Technical Specification Document

Central Switching Service (CSS) Service Definition

Version: 0.2   Effective Date: TBC

Change History

Version Number	Implementation Date	Reason for Change
0.1	TBD	Initial draft included in November 2019 Technical Specification Approach Consultation
0.2	TBD	Draft included in the Spring 2021 Switching Consultation

Contents Table

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 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 Point 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 Website).

1.7 The detail of the Address 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 7 years);

(d) up to 4 different addresses, where available, one address will be the Delivery Point Address and others at the Location of the Basic Land and Property Unit as recorded by GB Standardised Address List;

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

(f) 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 CSS. 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 Retail Energy Location 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.

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 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.

2.3 Queries relating to REL Address matches will be managed via the Switching Operator service management function, as defined in the Switching Operator Service Definition.

3   System Access and User Management

Communication Channels

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[1] The Switching Parties that can access the REL Address are stipulated in an agreement between DCC 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.

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. Behind the internet gateway servers there is a bank of firewalls providing protection to the CSS application and supporting infrastructure. These firewalls are configured to manage the connections for all inbound and outbound CSS messages.

3.3   At the other end of the internet connection will be the CSS User application domain where the user application resides. Note 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 (PEP) (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. This requires the private network service provider to physically deploy a boundary gateway (or edge router) into the CSS User's chosen datacentre where the private network cables are terminated. Note this could be directly into the Market Participant's data centre or that of an agent, for example a CSS Interface Provider. For the CSS environment the private network service provider will deploy boundary gateways in an Azure connection partner's datacentre. These boundary gateways will then be connected to Microsoft ExpressRoute transit connections from the connection partner to the Azure cloud. 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.

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

Certificate Requirements

3.6   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 (and, optionally, with a comprehensive list of properties).

Additional Certificate Requirements

3.7   The interface between the CSS and the Smart Metering Data Service Provider and Enduring Change of Supplier 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 Unauthorized" error will be returned to the CSS User. The error codes are referenced in the Data Specification.

4   Service Availability

4.1   The CSS Provider shall ensure that the CSS is made available 24 hours a day, 7 days a week, except during scheduled maintenance periods and unplanned outages.

4.2   The CSS Provider shall ensure that the CSS achieves 99.75% overall availability and 99.99 connection availability over each calendar year, excluding scheduled maintenance periods.

4.3   In the event of scheduled maintenance, the CSS Provider shall provide notice to the Switching Operator for inclusion in the forward schedule of change, in accordance with the Service Management Schedule.

4.4   In the event of an unplanned outage e.g. to fix a priority incident, the CSS Provider shall notify the Switching Operator in accordance with the Service Management Schedule.

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 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 - 10 mins response with a 1 - 4 hours resolution time;

(b)   Priority 2 – for Switching Incidents causing non-critical impact with non-significant financial loss / disruption - 20 mins response with a 24 hours resolution time;

(c)   Priority 3 – for Switching Incidents causing adverse impact but can be reduced to moderate adverse impact - 45 mins response with a 72 hours resolution time;

(d)   Priority 4 – for Switching Incidents causing minimal impact - 1 day response with a 10 day resolution time [2].

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
Average daily volume	mean time of 2 seconds or less
Average daily volume	90th percentile time of 4 seconds or less
Peak daily volume	mean time of 3 seconds or less

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[2] [These SLAs reflect the overall switching service management priority levels – DCC is considering application of these SLAs across each Switching Data Service].

Peak daily volume	90th percentile time of 6 seconds or less

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") as follows:

Performance Parameter	*Performance Level*
Average hourly volume	mean time of 3 seconds or less
Average hourly volume	90th percentile time of 6 seconds or less
Peak hourly volume	mean time of 5 seconds or less
Peak hourly volume	90th percentile time of 8 seconds or less

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*
Average daily volume	mean response time of 20 minutes or less
Average daily volume	90th percentile response time of 25 minutes or less
Peak daily volume	mean response time of 35 minutes or less
Peak daily volume	90th percentile response time of 40 minutes or less

7   Maximum Demand Volumes

Expected Volumes

7.1   The CSS shall be capable of processing 250,000 sSitches a day, which may occur in exceptional circumstances, for example to deal with a collective Switch.

7.2   The CSS shall be capable of processing, as a minimum, the following volume of Switch Requests:

(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.

7.3   In addition, the CSS shall be capable of processing an annual volume of 375,800 Initial Registration Requests.

7.4   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.

7.5   In addition, the CSS shall be capable of processing an annual volume of 25,900 failed Initial Registrations.

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

Capacity Management

7.7   The CSS shall be capable of the following:

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

(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.

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

8   Reporting

8.1   The following CSS reports shall be made available by the CSS Provider to Market Participants on the Switching Portal.

Market Intelligence & Monitoring
Recipients: Authority(summary of all MPIDs) and Energy Suppliers (MPID-specific)
▪ Completed Switches
▪ Rejected Switches
▪ Objected Switches
▪ Switch Annulment
▪ Switch Withdrawal
▪ Erroneous Switch
▪ Change of Occupancy Objections
▪ Initial Registrations & Deactivations
▪ Supplier Portfolio
▪ Market Performance
Recipients: Authority only
▪ Market Monitoring
▪ Domestic Electricity Annulment
▪ Non-Domestic Electricity Annulment
▪ Domestic Gas Annulment

▪ Non-Domestic Gas Annulment	

Energy Supplier Loss Notification and Cancellation Report
Recipients: Energy Suppliers (until all Energy Suppliers have Qualified as CSS Users)
▪ Registration Loss Notification
▪ Registration Loss Cancellation

[Reports to be defined:
- ▪ SoLR Failed Supplier Portfolio reports
- ▪ Performance assurance reports
- ▪ Billing Service Reports]

Address Management Service Reports	Comments
Unmatched RMPs	RMPs unmatched to GB Standardised Addresses listed together with their MPL Address
Unchanged Plot Addresses	Addresses that have not changed from a plot address (no postcode assigned) for a predetermined length of time. Corresponding historical values/trends.
Address Quality Analysis	Quantitative analysis of address quality, including numbers of RMPs matched and unmatched, summaries of their Address Quality Confidence Score and corresponding historical values/trends. The number of addresses with an Address Quality Confidence Score of less than [*x*] in each postcode district and area (district being the letters of the first part of the postcode and area being the numbers of the same district; using SE1 as an example, SE would be the district and 1 would be the area).
Updated ME Addresses	Addresses whose derivation is a Manuallly-Entered Address (ME) and for which the MPL Address has been updated. This is used to indicate those ME derived addresses that may need to be deleted and the MPL Address used instead to derive the REL Address, since the MPL Address has been updated to a better quality.
Updated Addresses	A report of addresses that have been created or changed since the previous report, for possible use by external parties who are interested in the use of REL Address. Each MPxN 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 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 1.12.

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   Business Continuity/Disaster Recovery[3]

9.1   The CSS shall utilise a public cloud offering, with data centres in two UK regions. This configuration provides the ability to switch between primary and secondary locations with minimum impact and downtime. It also provides the capability to failover from one to the other in the event of a catastrophic failure.

9.2   The CSS platform shall be protected against catastrophic failures pertaining to the hosted components that make up the entirety of the service. This includes both the Address Management Service and the Registration Service. The granular monitoring of each of the applications and underlying infrastructure is paramount to providing a continuous, truly highly available platform. The granular monitoring shall be provided by either the CSS Provider or the Microsoft Azure cloud environment.

9.3   In the event of an unplanned outage, the CSS Provider shall resume normal operations within 1 hour. In the event of corruption of business-critical data, the CSS Provider shall be capable of restoring uncorrupted data from back-up to a suitable point where resumption of processing can continue without loss or duplication of inbound or outbound messages.

10   System Audit

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

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3 [DCC is developing a proposal relating to BCDR to be reflected post consultation]

11 Data Handling

11.1 The CSS shall hold 28 months'-worth of transactions online (for auditing purposes); and 7 years' worth of transactions in total (online and in archive), from which information can be recovered within 1 Working Day.

12 Security

12.1 The security requirements for the CSS interface are intended to minimise the risks to the CSS infrastructure and its users.

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

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

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