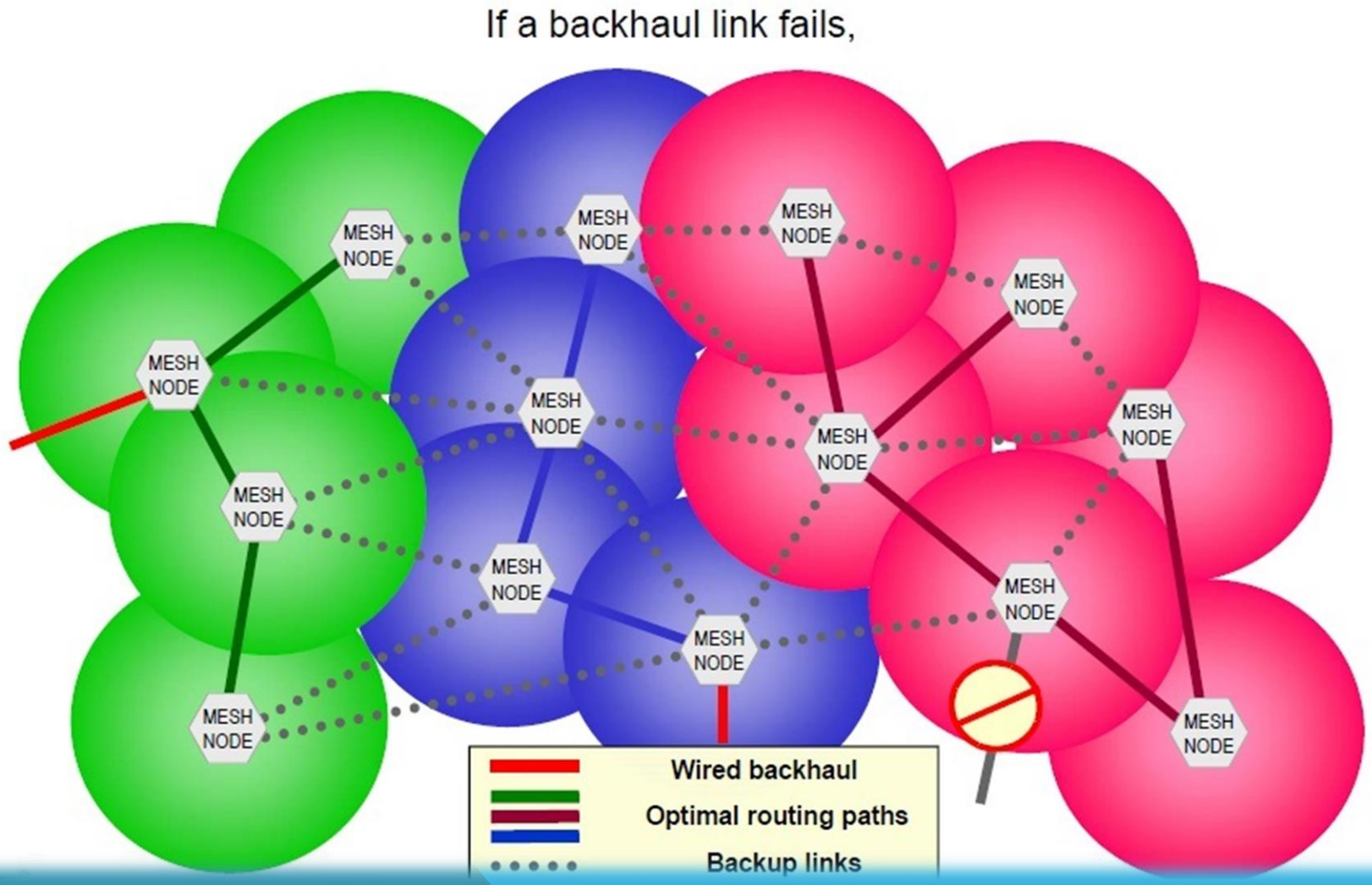


Automatic reclustering

Network automatically reclusters to take advantage of additional backhaul.

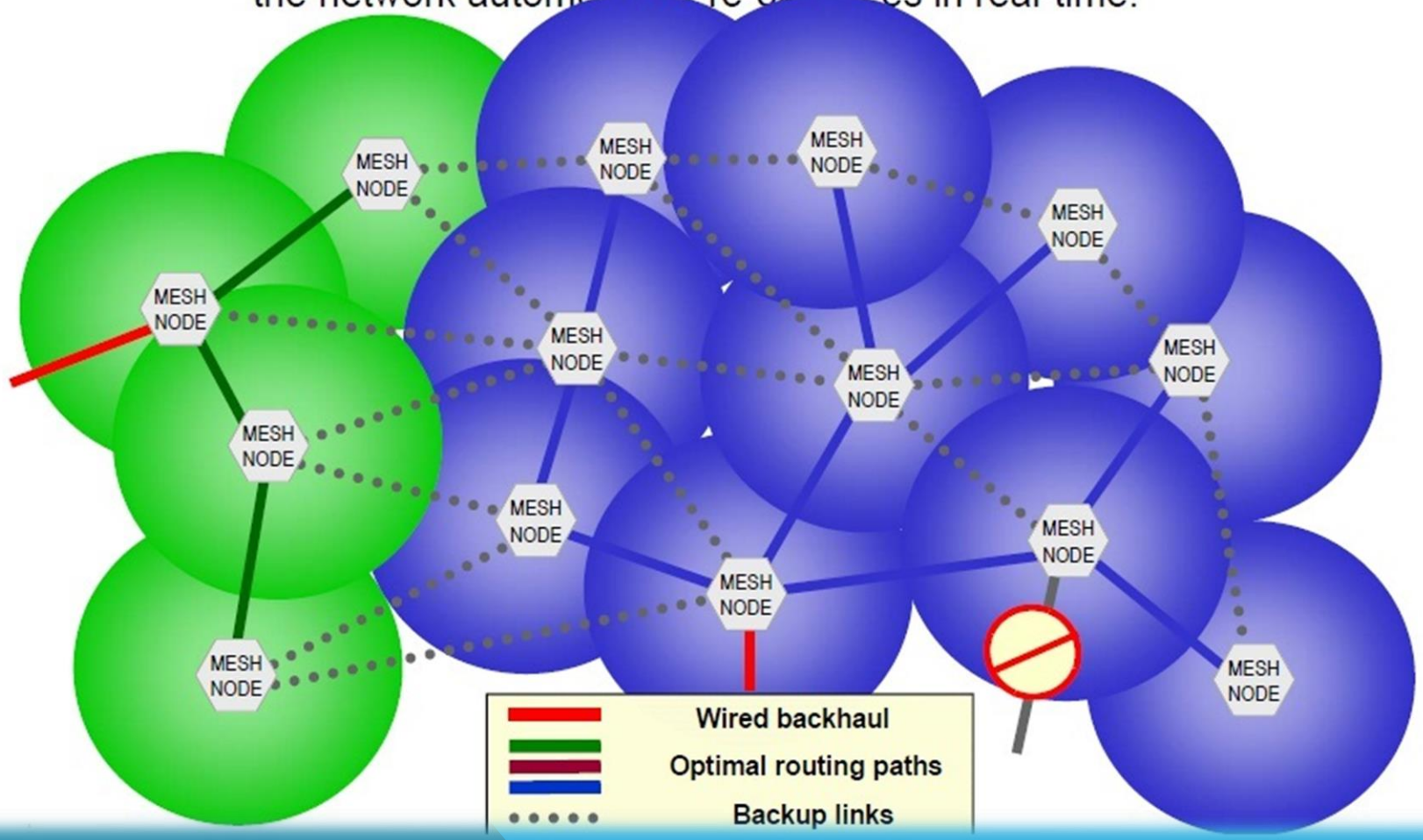


Self-healing



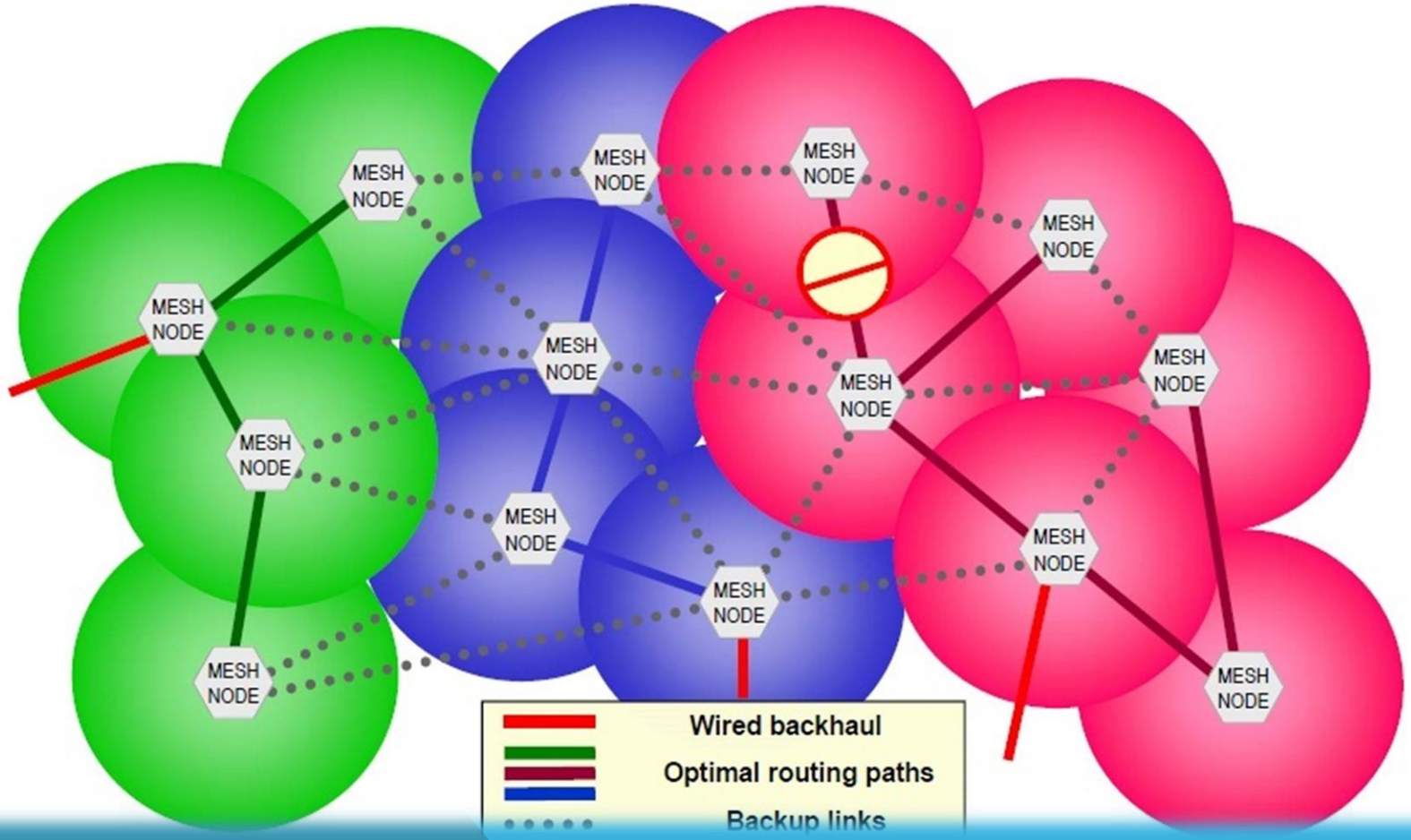
Reconfigure around backhaul failure

If a backhaul link fails,
the network automatically re-optimizes in real-time.



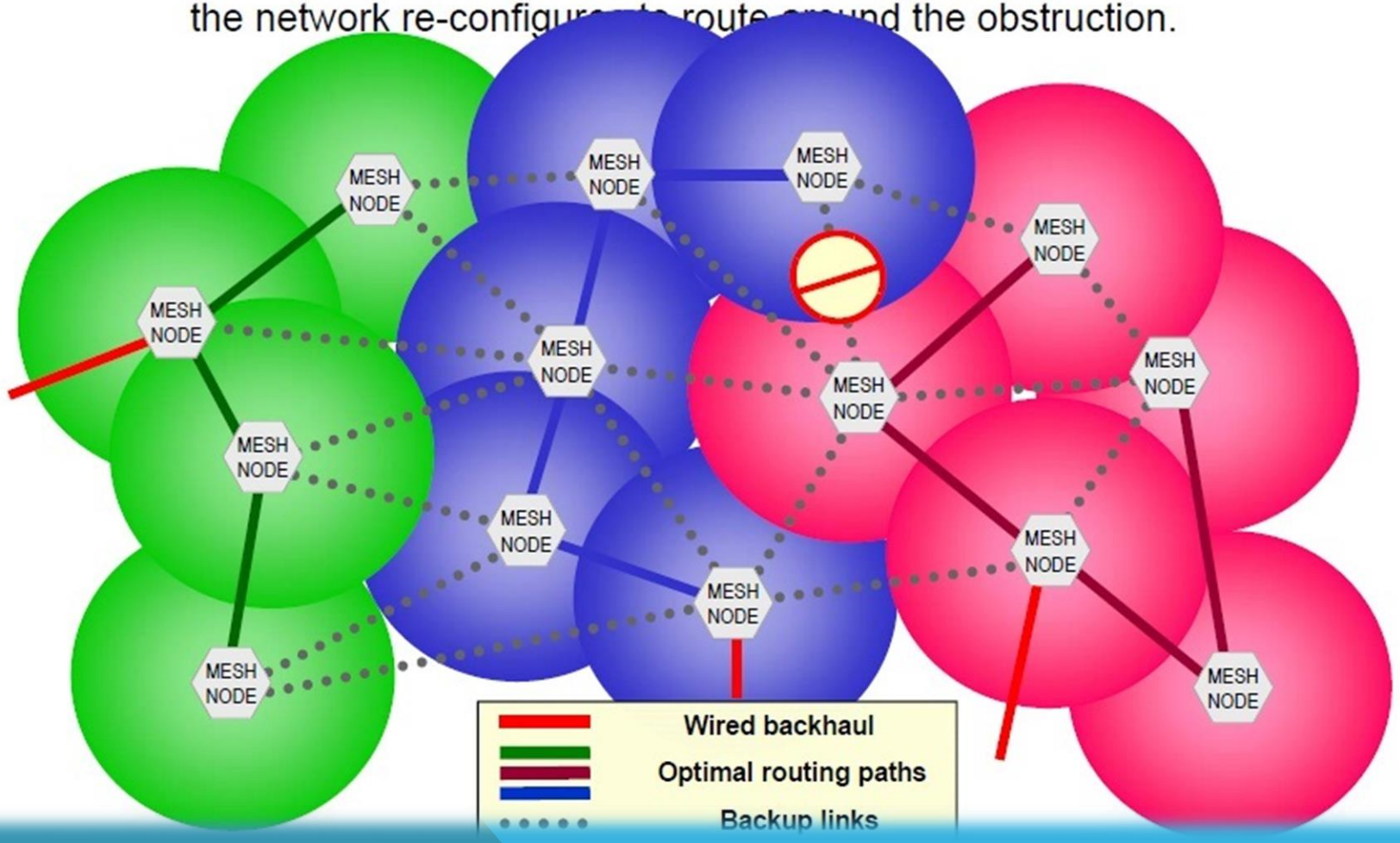
Self-healing

Similarly, if interference causes a path to fail,



Reconfigure around interference

Similarly, if interference causes a path to fail,
the network re-configures to route around the obstruction.



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One Platform: Open, Scalable, Adaptable

So You Have the Power and Flexibility to do Everything

Silver Spring NETWORKS

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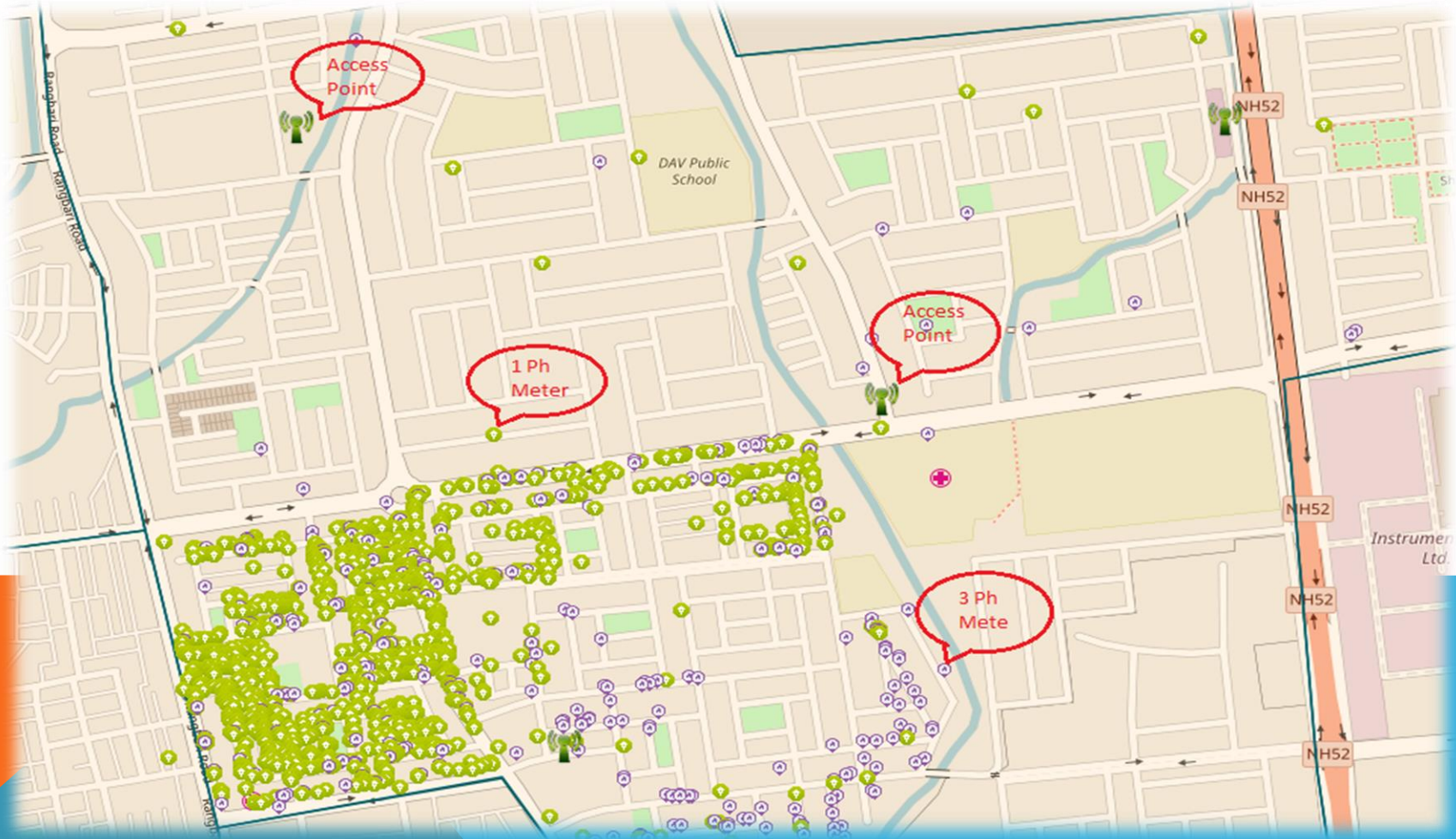
TECHNOLOGY

COMMUNICATION NETWORK : Meter Vendor Agnostic RF Mesh (865 – 867 MHz)

SMART METER : IS16444



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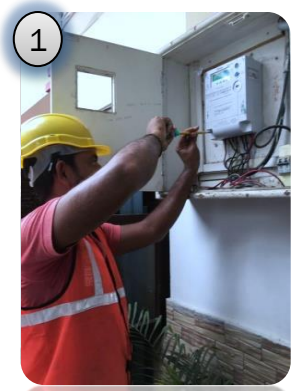
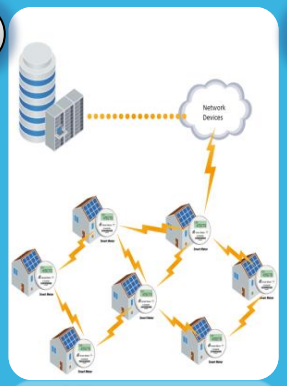
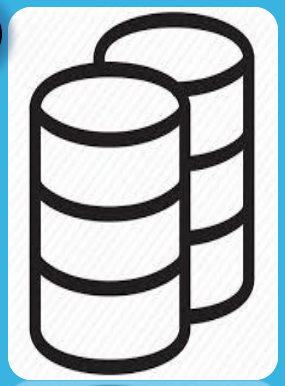
Meter Deployment to Data Retention - The Process Chain







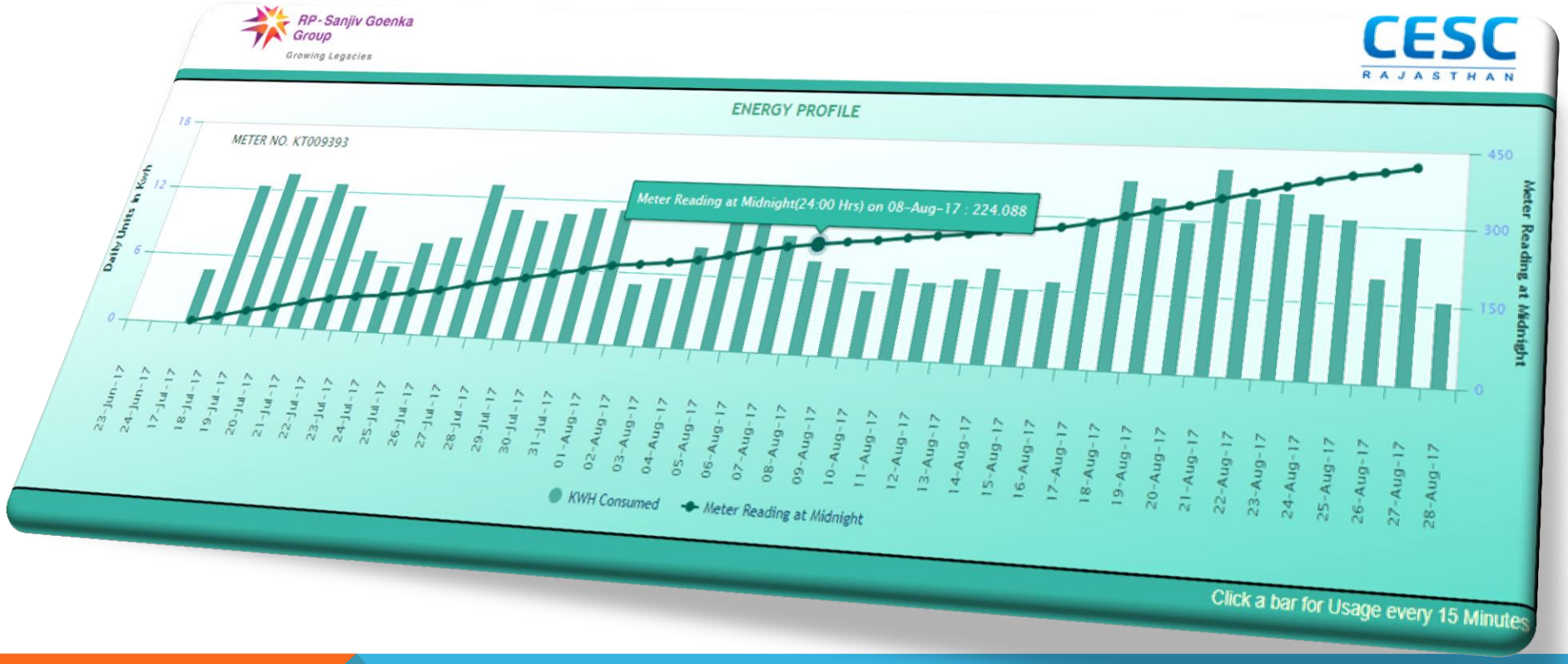
Meter Deployment

1. Installation Team Deploying Meter At Consumers' Premises
2. Installation Data Being Forwarded to CESC Middleware Application via Web-App
3. CESC Middleware Application Validates data , Updates Consumer Record & Forwards it to SSN System
4. SSN System Starts Receiving Meter Data through Network Devices & Forwards it to CESC Middleware Application
5. CESC Middleware Application Retains / Uses Meter Reading & Other Data for Integration with Utility System Applications

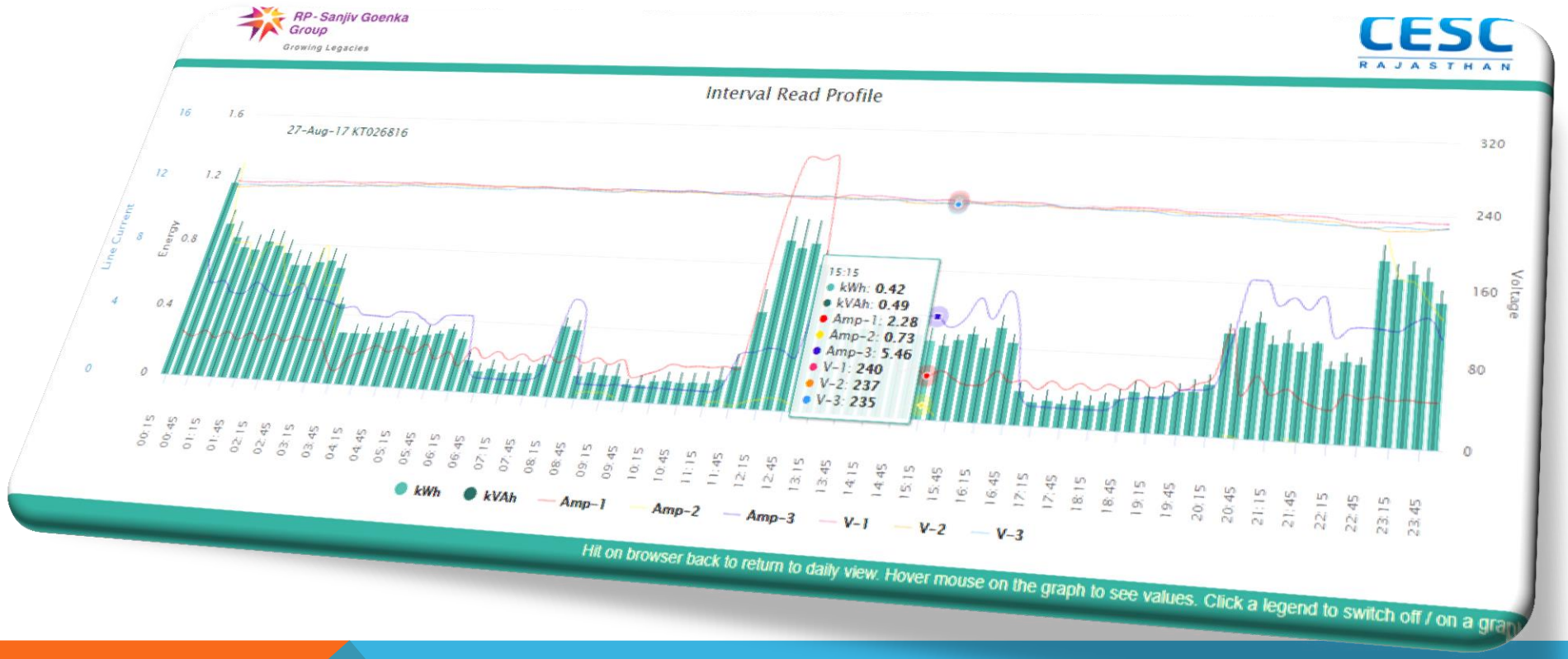
Data to Utility Applications

A Cluster of Smart Meters as Seen in Area Map during Ongoing Deployment

A Consumer's Daily Energy Profile Data In Utility Application
(Available to Consumers Also)



15-Minute Profile Data In Utility Application



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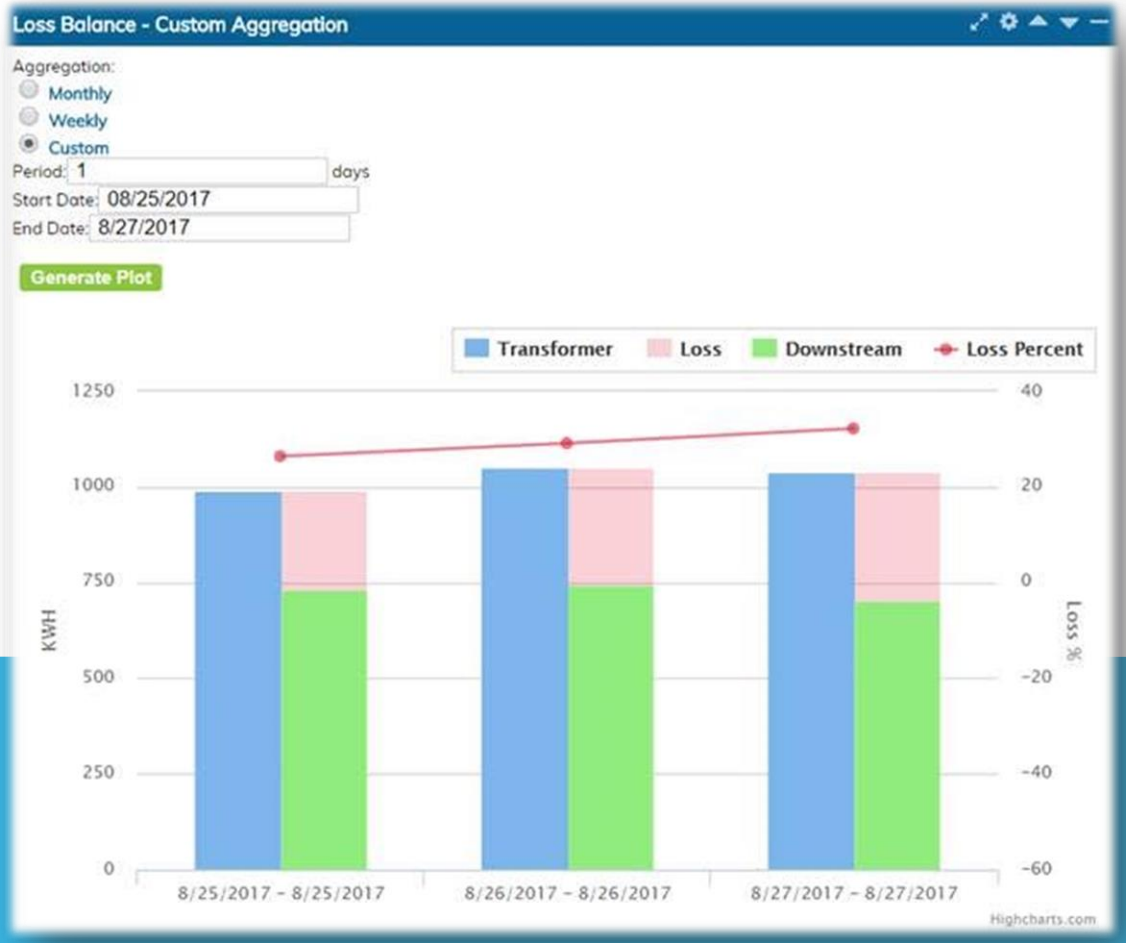
Energy Auditing Of Distribution Transformers

Audit Of 15-Minute Interval Energy

Consumers are Electrically Indexed Through Synchronized Outage Restoration Method



Power Outage Detection Module – Proactive Restoration of service

Online Outage Monitoring system is enabling O&M team to respond proactively to Power Outages even before the Consumer reports outage to the utility.

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Kota Electricity Distribution Limited
(A Franchisee of JVVNL)

CESC RAJASTHAN

SSN NIC SMART METER OUTAGE MONITOR (Last 24 Hrs Outages & 2 Hrs Restorations)

NAME ADDRESS	METER NO	KNO	OUTAGE FROM	OUTAGE TO	DURATION
RELIANCE JIO INFOCOME M/S LTD ON DIVIDER OPPOSITE VISHNU MEDICAL STORE KOTA MAHAVEER NAGAR II KOTA	KT027145	210722019839	2017-08-28 18:31:40	Ongoing	30
LALIT KUMAR 3 A 10 TALWANDI KOTA A-II KOTA	KT027118	210722017021	2017-08-28 18:31:40	Ongoing	30
PRITAM PAL SINGH 3-A-13 , TALWANDI KO A-II KOTA 0	KT014338	210722010738	2017-08-28 18:31:40	Ongoing	30
LALIT KUMAR JAIN S/O BASANTI LAL 3-A-10 TALWANDI KOTA (M CORP) TALWANDI KOTA SOUTH	KT027279	210722019064	2017-08-28 18:31:40	Ongoing	30
DHEMENDRA AGARWAL 3A15 TALWANDI A-II KOTA	KT014340	210722013699	2017-08-28 18:31:40	Ongoing	30
NEELAM BATALA PAREM BATALA 3-A-1 TALWANDI KOTA NA A-II KOTA	KT027281	210722004399	2017-08-28 18:31:40	Ongoing	30
TAHIR HUSAIN ABDUL RAJAAK SH.-160, RAJEEV PLAZA NA AEN (A-II) KOTA	KT014566	210722017612	-	2017-08-28 19:05:47	-
TAHIR HUSAIN ABDUL RAJAAK SH.-160, RAJEEV PLAZA NA AEN (A-II) KOTA	KT014566	210722017612	-	2017-08-28 18:56:29	-
SUSHEEL KUMAR PANDEY AND ROLI PANDEY FLAT NO 403 AKANSHA SPENDOUR KOTA 324005 PLOT NO 597 A TALWANDI KOTA	KT027185	210722022371	2017-08-28 18:26:01	2017-08-28 18:43:55	18
CHAND PRAKASH JAIN FLAT NO 202 , PLOT NO 597 A, KOTA 324005 AAKANSHA SPELENOR TALWANDI KOTA	KT027098	210722022361	-	2017-08-28 18:43:54	-
STM USHA NAMDEV RAM DAYAL - 482 A TALWANDI KOTA A-II KOTA	KT026839	210722002257	-	2017-08-28 18:43:54	-
RAMESH CHAND SHOP NO 14 (CORNER) TALWANDI KOTA 324005 TALWANDI KOTA	KT014799	210722022363	2017-08-28 18:26:17	2017-08-28 18:43:54	18
AJEET SINGH	KT027199	210722022370	2017-08-28 18:26:00	2017-08-28 18:43:54	18

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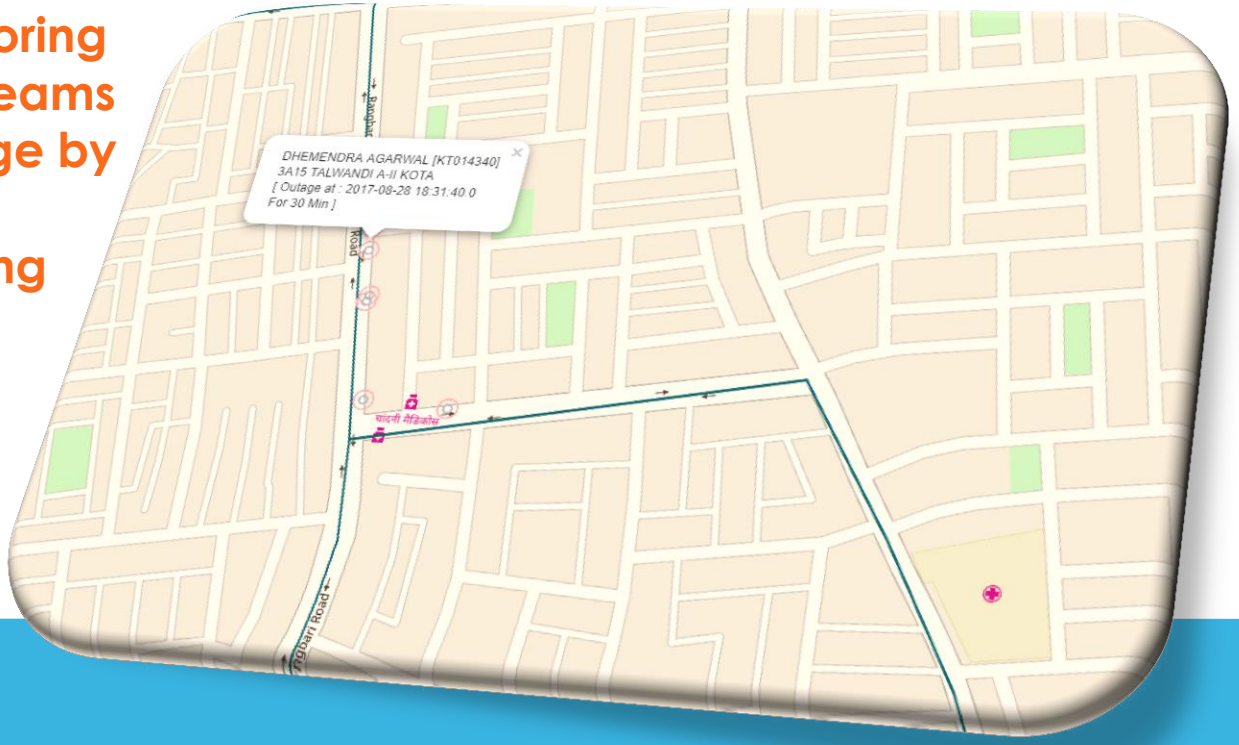
Power Outage Detection Module – Proactive Restoration of service

Geospatial Outage Monitoring system is allowing O&M teams to identify nature of outage by geographical reference - aiding better understanding and restoration plan.



Soft Switching to Net-Metering (Grid Connected Solar PV) Mode & vice versa

A mouse click will enable / disable Net-Metering mode in any Smart Meter OTA.

Respective consumers converted to net metering mode OTA.

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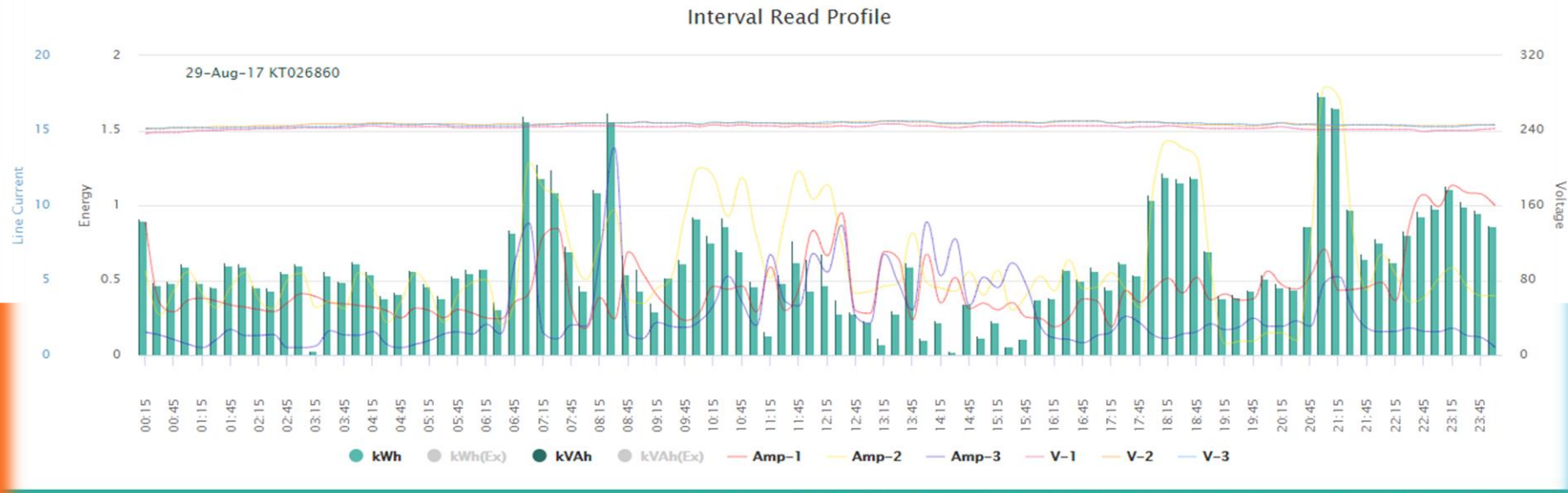

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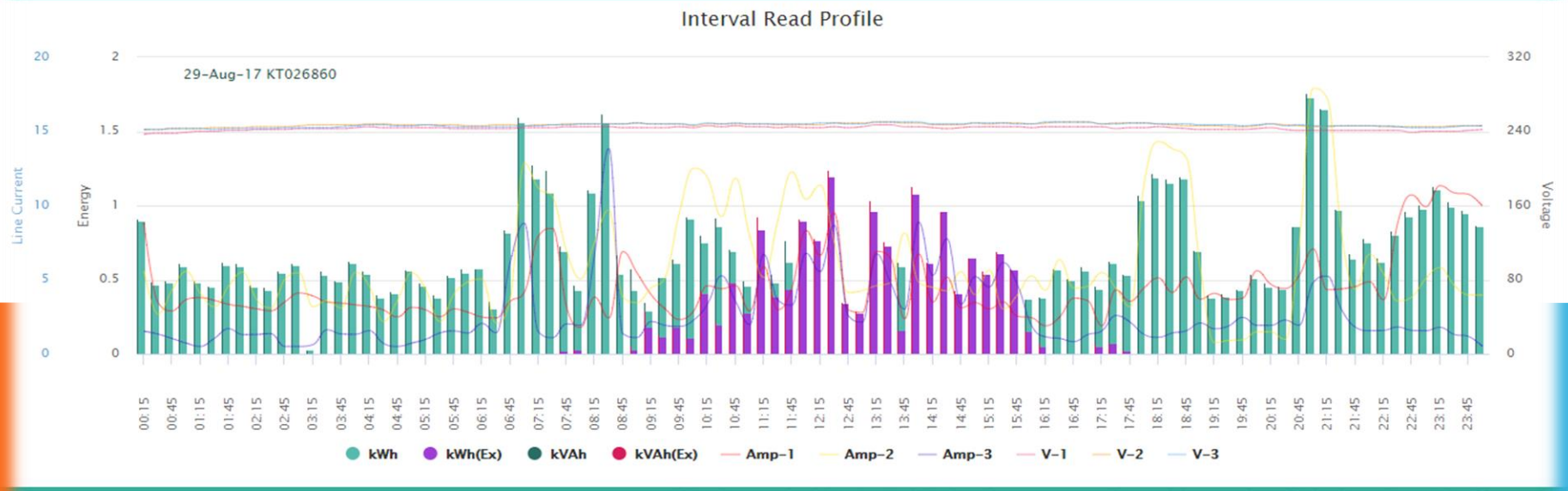

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Remote Conversion to Smart Pre-Pay Metering Mode & vice versa

A mouse click at back office will enable / disable Pre-Pay-Metering mode in any Smart Meter Over-The-Air With the help of relevant software application.

This software will add value by means of Tentative Balance Exhaustion Date , Low Balance Alert , Disconnection Warning , Usage trend etc. to the consumer.

Anti Theft Event Tracking Through Push Alerts

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CESC RAJASTHAN

SSN NIC SMART METER EVENTS RECORDED

CONSUMER NAME & ADDRESS	METER NO	KNO	EVENT TIME	EVENT
RAJ KUMAR GULAB CHAND JAIN - 550 A, TALWANDI PVT. KO A-II KOTA	KT027100	210722004192	15-08-2017 08:51:55	R_PHASE_MISSING_POTENTIAL_RESTORATION
RAJ KUMAR GULAB CHAND JAIN - 550 A, TALWANDI PVT. KO A-II KOTA	KT027100	210722004192	15-08-2017 08:51:55	Y_PHASE_MISSING_POTENTIAL_RESTORATION
RAJ KUMAR GULAB CHAND JAIN - 550 A, TALWANDI PVT. KO A-II KOTA	KT027100	210722004192	15-08-2017 08:47:01	R_PHASE_MISSING_POTENTIAL_OCCURENCE
RADHESHYAM CHITTORA MOHAN LAL - 2 M 13 TALWANDI KOTA A-II KOTA	KT027120	210722009756	15-08-2017 06:03:02	Y_PHASE_MISSING_POTENTIAL_OCCURENCE
RUKMA DEVI W/O RATAN LAL JI 3-D-20 , TALWANDI KOTA A-II KOTA	KT027105	210722001954	15-08-2017 05:32:35	Y_PHASE_MISSING_POTENTIAL_OCCURENCE
RADHESHYAM CHITTORA MOHAN LAL - 2 M 13 TALWANDI KOTA A-II KOTA	KT027120	210722009756	15-08-2017 04:17:44	Y_PHASE_MISSING_POTENTIAL_RESTORATION
RUKMA DEVI W/O RATAN LAL JI 3-D-20 , TALWANDI KOTA A-II KOTA	KT027105	210722001954	15-08-2017 04:14:02	Y_PHASE_MISSING_POTENTIAL_RESTORATION
RUKMA DEVI W/O RATAN LAL JI 3-D-20 , TALWANDI KOTA A-II KOTA	KT027105	210722001954	15-08-2017 02:14:42	Y_PHASE_MISSING_POTENTIAL_OCCURENCE
RADHESHYAM CHITTORA MOHAN LAL - 2 M 13 TALWANDI KOTA A-II KOTA	KT027120	210722009756	15-08-2017 02:05:01	Y_PHASE_MISSING_POTENTIAL_OCCURENCE
RADHESHYAM CHITTORA MOHAN LAL - 2 M 13 TALWANDI KOTA A-II KOTA	KT027120	210722009756	15-08-2017 00:28:12	Y_PHASE_MISSING_POTENTIAL_RESTORATION
RUKMA DEVI W/O RATAN LAL JI 3-D-20 , TALWANDI KOTA A-II KOTA	KT027105	210722001954	15-08-2017 00:25:17	Y_PHASE_MISSING_POTENTIAL_RESTORATION
MITHLESH 2 F 1 TALWANDI KOTA A-II KOTA	KT027215	210722000247	14-08-2017 18:41:22	R_PHASE_MISSING_POTENTIAL_RESTORATION
MITHLESH 2 F 1 TALWANDI KOTA A-II KOTA	KT027215	210722000247	14-08-2017 18:39:48	Y_PHASE_MISSING_POTENTIAL_RESTORATION
MITHLESH 2 F 1 TALWANDI KOTA A-II KOTA	KT027215	210722000247	14-08-2017 18:37:55	Y_PHASE_MISSING_POTENTIAL_OCCURENCE
MITHLESH 2 F 1 TALWANDI KOTA A-II KOTA	KT027215	210722000247	14-08-2017 18:37:55	R_PHASE_MISSING_POTENTIAL_OCCURENCE

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- OUTAGE MANAGEMENT
- VOLTAGE PROBLEM REDRESSAL
- BUDGETING CONSUMPTION
- NET METERING
- DTR LOSS CALCULATION

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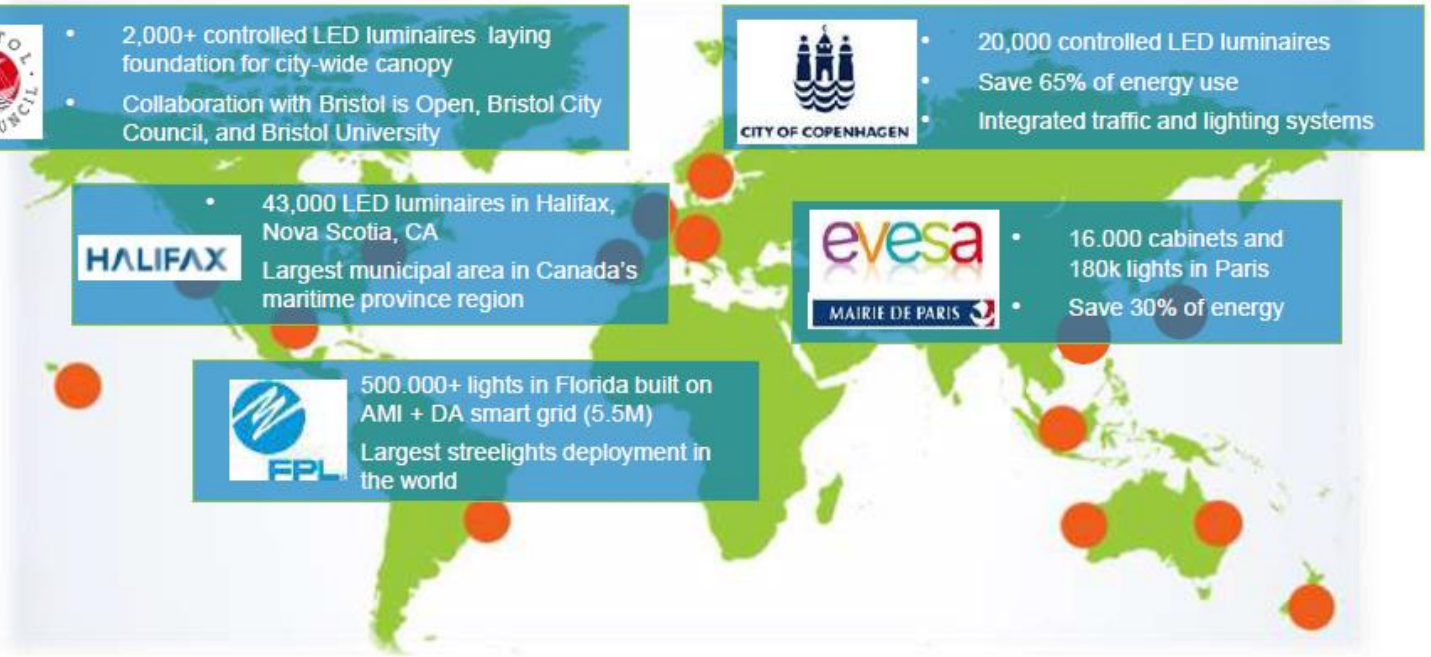
Live Demo

Silver Spring Footprints in Global Cities

Silver Spring NETWORKS



THE CONTROLS SOLUTION FOR OVER 3 MILLION STREET LIGHTS WORLDWIDE

FPL HALIFAX evesa MAIRIE DE PARIS City of Westminster BRISTOL CITY COUNCIL Glasgow CITY OF COPENHAGEN

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End Of Session

THANK YOU

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- High cost of devices & head end systems
- Integration of global network vendor with Indian meter manufacturers
- Data adopter development & testing by tri-party (Network/Meter/Utility)
- Data security & data privacy of consumers
- Social hindrance against smart meter installation
- Absence of network level interoperability
- Support teams residing at different time zones affects collaboration

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Multi Application Ready Canopy