



## **Example Proposal for Xserve File Server and Backup Solution**

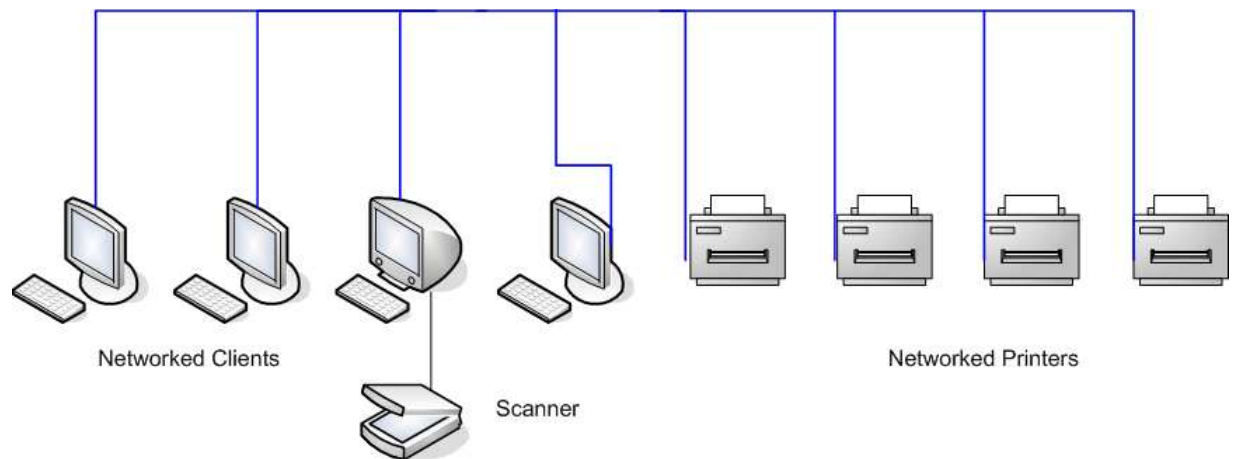
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## Customer Requirements

On customer site there are a number of Apple G5 workstations running Mac OS X. The workstations and network printers are connected directly to the public LAN. Currently, data is stored on a combination of internal hard drives and direct attach external drives. As data is stored locally on each of the workstations any disruptions to the LAN can prevent file sharing between workstations. Data is archived to DVD on an ad-hoc basis and stored off-site. There is approximately 400GB of data and their current storage is approaching full capacity.



This is a scalable solution that meets the following requirements:

- The solution will be based upon Apple Xserve hardware.
- Provide centralised file server capable of file transfers up to 3GB in size.
- Provide centralised backup solution.
- Share and manage printers and print queues.
- Provide resilience to hardware failures e.g. hard disk.
- The solution must be suitable for an office environment.

## Solution Overview

Following on from discussion's with the Client, ITOPS propose to supply, install and commission the following solution:

Apple G5 Xserver will provide the following services:

- File sharing to networked clients using Apple Filling Protocol (AFP)
- Backup and restore
- Apache web server
- Firewall to protect from the public LAN
- Share public LAN connection to private office LAN
- Printer sharing and print queue management
- User and Group management using LDAP based Open Directory
- Network services (e.g. DNS client, DHCP, NAT) if required

Apple Xserve Raid

- Provide up to 1.25TB of resilient (RAID5) storage to the file server using 200MB/s fibre channel connections.
- Can be scaled to 2.5 TB of resilient RAID5 storage

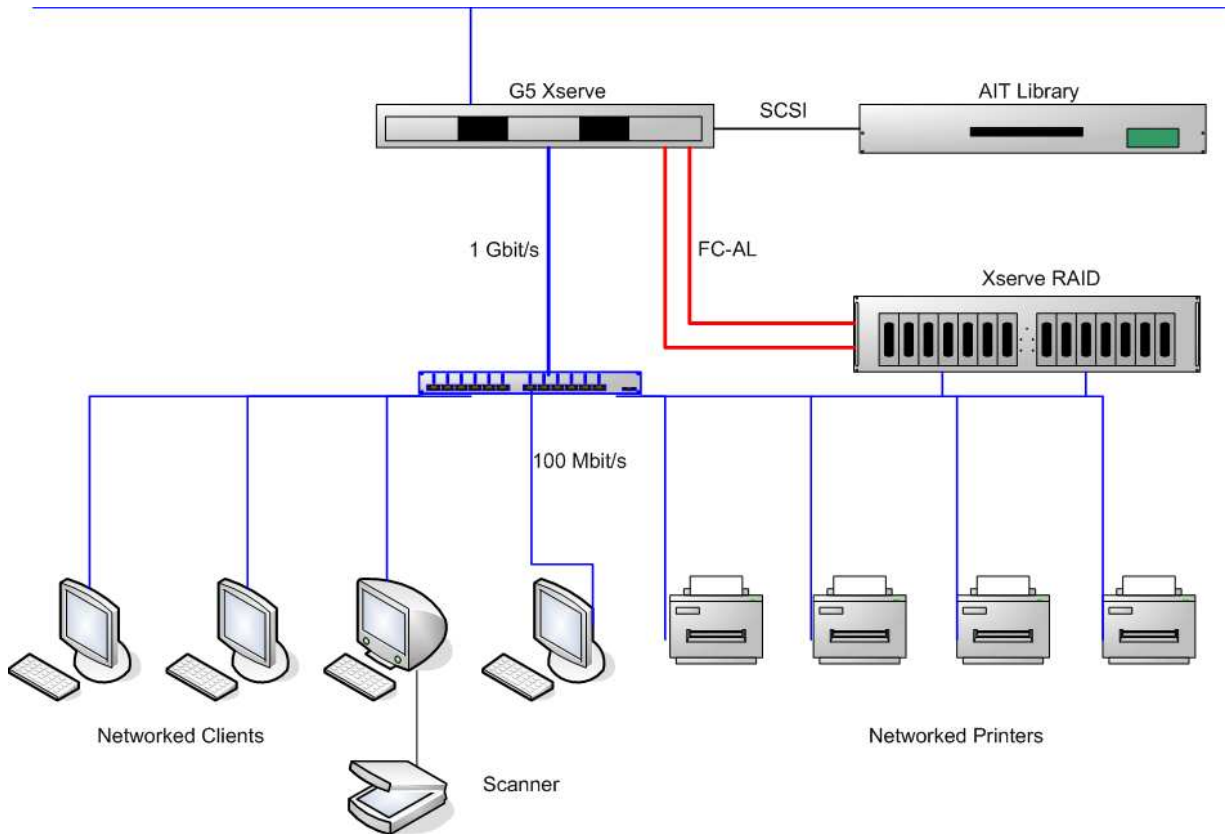
Backup and Restore

- 8 slot AIT Tape Library capable of backing up 0.8–2TB of data at transfer rates of 12MB/s
- Retrospect Backup Server 6.0 Software

Infrastructure

- Network switch with 2 Gb/s ports used for connection to Xserve, 24 100/10 Mb/s ports for connections to network clients and printers
- Cabinet to house hardware and provide necessary power and cooling
- Cabling for office LAN as required

Proposed Solution:



Scalability

Server – Memory in the Xserve G5 can be increased up to 8GB. Additional XServes can be added to distribute CPU load

Storage – an additional 7 disks can be added to the Xserve RAID to provide an additional 1.25TB of resilient storage using 250GB drives. Larger disks will be available in the future. Additional Xserve RAIDs can be added, depending on the configuration, a fibre channel switch may be required.

Rack Space – The proposed cabinet provides 12u of rack space. 6u is used by the proposed solution (Xserve G5 1u, Xserve RAID 3u, Switch 1u, Tape Library 1u) allowing a further 6u for expansion.

Network – 24 ports are available to clients, printers etc.

## Detailed Hardware Specification

### Apple Xserve G5

- Dual 2GHz PowerPC G5 512k L2 cache
- 2 x 1 GB DDR400 EEC SDRAM leaving 6 slots free for expansion
- 2 x 80GB SATA Drive Modules – mirrored to provide resilience to disk failure
- 2 x Gb/s Ethernet connections
- Fibre Channel PCI-X card – provides connectivity to XServe RAID
- CD-ROM Drive
- Mac OS X Server unlimited license

### XServe RAID

- 1750 GB (7 x 250GB) configured as 6 disk RAID 5 (1.25TB) with one hot spare disk
- 2 x 128MB cache Raid Controllers
- Cache Battery backup modules – provide power to raid controllers for up to 72 hours in the event of power failure
- Each controller supports 7 drive channels. Initial configuration will use the 1<sup>st</sup> controller to provide 6 disk RAID 5 array (1.25GB) with a hot spare disk
- This is the most flexible configuration as RAID arrays cannot be expanded with data in place, the array must be destroyed and rebuilt. A 7 disk configuration can be expanded to 14 disks. The 7 disks on the 2<sup>nd</sup> controller can also be configured as a 6 disk RAID 5 array with a hot spare disk.

### Backup and Restore

- LaCie AIT Library with 8 slots
- ATTO PCI-X SCSI Card
- Dantz Retrospect Backup Server
- AIT Media – number of tapes required will depend on the backup policy to be implemented which is out of the scope of this document
- Rackmount kit for libraryNetwork

- Switch with 2 x 10/100/1000 Mb/s, 24 x 10/100 MB/s ports
- Network cables – quantity will depend on office layout

#### Cabinet

- Xtrememac Xrack II 12u
- Acoustically engineered to reduce noise by up to 75%
- 12U Desk-height enclosure with positive ventilation
- 4 Ultra-Quiet Fans

#### Maintenance and Support

- AppleCare Premium Service & Support – 3 years telephone, email support with on-site hardware service
- ITOPS SOS (Supplementary On-site Support) days. You can use your SOS days as and when you wish (to assist with on-site system support, fault diagnosis, system administration, reconfigurations or upgrades). The visit will be arranged for a mutually agreed time/date.
- Mac OS X Server Maintenance Programme – 3 years

## Work to be Undertaken by ITOPS

The details below on the proposed work to be carried out to meet the clients requirements must be read in association with the assumptions and scope of work set out in this document.

ITOPS propose to carry out a hardware and software installation that meets the requirements. The solution will be designed by ITOPS consultants. The work proposed is detailed below.

Task	Who	Dependencies
Preparation and confirmation of installation requirements	ITOPS Consultant	
Site Survey and Implementation Plan	ITOPS	
Delivery of Hardware and Software	ITOPS Consultant	
Hardware installation and racking	ITOPS Consultant	
Network Configuration	ITOPS Consultant	
Mac OS X Server installation on Xserve G5	ITOPS Consultant	Power and network are available
Configuration of Xserve RAID	ITOPS Consultant	File system configuration has been determined
Installation of tape library and backup software	ITOPS Consultant	
Client and printer configuration	ITOPS Consultant	
Backup configuration	ITOPS Consultant	Backup Policy has been agreed
Document final configuration	ITOPS Consultant	



## Deliverables

- Supply of qualified personnel to carry out the work
- Successful installation and configuration of Xserve G5
- Successful installation and configuration Xserve RAID
- Successful installation and configuration of office LAN using Netgear switch
- Successful installation and configuration of backup solution using AIT Tape Library and Retrospect Backup software
- Successful installation and configuration of Mac OS X Server
- Successful Configuration of existing Clients/Printers
- Documentation of data migration method
- Documentation of implementation

# Scope of Project

## In Scope

- Hardware installation and configuration of Xserve G5, Xserve RAID
- Installation and configuration of Mac OS X Server
- Installation and configuration of Backup solution
- Installation and configuration of Office LAN

## Out of Scope

- Data migration from existing clients/archives
- Training and skills transfer

# Assumptions and Dependencies

The following list of assumptions and dependencies are applicable to this engagement: -

## Assumptions

- Number of days has been calculated for a unique person working 7.5 hours/day during normal business hours.
- All relevant documentation related to the project will be made available to ITOPS
- Any necessary system downtime can be performed during normal working hours.
- All work to be carried out during normal working hours
- All requested information is provided in time to meet project timelines
- An Internet connection will be available for software downloads if required

## Dependencies

- Any hardware or software that is to be installed by the Client or a third party
- The work on the project that is the responsibility of Client or a third party
- The access to facilities and systems that ITOPS require, including logins and passwords
- The information ITOPS may require, such as naming conventions, IP addresses, and server names
- Network settings (e.g. hostname, IP address, nameserver, name service, NTP server) have been determined
- The ability of any external or supporting system, which has not been provided by ITOPS as part of this proposal, that may impact the solution to handle any additional loads arising from the project

## Costs and Timescales

### Costs

ITOPS proposes to undertake this engagement on a fixed price basis. Costs have been determined based on the man-day estimates provided below and the scope, assumptions and dependencies defined within this proposal.

A statement of work will be prepared prior to commencement of work.

The breakdown of the man-day estimates and costs for the engagement is detailed in the table below:

	Total Man-days	Day Rate (£)	Total (£)
ITOPS Consultant	7	x	XXXX
<b>TOTAL</b>			

Price excludes VAT and all reasonable expenses.