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TRANSFORMATION SERVICES

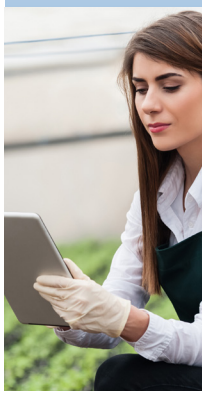
Zeetta NETWORKS

INTELLIGENT NETWORK SLICE MANAGEMENT ENGINE (InSME)

Global adoption of Digital technologies and driving the need for digital transformation by service providers. Augmented Reality/Virtual Reality (AR/VR), Connected and Autonmous Vehicles (CAV), Smart Cities and Video are driving the mass adoption of NFV/SDN to reduce the massive OPEX/CAPEX investment needed to support the delivery of these services. These services do not need a “one-size-fits all” shared homogeneous network, it needs a heterogeneous network.

TATA Communications Transformation Services (TCTS) in partnership with Zeetta Networks have developed a platform that slices networks to provide slices optimised for each service.

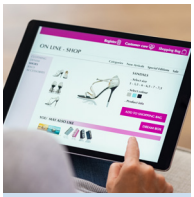
The Intelligent-networks Slice Management Engine (InSME) enables the automated combination and slicing of multiple access technology networks using machine-learning (ML). Slices are dynamic and tenant-aware and deliver a guaranteed user experience and more efficient usage of network resources.



InSME is a cloud-native open-standards based platform that uses a microservices architecture. The platform has three distinct layers:

- Presentation Layer – Slice triggering and visualisation
- Automation Layer – Dynamic Slice Orchestrator & machine-learning based Slice Optimiser
- Cross Domain Abstraction Layer – Zeetta Networks’s field-proven NetOS® SDN-Controller

InSME can be deployed in both Enterprise and Service Provider Networks to enable optimization of the user experience and monetization of network slices.



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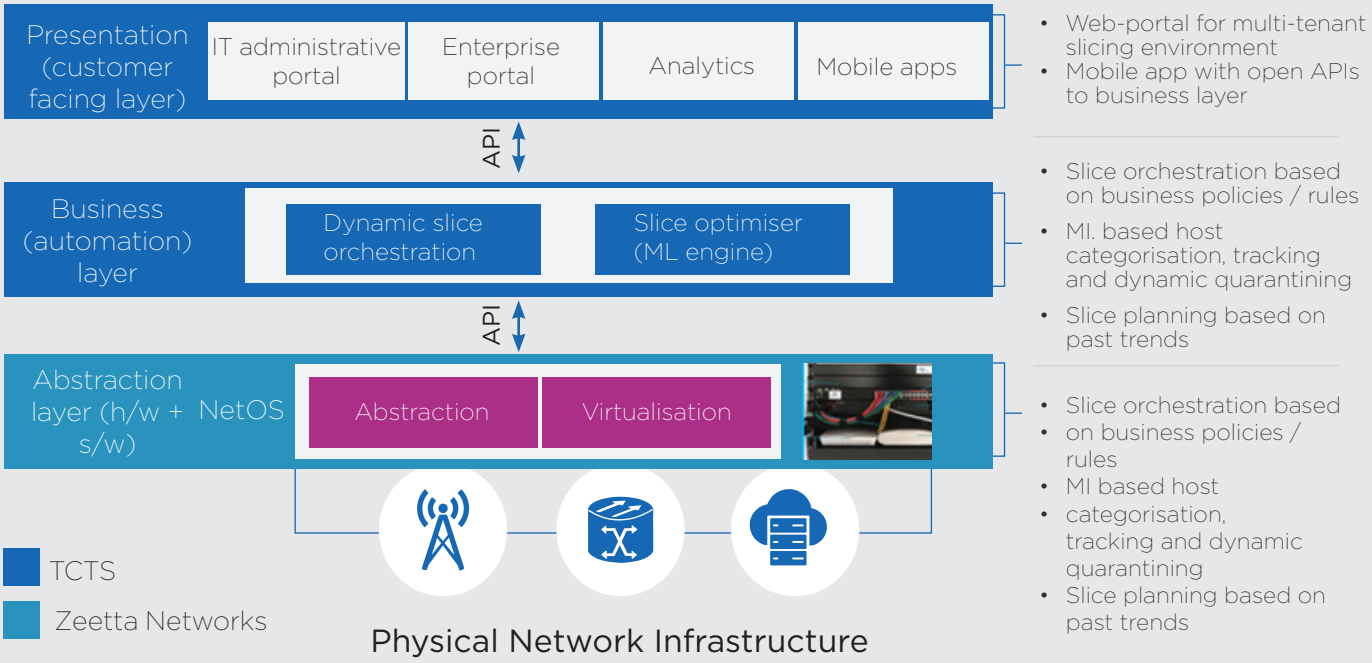
TCTS' InSME is an innovative software platform that enables elasticity in cross-domain networks through automation and the application of Machine Learning (ML), thereby creating tenant-aware dynamic network slices guaranteeing user experience assurance and efficient utilisation of network resources.

A ML and Automation-enabled Network Slice Management Engine will support open standards and be 100% cloud native with microservices architecture that will promote a diverse ecosystem for customers to have the best of breed solution. There are three parts to the solution – presentation layer for slice trigger and visualisation, automation layer comprising dynamic slice orchestrator and ML based slice optimiser to orchestrate and automate the provisioning of slices based on customer's past, present and future demands. The third will be a cross domain network abstraction layer enabled by NetOS® SDN controller- a patented technology from partner Zeetta Networks that will guarantee quick entry into both the enterprise and telecom service provider segments. The below figure depicts the solution stack for InSME.

InSME - FIRST FULLY AUTOMATED END-TO-END NETWORK SLICING PLATFORM



Characteristics	InSME	VPN	SD-WAN
Real time control of service/functions with customer	●	●	●
Secure separation from public network	●	●	●
Network functions support specific applications	●	○	●
Dynamic/Elastic (expand or shrink as needed)	●	○	○
Integrated orchestration of distributed compute (recursive virtualisation)	●	○	○
On-demand, tenant-aware virtual network service provisioning	●	○	○
Optical layer virtualisation	●	○	○
Edge to core virtual network planning	●	○	○

E2E (radio, transport, core) Network Slicing enabled through InSME

For quick entry into market-ready to deploy 'pop-up network' powered by Zeetta Networks NetOS® for enabling smart stadiums:

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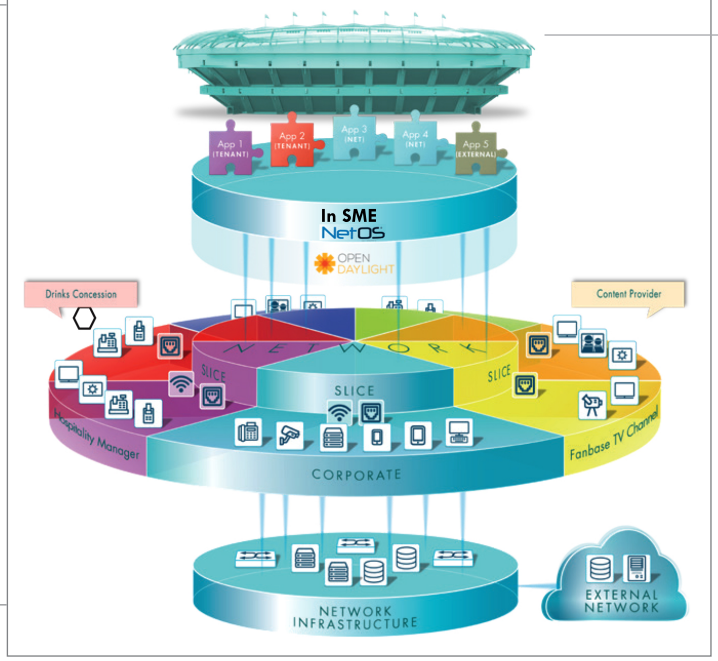
SMART STADIUM

On-demand connectivity enabled by on-the-fly networks

- Wireless access network e.g. Wi-Fi, 4G, etc.
- Backhaul options



Visitors

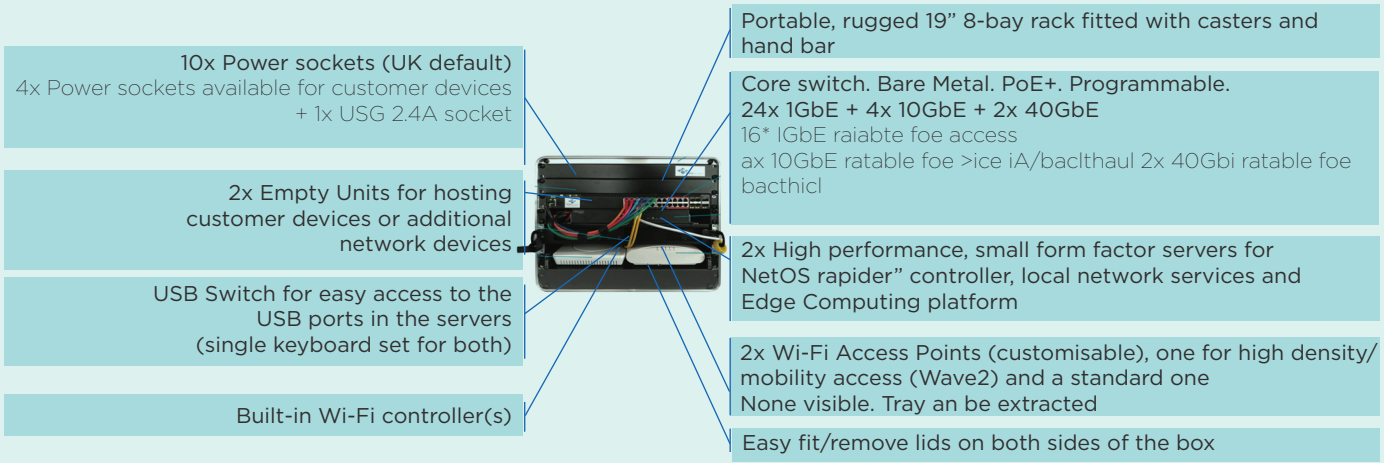
- Access exciting new services such as Augmented/Virtual Reality
- Receive bespoke content directly to their smartphones
- Enable location services (e.g. personalised information, adverts, etc.) delivered to nearby digital signage displays

Retail PoS

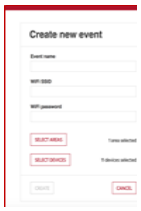
- Get dedicated networks during breaks (peak hours) for PoS

We, at TCTS, are joint go-to-market SI partner for Zeetta Networks' existing products NetOS® and NetOS Rapide™ and co-creating this path-breaking technology for end-to-end network slicing with InSME that enables the seamless end-user experience in the era of hyper-connected world.

NetOS Rapide™ in-a-box is combined hardware and software solution that provides:



- Provision different services for different tenants
- Tracking hosts (wired and wireless devices)
- Enable minimal touch configuration
- Port network services without the reliance on critical networking personnel



If interested to know more about this product and monetisation opportunities? Schedule a demo

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About Tata Communications Transformation Services (TCTS)

Tata Communications Transformation Services (TCTS), a 100% subsidiary of Tata Communications Ltd, provides leading business transformation, managed network operations, network outsourcing and consultancy services to telecommunication companies around the world. TCTS delivers operational efficiency, cost transformation and revenue acceleration solutions for all the stages of the carrier process lifecycle including but not limited to network engineering and design, implementation and operations functions.

TCTS is a part of the USD $100+ billion Tata group. Tata group comprises of over 100 operating companies in seven business sectors. TCTS leverages the market expertise of Tata group's global telecom operation capabilities and globally established IT, process and consulting skills. It carries the rich traditions and business ethics of the Tata companies.

For more details on TCTS and how we can help your company build, operate and transform, please contact us at tcts.marketing@tatacommunications.com or visit www.tatacommunications-ts.com. To hear more from TCTS experts, join us on LinkedIn https://www.linkedin.com/company/tata-communications-transformation-services and follow us on Twitter https://twitter.com/Tata_TCTSL.

About Zeetta Networks Limited

Zeetta Networks enables smarter networks. The company leads the development of open, programmable networks based on an advanced, patent-protected software controller called NetOS® that provides full network visibility, control and management through a single-pane-of-glass.

NetOS® enables network splicing® of any combination of network technologies (Fixed, Wireless and low-power IoT) to create a single virtualized network topology that can be then sliced into network slices (sub-networks) on-demand to meet specific user or application requirements. The ability to dynamically sliced and splice the network resources across wireless and fixed technologies is protected by the company's granted patents.

Zeetta Networks commercially deployed NetOS® in several enterprise projects across Europe and successfully demonstrated 5G Network Slicing in early 5G testbeds like the 5G Smart Tourism and 5G Rural First projects. NetOS® allows enterprises and service providers to control their fixed and wireless networks seamlessly, driving operational efficiencies and creating new monetization opportunities. In 2019, Zeetta will be extending its NetOS® product portfolio to support the creation and control of ad-hoc or "pop-up" networks.

To explore how we can help you or to arrange a demonstration by Zeetta networks , please€email us at info@Zeetta.com