NOVA Cyber Security Technology Research & Development Centre (NOVA CS-TRDC)
• 48 years experience, first and largest private telecom and software development company in Turkey
• Develops ICT software solutions for more than 200 global operators
• The biggest ICT system integrator company in the region
• 2200+ employees - 750+ highly qualified R&D engineers (25% with MSc & PhD)
• Turkey’s software export champion
• 65 scientific articles (journal papers, conference proceedings) in three years
• First runner-up of ICT sector in Turkey’s patent classification @2013, Over 70 yearly patent applications
• R&D 4G Development, IMS, VoIP services, Web applications, HW SW Communications, Cyber Security Products etc.
NETAŞ Telecommunication R&D Departments

Local custom product and solution design for

- Telecommunication
- R&D
- Intl. ICT Software R&D
- Defense R&D

- Cyber Security R&D

The pioneer of software export, Turkey’s largest VoIP R&D
High quality, best class SW R&D for 45+ yrs to multinational companies

Mission critical communication SW/HW design for defense organisation

- Network/Application Layer Security Products & Services
- Local custom product and solution design for
Mission: Foster excellence through collaborative effort to delivers products and services that significantly enhances security and continuity of critical ICT systems that serves society and the businesses.

Research Areas
- Architecture for Scalable, Highly Available Network Data Processing with Low Latency
- Big Data Analytics for Network/Applications, Machine Learning and Anomaly Detection, Behaviour Analysis
- Media Communication Security, End-to-End Security
- IoT/M2M System Architecture and Security

Products and Services
- VoIP & Web Application Firewalls
- VoIP & Web Application Vulnerability Scanning Tools
- Media Security Platform as secure communication infrastructure
- Penetration Test for Enterprises (Network, VoIP, Web)
NOVA CS-TRDC - Capabilities

• Formal SDLC Practices
• Platform Development
• Intrusion Detection System Development
• Protocol & Service Development
• Machine Learning and Anomaly Detection
• Behaviour Analysis
• M2M/IoT Architecture with Security Focus
• LAN/WAN Networking
• Virtualization, NFV
• Protocol Compliance Testing
• Automated Testing
• Stress and Volume Testing
NOVA Cyber Security Services and Products (Vertical and Horizontal)

Security Services
- Nova IOT Spy (IOT Vulnerability Detection and Forensics, 5G)
- Nova MMA (Mobile Malware Analysis)
- Nova 4.5G-SPY (IMS application security scanner)
- Nova V-SPY (VoIP Application Security Scanner)
- Nova W-SPY (Web Application Security Scanner)

Security Products
- Nova SOC (Reputation based Security Operation Center for V & W Gate)
- Nova V-OMS (VoIP Operational Management System)
- Nova V-IDPS (VoIP Intrusion Detection & Prevention Systems)
- Nova V-GATE (VoIP Application Firewall)
- Nova W-GATE (Web Application Firewall)
- Nova STATS (Network & VoIP & Web Statistical Alarm System)
- Nova MSP (Media Security Platform)
- Nova V-OMS (VoIP Operational Management System)
- Nova V-IDPS (Voice Intrusion Detection & Prevention Systems)
- Nova V-GATE (Voice Application Firewall)
- Nova W-GATE (Web Application Firewall)

Central Control Unit

NOVA Cyber Security Developments via 5G

Nova SOC (Security Operation Management)
Nova V-OMS (Operational Management System)
Nova SPY (Vulnerability Analysis)

APP. SECURITY
Nova GATE (VoIP & Web Application Firewall)
Nova STATS (Network Analytics)

BIG DATA
Nova M2M (Secure M2M Platform)
Nova MSP (Secure Media Communication)

CENTRAL CORE
Infrastructure Softwarization and Processes
Application and Business Services
Multi-Service Mgmt. Functions (Bhive - Service Mapser, Resource, Domain and Service Orchestration, Service Information Mgmt., Network Capability Discovery)
Infrastructure Control of (Virtual) Network Functions (Network softwarization, Cloud, Orchestration, Mobility control, Mobile edge Computing)
Integrated System Mgmt. and Operations (E2E, Interconnected Network segments, TCAPS functionality, Network Information Management, Multidomain operations, In-network data/operations processing)

Radio Access Network
Fixed Access Networks
Optical Access Network
Edge Cloud
Aggregation and Core Networks
Optical Metro Network
Optical Core Network
Network Clouds

TA8 / TA13 / TA19
GET CONNECTED
SYSTEM SECURE?
Netaş NOVA Cyber Security Department

**Research and Product Development**
- Firewalls, IDS/IPS, M2M Security, Mobile Malware, Vulnerability Analysis, Fuzzer Tools, Monitoring and Big Data Security Analytics about VoIP, Web, Mobile

**Platform Development**
- Common Security Platform, Media Security Platform and oneM2M Supported Secure Field Infrastructure Platform

**Anomaly Detection and Prevention**
- Anomaly Detection and Prevention by using Machine Learning especially regarding both network and application layer security.

**Deep Packet Inspection**
- Capturing and Analyzing Network Netflow, VoIP and Web traffic based on Deep Packet Inspection.

**Penetration and Software Verification Test Capabilities**
- IOT Vulnerability Detection and Forensics, VoIP Application Security Scanner, Web Application Security Scanner
## Nova Product and Projects - VoIP

**NOVA V-GATE (VoIP Application Firewall)** is a modular, transparent, high performance VoIP firewall aimed towards protecting VoIP systems from high costly, damaging attacks by preventing known and unknown application-layer attacks such as toll fraud, premium rate services, Dos/DDoS/TDoS, brute force, fuzzing.

**NOVA V-SPY (VoIP Vulnerability Scanning and Analysis Tool)** is a modular, high performance vulnerability scanning framework aimed towards helping penetration testers and administrators that evaluate the security of VoIP applications.

**VoIP IDS / IPS** is our new project to prevent toll and traffic frauds and also service abuse especially.

**VoIP Monitoring** is our new project to monitor VoIP systems on both performance and security sides.

## Competencies

<table>
<thead>
<tr>
<th>Platform Development</th>
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<tbody>
<tr>
<td>Linux (Ubuntu) System Administration</td>
</tr>
<tr>
<td>Test scripting (Python)</td>
</tr>
<tr>
<td>Database (PostgreDB, MongoDB)</td>
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<tr>
<td>Virtualization (VMware),</td>
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<tr>
<td>Web Services Development</td>
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<tr>
<td>C, C++</td>
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<tr>
<td>SOAP, J2EE, JSP</td>
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<tr>
<td>Protocol &amp; Service Development</td>
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<tr>
<td>Telecom standards (SIP, XML, SOAP, and HTTP)</td>
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<tr>
<td>Network (TCP/IP, Signaling),</td>
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<tr>
<td>Mitigate Fuzzing, DDoS, Flood Attacks</td>
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<tr>
<td>Fault Mgmt. (SNMP),</td>
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<tr>
<td>Load Balancing, High Availability</td>
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<tr>
<td>Big Data Analytics,</td>
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<tr>
<td>Machine Learning and Anomaly Detection</td>
</tr>
<tr>
<td>End-to-End UC and VoIP Security Testing (DDoS, different attack tests)</td>
</tr>
<tr>
<td>Performance Testing (Call Generator, Stress Tests)</td>
</tr>
</tbody>
</table>
# Nova - Mobile Security

## Nova Product and Projects – Mobile

**NOVA MSP (Media Security Platform)** ensures that your devices and operating systems communicate independently and securely. Nova MSP provides secure communication for both client-to-server and client-to-client communication even in unsecure networks and also offers secure media transfer enriched with various security methods and flexible crypto algorithm usage, enabling secure voice and video communication, file and message transfer, and whiteboard usage.

**Mobile Security Scanner** is our roadmap project which includes vulnerability scanning framework to test mobile applications.

**Mobile Malware Analysis** is our roadmap project to detect mobile malware applications and malicious behavioral.

## Competencies

- Mobile Application Development (Android/iOS)
- End-to-End Secure Media
- Secure Voice/Video and Instant Messaging Communication Platforms
- File Encryption
- WebRTC Technology
- Encryption Algorithms: AES128/192/256, Blowfish, TripleDES
- Smart Card: RSA 2048/4096 – SHA 512 – (CC EAL5+)
- Web Application Development (Windows/Android/Macintosh)
- Scalable Server Architecture
- Secure Web Socket
- TLS Connection
# Nova – Web Security

## Our Product and Projects

**Nova W-GATE (Web Application Firewall)** is an application that detects and prevents attacks made to HTTP / HTTPS / HTML5 / SOAP / XML-RPC / Web Service applications.

**Nova W-SPY (Web Vulnerability Scanning and Analysis Tool)** is a Web application security scanner tool including Web Crawler, Vulnerability Analyzer, Intercepting Proxy, Web RTC Support, Web Sockets Support, Comprehensive Reporting features.

## Competencies

- Multi Process Framework
- Reverse Proxy
- SSL/TLS Utilities
- VLAN and Network Management Module
- Web Threat Detection Techniques
- Web Threat Protection Techniques
- Web Services (XML and SOAP)
- Load Balancing
- Policy Management
- PostgreSQL and MySQL
- Hibernate (ORM + OGM)
- AngularJS and Bootstrap
- Web Crawler
- Vulnerability Analyzer
- Intercepting Proxy
- Web RTC Support
- C, C++
- SOAP, J2EE, JSP
<table>
<thead>
<tr>
<th>Nova Product and Projects – Big Data</th>
<th>Competencies</th>
</tr>
</thead>
</table>
| **Nova STATS (Network, VoIP and Web Behavioral Anomaly Detection Tool)** is holistic behavioral anomaly detection tool project by using network flow data, VoIP and Web packets together. | Network based Behavioral Anomaly Detection  
VoIP and Web Packet based Behavioral Anomaly Detection  
Packet Analysis  
Session Analysis  
Big Data Collection  
Big Data Management  
Big Data Feature Engineering and Analysis  
Big Data Sharing  
NetFlow Data  
Apache Big Data Tools  
Logging  
Load Balancing  
Security Policy and Rule Management and Optimization  
Compliance Audit |
<p>| <strong>Nova SOC Phase 1 (Border Security Product Log Analyzer)</strong> is an orchestration and security operation center tool project to improve performance, security and compliance of security applications such as IP firewall, NGFW, Web and VoIP Application Firewall and IDS/IPS products. |                                                                 |</p>
<table>
<thead>
<tr>
<th>Nova Product and Projects – IOT, M2M</th>
<th>Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nova M2M Security (from local network to M2M Gateway and Core and Service Platform) Sensors communication and IP Connection via M2M Gateway while Core Centers controls sensors and applications via application plafform</td>
<td>oneM2M Standartization by ETSI 6LowPAN Zigbee IPv4, IPv6 Layer protocols Restfull Architecture design COAP MQTT LWM2M SOA Forensics tools Attack Vectors generation and detection, prevention systems Encryption, trust and data integrity</td>
</tr>
<tr>
<td>Nova M2M Service Security (Service Orchestration Platform Security) All services’ interactions and communications via Core, sensors communication being secure and encrypted</td>
<td>IOT Forensics</td>
</tr>
</tbody>
</table>
Nova Penetration Test Services

NOVA PENTEST SERVICES

• UC network,
• VoIP and
• Web applications
• IOT, M2M with Security Services and Consultancy
  • test the applications,
  • infrastructure and
  • devices themselves to ensure they are protected from VoIP, WEB and Unified Communications-related attacks.