

Forecaster Workstation Replacement at the UK Met Office

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Background to the Forecaster Workstation Replacement Project

Our Goal at the Met Office is the efficient production of accurate weather forecasts.

To improve accuracy: 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 efficiency: the forecaster workstation will enable the forecaster to collate all this information effectively and then produce output that is relevant to the current task.

- The constraints on our current forecaster workstation systems are:
 - 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

Forecaster Workstation Replacement 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 a Service Oriented Architecture (SOA) – to provide a flexible browser-based solution, suitable as a replacement for integrated briefing systems
- 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
- 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
- Met Office Operations Centre
 - Exeter HQ
 - Aberdeen
 - BBC
 - October 2007 to July 2008
- United States Air Force Europe (USAFE)
 - 21st Operational Weather Squadron, based in Sembach, Germany
 - December 2007 to July 2008

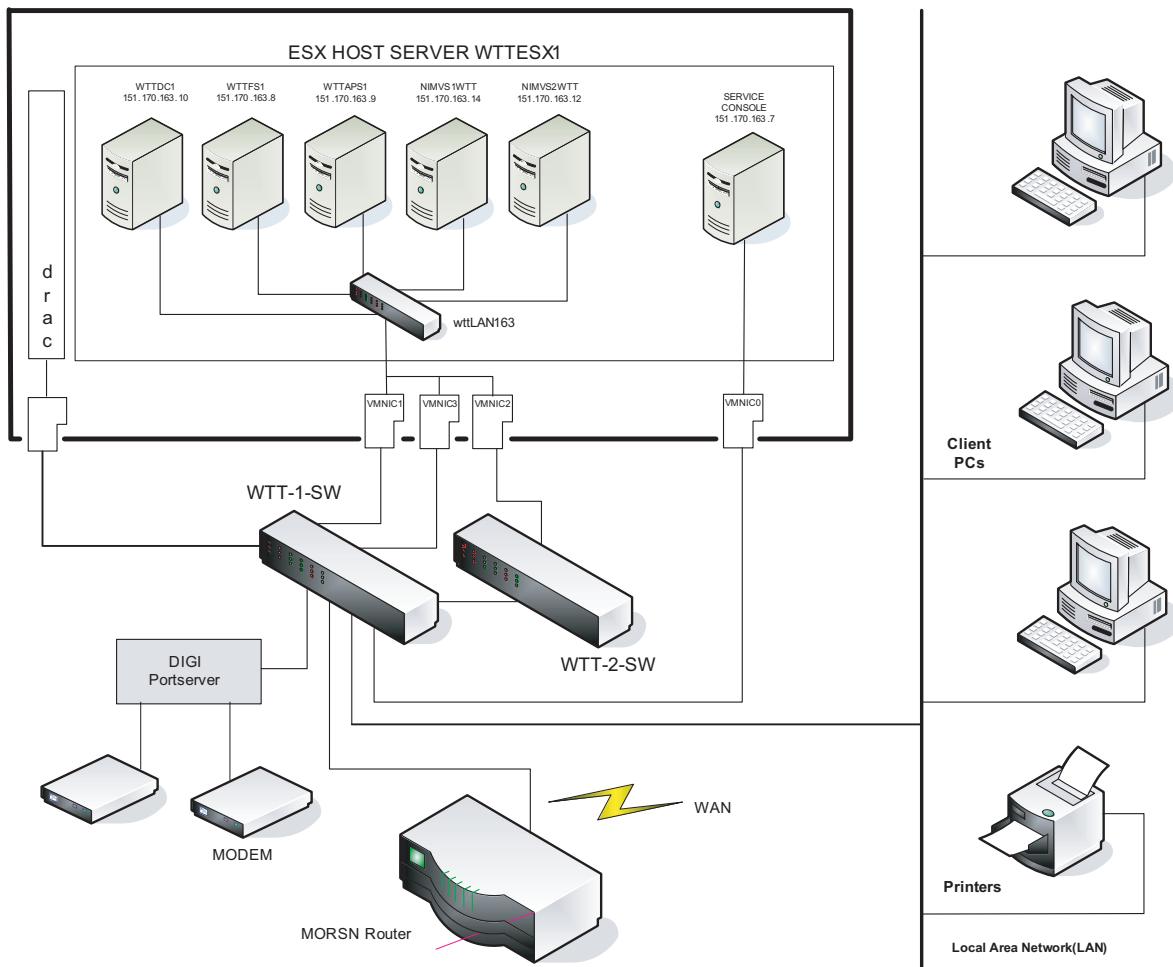
The SWIFT System

The technology solution for the replacement forecaster workstation is called SWIFT. The 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)

The extra functionality is being delivered through collaboration between developers at IBL and the UK Met Office. The IBL contributions are provided as software packages that enhance Visual Weather:

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



A Typical Installation

SWIFT Virtual Server Functions

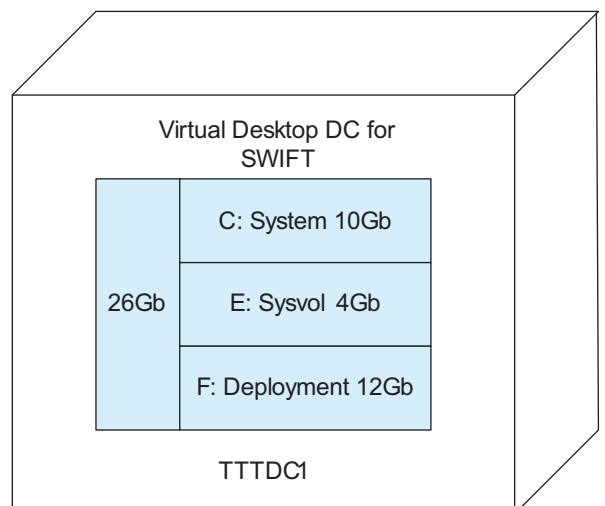
At a SWIFT outpost there will be three virtual SWIFT servers deployed.

- 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.

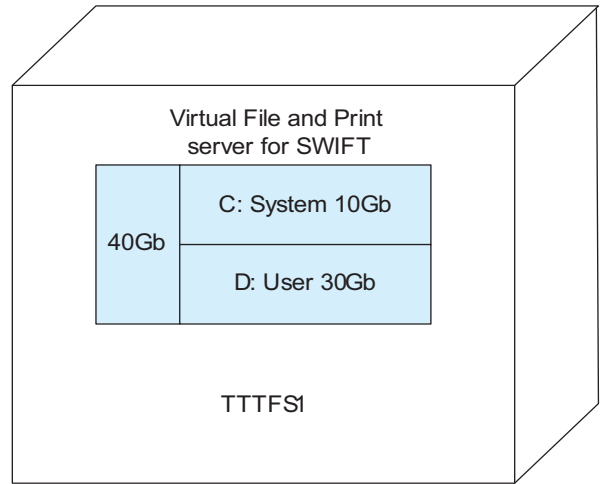
Desktop Domain Controller

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



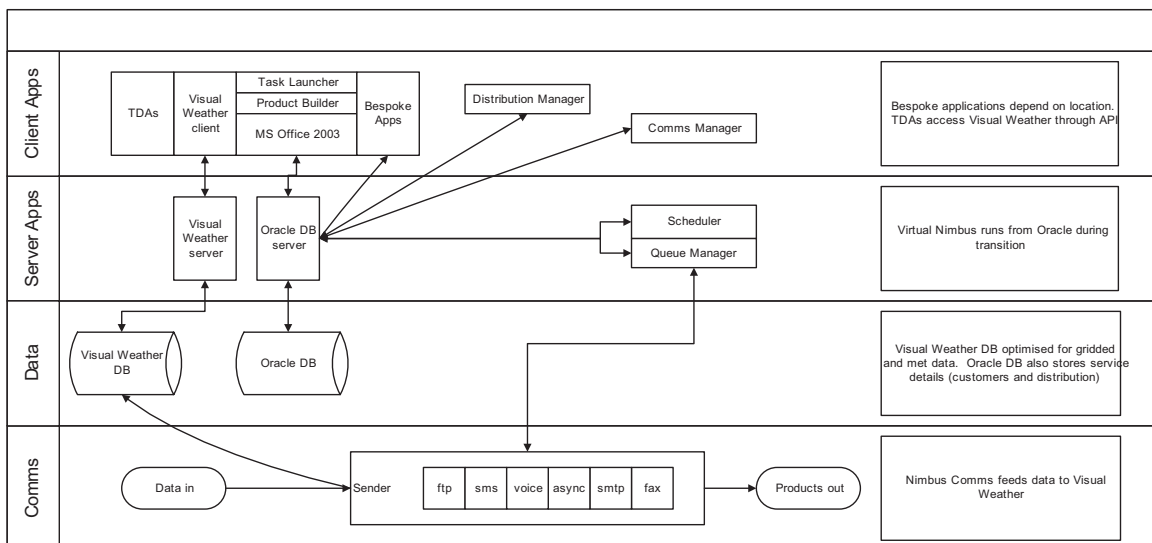
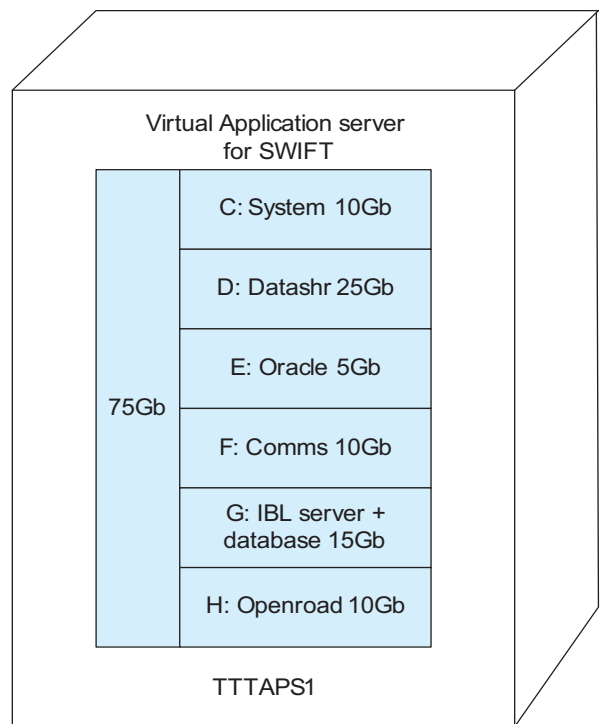
File Server

- 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.



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.



SWIFT – Logical View