Forecaster Workstation Replacement at the UK Met Office

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Our Goal

The *efficient* production of *accurate* weather forecasts

To improve <u>accuracy</u>

An **increasing variety and quantity of data**, such as numerical weather prediction output, satellite and radar imagery, and new observation types will need to be accessed as part of a **continuous production cycle**.

The **resolution and sophistication of these data will increase regularly** and the forecaster workstation will need to maximise the usefulness of the latest research and development as it becomes available.

To improve <u>efficiency</u>

The forecaster workstation will enable the forecaster to **collate all this information effectively** and then produce output that is **relevant to the current task**.

SWIFT

Background

- Current constraints:
    - Data Resolution is limited on Horace and Nimbus
    - Horace (HPUX & Linux) and Nimbus (Windows NT) platforms have reached end-of-life (support, spares etc.)
    - Horace and Nimbus are too inflexible to adopt a wider variety of data easily (e.g. new MSG data)
    - The high cost of development of legacy systems and development of 2 parallel systems

SWIFT

Strategy

- Merge our expertise with others to produce a world class Forecaster Workstation
  - and so share the costs

- Make use of existing scientific/meteorological components
  - save 're-inventing the wheel'

- Develop a 'Lite' version, based on SOA
  - provide a flexible browser-based solution, suitable as a replacement for integrated briefing systems

SWIFT

Strategy

- In 2005 the SWIFT project was initiated to replace the forecaster workstations

- It began with a European-wide competition to choose the new forecaster workstation software

- In April 2006 IBL Software Engineering was selected as the preferred supplier

Customers & Timescales

- Royal Navy

  - 80 warships
  - 2 Royal Navy Air Stations
  - Fleet HQ

  - Spring 2008 to Summer 2009

SWIFT

Customers & Timescales

- Royal Air Force and Army

    - 26 UK Stations, mainly airfields
    - HQ Air Command
    - Overseas: Gibraltar, Akrotiri, Gutersloh, Ascension Island, Falkland Islands

    - September 2007 to December 2008

SWIFT

Customers & Timescales

- Met Office Operations Centre

  - Exeter HQ
  - Aberdeen
  - BBC

  - October 2007 to July 2008

SWIFT

Customers & Timescales

- United States Air Force Europe (USAFE)

  - 21st Operational Weather Squadron, based in Sembach, Germany

  - December 2007 to July 2008

SWIFT

The SWIFT System

Includes:

- IBL **Visual Weather** (as the 'foundation')
- Extra functionality (**the 'gaps'** between VW & Horace/Nimbus)

- Optional - military Tactical Decision Aids (TDAs)
- Optional - configurations for a range of UKMO models and data formats
- Optional - integration with MS Office (Word, Powerpoint, Visio)
- Optional - Nimbus Communications / Distribution
- Optional - Nimbus Production / Task Launcher
- Optional – a range of special applications (eg: Marine Production System)
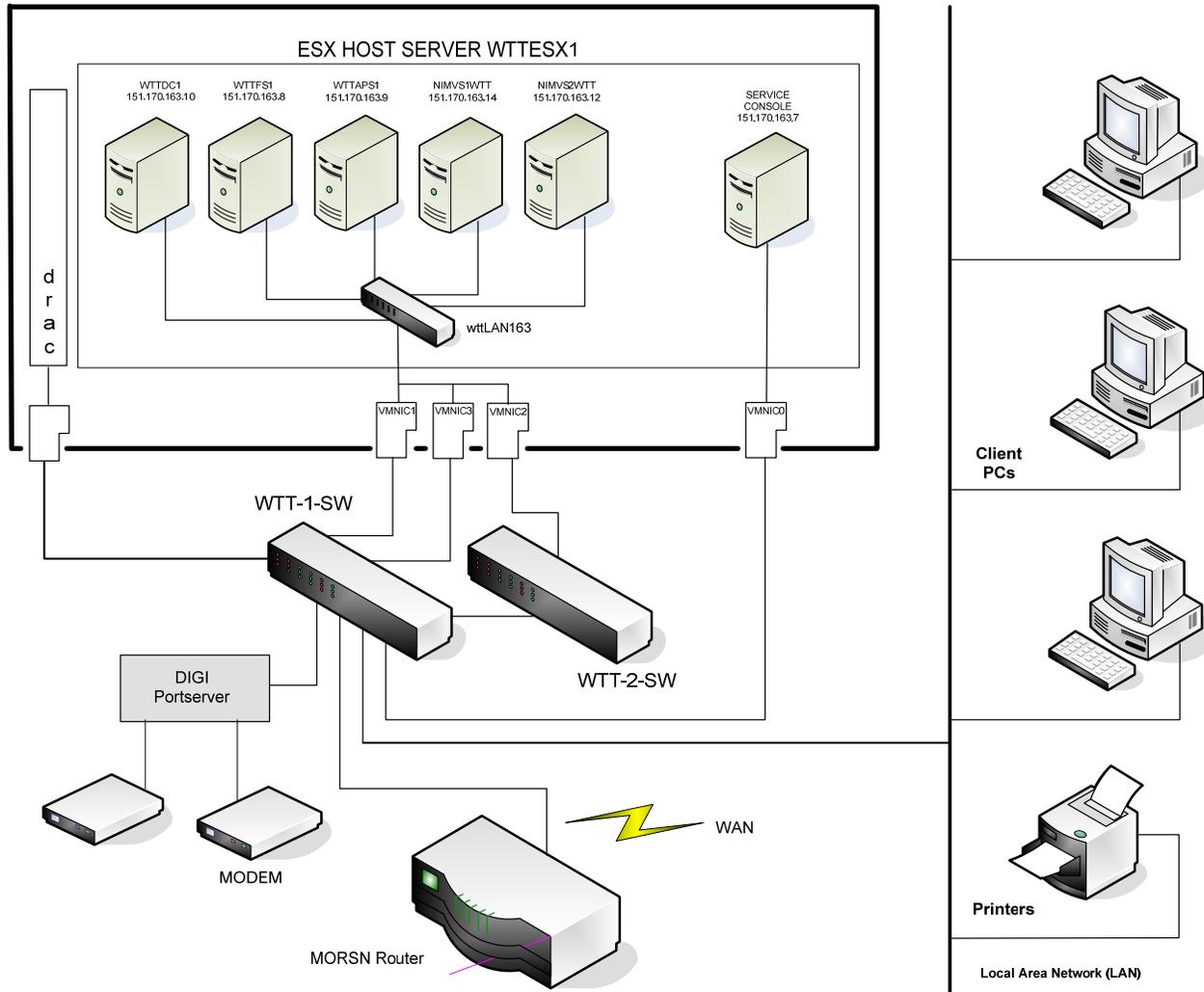
SWIFT

The extra functionality

- **Software Package 1 – already delivered:**
  - OSA
  - Roaming Tephigram
  - Easier map rotation, zooming, panning
  - Tephigram constructions (Normand's point, fog point etc)
  - Tephigram diagnostics (lee waves, vertical wind shear etc)
  - Streamlines (additional styles e.g. Florida State Uni format)

SWIFT

The extra functionality

- Software Package 2 – Already delivered:
  - Military Artillery Message Tactical Decision Aid (MO)
  - Additional projections (IBL) e.g. transverse mercator
  - Multiple animation windows (IBL)
  - 10-minute SYNOP (MO)

SWIFT

The extra functionality

- Software Package 3 – Beta delivered:
  - 5-day and 6-10 day graphics tables (IBL)
  - Export SHAPE file (IBL)
  - Layers from non-matching times (IBL)
  - Radar Ducting profile (IBL)
  - Timestamp fronts (IBL)
  - Derived diagnostics (IBL)
  - Export animated GIF (IBL)

The extra functionality

- Some Future Enhancements:
    - Batch OSA
    - Metmorph (OSFM)
    - Trajectories
    - Feature Tracking
    - Objective Fronts
    - WAFC Aviation SigWx Chart Production
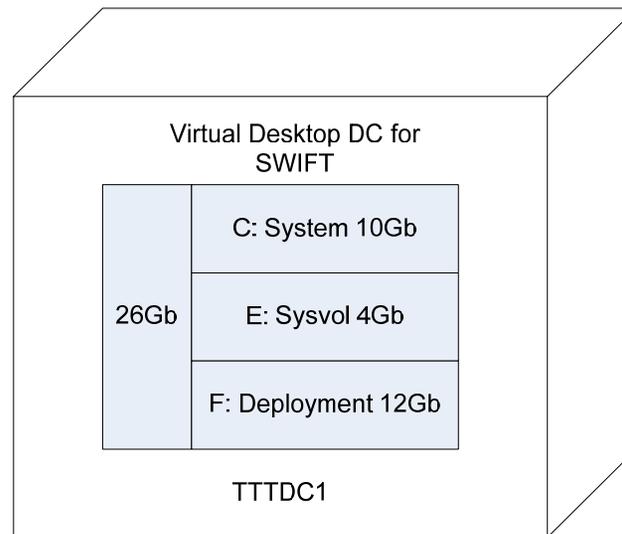
SWIFT

SWIFT Virtual Server Functions

At a SWIFT outstation there will be three virtual SWIFT servers deployed.

- a Desktop Domain Controller (TTTDC1 - WTTDC1)
- a File Server (TTTFS1 - WTTFS1)
- an Application server (TTTAPS1 - WTTAPS1).

During transition a couple of extra virtual servers will run virtual Nimbus while services are migrated to SWIFT.
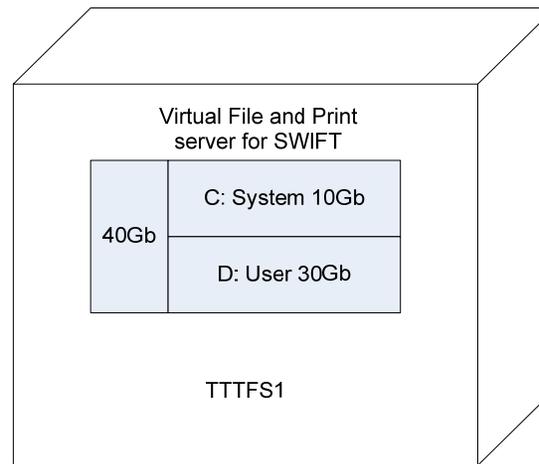
SWIFT

A Typical Installation

Desktop Domain Controller

- Domain controller for local site.
- Replicates with rest of Desktop domain.
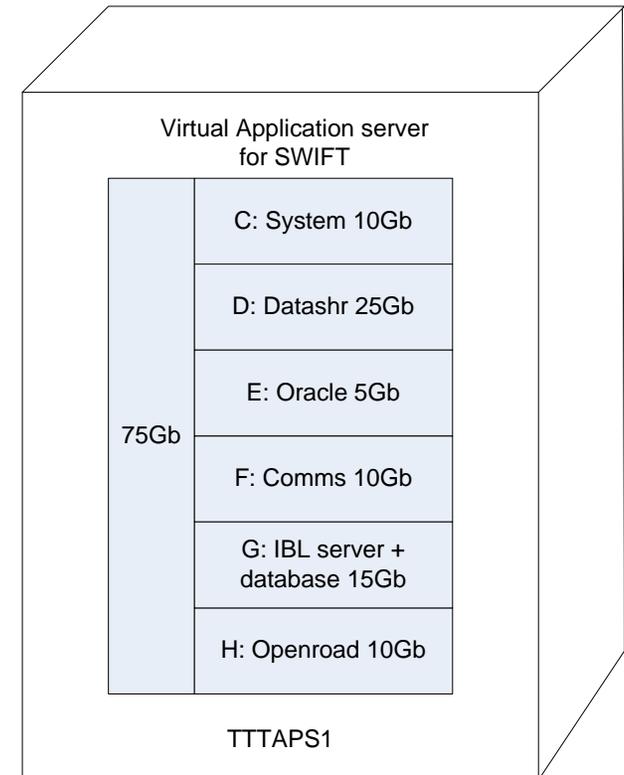- Authenticates user.
- Runs DHCP service for site subnet.

Virtual Desktop DC for SWIFT

26Gb	C: System 10Gb
	E: Sysvol 4Gb
	F: Deployment 12Gb

TTTDC1

SWIFT

A Typical Installation

File Server

- Print server for the site.
- Runs Backup Exec application that backs up files on DC, FS and APS. Physical DLT tape drive mounted on board the ESX host is connected to the virtual File Server.
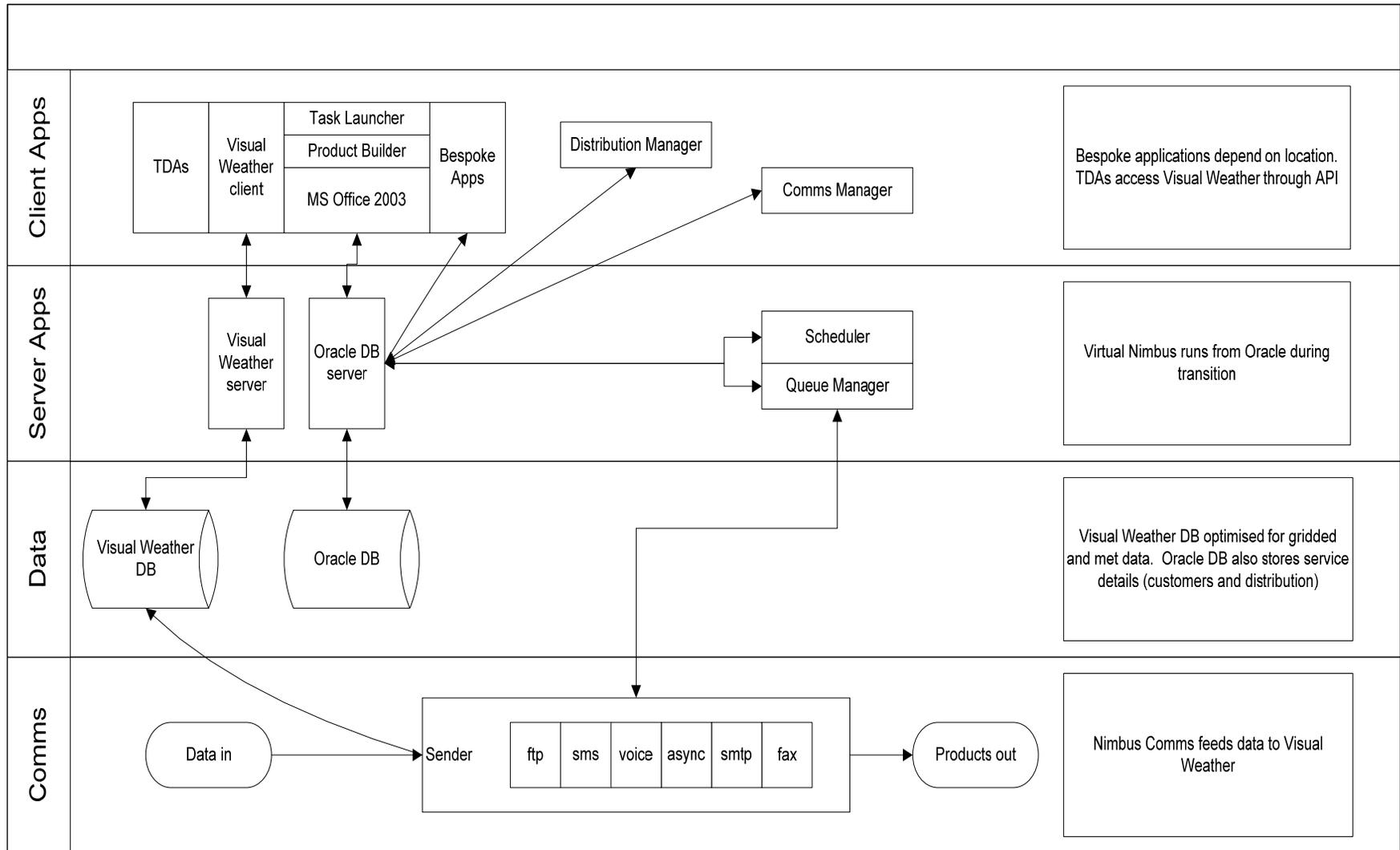- Drive for User folders.

Virtual File and Print
server for SWIFT

40Gb

C: System 10Gb

D: User 30Gb

TTTFS1

SWIFT

A Typical Installation

Application server

- Datashr drive for SWIFT Production
- DPF (Desktop Production Framework)
- Oracle database for SWIFT DPF.
- software for data ingestion, product distribution / monitoring.
- IBL Visual Weather server and database
- Special applications eg: Openroad - if applicable.

Virtual Application server for SWIFT

75Gb	C: System 10Gb
	D: Datashr 25Gb
	E: Oracle 5Gb
	F: Comms 10Gb
	G: IBL server + database 15Gb
	H: Openroad 10Gb

TTTAPS1

Questions?