

INTRODUCTION TO WAN BONDING

Features, Benefits, and
Real-World Applications

AGENDA

- § What is S.A.NE?
- § What is WAN bonding?
- § WAN bonding benefits
- § Use cases
- § Supported platforms
- § Questions



ABOUT BONDIX INTELLIGENCE



Bondix Intelligence develops WAN software solutions that let users instantly enjoy high speeds, high bandwidth, efficiency, reliability and low latency — simply by adding Bondix WAN bonding to existing hardware.



SHORT FACTS

- § Based in Netherlands and Germany
- § Founded 2017
- § +70 combined years of experience in developing smart WAN bonding solutions



CORE TEAM

- § Sales: Martin Santner
- § Development: Simon Ley
- § Marketing: Sylvia Ploch



SERVICE OFFERINGS

- § Software development
- § Software consulting
- § Network consulting

WHAT IS S.A.NE?

S.A.NE is short for **S**imple **A**ggregation of **NE**tworks which means it...

- § Is a custom protocol developed and owned by Bondix
- § Transports multiple data streams over any number of WAN interfaces
- § Transfers IP traffic to the cloud server endpoint
- § Creates a single virtual WAN connection with high resiliency and throughput
- § Can be deployed on existing CPEs
- § Responds to changing demands without the need to invest in proprietary hardware

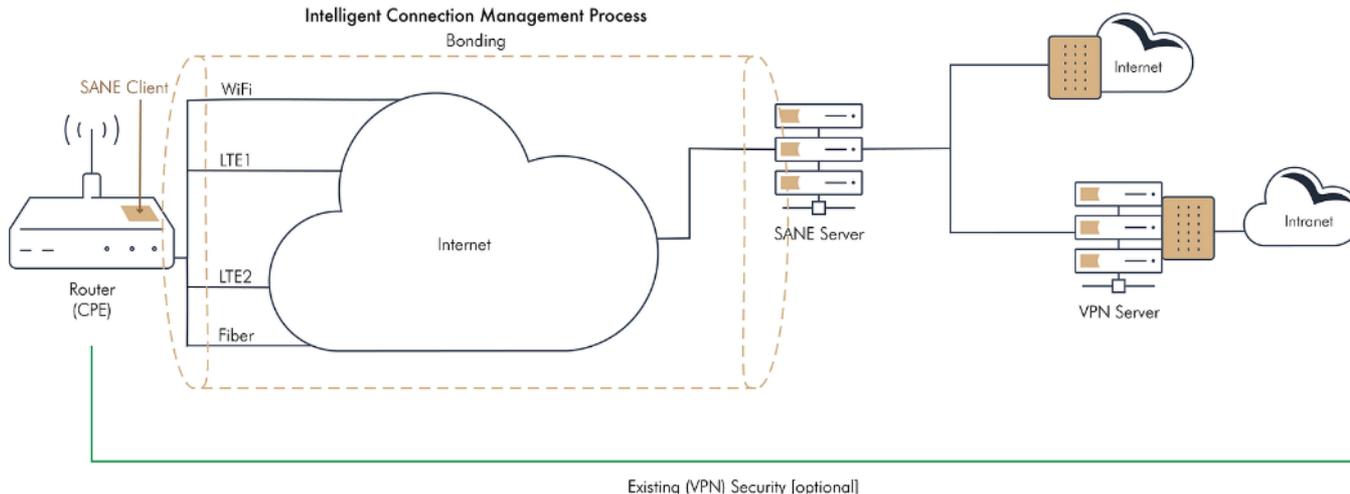
Or, even shorter:

Bondix S.A.NE is the future of software-defined (SD-) WAN!



WHAT IS WAN BONDING?

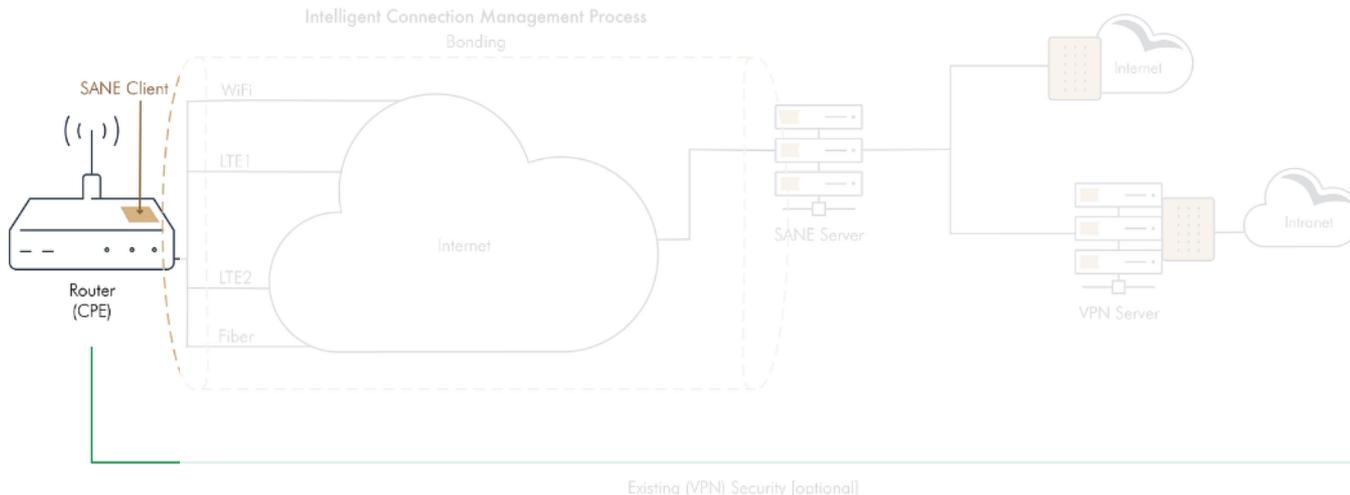
- § Bondix S.A.NE (*Simple Aggregation of NEtworks*) is a WAN bonding solution that provides increased performance, WAN smoothing, packet redundancy, and seamless failover.
- § Adds bonding functionality to existing hardware
- § Ultra fast, ultra reliable
- § Needs three components: Client, tunnel, and server



WAN BONDING - CLIENT

The Bondix S.A.NE Client...

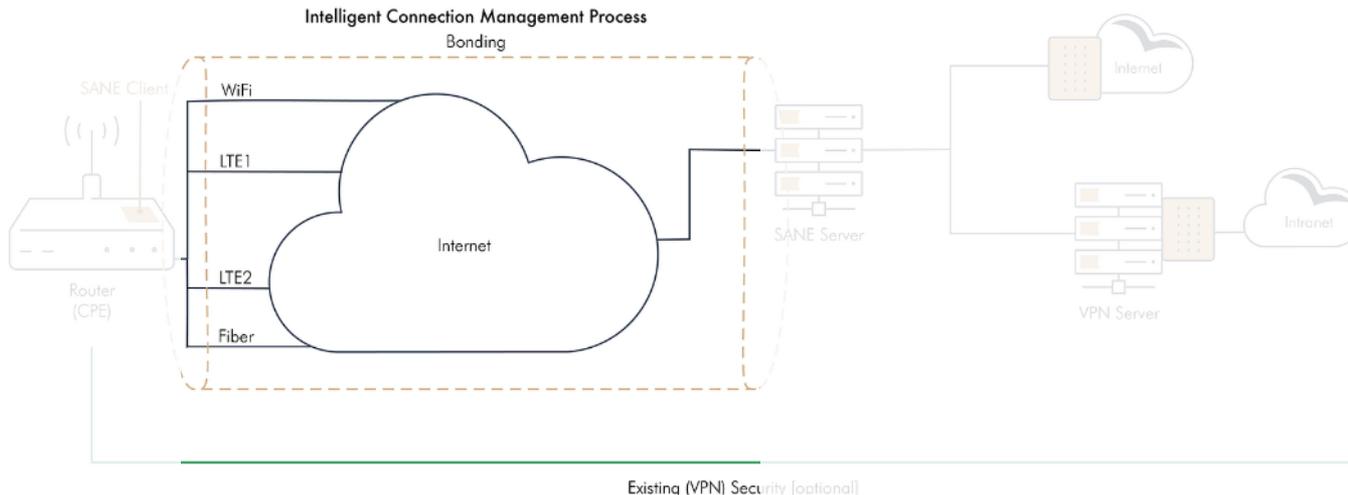
- § Sets up a tunnel with the server
- § Breaks down data traffic into data packages
- § Sends data packages through the tunnel
- § Features a built-in bonding proxy that ensures the best-possible performance



WAN BONDING - TUNNEL

The tunnel provides the logical connection that bonds multiple WAN links and...

- § Transports data packages to and from the client and server
- § Offers multiple methods for sending traffic based on the use case:
 - § WAN priority
 - § WAN smoothing
 - § Packet redundancy

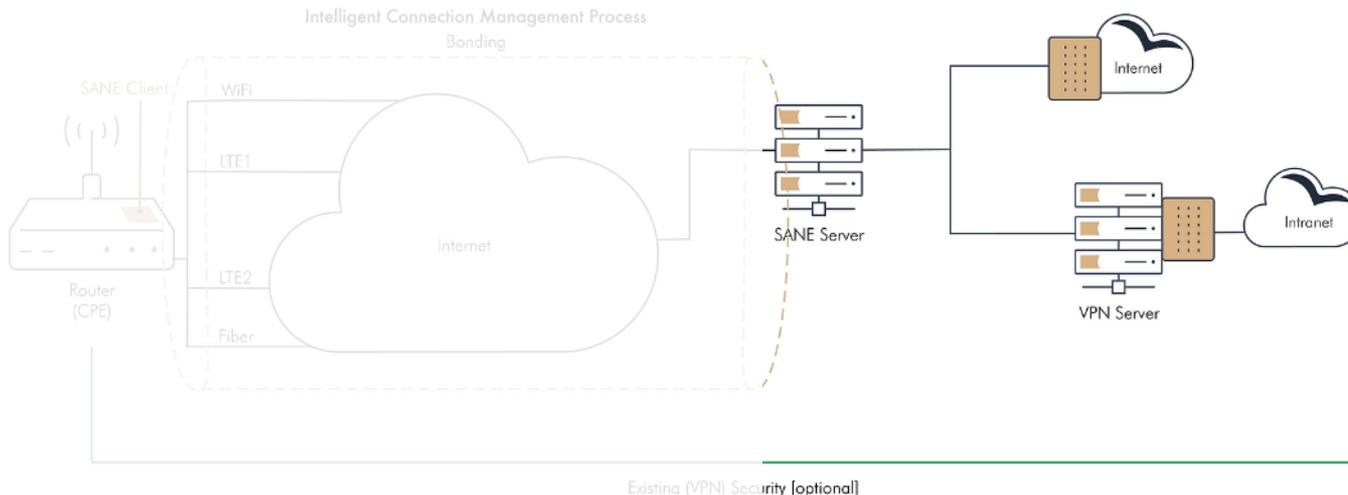


WAN BONDING - SERVER

The Bondix S.A.NE Server acts as the endpoint for the tunnel and...

- § Can be downloaded and run on a Linux VM at no additional license cost
- § Breaks down data traffic into data packages
- § Sends data packages through tunnel

S.A.NE supports single and multi-instance servers so it scales to high-bandwidth and/or geographically dispersed systems without an additional fee



BENEFITS OF WAN BONDING

	Hot Failover	WAN aggregation	WAN smoothing	WAN prioritization	Packet duplication
What it means	Bonded tunnel interface stays up across all WAN links. No packet loss or failover wait time.	Increases speeds and bandwidth up to a max of 200 Mbps	Reduces latency and jitter.	Auto-sense or manually sets the best active WAN link and balances traffic accordingly.	Replicates packets on multiple WAN links.

WAN BONDING ADVANTAGE:

Ultra-fast:

Higher bandwidth Internet connectivity than any one ISP can provide

Use cases:

- § Buses and trains
- § Retail stores
- § Home education/work/business

Ultra-reliable:

Guaranteed delivery of mission-critical data

Use cases:

- § Agriculture
- § Oil and gas
- § Windfarms

LICENSES & PRICES

	Bondix S.A.NE IoT	Bondix S.A.NE Standard	Bondix S.A.NE Enterprise	Bondix S.A.NE Ultimate
Bonding throughput	Up to 20 Mbps	Up to 100 Mbps	Up to 200 Mbps	Up to 500 Mbps
Maximum number of bonded WAN links	4	4	4	6
Server image included (e.g. for self-hosting)	ü	ü	ü	ü

Onboard passenger Wi-Fi for commuter rail

§ Pain points

§ Not enough bandwidth for everyone

§ Reliability throughout the route

§ Bondix S.A.NE WAN Bonding

§ “Bandwidth as you go” model to bond more cellular connections as needed

§ Improved passenger satisfaction

= more riders

= more revenue



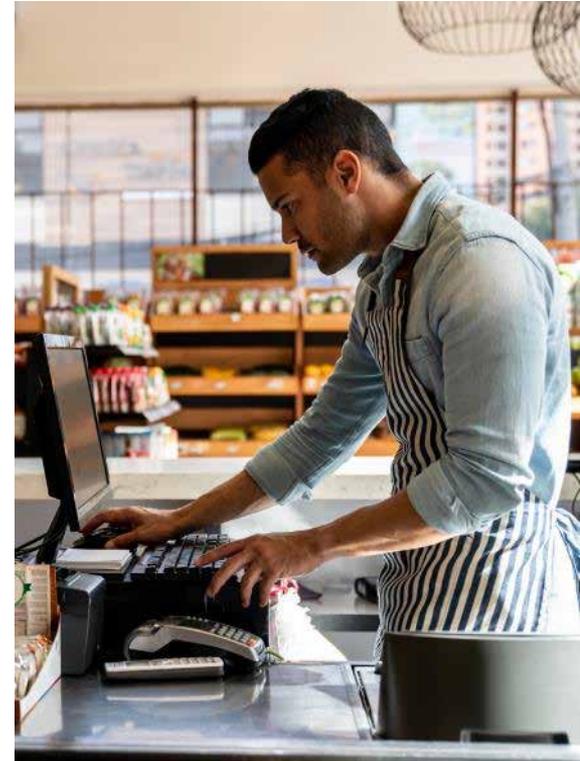
Provide retail stores and remote workers the best Internet connection for a reliable work environment

§ Pain points

- § Internet outages cause worker downtime or lost sales
- § Not enough bandwidth from a single Internet provider

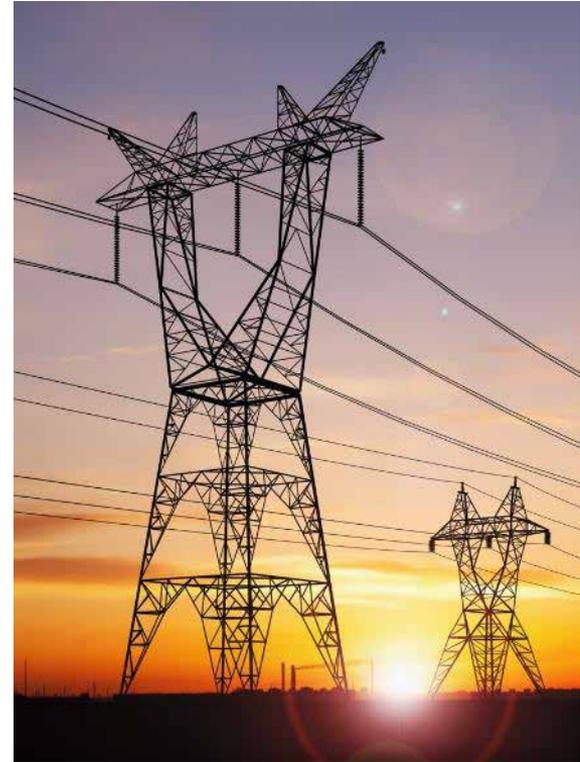
§ Bondix S.A.NE WAN Bonding

- § WAN smoothing and immediate failover for seamless connectivity
- § 5G bandwidth aggregation for increased throughput for single devices or multiple



Mission-critical data from oil/gas remote locations

- § Small amount of data, but needs guaranteed quick delivery
- § Pain points
 - § Spotty cellular connectivity
 - § High packet latency
 - § Outage delays due to VPN failover time
- § Bondix S.A.NE WAN Bonding
 - § Packet redundancy for guaranteed delivery
 - § WAN smoothing



SUPPORTED PLATFORMS



ARM

OpenWrt
Wireless Freedom

MIPS



SUMMARY

S.A.NE is a lightweight, flexible, software solution that...

- Has been designed to be easily adapted to and deployed on existing hardware platforms.
- Is licensed to hardware manufacturers, MSPs, and ISPs to improve WAN capabilities on existing platforms.
- Works as a recurring revenue license model.
- Provides low latency, and thus improved connection quality.
- Improves TCP connections.
- Is highly transferable and low-cost.
- Is hardware-agnostic and platform-independent.
- Can be scaled perfectly for any project.



QUESTIONS?

General assistance

sales@bondixintelligence.com

Tech support

support@bondixintelligence.com

https://wiki.bondix.dev/wiki/Main_Page