

Smart Metering

Towards Energy 2.0
Thought Paper Series: DCC



Smart Metering & The DCC

Precis

- > The full roll-out of smart metering for residential and small business customers commences from 2016 onwards, with the new Data Communications Company (DCC) central smart metering communications service going live in August 2016.
- > Nine mandated large Suppliers will then start their SMETS2 roll-out through the new DCC service. Other Suppliers must commence after that with an absolute back-stop that no non-DCC smart meters can be installed after October 2017.
- > The industry and Utiligroup are engaged in extensive preparatory efforts and to prepare the enabling software and service solutions.
- > Energy Suppliers and metering companies must comply and operate through new central services via the Data & Communications Company that require accreditation before they can be used.
- > There are many benefits to be unlocked by energy Suppliers through the use of wireless meter communications and the half hourly metered data on the basis of permission.
- > It is important to use the time available to best prepare your business and ensure your competitive readiness.
- > Utiligroup sees wider opportunity and sector transformation to a new basis that starts with smart metering and believes the time to mobilise is now.
- > We welcome engaging to help ensure your smooth transition into the new arrangements.



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Establishing the mandate and programme for smart metering

It is a decade ago that the first stirrings of progress towards a smarter energy system through the introduction of smart metering for residential consumers was envisaged, with the original business case by a government department that has long since gone. It was another five years from there until the business case was formalised and the programme of work commenced by Ofgem and then later transferred to current government department DECC.

From that point there has been a tangible commitment and associated delivery to realise the benefits envisaged in the business case. At its simplest smart metering moves from an analogue world of disconnected, manually accessed basic data to a capability that is accurate, information rich and connected in real-time. These features help create a new basis for customer service and offerings to evolve and reflect the experience and expectations we all have through other digital services in telecoms, shopping, TV, banking and social media.

The always-connected world of the internet has fundamentally changed the way in which we live and enabled constant innovation and personalisation in our services. Customers are now at the heart of their services through self-service, contribution to the outcomes they want and becoming real-time reviewers of the service level received. This has caused services to evolve, respond and innovate in ways that transform markets, causing some incumbents to fall away and completely new players emerge to become leaders. Energy is at the very start of this journey with new entrants seeing the opportunity and entering the market before the digital capabilities are in place.

It is fair to say that the reputation of the energy market has suffered as it evolved from a perception of a low cost essential enabler, which customers did not really need to think about through price rises over the last decade and problems in customer service, with for many years a limited choice of provider compounding the issue. Prices more than doubled after the cold winter shock of 2004 causing gas then electricity prices to respond. Energy companies sought to hedge their positions, seeking to mitigate against future wholesale price rises, but causing limited flexibility in their ability to respond to short term dips.

Exacerbating this, the big established energy companies embarked on the introduction of large enterprise IT systems that took lots of investment and time to deliver and even longer to fine tune the customer service. UK energy was stuck in what at Utiligroup we call, 'Energy 1.0' a world of pre-internet businesses, big IT systems, slow change and limited choice. But around us the world was changing quickly, technology innovation was growing at an exponential rate with an energy sector unable to absorb it globally at a fast enough rate, from smart metering and wind power to distributed solar microgeneration, tidal energy, offshore arrays, emerging electric cars, battery storage, demand side services and a bewildering range of even more disruptive entrants on the horizon. It's not just the established providers of energy technology but new companies such as Tesla, Google and Amazon experimenting with new capabilities and a massive eco-system of start-ups arriving in endless waves.

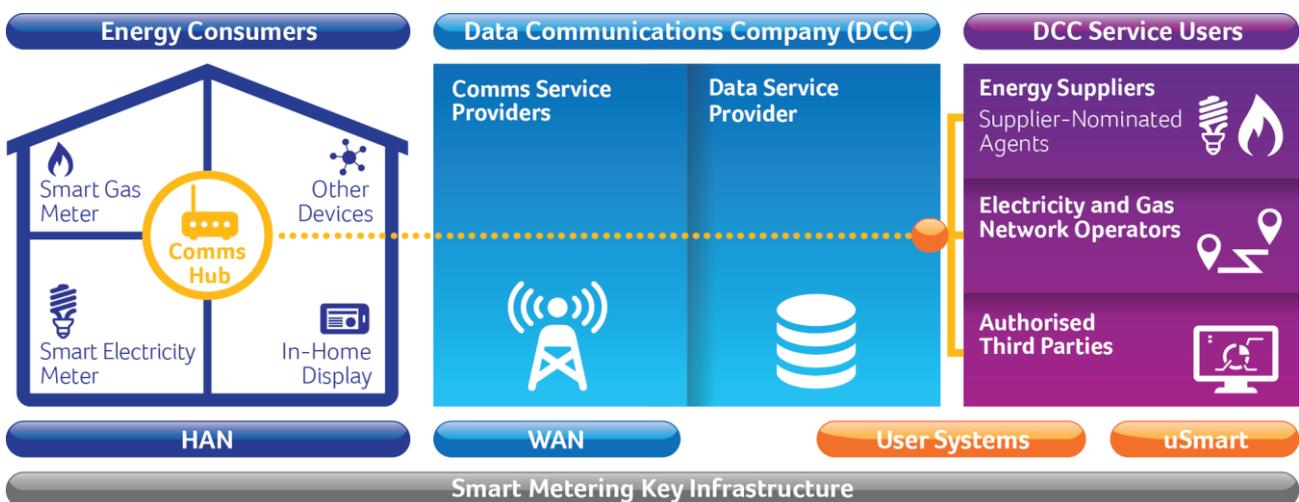
Common factors of all those seeking to innovate for customers to increase the effectiveness, understanding and engagement in energy provision is their desire for continuous online customer connectivity, a recognition of the value of using information and a need for a longer term relationship on the basis of trust. Clearly, there is a lot of work to do to create this relationship in a sector that is by the admission of its long term incumbents 'broken,' but this is vital to achieve the mandate of trust that is key to using their data in collaboration with them. There is then a real rationale for the digitisation of energy services and a need to do and be seen to do the right things that create customer trust. In the UK however it can be said that we do not always make things easy for ourselves in comparison to other countries. Whereas energy is often a bundled integrated service from one provider outside UK, here we have an established commitment to competition and separation of roles designed to cultivate excellence, choice and innovation. As we know in the UK the energy company selling the commodity to the customer (energy Supplier) is separate to the companies that deliver the energy over their wires and pipes (Transmission and Distribution companies) with metering services being further separated as a regulated entity (even if it is

within the energy Supplier). To enable all these roles to participate in a digital energy economy with access to the right information and security of customer access requires some complexity not delivered in other countries. With the Supplier having the customer relationship and little contact with the distribution companies, the UK smart metering roll-out was designed to be Supplier led enabling deeper contact and service evolution, but losing the ability for a street-by-street orderly roll-out approach.

With Suppliers leading the roll-out they need to be able to choose different providers over time and to operate with meters they inherit when they win a new customer and to stop communicating with those for customers they lose. The modern concerns of security, authorisation and resilience drive the need for an infrastructure that meets the needs of customers, energy companies and IT considerations whilst being able to support competition, service evolution, new players and services as yet not envisaged. It was a unique level of complexity in the world for a smart metering roll-out but if it could be delivered, the capabilities established will be flexible and adaptive to support the future energy market.

When the programme commenced in 2011 there was some scepticism whether the government of the day would see it through, revert to a Distributor led approach or abandon the central IT systems needed to deliver smart metering. The coalition government was pushing strongly to start the mass deployment after a smaller foundation stage by 2015 and to complete it by 2019. Here we are in 2016 with the roll-out now getting close to starting but with the completion date only put back a year. The demand for change and new capabilities is now real, pressing with the market leaders starting their use of new central systems and full roll-outs commencing towards the end of this year. Having got this far it is unlikely to be delayed or slip much further, so the race is most definitely on.

Creating a market design for smart metering



There are many capabilities required to deploy smart metering starting with the meters themselves, the company who will deploy and maintain them and the back-office systems needed to manage the data and its use within the service. With its commitment to competitive market for energy, the UK has a requirement to continue this through a central IT capability that enables all energy Suppliers, big or small, incumbent or new to offer the same type and consistent level of service to its customers through the new wireless communications with smart meters. This new requirement is known as the DCC or 'Data Communications Company', an umbrella organisation under which sits two tiers of service provider. The first is the Communications Service Provider (CSP) for which there are three regions of service with roughly ten million properties each (south, central and north of UK). The CSP provides the communications hub and telecoms service that enables the meter to be communicated with on both an inward and outbound basis. After an extensive bidding process Telefonica won the central and south regions and Arqiva the north. Each CSP has to design, manufacture and provide dedicated communications hubs to the energy Suppliers to integrate into their chosen meters ahead of deployment which has to be commissioned along with the meter at the time of deployment. The meter can then be 'seen' in the new DCC service and interacted with in accordance with the data, process and regulatory stipulations directed by the new Smart Energy Code (SEC). The second tier of DCC service is the 'Data Service Provider' (DSP) provided by CGI after a corresponding tender that creates the software that enables the service access and data exchange by each authorised party. To protect

customer interests and avoid inadvertent issues with inappropriate data access, the DCC does not store the data which resides at all times within the meter – meaning the DCC must enable constant ongoing meter access where required.

In the competitive markets an energy Supplier may win or lose customers continually, including during the roll-out of smart meters. This makes them less inclined to want to buy the meters themselves when they may not provide the energy and service innovation the meter enables. So a type of service provider called the Meter Asset Provider (MAP) finances and owns the meters with the Suppliers effectively 'renting' it from them during the period of their customer supply relationship. These MAPs are required to track their meters through the supply chain and into deployment. This ensures their integrity when deployed into operations and enables them to recognise who to bill for the services. The arrangements remove commercial complexities for the energy Supplier, but introduce a range of operational requirements through the supply chain that the DCC must support. We'll say it again, with the best of intentions and with an eye to future innovation; we still don't make it easy for ourselves in the short term of UK energy.

Enabling meter interaction through the dcc

As we can observe, without the new DCC there is no effective deployment of smart metering. Therefore, since the contract awards in late 2013 the new providers have been working hard to create and deliver all the new capabilities required. While there has been some ongoing incremental slippage in the delivery we now have a profound government commitment stated through the regulators OfGEM – that no new meters can be installed that aren't DCC ready and compliant by the back-stop date of October 2017. Although seeming a long way away, it is far closer when looked at as a delivery plan from early 2016. The first mandated energy Suppliers to prepare for and start to use the DCC will commence live operations in August this year (or thereabouts) with only a year after that for all the energy Suppliers, meter deployment companies and MAPs to have their systems in place, tested and accredited as fit for purpose.

Focusing on energy Suppliers for a moment as the primary customer relationship owner, the process of using the DCC is not only one internal to their business that they can control. They must integrate the new service (meters, communication hubs, back-office and DCC use and create a supply chain of finance and operational readiness with their MAPs and meter service providers) and then take this through a process of demonstrating readiness with the DCC leading to an accredited status.

Effective planning is required to define a roll-out plan and provide the required schedules of DCC communication hubs ten months in advance with 50% accuracy for a period of twenty four months. Obtaining test environments and associated technical infrastructure from the Communications Service Providers also takes about four to five months. Even if a Supplier's roll-out during the period to 2020 is not at the front of the programme commencement, work to use the time available and produce all the required planning to get in the industry queue is now an important ongoing consideration. The DCC will be delivered in a series of planned releases with new features and rectification of outstanding issues in each one with the management of this and adoption of change from each release becoming an ongoing part of technical and operational evolution for all those using the DCC in future. The DCC is also being designed to achieve a flow of messaging across the infrastructure that avoids congestion by balancing planned and ad-hoc use. This will reduce peaks and avoid congestion that limits the ability of the user to deliver their intention at the time of message initiation. A planned approach to operational use of the DCC will be required to schedule messaging throughout each month and reduce likelihood of use at times of industry peak message exchange. After the programme commences the approach to adopt and enroll existing SMETS1 pre-DCC smart meters will be confirmed and subject to the basis of decisions these will then transition into the enduring arrangements.

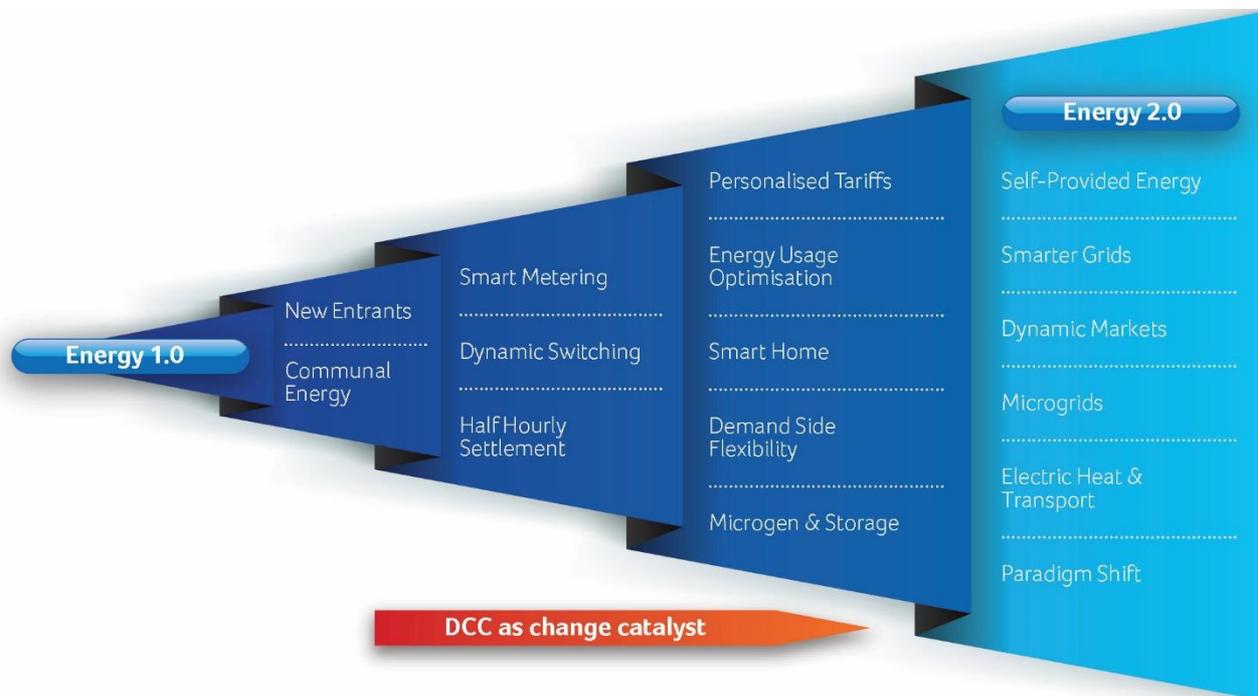
Ongoing planned deployments that continue using SMETS1 and picking up customers with a SMETS1 meter needs careful alignment towards the new DCC and engagement with them to ensure the meters can transition into the enduring arrangements without technical or commercial disincentive. The DCC is a new, extensive requirement with complex new data and operational processes to support. It is a big ask for the large incumbent providers and an even bigger one for the recent and emerging new entrants. The DCC is both an enabler to grow your customer relationships, numbers and offerings when delivered well and a blocker otherwise, so the preparedness of the Supplier in this process is crucial to their future competitive

success. The vision of UK government for the DCC is that it will become the central new service upon which new capabilities will be introduced and even before it is delivered the commitment to deliver centralised, faster customer switching between energy Suppliers through the DCC sometime from 2018 onwards has been made. The message is obvious, get on board now to take ownership of your success and ability to move forward.

With the new DCC being such a vital enabler to UK energy and its direct communications connection to every home it is to be expected that security and authorised service access is designed in from the start. Every user of the service across the Suppliers, meter service providers and MAPs have to meet stringent, accredited security requirements that are far beyond that most have ever had to consider to date. The nine mandated 'Large Suppliers' have to be ready by August this year (2016) with extensive programmes of work ongoing alongside other major industry change programmes such as Nexus for gas and 'P272', to move non-residential customers into a more dynamic half hourly settlement process. The next wave of energy Suppliers as mentioned before need to complete all this work, achieve accreditation and commence their deployments only a year later with an absolute cut-off of no dumb meters or non- DCC early smart meters after October 2017, which suddenly doesn't seem so far away.

How Utiligroup is enabling the delivery of smart metering

Utiligroup is focused on enabling competitive market entry, compliant participation, optimised growth and innovation to meet future change, therefore the successful delivery of smart metering and the DCC is core to our business. Five years ago we launched a series of thought papers called 'Towards The Smart Energy Market' that set out perspectives on energy evolution that are now coming to fruition with OfGEM recently adopting the term in a paper, that carries the theme on for five years and beyond, which we welcome as our tracking of the market.



Technology and customer service expectations show that we are only at the start of the next wave of energy – digital communications with customers is just the start. From here we envisage new entrants in Supply using customer data under trust to introduce growing savings or new benefits. The range of energy technologies such as microgeneration, microgrids, power storage, electric heating and electric cars is combined with service innovation in price comparison, communal, council and city local energy service models and decentralised energy systems. It's going to be exciting, messy and disruptive requiring customer focus, agility and assured compliant market best practice. We recognise the evolution to the next energy model as 'Energy 2.0' and the time to prepare for it is now.

In the background Utiligroup has been quietly and diligently working to enable an effective transition and operational basis for our Supplier, Meter Service Provider and MAP clients to seize the opportunity of the DCC. Other parties are expert in the actual meters and communications, but when it comes to the deep complexity at the heart of the market we look forward to getting stuck in and turning it into trusted capabilities that frankly just let our clients get on with their businesses with customers.

We're all customers and we want energy to be efficient, it's our core sector so we're absolutely committed to helping clients get it right, first time and to compete on the new basis. As evidenced by the huge switching of customers towards the new entrants, they welcome the aligned services that reflect their experience of other sectors thus want this to continue smoothly and to grow further. So we looked into the requirements of the new market and the opportunities it creates. We registered as a SEC Party and then engaged deeply as part of the work groups and committees that are shaping the new changes. This engagement enables us to develop the intelligence from the inside that is a vital enabler now and into the future in creating new capabilities.

Our industry and solution experts applied this new insight into the design and ongoing delivery of a new enabling Software as a Service (SaaS) solution called 'uSmart' (making you smart). This solution does what Utiligroup does best by sitting between the new DCC service and those using it to remove the need for those focusing on customer services to understand and model all the industry complexity across their IT systems. The industry knows this solution for DCC as a market 'adaptor' connecting the user of the DCC with the central services and onwards to the meter devices, but with a secure two-way interface only to the central systems required. We know our clients want to focus on customer innovation and avoid industry complexity so our solution goes beyond merely connecting systems and into the full business operational lifecycle with orchestration of business processes and end-to-end information management putting control and operational effectiveness for the new industry basis into the hands of our clients and enabling ease of integration for their existing back-office systems.

Changing your business to meet the evolving needs of customer expectations is demanding enough, so we seek to abstract the complexity and keep it away from your business as much as we can. This approach also means we can deliver some of the preparations and accreditation for the Supplier (and other roles) which minimises your efforts and requirement for industry specific expertise. In addition to creating the uSmart solution for our customers we also created our own testing environment where we can create industry data, perform our own simulated interactions and model the new services at the earliest stages in the central programme delivery.

Our solution and that of our clients using it in the mandated early programme entry has delivered successfully, with our solution the first through the SREPT (SMKI & Repository Entry Process Testing where SMKI means Smart Metering Key Infrastructure) stage of approval. There's no time to take a breath though, the work continues at pace to deliver for our clients. During 2016 a new national promotional campaign will build through media channels promoting smart metering benefits and delivery by the new body Smart Energy GB. Whether you are ready or not to deliver, your customers will be exposed to messaging that will create interest and their demand. If competitors are preparing and you are behind them, it may create a new competitive advantage for them. Our focus therefore is to work with the extensive range of other Suppliers, Meter Agents and MAPs to help ensure their readiness in the timeline described and support their smooth transition into the new arrangements.

We are engaging extensively with existing clients, emerging new entrants and the market to show our new solution, explain the timings as well as commencing collaborative work together. Our business has grown its expert resource base and industry presence to have the right coverage, intelligence and scale to enable such a massive transition in the sector. The time to engage and commence preparations is right now so that you have a planned approach, ready at the right time with an integrated capability for the DCC and beyond that you can use and build on confidently. This is crucial to continue your growth, but also to be ready for energy to go digital, get connected, bring it up to date and meet the emerging future needs of society.

Realising customer opportunities unlocked by digitising energy communications

In a world where online connectivity is at its heart, everything will become connected over time and that takes ever more electricity. In decarbonising our society, we progress towards sustainable energy sources with microgeneration, electricity based heating and storage in our homes. So while adding more electrical needs, it is vital to become efficient in our use of energy demand and to manage the real-time flow of supply and demand. In addition to smart metering and the enabling new DCC with centralised, faster switching following on, central settlement of customer demand for Suppliers will move towards a new half hourly basis and from there we envisage new tariffs and markets to reward customers for flexibility in the way they use their energy. To enable this innovation half hourly smart metering data can also be accessed securely through the DCC on the basis of customer authorisation by trusted Suppliers or third parties. Even faster real-time access to data within the home through smart home platforms and consumer access devices plus virtual in-home displays via portals and apps will come forward. These devices themselves need to operate in accordance with the DCC so it will be an increasingly central industry capability through which to drive innovation.

Once the DCC is introduced the possibilities are exciting, will evolve quickly and will absolutely need customer trust, but needs smart meters in place first as the foundation device. We work with Supply companies today who are exploring this value and emerging new ones who will be 'smart from the start'. Gradually we are becoming part of the services we receive, not just consumers, but participants and then partners in the service outcome. So whether it is planned or messy, recognised or not, our energy services like so much of our society will evolve onwards to a new basis. As with other areas of society the changes that communications connectivity introduces can scarcely be envisaged today by those who come from the old foundation. Utiligroup was formed to enable the future, from existing areas such as competitive supply entry or communal energy through to smart metering, better markets and beyond.

Rest assured that as we have on the DCC, we have new research, models, data analytics and capabilities brewing inside the business to discuss and engage with you on. From device to customer and central industry, Utiligroup has a holistic view and process based model to use in supporting your business evolution. The DCC is a new central enabler that plays a pivotal role in the journey from Energy 1.0 today to Energy 2.0 tomorrow and onwards. This requires a multidisciplinary approach that brings together industry understanding, ICT capabilities, security, service readiness and a continual commitment to turn future complexity into practical enabling capabilities. We work hard to be your trusted partner to enable services today, make the transition and seize the opportunity of a transformed energy market. In the UK we sometimes make things difficult for ourselves, but it's because we can see a future that is profoundly different and need to orientate towards it now. We welcome working together in partnership to commence this journey and most importantly continue to enhance customer service and focus in the delivery of the vital underpinning services to our lives.

In conclusion - the time to prepare is now

- > In conclusion, 2016 is a critical year for energy Suppliers and metering organisations to prepare for their delivery of smart metering and of accredited use of the new central DCC service.
- > Preparations takes time with industry timescales for participating in testing and such as ordering communication hubs for your meters having ten months of prior notice required before they start to be shipped.
- > Preparing now will enable an effective transition and early realisation of competitive benefits, enable a better customer relationship and avoid being blocked from competing effectively against those who move forward early in the roll-out.
- > There is an absolute backstop date of August 2017 by which all suppliers must have completed qualification as a DCC User, and we recommend starting now and using the time available to your best advantage.
- > Utiligroup is working as part of the programme to deliver the enabling 'adaptor' solution needed that meet the requirements of industry expertise, software and service design, security and supporting the industry future roadmap.
- > Our business is ready to work in partnership with you today and welcomes early dialogue to seize the opportunity and transform energy use for all customers.

To discuss your readiness for DCC and Utiligroup's enabling solution contact Jennifer James:
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Further Reading:

- > The DCC <https://www.smartdcc.co.uk/>
- > Smart Energy GB <https://www.smartenergygb.org/>
- > OfGEM <https://www.ofgem.gov.uk/gas/retailmarket/metering/transition- smart-meters>
- > OfGEM Smarter Markets <https://www.ofgem.gov.uk/gas/retail-market/market-review- and-reform/smarter-markets-programme>
- > Smart Energy Code (intro) <https://www.ofgem.gov.uk/licences-codes- and- standards/codes/gas-codes/smart-energy-code-sec>
- > Smart Energy Code <https://www.smartenergycodecompany.co.uk/home>
- > DECC <https://www.gov.uk/guidance/smart-meters-how-they-work>
- > Energy UK <http://www.energy-uk.org.uk/policy/smart-meters.html>



Stay Tuned...

Our next paper related to DCC will cover how to capitalise on its use to create new benefits on the basis of trust with customers...

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