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Abstract:	This document defines the Business Volumes that the Horizon infrastructure will support for New Services. The initial version covers the Network Banking Service and EFTPoS.
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0 DOCUMENT CONTROL

0.1 Document History

	Date	Reason for Issue	Associated CP/ PinICL Nos.
0.1	04/02/2002	Initial draft of PA/PER/031 updated with the latest volumetrics This document replaces NB/SRS/001 – 'Systems Requirements Specification for Business Volumes'	N/A
0.2	11/02/2002	2nd Draft, sent out for formal review	N/A
0.3	25/03/2002	3rd Draft, including EFTPoS, Online Transactions and Helpdesk volumes Extensive updates following review with Bob Booth and Torstein Godeseth (Post Office Ltd)	N/A
0.4	15/04/2002	4th Draft. Updated following formal review within Fujitsu and Post Office.	N/A
1.0	24/05/2002	Version for approval.	N/A
1.1	11/06/2002	Approval of version 1.0 rejected. Changes to correct issues highlighted. Not issued for review	N/A
2.0	11/06/2002	Version for approval	N/A

0.2 Approval Authorities

Name	Position	Signature	Date
Colin Lenton-Smith	Commercial & Finance Director, Fujitsu Services, Pathway		
Keith Baines	Head of Horizon Commercial, Post Office Ltd		

0.3 Associated Documents

Ref.	Doc.	Vers.	Title	Author
A12	Schedule A12	[redacted]	Contract Schedule A12	Myles Blewitt
N01	NB Schedule N01	[redacted]	Contract Schedule N01	Myles Blewitt
N08	NB Schedule N08	[redacted]	Contract Schedule N08	Myles Blewitt
LiveSys	NB/SRS/003	0.4	Live System Transaction Profiles	James Stinchcombe

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NBS Vols	N/A	2.0a	POCL NB volumetrics v2.0a.xls dated 04/07/01	Kevin Corrigan (PO Ltd)
EFTPoS	N/A		Memo 'Estimate of Peak Transaction Rates' dated 27.10.00	Darren Ware (PON)
EFTPoS VOLS	NB/SRS/002	0.6	Systems Requirements Specification for EFTPoS'	Mike Chawner/ Ramesh Kallidai

0.4 Abbreviations & Definitions

Abbreviation	Definition

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Abbreviation	Definition
APS	Automated Payment Service
CAPO™	Card Account at Post Office. The official brand name of POCA (Post Office Card Account).
CCD	Contract Controlled Document
CSR	Core Systems Release
CSR+	Core Systems Release (plus)
DLE	Digital Local Exchange. The telephone exchange that the outlet connects to, which in turn connects to the Energis network via a number of British Telecom or Kingston Telecom interconnects. There are around 720 DLEs across the country.
DRS	Data Reconciliation Service
EFTPoS	Electronic Funds Transfer Point of Sale
EPOSS	Electronic Point of Sale Service
FRIACO	Flat Rate Internet Access Call Origination
ISDN	Integrated Services Digital Network
LAN	Local Area Network
LFS	Logistical Feeder System
MVL	Motor Vehicle Licenses
NB	Network Banking
NBE	Network Banking Engine
NBS	Network Banking Service
OBCS	Order Book Control Service
Pathway	Fujitsu Services (Pathway) Ltd
POL	Post Office Counters Ltd
RDDS	Reference Data Distribution Service
RDMC	Reference Data Management Centre
SLA	Service Level Agreement
VPN	Virtual Private Network
WAN	Wide Area Network

Item	Definition
Contracted Notice Period	The notice period required to increase Contracted Volumes in this document, specified in relation to particular volumes.
Contracted Volumes	The volumes that Pathway contracts to support in accordance with [N01 section 12] and this CCD.

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Design Limits	The volumes that the system can be changed to support with the Contracted Notice Period.
Design Limit Notice Period	The notice period required to increase Design Limits in this document, specified in relation to particular volumes.
Existing Services	OBCS, APS, EPOSS and LFS
Off-Line	Where a system elects not to communicate with another system – typically the counter having the rules held locally to enable it to complete the transaction. Not supported in the initial release of Network Banking
On-line	Where a system attempts to communicate with another system – typically the counter seeking authorisation from a Client.
Online Transaction	Transactions requiring an online connection as defined in section 4.1
New Services	Additional Services to Existing services
Phase 1	As defined in section 1.7
Phase 2	As defined in section 1.7
Scalability Threshold	The volumes that the system can be changed to support with the Design Limit Notice Period.
Transaction	A recorded and auditable instance of business activity, involving service provision or Stock movement across organisational or service boundaries

0.5 Changes in this Version

Version 2.0 issued for approval. Changes since 1.0 are marked.

0.6 Changes Expected

Addition of other New Services as appropriate. Updates following agreement of EFTPoS contract, which may require changes to the documented volumes

Following agreement on reference data volumes for NBS with Post Office, these will be added to the document to form a contractual baseline. This will be done under Change Control.

Update of volumes over time

0.7 Table of Contents

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1 INTRODUCTION

1.1 Purpose

This document is the 'Horizon New Service Business Volumes', which once approved becomes a CCD.

The 'Horizon New Service Business Volumes' documents the business workload volumes for any new Services supported by the infrastructure within the Pathway operational domain. Initially only NBS and EFTPoS are included. As other New Services are agreed these will be added.

EFTPoS volumes have been included to reflect changes to the infrastructure for NBS that also support the EFTPoS Service. Introduction of the EFTPoS service itself will be subject to Change Control. All references to EFTPoS in this document need to be considered in this context.

The volumetrics will be used for:

- Sizing the infrastructure within the Pathway operational domain to deal with the New Services
- Capacity Management of the Infrastructure within the Pathway operational domain for those services

The target audience for this document is varied and includes systems designers, capacity managers and business analysts. Some parts of this document may not be appropriate for all readers.

Because the workload volumetrics for New Services are based on business projections that could be under or over estimates of the workload, Pathway has included in the NBS a Capacity Management Service that will monitor:

- The workload generated by each New Service and
- The load generated on the infrastructure by those services.

As the roll-out of the New Services progresses the Capacity Management Service will report to the Service Review Board enhanced predictions of the capacity required to support the business volumes. Any changes in the business volumes and the capacity needed to support them will be agreed though Change Control.

The business volumes set out in this document have been used by Pathway to determine the systems and network capacity required to support the New Services.

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1.2 Scope

This document defines the peak workload volumes for the New Services that the infrastructure within the Pathway Operational Domain will be configured to support.

Initially only NBS and EFTPoS are included.

EFTPoS is a future service that will be introduced under Change Control.

1.3 Introduction

'Horizon New Business Volumes' documents the business-level volumes for the New Services that will be run within the Pathway Operational Domain, i.e.:

- NBS
- EFTPoS

In addition, where volumes for NBS and EFTPoS have a combined impact on the system these are covered separately as "Online Transactions". The reason for this is that the NBS and EFTPoS peaks are not expected to occur at the same time, so the peak Online transaction volume is less than the sum of the peak NBS and EFTPoS volumes.

The business-level volumetrics will be used in conjunction with the system qualities (response time and availability – see [N08]) to give the total system view of the workload from which Pathway has determined the infrastructure capacity required to support the New Service workload.

For each new service, the following are given:

- Contracted Volumes - the volumes that Pathway will contract to support
- Design Limits - the volumes that Pathway can scale the system to support New Services within the Contracted Notice Period (see 1.6) and then sustain without impacting the Existing Services.
- Scalability Threshold - the volumes that Pathway can scale the system to support within the Design Limit Notice Period (see 1.6). Scaling beyond these numbers is possible but will require significant design work and will be dealt with on a case by case basis under Change Control.
- In addition, other areas of concern are covered for each service where appropriate.

The justification for the numbers is provided in section 6.

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1.4 Overview

Based on current experience, the Existing Services offered at an automated Post Office counter position mainly require local processing, with less than 2% of transactions generating on-line interactions with the datacentre. Data generated within an outlet is replicated to the datacentre periodically. This produces a very specific workload profile that the Horizon infrastructure has been designed to support.

The New Services require on-line authentication and authorisation for all transactions. This creates a very different demand profile particularly on the outlet to datacentre network and the Horizon datacentre systems.

The demand on the infrastructure generated by New Services is not uniform across the time periods used to describe on-line workloads e.g. second, hour or day so a set of peaking profiles have been included which will be used to model the demand in each of the peak periods.

Each of these measures describes a characteristic of the system that is required to determine the capacity required as shown by the table below.

Period	Definition	Used For
5 Minutes	The aggregate business over the peak 5 minute period of the month, expressed as a per second rate	Sizing components that need to support on line transactions. E.g. WAN, VPN Servers, Correspondence Servers, Authorisation agents etc.
Hour	The total business volume in the busiest hour of the month.	Sizing components that need to keep up during the day but do not need to support the peak 5 minutes. E.g. DRSH
Day	The total business volume in the busiest day of the month.	Sizing components that need to support the full day load. E.g. overnight batch processing
Two Days	The total business volume in the busiest two consecutive days of the year.	Sizing storage capacity E.g. Overnight host processing - the Host must be capable of storing and processing two days data if a major failure occurs and overnight processing is delayed by a day
Week	The total business volume in the busiest week of the year.	Sizing storage capacity E.g. data warehouse weekly data
Month	The total business volume in the busiest month of the year.	Sizing storage capacity E.g. data warehouse monthly data, correspondence server storage, DRSH storage.

These volumes are also used to help size other aspects of the Pathway system, for example impacts on MIS and SLA reporting.

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1.5 Consequences of Excess Volumes

If the "Contracted Volumes" are exceeded, then the following service levels may be affected:

Volume Set	Service Level
Network Banking - 5 minute volumes (section 2.2)	NBS Response Time [N08 2.1]
EFTPoS - 5 minute volumes (section 3.2)	EFTPoS Response Time [TBA]
Online Transactions - 5 minute volumes (section 4.2)	NBS Response Time [N08 2.1] EFTPoS Response Time [TBA]
Outlet To DataCentre Network - 5 minute volumes (section 5.3)	NBS Response Time [N08 2.1] EFTPoS Response Time [TBA] NBS Reliability [N08 2.3] EFTPoS Reliability [TBA]

If the Design Limits are exceeded then any service level or obligation involving data processing (either human or computerised) may be affected. This includes service levels and obligations for the Existing Services as well as for the New Services. As per [N01 section 12], any failure to meet service levels or obligations shall be disregarded, providing Pathway can demonstrate that the failure has occurred as a result of exceeding the Design Limits.

1.6 Notice for Changing Volumes

For each Contracted Volume and Design Limit in this document two notice periods are given for changing them:

- Contracted Notice Period - the minimum notice that Pathway needs to increase the Contracted Volumes. The Contracted Volumes cannot be changed so that they exceed the Design Limits.
- Design Limit Notice Period - the minimum notice that Pathway needs to increase the Design Limits. The Design Limits cannot be changed so that they exceed the Scalability Threshold.

Each notice period starts when both parties have agreed the Change Control Notice, such agreement not to be unreasonably withheld or delayed.

The notice period for changing the Scalability Limits in the tables will depend on the nature of the change. Ideally more notice than the minimum should be given to allow Pathway to plan the capacity changes in a cost-effective way (e.g. by including within a major release).

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It is a function of the Service Review Board to discuss, plan and agree any such changes, which will be done under Change Control.

1.7 Phasing of Capacity

As set out in the pricing schedule [A12], capacity is being installed in two phases:

- Phase 1 - These volumes (sized at 50% of final volumes) are used for all components from the start of the service.
- Phase 2 - These volumes are used for all components six months after PO Ltd has given notice that it needs Pathway to support these volumes, such notice to be given no earlier than 1st March 2003.

This approach avoids having to purchase 100% capacity from day one. This has the following advantages:

- It defers spend on capacity that is not needed initially.
- If the expected transaction volumes do not arise or occur later than expected, it may be possible to avoid or delay having to increase the capacity.
- Waiting to purchase capacity typically means more capability can be purchased for the same price. This assumption has been made in the pricing for [A12].
- Being able to purchase systems with higher capacity reduces the total number of servers required, lowering the overall cost of management.

The expected areas of change at phase 2 include:

- Increased processing power for the correspondence servers and potentially a new version of WebRiposte to improve connection concurrency handling.
- Increased processing power for the NBS agents
- Increased storage for the DRS and Data warehouse
- Increased processing power for the DRS Host

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2 NETWORK BANKING

2.1 Introduction

The NBS is a new service that will provide a service to both:

- Existing benefit customers who will be paid through the NBS rather than OBCS and
- New (non benefit) customers accessing the services provided by the NBS

The number of benefit customers serviced by Post Office once NBS is in place is predicted to be lower than the number serviced under OBCS. This is due to some customers choosing not to collect their benefit from the post office if it is paid directly into their bank accounts.

The load generated on the Pathway infrastructure by NBS is significantly different to that of the Existing Service workload. In particular, the infrastructure will have to support:

- The peak on-line transaction volumes
- On-line response times (see [N08] 2.1)
- On-line service availability (see [N08] 2.2)
- On-line service reliability (see [N08] 2.3)

The peak-processing profile and the Quality of Service parameters determine the capacity in a particular component that must be delivered to support a given workload.

The rate of growth of NBS is driven by:

1. The take-up rate of the service by personal banking customers and CAPO™ customers
2. The rate at which CAPO™ cards are be issued and the number of such cards
3. The replacement rate of benefit payment books by cards.

Post Office Ltd. has predicted the future workload volumes but the process for the introduction of infrastructure capacity recognises that there are variables in the workload volumetrics and allows for planned change through the Capacity Management Service.

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2.2 Transaction Volumes

These volumes are used to size components that process or store NBS transactions separately from other Online Transactions (e.g. NBS agents, Warehouse, DRS etc).

2.2.1 Phase 1

For Phase 1 the system will support the volumes below:

Volume	Contracted Volume	Design Limit	Scalability Threshold	Contracted Notice Period	Design Limit Notice Period
Peak Month	20,923,780	25,108,536	31,385,670	3 months	9 months
Peak Week	5,480,016	6,576,019	8,220,024	3 months	9 months
Peak 2 Days	2,828,379	3,394,055	4,242,569	3 months	9 months
Peak Day	1,632,090	1,958,508	2,448,136	3 months	9 months
Peak Hour	347,488	416,986	521,232	3 months	9 months
5 Minutes (Per Sec)	111	133	167	3 months	9 months

2.2.2 Phase 2

For Phase 2 the system will support the volumes below:

Volume	Contracted Volume	Design Limit	Scalability Threshold	Contracted Notice Period	Design Limit Notice Period
Peak Month	41,847,560	50,217,072	62,771,340	3 months	9 months
Peak Week	10,960,032	13,152,039	16,440,049	3 months	9 months
Peak 2 Days	5,656,759	6,788,111	8,485,138	3 months	9 months
Peak Day	3,264,181	3,917,017	4,896,271	3 months	9 months
Peak Hour	694,976	833,971	1,042,464	3 months	9 months
5 Minutes (Per Sec)	222	267	334	3 months	9 months

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2.3 Other Volumes

2.3.1 Routing Gateways

The DRSH has the concept of "Routing Gateways", which are defined by reference data for a particular IIN/operation combination. These are used to group transactions into separate reports.

The reconciliation report structure, in agreement with Post Office Ltd, has assumed there are no more than 30 routing gateways. Each routing gateway produces 11 daily reports and 2 weekly reports from the DRS. There are also 2 daily reports for covering all gateways.

With 30 gateways in operation the table below shows the total number of reports:

Day	Total Reports
Normal Weekday (not Monday)	332
Monday (not Bank Holiday)	1056
Tuesday after B.H. Monday	1388
Tuesday after Easter	1720

2.3.2 NBE Interface

The Horizon to NBE interface has been sized to support the phase 2 peak 5 minute Contracted Volumes in section 2.2 above.

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3 EFTPOS

3.1 Introduction

EFTPoS would introduce a new Method of Payment to the Horizon system so that a customer in addition to paying by cash or cheque could now do so by Card.

It is predicted that the customer behaviour that determines the distribution of EFTPoS payments over the day will be similar to that for EPOSS transactions. The key difference between EFTPoS and other services is that Saturdays are expected to be significantly busier than weekdays.

The predicted Saturday peak results from a series of variable events occurring on the same day e.g.:

- Month end resulting in a significant increase in MVL payments and
- Large utility companies issuing quarterly bills

3.2 Transaction Volumes

These volumes are used to size components that process or store EFTPoS transactions separately from other Online Transactions (e.g. EFTPoS agents, Warehouse, DRS etc).

Some of infrastructure upgrades for NBS have been sized to allow for EFTPoS traffic as well. Since the EFTPoS contract has not yet been agreed, the volumes below are only supported on the components specified below.

In sizing EFTPoS, it has been assumed that the workload generated by EFTPoS on any component would be no more than 12% of the workload generated by NBS. Pathway reserves the right to reassess and amend the EFTPoS Contracted volumes if any changes before EFTPoS contract agreement mean this assumption is not valid. [This caveat will be removed when the EFTPoS contract is agreed.]

The following components will support the Contracted EFTPoS volumes:

- Correspondence Servers
- Agent Servers for loading data from the correspondence servers to the DRS Host only (additional agent servers will be needed for processing of the online EFTPoS transactions)
- Audit excluding Audit Retrieval (Audit retrieval requirements have not been agreed for EFTPoS so have to be excluded).

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- Host excluding storage (EFTPoS requires additional storage on the host)
- Data Warehouse excluding storage (EFTPoS requires additional storage on the data warehouse)
- Outlet to Data centre network is included in the volumes defined in section 5.

3.2.1 Phase 1

For Phase 1 the system will support the volumes below:

Volume	Contracted Volume	Design Limit	Scalability Threshold	Contracted Notice Period	Design Limit Notice Period
Peak Month	2,105,000	2,526,000	3,157,500	3 months	9 months
Peak Week	632,384	758,861	948,576	3 months	9 months
Peak 2 Days	282,974	339,569	424,462	3 months	9 months
Peak Day	144,212	173,055	216,319	3 months	9 months
Peak Hour	39,684	47,621	59,526	3 months	9 months
5 Minutes (Per Sec)	11	13	17	3 months	9 months

3.2.2 Phase 2

For Phase 2 the system will support the volumes below:

Volume	Contracted Volume	Design Limit	Scalability Threshold	Contracted Notice Period	Design Limit Notice Period
Peak Month	4,210,000	5,052,000	6,315,000	3 months	9 months
Peak Week	1,264,768	1,517,721	1,897,152	3 months	9 months
Peak 2 Days	565,949	679,139	848,923	3 months	9 months
Peak Day	288,425	346,110	432,637	3 months	9 months
Peak Hour	79,368	95,242	119,052	3 months	9 months
5 Minutes (Per Sec)	22	26	33	3 months	9 months

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4 ONLINE TRANSACTIONS

4.1 Introduction

For this section, Online Transactions are defined as the combined volumes of EFTPoS and NBS transactions. These volumes are used to size components that process and store Online Transactions in a common way (e.g. Correspondence servers).

The outlet to data centre network is explicitly excluded from this section and is covered later.

Note that the volumes in this section do not necessarily match the sum of the EFTPoS and NBS volumes from previous sections. This is because the peaks from NBS and EFTPoS are expected to happen at different times.

4.2 Transaction Volumes

4.2.1 Phase 1

For Phase 1 the system will support the volumes below:

Volume	Contracted Volume	Design Limit	Scalability Threshold	Contracted Notice Period	Design Limit Notice Period
Peak Month	23,028,780	27,634,536	34,543,170	3 months	9 months
Peak Week	6,112,400	7,334,880	9,168,600	3 months	9 months
Peak 2 Days	3,111,354	3,733,625	4,667,031	3 months	9 months
Peak Day	1,776,303	2,131,563	2,664,454	3 months	9 months
Peak Hour	369,074	442,889	553,611	3 months	9 months
5 Minutes (Per Sec)	117	141	176	3 months	9 months

4.2.2 Phase 2

For Phase 2 the system will support the volumes below:

Volume	Contracted Volume	Design Limit	Scalability Threshold	Contracted Notice Period	Design Limit Notice Period
Peak Month	46,057,560	55,269,072	69,086,340	3 months	9 months
Peak Week	12,224,800	14,669,760	18,337,200	3 months	9 months
Peak 2 Days	6,222,708	7,467,249	9,334,062	3 months	9 months
Peak Day	3,552,606	4,263,127	5,328,908	3 months	9 months
Peak Hour	738,148	885,777	1,107,222	3 months	9 months
5 Minutes (Per Sec)	234	281	352	3 months	9 months

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4.3 Other Volumes

4.3.1 Table of IINs

There is a limit to the number of IIN ranges that can be supported by the Horizon system before the Target response times in [N08 section 2.5] are impacted.

This limit for NBS and EFTPoS combined is 1600. [To put this in context, for Electron, Visa-Delta, Solo and Switch combined the expected number of IIN ranges is 85, although more may be needed to cope with cards with and without start dates for example.]
If this volume is exceeded, the response time for NBS and / or EFTPoS at the counter will start to extend. As such, the maximum number of IIN ranges Post Office Ltd can specify shall be 1600.

The number of IIN ranges for EFTPoS and NBS should have no impact on the response time for the Existing services.

An increase in the number of ranges for the Existing Services (e.g. OBCS bar codes and AP magnetic cards) may increase the response time for EFTPoS and NBS. Any such issues will be handled under the CCN that introduced the change.

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5 OUTLET TO DATACENTRE NETWORK

5.1 Introduction

The outlet to data centre network is designed to to scale to support at least the Online Transaction load.

This scaling is achieved by moving more outlets onto fixed connections as the workload increases. The factor that forces this behaviour is that there is a limit to the ISDN call attack rate that the network can support. Hence the need to ensure that the workload generated by the outlets that dial on demand is less than the call attack rate that the network can support.

Since fixed connections are more expensive than dial on demand ones, there is a straight trade off between the network capacity and the network cost.

5.2 Outlet Types and Constraints

The network design supports the following Service types for an outlet:

a) Satellite Connected Outlet - As today. Supports around 250 Post Offices.

b) Bronze Outlet - Uses a "connect on demand" technology to establish an ISDN connection when an online transaction occurs.

c) Silver Part-time Outlets - During limited defined hours, the ISDN line is kept open. Outside these times a "connect on demand" service is used. There are two types:

> Type A - ISDN Line kept open 08:30 to 10:30 Monday, 08:30 to 09:30 Tuesday and 08:30 to 09:30 Thursday.
>
> Type B - ISDN Line kept open 08:30 to 12:30 Saturday

d) FRIACO Silver Daytime Outlets - During daytime hours (08:00 to 17:30 Monday to Friday and 08:00 to 13:00 Saturday), the ISDN line is kept open. Outside these times a "connect on demand" service is used.

e) Non FRIACO Silver Daytime Outlets - the same as d) but in a geographic area not covered by FRIACO.

f) FRIACO Silver 24 Hour Outlets - The ISDN line is kept open 24 hours per day, 7 days per week.

g) Non FRIACO Silver 24 Hour Outlets - the same as f) but in a geographic area not covered by FRIACO.

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There are some constraints on the Service type an outlet can be and the movement of an outlet from one type to another as shown in the table below.

Constraint	Comment
Dialled Service ISDN Call rate is limited	The dial on demand service has a limit in the number of calls per second that it can support (see under section 5.3).
FRIACO Not Available for certain outlets	Energis do not have FRIACO coverage for the whole of the UK. Coverage is dependent on the DLE that the outlet connects to.
FRIACO Capacity may not be sufficient in some exchanges	In some DLE's, there may be insufficient capacity for Energis to support all the Post Offices we wish to make Silver on the FRIACO service. There should always be sufficient capacity on the Non-FRIACO Silver service.
Mobile outlets have Bronze Service only	Mobile outlets will only be supported on the Bronze Service.
Outlets with 5 or more counters have to be Silver	For large outlets, it makes sense to allocate as Silver as it ensures that the transactions are replicated to the data centre as they happen. Having looked at the expected transaction volumes, all outlets of 5 counters or above would be made Silver anyway, so the system automatically ensures such new outlets are made Silver (daytime or 24, FRIACO or Non FRIACO).
Satellite Connected Offices have to be Satellite	Satellite connected outlets can only be supported on the Satellite service which has the same Service Levels as the Bronze Service.
Lead Time on changes	Energis have specific lead-time for ordering capacity (see section 5.3.2).
Outlet relocation	To relocate an outlet, the following actions are taken: i) Move the outlet to a service that has 100% UK coverage (either Bronze or Non FRIACO Silver) ii) Relocate the outlet iii) Move the outlet to a more cost effective service if available (e.g. FRIACO service) This action is needed to avoid having to co-ordinate change of the network service with the relocation (e.g. if the outlet mores from an area with FRIACO coverage to one without FRIACO coverage).
Load on Correspondence Servers	Each Silver outlet imposes a load on the correspondence server for that outlet. There may be limitations to the total number of Silver outlets that we can supported under phase 1 capacity. This is expected to be 2500 per correspondence server cluster. The post office estate is split into 4 such clusters each cluster looking after roughly a quarter of the network.
Minimum Quantity	The minimum quantity of FRIACO connected outlets (either Silver Daytime or Silver 24 Hour) is 6000.

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Additional "operational and external technical" [N01 2.6] constraints may be notified to Post Office on a monthly basis.

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5.3 Volumes

This section looks at the following volumes:

- Maximum Total Online Transaction Rate - the maximum transaction rate supported by the whole network (both dialled and fixed connections). This is expressed as a 5 minute volume.
- Maximum Dialled Transaction Rate - the maximum transaction call rate for Dialled Connections. This is expressed as a 5 minute volume.

The maximum Online Transaction rate (i.e. for NBS and EFTPoS) that can be supported by the dial on demand network is calculated by:

- Taking the maximum 5 minute Dialled Transaction rate that the network can support
- Subtracting an allowance for OBCS Foreigns as described below

The allowance needed for OBCS foreigns is calculated as the product of:

- 2% (which is the OBCS foreign workload as a proportion of the whole OBCS workload)
- Peak 5 minute volume for OBCS (this declines as NBS replaces OBCS)
- The % dialled workload (which declines as more outlets are made Silver).

The maximum Dialled Transaction rate varies by time of day (and day of week), as allowance needs to be made for other causes of ISDN calls including regular Riposte connections and systems management functions (e.g. software distribution). This variation is shown by separate "Periods" in section 5.3.1.

5.3.1 Phase 1 and Phase 2

There is no phasing of the network capacity. The volumes it can support are defined below:

Volume	Contracted Volume	Design Limit	Scalability Threshold	Contracted Notice Period	Design Limit Notice Period

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5 Minute Total Online Transaction Rate (per second)	234	281	352	3 months	9 months
5 Minute Dialled Transaction Rate - Period 1 (per second)	13.5	13.5	13.5	N/A	N/A
5 Minute Dialled Transaction Rate - Period 2 (per second)	10	10	10	N/A	N/A
5 Minute Dialled Transaction Rate - Period 3 (per second)	5	5	5	N/A	N/A

The three periods are defined as:

- Period 1 - Monday to Saturday 08:30 to 10:30. During this period, the number of calls made by causes other than Dialled Transactions is designed to be low.
- Period 2 - Monday to Saturday 08:00 to 08:30 and 10:30 to 17:30. During this period there may be regular Riposte connections but the calls caused by Systems management functions is designed to be low.
- Period 3 - All other times. During this period there may be regular Riposte connections and / or calls to support systems management.

Since as it is not possible to increase the Contracted Volumes or Design Limits for the 5-Minute Dialled Transaction Rates no notice period is given.

5.3.2 Notice Periods and Minimum Quantities

The required periods of notice for changing outlets from Dial on demand Connections (e.g. Bronze) to Fixed Connections (e.g. daytime Silver) varies depending on the amount of additional capacity that needs to be purchased from Energis. The lead times for this are:

- Up to 500 ports - 45 working days
- 500 to 1000 ports - 60 working days
- Over 1000 ports - 120 working days

These time scales are subject to ensuring the FRIACO capacity for any DLE is not exceeded.

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The notice periods refer to the calendar month that capacity is supplied, irrespective of the number of orders placed (for example if two separate orders request capacity increase in December 2003 and each is for 600 ports then the notice period of 120 working days applies to each order).

For orders over 1000 ports, additional ports can be ordered up to 45 working days before the capacity is delivered, providing that capacity does not exceed 20% of the original order.

There is a minimum quantity of 6,000 FRIACO ports that must be maintained. These can be either used for FRIACO Silver daytime outlets or FRIACO Silver 24 hour outlets.

The total number of FRIACO ports can be reduced, providing the following conditions are met:

- The port being returned has been held for at least 12 months.
- 6 months notice has been given (notice can be given once the port has been held for a minimum of 6 months).
- The total number of FRIACO ports is not reduced below the 6,000 minimum.

The final allocation of outlets to ports takes place approximately 4 weeks before the Energis capacity order is delivered. Silver outlets can be demoted to Bronze as well as Bronze outlets promoted to Silver, provided the total Silver outlets is kept consistent with the ordered capacity. At this stage the number of ports for each DLE cannot be changed.

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6 VOLUME JUSTIFICATION

This section provides background information to justify the volumes in the previous sections.

This section has no contractual significance.

6.1 Network Banking

6.1.1 Monthly Volumes

- Post Office Ltd. has supplied Pathway with projected annual volumes for the NBS [NBS Vols]

These are shown in the table below:

Year	Personal Banking (000's)	Benefit Banking (000's)	Total (000's)
2002/03	10,391	0	10,391
2003/04	124,163	107,710	231,873
2004/05	204,484	237,820	442,304
2005/06	215,133	253,090	468,223
2006/07	216,096	246,060	462,156

For the Design Limits, These volumes + 20% has been used.

For the Scalability Threshold, These volumes + 50% has been used.

6.1.2 Workload Profile

There are two customer types (CAPO and personal Banking) which have very different workload profiles. The following profiles have been used for each to determine the expected peaks:

- For existing benefit customers (CAPO) the OBCS profile is used
- For new (non benefit) customers the EPOSS profile for Banking products is used.

These give the following profiles as documented in 'Live System Transaction Profiles' [LiveSys]:

Profile	Personal Banking % of Monthly Volume	Benefit Banking % of Monthly Volume
Peak Month	104.7%	109.4%
Peak Week	29.4%	27.0%
Peak 2 Days	12.2%	16.4%
Peak Day	7.1%	9.5%
Peak Weekday Hour	1.14%	2.32%
Peak Saturday Hour	1.27%	0.37%
Peak Weekday Second	0.00034%	0.00076%
Peak Saturday Second	0.00038%	0.00011%

6.1.3 Expected Volumes

The table below provides the expected volumes given the "Best View" data above and the expected profile.

Year	Peak Month (000's)	Peak Week (000's)	Peak 2 Days (000's)	Peak Day (000's)	Peak Weekday Hour (000's)	Peak Saturday Hour (000's)	Peak Weekday Second	Peak Saturday Second
2002/03	907	254	106	61	10	11	3	3

Year	Peak Month (000's)	Peak Week (000's)	Peak 2 Days (000's)	Peak Day (000's)	Peak Weekday Hour (000's)	Peak Saturday Hour (000's)	Peak Weekday Second	Peak Saturday Second
2003/04	20,654	5,463	2,740	1,581	327	164	104	49
2004/05	39,526	10,356	5,339	3,081	655	289	210	87
2005/06	41,848	10,960	5,657	3,264	695	305	222	92
2006/07	41,291	10,826	5,570	3,214	682	304	218	91

6.2 EFTPoS

6.2.1 Monthly Volumes

The workload profiles for EFTPoS have been supplied by Post Office Ltd. in [EFTPoS VOLS] – 'Systems Requirements Specification for EFTPoS' that supersedes the working assumptions documented in [EFTPoS] as follows:

Month	EFTPoS (000's)
Apr 2003	260
May 2003	420
Jun 2003	580
Jul 2003	740
Aug 2003	900
Sep 2003	1,060
Oct 2003	1,400
Nov 2003	1,740
Dec 2003	2,080
Jan 2004	2,420
Feb 2004	2,760
Mar 2004	3,100
Apr 2004	3,260

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Month	EFTPoS (000's)
May 2004	3,420
Jun 2004	3,580
Jul 2004	3,740
Aug 2004	3,900
Sep 2004	4,060
Oct 2004	4,085
Nov 2004	4,110
Dec 2004	4,135
Jan 2005	4,160
Feb 2005	4,185
Mar 2005	4,210

6.2.2 Workload Profile

The EFTPoS profile is based on information provided by PO Ltd from a limited trial as documented in 'Live System Transaction Profiles' [LiveSys]:

Profile	EFTPoS % of Monthly Volume
Peak Month	100.0%
Peak Week	30.0%
Peak 2 Days	13.4%
Peak Day	6.9%
Peak Weekday Hour	1.03%
Peak Saturday Hour	1.89%
Peak Weekday Second	0.00028%
Peak Saturday Second	0.00052%

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6.2.3 Expected Volumes

The table below provides the expected volumes given the data from PO Ltd and the expected profile.

Month	Peak Month (000's)	Peak Week (000's)	Peak 2 Days (000's)	Peak Day (000's)	Peak Weekday Hour (000's)	Peak Saturday Hour (000's)	Peak Weekday Second	Peak Saturday Second
Apr 2003	260	78	35	18	3	5	1	1
May 2003	420	126	56	29	4	8	1	2
Jun 2003	580	174	78	40	6	11	2	3
Jul 2003	740	222	99	51	8	14	2	4
Aug 2003	900	270	121	62	9	17	3	5
Sep 2003	1,060	318	142	73	11	20	3	6
Oct 2003	1,400	421	188	96	14	26	4	7
Nov 2003	1,740	523	234	119	18	33	5	9
Dec 2003	2,080	625	280	142	21	39	6	11
Jan 2004	2,420	727	325	166	25	46	7	13
Feb 2004	2,760	829	371	189	28	52	8	14
Mar 2004	3,100	931	417	212	32	58	9	16
Apr 2004	3,260	979	438	223	33	61	9	17
May 2004	3,420	1,027	460	234	35	64	10	18
Jun 2004	3,580	1,076	481	245	37	67	10	19
Jul 2004	3,740	1,124	503	256	38	71	11	20
Aug 2004	3,900	1,172	524	267	40	74	11	20
Sep 2004	4,060	1,220	546	278	42	77	12	21
Oct 2004	4,085	1,227	549	280	42	77	12	21
Nov 2004	4,110	1,235	553	282	42	77	12	22
Dec 2004	4,135	1,242	556	283	42	78	12	22
Jan 2005	4,160	1,250	559	285	43	78	12	22
Feb 2005	4,185	1,257	563	287	43	79	12	22
Mar 2005	4,210	1,265	566	288	43	79	12	22

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