

UURNIK SYSTEMS PRIME TECHNICAL SERVICES (PTS)

Uurnik's expertise lies in translating business requirements into technical requirements and subsequently coming up with **robust** and **scalable** solutions. We have been transfiguring products into services to help turnaround companies by allowing them to focus on their principal business rather than on developing unwieldy IT roadmaps, complex deployments or unforeseen issues.

Generally, the IT sector is divisible into two main sectors: **enterprise** and **service provider**. Both bring on their own set of challenges in their own unique way. Vendors and solution providers develop their products taking that into account.

At Uurnik, we are lucky to have a blend of professionals who happen to have worked in **both** of these sectors. Although the platforms are more or less common but the way the constituent technologies and features are put to use in each of the two sectors is at times **substantially different**.

Therefore, the services that we design are **rich** and **collaborative** (as enterprise products are meant to be) but at the same time they are **robust, scalable** and ready for diverse customers (as **service provider** products generally are).

Foundation of Prime Technical Services

Our team of vastly **experienced & certified** engineers follows established practices while working with the best of breed and leading technology vendors to provide our customers with solutions carrying not only quality & stability but also something that is crucial in today's business world - data security.

Value of Prime Technical Services

Efficacious IT infrastructure is the basis of every modern-day business. To achieve its maximal efficiency, its design and implementation should be specific to the requirements of your organization. Uurnik Systems provides a broad portfolio of end-to-end services and support that helps customers **reduce** total cost of ownership, **increase** business value and **accelerate** return on investment. We deliver this by offering **high quality designs** based on **established** blueprints, **comprehensive** implementations & **planned** migrations.& **planned** migrations.

“Sometimes it is
the people no one
imagines anything
of who do the
things no one can
imagine.”

Alan Turing

Alan Turing was an English mathematician and pioneer of theoretical computer science and artificial intelligence.

Uurnik's Approach to Prime Technical Services

Our engagement model is very convenient and helps build the customers' trust. We clearly realize that some of our services are driving a shift in the paradigm. For that we tend to work closely with the customer and perform maximum due diligence. We follow the best practices of customer involvement to make our engagement model invigorating: **organize & liaise, systematize, evaluate & inform, design, deploy & configure, review & schedule.**

IT CONSULTING



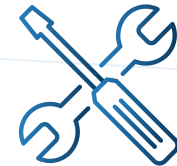
IT consulting is a perfect means to find out how to utilize your IT resources in the best possible way for achieving your business goals

IT SOLUTION DESIGN



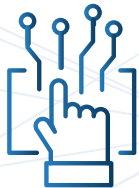
Development of an efficient IT infrastructure, allied services and solutions starts with the design based precisely on the customer's requirements

IT IMPLEMENTATION



Implementation of new IT infrastructure solutions without interruptions in business activities is a must in the process of business transformation

IT OPERATIONS



When it comes to maintenance or upgrades of the IT infrastructure, these operations need to be done impeccably

IT SUPPORT



Quality IT support takes care of your IT resources and provides you with fast & efficient help in case of problems related to their malfunctioning

IT MANAGED SERVICES



We offer a wide range of Managed IT Services that can complement our Managed Co-location, Managed Hosting and Managed Private Cloud portfolio

Next Generation Solutions

Our exposure includes but is not limited to: **policy-based** intrusion prevention, **layer-7** analytics, **threat protection** and enriched **deep packet** analysis based on **application layer** firewall, **end-point** security, **multi-tiered** isolated zones, **diverse** types of VPNs, **anti-malware**, **email** & **web** traffic policing, etc.

Enriched Experience

In the past we have represented Cisco Advanced Services and played a significant role in network & security revamp at a major mobile operator. Most of Cisco's security products portfolio was put to use.

Multi-Vendor Security Exposure

Experience with best of the breed, who are leaders in Gartner's Magic Quadrant.

Example, next generation firewalls and intrusion prevention products like **Cisco** Firepower Threat Defense (FTD), **Juniper** SRX, **Fortinet** Fortigate, **Sophos**, **Palo Alto Networks**, **Barracuda**, **Forcepoint**, **Citrix** & **F5** (WAF), **Digital Guardian** (DLP), etc.

Getting Hands On

When it comes to FTDs, our skills include but are not limited to:

- Create infrastructure-wide policies of different kinds including:
- Access Control Policies to filter and control traffic based on characteristics of **encrypted traffic**, Custom Security Group Tag (SGT), (**realm**, user, user group, or ISE attribute), **contextual information** (including characteristics such as reputation, risk, **business relevance**, application used, or URL visited), simple, easily determined transport and network layer characteristics (source and destination, port, protocol, etc.)
- **URL** Filtering, **IPS** Policies, **File** Policy, **Identity** Policy
- **Network Discovery** Policy (to collect host, application, and user

data for network traffic). Helps build a **comprehensive map** of network assets, perform **forensic analysis**, behavioral **profiling**, access control and mitigate & respond to the vulnerabilities and exploits

- Variable Sets
- Network mapping & **real-time contextual awareness** using NGIPS
- Impact assessment; correlation of all intrusion events to determine an attack's repercussions
- Tight functional association with end-point security (ISE)
- **Dynamic sandboxing** capabilities and actionable event correlations using Integrated Advanced Threat Protection
- **Malware Remediation** – Cisco AMP for networks
- Patient zero identification & **Outbreak Control**
- Secure Web Gateway
- Web Application Firewall (**WAF**)
- Email security: **anti-spam**, **anti-phishing**, etc.
- **Data Loss Prevention (DLP)** – kernel based agent, 3-way classification and integration with its tools, data discovery (on endpoint, network, data repositories & cloud), flexible controls, real-time analytics, web inspection proxy (complete file control without injections), compatible with various OS
- Industrial Control Systems (ICS) Security, PLC, etc.



AT A GLANCE

Strong background of employing core network technologies like MPLS & Traffic Engineering to deliver services in mobile operators, MPLS service providers, ISPs, Internet Exchanges, etc.

Diverse Skillset

On top of traditional skillset enabling us to lay fresh backbones for telecom operators or fanning out their points of presence (POPs), we've been part of some challenging cases.

Backbones' Mergers & Splits

- We've considerable experience of splitting & merging telecom backbones when an operator either sold its OpCo or acquired one
- Migrate the logical BGP topology in one half of the MPLS backbone & then split it off
- Fuse it with the newly acquired OpCo's backbone
- Renumbering of **BGP ASN**; simultaneously managing **MP-eBGP** & **MP-iBGP** logical topologies within a single core
- Undertake migrations while maintaining 3G/4G & MPLS services

Upgrading Mobile Packet Core

Upgrading the mobile packet core (MPC): efficacious connectivity of **GGSNs** with other elements, **SGSN** pooling, classification of traffic based on age, etc. using specialized platforms, **luPS** over IP, **luCS** over IP, **luB** iHSPA, roaming **GRX** connectivity and interaction with **GSM**, etc.

Covering A Broad Horizon

- Segregated connectivity for **MVNOs** to specific shared services based on business model
- Readiness of the IP/MPLS core for 5G/LTE; driving various programs to accommodate evolution e.g. **VNF** based platforms
- Shared services design e.g. billing, payments, **(OTA), VAS**, etc.
- Upstream ISP connectivity optimization to **reduce transit** costs,

SERVICE PROVIDER, INTERNET EXCHANGES, CORE



interconnects with **content providers, Internet exchanges**, peering points, channel service providers for global reach, etc.

- Employ **flexible yet secure** transport technologies to broaden the reach of WAN connectivity offerings, scalable design with detailed application of AAA attributes
- **Carrier grade NAT**; large-scale design for millions of subscribers
- End-to-end carrier grade **QoS** considering depleting resources; for customers looking seeking differentiated services
- Inter-domain **multicasting**, dual PIM draft-rosen, next-generation MP-BGP based multicast VPNs
- **IPv6** migration strategies, mapping onto application requirements
- Segment Routing, SRv6, Network Programmability

Services/Products Development

Services development for telecom operators:

- mobile (3G/4G) data access employing security VPNs
- services/solutions for an SP based on **Unified MPLS**
- segmented network services spanning across the WAN
- drafting policy documents that are used in repeatable procedures
- SDWAN over Segment Routing

An Evolutionary Path

Historical affiliation with **SD-WAN** and **Managed WAN infrastructure**. Long before SD-WAN was launched in market, we were working on solutions for customer asking for end-to-end segmentation, both over private & public circuits.

We were working with vendors like Cisco, Juniper, etc. to build a solution that is tightly knit together rather than clubbing features in an adhoc fashion. Out came SD-WAN.

Since we had first hand input from customers looking to address shortcomings, which SD-WAN now thankfully does, we are well geared to pitch it.

Our Familiarity

Some key features that we are well-versed with:

- **Smart Path Control:** dynamic, policy-based path selection with load balancing for high network availability
- **Application Optimization:** per-segment topologies e.g. for UC vs data-center apps vs regional shared services, prioritize critical traffic, **fabric-level** extensive QoS. Acceleration with object caching for superior user experience
- **Transport Agnostic:** doesn't matter if it's a private e.g. MPLS or public internet link, **diverse last mile** e.g. DSL, 3G/4G, etc
- **End-to-End Segmentation:** without relying on last mile technology type e.g.



broadband; for **different lines of business** at scale

- **Application Aware Routing:** symmetric traffic for DPI
- **Highly Secure Connectivity:** secure business partners access, DIA, advanced branch threat defense, real-time threat intelligence, network as sensor/enforcer
- **High Availability:** active-active capacity, bundling of diverse links
- **Zero Touch Deployment:** single stage, two stage, TPM
- **Seamless Cloud Extension**
- Cloud onramp for IaaS and SaaS

- Enterprise NFV
- Native application hosting
- Device templates, feature templates
- Integrated compute & storage
- SDWAN over Segment Routing

Working with SD-WAN

- Functional experience of **Overlay Management Protocol (OMP)**, vEdge, **TLOC Extensions, Color & VPN** types (transport, management & service), Centralized Management & Automation using **vManage** (multi-tenant), **vSmart**, **vBond** & Managed Services Accelerator (MSX)
- Hybrid WAN designs

Comparative knowledge of vendors helps us to position their solutions effectively:

Cisco/Viptela, VeloCloud (now part of **VMware**), **Silver Peak**, Juniper, HP & Aruba (which is now part of HP), Citrix, Huawei, Riverbed who has now shook hands with Versa Networks, Fortinet, CloudGenix (now part of Palo Alto Networks), Nokia Nuage Networks, Talari Networks (now part of Oracle).

Software Defined Data Center

Coming from a strong background of implementing data centers for enterprises, FIs e.g. stock exchanges, brokerage houses, public services, etc. Uurnik had to ensure that its software defined data center solutions offer feature parity not only between physical & virtual but eventually also cloud infrastructure.

Early Bird Experience

Our teams had the privilege to design and implement one of the first deployments of Cisco's ACI in MEA region for a large commercial enterprise in United Arab Emirates during late 2014, early 2015. It entailed migration from traditional Network Centric to Application Centric Infrastructure environment. We carry expertise in migration of traditional multi-site data center to multi-site ACI fabric.

Since then, we've been closely following up on advancements in SDDC/SDN solutions e.g. ACI, NSX, Dell & Cumulus Networks, etc. & how do they fit into rapidly transitioning use cases.

Our Familiarity

In addition to ACI's architecture, some key features that we are well-versed with:

- **Leaf & Spine Topology:** enabling a fabric architecture that is easy to build, manage, and maintain
- **ACI Object Relationships:** Tenants, Private Network (VRF), Bridge Domain

(BD) Identifier, Endpoint Group (EPG), Application Profiles, Contracts, Context, multi-hypervisor normalization, **VXLANs**, Fabric **VTEPs**.

- **Flow Management:** Flowlet dynamic load balancing, dynamic flow prioritization, external connectivity
- **ACI Multi Tenancy:** Infra, Mgmt, Common
- **Holistic Architecture:** for entire fabric
- ACI **Single-Pod** fabric to ACI **Stretched** fabric to **Multi-Pod** fabric to ACI **Multi-Site**
- **ACI Multi-Site Orchestrator**
- Inter-site control-plane
- Inter-site data-plane
- ACI **GOLF** (L3 EVPN for Fabric WAN)
- **End-to-End Management:** Cisco Application Policy Infrastructure Controller (APIC) providing centralized automation of fabric management, monitoring, troubleshooting and maintenance
- **Policy-Based Automation Provisioning:** OpFlex

Activities We Perform In Migrations:

- **Analysis of the existing environment:** To understand the requirements that the Cisco ACI solution has to address and allow us to later prepare the migration plan. Developing a **Customer Requirements Document (CRD)**.

- **Solution design:** Preparing the basis for the migration, application/service requirements. Evaluate various deployment and implementation options from the perspective of requirements as well as benefits/drawbacks that a specific option may incur. Delivering the **Design Document (DD)** for the Cisco ACI solution
- **Migration plan design:** Defining how and which servers, routers, applications, services, etc. will be migrated from existing to the Cisco ACI solution. Preparing the **Migration Plan (MP)**.
- DevNetOps, **Network Automation** (Python, Ansible, Nornir, Puppet, Chef, Jenkins, GitHub)



An Evolutionary Path

Increased dependence on wireless by users, applications and IoT mass rollouts. **Access points, controllers** simplified **automation, location analytics** & our services make your wireless network quick, yet **secure**.

WiFi 6 (802.11ax), a major upgrade since 2014, has magically enhanced users' experience creating a plethora of opportunities. Our proven processes, **best practices & expert guidance** minimize disruption & maximize revenue.

Experience of designing world's most sophisticated wireless networks (high density deployments e.g. airports, convention centers, stadiums, etc.)

Our Familiarity

Some key features we are well-versed with:

- **Next Wave of Mobility: Open Roaming** leveraging Next Generation Hotspot (NGH), Private Cellular for Service Providers, AnyNet Multi Network Multi Cloud & Multi Spectrum supporting **consistent** experience
- **RF Optimized Connectivity:** OffChannel RRM, event-driven RRM, Zero-Wait & Dual Filter Dynamic Frequency Selection (DFS), FastLocate w/o performance impact, RF Groups and Profiles, **DCA, TPC**, CHDM, COF, **XOR** Radio Flexible Radio Assignment (FRA), RSSI Low Check, SNR, Off-Channel Scanning, DFS, DBS, **HDX**, Optimized Roaming, Receive Start of Packet (RX-

SOP), Dynamic Bandwidth Selection (DBS), ClientLink 4.0 based beamforming, mitigating impacts of wireless interference

- **Wireless Security:** 802.1x, WPA3 SAE Transition/Enterprise (192bit) mode, AES Encryption, P2P Blocking, MAC Auth, MFP, 802.11w, AAA Override, adaptive WIPS, ELM, BYOD, Client exclusion, rouge detection, profiling, SSID security & segmentation
- Load balancing, Fast SSID, Multicast Forwarding, 5Ghz **Channel Bonding**, mDNS snooping, **Fastlane** & WLC QoS for real-time apps, plug & play provisioning, **FlexConnect**, location services & context awareness

Operating Wireless

- **WLAN Network Assessment:** A specialized assessment is available to ascertain your current WLAN environment readiness. Evaluate, report, configure gaps and optimize
- **RF Site Survey & Design:** RF propagation, coverage, interference, signal quality, ability to dynamically adapt
- **WLAN Solution Design:** Risk identification, room for improvement, next steps definition
- **WLAN Implementation:** Dependable for sensitive real-time voice and video traffic, guest access, outdoor wireless, post-deployment RF assessment
- Comparative knowledge of vendors helps positioning & sizing: Cisco, Aruba, Juniper Mist, Huawei, Fortinet, etc.

Connecting OT Systems to IT Systems

Solving IoT challenges with solutions below

- **IoT Power:** low-power network devices & protocols, WiFi 6 (802.11ax), 5G, Zigbee, LoRaWAN, Bluetooth 4.0, RPL, Superior battery life using Target Wake Time (**TWT**)
- **IoT Security:** Secure the device, network communications & applications, Macro & Micro Segmentation, industrial security with IEC-62443
- **IoT Scalability:** Automated deployments for scalability & simplicity, Parallel processing for Spectrum Efficiency, Small Packet Aggregation, Long Guard Interval, BSS Coloring, better spectrum coexistence
- **IoT Simplicity:** **industrial** automation (manufacturing, utility, mining), **distribution** automation (utility grid feeder networks), remote & mobile assets (public safety vehicles, service fleet, buses, remote sites), intelligently translate business requirements to policies, orchestration and assurance
- **IoT Environment:** ruggedized devices
- **IoT Interoperability:** support for **industrial protocols** (Modbus, PROFINET, SCADA, CC-Link, etc.) with **enabling features** Precision Time Protocol (PTP), Time Sensitive Networking (TSN), MRP, PRP, HSR, REP, etc.)
- **IoT Edge Compute:** docker support, DEVNET & workload management platforms working coherently

Benefits of working with Uurnik Systems

At Uurnik Systems, we firmly believe in constant evolution. We continually communicate with and acquire feedback from our customers in order to constantly improve our services and products. That enables us to keep ourselves on top of today's and tomorrow's technology, no matter how fast it moves. It ensures that our customers always have the best tools and services available to them.

We help our customers to grow their business on a reliable basis, to be flexible in adopting innovations, to have governance & security over their business data and everyday operational processes, to be mobile and to lower their costs.

We elucidate the complications of IT, enhance its experience for business users, decrease OpEx and accelerate technology transitions. That in turn will truly put them ahead of competition.

Some of the compelling reasons to join hands with Uurnik are:

- Vast & extensive experience on a wide range of technologies and platforms
- Empowering you to take decisive actions based on intrinsic details; at your dispersal

- Expedite your transformation & get visibility in virtually no time
- Don't miss out on the strategic part of our service during all this!

About Uurnik Systems

Uurnik Systems is an ICT solutions company, providing integrated end-to-end solutions and services to businesses.

Uurnik adopts an unprecedented approach in offering its customers a rich array of professional, managed and operational services to allow them to focus on their mainstream business. It has applied radically new thinking in delivering purposeful technology solutions in a form that customers can make use of almost instantly. Mature yet easy-to-adapt processes, robust yet flexible infrastructure environments & ease of delivery allow customers to reap the intrinsic power of IT.

With our fervor complemented by our talent, we help our clients to employ technology to enhance, evolve & succeed.

Uurnik Systems has the pedigree to serve the IT needs of some of the world's largest businesses.



A crossroad, where customers meet our tech-frenzy offerings, underpins our entire service-oriented outfit.

To learn more about Uurnik Systems

<http://www.uurnik.com> | info@uurnik.com | Americas: +1 469 501 1108 | Europe: +44 208 133 8590