RETAIL ENERGY CODE

Central Switching Service (CSS) Service Definition

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Technical Specification Document

Central Switching Service (CSS) Service Definition

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Change History

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0.1	TBD	Initial draft included in November 2019 Technical Specification Approach Consultation
0.2	TBD	Draft included in the Spring 2021 Switching Consultation
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1 Description of Service

1.1. This Service Definition defines the Central Switching Service (CSS) to be provided by the CSS Provider.

1.2. The CSS Provider is one of a number of Switching Data Service Providers, and is therefore captured within the scope of the overall Switching Service Management arrangements, as defined in the Switching Service Management Schedule.

1.3. The CSS comprises the Registration Service and the Address Management Service, explained in further detail below. These operate alongside the Electricity Retail Data Service and the Gas Retail Data Service.

Registration Service

1.4. A core purpose of the CSS is to manage Registrations and associated data. The CSS maintains a central database for electricity and gas Registrations.

1.5. The detail of the Registration Service to be provided by the CSS Provider is described in the Registration Services Schedule, RMP Lifecycle Schedule, Switching Data Management Schedule, Related Metering Points Schedule and the Data Specification.

Address Management Service

1.6. A core feature of the CSS is its use of an address related to an RMP which has, as far as is possible, been matched by the Address Management Service to a set of "standardised" Great Britain addresses, to create a unique address, called the Retail Energy Location Address (REL Address). The REL Address is used for each RMP at a given Premises, and is the principal address that Consumers are likely to provide (e.g. to an Energy Supplier or a Price Comparison Websites).

1.7. The detail of the Address Management Service to be provided by the CSS Provider is described in the Address Management Schedule and the Data Specification.

1.8. For each REL Address, the CSS shall maintain the following information:

(a) the source of the REL Address;

(b) the Unique Property Reference Number, if the REL Address is derived from the GB Standardised Address List;

(c) previous REL Addresses for an RMP and the source of those previous addresses (to be maintained for at least seven years);

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(d) a Retail Energy Location (W) Address (if applicable); and

(e) an Address Quality Confidence Score.

1.9. The Address Management Service includes maintenance of:

(a) **GB Standardised Address List** – a complete set of all domestic and commercial GB addresses, plus as many other locations to which energy is supplied as is practicable (such as locations with a supply point but no address), held in a widely-recognised standardised form, compliant with BS7666 and ISO 639-2:1998, in all official GB languages. The GB Standardised Address List is formed from Ordnance Survey data; and

(b) **Address-matching software** – a set of algorithms, configuration settings and related software which, given an input address, searches the GB Standardised Address List and produces a match, together with a reference number that uniquely identifies the matched address (for example, the Unique Property Reference Number) and an Address Quality Confidence Score for the match.

1.10. The Address Quality Confidence Score returned by the Address Management Service is intended to be used by the CSS to manage the quality of its addresses. It represents the level of certainty associated with a particular address match and is likely to be based on a number of different factors, such as whether the house number and postcode are identical (high quality indicator) or house number and street name match but the postcode does not (lower quality indicator).

1.11. The CSS Provider shall apply a Good Industry Practice methodology for determining the Address Quality Confidence Score in accordance with the annual process set out in the Address Management Schedule. Where the CSS Provider determines that it has improved the accuracy of a Retail Energy Location Address or that the CSS Provider's confidence in the Retail Energy Location Address has increased, then the CSS Provider shall update the Address Quality Confidence Score accordingly.

1.12. Addresses matched to the GB Standardised Address List and returned to the Registration Service will form the REL Address mastered by the CSS Provider. The REL Address may also be formed where there is no match to the GB Standardised Address List, by using the Meter Point Location Address (MPL Address). REL Addresses will be synchronised to the Electricity Enquiry Service and Gas Enquiry Service so that Switching Parties (including Price Comparison Websites)[1] can raise enquiries against them for the purpose of enabling switching (including without limitation) for the purpose of design, development, testing, integration and live operational use. No REL Address information may be displayed on public facing websites unless it is the website of a Switching Party that is a Price Comparison Website, and with prior permission from Ordnance Survey.

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1. The Switching Parties that can access the REL Address are stipulated in an agreement between the CSS Provider and Ordnance Survey. These include any party to the REC, any entity providing services to the Switching Programme for time to time, and CSS Users (as defined in the REC) and in each case their respective employees, agents and contractors from time to time.

2 Definition of CSS Users

2.1. The CSS provides an application interface to enable the exchange of Registration and address information between the CSS and CSS Users. A full list of CSS User categories is included in the CSS Schedule.

2.2. Market Participants and CSS Interface Providers are required to become CSS Users before they can exchange messages with the CSS. The CSS Schedule defines the process Market Participants must follow in order to become CSS Users and defines the associated CSS User obligations.

3 System Access and User Management

Communication Channels

3.1. The communication channel options available to interact with the CSS are:

(a) Internet Access; or

(b) Private Network Access, connecting via a Microsoft ExpressRoute.

3.2. Internet Access – The CSS applications run in the Microsoft Azure Cloud which includes a series of internet gateway servers and firewalls providing protection to the CSS application and supporting infrastructure.

3.3. At the other end of the internet connection will be the CSS User application domain where the user application resides. This could be part of the Market Participant's data service or that of an agent, for example a CSS Interface Provider. If the CSS User wishes to use the internet for connecting to the CSS, then its chosen environment will need to include both a policy enforcement point i.e. firewall and one or more internet gateways, depending on its capacity and resilience requirements.

3.4. **Private Network Access** – CSS Users may choose to use a private network, connecting via a Microsoft ExpressRoute to send and receive CSS Market Messages, rather than relying on the public internet. CSS Users wishing to use a private network will need to purchase and configure the Microsoft Azure ExpressRoute and work with their chosen private network provider to establish the required network connections / cross connects, to enable communication with the CSS. Traffic via the private network / ExpressRoute will then be processed in the Azure cloud in a similar way to traffic over the internet, all of which will be transparent to the CSS application.

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3.5. CSS Users are responsible for deciding which communication channel they will use to interface with the CSS.

Certificate Requirements

3.6. Subject to Paragraph 3.7, each CSS User is required to obtain digital certificates from the CSS Certificate Authority in accordance with the process set out In the CSS Schedule. These certificates are digitally signed by the CSS Certificate Authority and bind certificate owners with their public keys.

Additional Certificate Requirements

3.7. The interface between the CSS and the Smart Meter Data Service Provider and Enduring Change of Supplier Service Provider will use two certificate authorities:

(a) to secure TLS connections, certificates must be issued and signed by the DCC Key Infrastructure (DCCKI) Certificate Authority (as defined in the Smart Energy Code); and

(b) certificates for message signing must be issued and signed by the Smart Metering Key Infrastructure (SMKI) Certificate Authority (as defined in the Smart Energy Code).

TLS Requirements and Configuration

3.8. To secure the exchange of data between the CSS and CSS Users, TLS v1.3 protocol standard is applied where possible (TLS v1.2 is the minimum standard) and will make use of authentication using PKCS #3 Ephemeral Diffie Hellman key exchange to generate a shared secret (TLS-RSA) with AES-256-GCM-SHA256 for communications encryption.

3.9. If this authentication step fails, an “HTTP 401 Unauthorised” error will be returned to the CSS User. The error codes are referenced in the Data Specification.

4 Service Availability

4.1. The CSS shall be provided 24 hours a day, seven days a week, except during Scheduled Maintenance periods and unplanned outages.

4.2. The CSS shall have 99.75% overall availability and 99.99% connection availability over each calendar month, excluding Scheduled Maintenance periods.

4.3. Scheduled Maintenance shall not occur between 16:00 and 01:00 hours. In the event of Scheduled Maintenance, the CSS Provider shall provide notice to the Switching

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Operator for inclusion in the forward schedule of change, in accordance with the Switching Service Management Schedule .

4.4. In the event of an unplanned outage:

(a) the CSS Provider shall notify the Switching Operator in accordance with the Switching Service Management Schedule; and

(b) the CSS shall resume normal operations within one hour.

4.5. The CSS Provider shall maintain a business continuity process which allows the continued operation of the service in case of overall failure. This may be partially manual but must operate at the anticipated volumes.

5 CSS User Support

5.1. The CSS does not have an externally facing service desk. Any Switching Incidents and Switching Service Requests will be raised via the Switching Portal. The CSS Provider shall provide second line support in accordance with this Paragraph 5 and the Switching Service Management Schedule.

5.2. The CSS Provider shall support the response and resolution times for the following Switching Incident categories.

(a) Priority 1 – for Switching Incidents causing critical impact and significant financial loss / disruption - 30 minute response with a four hour resolution time;

(b) Priority 2 – for Switching Incidents causing non-critical impact with non-significant financial loss / disruption - one hour response with a 24 hour resolution time;

(c) Priority 3 – for Switching Incidents causing adverse impact but can be reduced to moderate adverse impact - three Working Hour response with:

i. a three Working Day resolution time for at least 90 percent of Priority 3 Switching Incidents resolved in each calendar month.

ii. a six Working Day resolution time for all Priority 3 Switching Incidents resolved in each calendar month.

(d) Priority 4 – for Switching Incidents causing minimal impact - one Working Day response with:

i. a 10 Working Day resolution time for at least 95 percent of Priority 4 Switching Incidents resolved in each calendar month.

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ii. a 20 Working Day resolution time for all Priority 4 Switching Incidents resolved in each calendar month.

5.3 The Switching Operator must adhere to the Switching Operator Major Switching Incident Best Practice document if a Major Switching Incident has not been resolved within the required Service Levels.

6 Service Levels

6.1. Following receipt of Market Messages from CSS Users, the CSS Provider shall carry out synchronous validation and provide a response within the following times:

Performance Parameter	***Performance Level***
Up to peak daily volume	mean time of two seconds or less
Up to peak daily volume	90th percentile time of four seconds or less

Mean response: arithmetic mean response time taken between the receipt of a message and the response for the message of the daily population.

90th percentile: the percentage of days in the month where the 90th percentile message response time is less than or equal to the performance levels defined in this Paragraph 6.1; where the 90th percentile means the time by which 90 percent of all message responses in that day have completed, when all of the response times are sorted from least to greatest.

Measured as a percentage of days with up to peak daily volume in the reporting month that the mean/90th Percentile response time was at or below the Service Level target.

6.2. The CSS Provider shall process a Registration Service Request (from the point of receipt by CSS to the point where CSS sends out the response of either "Validated" or "Rejected"), and any other Market Message requiring an asynchronous response, as follows:

Performance Parameter	***Performance Level***
Up to peak hourly volume	mean time of three seconds or less
Up to peak hourly volume	90th percentile time of six seconds or less

Mean response: arithmetic mean response time taken between the receipt of a message and the response for the message of the hourly population.

90th percentile: the percentage of hours in the month where the 90th percentile message response time is less than or equal to the performance levels defined in this Paragraph 6.2; where the 90th percentile means the time by which 90 percent of all message responses in that hour have completed, when all of the response times are

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sorted from least to greatest.

Measured as a percentage of hours with up to peak hourly volume in the reporting month that the mean/90th percentile response time was at or below the Service Level target.

6.3. The CSS Provider shall process the securing of Switches and send synchronisation messages of secured Switches at Gate Closure to each relevant Switching Data Service Provider (from the time of Gate Closure to the point at which CSS sends the last message) as follows:

Performance Parameter	***Performance Level***
Up to peak daily volume	mean response time of 35 minutes or less
Up to peak daily volume	90th percentile response time of 40 minutes or less

Mean response: arithmetic mean of the response time taken from the time of Gate Closure to the point at which CSS sends the last message.

90th percentile: the 90th percentile Gate Closure time for all days in the month is less than or equal to the performance levels defined in this Paragraph 6.3; where the 90th percentile means the time by which 90 percent of all daily Gate Closure events have completed, when all of the completion times are sorted from least to greatest.

Measured as a percentage of days in the reporting month that the mean/90th Percentile response time was at or below the Service Level target.

6.4. The Address Management Service shall apply updates to its GB Standardised Address List within three Working Days of receipt.

6.5. The relevant data for reporting in the software solution shall be available to generate adhoc reports within two Working Hours of a request for that data.

Management of BCDR events

6.6. Where a BCDR event is invoked, the Recovery Time Objective for the Registration Service and Address Management Service will be:

(a) four hours target time; and

(b) eight hours maximum time.

6.7. The Recovery Point Objective for the Registration Service shall be:

(a) target - 15 minutes

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(b) maximum - 30 minutes

6.8. The Recovery Point Objective for the Address Management Service shall be:

(a) target - 60 minutes

(b) maximum - 120 minutes

7 Maximum Demand Volumes

Expected Volumes

7.1. The CSS shall meet the requirements set out below. Where the values are breached, the service provided may not be subject to the expected Service Levels. Any such failure to meet the expected Service Levels will not constitute a breach by the CSS Provider.

7.2. Where maximum demand volumes are breached within a given month the CSS Provider shall report the breach incident to the Code Manager, and any impacts reported against the service. The Code Manager may initiate a Change Proposal to increase the maximum demand volumes or take remedial steps to prevent recurrence of the breach.

7.3. The CSS shall, subject to Paragraph 7.11, be capable of processing, as a minimum, the following volume of Switch Requests and changes to Supplier Agents and Smart Meter Data Retrievers:

Switch Requests only

(a) average daily volume of 42,300;

(b) peak daily volume of 281,600;

(c) average hourly volume of 3,500;

(d) peak hourly volume of 25,300; and

(e) annual volume of 15,450,000.

Total volume of messages received

(a) peak daily volume of 1,142,400; and

(b) peak hourly volume of 103,000.

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7.4. Where peak demand is regularly being exceeded, and the CRS Provider has not proactively raised a Change Proposal to amend these, the Code Manager will raise a Change Proposal to amend the volumes within this Service Definition.

7.5. In addition, the CSS shall be capable of processing an annual volume of 375,800 Initial Registration Requests and changes to Meter Asset Provider.

7.6. The CSS shall be capable of processing, as a minimum, the following volume of Switch Requests which fail to complete successfully:

(a) average daily volume of 7,831;

(b) peak daily volume of 52,100;

(c) average hourly volume of 653;

(d) peak hourly volume of 4,689; and

(e) annual volume of 2,858,250.

7.7. In addition, the CSS shall be capable of processing an annual volume of 25,900 failed Initial Registration Requests.

7.8. In exceptional circumstances the CSS shall be capable of processing 250,000 Switches a day, in addition to the average daily volume.

7.9. The Address Management Service shall be capable of processing an address update of between 1.5 and 2 million address records in a periodic release from the address source and a peak address update of up to 10 million address records in a periodic release.

Capacity Management

7.10. The CSS shall be capable of the following:

(a) storing information related to a combined total of 55.3 million RMPs at the CSS Go-Live Date;

(b) supporting a 375,800 increase in the number of RMPs in each year of operation; and

(c) adding and removing System resources dynamically, as resource requirements vary.

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7.11. Overall, capacity shall be such that all the other non-functional requirements placed on the CSS are efficiently met.

7.12. During the MHHS Migration Period, in addition to the requirements of Paragraph 7.3, the CSS Provider shall be capable of processing the volume of changes to electricity Supplier Agent and Smart Meter Data Retriever in accordance with the maximum daily migration volumes published in the MHHS Migration Plan, within existing Service Levels. Any failure to achieve these Service Levels shall be considered a failed Performance Level in accordance with Annex A of the Performance Assurance Schedule, where the volume of changes to electricity Supplier Agent and Smart Meter Data Retriever do not exceed the sum of the volumes set out in Paragraph 7.3 and the maximum daily migration volumes published in the MHHS Migration Plan. It shall be the sole responsibility of the CSS Provider to ensure they are engaged with any changes to the maximum daily migration volumes published in the MHHS Migration Plan, and that they are able to support these volumes appropriately.

8 Reporting

8.1. The following CSS reports shall be made available by the CSS Provider to recipients via the Switching Portal (or an alternative means agreed between the Switching Operator and the recipient).

Market Intelligence & Monitoring
Recipients: Authority and Code Manager (summary of all MPIDs) and Energy Suppliers (MPID-specific)
Completed Switches
Rejected Switches
Objected Switches
Change of Occupancy Objections
Switch Withdrawal
Switch Annulment
Erroneous Switch
Initial Registrations & Deactivations
Supplier Portfolio
Recipients: Authority and Code Manager only
Switches by Energy Supplier Size
Domestic Electricity Switch Annulment
Non-Domestic Electricity Switch Annulment
Domestic Gas Switch Annulment
Non-Domestic Gas Switch Annulment
Recipients: Code Manager only
RMPs Associated with Switch Rejection
RMPs Associated with Switch Objection
RMPs Associated with Switch Annulment

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RMPs Associated with Switch Withdrawal
RMPs Associated with Erroneous Switches
RMPs Associated with Change of Occupancy Objection

Energy Supplier Loss Notification and Cancellation Report
Recipients: Energy Suppliers (until all Energy Suppliers have Qualified as CSS Users)[2]
Registration Loss Notification ○ MPRN or MPAN ○ Fuel type ○ Active Registration Id ○ Pending Registration Id ○ Gaining Supplier MPID ○ Gaining Supplier Role (X for electricity or SUP for gas) ○ Supply Start Date ○ Objection Window start date ○ Objection Window end date ○ Annulment Window end date ○ Change of Occupancy indicator ○ Erroneous Switch indicator
Registration Loss Cancellation ○ MPRN or MPAN ○ Fuel type ○ Registration Id ○ Registration Status ○ Registration Status from date

2. The Code Manager will have the ability to switch this reporting on / off depending on whether there are any unqualified Energy Suppliers.

Performance Assurance Reporting
Recipients: Code Manager
A monthly performance report providing details of overall service performance against requirements set out within this service definition

Billing Reporting
Recipients: Code Manager
Registration Request Activities per Gaining Supplier ○ MPID ○ Fuel type ○ Number of submitted Registration Requests ○ Number of successful Registration Requests ○ Number of Withdrawn Registration Requests

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○ Number of Annulled Registration Requests ○ Number of Objected Registration Requests ○ Number of Rejected Registration Requests ○ Number of Registration updates ○ Number of Registration De-Activations ○ Number of Registered RMPs
Registration Request Activities per Losing Supplier ○ MPID ○ Fuel type ○ Number of Annulled Registration Requests ○ Number of Objected Registration Requests
Chargeable CSS Reports per MPID ○ MPID ○ Market Participant Role (X for electricity or SUP for gas) ○ Number of reports

Failed Supplier Report
Recipients: Ofgem (data provided relating to the failed Energy Supplier portfolio where a SoLR occurs)
Shipper(s) (gas only)
Number of RMPs for Domestic Premises
Number of RMPs for Non-Domestic Premises
Number of RMPs with in-flight Switches, where the failed Energy Supplier is the Gaining Supplier
Number of RMPs with in-flight Switches, where the failed Energy Supplier is the Gaining Supplier
For each in-flight Switch, where the failed Energy Supplier is the Gaining Supplier ○ Meter Point Reference Number (MPRN) or Metering Point Administration Number (MPAN) ○ Domestic Premises Indicator ○ Supply Effective From Date
Number of RMPs with in-flight Switches, where the failed Energy Supplier is the Losing Supplier
For each in-flight Switch, where the failed Energy Supplier is the Losing Supplier ○ MPRN or MPAN ○ Domestic Premises Indicator ○ Supply Effective From Date
For each RMP where the failed Energy Supplier is the Registered Supplier: ○ MPRN or MPAN ○ MPL Address ○ MEM, identified by MPID and Market Role RMP Status

Address	**Description**

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Management Service Reports	
Recipients:	**Switching Operator and Code Manager (the Code Manager will receive reports from the Switching Operator)**
Unmatched REL Extract	A monthly report detailing the Address Quality Confidence Score for RMPs unmatched to GB Standardised Addresses.
Matched REL Extract	A monthly report detailing the Address Quality Confidence Score for RMPs matched to GB Standardised Addresses.
Unmatched Null Invalid Postcode	A monthly report detailing the unmatched REL Addresses with null or invalid postcode.
Unchanged Plot Addresses	A monthly report detailing addresses that have not changed from a plot address (e.g. without a valid postcode assigned). The report shows the count of days since the record was created to the end of the reporting period.
Address Quality	A monthly report showing quantitative analysis of address quality, including numbers of RMPs matched and unmatched, summaries of their Address Quality Confidence Score and corresponding historical values/trends.
Unmatched ME Extract	A monthly report detailing the Address Quality Confidence Score for RMPs unmatched to GB Standardised Addresses for REL Addresses derived from a Manually Entered Address (ME Address).
Updated Addresses	A monthly report of addresses that have been created or changed since the previous report. Each RMP is listed together with its current REL Address, if: • REL Address has been established (as a result of an Initial Registration); or • REL Address has changed for any reason (because of the introduction or removal of an ME Address, update of MPL Address or updated address passed to CSS by the Address Management Service.

8.2. The CSS Provider shall provide reports, upon request, to a Qualified Energy Supplier setting out all the REL Address data which the CSS Provider is required to maintain under Paragraph 1.8 insofar as relating to RMPs for which the Energy Supplier is (at the time of the request) the Registered Supplier (or has a Registration Status of Pending, Confirmed or Secured Active in relation to that RMP). Each Energy Supplier which receives one or more such reports undertakes to only use such reports for the purposes of enabling Switching, as per Paragraph 1.12.

8.3. The CSS Provider shall provide reports, upon request, to a Gas Transporter or Distribution Network Operator setting out all the REL Address data which the CSS Provider is required to maintain insofar as relating to RMPs on that Gas Transporter's or Distribution Network Operator's network. Each Gas Transporter or Distribution Network Operator which receives one or more such reports undertakes to only use such reports for the purposes of enabling switching, as per Paragraph 1.12.

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8.4. The CSS Provider shall provide the information required by the Switching Operator to allow it to meet its requirements under this Code.

9 System Audit

9.1. The CSS shall maintain an audit trail of requests received and responses sent (inbound and / or outbound messages).

9.2. The CSS shall hold 28 months' worth of transactions online (for auditing purposes); and seven years' worth of transactions in total (online and in archive), from which information can be recovered within 1 Working Day.

10 Data Handling

10.1. The CSS shall operate in Local Time.

10.2. The CSS shall be able to detect loss and duplication of Market Messages transferred from / to it and shall have facilities for rectification.

10.3. The CSS shall be able to detect mis-alignment of data between itself and other Systems with which it exchanges synchronisations and shall have facilities for rectification.

11 Security

11.1. The security requirements for the CSS interface are intended to minimise the risks to the CSS infrastructure and its users. The CSS shall run on infrastructure (hardware and software) which is physically / logically separated from other applications.

11.2. The CSS itself shall be certified against ISO/IEC 27001 and shall be subject to certification using a UKAS-certified auditing body.

11.3. The CSS's cloud base infrastructure shall be assured with 'SOC Type 2' security certification.

11.4. Security requirements for CSS Users are described in the CSS Schedule.

11.5. In the event that the CSS Provider detects a potential or suspected security breach impacting switching related Systems, it shall raise a Switching Incident (in accordance with the Switching Service Management Schedule).

11.6. In the event of insolvency of the organisation maintaining CSS, the source code shall be recoverable from escrow.

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