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Public Sector  
Network  
Programme

# Public Sector Network Outline Business Case

Version 2.8

## VERSION HISTORY

<b>Version</b>	<b>Date Issued</b>	<b>Brief Summary of Change</b>	<b>Owner's Name</b>
0.5	09/01/09	PSN Strategic Outline Business Case	John Stublely
1.3	30/3/2009	Updated to support funding request for PSN Programme core team	John Stublely
2.5	27/8/2009	Updated for Review by PSN Programme Board	Simon Foster
2.6	10/9/2009	Updated following comments from Programme Board and John Suffolk for Review by PSN Steering Board	Simon Foster
2.7	07/10/2009	Minor updates for endorsement by PSN Programme Board	Simon Foster
2.8	10/11/2009	Minor updates for endorsement by PSN Programme Board	Simon Foster

## REFERENCES

1. PSN Business Case v1.3 issued on 30 March 2009
2. STRATEGIC SUPPLY BOARD TIGER TEAM 3 (Cost Reduction Team) Voice & Data Networking Services
3. PSN Operating Model, Issue v1.2, 24 April 2009
4. Statement of Fairness Provisions for GCN Service Providers, Issue v1.3, 24 April 2009
5. Government ICT Strategy, Cabinet Office, to be published October 2009.
6. Collaborative procurement of IT – HM Treasury Operational Efficiency Programme, May 2009
7. Transformational Government Enabled by Technology, Cabinet Office, Nov 2005
8. Digital Britain, DCMS, June 2009

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## EXECUTIVE SUMMARY

This business case provides the justification for a transformational approach to the provisioning of network services across the public sector, and the continued investment in the PSN programme by the Cabinet Office. PSN contributes to the Government ICT Strategy [Ref 5] and will deliver both direct cost savings in its own right and enables substantial indirect savings by creating a new marketplace in government ICT services.

Whilst the Strategic Case discusses the rationale for PSN, the Economic Case considers only direct costs and savings, and only at a pan public-sector level. Broad assumptions are made, so estimates are conservative, and the precision of the figures presented here should be treated with caution. Bearing this in mind, the total annual savings with an 80% adoption of PSN are estimated to be £631M ± 53%. This is the equivalent of 22% of the external cost plus 24% of the internal annual cost of a typical commodity ICT public sector contract.

Following endorsement of this document by the PSN Programme Board, the next step is to obtain wider endorsement across the public sector and industry, specifically from the suppliers and customers involved in the early delivery of PSN, several of whom are represented at the PSN Steering Board. Clearly, organisations must prepare their own business cases for PSN, but in doing so will be able to include the additional *indirect* savings not quantified in this document within any VFM and ICT Collaborative Category Board reporting. A model is presented in this document to support the preparation of a specific business case.

The options considered in this business case are:

1. **Do nothing strategic.** This leaves customers to continue to procure network services independently, does not create the desired marketplace, and still requires procurement of GSI and MTS.
2. **HMG invests in Points of Interconnection.** This option – investigated during the PSN Lite project – has government investing directly to deliver peering points for the GCN (Government Conveyance Network) and enables the creation of the PSN marketplace.
3. **Industry offers Points of Connection.** This allows network service providers to offer their own GCN points of connection at no direct charge to HMG, and enables the creation of the PSN marketplace.

The preferred option is Option 3 because it carries lower risk to HMG and does not place HMG in the position of being a network service provider. The table below summarises the Economic Case for Option 3.

<b>Preferred option: 3 – Industry offers Points of Connection</b>			
<b>Costs, annualised over 5 years</b>		<b>Undiscounted</b>	<b>NPV</b>
Revenue (CO programme costs over 5 years)		-£0.93M	-£0.91M
Revenue (in-service governance and management)		-£2.05M	-£1.82M
Risks retained		-£150M	-£150M
Optimism bias (10%)		-£11.1M	-£11.1M
<b>Total Costs</b>		<b>-£164M</b>	<b>-£164M</b>
<b>Annual Benefits: 80% uptake (NPV)</b>	Quantitative	Cash releasing	Non-cash releasing
Revenue from central services	£4M		
<b>Total Quantitative benefits</b>	<b>£4M</b>		
Network duplication and efficiency		£174M ± 15%	
Procurement, design and support duplication: External		£392M ± 50%	
<b>Total cash releasing benefits</b>		<b>£566M ± 40%</b>	
Procurement, design and support duplication: Internal staff			£225M ± 50%
Total non-cash releasing benefits			<b>£225M ± 50%</b>
<b>Total Benefits (80% uptake)</b>		<b>£795M ± 42%</b>	
<b>Net Benefits (80% uptake)</b>		<b>£631M ± 53%</b>	

The difference between the total and net benefits allows for the risk of delay and failure to achieve savings. The break-even point is an uptake of 17% of public sector users nationally. The internal staff savings are shown as non-cash-releasing, but they could be cash releasing if they lead to a headcount reduction. PSN central services will be procured on a cost-neutral basis to Government, and so do not appear as a cost in the economic case. Their estimated total annual cost is £20M, to be covered by revenues received from customers. Note that there is a risk (included in the figures above) that suppliers choose not to bid for these central services; in the event of which HMG may be required to provide the capital for them directly.

## 1 INTRODUCTION

This Outline Business Case is an update of the *PSN Business Case v1.3, 30 March 2009* [Ref 1]. The earlier version relied heavily on the work of the Strategic Supply Board Cost Reduction Tiger Team [Ref 2]. This updated document provides an alternative analysis and enables cross validation of the earlier findings.

This business case provides the justification for HMG to take a strategic approach to the provisioning of network services across the public sector, and the continued investment in the programme by the Cabinet Office. It also provides a framework that public sector organisations are invited to use for identifying savings when considering PSN. The networks that have been used to illustrate the business case for PSN are the GSI and those of DWP, HMRC, MOD, HO and NHS because these networks together serve 40% of the 4.5M public sector employees in the UK with ICT desktop devices, and should create a marketplace of sufficient size for PSN services.

### 1.1 The Public Sector Network

The Public Sector Network (PSN) is a CIO Council initiative enabling much greater collaborative procurement of ICT services than is currently possible and so supports the Treasury's Operational Efficiency Programme OEP, particularly in back office operations and IT. The PSN vision, as described in the PSN Operating Model [Ref 3] is ***“to create the effect of a single network across government”***.

The PSN vision requires a change in the way the public sector procures its network services, and the way in which these services are offered. PSN Customers will no longer procure physical network assets. Instead, rather like domestic or commercial Internet users, PSN customers will simply buy network services, as and when required and in whatever configuration is preferred, e.g. as an integrated solution of many services, or as an individual service, across a whole organisation or devolved to local groups.

PSN will therefore offer both significant **direct** savings in economies of scale around the procurement and management of network services, but it will also **enable** other savings, such as those achieved through data centre consolidation.

### 1.2 Background

In November 2005, the CIO Council embarked upon a strategic Supplier Management Initiative (SMI), and it set up the Strategic Supply Board (SSB) as a focus for driving three overarching objectives, namely:

- an improvement in overall quality and reliability with regard to the delivery of critical IT programmes;
- achievement of significant cost reductions on IT spending, whilst delivering superior services and systems, offering better value for money; and,
- improvements to the 'acquisition process', reducing time and cost whilst increasing standardisation.

Reference: <http://www.intellectuk.org/content/view/4183/2/>

The SSB set up three joint industry-government 'Tiger Teams', to look at procurement methods/approaches and costs, programme and project delivery; and cost reduction on operational IT spending across government. The Cost Reduction Tiger Team estimated that cost savings of 34.2% (on a £1.5bn annual budget) could eventually be realised for Public Sector procurements if a PSN approach was adopted.

### 1.3 Scope

This is the business case for the Public Sector as a whole to adopt PSN. Organisations should consider their own business cases separately. Whilst the Strategic Case discusses the wider benefits, the Economic and Financial Case considers only direct costs and savings, and excludes any initiative that exploits PSN, such as:

- Data centre consolidation and platform virtualisation;
- Cross-government collaboration (eg file sharing, application consolidation, videoconferencing);
- Mobile working and telephony (including internal calls across government).
- Delivery of Government strategic objectives in the Greening Government ICT strategy

Although indirect savings could easily outweigh the direct savings, they are more difficult to estimate at this stage, and will be more difficult to attribute solely to PSN.

## 2 THE STRATEGIC CASE

### 2.1 Business strategies

PSN contributes to the Government ICT Strategy [Ref 5], which takes 11 of the 14 strands of the Transformational Government Agenda [Ref 7], and supports:

- Collaborative procurement of IT – HM Treasury Operational Efficiency Programme, May 2009 [Ref 6]
- HMG Service Transformation Agreement, 2007 PBR and CSR
- Cabinet Office Departmental Strategic Objectives 2008-2011
- HMG 2007 PBR and CSR value for money programme
- Greening Government ICT, Information Assurance and the Public Sector Reform objectives

The benefits map in Appendix A presents the outcomes of PSN alongside those of these other key initiatives.

### 2.2 Investment objectives

PSN will contribute significantly to the OEP recommendation that 20% savings of the public sector spend on ICT should be achievable without compromising the quality of front line public service delivery. PSN will:

- Deliver direct savings in the procurement and procurement costs of voice and data communications arising from the provision of NGN (Next Generation Network) technology across the public sector
- Enable indirect savings, for example by broadening the range of services that can be procured through Collaborative Procurement and providing the connections to G-Cloud data centres.
- Increase the efficiency of pan-government inter-working by allowing data and interactive collaboration tools that use this data to be shared securely across the public sector.
- Mitigate against potential future costs to the public sector arising from machinery of government changes or departmental reorganisations

**PSN direct savings** include:

- Cash releasing savings from government core backbone communications networks
- Cash-releasing (supplier) and potentially both cash releasing and non-cash releasing (staff) savings by standardisation of services and avoiding duplication of procurement, design, development, assurance and service management effort.

**PSN indirect savings** – achievable as a consequence of PSN – will be significant, but their financial contribution to the Economic Case will be excluded. Separate business cases should be prepared for any such initiative. For example if the DWP wanted to share its virtualised contact centre, which has already achieved significant productivity savings internally, it could be made available to other departments over PSN.

**Increased efficiency of pan-government inter-working.** There are huge additional efficiency savings to be made in staff time as they use the PSN for cross-government real-time information exchange and collaborative working. However we will exclude these from the Economic Case because they depend entirely on which interactive collaboration tools appear in the new marketplace, and this cannot be predicted at this stage. Each new collaboration tool should be the subject of its own business case.

**Mitigation against potential future costs** arising from reorganisations is also excluded from the Economic Case because the savings arising are hypothetical. We note however that the recent integration of the ICT systems of Revenue and Customs following their merger is even now incurring an ongoing cost of some £6M for two networks, provide by two competing service providers, in addition to the resulting nugatory integration and management effort that this entails.

### 2.3 Existing arrangements

The total public sector ICT spend is estimated by the OEP report [Ref 6] as £16Bn in 2007/8. Gartner and Kable both have a breakdown of this figure, but Gartner's figures are averaged across governments worldwide, whereas Kable's figures pertain specifically to the UK and contain the detail we need for this business case. The breakdown of this spend, according to Kable is shown below.

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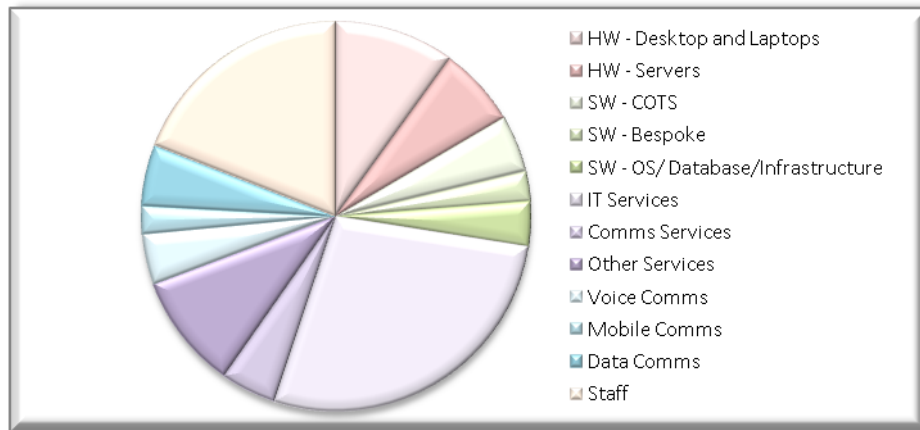


Figure 1 – 2008/2009 breakdown of public sector ICT spend by category (source: Kable)

## 2.4 Commercial landscape

We have the opportunity to exploit some significant factors to ensure early and rapid adoption of PSN:

- Industry has mobilised to deliver NGNs: government has the opportunity to shape their direction;
- Almost £900m (annualised) of contracts are due for renewal between 2009 and 2012. This equates to 43% of the total public sector spend on voice and data communications identified above;
- Collaboration is high on the agenda, and being encouraged by the CIO Council for all procurements.

## 2.5 Business needs

Existing arrangements fail to meet the business needs and inhibit efficiency in several respects:

- As the cost pressures of CSR07 come into play, the public sector “ICT Capability Gap” (ie the gap public sector staff perceive between their work ICT and their home ICT) will grow wider each year. Services are highly fragmented but Government Policy is driving the need for them to be increasingly interrelated. Examples of this are the recent the merging of Revenue and Customs, and the need to share child welfare information across several agencies.
- Inherent inefficiencies in the public sector ICT marketplace compound the capability gap identified above. Fragmented and lengthy procurements for networks across the public sector cause technological, management, duplication and marketplace inefficiencies.

## 2.6 Outcomes and Benefits of the PSN Programme

The PSN Programme will deliver the following outcomes:

- An environment where Industry is incentivised to provide core transport and interconnectivity for the public sector a Government Conveyance Network (GCN)
- Governance of PSN services and the GCN that is fair, and does not stifle competition or innovation  
An environment into which Industry is incentivised to deliver PSN services
- Wide-scale adoption of PSN compliant services by the public sector

These programme outcomes support the Government ICT Strategy [Ref 5] and link to pan-government benefits as shown in Appendix A. The new marketplace for PSN Services is illustrated in Appendix B.

## 2.7 Risks, dependencies and constraints

The main PSN risks, dependencies and constraints are shown in Appendix C. These can be summarised as:

- Programme delayed, impacting early adopter contracts;
- Failure to achieve external or internal procurement savings;
- Failure to attract investment money from industry into central services.

## 3 THE ECONOMIC CASE

### 3.1 Scope

The Economic Case for PSN is considered from the perspective of the Public Sector as a whole. It provides a framework for identifying savings that public sector purchasing bodies are invited to use when considering PSN. We cannot predict in any reasonable detail how this core network will be exploited, and so we cannot predict what indirect savings can be made from this. These indirect savings – achievable as a consequence of PSN – will be significant, but their financial contribution to the economic case will be excluded.

### 3.2 Assumptions

Assumptions and constraints regarding network and traffic growth and cost:

- Given that Internet traffic is expected to double every two years (Cisco), it is reasonable to assume that public sector network usage – which has effectively been dampened to date due to available bandwidth – will grow to fill any available capacity. As new capacity arrives, so public sector users will find more and more bandwidth-hungry tools that become tolerable to use. Even if the public sector shrinks, increased mobile-working and interdepartmental working will drive usage up.
- This business case does not use current versus historic network costs as a basis for justifying the PSN, because network cost reductions can be achieved at any point in time by a traditional government re-procurement. However, such procurements are costly and lengthy, and inhibit a price-driven marketplace. Instead, PSN will bring better competition and flexibility to this marketplace.
- Investment is continuing in NGNs. In particular BT is investing heavily in its 21<sup>st</sup> Century Network programme [www.btplc.com/21CN](http://www.btplc.com/21CN). Part of this investment increases the “size of the cloud”, which places access points closer to customers across the country. This investment is happening regardless of PSN, and so we do not include any reduction in price of the “last mile tails” (the “last mile” connection between a consumer and its home network) within the PSN business case.
- We assume that the costs of providing the core network backbone in Options 2 and 3 (below), and the peering points in Option 2, are recovered through the pricing of services to end customers.

### 3.3 Options

The options considered are:

1. **Do nothing strategic.** This leaves customers to continue to procure network services independently, does not create the desired marketplace, and still requires reprocurement of GSI and MTS.
2. **HMG invests in Points of Interconnection.** This option – investigated during the PSN Lite project – has government investing directly to deliver peering points for the GCN (Government Conveyance Network) and enables the creation of the PSN marketplace.
3. **Industry offers Points of Connection.** This allows network service providers to offer their own GCN points of connection at no direct charge to HMG, and enables the creation of the PSN marketplace.

**Do nothing strategic.** Each new off-net connection adds complexity to the existing interconnectivity. As the volume of off-net traffic increases, the inflexibility of the existing infrastructure causes increased unnecessary traffic, and overuse and underuse of certain links. The costs incurred for off-net connectivity increases to cover this inefficiency. Equally, a separate tail is required into each building *and* for each network required in that building. The more networks, the more tails. Finally, with the lack of a dynamic marketplace in the application space there is little downward pressure on prices.

**HMG invests in Points of Interconnection.** This POI model was explored in the Cabinet Office’s PSN Lite project. The model consists of a number “peering points” across the country, to which each Industry GCN network provider is asked to connect. This model has two effects. Firstly, it places HMG somewhat into the role of network provider. Secondly, it gives market advantage to those network providers closest to these points. However, the cost of option should be explored.

**Industry offers Points of Connection.** A POC is owned by one of the GCN network providers, and access to any service over any GCN network provider is possible from this POC. Traffic flow and financial settlement is agreed between the network providers.

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Note that the option of undertaking a full network procurement for the entire public sector was not considered because it would place HMG squarely in the role of network provider for the public sector, which is not its business, and it is not consistent with the transformation agenda or the ICT strategy.

### 3.4 Key questions that the economic case should answer

The **price of the GCN** is a notional figure representing what we are currently paying for the services that could migrate to the GCN. It can be measured by adding up the prices paid by public sector organisations to use all the various shared and private backbones available. We must be careful to exclude the cost of connecting to the backbones – ie the cost of the tails, and the support services around the backbone.

The economic case begins by asking: “How far can we bring down the price of the GCN by shifting away from procurement of components and towards collaborative procurement of services built on common standards?” To answer this, we step through the following key questions:

- **Question 1.** What is the baseline price being paid for the backbone networks that could migrate to the PSN, prior to any savings brought about by PSN?
- **Question 2.** How does this vary as an increasing number of organisations migrate their own networks onto PSN? (NB, re-use is a key principle of PSN).
- **Question 3.** How much duplication is there in the provision of WAN backbone and tails to public sector buildings that can be eliminated by the adoption of PSN?
- **Question 4.** What raw savings should we expect from moving to MPLS (Multiprotocol Label Switching) technology strategically?

The real benefit of the PSN approach is realised if a substantial portion of the public sector adopts it together. By opening up the marketplace, PSN can claim a direct efficiency in the procurement of both network and user services through standardisation and simplification.

- **Question 5.** What internal staff and external supplier savings can be made by public sector organisations avoiding duplication of procurement, assurance integration and management activities for network and user services?
- **Question 6.** What savings can be made if the PSN marketplace approaches a “perfect” marketplace, ie it ensures that network services are **continuously** provided at the best price? Here we consider only the savings in network services, not savings that might be achieved in application prices – this should be the subject of separate business cases.
- **Question 7.** How will we ensure that PSN is exploited to optimise the enabled savings and exploit the capability created to improve services?
- **Question 8.** What is the cost to Government to manage and govern the PSN marketplace?

### 3.5 Options Appraisal against Critical Success Factors

The table below shows how each of the three options delivers against each of six CSFs. For this analysis we consider the possibility of departmental uptake of PSN being high (above 40%) or low (below 10%).

	Option 1	Option 2		Option 3	
		high uptake	low uptake	high uptake	low uptake
<b>CSF1: strategic fit</b>	✘	✘	✘	✔	~
<b>CSF2: creation of a marketplace</b>	✘	✔	✘	✔	✘
<b>CSF3: benefits optimisation</b>	✘	✔	~	✔	~
<b>CSF4: potential achievability</b>					
• Public sector as a whole	✔	✔	✔	✔	✔
• Individual organisations	✔	~	✔	~	✔
<b>CSF5: supply side capability</b>	✔	✔	✔	✔	✔
<b>CSF6: potential affordability</b>	✘	✔	✘	✔	✘

Figure 2 – Options Appraisal

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The most attractive option is Option 3. This is underpinned by the analysis in the remainder of this section which is summarised in the table below.

Option	Benefit
1: Do nothing strategic.	Zero
2: HMG invests in Points of Interconnection (80% uptake)	£571M ± 57%
3: Industry offers Points of Connection (80% uptake)	£631M ± 53%

Figure 3 – Summary of net benefits for each option

A low uptake of PSN services is inefficient, and a centrally procured network would come at a high capital cost, it would be uncompetitive and carry unacceptable risk. Asking Industry to procure the backbone under the right governance arrangements transfers some key risks from government to industry. Where the business case becomes interesting is the balance between an individual organisation’s risk calculation and the risk calculation across government. This is explored in brief in the Local Authority Case Study in Appendix D.

**3.6 Economic appraisal – preferred option**

This section considers the key questions that appear in Section 3.4. against the preferred option.

**3.6.1 Questions 1 and 2: Baseline price of the GCN and variance based on uptake**

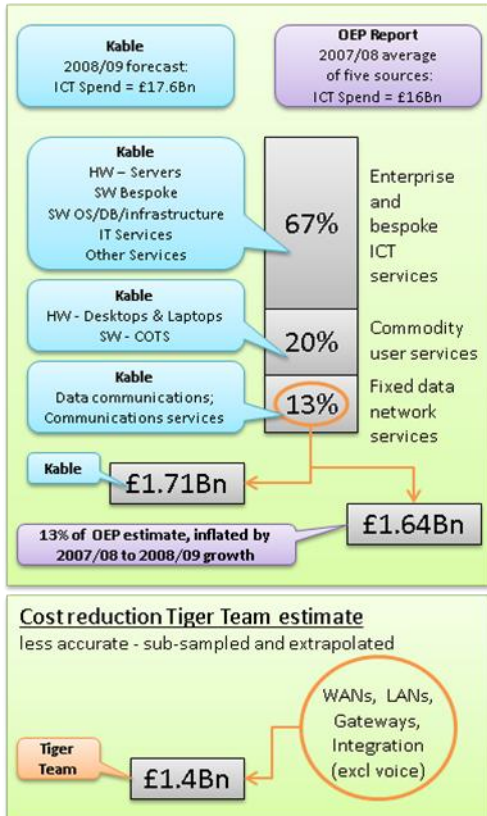
*What is the baseline price being paid for the backbone networks that could migrate to the PSN, prior to any savings brought about by PSN?*

*How does this vary as an increasing number of organisations migrate their own networks onto PSN? (NB, re-use is a key principle of PSN).*

Estimates for the baseline price HMG pays for the elements of the network that would become the GCN are presented in Figure 4. This baseline price does not consider any savings that could be achieved through PSN.

**Public sector spend on fixed network services**

\*including LANs, but excluding fixed and mobile telephony, and internal staff



**The baseline price of the GCN**

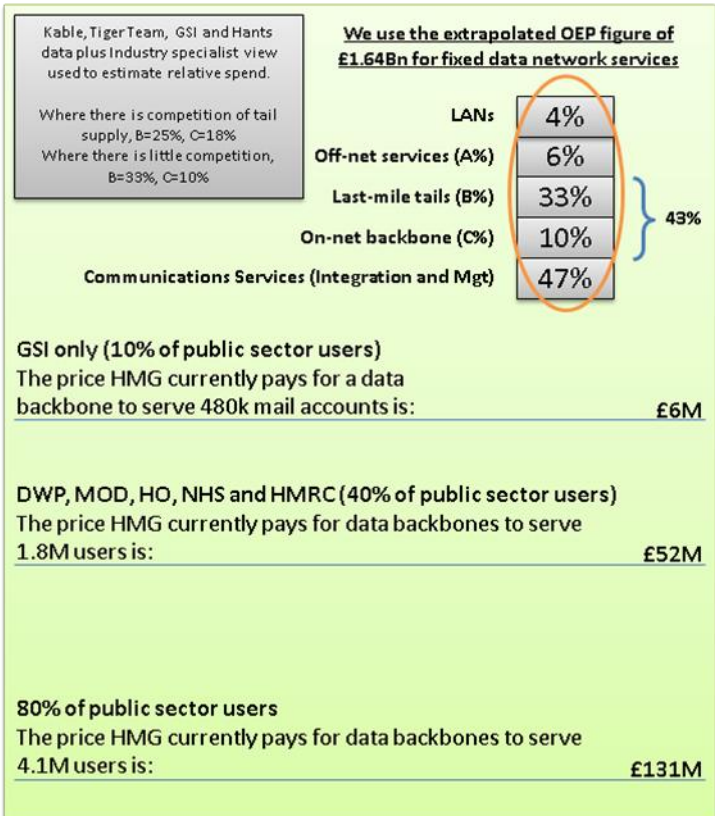


Figure 4 – Estimates for the baseline price of the GCN

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HMG is currently paying an effective price of £6M for a RESTRICTED/CONFIDENTIAL backbone that serves 10% of public sector users, £52M for (broadly PROTECT/RESTRICTED, with MOD carrying some higher traffic) backbones that serve 40% of public sector, and £131M for (broadly PROTECT/RESTRICTED) backbones that serve 80% of the public sector.

### **3.6.2 Question 3: Elimination of network duplication**

*How much duplication is there in the provision of WAN backbone and tails to public sector buildings that can be eliminated by the adoption of PSN?*

Savings are achievable by removal of duplication of direct expenditure by departments on WAN backbone services and last-mile tails. The bullets below present different approaches to estimating what savings can be made here:

- The report **STRATEGIC SUPPLY BOARD TIGER TEAM 3 (Cost Reduction Team) Voice & Data Networking Services**, states that savings of 24.7% on WAN costs are possible. If 10% of this is attributable to MPLS itself (see below), then the remaining 14.7% is achieved through WAN (backbone plus tails) rationalisation between departments. The savings predicted are 14.7% of 43% of £1.64Bn, or **£104M**.
- Figure 4 illustrates how inefficient the current fragmented procurement of networks by public sector bodies is. If it costs £6M to serve 10% of public servants, why does it cost £52M to serve 40% of them, and furthermore, why does it cost £131M to serve 80% of them? This suggests a backbone serving 80% of public servants should cost between £48M and £105M, or, taking the mid-point, £76.5M, suggesting a potential saving of **£55M**.
- The Kent Connects partnership provides an example of such savings. 16 connections from legacy county networks to GCSx were replaced with just 2 for the Kent PSN. Similar levels of consolidation should be achievable if other local authority partnerships co-operate in the same way.
- In addition, Figure 4 suggests that the last mile tails make up 33% of the total cost of a typical data communication contract, and represent an annual spend of up to £541M. PSN offers both access consolidation (within a building) and transport consolidation of the tails between adjacent buildings. In urban areas, transport consolidation could be very high; in rural areas it would be lower. Access consolidation will occur only where there are existing cases of more than one network supplying a single building. We make the conservative assumption that 20% access and transport consolidation can be achieved across the public sector, saving up to **£108M**. Although this saving has been identified, it will become less and less attributable to PSN over time as network service providers continually deepen the reach of their networks, and the average tail distance between a consumer and their nearest network access point shortens. We therefore apply a deflator of 10% per year over 5 years. The estimated average annualised savings for access and transport consolidation becomes **£89M**.
- This analysis gives a total saving achievable from a shared data backbone and access/transport consolidation of **up to £143M**.

Taking the mid-point of the Tiger Team estimate and this analysis gives us an estimated saving due to the provision of WAN backbone and tails of **£124M** on the price paid by HMG for fixed data network services.

### **3.6.3 Question 4: Use of MPLS technology**

*What raw savings should we expect from moving to MPLS technology?*

Moving to MPLS technology offers the potential for both increased bandwidth and financial savings. Although the bandwidth increase is significant, as section 3.2 explains – this business case does consider historic network costs as a basis for justifying the PSN. Evidence for the savings achievable with moving to MLPS technology includes:

- The report: **Ethernet and IP MPLS VPN Services**, 4 August 2009 from Infonetics: “Although pricing varies widely, Ethernet services are typically at least 20% to 30% lower than frame relay or private line services”<sup>1</sup>

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<sup>1</sup> <http://www.infonetics.com/pr/2009/Ethernet-IP-MPLS-VPN-Services-Market-Research-Highlights.asp>

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- The Hampshire and Isle of Wight (HIOW) Local Government Association has achieved a 5x to 10x increase in bandwidth, plus a saving of 10%, through the procurement of HPSN2 (Hampshire PSN 2).
- The report ***How to cut communications costs by replacing leased lines and VPNs with MPLS***, March 2009 from Computing<sup>2</sup>, in association with Star: “some estimations go so far as to suggest that a company can reduce its WAN operational expenditure by as much as 50 per cent by adopting an MPLS strategy”

Given that some networks, eg the GSI are MPLS already, we will make the conservative assumption that 5% savings on the backbone plus tail price (£705M) are achievable simply from moving to MPLS technology. The savings achievable from moving to MPLS are therefore estimated at **£35M**. Although this saving has been identified, it will become less and less attributable to PSN over time as customers migrate naturally to MPLS. We therefore apply a deflator to the £37M of 10% per year over 5 years where the savings identified through MPLS are transferred away from PSN due to market moves. The estimated average annualised savings for moving to MPLS becomes **£29M**.

### **3.6.4 Question 5: Efficiency of procurement, integration and management**

*What internal staff and external supplier savings can be made by public sector organisations avoiding duplication of procurement, assurance integration and management activities for network and user services?*

Savings achievable through removal of duplication of the integration and management effort:

- The report ***STRATEGIC SUPPLY BOARD TIGER TEAM 3 (Cost Reduction Team) Voice & Data Networking Services***, states that savings of 50.7% on supplier-side network service integration and management are possible.
- The HIOW PSN experience (described in Appendix A) yielded a combined internal procurement savings by Portsmouth, Southampton and IOW (not to mention the other 12 public sector bodies in the area) of over £450,000, compared to the actual internal procurement cost of the project of £350,000, a saving of 56% in procurement costs.

Although both these examples show that savings of over 50% can be achieved, and intuitively, the savings will increase as a function of the number of collaborators on any single procurement, we will err on the side of caution in this business case and make an assumption that the savings that can be achieved here are 30%.

In responses to a questionnaire sent out to public sector bodies for this business case, respondents have stated that the external cost to specify, design, secure, deploy, operate and maintain commodity ICT services, and getting these to work together is 7% to 9% of their total ICT budgets (or £1.35Bn nationally), and the corresponding internal cost is 4% to 5% of the total budget (or £751M nationally).

Hence we conclude that the external cash savings arising from this efficiency amounts to **£405M** on the price paid by HMG for IT and communications services, and the internal (staff) savings arising from this efficiency amount to **£225M** on the price paid by HMG for its ICT staff.

### **3.6.5 Question 6: Better marketplace for network services**

*What savings can be made if the PSN marketplace approaches a “perfect” marketplace, ie it ensures that network services are continuously provided at the best price? Here we consider only the savings in network services, not savings that might be achieved in application prices – this should be the subject of separate business cases.*

Achieving a perfect marketplace in network services will be difficult. BT has 85% - 91% of the UK network marketplace, and in addition to often being the only choice in network services in many geographic areas, its prices are regulated by OFCOM.

The experience of HIOW, Kent Connects and the Welsh Assembly is that network prices vary considerably, depending on the supplier. For some organisations there may be no choice but to go to some incumbent, but these organisations had the technical capability to specify and procure at a considerable discount from those available from an incumbent.

- For HIOW, it was significantly cheaper to procure a network from one network service provider than another. HIOW found that the annual charge for a 1Gb Ethernet Extension Path ranged between £17,028 and £6,600 per annum.

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<sup>2</sup>[http://www.ithound.com/v3/view\\_abstract/2690/ITSystemsManagement/NetworksCommunications/IPNetworks/HowtocutcommunicationscostsbyreplacingleasedlinesandVPNswithMPLS](http://www.ithound.com/v3/view_abstract/2690/ITSystemsManagement/NetworksCommunications/IPNetworks/HowtocutcommunicationscostsbyreplacingleasedlinesandVPNswithMPLS)

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- If Kent Connects had procured the Kent Public Sector Network (KPSN) entirely as a GCSX network, rather than a local network connecting to GCSX, the price was estimated at £147M over 4.5 years. In fact, the price the partnership is paying for the KPSN is around £33M over 4.5 years.
- The modelling in Figure 4 identifies that where there is a marketplace for network tails, the ratio of the tail price to the backbone price drops from 33:10 to 25:18. Over the whole public sector, even after the savings identified in Question 3, this suggests that we are currently overpaying by £108M. We cannot reasonably expect to achieve this level of savings in the current UK marketplace, but PSN should encourage more competition. Indeed, at the time of writing a number of additional local authorities, including Devon, Yorkshire, Dorset and Cambridge are considering the approach taken by HIOW, Kent Connects and the Welsh Assembly.

We estimate that PSN marketplace will generate 20% savings from the £108M overpayment, or a saving of **£21M** on the price of backbone and tails.

### **3.6.6 Question 7: Realising the benefits**

*How will we ensure that PSN is exploited to optimise the enabled savings and exploit the capability created to improve services?*

Considerable savings are achievable through PSN, not only the direct savings quantified in this Economic Case, but also: indirect savings enabled by PSN but accrued more widely through Collaborative Procurement, increased efficiency of pan-government inter-working arising from the improvements in information sharing and mitigation against potential future costs to the public sector arising from machinery of government changes or departmental reorganisations.

With strong management, we believe that actual savings achieved could be considerably higher than those identified here. If poorly managed, then the potential value of PSN will just drift away with no one paying any attention.

Departments themselves will be responsible for maximising and tracking their own benefits from PSN – not just the financial benefits but also any wider benefits, for example service transformation benefits driven by Digital Britain [Ref 8] – just as they are responsible for maximising and tracking benefits from any alternative network solution they would otherwise be engaged in. We recommend that public sector organisations build their own business cases and commit to specific savings, in order that they can be tracked by the OGC ICT Collaborative Category Board (CCB).

### **3.6.7 Question 8: Governance and management costs**

*What is the cost to Government to manage and govern the PSN marketplace?*

There will be cost associated with establishing a central Governance function and a small number of “single instance” services for the PSN. The principles driving the funding for these functions is that they will be cost neutral, and require minimum capital outlay by HMG.

#### **Governance**

Governance will be required in order to maintain a fair marketplace, manage the PSN Service Catalogue, resolve disputes, authorise new services, maintain PSN standards, move PSN forward and drive the realisation of benefits across the public sector.

The central governance function has not been fully modelled at this point, but a reasonable assumption is that it will cost no more than **£2M** per annum in line with the cost of running the PSN Programme for 2009/10, and allowing for the fall-off in design assurance and transition work being balanced by a fall off in voluntary resources from Industry being enjoyed during the development stage. A portion of the current programme cost is allocated to external specialist contractors. These costs will ultimately be funded by a revenue stream collected from PSN service providers. We assume that this stream will reach the necessary £2M at 40% uptake of PSN, and any additional income will be managed as a “common good fund” through the Governance function. At 80% uptake of PSN, the total annual revenue from central services to the governance function is assumed to be **£4M**.

#### **Network Infrastructure**

The core network of the PSN – the GCN – is being provided under a set of legally binding “Deeds of Undertakings” to HMG at a nominal price. It will work in concert with the single-instance services to deliver “the effect of a single network”. Some of these services will be surfaced by suppliers involved in the GCN delivery, others require a degree of independence from these suppliers and will therefore be procured centrally.

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The core PSN components that will be procured centrally are currently identified as:

- The Service Information Monitor (SIM). The SIM gathers service level status information from PSN and core network service providers and provides this information to Service Desks as appropriate.
- Security components, including:
  - Potentially, an Authentication Service, or some of its components, such as Directory Services.
  - A Security Monitoring Service, this would be in addition to any existing internal protective monitoring capability within suppliers' networks.
- Potentially, a Settlement Service.

The current estimate for the capital set-up cost of the SIM is under £10M and will be procured on a cost-neutral basis to Government. We expect the SIM service provider to provide the capital for the SIM and recover it through subscription charges to PSN service providers. Our initial estimate for the annual service charge for the SIM, to recover the capital and operational costs – including the revenues collected by HMG to manage the governance function – is **£5M**.

If central Authentication, Directory Services or Settlement services are required, the assumption is that they will be procured on the same basis as the SIM – cost-neutral to HMG, with the capital cost of each – expected to be under £20M – borne by their providers and recovered through subscription charges to PSN service providers. Regarding Directory Services in particular, there is the possibility that these may be able to be provided by enhancing the Directory Services within the Government Gateway or the National ID Scheme. Our initial estimate for the annual service charge for Authentication or Settlement, to recover the capital and operational costs – including the revenues collected by HMG to manage the governance function – is **£5M**.

The model for the Security Monitoring Service is slightly different. PSN service providers do not depend directly on this service and so will not include it or charge for it within their bundled offerings. Instead, it could be procured as a central PFI-type service and paid for by direct subscription by PSN consumers. The Security Monitoring Service has not yet been defined, and so its cost cannot be accurately determined. Our initial estimate for the annual service charge for Security Monitoring – including the revenues collected by HMG to manage the governance function – is **£10M**.

### **Authorisation of PSN Services**

There will be a cost for the testing, accreditation, authorisation and compliance validation of PSN services and service providers. CESG is in the process of setting up an accreditation facility to assure NGN services, and the CESG model is to outsource all PROTECT accreditation services to industry, and retain in-house the accreditation of higher assurance systems. The PSN authorisation function has not been fully defined at this stage, but we expect that CESG will contribute to it.

Commercial organisations will have the opportunity to bid for and provide PSN authorisation facilities, and, if the market bears it, there should be more than one such facility. We assume that PSN authorisation facilities will be used (and hence paid for) by prospective suppliers of PSN services, as part of the process of gaining entry to the PSN marketplace.

PSN authorisation facilities need to be quick and be able to handle a high volume of customers. The accreditation elements of these services will replace many of the services currently used by departments to accredit their own systems.

It is extremely difficult to estimate the total annual price likely to be paid to PSN service providers for them to recover the cost of testing, accreditation, authorisation and compliance validation. There will be business change costs within the security community for them to define and adapt to the new model, and business set-up costs within CESG and Industry to provide PSN authorisation facilities. Our assumption is that their operational costs are already accounted for in the residual costs, after the efficiency savings identified in section 3.6.4. The cost to define and bring into being a number of PSN authorisation facilities remain, and are included within the PSN programme costs estimated for 2010/11 below.

### **Programme costs**

In addition to the cost of running the PSN Programme for 2009/10, resource will be required to bring the central services and functions into existence, in terms of design assurance, security assurance procurement management transition support and marketing. Current PSN programme plans extend out only as far as existing budgets allow, and do not include the activities required to complete the definition and procurement of Security Monitoring services, Authentication services, Settlement services, and PSN authorisation facilities.

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Nor do existing plans allow for the effort required to communicate and market the transition to PSN and the technical support to departments for transition planning itself.

The cost of running the PSN Programme for 2009/10 is £2M, broken down as shown in Figure 9 in the Financial Case (Section 5) into internal CO staff costs, external specialist contractors and CESG fees. By the end of 200/10 the construction of the SIM will be under way. It would be prudent to assume that an additional £1.83M capital budget will be required for 2010/11 and £1.55M 2011/2012 (CESG's cost transferring to PSN Service Providers at this point) to complete the remaining activities. These costs will reduce and transition into the governance cost identified above, and will ultimately be funded by a revenue stream from PSN service providers. However, PSN services are not expected to come on line in significant volumes until 2012. Hence the total cost for running the programme prior to the central governance becoming self funding, over 2009/10, 2010/2011 and 2011/2012 is estimated at **£5.41M**.

### 3.6.8 Sensitivity Analysis

It is acknowledged that many of the assumptions in this paper are based on insufficient data, and should be challenged by public sector organisation undertaking their own business cases for PSN. The bullets below summarises the fairly crude sensitivity analysis undertaken here.

- On the savings identified in backbone and tail circuits, the ratio of B (the price of tails) to C (the price of the backbone) has minimum effect, however, varying the sum of B and C by  $\pm 5\%$  varies the overall savings from network duplication, MPLS and a better marketplace by  $\pm 18\%$ .
- The price we calculate the backbone should be is £76.5M  $\pm 37\%$ . Varying this to its extremes varies the overall savings from network duplication, MPLS and a better marketplace by  $\pm 14\%$ .
- Combining the two effects above, varying B+C by -5% and increasing the price of the backbone to the top of its predicted range brings the overall savings down by 14%. Using this analysis, we will take the expected value of £174M (£124M on network duplication, £29M on MPLS and £21M on a better marketplace) and round up to a range of  $\pm 15\%$  on our overall savings from network duplication, MPLS and a better marketplace.
- There is a linear relationship between the overall price for External Communications Services and the savings derived from this number. Our three points for estimating this saving are 5% (pessimistic) 30% (expected) and 50.7% optimistic, giving an expected value of 29%, or £392M  $\pm 50\%$ .
- Similarly, there is linear relationship between the estimate for the overall price for Internal ICT staff costs and the savings derived from this number. Our three points for estimating this saving are 5% (pessimistic) 30% (expected) and 56% optimistic, giving an expected range of 30%, or £225M  $\pm 50\%$ .

### 3.6.9 Summary of savings before risk

Before risk, the total savings estimated with an 80% adoption of PSN across the public sector are:

- £174M  $\pm 15\%$  from a total of £705M for network duplication and efficiency.
- £392M  $\pm 50\%$  from the external cost to specify, design, secure, deploy, operate and maintain commodity ICT services of £1.35Bn.
- £225M  $\pm 50\%$  from the internal staff to cost specify, design, secure, deploy, operate and maintain commodity ICT services of £751M.

This is the equivalent of 28% of the external cost plus 30% of the internal cost of a typical public sector contract delivering commodity ICT network and user services.

### 3.6.10 Quantification of risks

The table below quantifies the impact of failure or delay based on the most likely risks in Appendix C. Additional impacts will be felt through delayed benefits from programmes that depend on PSN.

Option 3 Risks	Probability	Impact/ year	Expected value/year
Programme delayed	30%	£181M	£54.3M
Failure to achieve external procurement savings	10%	£410M	£41M
Failure to achieve internal procurement savings	20%	£263M	£52.6M
Failure to attract investment money	10%	£20M	£2M
Expected value			<b>£150M</b>

Figure 5 – Quantification of risks for Option 3

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**3.6.11 Costs and savings**

The tables in Figure 6 below summarise the costs and savings of option 3.

- The programme cost and governance figures are annualised over 5 years to enable an NPV calculation, using the Treasury's suggested discount rate of 3.5%. The risk and benefits figures are by their very nature NPV figures because they have been derived as percentages of an overall spend in the current year.
- As stated in section 3.2 PSN central services will be procured on a cost-neutral basis to Government, and so do not appear as a cost in the economic case. The estimated annual cost for these services is £20M. This includes £4M passed to HMG to operate the governance and management function.
- The revenue from central services pays both for the in-service governance and management (£1M) and a "Common Good" fund to be allocated by the PSN Governance function. A revenue of £2M is assumed at a 40% uptake, so at 80% uptake this revenue is £4M, and at 10% uptake it is £0.5M.
- The internal staff savings could be cash releasing if they lead to a headcount reduction.
- An allowance for Optimism bias is included, even though risks have been quantified and allowed for. Optimism bias helps us to adjust for optimism in capital and operating costs, but Treasury research provides no evidence that it helps in adjusting for optimism in works duration or benefits realisation. To err on the side of caution, we retain 10% optimism bias, simply to augment the existing risk value.

<b>Preferred option: 3 – Industry offers Points of Connection</b>		
<b>Costs, annualised over 5 years</b>	<b>Undiscounted</b>	<b>NPV</b>
Revenue (CO programme costs over 5 years)	-£0.93M	-£0.91M
Revenue (in-service governance and management)	-£2.05M	-£1.82M
Risks retained	-£150M	-£150M
Optimism bias (10%)	-£11.1M	-£11.1M
<b>Total Costs</b>	<b>-£164M</b>	<b>-£164M</b>

<b>Annual Benefits: 80% uptake (NPV)</b>	Quantitative	Cash releasing	Non-cash releasing
Revenue from central services	£4M		
<b>Total Quantitative benefits</b>	<b>£4M</b>		
Network duplication and efficiency		£174M ± 15%	
Procurement, design and support duplication: External		£392M ± 50%	
<b>Total cash releasing benefits</b>		<b>£566M ± 40%</b>	
Procurement, design and support duplication: Internal staff			£225M ± 50%
Total non-cash releasing benefits			<b>£225M ± 50%</b>
<b>Total Benefits (80% uptake)</b>		<b>£795M ± 42%</b>	
<b>Net Benefits (80% uptake)</b>		<b>£631M ± 53%</b>	

<b>Annual Benefits: 40% uptake (NPV)</b>	Quantitative	Cash releasing	Non-cash releasing
Revenue from central services	£2M		
<b>Total Quantitative benefits</b>	<b>£2M</b>		
Network duplication and efficiency		£87M ± 15%	
Procurement, design and support duplication: External		£196M ± 50%	
<b>Total cash releasing benefits</b>		<b>£283M ± 41%</b>	
Procurement, design and support duplication: Internal staff			£113M ± 50%
Total non-cash releasing benefits			<b>£113M ± 50%</b>
<b>Total Benefits (40% uptake)</b>		<b>£398M ± 43%</b>	
<b>Net Benefits (40% uptake)</b>		<b>£234M ± 73%</b>	

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<b>Annual Benefits: 10% uptake (NPV)</b>	Quantitative	Cash releasing	Non-cash releasing
Revenue from central services	£0.5M		
<b>Total Quantitative benefits</b>	<b>£0.5M</b>		
Network duplication and efficiency		£22M ± 15%	
Procurement, design and support duplication: External		£49M ± 50%	
<b>Total cash releasing benefits</b>		<b>£71M ± 45%</b>	
Procurement, design and support duplication: Internal staff			£28M ± 50%
Total non-cash releasing benefits			<b>£28M ± 50%</b>
<b>Total Benefits (10% uptake)</b>			<b>£99M ± 46%</b>
<b>Net Costs (10% uptake)</b>			<b>-£65M ± 70%</b>

Figure 6 – Summary of PSN costs and benefits for Option 3

If the break-even point is the uptake point when the Total Benefits match the Total Costs, then from the table we conclude that the **break-even point for PSN Option 3 is an uptake of 17% nationally.**

### 3.7 Economic appraisal – other options

This section briefly summarises the economics of the remaining options.

#### 3.7.1 Option 1 – Do nothing strategic

This option allows public sector customers to continue to procure of network services without public sector wide collaboration. By following this option, none of the economic benefits detailed in **Error! Reference source not found.** would be available. This option is not considered further.

#### 3.7.2 Option 2 – HMG invests in Points of Interconnection

This option provides for government to invest directly with network service providers to deliver “peering points” for the PSN. Note that as stated in section 3.2, the costs of providing these HMG-owned peering points and the Industry-owned backbone are recovered through the pricing of business services to end customers. Hence this option includes:

- The costs of the peering points to HMG and the fees recoverable to HMG for their use. We make the assumption that they are provided to public sector customers on a cost recovery basis. It is assumed that a 21-POC backbone is procured, at an annual cost of **£21M**. This is consistent with the sizing undertaken in the PSN Lite project. Like other PSN central services, this will be procured on a cost-neutral basis to Government, and so does not appear as a cost in the economic case.
- The likely increase in last-mile tail prices which result from the lower access and transport consolidation achievable through this option (see section 3.6.2). We make the assumption that only 10% access and transport consolidation (**£44M**) can be achieved across the public sector from Option 2, lowering the total saving expected for network duplication down from £174M to **£130M**.
- The economic impact of lower PSN uptakes in a scenario where government has made the investment in the backbone.
- The increased risk due to procurement delay. The table below quantifies the expected impact of failure or delay of Option 2 based on the most likely risks in Figure 12.

Option 2 Risk	Probability	Impact/ year	Expected value/year
Programme delayed	50%	£135M	£67.5M
Failure to achieve external procurement savings	10%	£410M	£41M
Failure to achieve internal procurement savings	20%	£263M	£52.6M
Failure to attract investment money	10%	£20M	£2M
Expected value			<b>£163M</b>

Figure 7 – Quantification of risks for Option 2

The tables in Figure 8 below summarise the costs and savings detailed for Option 2.

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<b>Option 2 – HMG invests in Points of Interconnection</b>			
<b>Costs, annualised over 5 years</b>		<b>Undiscounted</b>	<b>NPV</b>
Revenue (CO programme costs over 5 years)		-£0.93M	-£0.91M
Revenue (in-service governance and management)		-£2.05M	-£1.82M
Risks retained		-£163M	-£163M
Optimism bias (10%)		-£14.4M	-14.3M
<b>Total Costs</b>		<b>-£180M</b>	<b>-£180M</b>

<b>Annual Benefits: 80% uptake (NPV)</b>	Quantitative	Cash releasing	Non-cash releasing
Revenue from central services	£4M		
<b>Total Quantitative benefits</b>	<b>£4M</b>		
Network duplication and efficiency		£130M ± 15%	
Procurement, design and support duplication: External		£392M ± 50%	
<b>Total cash releasing benefits</b>		<b>£522M ± 42%</b>	
Procurement, design and support duplication: Internal staff			£225M ± 50%
Total non-cash releasing benefits			<b>£225M ± 50%</b>
<b>Total Benefits (80% uptake)</b>		<b>£751M ± 44%</b>	
<b>Net Benefits (80% uptake)</b>		<b>£571M ± 57%</b>	

<b>Annual Benefits: 40% uptake (NPV)</b>	Quantitative	Cash releasing	Non-cash releasing
Revenue from central services	£2M		
<b>Total Quantitative benefits</b>	<b>£2M</b>		
Network duplication and efficiency		£65M ± 15%	
Procurement, design and support duplication: External		£196M ± 50%	
<b>Total cash releasing benefits</b>		<b>£261M ± 43%</b>	
Procurement, design and support duplication: Internal staff			£113M ± 50%
Total non-cash releasing benefits			<b>£113M ± 50%</b>
<b>Total Benefits (40% uptake)</b>		<b>£376M ± 44%</b>	
<b>Net Benefits (40% uptake)</b>		<b>£196M ± 88%</b>	

<b>Annual Benefits: 10% uptake (NPV)</b>	Quantitative	Cash releasing	Non-cash releasing
Revenue from central services	£1M		
<b>Total Quantitative benefits</b>	<b>£1M</b>		
Network duplication and efficiency		£16M ± 15%	
Procurement, design and support duplication: External		£49M ± 50%	
<b>Total cash releasing benefits</b>		<b>£65M ± 47%</b>	
Procurement, design and support duplication: Internal staff			£28M ± 50%
Total non-cash releasing benefits			<b>£28M ± 50%</b>
<b>Total Benefits (10% uptake)</b>		<b>£94M ± 47%</b>	
<b>Net Costs (10% uptake)</b>		<b>-£86M ± 52%</b>	

Figure 8 – Summary of PSN costs and benefits for Option 2

**The break-even point for PSN Option 2 is an uptake of 19% nationally.**

## **4 THE COMMERCIAL CASE**

### **4.1 Introduction**

The commercial model for PSN is described in the PSN Operating Model [Ref 3]. It sets out the relationships between the PSN Authority, Framework/Contracting Authorities, PSN Service providers, and PSN Consumers. The key element in respect of this business case is the ‘Undertakings’ of GCN Service Providers, including those with regard to ‘fairness’. We recall that the GCN will be provided to HMG at no direct cost, and so, in lieu of a contract, a legally-binding “Deed of Undertakings” will be agreed between GCN Service Providers and a representative Crown body that is part of the PSN Authority. This agreement will set out the various commitments in relation to delivery of the GCN described in [Ref 3], including those described in the ‘Statement of Fairness Provisions for GCN Service Providers’ [Ref 4]. The commercial relationships agreed between individual framework authorities, suppliers and customers are a matter for separate business cases.

### **4.2 Potential for risk transfer**

Following the principle that risk is passed to ‘the party best able to manage them’, subject to value for money, the Deed of Undertakings will ensure that certain key risks, namely the risk of Anti-competitive behaviour, the risk that the design of the GCN is not flexible enough, and the risk of Withdrawal of a GCN provider are transferred as far as possible to the GCN service providers themselves.

### **4.3 Proposed length of the Deed of Undertakings, and charging mechanism**

Given that the GCN will constitute part of the UK’s Critical National Infrastructure, it is understood that a Deed of Undertakings is agreed for a minimum of 10 years. It is understood that a zero or nominal charge is made for the provision of the GCN.

### **4.4 Proposed key contractual clauses**

Key contractual clauses have not yet been established. However [Ref 3] and [Ref 4] elaborate on the commercial principles required of an organisation operating as a GCN Service Provider.

### **4.5 Personnel implications (including TUPE)**

It is anticipated that the TUPE may apply to this investment if departments have data communications teams. Additionally the marketplace being created by PSN may create the opportunity for increased outsourcing of other ICT services consumed by the public sector.

### **4.6 Procurement strategy and implementation timescales**

The key drivers for the Implementation of the PSN are the end dates of a “first wave” of HMG contracts coming up for renewal in the 2012 timeframe. This first wave includes GSI, MTS, DWP ICONS, MOD DFTS, NPIA, HO IT2000 and IPIDS, NHS N3, MOJ NOMS, HMRC ASPIRE, JANET and several Local Authorities.

Each of these contracts is a matter for their own contracting authority, or let through the SNS Framework; however the vision for PSN is that these contracts contain clauses that require the services provided to be PSN compliant, either as a PSN Service Provider or as a PSN Direct Network Service Provider.

### **4.7 FRS 5 accountancy treatment**

Given current Treasury advice, we do not expect PSN Services to be identified as assets on the balance sheet of a typical PSN Service customer. If the customer elects to become a PSN Direct Network Service Provider, it needs to take advice on the accountancy treatment of the services it provides to others.

## 5 THE FINANCIAL CASE

PSN is affordable to the Cabinet Office over the duration of the Programme, providing:

- The additional revenue streams identified below are secured;
- PSN uptakes of 10% in 2011/12, 20% in 2012/13 and 40% by 2013/14 are achieved;
- The voluntary contributions from other Whitehall departments (specifically OGC) and Industry of specialist resources continue;
- Suppliers for central services can be found that are willing to provide the capital for these services.

### 5.1 Impact on the Cabinet Office's income and expenditure account

The anticipated payment stream in the Cabinet Office for PSN over the first 5 years is shown below. Note that:

- Shortfalls are identified for 2010/2011, 11/12 and 12/13 to create services such as the SIM, Settlement, Security Monitoring, Authentication and PSN authorisation facilities, to support transitions and to market the PSN. **There are currently no agreed sources of funds to support this work. In particular the GSI TIF and the CO SIA Fund have NOT agreed to the support indicated.**
- Procurements for frameworks will emerge in the latter half of 2009/10, and on into 2010/11. Revenues from PSN service providers will begin to accrue in 2011/12 (see section 3.6.7), but they will not be sufficient to fund the PSN Governance function fully until 2013/14.
- Like the PSN Programme, the Governance Function is likely to require a blend of Civil Servants and external specialist contractors.

£M, excl VAT	2009/10	2010/11	2011/12	2012/13	2013/14	Total
<b>Preferred option: 3 – Industry offers Points of Connection</b>						
Revenue						
<u>Programme</u>						
- Design Assurance	0.75	0.75	0.35			1.85
- Transition support & marketing	0.75	0.75	0.35			1.85
- CESG	0.28	0.28				0.56
- CO Staff – mgt & procurement	0.2	0.1	0.1			0.4
<u>Governance</u>						
- CO Staff		0.1	0.4	0.5	0.5	1.5
- Design Assurance			0.4	0.75	0.75	1.9
- Transition support & marketing			0.4	0.75	0.75	1.9
- Misc	0.05	0.05	0.05	0.05	0.05	0.25
<b>Total</b>	<b>2.03</b>	<b>2.03</b>	<b>2.05</b>	<b>2.05</b>	<b>2.05</b>	<b>10.21</b>
<b>Funded by</b>						
Existing						
- GSI TIF	1.5					1.5
- CO	0.25					0.25
Additional (NOT CONFIRMED)						
- GSI TIF		1.2	1	1		3.2
- CO SIA Fund	0.28	0.28				0.56
- PSN revenue stream			0.5	1	2	3.5
- CO		0.55	0.55	0.05	0.05	1.2
<b>Total</b>	<b>2.03</b>	<b>2.03</b>	<b>2.05</b>	<b>2.05</b>	<b>2.05</b>	<b>10.21</b>

Figure 9 – Impact on the Cabinet Office's income and expenditure

### 5.2 Impact on the Cabinet Office's balance sheet

PSN will have no significant impact on the Cabinet Office's balance sheet.

## 6 THE MANAGEMENT CASE

### 6.1 Programme management arrangements

The organisation, plan and reporting structure for the Programme is described in the PSN Programme Plan. The SRO for PSN in the Cabinet Office is Lesley Hume, Office of the Government CIO and SIRO. The Programme Director is John Stubbley and the Programme Manager is Martin Gould. The core PSN assurance team consists of a blend of Civil Servants, Specialist contractors and Industry volunteers. Industry volunteers are responsible for each of the programme's managed workstreams, except Security, which is the responsibility of CESG. Currently the workstreams are: Service Management, Governance and Commercial; Technical Architecture; Transition Planning and Security.

To ensure a level commercial playing field – specifically to allow smaller Industry stakeholders to maintain a current knowledge of the programme and to allow them to participate meaningfully at any time – all relevant programme deliverables are published on the Internet on the Cabinet Office's PSN web page, [http://www.cabinetoffice.gov.uk/cio/public\\_sector\\_network.aspx](http://www.cabinetoffice.gov.uk/cio/public_sector_network.aspx).

The programme is managed according to the principles of MSP, subject to the limitations imposed by having a large component of the workforce outside of the Cabinet Office's direct control. The PSN Change Control Process is described in the PSN Programme Plan.

Specialist contractors are used in the areas of: Programme and Project Management; Business Change and Stakeholder Management; NGN architecture and design; ITIL Service Management and Security Assurance.

### 6.2 Benefits realisation and post project evaluation

Section 3.6.6 states the departments themselves will be responsible for maximising and tracking their own benefits, post implementation reviews (PIRs) and project evaluation reviews (PERs) from PSN, but additionally the OGC is responsible for tracking and optimising the savings achieved across the public sector from Collaborative Procurement.

### 6.3 Risk Management

The Programme Plan is risk-driven. Programme risks are captured in the Programme Risk register. Risks are managed through the normal Programme reporting cycle.

### 6.4 Contract Management

Delivery of PSN services will be managed by an appropriate contracting authority. The contracting authority selected is a matter for each customer. The framework authority for GSI and MTS replacement is Buying Solutions. The authority for the delivery of the Deed of Undertakings with each GCN Service Provider is to be confirmed.

### 6.5 OGC Gateway arrangements

An OGC Gateway 0 Review has already taken place. Further Gateway 0 reviews should be performed periodically for the core Programme, OGC Gateway 3 reviews should be performed for each major procurement activity that deliver PSN services.

### 6.6 Contingency plans

In the event that this project fails, each public sector body requiring network services is ultimately responsible for its own continuity of network services. Additionally, Buying Solutions is currently developing contingency arrangements in the event that PSN services are not available when GSI and MTS retire.

**Signed:**

**Date:**

**Lesley Hume**

**Senior Responsible Owner, On behalf of the PSN Programme Board**

**UNCLASSIFIED**  
**Public Sector Network – Outline Business Case**

**A. BENEFITS MAP**

The benefits map below presents the outputs and outcomes of the PSN Programme alongside the outcomes of certain other key government initiatives, namely G-Cloud, Shared Services and Collaborative Procurement. Viewing the diagram from left to right, these outcomes, combined, contribute to the pan-government benefits identified, and so support government strategic objectives.

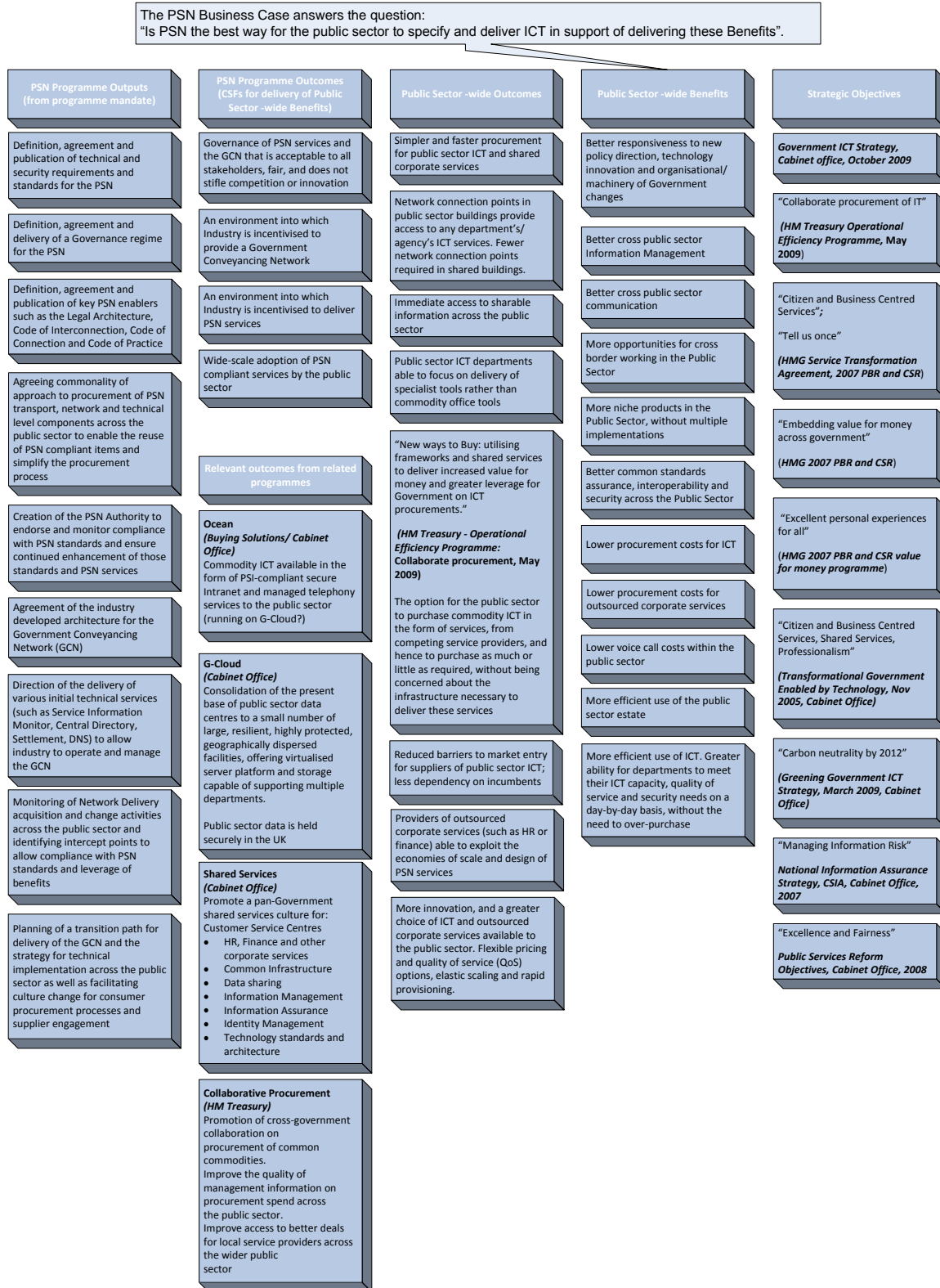
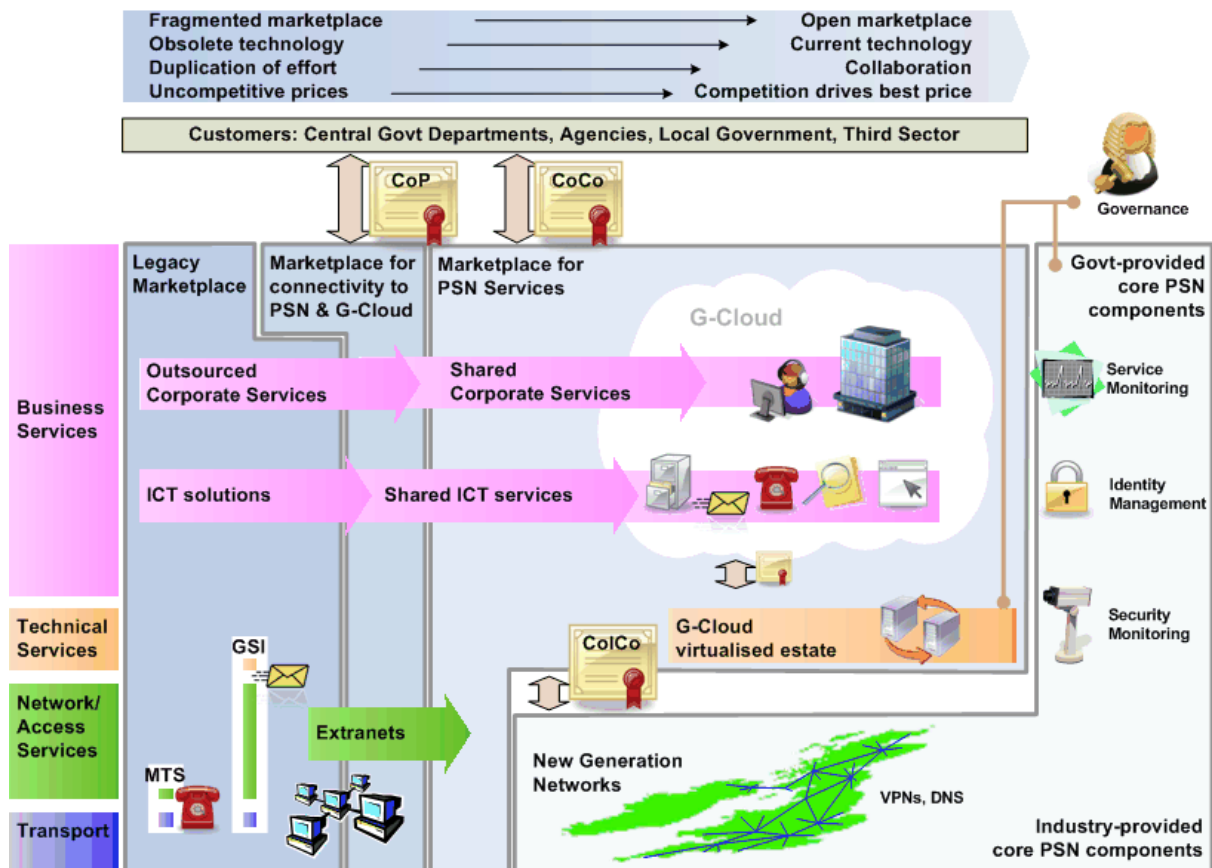


Figure 10 – PSN/ G-Cloud/ Shared Services/ Collaborative Procurement/ SNS Benefits Map

## B. THE NEW MARKETPLACE FOR GOVERNMENT ICT SERVICES

Different elements of the PSN landscape will be procured in different ways. PSN changes the marketplace for government ICT procurement. This is illustrated in **Error! Reference source not found.** below.



• Figure 11 – Maturation of the PSN marketplace

- Within the **Marketplace for PSN services**, it will be up to suppliers of PSN services and their customers or intermediaries to agree their own procurement and support arrangements.
- The **Government provided core PSN components** are being procured centrally. A procurement strategy is being developed for each of these.
- The **Industry provided core PSN components** are not being procured by Government. Industry is developing the core Government Conveyance Network (GCN) with the expectation that it will be used and financed by PSN service providers.

## C. RISKS, DEPENDENCIES AND CONSTRAINTS

The main PSN risks, dependencies and constraints are shown below. Note that Government has fewer development and implementation risks because development is an Industry responsibility.

Risk/Dependency
<p><b>Design Development and Implementation</b></p> <p><b>Risk:</b> Programme delayed:</p> <ul style="list-style-type: none"> <li>• <b>Risk:</b> timely development of accreditation models</li> <li>• <b>Risk:</b> timely instantiation of PSN central services, including PSN authorisation facilities</li> <li>• <b>Risk:</b> failure to attract investment money from Industry into central services and PSN authorisation facilities</li> <li>• <b>Dependency</b> on Industry for timely completion of design development and implementation</li> <li>• <b>Dependency</b> on OGC for commercial support</li> <li>• <b>Dependency</b> on CESG resources for security support</li> <li>• <b>Dependency</b> on Buying Solutions and other contracting authorities for procurement support</li> <li>• <b>Dependency</b> on industry for successful integration of services</li> <li>• <b>Risk:</b> Availability of government and industry resources</li> <li>• <b>Risk:</b> Overlap of responsibility/ gaps between different parts of government with similar agendas (PSN/ G-Cloud/ Collaborative Procurement/ Shared Services)</li> </ul>
<p><b>Operational</b></p> <p><b>Risk:</b> Failure to achieve external and internal procurement savings:</p> <ul style="list-style-type: none"> <li>• Adapting to the new marketplace</li> <li>• Implementing internal staff changes</li> <li>• High price-points for PSN services: <ul style="list-style-type: none"> <li>○ high barrier to market for PSN service providers: eg accreditation/ authorisation/ COICO prevents supplies from entering market</li> <li>○ poor uptake from customers leading to poor choice of services</li> <li>○ anti-competitive behaviour from service providers, either individually or in consortia</li> <li>○ market not large enough</li> </ul> </li> <li>• Design not flexible enough to support all pan-government business scenarios</li> <li>• High cost to meet Code of Connection (CoCo) requirements</li> </ul> <p><b>Risk:</b> Unsatisfactory services</p> <ul style="list-style-type: none"> <li>• customers unable to buy the service management arrangements they want</li> <li>• poor performing centrally procured services</li> <li>• poor interoperability between services provided by different providers</li> </ul> <p><b>Risk:</b> Ineffective Governance/dispute resolution</p> <ul style="list-style-type: none"> <li>• customers or service providers unable to have issues resolved</li> <li>• sources of faults cannot be identified/agreed</li> <li>• unclear lines of governance responsibility between PSN and other operational shared services</li> </ul> <p><b>Risk:</b> Legal challenge, eg from network provider claiming anti-competitive behaviour</p> <p><b>Constraint:</b> Government Strategic Objectives.</p> <p><b>Constraint:</b> Legal and OFCOM constraints, to ensure fair competition between service providers.</p> <p><b>Constraint:</b> Security constraints, in particular the need for services to be accreditable.</p>
<p><b>Termination</b></p> <p><b>Risk:</b> Change of Government/ Election/ Government loss of appetite for programme</p> <p><b>Risk:</b> Withdrawal of significant GCN provider</p>

Figure 12 – Main Risks and dependencies associated with PSN

## D. LOCAL AUTHORITY CASE STUDY

### Placing risk in the best place – Direct Network Service Providers

High uptake of PSN across the public sector can also include the procurement of physical, *PSN compliant*, network infrastructure to serve a specific geographic area or customer base. This can be seen as a stepping stone towards being a PSN “Direct Network Service Provider” (DNSP).

PSN compliance here means a network under PSN governance which is able to carry external PSN services to its users. For example, the model being adopted by the Hampshire and Isle of Wight Local Government Association (HIOW), Kent Connects and Devon County Council, the Welsh Assembly and a number of others is one where physical network is being procured directly, but that this network must interoperate with the wider PSN. The HIOW PSN (HPSN2) will, upon initial rollout, serve 16 separate local public bodies in the Hampshire and Isle of Wight area, all of whom have collaborated in the procurement (savings hundreds of thousands in replicated procurement effort), and are enjoying a service catalogue which is delivering an annual 10% savings in commodity ICT cost.

The prices obtained by HIOW were achieved through exploitation of the local knowledge of where physical network connection points would be needed at what bandwidth, rather than depending on a network provider’s standard tariff prices which include their own distance-related component of risk contingency. So HIOW – rather than the network provider – is carrying the risk of network deployment and *is best placed to carry it*.

The power of the HIOW PSN model comes not only with the internal savings achieved at procurement time (the contribution to the procurement costs paid by Portsmouth City Council and Southampton were £10,000 each rather than what would more typically be a cost of £100,000 to £150,000 each for a procurement of this type) but also through the existence of a service catalogue that now offers considerable savings to any additional public body with nearby premises.

For example, a DWP, Health Department, or HMRC office could choose join the HIOW Local Government Association and connect to its own central ICT services (if they were available over PSN) either through HPSN2 or a different PSN service provider. This is a concrete example of the public sector ICT marketplace beginning to open up. To connect via HPSN2 would cost considerably less than the £1000 - £2300 per desk that can be experienced elsewhere within the public sector.

A final point to note regarding the HIOW model is that delivery and support of physical assets can be offered at local, rather than a national level, thus offering users the potential for much more rapid response times than could be guaranteed under some nationally agreed SLA.

The HIOW example demonstrates that if projects, programmes or departments consider only their immediate problem, and do not consider the inevitable wider requirements for future extensibility and interoperability, then their benefits analysis may be incomplete. Departments are therefore asked to consider these wider issues prior to any investment decisions. Success of the PSN is dependent upon a broad uptake, as the benefits that a department enjoys depend on other departments participating.

### DNSPs and the GCN

Potentially, national bodies such as DWP, NHS, MOD or HMRC could consider becoming Direct Network Service Providers by reconfiguring their existing network infrastructure, and in doing so, minimising their own investment by passing network traffic as soon as possible onto the backbone – ie the GCN. The volume of departmental-owned network might be higher in geographic areas where the volumes of users are high and the data centres are located, but it should be lower where other DNSP already exist.

There are pros and cons to a public sector organisation being a DNSP. Becoming a DNSP presents an opportunity for operational efficiency, but it does require a degree of ICT maturity, and the ability to provide ICT services on a commercial basis to others. There is an important difference between the models being adopted by these various partnerships. In the HIOW model, the service provider is the partnership itself. In the Kent Connects model, the service provider is an Industry partner. Potential DNSPs should consider these options seriously before making such a strategic commitment.

## **E. BUSINESS CASE CHECKLIST FOR ORGANISATIONS**

The key questions 1 to 8 in this business case do not address all the costs and savings associated with PSN, particularly those that are specific to departments or other public sector organisations. Although this is a matter for organisations themselves, the checklist below will help them in the preparation of their own business cases.

Savings to be expected:

- Organisations should ensure that the price being paid for network infrastructure is separated out in any contract structure because it will fall to zero in the PSN model. The price paid for network services should be discounted by the supplier to reflect the fact that the GCN backbone is being shared across many customers, and that there will be some access and transport consolidation as quantified in the response to questions 1, 2 and 3.
- If organisations are moving to MPLS technology for the first time with their network then they should expect a reduction in price for this, as described in the response to question 4.
- The most significant savings involve the way in which ICT is procured, specified, designed, deployed and supported. Organisations will have to undergo business change activities to achieve this and significant consolidation of business functions and external system integrator spend is expected, as described in the response to question 5.
- Organisations should expect better prices, not just for network services as described in the response to Question 6, but also for commodity ICT and business services that are now being shared across many customers.

There will be transition costs associated with PSN, these will include:

- Upgrading any building LANs to support high-bandwidth PSN services.
- Interfacing between existing LANs and the WAN.
- Organisational changes - redeploying some staff away from procurement, programme management, system design and development, security accreditation, and service management functions of commodity ICT.
- Building the management and support structures appropriate to support the commercial model selected by the department for commodity ICT..
- Any cultural changes arising from the commercial model selected.
- Any organisation and process changes required to comply and maintain compliance with the PSN Codes of Interconnection (CoICos) and Codes of Connection (CoCos).
- If applicable, the costs associated with any in-flight contract changes to migrate existing ICT solutions to a state of interoperability or full compliance with PSN. However care needs to be taken when identifying whether a cost is attributable wholly to PSN Transition, or would be a cost that would be incurred in any event as a consequence of engineering technical enhancements or new capability. Departments should transition to PSN at the point in their procurement cycle when they would need to make a strategic IT investment anyway, or sooner if it makes financial sense.

There will be operational costs associated with PSN, these will include:

- The service charges agreed between the customer and its PSN service providers
- Any internal costs to support the commercial model selected, eg the running of an Intelligent Agent if one were necessary
- Any internal costs to maintain compliance with CoICos and CoCos.