

GCN Service Description
Addendum to PSN Operating Model

Commercial and confidentiality statement

This document defines the principal requirements for GCN Services in the context of the Public Sector Network (PSN) Operating Model, taking account of an industry proposal to establish core enabling infrastructure for the PSN, this being the Government Conveyance Network (GCN) and associated service and settlement technical infrastructure¹. Work to produce this Service Description has been pursued at the invitation of Her Majesty's Government (HMG), with industry contributors therefore participating at the request of HMG.

All aspects of discussion and work to produce this Service Description have been non-commercial in so far as the outcomes and outputs are not intended to affect any existing contractual relationships, or to bind any of the participating companies in terms of future product offerings. Nothing in this document constitutes an offer of supply or service from any company. The work to produce this document has not intended to exclude the engagement of those organisations not participating, and this GCN Service Description is therefore subject to broader industry consultation.

No information in this document is either confidential or commercially sensitive from the perspective of companies participating in its development. It has therefore been for HMG to determine what confidentiality provisions shall apply to this document. Cabinet Office, the relevant authority in this regard, has determined that this document does not require a protective marking, and the document is marked UNCLASSIFIED to positively indicate this status.

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¹ Refer to section 1 for further clarification with regard to background and context

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Key technical abbreviations

Term	Description
"AS"	Autonomous System
"ASBR"	Autonomous System Border Router
"BGP"	Border Gateway Protocol
"BGP ASN"	Border Gateway Protocol Autonomous System Number
"COS"	Class of Service
"DNS"	Domain Name Services
"DWDM"	Dense Wave Division Multiplexing
"GSI"	Government Secure Intranet
"IGP"	Interior Gateway Protocol
"LDP"	Label Distribution Protocol
"LSP"	Label Switched Path
"MED"	Multi-Exit Discriminator
"MP-BGP"	Multi Protocol BGP
"MPLS"	Multi Protocol Label Switching
"MPLS EXP COS"	MPLS 'Experimental bits' used for COS
"NAT"	Network Address Translation
"PE"	Provider Edge Router
"PoC"	GCN Point of Connection
"QoS"	Quality of Service
"RT"	Real Time
"RD"	Route Distinguisher
"VPN"	Virtual Private Network
"VRF"	Virtual Route Forwarding

1 Introduction

1.1 General background

The Public Sector Network vision

- 1.1.1 The Public Sector Network (PSN) vision one of creating 'the effect of a single network across UK government', delivered through multiple service providers in order to ensure ongoing value and innovation.
- 1.1.2 In some respects, this is similar to the Internet model, whereby 'service consumers' experience flexibility and inter-working without much concern for underlying inter-network 'plumbing'. However, the vision is also one of a 'private network of networks' for the public sector, addressing the various special security, resilience, service and availability needs of public sector organisations.

The PSN in practical terms

- 1.1.3 The PSN is a supply-side 'network of networks', making network-oriented services utility-like for the public sector. Hence, it is essentially an inter-working and standards framework for the suppliers of network-oriented services to the public sector, governing both interconnection of supplier services and the relevant key service characteristics/attributes that ensure inter-working and end-to-end service assurance across supplier portfolios. As such, it includes:
- an overarching PSN Operating Model and governance approach – including a Code of Interconnection (CoI) and Code of Practice (CoP) for service providers, and a Code of Connection for service consumers;
 - new standards that ensure inter-working across network-oriented services and end-to-end serviceability across suppliers;
 - a 'marketplace' for PSN Services, established through procurements; and
 - various core enabling infrastructure, including:
 - a Government Conveyance Network (GCN), this being the interconnect 'glue' between the individual service providers conforming to the CoI;
 - central technical infrastructure providing for service inter-dependency analysis across suppliers, supporting end-to-end service management and assurance; and,
 - an appropriate commercial settlements regime for suppliers, underpinning end-to-end service management and assurance where the chosen delivery model involves peered service providers.
- 1.1.4 To be clear, this standards framework will not replace current quality (ISO 9001), service (ISO 20001) and security (ISO 27001; Security Policy Framework) management standards, or Next Generation Network (NGN) standards; rather, it will compliment these by extending standards to various technical, commercial and service inter-working arrangements for government's suppliers of network-oriented services.

The PSN Programme

1.1.5 During the course of 2008, government established a formal programme of activities – the ‘Public Sector Network Programme’ – to drive forward planning and execution against the PSN vision. Though principally coordinated by Cabinet Office, this collaborative programme engages input and contribution from a broad cross-section of government and industry stakeholders.

The Ocean procurement

1.1.6 Towards the end of 2008, government launched an initial procurement – known as ‘Ocean’ – formally aligned to delivery of the PSN vision. Ocean is a collaborative procurement led by Foreign & Commonwealth Office (FCO) in conjunction with Office of Government Commerce (OGC) and OGC Buying Solutions (OGCbs).

1.1.7 Ocean will establish, with no particular meaning implied in the stated order:

- successor PSN Services to the current Government Secure Intranet (GSI) family of contracts and services;
- successor PSN Services to the current Managed Telephony Service (MTS) contract and services;
- an initial ‘catalogue’ of approved PSN Services alongside a contracting framework allowing for consumption by any public sector organisation; and,
- replacement services in respect of the Foreign Telecommunications Network (FTN) – i.e. FCO’s Departmental voice and data communications supply – based principally on the catalogue of approved PSN Services.

Further information about the PSN Programme

1.1.8 Further background information about the PSN programme and related activities is provided in related documents (Reference Appendix B). Alternatively, any comments or queries in connection with the PSN Programme should in the first instance be directed to:

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1.2 Specific context to this document

The PSN Operating Model

1.2.1 The PSN Operating Model describes how PSN Services will inter-work in creating ‘the effect of a single network’. It also describes the technical, security, service, governance and commercial models for the PSN, to be applied for all PSN Services procured through Ocean and more broadly.

1.2.2 The PSN Operating Model is intended to focus only on those elements that must be common across all PSN Services – e.g. certain technical standards and central infrastructure – and on the core responsibilities of service providers and service consumers to the extent that these affect service inter-working and interoperability across the PSN.

1.2.3 Accordingly, the PSN Operating Model prescribes a minimum set of requirements that a service provider must meet in order to be able to deliver PSN Services. It prescribes similar for service consumers. However, the model intentionally leaves as much as possible open to individual service consumers and service providers to define, thus allowing an appropriate level of local autonomy, which is considered important in terms of:

- enabling on-going competition and innovation; and
- maximising take-up across the public sector.

1.2.4 Also, the PSN Operating Model is intended to be extensible, and is currently defined as a 'baseline'. Hence, the Operating Model is expected to evolve over time, either by necessity or desire. Evolution of the baseline might be driven by, for example:

- considerations and issues identified through broader consultation or, indeed, Ocean Competitive Dialogue (CD) – see section 1.4 below;
- resolution of certain outstanding issues or agreements in a number of areas where there remain practical options rather than 'absolutes';
- extension of the model, in whole or in part, to cover a broader set of ICT services across government's ICT estate, e.g. key aspects of G-Cloud implementation².

The Government Conveyance Network

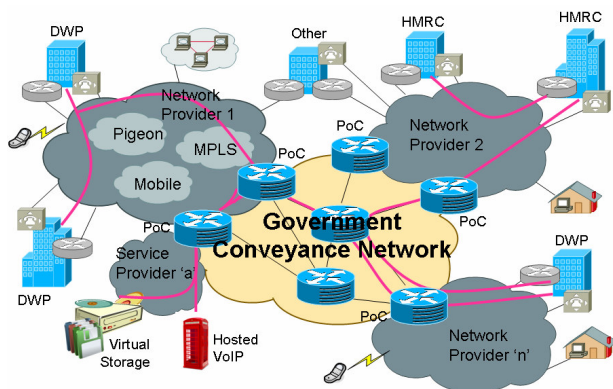


Figure 1 - High-level PSN Transport Architecture

1.2.5 A Government Conveyance Network (GCN) will be used to interconnect supplier data networks and other services in terms of network transport. This is illustrated in Figure 1. The GCN will be a network of high-availability Points of Connection (PoCs), made available to all PSN Service Providers or public sector organisations complying with a Code of Interconnection (CoICo): Direct Network Service Providers (DNSPs).

1.2.6 Further PSN Service Providers will be able to utilise the GCN through these DNSPs, though no direct connection to the GCN will be permitted for any PSN Service Provider not fully complying with a CoICo. Moreover, PSN Consumers (i.e. public sector customers) will not be allowed to connect directly to the GCN, unless they comply with a CoICo and essentially become DNSPs in their own right.

² Further information about the G-Cloud project, which is considering a cross-government data centre strategy, is available from Cabinet Office

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- 1.2.7 Though it is possible that the GCN is provisioned upon the core infrastructure of a single network operator at any given point in time, the GCN will essentially be a composite 'mesh' of core industry networks, with any network operator able to participate in GCN delivery providing they meet certain capability criteria defined in the PSN Operating Model. Hence, the supply of GCN connections will be an open market.
- 1.2.8 If there is no competition in the supply of GCN Services [because only one network operator participates in GCN delivery, whether initially or at some future point in time] then these services will be subject to a regulatory regime, to be agreed through the PSN governance model. In such a scenario, value will be assured on a cost-orientated basis, and the network operator will therefore be required to demonstrate that its GCN product/service design is efficient.
- 1.2.9 A GCN Service Provider will not necessarily be a PSN Service Provider. However, any service provider operating as both will be subject to legally-binding commitments with regard to 'fairness', whereby their business function involved in GCN delivery will be distinct from their business function engaged in delivery of PSN Services to public sector consumers. The provisions here incorporate Chinese Walls between the business functions, and are intended to ensure that the GCN itself is not a point of competition or differentiation for any supplier, whether they are involved in GCN delivery or not.
- 1.2.10 No DNSP, whether a public or private sector organisation, will be allowed to utilise the GCN as a substitute national network backbone in creating end-user PSN Network Services (i.e. a Wide Area Network (WAN) service for end-user connectivity.)

GCN Points of Connection

- 1.2.11 Points of Connection (PoCs) on the GCN will be made available by the supplier(s) of GCN Services, subject to approval of each PoC location through the PSN governance model. It is intended that the distribution of PoCs will not represent a geographical constraint for DNSPs, though the number of PoCs will be kept to a reasonable minimum in order to remain manageable and cost-effective for the supplier(s) engaged in GCN delivery.
- 1.2.12 As a minimum, the choice of PoCs available to DNSPs will provide for appropriate resilience and geographical diversity in terms of DNSP connections to the GCN. At the same time, the suppliers of GCN Services will consider any reasonable request for a new PoC location from DNSPs, subject to governance approval.
- 1.2.13 DNSPs will be able to connect to GCN PoCs by means of both physical and virtual connections, i.e. encompassing both 'build-to' and 'build-at' options. However, all virtual connections must be specified and operated as private dedicated connections between designated DNSP site(s) and PoC(s).
- 1.2.14 At the transport level, interconnection to/at a PoC will be based upon Multi-Protocol Label Switching (MPLS), using either 'option A' or 'option B' according to 'product options' made available by the GCN Service Provider(s). Suppliers of GCN Services will provide for translation between these connection options.

Single-instance network services

- 1.2.15 The GCN will also incorporate a number of single-instance network services, such as root-level Domain Name Services (DNS), which are required in order to deliver 'the effect of a single network'. Each such service will be surfaced by an individual supplier involved in GCN delivery, by agreement under the governance regime set out in the PSN Operating Model. To be clear, this shall not apply for delivery of the Service Information Monitoring (SIM) infrastructure: the approach to SIM delivery is covered separately.
- 1.2.16 The costs associated with delivering single-instance network services will form part of a 'shared overhead' to be funded equitably by the suppliers of GCN Services, with costs reported 'open book' and value assured on this basis. The GCN Service Providers will recover such overheads as part of their charges for GCN Services, and the amounts recovered will be auditable under provisions for fairness.

The GCN and Critical National Infrastructure

- 1.2.17 The GCN and associated single-instance network services will be designated as key elements of Critical National Infrastructure (CNI). All suppliers involved in GCN delivery will conform to reasonable requirements and obligations placed on them in this regard.
- 1.2.18 CNI requirements and obligations for GCN Service Providers may be determined by the PSN Authority or, in consultation with the PSN Authority, by the Centre for the Protection of Critical National Infrastructure (CPNI).
- 1.2.19 Network operators may be excluded from GCN delivery by the PSN Authority where they are unable to meet any requirements and obligations relating to CNI, whether they are established GCN Service Providers or not.

PSN security basics

- 1.2.20 In terms of Confidentiality, Integrity and Availability (C-I-A) as defined by CESG – government's technical authority for Information Assurance (IA) – the PSN will operate to a base level of 2-2-4. The GCN 'core' will enable this base level of assurance end-to-end, with all individual PSN Services requiring accreditation to 2-2-4, subject to individual service consumer requirements for lesser access resilience/availability (i.e. 2-2-x).
- 1.2.21 Higher availability will be required within the GCN 'core' itself, where certain types of network traffic will be concentrated, and this will be addressed as part of GCN implementation reviews with each network operator participating in GCN delivery.

This 'GCN Service Description' document

- 1.2.22 This GCN Service Description document is an addendum to the PSN Operating Model. And, to be clear, it is an explicit component of the Operating Model. As such, it is part of the current Operating Model 'baseline'.
- 1.2.23 This document sets out requirements and standards for GCN Services – i.e. the supply of connections to the GCN – and all GCN Services will be required to comply with these requirements and standards as a minimum.**

1.2.24 GCN Service Providers will also comply with all relevant requirements and provisions set out elsewhere in the PSN Operating Model.

1.3 Related documents

1.3.1 This document refers to the definitions of certain core enabling infrastructure and services, each of which is provided as an addendum to the PSN Operating Model document. A number of other related documents are also referenced. These further documents are explicit parts of the PSN Operating Model, and include:

- the '**PSN Operating Model**' itself;
- a '**Statement of Fairness Provisions for GCN Service providers**';
- a '**Service Information Monitor (SIM) Service Description**';
- a '**Settlement Regime Description**';
- the '**PSN Common Requirements**'; and,
- draft **CoCo, CoP and CoCo Agreements**.

1.4 Consultation and Ocean Competitive Dialogue

1.4.1 At this time, the PSN Operating Model, including this Service Description, has been documented to allow both the PSN Programme and the Ocean procurement programme to move forwards against their primary objectives. Hence, the Operating Model and this Service Description represent a baseline that is expected to evolve, in some areas out of necessity as the needs and circumstances of broader stakeholders across both industry and government are considered by the PSN Programme and the Ocean procurement.

1.4.2 The above in mind, there will be open consultation with regard to the baseline PSN Operating Model and this GCN Service Description, managed primarily by Cabinet Office and supported by those organisations that have participated in authoring this document. An initial consultation period will commence 24 April 2009, closing on 22 May 2009. Obviously, long-listed Ocean bidders may participate in this consultation at their option.

1.4.3 The PSN Operating Model and this Service Description may be further refined through the Competitive Dialogue (CD) process of the Ocean procurement. This will be supported indirectly by those organisations that have participated in authoring this document, subject to an appropriate 'Ethical Walls' agreement in respect of their key individuals engaged. A generic version of this agreement will be published separately.

1.4.4 Where any further detail to the PSN Operating Model is developed through Ocean CD, and this detail is considered to be commercially sensitive in relation to the Ocean procurement, then this will be incorporated into a separate Ocean Operating Model. Once Ocean framework contracts have been awarded, the approach and timescales for incorporation of such variances, where appropriate, will be agreed through PSN Programme governance.

1.5 The scope of this GCN Service Description

1.5.1 This document sets out the requirements and standards for GCN Services – i.e. the supply of connections to the GCN – and all GCN Services will be required to comply with these requirements and standards as a minimum. GCN Service Providers will also comply with all

relevant requirements and provisions set out elsewhere in the PSN Operating Model and PSN Common Requirements.

- 1.5.2 Individual GCN Service Providers and PSN Service Providers may define and comply with additional requirements and/or standards as appropriate to their own individual requirements. However, any such requirements and standards will be in addition to the minimum set out here.
- 1.5.3 Further information about the PSN commercial model as relates to the provision and consumption of GCN Service can be found in the PSN Operating Model.

1.6 Prioritisation of GSN Services requirements and standards

- 1.6.1 This document identifies a priority for each requirement and/or standard. The convention used for this is set out below.
- **“Must”** – abbreviated to **“M”** – represents a mandatory requirement or a standard that must apply or be adhered to.
 - **“Should”** – abbreviated to **“S”** – represents a highly desirable requirement or a standard that is highly recommended
 - **“Could”** – abbreviated to **“C”** – represents a requirement or standard that is desirable, but not fundamental to the integrity or operation of the PSN
 - **“Would”** – abbreviated to **“W”** – represents a low priority requirement or standard, which can be considered optional

2 GCN connectivity services

2.1 Overview

- 2.1.1 The GCN shall provide inter-connectivity between different PSN Service Providers, which in turn provide PSN Services to PSN Customers.
- 2.1.2 The GCN shall serve as a network transport hub for all PSN Service Providers or public sector organisations complying with the PSN Code of Interconnection (CoIco). All such organisations are described as Direct Network Service Providers (DNSPs).
- 2.1.3 DNSPs shall interconnect with the GCN at a number of defined Points of Interconnection (PoCs), which shall be spread throughout the United Kingdom mainland, offering local points of peering to individual DNSPs.
- 2.1.4 The number and location of PoCs shall be agreed through the PSN governance regime and shall ensure that the range of PoCs available offers optimal performance, resilience and diversity, balanced against the cost of supporting any volume of PoCs.
- 2.1.5 GCN Service Providers shall keep the number of PoC locations to a minimum and shall locate such PoCs in sites convenient to the service provider community as a whole. However, the number of PoCs will reflect the need to:
- prevent any loss of connectivity as a consequence of losing a PoC;
 - ensure equitable access regardless of geography; and,
 - offer 'carrier grade' availability.
- 2.1.6 GCN Service Providers shall offer GCN connectivity by way of Inter-AS BGP peering on Option A or Option B at their own discretion. The GCN Service Providers will provide for translation between these connection options across the GCN itself.
- 2.1.7 GCN Service Providers shall provide a minimum of 1Gbps Ethernet interfaces for connectivity onto the GCN. Other interfaces may be offered but this will be specific to each GCN Service Provider, allowing for differentiation.
- 2.1.8 The GCN shall be operated at Impact Level 2 in terms of Confidentiality and Impact level 2 in terms of Integrity, and it shall not prohibit individual PSN Service providers from offering security overlays in accord with the PSN network and security models.
- 2.1.9 PSN Service Providers will provide all network intelligence in terms of Network Address Translation and encryption termination. The GCN network will be used for transport only

2.2 Functional requirements

Reference	Statement of Requirement	Priority
2.2.1	The GCN Service Provider shall provide connectivity services and	M

	associated ancillary services	
2.2.2	The PoCs shall be in locations which maximise the accessibility of the PoCs for PSN Service Providers and optimise the ability of re-use of existing infrastructures by GCN Service Providers	M
2.2.3	The GCN Service Provider shall design the GCN so that the business requirements advised to the GCN Service Provider by the PSN Service Providers are satisfied	M
2.2.4	The GCN Service Provider shall provide sufficient Ethernet connection interfaces at 1Gbps	M
2.2.5	The GCN Service Provider shall provide physical connectivity to ColCo compliant service providers within POC locations	M
2.2.6	The GCN Service Provider shall provide connectivity services to meet performance requirements and associated service levels	M
2.2.7	The GCN Service Provider shall provide connectivity services of sufficient capacity to meet the network performance requirements	M
2.2.8	The GCN Service Provider shall implement QOS/COS to ensure prioritisation and bandwidth allocation guarantees. The GCN Provider will support at least 5 COS levels across its GCN network.	M
2.2.9	The GCN Service Provider shall be able to identify individual IP flow information, for the purposes of fault resolution.	M
2.2.10	The GCN Service Provider shall perform translation of MPLS EXP COS values, as instructed by the PSN Authority, to allow interoperability between different PSN Service Provider offerings.	M
2.2.11	The GCN Service Provider shall use a public registered BGP ASN	M
2.2.12	The GCN Service Provider shall use registered public registered IP addresses for services hosted to other PSN Service Providers, from Government address allocations.	M
2.2.13	The GCN Service Provider shall use registered public registered IP addresses for services hosted to Government customers, from Government address allocations.	M
2.2.14	As a market differentiator the GCN Service Provider has the choice whether to support IPv6 but this is not a mandatory requirement	S

2.3 Security requirements

Reference	Statement of Requirement	Priority
2.3.1	The GCN Service Provider shall provide connectivity at Impact Level 2 for Confidentially	M
2.3.2	The GCN Service Provider shall provide connectivity Impact Level 2 for Integrity	M
2.3.3	The GCN Service Provider shall provide connectivity options that provide for availability of 99.99%	M
2.3.4	The GCN Service Provider shall take industry standard precautions to ensure that their GCN infrastructure is resilient to accidental or malicious denial-of-service attacks.	M
2.3.5	The GCN Service Provider shall ensure that there is sufficient network capacity to accommodate any combination of dual POC failures	M
2.3.6	The GCN Service Provider shall shut down connectivity, as per instruction by the PSN Authority for the purposes of network isolation	M
2.3.7	The GCN Service Provider will support lawful traffic intercept within the GCN as requested by HMG IT security services	M

2.4 Service management requirements

Reference	Statement of Requirement	Priority
2.4.1	The GCN Service Provider shall supply network management information to the Service Information Monitor (SIM) in accord with the PSN Operating Model	M
2.4.2	Each GCN Service Provider shall provide service management information for the GCN Service elements it provides	M
2.4.3	A GCN Service Provider will provide reporting information to confirm service performance between themselves and other GCN Service Providers. This may include but is not limited to delay, loss and jitter parameters	M

2.5 Business Continuity and Disaster Recovery requirements

Reference	Statement of Requirement	Priority
2.5.1	The GCN Service Provider shall ensure any Business Continuity event does not effect its ability to deliver connectivity and meet the required Service Levels	M

2.6 Continuous Improvement requirements

Reference	Statement of Requirement	Priority
2.6.1	The GCN Service Provider shall review the performance of the GCN continuously and shall implement appropriate improvements.	M
2.6.2	The GCN Service Provider shall implement service improvement to address any failures in meeting Service Levels within one month of the failure.	M

3 Instrumentation end-points

3.1 Purpose

3.1.1 The purpose of instrumentation end-points is to provide a point at which to measure traffic performance. End-points (i.e. shadow routers or other equivalent devices) should be implemented in each PoC. PSN Service Providers shall be able to poll the devices for the purpose of network performance instrumentation. The shadow routers shall have a dual functions:

- Act as response devices
- Act as IP probe sender devices

3.2 Functional requirements

Reference	Statement of Requirement	Priority
3.2.1	The GCN Service Provider shall provide instrumentation end-points within the GCN, for the purposes of measuring performance to the GCN.	M
3.2.2	The GCN Service Provider shall provide end-points to act as response devices.	M
3.2.3	The GCN Service Provider shall provide the capability to measure network performance from the GCN to the PSN network edge.	M
3.2.4	The GCN Service Provider shall supply the necessary configuration information (IP address, passwords etc) for end-points to Direct Network Service Providers	M

3.3 Technical requirements

Reference	Statement of Requirement	Priority
3.3.1	The GCN Service Provider shall ensure that end-points are deployed that support UDP echo and Jitter performance probes	M

3.4 Availability requirements

Reference	Statement of Requirement	Priority
3.4.1	The GCN Service Provider end-point availability shall exceed 99.85%	M

3.5 Business Continuity and Disaster Recovery requirements

Reference	Statement of Requirement	Priority
3.5.1	The GCN Service Provider shall ensure that shadow router services are reinstated when the relevant underlying GCN service recovers from failure.	M

4 Domain Name registration and provisioning

4.1 Overview

- 4.1.1 The GCN will host top-level Domain Name Services (DNS) for the PSN. This will be a single-instance network service surfaced by an individual supplier involved in GCN delivery, by agreement under the governance regime set out in the PSN Operating Model. In this Service Description document, the supplier providing this surface is named as the DNS Service Provider.
- 4.1.2 The costs associated with delivering single-instance network services will form part of a 'shared overhead' to be funded equitably by the suppliers of GCN Services, with costs reported 'open book' and value assured on this basis. The GCN Service Providers will recover such overheads as part of their charges for GCN Services, and the amounts recovered will be auditable under provisions for fairness.

4.2 Functional requirements

Reference	Statement of Requirement	Priority
4.2.1	The DNS Service Provider shall provide a managed DNS Service to support GCN and PSN Services	M
4.2.2	The DNS Service Provider shall host DNS records on behalf of the PSN Authority.	M
4.2.3	The DNS Service Provider service will allow forward and receive forwarded DNS queries	M
4.2.4	The DNS Service Provider shall provide separate DNS Services communities operating at different Impact Levels in terms of Confidentiality and Integrity, covering IL2 and IL3	M
4.2.5	The DNS Service Provider shall not prohibit the future introduction of IL4 DNS.	S
4.2.6	The DNS Service Provider shall configure, supply and maintain the Top Level DNS servers.	M
4.2.7	The DNS Service Provider shall ensure that the DNS service meets the performance required for the PSN	M
4.2.8	The DNS Service Provider shall ensure that availability for the DNS Service meets a target of 99.999%	M
4.2.9	The DNS Service Provider shall ensure that the DNS platform scales to meet PSN customer requirements	M

4.2.10	The DNS Service Provider shall ensure that the service successfully resolves 99.9% of all queries.	M
4.2.11	The DNS Service shall support a number of common DNS configuration features, to be defined	M
4.2.12	The DNS Service Provider shall register Internet Domain Names with the PSN Authority on behalf of PSN Consumers end Users	M
4.2.13	The DNS Service Provider shall register Internet Domain Names with the Internet governing organisations on behalf of PSN Consumers	M
4.2.14	The DNS Service Provider shall resolve domain name registration commercial issues, though this shall not include legal advice.	M
4.2.15	The DNS Service Provider shall resolve domain name technical issues, and this will include the identification of DNS record types necessary for meeting the business requirements of end PSN Consumers.	M
4.2.16	The DNS Service shall support static updates.	M
4.2.17	The DNS Service shall allow authorised PSN Consumer representatives to add, modify and delete DNS records via an online user interface.	M
4.2.18	The online domain name registration service shall take the format of a structured configuration procedure.	M
4.2.19	The DNS Service shall allow authorised PSN Consumers to register Internet Domain names with the Internet Governing Body via the on line interface.	M
4.2.20	The on line domain name interface shall include the easy selection of common configurations and record types, though these are to be agreed	M

4.3 Technical requirements

Reference	Statement of Requirement	Priority
4.3.1	The DNS Service Provider shall provide domain name registration for IPv4.	M
4.3.2	The DNS Service Provider shall support IPv6 in the future, but this is not a mandatory requirement immediately	S
4.3.3	The DNS Service Provider shall ensure that the Domain Name Registration Service supports any Voice requirements.	M

4.4 Security requirements

Reference	Statement of Requirement	Priority
4.4.1	The DNS Service Provider shall ensure that Domain Name Records cannot be tampered with or misrepresented.	M
4.4.2	The DNS Service Provider shall advise the PSN Authority on the anti-spoof configurations that can be implemented as part of the DNS Service	M
4.4.3	The DNS Service Provider shall protect the DNS infrastructure from denial-of-service compromise in order to meet the availability requirements.	M
4.4.4	The DNS Service Provider shall advise the PSN Authority on Domain Name System Security Extensions.	M

4.5 Service Management requirements

Reference	Statement of Requirement	Priority
4.5.1	The DNS Service Provider is required to manage the Domain Name Registration Service on behalf of the PSN Authority and PSN Users.	M
4.5.2	The DNS Service Provider should ensure the timely activation and registration of DNS records.	M

4.6 Business Continuity and Disaster Recovery requirements

Reference	Statement of Requirement	Priority
4.6.1	The DNS Service Provider shall ensure any Business Continuity Event shall not effect its ability to deliver connectivity and meet the required Service Levels	M
4.6.2	The DNS Service Provider shall ensure that normal service resilience is restored within 7 days of any Business Continuity Event.	M

4.7 Continuous Improvement requirements

Reference	Statement of Requirement	Priority
4.7.1	The DNS Service Provider should ensure that the GCN DNS platform software versions are not more than 2 years or 2 major releases out of date.	M
4.7.2	The DNS Service Provider shall ensure that platform minor software patches, necessitated by functional or security advisories, are implemented with three months of release	M
4.7.3	The DNS Service Provider shall review the performance of the GCN DNS continuously and shall implement improvements.	M
4.7.4	The DNS Service Provider shall implement service improvement to address any failures to meet Service Levels within one month of the failure to met Service Levels	M

5 Overarching service management requirements

5.1 Functional Requirements

General Requirements

Reference	Statement of Requirement	Priority
5.1.1	The GCN Service Provider shall adhere to the service model and principles defined for the PSN in the PSN Operating Model.	M
5.1.2	The GCN Service Provider shall comply with its responsibilities and obligations for service management as identified in the PSN Operating Model and PSN Common Requirements	M
5.1.3	The GCN Service Provider shall fully document all of its service management processes and supporting systems.	M

Service Request management

Reference	Statement of Requirement	Priority
5.1.4	<p>If the GCN Service Provider's review of GCN Service Requests identifies GCN Integrity, performance, security and/or capacity issues then the GCN Service Provider shall:</p> <ul style="list-style-type: none"> fully document the issues and identify possible solution wherever possible agree a solution with the relevant PSN Service Provider Escalate any issues that cannot be resolved to the GCN Governing Body and the PSN Authority 	M
5.1.5	Where necessary, GCN Service Providers shall raise Change Requests with the PSN Authority Core Team where enhancements to the GCN are needed to support predicted growth, or where they are needed to deal with incidents or problems or GCN Service Requests where solution cannot be agreed with a PSN Service Provider	M
5.1.6	The GCN Service Provider shall support any Change Request for GCN enhancements with Availability, Performance and Capacity Management plans and forecasts	M
5.1.7	The GCN Service Provider shall agree target provisioning dates with PSN Service Providers.	M
5.1.8	The GCN Service Provider shall Provision the services required by PSN	M

	Service Providers in the agreed timescales.	
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Incident and Problem management

Reference	Statement of Requirement	Priority
5.1.9	The GCN Service Provider shall monitor for service-affecting incidents and report these in line with the PSN service model and PSN Common Requirements	M
5.1.10	The GCN Service Provider shall report service affecting Incidents via the PSN Service Information Monitoring infrastructure systems in line with the PSN service model and PSN Common Requirements	M
5.1.11	The GCN Service Provider shall review all service Incidents that it is allocated and accept or reject these [with justification where a rejection] in line with the PSN service model and PSN Common Requirements	M
5.1.12	The GCN Service Provider shall restore GCN Service with the timescales defined in relevant Service Level targets	M
5.1.13	The GCN Service Provider shall provide support and resources as appropriate to any Joint Major Incident Team (JMIT) formed in accord with the overarching Major Incident process set out in the PSN Operating Model and PSN Common Requirements	M

Service level management

Reference	Statement of Requirement	Priority
5.1.14	<p>The GCN Service Provider shall operate a Service Level management process in order to:</p> <ul style="list-style-type: none"> confirm and agree Service Levels for services being provided via on the GCN and at GCN Points of Connection monitor and manage delivery of agreed Service Levels 	M

Availability management

Reference	Statement of Requirement	Priority
5.1.15	The GCN Service Providers shall operate an Availability management process to ensure that the availability requirement of all services using the GCN is met.	M
5.1.16	Each GCN Service Provider shall monitor availability and order trends to produce an availability management plan with associated actions.	M

Capacity management

Reference	Statement of Requirement	Priority
5.1.17	The GCN Service Providers shall operate a Capacity management process to ensure that the capacity of the GCN is sufficient for all current and ordered Services	M
5.1.18	The GCN Service Provider shall monitor capacity usage and order trends to produce a capacity management plan with associated actions.	M

Performance management

Reference	Statement of Requirement	Priority
5.1.19	The GCN Service Provider shall operate a Performance management process to ensure that the performance of the GCN is sufficient for all current and ordered services.	M
5.1.20	The GCN Service Provider shall monitor performance and associated trends to produce a performance management plan with associated actions.	M

GCN Service Desk

Reference	Statement of Requirement	Priority
5.1.21	The GCN Service Provider shall provide a Service Desk to support its GCN Services	M
5.1.22	The GCN Service desk shall provide support for all Incidents, issues and enquiries during normal office hours, defined as 8am to 5pm on weekdays excluding Bank Holidays	M
5.1.23	The GCN Service desk shall provide support '24 by 7' in relation to Incident management	M

5.2 Security requirements

Reference	Statement of Requirement	Priority
5.2.1	The GCN Service Provider will operate to the minimum levels of security management defined for the PSN, as outlined in the PSN Operating Model and PSN Common Requirements	M

5.3 Business Continuity and Disaster Recovery requirements

Reference	Statement of Requirement	Priority
5.3.1	The GCN Service Provider shall ensure any Business Continuity Event does not affect its ability to meet service management requirements and achieve agreed Service Levels for GCN Services.	M
5.3.2	The GCN Service Provider shall implement appropriate systems, processes and procedures to ensure that business continuity is maintained.	M
5.3.3	In the event of a Disaster Recovery Event normal service management facilities shall be restored within 24 hours of the event.	M
5.3.4	The GCN Service Provider shall develop standby systems, processes and procedures to provide for a viable but degraded service desk to be provided during any period that the full service is unavailable.	M

5.4 Refresh Evolution and Continuous Improvement requirements

Reference	Statement of Requirement	Priority
5.4.1	The GCN Service Provider shall continuously review the performance of its services processes and shall implement improvements to the processes as appropriate	M
5.4.2	The GCN Service Provider shall implement service improvements to address any service management failures within one month of the failure.	M

6 Target Service Levels

6.1 General

Reference	Statement of Requirement	Priority
6.1.1	A complete common set of GCN Service Level Agreements and Service Level Guarantees is to be defined in consultation with the Cabinet Office PSN Programme team	M

6.2 Provisioning timescales

Reference	Statement of Requirement	Priority
6.2.1	<i>Measure:</i> Provisioning completed within the timescales requested. <i>Target:</i> 95%	S

6.3 Incident management

Reference	Statement of Requirement	Priority
6.3.1	<i>Measure:</i> Time to report, via the Service Information Monitoring infrastructure systems, service-affecting Incidents discovered through service monitoring. <i>Target:</i> < 60 seconds	S
6.3.2	<i>Measure:</i> Time to review all allocated incidents and accept or reject with justification. Measured from the time the Incident allocation is received. <i>Target:</i> < 10 minutes	S
6.3.3	<i>Measure:</i> Services restored within target timescales <i>Target:</i> 95%	S
6.3.4	<i>Measure:</i> Updates provided the SIM infrastructure when the status of an incident changes <i>Target:</i> < 30 minutes from the status change	S

6.4 Service desk response and performance

Reference	Statement of Requirement	Priority
6.4.1	<p><i>Measure:</i> Service Desk available '24 by 7' for Incident management</p> <p><i>Target:</i> 99.7%, including planned downtime</p>	S
6.4.2	<p><i>Measure:</i> Standby service desk arrangements successfully implemented during periods when the full service is unavailable</p> <p><i>Target:</i> 100%</p>	S
6.4.3	<p><i>Measure:</i> Calls to the Service Desk answered by an agent.</p> <p><i>Target:</i> 100% of calls within 30 seconds</p>	S
6.4.4	<p><i>Measure:</i> Email to the Service Desk acknowledged.</p> <p><i>Target:</i> 100% within 5 minutes</p>	S
6.4.5	<p><i>Measure:</i> Issues raised with the Service Desk resolved to the satisfaction of the organisation raising the issue(s)</p> <p><i>Targets:</i></p> <ul style="list-style-type: none"> • 75% in less than 24 hours • 85% in less than 48 hours • 95% in less than 7 days • 100% in less than 30 days 	S

6.5 Disaster Recovery

Reference	Statement of Requirement	Priority
6.5.1	<p><i>Measure:</i> Full service management restored after the occurrence of a Disaster Recover event</p> <p><i>Target:</i> <24 hours</p>	S

Appendix A: Impact Level definitions

Further information at:

http://www.cesg.gov.uk/policy_technologies/policy/media/business_impact_tables.pdf

Impact if the data is lost or stolen and misused	Protective Marking	Examples
<ul style="list-style-type: none"> • inconvenience to customers • minor damage to the department's standing or reputation 	<p>PROTECT Impact Level 2</p>	<ul style="list-style-type: none"> • Personal Data relating to any customer or member of staff such as a name, address or VAT number or National Insurance Number for which we have a duty of care. • Combinations of data items all of which are in the public domain or which if put in the public domain could not cause economic harm to the customers concerned.
<ul style="list-style-type: none"> • substantial inconvenience or distress • significant financial impact to the customer • substantial damage to the department's standing or reputation • prejudice the investigation of or facilitate the commission of crime • could have wider implications within government 	<p>RESTRICTED Impact Level 3</p>	<ul style="list-style-type: none"> • A complete customer record including personal financial and banking details. • Volumes of "Protect" data about a reasonably large number (hundreds) of customers or staff • A small multiple of complete customer records (remembering that the marking reflects the highest impact individual item)
<ul style="list-style-type: none"> • prejudice to the safety security or liberty of an individual • impede the investigation or facilitate the commission of serious crime • could have wider implications within government • measurable impact to the UK economy 	<p>CONFIDENTIAL Impact Level 4</p>	<ul style="list-style-type: none"> • A large number of complete customer records (remembering that the marking reflects the highest impact individual item) • A set of data relating to many customers which in combination could result in identity theft and fraud against those customers (for example name, address, date of birth and credit card details)

Appendix B: Related documents

This document refers to the definitions of certain core enabling infrastructure and services, each of which is provided as an addendum to the PSN Operating Model. A number of other related documents are also referenced. These further documents are explicit parts of the PSN Operating Model. These inter-related documents include:

- the '**PSN Common Requirements**';
- the '**PSN Operating Model**'
- this '**GCN Service Description**';
- a '**Service Information Monitor (SIM) Service Description**';
- a '**Settlement Regime Description**';
- a '**Statement of Fairness Provisions for GCN Service Providers**'; and,
- draft **CoICo, CoP and CoCo Agreements**