ORDNANCE SURVEY GB

ADDRESSBASE, ADDRESSBASE CORE, ADDRESSBASE PLUS, ADDRESSBASE PREMIUM – OVERVIEW

Version history

Version	Date	Description
2.0	03/2016	Specification change.
3.0	03/2021	AddressBase Core product included.
3.1	08/2021	Introduction of GeoPackage format to the AddressBase Premium and AddressBase Premium Islands products.
3.2	09/2023	Updated BLPU state code definition

Purpose of this document

This is the Overview for the AddressBase family of products. This Overview provides greater insight into this product and its potential applications. For information on the contents and structure of AddressBase products, please refer to the Getting Started Guides and Technical Specifications.

The terms and conditions on which these products are made available to you and your organisation are contained in that Ordnance Survey customer contract. Please ensure your organisation has signed a valid current customer contract to be able to use the Product.

We may change the information in this Overview at any time, giving you the notice period set out in your contract.

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Copyright in this Overview

The data in AddressBase products is provided by GeoPlace, a limited liability partnership between the Local Government Association and Ordnance Survey.

AddressBase products contain data created and maintained by English, Welsh and Scottish Local Government as well as Royal Mail and the Valuation Office Agency:

- Valuation Office Agency data is provided under the Open Government Licence and other data provided under the Open Government Licence v3.0.2.

Trade marks

Contact details

OS website 'Contact us' page (https://www.ordnancesurvey.co.uk/contact-us).

Contents

1. Introduction

The AddressBase product family is made up of four products:

- AddressBase Premium
- AddressBase Core
- AddressBase Plus
- AddressBase

The AddressBase products are created by bringing together different address sources:

- Local Authority Gazetteers for England, Wales and Scotland
- Royal Mail Postcode Address File (PAF) data
- References to Valuation Office Agency (VOA) data
- Additional addresses and coordinates from Ordnance Survey

This information is managed by GeoPlace under a joint venture partnership between the Local Government Association and Ordnance Survey (OS). Scottish Local Authority address information is supplied to GeoPlace under licence between Ordnance Survey and the Improvement Service supported by the Scottish Government.

Ordnance Survey is responsible for the customer management, sales, marketing and distribution of AddressBase products.

1.1 Key features of the products

Each product has varying numbers of records and levels of detail. A comparison between the four products and the level of detail that can be obtained is shown in Table 1.

Table 1: A comparison between the four AddressBase products and the level of detail they provide

Level of detail	AddressBase	AddressBase Core	AddressBase Plus	AddressBase Premium
Number of records	Approx. 30 million records	Approx. 34 million records	Approx. 37 million records	Approx. 40 million records
Unique identifiers	UPRN and UDPRN	UPRN, UDPRN, TOID and USRN	UPRN, UDPRN, TOID, USRN and UARN	UPRN, UDPRN, TOID, USRN and UARN
Coordinates	Property level coordinates	Property level coordinates	Property level coordinates	Property level coordinates
Addressable features	• Geocoded PAF records	• Geocoded PAF records • Additional Local Authority (occupiable) records (for example, Flats, Village Halls)	• Geocoded PAF records • Additional Local Authority (occupiable) records (for example, extra Flats, Village Halls) • Multilingual addresses (Welsh and Gaelic) • Non-postally addressable properties (for example, Ponds, Lakes) • Street Records	• Geocoded PAF records • Additional Local Authority (occupiable) records (for example, extra Flats, Village Halls) • Lifecycle records (Pre-Build and No longer existing) • Alternative addresses (Vanity, for example, Rose Cottage) • Multilingual addresses (Welsh and Gaelic) • Non-postally addressable properties (for example, Ponds, Lakes) • Street Records
Address structure	PAF-like format	Simplified attribution structure	BS7666 and PAF structure in one file	Relational database model with individual tables for BS7666 and PAF structure
Level of classification for addressable objects	Primary level classifications	Secondary level classifications	Tertiary/quaternary level property classifications and VOA classification	Tertiary/quaternary level property classifications and VOA classification

Level of detail	AddressBase	AddressBase Core	AddressBase Plus	AddressBase Premium
Source of organisation names/data	Organisation names from PAF	Organisation data condensed from both PAF and Local Authorities	Organisation names from PAF and Local Authority	Organisation names from PAF and Local Authority
Additional features	N/A	Single line address and parent/child relationships	Occupiable flag and parent/child relationships	Occupiable flag and parent/child relationships
Product coverage	GB coverage	GB coverage	GB coverage	GB coverage
Additional product coverage	N/A	N/A	Northern Ireland, Channel Islands and Isle of Man available as an add-on	Northern Ireland, Channel Islands and Isle of Man available as an add-on
Product supply format	CSV or GML	CSV or GeoPackage	CSV or GML	CSV, GML or GeoPackage
Product currency	Six-weekly supply	Weekly supply	Six-weekly supply	Six-weekly supply

1.2 Product applications

Each AddressBase product can be used for a range of applications and there is cross over between which product is best suited for a chosen task.

Table 2: A comparison of the suitability of the four AddressBase products for defined applications

Applications	AddressBase	AddressBase Core	AddressBase Plus	AddressBase Premium
Utility demand planning	N/A	Good	Good	Best
Energy / utility switching	Good	Better	Better	Best
Sales lead generation	Good	Better	Better	Best
Fraud prevention	N/A	Good	Good	Best
Insurance underwriting	N/A	Good	Good	Best
Delivery / logistics	Good	Better	Better	Best
Urban planning	N/A	Good	Good	Best
Asset maintenance	N/A	Good	Good	Best
Conveyancing	N/A	Good	Good	Best
CRM systems	Good	Better	Better	Best

2. Overview of the products

The four AddressBase products have been designed to meet distinct customer requirements. The source data is collated, verified and quality assured by GeoPlace.

2.1 AddressBase Premium

AddressBase Premium provides the most detailed view of an address and its life cycle for England, Wales and Scotland. It has approximately 40 million addresses as it records an address from creation through to retirement. All address records are provided with a Unique Property Reference Number (UPRN).

There are over 100 million cross references which include references to VOA data, OS MasterMap Topography Layer and OS Highways Network Layer.

The product contains Local Authority, Ordnance Survey and Royal Mail addresses. Addresses are captured at all stages of the property lifecycle. Provisional addresses (proposed planning developments) and historic information (no longer existing, for example demolished properties) are included in the product, where available. Alternative addresses are included, where available, as these indicate variations in the official addresses and / or addresses in different languages (Welsh or Gaelic). Other non-postal addresses are included in AddressBase Premium; these include places of worship, community centres and utilities.

2.2 AddressBase Core

AddressBase Core was released in July 2020 as a new addition to the addressing portfolio. It takes many of the important elements from the other AddressBase products, such as coordinates, classification, and cross-references, to connect address information to other products via key identifiers.

AddressBase Core's primary source of addressing information is Local Authority data from the National Land and Property Gazetteer (NLPG) and the One Scotland Gazetteer (OSG). They have the legal responsibility to capture and maintain address data for Great Britain, so you are assured of its authenticity and legal nature.

Address information is provided in an easy-to-use format alongside a single line attribute, which concatenates all the address elements into what you would expect to see on an envelope. The address information is updated weekly and offered in a simplified format to make the product as easy to access and use as possible.

Customers have asked for straight-forward file formats, so comma-separated value (CSV) files and GeoPackage are available for this product, with headers included – removing the need for any post-processing. Simply load or drag and drop into a GIS package to start analysing.

2.3 AddressBase Plus

AddressBase Plus contains current properties using addresses sourced from Local Authorities, Ordnance Survey and Royal Mail for England, Wales and Scotland. At present, the product contains approximately 37 million records.

The product contains all current addresses validated from Local Custodians. Non-postal addresses, such as ponds, electricity sub-stations and telephone boxes, are also included.

The product enables the end-user to locate an address or property on a map using either X, Y coordinates supplied on the British National Grid or latitude and longitude coordinates provided on an ETRS89 projection, and display the Local Authority address elements or the Royal Mail address elements, where matched.

2.4 AddressBase

AddressBase provides a current view of all Royal Mail PAF addresses that have been matched to the NLPG and OSG. The product provides Royal Mail attribution as well as enhancing PAF with X and Y coordinates on the British National Grid and ETRS89 coordinate reference systems and providing the classification of an address to a primary level (see Section 3.3 for further details on classification levels). It also provides a primary level classification.

This product will provide you with a single view of an address, allow you to locate this address on a map to give you a geographic view, and carry out primary analysis on the function of the address to determine, for example, residential from commercial properties.

3. Product details

3.1 Unique Property Reference Number

The Unique Property Reference Number (UPRN) is the persistent identifier that provides consistency across the AddressBase products range. Each address record has a UPRN, which provides a reference key to join related address records across different datasets.

Throughout its life cycle, information on the address of a property can change. This may be due to a change of name, change of use, or the eventual demolition of the property. All these changes are reflected against the same UPRN, meaning that users are aware that it is the same physical property.

3.2 Coordinate reference system

AddressBase products have two coordinate reference systems (CRS) present within the data:

1. British National Grid (BNG).
2. European Terrestrial Reference System 89 (ETRS89)

BNG uses the OSGB36 geodetic datum and a single Transverse Mercator projection for the whole of Great Britain. Positions on this projection are described using Easting and Northing coordinates in units of metres. The BNG is a horizontal spatial reference system only; it does not specify a vertical (height) reference system.

ETRS89 is the EU recommended frame of reference for European data and is represented as latitude and longitude values. ETRS89 is a horizontal spatial reference system only; it does not specify a vertical (height) reference system.

View our guide to coordinate systems in Great Britain, which is available on the OS website (https://www.ordnancesurvey.co.uk/documents/resources/guide-coordinate-systems-great-britain.pdf).

3.3 Classification

The AddressBase classification scheme provides varying levels of classification for addressable objects which are captured and maintained by the Local Authorities and Ordnance Survey. This allows searches to be limited on residential or commercial addresses or to be more specific (for example, a search to find all the flats or all the fast-food outlets in a specified area). The varying levels of classification are outlined in Table 3.

Table 3: Example of the varying levels of classification provided by the AddressBase classification scheme

Primary Level Classification		**Secondary Level Classification**		**Tertiary Level Classification**		**Quaternary Level Classification**	
Code	**Code description**	**Code**	**Code description**	**Code**	**Code description**	**Code**	**Code description**
R	Residential	RD	Residential Dwelling	RD02	Detached House	Not classified at quaternary level	Not classified at quaternary level
C	Commercial	CH	Hotel/Motel/ Boarding/ Guest House	CH01	Boarding/Guest House/ Bed And Breakfast/Youth Hostel	CH01YH	Youth Hostel

The level of classification varies across all addressable objects and across the different products. The most granular level of classification provided for an address in each product is detailed in Section 1.2.

There are only certain classification codes that extend to the quaternary classification level, as shown in Table 3. A full list of the classification codes can be found on our Product Support page on the OS website (https://www.ordnancesurvey.co.uk/business-government/tools-support/addressbase-premium-support).

4. Address capture and data source

Through collaborative working between Ordnance Survey, GeoPlace, the Local Government Agency and Improvement Service a single definitive spatial address database for Great Britain has been created and maintained since September 2011 for England and Wales, and April 2012 for Scotland.

This initiative supports the UK Location Strategy concept of a 'core reference geography', including the key principles of the European Union INSPIRE directive: that data should only be collected once and kept where it can be maintained most effectively.

4.1 AddressBase data inputs

4.1.1 Local Government's National Land and Property Gazetteer

The National Land and Property Gazetteer (NLPG) provides the most up-to-date addresses, including street names and numbers from each Local Authority's Local Land and Property Gazetteer (LLPG) in England and Wales. This data also provides a UPRN for each address, encompassing residential, commercial and public infrastructure, such as fire stations.

4.1.2 The One Scotland Gazetteer

The One Scotland Gazetteer (OSG) provides the most up-to-date addresses, including street names and numbers from each Scottish Local Authority's Corporate Address Gazetteer (CAG). This data also provides a UPRN for each address, encompassing residential, commercial and public infrastructure, such as fire stations.

4.1.3 Ordnance Survey owned large scale data and coordinates

Ordnance Survey provides a wide range of additional addresses, including non-postal addresses, such as Telephone Exchanges, and a wider spatial context by including references for both the OS MasterMap Topography Layer and the OS MasterMap Highways Networks Layer which the address feature is related to, and additional classification information.

4.1.4 Royal Mail Postcode Address File

The Royal Mail Postcode Address File (PAF) contains approximately 30 million Royal Mail addresses that are identified as receiving post in Great Britain. Addresses from the NLPG and OSG are matched to the PAF addresses to provide the Unique Delivery Point Reference Number (UDPRN) in the products and supplement the Local Authority address with information such as organisation name, postal town and postcode.

4.1.5 Valuation Office Agency

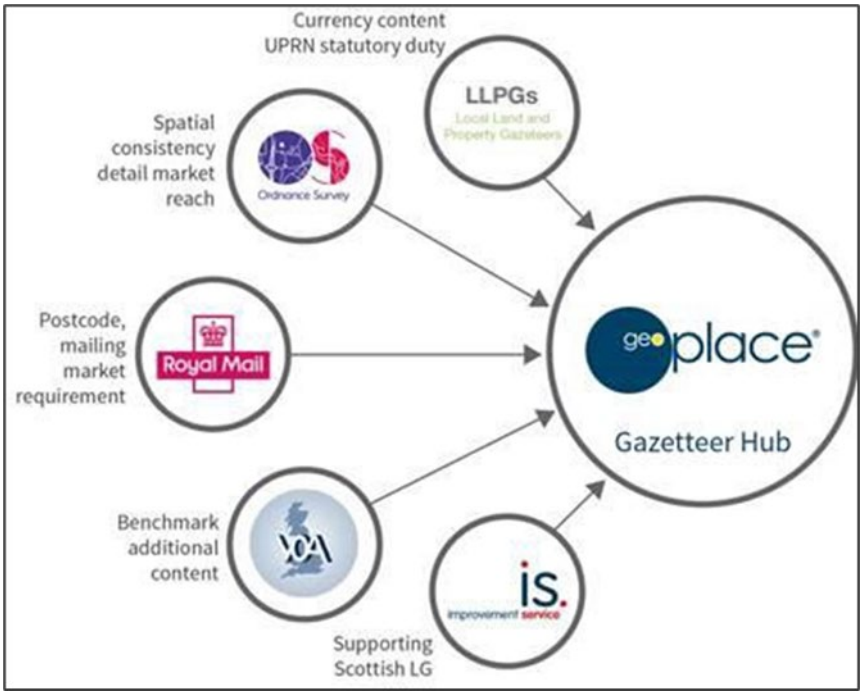
The Valuation Office Agency (VOA) gives the government the valuations and property advice needed to support taxation and benefits within England and Wales. Addresses from the NLPG are matched to the VOA address to provide the Unique Address Reference Number (UARN), VOA Special Category and Primary Description classification codes in the products.

4.2 Roles and responsibilities of AddressBase creation

4.2.1 GeoPlace

GeoPlace is a limited liability partnership jointly owned by the Local Government Association and Ordnance Survey and is the centre of excellence for spatial address and street information in Great Britain. GeoPlace brings together local government's address and streets gazetteers with information from Ordnance Survey, Improvement Service, Royal Mail's PAF dataset and VOA addresses into a central spatial address data hub. The database hub is updated by GeoPlace based upon the receipt of data from all the contributing data sources.

GeoPlace manage this hub and provide Ordnance Survey with address and street information to be utilised in the AddressBase products.



At the time of print, there are 318 local authorities in England and Wales, inputting updates to their Local Land and Property Gazetteers (LLPG). These changes are submitted to the GeoPlace Hub daily, weekly, or monthly as part of their update schedule.

On receipt of these updates, addresses are checked to ensure that they have been produced in accordance with the NLPG Data Entry Conventions and they are in compliance with the national standard for the representation of address information – BS 7666 Parts 1 and 2.

4.2.2 Improvement Service

The Improvement Service provide support and guidance to Local Government within Scotland. Part of this is the management of the OSG. There are currently 32 local authorities in Scotland which update their local address gazetteers on a daily, weekly, or monthly as part of their update schedule to the OSG. The Improvement Service check each update to ensure compliance with the national standard for addressing and the Scottish Gazetteer Conventions 1-3.

4.2.3 Local Authority Custodians

One of the key strengths of AddressBase products is the collection and verification of data at the local level. A real benefit is the capture of addresses at the earliest point in their lifecycle, and then this address being maintained by the local authority.

To do this the Local Custodians will utilise the wealth of information at their disposal until the address no longer exists (i.e. when it becomes a historical record).

Local Custodians will use information such as:

- Building and Development control
- Planning and Land Charges
- Waste Collection
- Electoral Roll

LLPG custodians (England and Wales) are allocated sequential batches of UPRNs by GeoPlace, which are assigned by the LLPG custodian at the creation of a new address.

The OSG (Scotland) custodians are allocated sequential batches of UPRNs by the Improvement Service, which are assigned by the OSG custodian at the creation of a new address.

4.2.4 Street Name and Numbering

A critical step in the creation of an address is undertaken within each Local Authority by the dedicated Street Name and Numbering (SNN) custodian or the Scottish Local Street Gazetteer (LSG) custodians, who allocate the official street name and building information.

The SNN/LSG custodian has a statutory obligation to provide SNN/LSG information for all addresses within their administrative area. Once the SNN/LSG custodian has fulfilled their statutory obligation for initial capture, the LLPG/OSG custodian will maintain the address for the life of the address record.

The official street name and building information for new properties captured by the SNN/LSG custodians is provided to Royal Mail who then allocate a postcode to the address.

4.3 Currency

Updates are continuously made to the central spatial address data hub, which is managed by GeoPlace. These are used to produce the AddressBase Core product, which is supplied on a weekly basis. An extract is taken for the creation of AddressBase, AddressBase Plus and AddressBase Premium on a six-weekly basis.

4.4 Completeness

Quality control procedures are undertaken at all stages of production to ensure that the data is as accurate and complete as possible and conforms to the specification. These quality control checks include automated data testing against the product specification and visual checks by operators.

4.5 Precision

Coordinates for all addressable objects with each AddressBase product are published with geometry given to a precision of up to two decimal places for British National Grid coordinates and up to seven decimals places for ETRS89 coordinates.

5. Product supply

5.1 Product supply formats

All four of the AddressBase products are available as comma-separated value (CSV) files. AddressBase, AddressBase Plus and AddressBase Premium are also available as Geography Markup Language (GML). AddressBase Core and AddressBase Premium are also available as a GeoPackage.

5.1.1 Comma-separated values

Comma-separated value (CSV) files are delimited text files that use commas or other characters to separate individual elements of a feature. They are used to store data, often in the form of a table. These tables can be freely loaded into databases and programs, allowing for the easy loading and updating of data holdings.

The supply of AddressBase products in the CSV format means:

- There will be one record per line in each file.
- Fields will be separated by commas.
- Character strings will be encapsulated with double quotation marks.
- No comma will be placed at the end of each row in the file.
- Records will be terminated by Carriage Return/Line Feed

For AddressBase Core, the first line of the CSV file will be the Header row. The AddressBase, AddressBase Plus and AddressBase Premium products have a separate Header file that is available on the individual Product Support pages; this header file can be combined with the data to give a structured tabular view. Instructions on how to do this are provided in the relevant Getting Started Guides on the Product Support pages.

5.1.2 Geography Markup Language version 3.2.1

The Geography Markup Language (GML) encoding standard is an Extensible Markup Language (XML) grammar for expressing geographical features. XML schemas are used to define and validate the format and content of GML. The XML specifications that GML is based on are available from the World Wide Web Consortium (W3C) website (https://www.w3.org/). More information can be found in the Open Geospatial Consortium (OGC) document, Geography Markup Language v3.2.1 (https://portal.ogc.org/files/?artifact_id=20509).

The GML 3.2.1 specification provides a set of schemas that define the GML feature constructs and geometric types. These are designed to be used as a basis for building application-specific schemas, which define the data content.

More information on the XML schemas can be found in the Technical Specification document for each product.

5.1.3 GeoPackage

GeoPackage (*.gpkg) is an open, standards-based data format, as defined by the Open Geospatial Consortium (OGC). It is designed to be a lightweight format that can contain large amounts of varied and complex data in a single, easy to distribute and ready to use file. Please be advised that older versions of GIS software may need updating before being able to display and interact with GeoPackage files.

GeoPackage offers the following benefits:

- The single file is easy to transfer and offers the end-user a rich experience.
- Attribute names are not limited in length, making it user-friendly.
- The file size limit is very large at 140 TB[1], so lots of data can be easily accommodated.
- It supports raster, vector and database formats, making it a highly versatile solution.
- It is an OGC standard.
- In most cases, it is a Plug and Play format

5.2 Supply media and file structure

AddressBase products incorporate a web-based ordering system that allows customers to order initial data supply and updates, obtain price estimates and view details of their data holdings on demand from OS Orders (https://www.ordnancesurvey.co.uk/business-government/tools-support/orders).

AddressBase products can be ordered via DVD or Secure File Transfer Protocol (SFTP).

AddressBase Premium and AddressBase Premium Islands products are available as online downloads for customers who have signed up to the Public Sector Plan on the OS Data Hub (https://osdatahub.os.uk/). From October 2021, Premium Plan members will be able to download AddressBase Premium and AddressBase Premium Islands data from the OS Data Hub.

AddressBase Core is provided as a single file which will contain all records regardless of format and supply option: full supply or change-only update (COU).

The AddressBase, AddressBase Plus and AddressBase Premium products have been split into chunks of smaller data. The primary supply mechanism is referred to as non-geographic chunks. This is the main mechanism for the delivery of data. The exception to this is AddressBase Premium GeoPackage, which will be delivered as a single file.

Public Sector Geospatial Agreement (PSGA) customers are able to order all AddressBase products via geographic chunks (5km tiles). Address records are provided in individual files, which represent each 5km tile ordered.

[1] A file size limit might be imposed by the file system to which the file is written.

5.2.1 Non-geographic chunking

Non-geographic chunking is a way of dividing up data into chunks that are supplied in separate volumes that have a fixed maximum number of records, as opposed to a given geographic National Grid area. For this reason, it is possible for features from various geographic locations to appear in one volume and for adjacent features to appear in different volumes.

Non-geographic chunk volumes are designed to be loaded into spatial databases but can be used in a file format as long as all chunks are translated or imported into the system at the same time.

For the CSV supplies, a maximum of one million complete address records will be contained within one volume; when the limit is reached, a new volume will be started.

For the GML supply, a maximum of 200 000 features will be provided in one volume before the next one is started.

5.2.2 Geographic chunking

For data that is supplied in 5km-by-5km chunks, the file name will reference the 1km tile in the south-west corner of the 5km tile.

Based on your area of interest (AOI), for example, the boundary of your local authority, a 5km-by-5km grid covering the AOI is generated.

All features within each 5km grid that intersects the AOI are added to a geographic chunk file. Geographic chunking is performed using the standard Ordnance Survey National Grid.

5.3 Coverage

AddressBase products provide address data for England, Wales and Scotland.

5.3.1 National sets

A national set of AddressBase, known as a Managed GB Set (MGBS) service is a way of processing identical orders faster, which improves delivery times. All records within England, Wales and Scotland will be provided. If you are signed up to an MGBS service, you will benefit from the following:

- Data arriving faster and in a more predictable manner.
- Seeing the same version of features as other organisations.
- Easier data management as there is no need to manage your order beyond signing up

For PSGA customers, the MGBS will be supplied as geographic or non-geographic chunks. For non-PSGA users, the MGBS will be supplied as non-geographic chunks.

5.3.2 Customer-defined areas of interest

Customers may provide their own area of interest (AOI) in any standard GIS format. You can supply us with a polygon, or you can digitise a polygon within our online ordering service.

5.4 Product updates

Customers are able to take a full supply for all AddressBase products. However, an easier way to manage the addressing data updates within each product release is to take change-only updates (COU).

5.4.1 Full supply

A full supply is a resupply of all addressable features in each product every time it is released. This may require you to delete a current data holding and replace this with the newly supplied product on each product refresh.

AddressBase Core and AddressBase Premium in GeoPackage format are only available as a full supply for each release.

5.4.2 Change-only update

A change-only update (COU) is a supply of features which have been inserted, updated or deleted since the last supply. COU will be supplied on a weekly basis for AddressBase Core CSV or a six-weekly basis for AddressBase, AddressBase Plus and AddressBase Premium.

Any feature which has not undergone one of the aforementioned changes since a customer's last supply will not be supplied as part of a non-geographic chunked COU.

A geographic chunked COU is not supplied as per the non-geographic chunked COU. For a specified 5km tile, all features within the tile will be supplied should any of the individual features change. This means that the user will need to remove all features that previously existed in the provided tile(s) and insert the entire new tile(s) in its place.

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