Selecting the right WAN solution for your business

Key considerations for IT Professionals

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Introduction

Cloud, mobile, social and analytics technologies are all being demanded by organisations and end users in their daily working lives. To be successful with the deployment and management of these technologies means the WAN must be fit for purpose today and be able to scale for tomorrow's IT requirements.

In light of these *'megatrends'*, many IT departments have started to deploy and scale them without considering the impact they will have on the network.

To gain the most value of out of Cloud, Social, Mobile and Analytics platforms, IT departments must examine the state of the WAN.

At Wanstor, we believe there has never been a better time for business, charity and not for profit organisations to re-evaluate their Wide Area Networks. Not only are technology demands growing on WAN requirements, but the market has more to offer in terms of services and importance than ever before.

As the WAN moves back up the IT agenda, IT professionals need to explore disaggregation and aggregation of virtualized network functions, managed services, product bundles, and the value of existing WAN suppliers. This means businesses need to take an objective view of existing WAN solutions and ask themselves key questions, including:

What WAN solution do we need in place for business success now?

How can it support digital transformation?

Will the WAN solution satisfy user and business bandwidth demands in the future?

In this white paper, Wanstor's WAN experts outline the impact business activities are having on the WAN. They also identify key areas of evaluation for choosing and managing a WAN service with the right supplier, and showcase examples of where we have made a real difference to customers with our WAN services.

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Understanding Common WAN challenges

Applications are driving your organisation

Business, charity and not for profit organisations recognise that to grow revenue, they must expand their customer base. As staff, customers and stakeholders need access to an organisation 24x7, many are turning to different applications if traditional methods of accessing email and data are blocked.

It is no secret that as IT and the wider business environment has matured, application technology has been at the forefront of forcing change. Today there are a wealth of applications on the market that promise organisations and the individuals using them more effective and efficient ways of working from a consistent, coordinated data set.

These new applications have at their core an ability to deliver seamless communications. New online apps representing critical business processes are now enabled for the web, while many existing applications need to be extended consistently on a global basis. These applications may include the following, listed opposite.

- *Financial and business applications, such as enterprise resource planning (ERP) and customer relationship management (CRM)*
- *Web applications such as voice over IP (VoIP) and videoconferencing*
- *Content management for product life-cycle management/content*
- *Cloud strategies and offerings to introduce new functionality to the organisation*

In summary, IT requires the benefits of these new apps without slow, unreliable, unpredictable application response times, slowing user adoption and reducing productivity. The exchange of information between partners and suppliers must be enabled; it is critical, for example, that partners know the timelines for delivery of products or services.

With a wave of new content types on the business network (email, file and print data, backup data and web servers), the need for improved WAN capabilities and better bandwidth management is clear.

The rise of the Mobile Worker

Over the last decade, better internet access has transformed how people work, with over 41% claiming that being online enables them to do so more flexibly. Today's employee demands the ability to work at flexible times and in virtually any location, without the rigidity of a nine-to-five day. This change is being fuelled, in part, by the following trends:

Shifting Social Dynamics: As a result of changing social dynamics, end users accustomed to universal connectivity of consumer applications demand flexibility in accessing corporate apps anywhere, at any time.

Global Competition: To compete in a global economy, organisations must be able to leverage skillsets independent of primary HQ location. This means businesses are no longer exploring local markets for talent, but looking globally as well.

The environmental agenda: Encouraging employees to work from home can significantly reduce organisational carbon footprint, and include the benefit of time and energy savings associated with commuting to office locations. Factors beyond business control such as weather or mass illness can be minimised with a *work-at-home* policy.

Cost efficiencies: Business, charity and not-for-profit organisations are all investigating ways to extract greater value from their investments.
One cost area constantly under review is office space. By encouraging mobile working, less office space may be required, and employees benefit from lower travel costs to work locations.

Mobile working has obvious headline benefits to senior business decision makers, but as remote worker numbers continue to grow, IT teams are faced with challenges around supporting those workers.
These obstacles may include:

Quality: Remote and mobile employees must have access to the same tools and information available to those located on-site.

Security: Mobile workers create a security challenge for organisations of all sizes, with workers accessing email, data and information from a variety of locations (hotels, airports, railway stations, customer or supplier premises).

Mobile working, if not secured correctly, has the ability to corrupt the most secure network architectures, and a globally coordinated strategy is the only way to address such challenges around remote operation.

Compliance: Ensuring that legal and regulatory compliance requirements are met remains a major concern for most IT teams when staff are dealing with sensitive data and information away from company sites. When sensitive corporate data can easily be accessed on individual laptops, IT must implement process that prevents data from going missing.

Application performance: Applications originally designed to work over LAN must in essence provide a similar experience over WAN, meaning fast, predictable response times for enterprise applications.

Network complexity: Handling the wide range of connection types and bandwidth links for end users on a global scale represents a significant challenge for any team. Given that the demand for mobile working is growing and that challenges around this facing organisations are real, IT must invest in WAN design and optimisation to ensure the communication flow between employees, partners, suppliers, and customers remains seamless.

Data and Asset Consolidation

IT asset consolidation is a key strategy for most organisations. For most IT teams, the deployment of servers and storage systems at numerous remote sites is both an administrative nightmare and a security challenge. Key challenges posed by these distributed systems include:

- *Deploying, maintaining, managing backup software and systems (tape drives, tape media) in widely dispersed locations*
- *Implementing media management policies for onsite, offsite storage of backup tapes often requiring the use of third-party transportation and vaulting companies, increasing the risk of lost or misused data*
- *Monitoring and improving success and failure rates on remote backup processes and undertaking complex data or application recovery procedures, where local IT expertise is limited or non-existent*
- *Supporting business continuity plans with data centre replication, where bandwidth may be limited or cost prohibitive*
- *Ensuring protection and retention of data for eDiscovery proceedings*

In summary, organisations have two options:

- *They can centralise business applications and storage back to a primary data centre*
- *They can deploy advanced data replication services that reduce cost and complexity around backing up remote servers*

Both options offer major improvements in data protection and disaster recovery. At Wanstor, we often find that consolidation goals conflict with existing data protection solutions and processes.

As organisations continue to expand, they must respond to changing expectations around application availability and information security. They require solutions that better help to meet these challenges.

At the most basic level, such a solution must fulfill the following requirements:

- *Leverage existing systems and facilities such as WAN links without requiring major redesign or upgrades to installed systems*
- *Reduce time and resources required for local or remote backup and replication whilst eliminating backup windows and reducing the volume of failed backups and recoveries*
- *Support installed server environments (Windows, VMware, Linux, Unix) and application types (files, email, databases) that business typically deploys on departmental systems or in remote offices*
- *Support replication from branch office to data centre and between data centres for disaster recovery*

Today, many IT teams recognise the most efficient approach to protection of branch office data and implementation of disaster recovery is WAN-based backup and data replication.

Beyond these basics, WAN solutions need to meet the evolving regulatory and governance needs and must:

- *Scale to meet the expanding number of systems, applications and sites whilst reducing backup and recovery times across all locations*
- *Ensure the integrity and security of backed-up data while in transit and at any central data storage facility*
- *Provide a centralised system around setting policies for backups, transfers and recoveries as well as implementing systems to monitor compliance with these policies*
- *Improve recovery point and recovery time objectives*
- *Improve robustness and reliability of data protection*
- *Reduce costs for hardware, network and administration*

The single most challenging aspect of centralized backups or replications for extended enterprise is bandwidth limitation (cost and throughput) on each individual remote office.

Changing Branch Office IT expectations

It is the wish of the business within the remote branch to be closest to its customers. As a result, IT teams must be able to deliver services that meet those needs of the organisation everywhere. As organisations recognise how improvements in customer service by increasing touch points result in revenue growth, there is a corresponding growth in the number of remote and branch locations. To effectively leverage investment in branch locations, IT must maintain the following goals:

- *Reduce and contain bandwidth costs*
- *Reduce and contain IT and support costs*
- *Facilitate and support revenue-generating activities*
- *Secure corporate data either for regulatory purposes or simply to stay out of the headlines*
- *More reliable and efficient data protection*
- *Single consistent set of business analytics*

To achieve these goals, the IT team must investigate centralisation strategies across the following elements of IT infrastructure:

Servers: Removing or consolidating servers that exist in remote branch and departmental locations

Storage: To have a more coordinated and cohesive data protection plan, IT is creating centralised pools of network storage in the data centre

Desktops: The rise of applications and devices is creating a management headache for IT organisations. To simplify the installation and ongoing administration costs associated with desktop applications, IT needs to centralise this functionality in the data centre and provide virtualized desktop and application images to remote locations

If business complexities limit the ability of IT to centralise, there should be demand for centralised, data centre-based management of distributed IT infrastructure in the remote branch.

Common WAN Concerns for IT professionals

+ Cost
+ Uptime
+ Latency
+ Circuit implementation lead time
+ Security
+ Existing circuit capacity increase lead times
+ Packet loss
+ Jitter
+ Traffic prioritisation

Factors driving WAN change

+ Improving application performance
+ Reducing operating costs
+ Increasing uptime
+ Reducing design complexity
+ Providing access to public cloud computing services
+ Improving support for real time applications (voice, video calls)
+ Reducing time taken to implement new network services
+ Increasing IT team agility required in terms of supporting different types of offices, shops, buildings and support for traffic growth at existing sites

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WAN Design Considerations

Business Critical Applications: When and how do these need to be accessed, and by whom?

Internet Access: Different sites require different connectivity options. Do you know your site mix and the relevant connectivity options for each type of site?

Remote Working: What percentage of workers operate remotely or require remote access? Is your WAN configuration enabling access to the company network safely and securely?

Guest Working: Suppliers, customers and stakeholders all require access to a reliable internet connection whenever on site. Does your WAN solution allow guest users safe and secure guest access to Wi-Fi? Does it allow for fluctuation in the amount of traffic or the numbers of users over the course of a working day?

Branch Offices: No longer does a *one size fits all* approach solve the branch office bandwidth conundrum. As workstyles have evolved, so has the role of the remote site. WAN designs should accommodate the changing dynamics of branch office users.

Public Cloud Computing: All organisations can benefit from access to the agility and speed of public cloud computing. Your WAN should offer IT and DevOps teams access to public cloud services that they need when they need it, on a safe, secure network.

Traffic Prioritisation: How do you prioritise which types of traffic take priority in transit? Customer transactions and interactions frequently occur away from sites. Consider minimum bandwidth requirements for different apps and comms tools when outlining any new architecture or updates to your network accordingly.

Voice and Video: Customers, Employees and Senior Executives expect voice and video technologies to function seamlessly. Restricting bandwidth to prevent users from accessing comms channels they either want or need for everyday business functions is no longer an option available to IT.

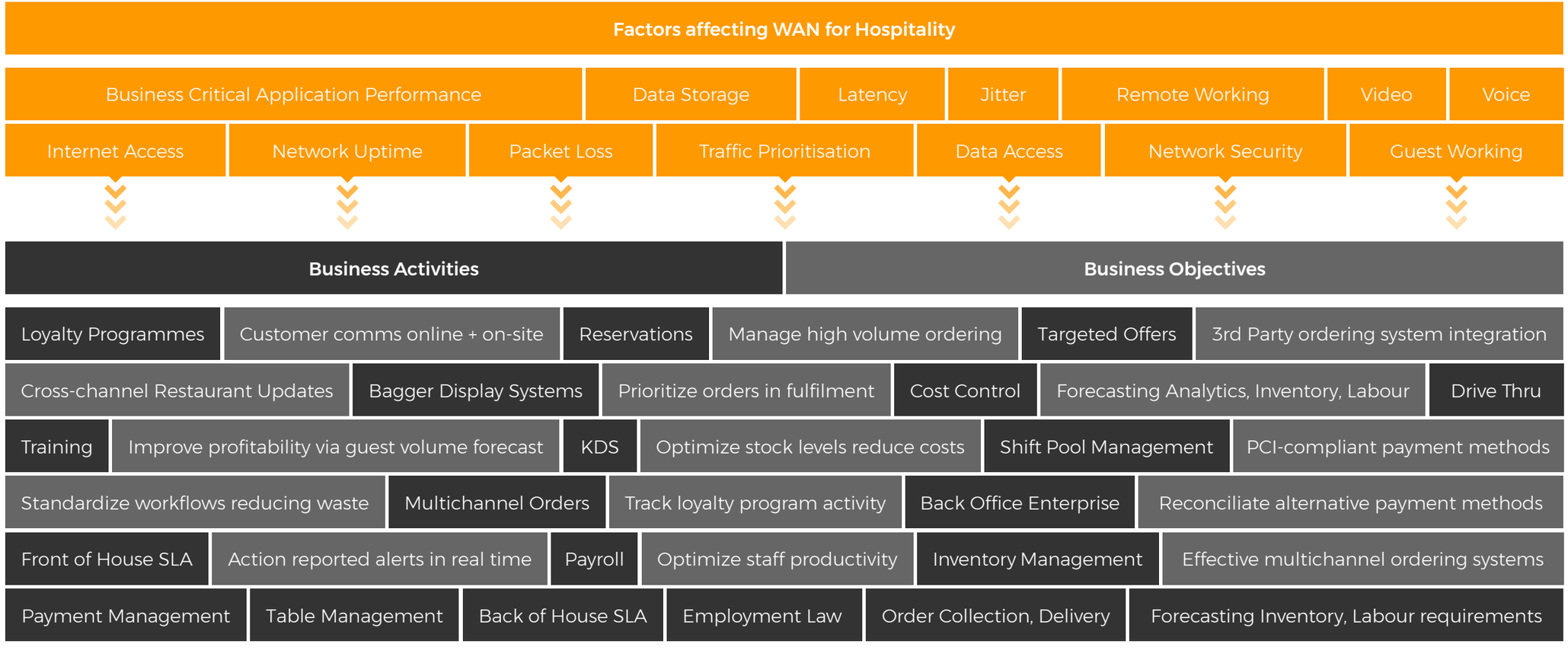
Data Centre: How is the WAN connected to your Data Centre? Is it a clear design? Is the connection secure? Can users access data and information where and when they need it?

Network Traffic Visibility: Do you know what is responsible for bandwidth consumption on your network? Is it non-corporate traffic such as social media websites? Are you aware of the security risks posed by different types or patterns of traffic?

Industry Compliance and Regulation: Do you know your responsibilities for keeping data safe during its journey through your organisation? Most industries now have specific regulations relating to data and how it is captured, transferred and stored. Do you know what is required from your organisation in pursuit of becoming and remaining compliant?

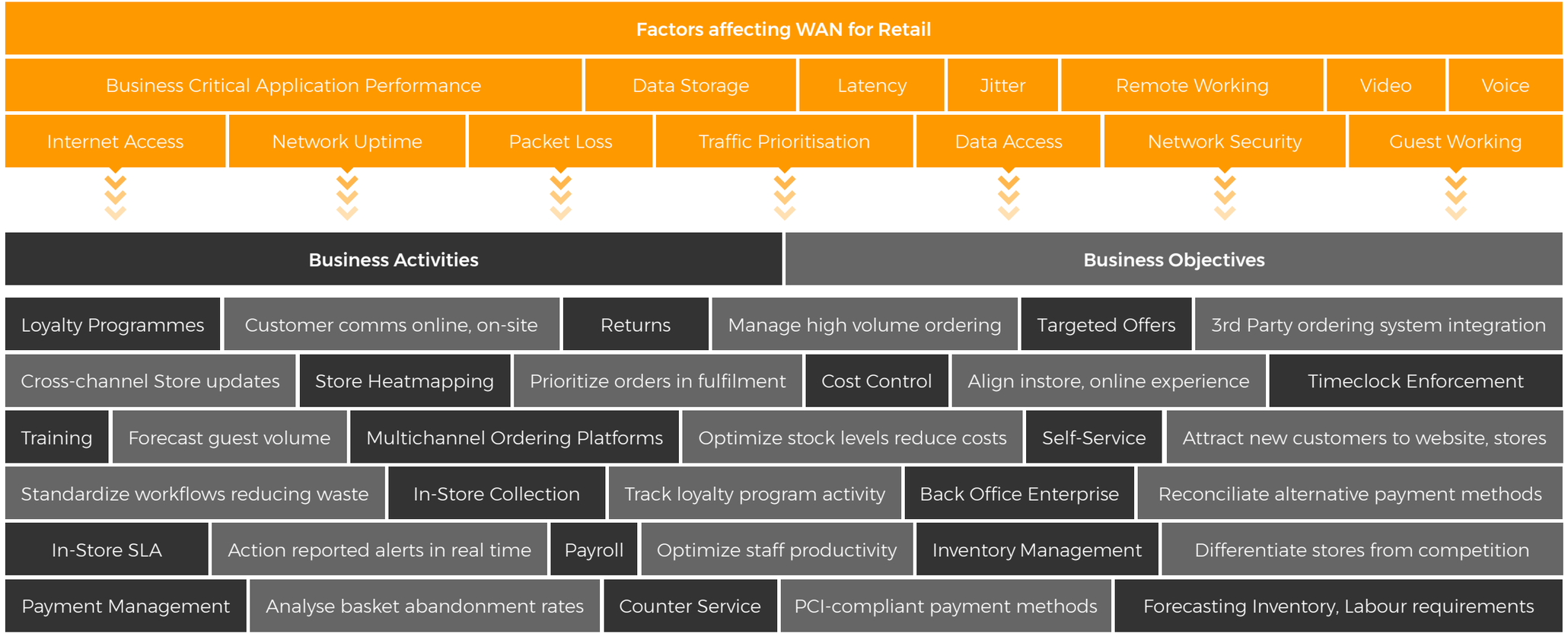
Understanding WAN for Hospitality

Hospitality businesses and IT professionals must realise factors impacting the WAN originate not only from within the dining environment - they occur before the customer has even visited your site. Wanstor's hospitality experts have outlined some of these factors below:



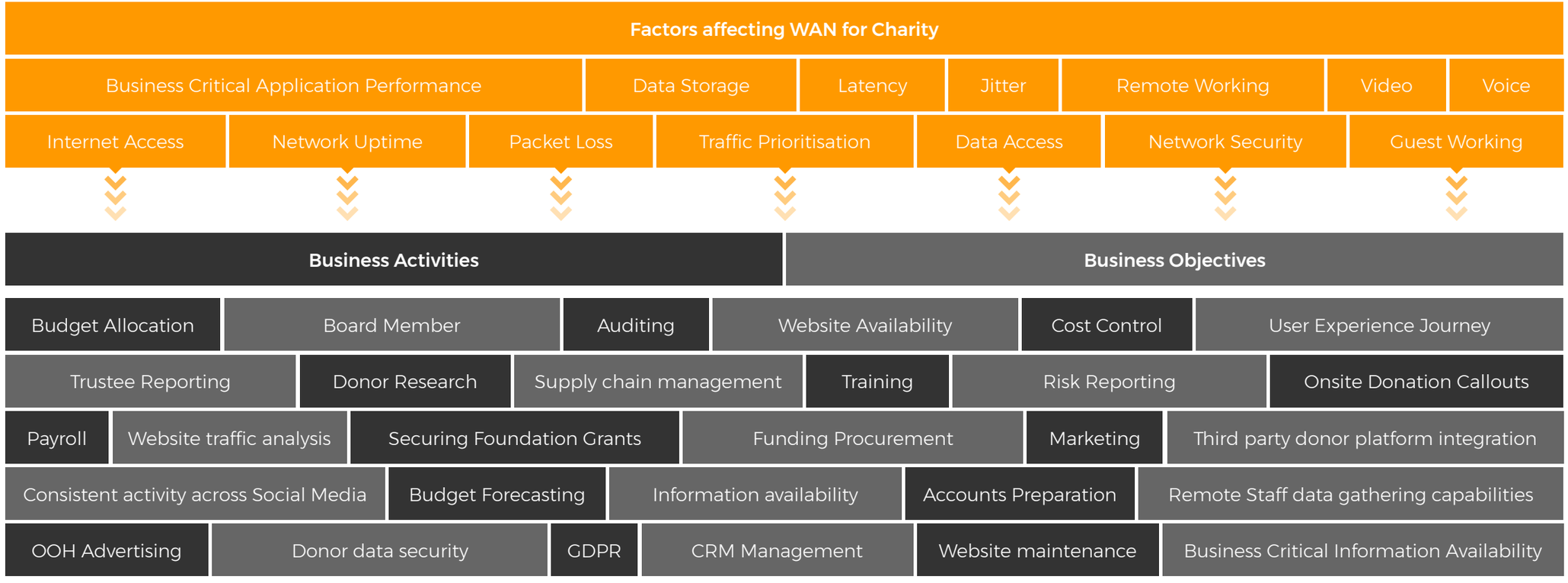
Understanding WAN for Retail

Hospitality businesses and IT professionals must realise factors impacting the WAN originate not only from within the store environment - they occur before the customer has even visited your site. Wanstor's retail experts have outlined some of these factors below:



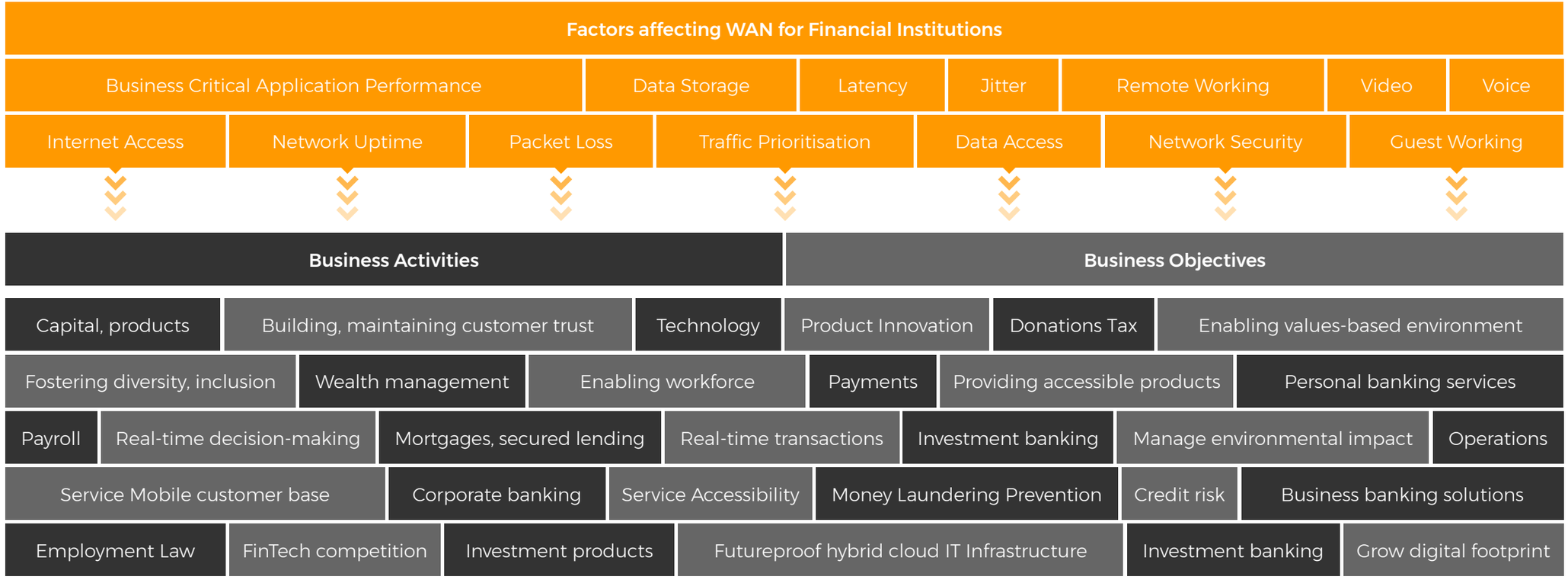
Understanding WAN for Charity & Not-for-Profit

Charity organisations and IT professionals must realise factors impacting the WAN occur not only at individual sites - they originate before interested parties even visited your website or locations. Wanstor's charity experts have outlined some of these factors below:



Understanding WAN for Financial Services

Financial Services organisations and IT professionals must realise factors impacting the WAN occur not only at individual sites - they originate before interested parties even visited your website or locations. Wanstor's charity experts have outlined some of these factors below:



Key considerations for selecting a WAN provider

As we have already identified earlier in this document, traditional WAN solutions rely on an on-premises, hardware-centric infrastructure approach. In many business, charity and not-for-profit organisations, the WAN design has become confused and unfit for purpose.

The reason why WAN design has been abstracted and affects performance is because more applications and technologies have been added to the network with an expectation that the WAN would *'just work'*.

At the present time, many organisations are facing a perfect storm in being told to reduce WAN and connectivity costs as well as improve application performance along with providing a network ready for the demands of cloud computing.

In today's '*always on*' world, it is not just the IT team demanding better network performance, but business leaders as well, who demand access to the best possible network speeds at the right price point so they can enhance performance through improved employee productivity and the automation of many manual processes found across businesses.

Alongside internal pressure to deliver a WAN which truly enables rather than inhibits organisational performance are the external promises from a range of WAN providers promising '*best in class*' service against impossibly low price points.

Unfortunately, many IT professionals are enticed by these false promises and non-existent pricing offers. They face future consequences when the CEO finally runs out of patience as his skype continually fails or he cannot access documents in a timely manner away from site. Or, they discover a retail or restaurant site that has lost a day's trading because of a non-existent internet connection.

> **Organisations face a perfect storm in striving to reduce WAN and connectivity costs as well as improve application performance**

In this part of the document, Wanstor's WAN experts have identified several key areas that you as an IT professional responsible for the purchase, design and management of the WAN should consider.

Key areas to consider include elements listed in our diagram below:

Before we explore more on WAN design, it is important to understand what your existing and future requirements for a Wide Area Network are likely to be. On the following slide, you will find areas requiring consideration around these requirements - once you have solved for the points raised by this data, you may focus upon technical considerations for your WAN and on what constitutes acceptable network performance.

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Understand your Organization

Company: Gain insights into the organisation you work for. Understand its nature and purpose, and its top down organisation. Identify relevant departments and their view of IT and your current network

Overall revenue & employees: Identify company turnover, revenue sources and employee count. Consider whether your employee base is relatively stable or fluctuating seasonally. Varying user demands affect a WAN differently. Identify planned business or technology changes and related WAN use cases

Project goals: Primary goals around WAN refresh include reducing WAN link costs, better application performance and improving both business and IT agility. Consider business outcomes and benefits

Project focus: Outline focus and phasing for your WAN refresh. Consider scoping for direct Internet access (DIA), W/LAN management, mobile workers, and IoT support

Regional scope & timeframes: Identify geographies included along with regional considerations including local availability and broadband reliability

Identify your Users

Matching network bandwidth and accessibility to users is crucial to networking success in empowering your employees

In today's '*always on*' world, mobile connectivity is *de rigueur*, with user access to essential applications and data critical to business function

IT departments must understand different workstyles permeating organisations, using job function to define employees' technology requirements

Workstyle assessment may include information and application access requirements, internal and external interactions, transaction value, risk exposure, energy consumption and work location

Defining individual user workstyles enable organisations to establish requirements around device provisioning, networking, and security

IT Systems, Architecture

Applications: Identify key applications, planned updates and hosted locations including branch offices, enterprise data centres and cloud facilities. enabling you to map app traffic accurately

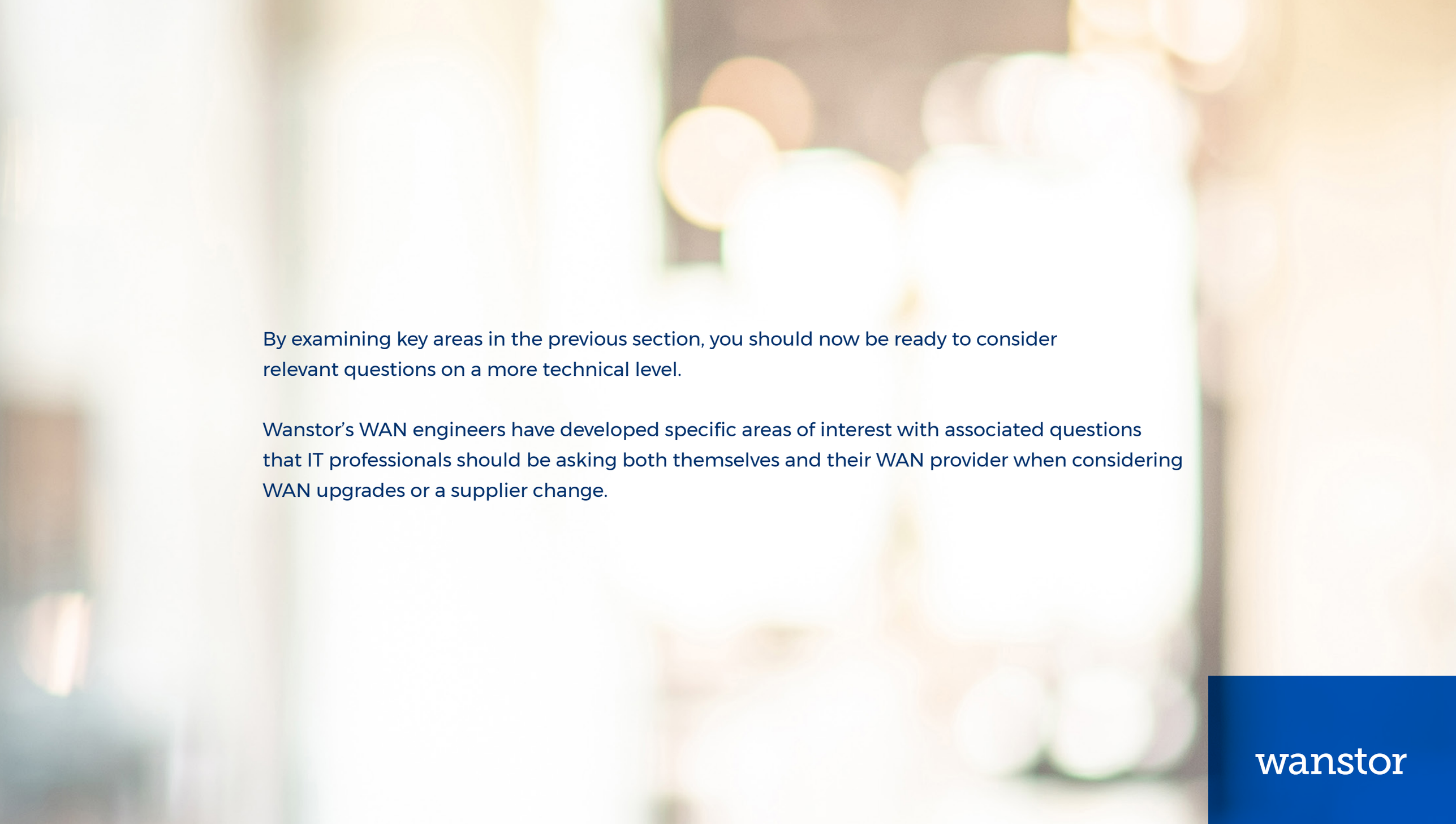
Data centres: Identify all live data centres, servers in each data centre, key applications by facility, workforce support and corresponding WAN connection required

Public cloud services: Identify current, projected public cloud computing services (IaaS) and applications (SaaS)

Remote WAN endpoints: Identify regional and branch offices, network connectivity within and between sites, employee numbers on-site, applications currently in use, mobile employee application usage, current and projected usage by the IoT

Current WAN status: Identify type and number of WAN links into sites or data centres, associated QoS services, Direct Internet Access (DIA) from regional or branch offices or data backhauled to central site for inspection

Security: Describe current network security appliances and software deployed at sites



By examining key areas in the previous section, you should now be ready to consider relevant questions on a more technical level.

Wanstor's WAN engineers have developed specific areas of interest with associated questions that IT professionals should be asking both themselves and their WAN provider when considering WAN upgrades or a supplier change.

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Technology	Existing Architecture	Network integration	Performance
Identify WAN services such as MPLS, fibre, LTE that your existing solution supports	Identify location of orchestration, security and WAN optimization functionality	Describe data centre insertion model (in-path, out-of-path)	Define inbound, outbound traffic prioritisation
Identify speed of services and your expectations for the future	Isolate hardware, software-based solution components	Consider multiple datacentre support, associated WAN	Outline parameters around path selection and traffic steering (latency, packet loss, jitter)
Identify subsidiary service provisioning such as DNS, DHCP, NAT	Map on-premise, cloud components of solution	Identify overlay technology, base network insertion model	Investigate single path traffic flow enforcement between sites
Consider load balancing traffic over multiple WAN links	Identify integration with underlay network infrastructure, other network areas	Interrogate WAN solution ‘split’ data centre support	Define functional and qualitative VoIP support
Identify application overlay path enforcement allowing traffic redirection to WAN underlay	Define remote user WAN support	Define hub-and-spoke, any-to-any, full-mesh communications support	Investigate latency reduction on applications, services
Define solution multi-tenancy support	Consider public cloud connectivity within your WAN architecture	Identify support for multiple hub hub-and-spoke designs	Investigate usage reduction through solution scalability
Identify supported routing protocols	Define performance, security, manageability levels offered	Define dynamic hub to mesh connectivity failover for network failure	Define quantifiable proof points around solution optimisation component impact
Separate solution components by third party or self-provisioning	Interrogate disparate cloud IaaS platform solution connectivity	Consider existing router migrations, maintaining routing protocol integrity or network redesign	
Identify active router functionality such as application recognition, QoS, embedded firewalls	Consider WAN solution capabilities around application recognition including identification point, data gathered	Define legacy site connection management	
Identify supported APIs	Define solution connectivity outbound from sites or tunnelled to central site	Outline VLAN support	
Define virtual and physical form factors available on your solution edge device along with any hypervisors your virtual form factor is available on	Describe SaaS-based application connectivity, associated WAN optimisation, security functionality		
Describe single platform network functionality consolidation in your solution	Define application identification and management		

Scalability, availability	Visibility	Provisioning, deployment	LAN, WAN integration
How does existing WAN architecture enable scalability of solution	What networking and application parameters does your WAN solution monitor?	Describe overall and individual provisioning tools for solution	Outline solution integration support around Wi-Fi, LAN, traditional WAN components
Investigate solution scalability (site numbers, tunnels supportable in hub, spoke, full mesh)	Define networking application parameter monitoring around dynamic traffic steer between WAN links, performance and reliability tracking	Outline appliance provisioning touch level	Identify tools managing wired or wireless WAN, cloud connectivity from end user to applications and data
Does existing IT architecture enable high availability at data centres and branch offices	Outline solution troubleshooting functionality	Consider tethering for initial automated configuration	Consider level tool integration including unified dashboard presentation
Define ability to support active or passive high availability	Investigate integration options around advanced network performance management (NPM), end-user experience management (EUEM) solutions	Describe upgraded solution design, provisioning for traditional WAN environments	Investigate centralised management and orchestration policy implementation across Wi-Fi, WAN, public cloud resources
Outline individual component design for high availability	Query SaaS performance monitoring capabilities	Define branch office device deployment procedure	Consider ISO Layer 7 Enforcement policy support
Define overall fallback functionality during single component failure	Outline WAN health monitoring for individual solution elements	Consider any required pre-deployment configuration resources	Outline Wi-Fi access delivery
Investigate multiple vWAN support	Identify traffic flow, capabilities around service quality visualisation	Outline software update deployment process	Consider solution support around user, device, WAN, LAN authentication
Describe solution scalability testing		Consider provider ability around dynamic discovery, allocation, procurement, reconfiguration	Outline solution support around single sign-on and two-factor authentication
		Investigate labour requirement around design, provisioning, deployment, management	Investigate performance monitoring of end-to-end user experience over LAN, WAN, cloud networks
			Define guest Wi-Fi third party integration and policy governing self-registration, sponsor approval, throttling, blocking

Security	Cloud	Management	Support and Services
Define security enablement for WAN links, cloud location, LAN, Wi-Fi, mobile users, IoT appliances	Investigate Azure, AWS marketplace availability around proffered Public Cloud solution	Outline solution capabilities around on-premise + cloud monitoring	Define 24x7x365 support availability options
Investigate Cloud Access Security Broker, Cloud Security Provider integration	Investigate Direct Connect, Express Route uplink capabilities	Describe internet link management performance	Describe regional hardware replacement SLA options
Define current centralized management policies	Define first packet classification capabilities around applications, routing to SaaS provider (central site backhauling, DIA, cloud-based security provider handoff)	Outline reporting functionality	Outline POC structuring for prospective customers
Outline domain name filtering for outbound traffic	Investigate solution connectivity capabilities around IaaS provider functionality	Detail centralized cloud, WAN, wired, wireless LAN management	Describe solution training offering
Define user-level rule application around outbound, inbound security	Outline performance monitoring around public cloud resource access	Define global, local performance policy centralization options	Outline vendor, partner professional services lifecycle offerings (pre-deployment network, security assessments, design, implementation, post-implementation support)
Define end-to-end user, application-based network segmentation	Describe solution's SaaS performance optimization, monitoring	Describe high-level policy abstractions for user, application, zone	Outline transformational services addressing business process, technology change
Outline traffic encryption, identify *single point of attack* vulnerabilities		Define policy application for WAN, wired LAN, wireless LAN, cloud-based resources	Define *as-a-service* solutions offerings
Define authentication, authorisation functionality governing operator access to solution components		Confirm DevOps approach capacity around network operations	Outline partner ecosystem
Describe solution tunnelling capability around security, automation			Consider template ROI quantifying financial impact around solution adoption
Outline solution access control, ID management			
Define complexity reduction and policy enforcement around security			
Define data, metrics enabling internal auditing of security-related appliances			

How Wanstor can help you overcome networking challenges

Solutions

WAN	LAN	Wi-Fi	SECURITY	UNIFIED COMMS
ADSL 2+, unlimited	Core Networking	Planning, Design	Firewalls	IP Comms
FTTC	Virtual Private Networks	Security	Authentication	Video Comms
GEA, EoFTTC	Data Centre Networking	Site Surveys	End Point, Patching	Digital Media
EFM	Wi-Fi	Guest Access	Data Loss Prevention	Voice, Telephony
Fibre	Structured Cabling	Structured Cabling	Network Access Control	Email, Messaging

Capabilities

End-to-end Services

GEA, EoFTTC	Design	Test	Implement	Support + Manage
+ Strategic updates + Assessments + Transformative networking	+ Architectural roadmap + Advanced consultancy + ROI / TCO	+ Solution testing + Proof of concept + Benefits realisation	+ Procurement + Staging + Deployment + Transformation	+ Operational support + Asset disposal + Field engineering + Maintenance

Industry Technologies

Routing & Switching	SDN	Intrusion Prevention (IPS)	Payments	Firewalls	Network Virtualisation
NAC	Storage Networking	IPv6	Mobility	BYOD	Authentication	Unified Communications

Strategic Partners

Gold Microsoft Partner · Trend Micro Gold Partner · ManageEngine · Cisco Meraki · PRTG Network Monitor · vodafone · colt · purplewifi authorised reseller · aruba a Hewlett Packard Enterprise company · Virgin media · openreach BT Group business · BT wholesale

Flexible Commercials: Fixed Outcomes Resources on Demand Pay-per-Use Financing or Leasing Projects or Programmes

Wanstor WAN Service Overview

Wanstor offer a range of wide area network (WAN) connections from your business to the internet. Our most popular services include:

ADSL2+

ADSL2+ offers the shortest installation times and runs over a standard telephone line

It is the most cost-effective solution for internet connectivity with an easy upgrade path to FTTC at a later stage if available in the area

Generic Ethernet Access (GEA), EoFTTC

GEA is an entry-level business grade connection. Copper runs from your site to the green box (cabinet) outside in the same way as FTTC

This is where cost savings are made, as there is no fibre termination into the building

Ethernet Fibre (Etherway, EWL)

Fibre offers dedicated, reliable, business-grade connections to the internet with maximum speed flexibility, allowing changes to be made within hours of your request

Fibre to the Cabinet (FTTC)

The next generation of broadband service, offering improved speeds up to 80Mbp/s download and 20Mbp/s upload

The service is more reliable than ADSL2+ as copper runs only from the site to the nearest green box (cabinet), reducing scope of copper failure

Ethernet First Mile (EFM)

EFM is a dedicated business grade connection utilising copper between the site and local BT exchange. It is the most resilient copper service, as it utilises eight wires instead of the standard two for all other services. The distance between these two locations governs price and speeds available

Service Option	ADSL 2+	Unlimited ADSL 2+	FTTC	GeA, EoFTTC	EFM	Fibre
Monitored Service	✓	✓	✓	✓	✓	✓
Usage Reports	✓	✓	✓	✓	✓	✓
Specified Bandwidth	✗	✗	✗	✓	✓	✓
Managed Router Included	✗	✗	✗	✓	✓	✓
Uncontended Service	✗	✗	✗	✓	✓	✓
Static IP Available	✓	✓	✓	✓	✓	✓
Available Speed up to up/down mb/s	20 / 2	20 / 2	80 / 20 *or* 40 / 10	20 / 20	2 *to* 35	2 *to* 10000
Minimum Term	12 Months	12 Months	12 Months	12 Months	12 Months	12 Months
Wanstor Availability Target	99%	99%	99%	99.99%	99.99%	99.99%
Carrier Fix SLA	Optional	Optional	Optional	7 Hours	7 Hours	7 Hours
Average Installation	5 Days	10 Days	10 Days	20 Days	30 *to* 60 Days	30 *to* 60 Days
Additional Options						
Improved Carrier Fix SLA			✓[1]			✓[2]
Event Logging	Contact NOC Manager					

[1] Standard BT response time of 40 hours with site visits Monday to Saturday 08:00am to 18:00pm

[2] Improved 24 / 7 site visit option with aim to fix any fault up to the demarcation point within 7 hours of site visit

In Focus: Internet Connectivity

Your connection
A connection from Wanstor provides your organisation with a high-speed, symmetrical, reliable Internet line over various access technologies. Wanstor's WAN connections have no download or upload limits, with no adverse shaping on your traffic. Our connections range from 10Mbps to 10Gbps, and our customers include small businesses, large enterprises, charity and not-for-profit organisations.

Managed and Monitored
All Wanstor connections are supplied with a managed router, offering maximum flexibility in managing your service. All our customer connections are monitored 24×7 for both performance and reliability, ensuring end-to-end Quality of Service (QoS) on traffic for customers demanding that application traffic such as *Voice over IP* (VoIP) or video conferencing is prioritised.

Backup when it's needed
In addition to primary leased-line circuit installation, Wanstor can offer secondary backup circuit installations allowing switching should disruption occur to your primary line, minimising business disruption.

Inter-site VPN
For multi-site organisations with home workers, our solutions include virtual private network access across existing internet connections. Our *best in class* encryption technologies safeguard your data from interception, with the capacity to drastically reduce costs for inter-site links.

Leased lines
Our *site-to-site* solutions connecting remote locations to headquarters can accommodate any size of branch office, with speeds from 10Mbps to 10Gbps.

Superfast broadband
Our connectivity solutions utilising *Fibre to the Cabinet* (FTTC) are delivered over existing copper wires, with no costly install and speeds of up to 80Mbps.

In Focus: Security

Cyber security is a top three priority for all IT professionals, with demands on a stable, secure internet connection placing the topic front of mind.

Wanstor's 17+ years of experience in hospitality, retail, charity, financial and education services mean we appreciate the significance of corporate security, with documented, detailed processes for data security which are ISO27001 accredited. Our ISMS (Information Security Management System) is audited annually to ensure compliance.

Security consulting
Wanstor can assist business, charity and not-for-profit organisations with developing their Information Security Management Systems and Payment Cards Industry or PCI compliance.

In addition to these regulations we are able to act as trusted advisor, providing an impartial third-party view to your organisations security by reviewing firewall architecture and rulesets, physical and logical access controls, remote access methods and controls, and externally-facing services (including penetration testing).

Next-Generation Firewalls
Our security engineers understand the pressure on IT departments around ensuring that networks and their security function without incident.

We work with sector-leading security firms in providing a hybrid approach to IT security that encompasses the following:

- Traditional firewalling
- Next-generation firewalling
- Intrusion Prevention / Protection (IPS)
- Unified Threat Management (UTM)
- In-line Anti-Virus
- Web filtering
- Two-Factor Authentication
- Secure Remote Access

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Consultancy Services

Our specialist networking and project management teams have accumulated a wide range of skills over seventeen years of building and supporting networking infrastructure for customers across the UK. This means we are able to share expert knowledge of wide area networking requirements for businesses across several core industry verticals.

A significant amount of our work involves consulting with a range of organisations across these sectors, from restaurants to financial services businesses, to charities and retailers, advising them on the ingredients required for successful network implementation and long term operation.

Our broad expertise in design, implementation, troubleshooting and maintenance of WAN, LAN and Wi-Fi networks means we are able to proactively identify obstacles to successful network operation before these obstacles impact adversely upon business continuity.

Due to the fact that we are vendor agnostic and are not tied to any one specific supply chain, we are able to offer impartial, unbiased advice with a focus on industry standards and best practice. A summary of our expertise can be seen in the table on the next page.

System and Network Design

Wanstor have over seventeen years of experience in the following areas of system and network design:

+ Wide Area Networking
+ Local Area Networking
+ Wi-Fi Local Area Networking (Wi-Fi)
+ Data Centre Design, Management
+ Physical Networking Infrastructure
+ Voice (VoIP)
+ Video (video conferencing)

Project and Programme Management

Wanstor's Project Management Services ensure that:

+ Projects are fully defined, scoped and planned
+ Regular checkpoint meetings are scheduled in order to update key stakeholders on project status
+ Risk identification and risk mitigation are under constant review
+ Issue tracking and issue management are implemented at the outset of a project
+ External dependencies are effectively managed
+ Deviations from project planning are managed and escalated where appropriate to situation
+ Projects are delivered on deadline and within budget
+ Project transitioning to *Business As Usual* (BAU) in a controlled fashion is a priority on completion

Engineering

For almost two decades, Wanstor has provided services to leading restaurant, retail, charity and financial services organisations across the UK.

Our experience has lead to the development of bespoke engineering techniques that are vital to complex network deployments.

We pride ourselves on providing best-fit technology to suit the technical and budgetary requirements of any project.

In many cases, no single technology is able to meet all requirements and a solution is composed of hybrid components.

Additionally, we innovate and design bespoke solutions in order to overcome common WAN challenges by way of proactive recommendations.

In the face of unexpected challenges, we endeavour to deploy the most effective and timely response in minimising network risk to your organisation.

WAN, LAN Integration

Wanstor can provide both LAN and WAN equipment as well as engineering services in combination with our support offering.

Switching and Routing

Leveraging an impressive portfolio of industry partners, Wanstor provide switching and routing equipment to support both LAN and WAN deployments, with further expertise in carrier Ethernet, metro Ethernet and MPLS proving invaluable in network architecting.

We help you specify, design, procure and install your hardware before reviewing existing WAN networks for utilisation and identifying both bottlenecks and areas for improvement or QoS deployment.

Network Security

Wanstor's range of security services can provide you with:

+ Firewalling
+ IPS, UTM
+ Web filtering
+ Email scanning
+ In-line anti-virus

Wireless Networking

We understands the demand for wireless connectivity as default resulting from an explosion in mobile devices requiring no wired Ethernet port forcing deployment. Wanstor are able to oversee and manage successful wireless deployments with:

+ Guest portal deployment
+ Site surveys
+ Wireless monitoring
+ Access Point Installation
+ Bring your own device (BYOD) Implementation

Security

Network security is a high-profile issue for any organisation and cannot be sidelined or postponed.

Our experience with networking technology across numerous industry sectors has lead to the generation of detailed processes around data security which are fully ISO27001 accredited, with our Information Security Management System audited annually so as to ensure the highest standard of compliance.

Wanstor can assist you in the development of:

+ ISMS (Information Security Management System)
+ PCI (Payment Cards Industry) Compliance
+ GDPR strategy
+ Firewalls
+ MDM
+ Email, endpoint security
+ Authentication
+ Data Loss Protection
+ Patching, monitoring as standard

Procurement

We have an in-depth understanding of the procurement landscape around WAN and other networking technologies. Due to our extensive experience in this field, we can help you with:

+ Strategy Development
+ Specification and User Requirements
+ Options Appraisal
+ Evaluation Models
+ Tender Evaluation
+ Supplier Engagement and Management

Network Monitoring

Diagnosis
Our engineers work alongside you to map and analyse your infrastructure's health, with Wanstor's network diagnostics equipment, training and experience helping to identify root cause around any networking issue, including:

+ Network bottlenecks
+ Network loops
+ Security issues
+ Traffic segregation
+ Traffic, Resource Monitoring
+ Latency, Utilisation, QoS
+ IPv6 readiness
+ Physical, Logical Redundancy and Resilience

Recommendations
Once we are familiar with your network Wanstor's skilled and accredited engineers can make proactive recommendations to improve network performance. These are based on any issues highlighted during the diagnosis stage and our general findings are based around networking best practice and a deep understanding of your industry's governance models.

With network analysis and mapping complete, our accredited engineers will submit proactive recommendations with a view to both improving and maintaining your network performance

Implementation
We will assist your IT team in the planning and rollout of WAN networking infrastructure, with our dedicated project management practice helping to oversee deployment of and modifications to your network with minimal disruption to business or users.

Support Contracts

Wanstor are able to offer your organisation a wide range of support services for LAN and WAN, including:

Traditional maintenance services
Our broad portfolio of vendor partners ensure we can provide traditional break-fix hardware and software maintenance for any network configuration along with manufacturer support.

We offer parts-to-site support or alternatively can provide on-site engineering along with normal business hours cover or, if you prefer, the services of our 24×7 network operations centre.

Engineering support services
For occasional basic and advanced technical support, our call-off engineering support services may meet your requirements.
We provide on-site and remote technical support with qualified engineers available to assist with complex networking issues of any nature, backed by a 24×7 Service Level Agreement where required.

IMAC services
Wanstor's *Install / Moves / Adds / Changes* (IMAC) service is able to alleviate the pressure on your internal IT team, allowing them more time to focus on high value projects around the business.

Experienced engineers undertake all configuration and change control work, allowing your networking professionals time to tackle issues of strategic importance to your business.

UC&C

Communications remain a vital tool and the core business driver for any organisation. We work with you to design, deploy, manage and support UC&C technologies, including:

+ Telephone systems
+ PBX Refresh, SIP Trunking
+ Flexible, mobile working
+ Voice, video conferencing
+ Collaboration technology
+ Presence, Instant Messaging
+ Email

Benefits of Wanstor Wide Area Networking Services

By partnering with Wanstor for WAN requirements, business and not-for-profit organisations are able to support more applications, users, data, and devices, and will benefit from the following:

- With full visibility across your entire infrastructure, we can identify and address networking issues faster than traditional WAN providers
- As Wanstor functions as both ISP and MSP, your network management solution is consolidated under one supplier with a single cost outlay
- Tiered support offerings dependent on site requirements tailored specifically to your needs mean you pay for bandwidth that you need when you need it, and ensure a predictive OPEX networking spend
- Reduced business risk caused by IT change, with predictive analysis of end-user, network, and application impacts on the WAN
- Planning undertaken with long-term WAN and application architecture in mind avoiding siloed decision-making around IT
- Thorough understanding of how WAN performance can be improved, based on deep insight into application and networking environments
- Optimised WAN technology connecting seamlessly to your organisation's IT infrastructure, meaning lower operational and in-life management costs
- Identification of WAN Service Level Agreements that improve infrastructure and performance, positioning IT as a business enabler and not a business inhibitor
- Critical application and network services performing at maximum efficiency on a WAN that is secure, resilient and user-friendly

Final Thoughts

As we have discussed throughout this white paper, Wanstor are able to help hospitality, retail, financial services and charity organisations to plan, design, deploy and optimise their Wide Area Networks.

Our WAN solutions enable organisations across the UK to reduce WAN operating costs, increase network agility through automation, and provide superior broadband performance for business critical applications.

We understand that many organisations are experiencing Wide Area Network challenges across operational costs, supplier management, flexibility of services, and general network performance.

By partnering with Wanstor for their WAN requirements, businesses across the UK are able to effectively support more applications, users, data, and devices.

These organisations will benefit from reduced business risk caused by IT change, IT infrastructure decisions made with long-term WAN and application architecture demands in mind, and an improved understanding of how WAN performance may be improved based on deep insight into application and network environments.

For more information about Wanstor's Wide Area Networking services and solutions, please contact us on **0333 123 0360**, email us on **info@wanstor.com** or visit us at **www.wanstor.com**