

# The Self-Organizing Networks (SON) Ecosystem: 2014 - 2020

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## **Abstracts**

Self-Organizing Network (SON) technology minimizes the lifecycle cost of running a wireless carrier network by eliminating manual configuration of equipment at the time of deployment, right through to dynamically optimizing performance and troubleshooting during operation. This can significantly reduce the cost of the carrier's services, improving the OpEx to revenue ratio.

Amid growing demands for mobile broadband connectivity, wireless carriers are keen to capitalize on SON to minimize rollout delays and operational expenditures associated with their ongoing LTE and small cell deployments.

Originally targeted for the Radio Access Network (RAN) segment of wireless carrier networks, SON technology is now also utilized in the mobile core and mobile backhaul segments. Furthermore, the SON ecosystem is increasingly witnessing convergence with other technological innovations such as Big Data analytics and Deep Packet Inspection (DPI).

Despite challenges relating to implementation complexities and multi-vendor interoperability, SON revenue is expected to grow to more than \$3 Billion by the end of 2016, exceeding conventional mobile network optimization revenue by over 20%.

The "Self-Organizing Networks (SON) Ecosystem: 2014 – 2020" report presents an indepth assessment of the SON and associated mobile network optimization ecosystem including key market drivers, challenges, OpEx and CapEx savings potential, use cases, SON deployment case studies, future roadmap, value chain, vendor analysis and strategies. The report also presents revenue forecasts for both SON and conventional mobile network optimization, along with individual projections for 8 SON



submarkets from 2014 through to 2020. Historical figures are also presented for 2010, 2011, 2012 and 2013.

The report comes with an associated Excel datasheet suite covering quantitative data from all numeric forecasts presented in the report.



### **Contents**

#### LIST OF COMPANIES MENTIONED:

The following companies and organizations have been reviewed, discussed or mentioned in the report:

- 21 Vianet Group
- 2K Telecom
- 3 Austria
- 3 Denmark
- 3 HK
- 3 Ireland
- 3 Italia
- 3 Sweden
- 365 Media
- 3Roam
- 4G Americas
- 4ipnet
- **6WIND**
- A1 Telekom
- Ablaze
- Accedian
- Accedian Networks
- Accelleran
- Accuver
- Actelis
- Actix
- Adams NetWorks
- **ADLINK**
- **ADTRAN**
- **ADVA**
- Advantech
- Aero2
- Aerohive
- Aeronet
- Aexio
- Aircel
- Aircell



AIRCOM International

AirHop Communications

Airspan Networks

Airtel Nigeria

Airvana

AIS/DPC Thailand

Al Madar

Alaska Communications

Albis Technologies

Alcatel-Lucent

Alfa

Algar Telecom (CTBC)

Algerie Telecom

Alpha Networks

Altel

Altera

Alvarion

**Amdocs** 

Andorra Telecom

Andrew

**Antares Group** 

Antel

Anvaya Networks

**Aptilo** 

Aqiva Wireless

Aquafon

Arcadyan

Argela

ARIB (Association of Radio Industries and Businesses, Japan)

Aricent

Arieso

**ARItel** 

Armentel

**Aruba Networks** 

Ascom

Asiaspace

Askey

**ASOCS** 

Astellia



AT&T Mobility

ATDI

Athena Wireless Communications

ATIS (Alliance for Telecommunications Industry Solutions, U.S.)

Atrica

Avanti

Avea

**Aviat Networks** 

Avvasi

**Axell Wireless** 

Axerra Networks

Axis Teknologies

Azercell

Azerfon

b•lite

**Babilon Mobile** 

Bakcell

Bakrie Telecom

Batelco

Bayan Telecommunications

**BayRICS** 

**Beeline** 

Beeline Lao

BelCel

Belgacom / Proximus

**Bell Mobility** 

BendBroadband

BeST (Life)

**BH Telecom** 

Bharti Airtel

**Bhutan Telecom** 

Big Switch Networks

BigAir

**BLiNQ Networks** 

Bluegrass Cellular

Blueline

BluWan

**Bollore Telecom** 

**Bouygues Telecom** 



**Brazil Army** 

Brazil Sao Paulo Military Police

**BridgeWave Communications** 

Broadcom

**Brocade** 

Browan

**BSNL** 

BT

**BTC** 

BTI Systems

**BTI Wireless** 

**BTL** 

**BUCD** 

Bulgaria Vivacom

Bytemobile

C Spire Wireless

C&S

Cable and Wireless

Cambium Networks

Canoga Perkins

Carolina West Wireless

**Carrier Access Corporation** 

Cavium

**CBL Bahamas** 

CBNL (Cambridge Broadband Networks Limited)

CCI (Communication Components Inc.)

CCS

CCSA (China Communications Standards Association, China)

**CDMA Development Group** 

Ceclcom Axiata

CeedTec

Celcite

Cell C

Cellcom

CellO

Cellvine

Cellwize

Celtro

**CENTRI** 



CenturyLink

Ceragon

**Chariton Valley Comms** 

**Charles Industries** 

**Chat Mobility** 

China Mobile

China Mobile Hong Kong

China Telecom

China Unicom

CHT

Cielo

Ciena

Cisco Systems

Citrix

City of Charlotte Council

Claro

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COAI (Cellular Operators Association of India)

Cobham

**Coherent Logix** 

Colorado Valley

Comarch

Comba Telecom

**Commnet Wireless** 

CommScope

Commsquare

Contela

ConteXtream

**Continuous Computing** 

Convergence Technologies

Copper Valley Telecom

Corning

Cosmote

COTA Murcia4G

Cross Telephone

Crown Castle

CSI

**CSL Limited** 



Custer Telephone
Cyan
Cyan
Datame
DBD
Dedicado
DeltaNode
Deutsche Telekom
Dhiraagu
Dialog Axiata LTE TDD later FDD
Dialogic
DiGi
Digicel
Digicel Fiji
Digitel
Digitel Jamaica
Dish Network
D-Link
DNA
DoCoMo Pacific
DragonWave
DTAC – TriNet
DTM (Datang Mobile)
Du
E Plus
eAccess
Eastlink
E-Band Communications
ECE (European Communications Engineering)
ECI Telecom
Econet Wireless
Eden Rock Communications
Edgewater
EE
EION
Elisa
EMT
Emtel
EnergyAustralia Ausgrid



Fa O anima
EnGenius Entel Movil
Entel PCS
Entel Peru
Enterasys
ERA/T-Mobile Poland
Ericsson
ETC
Etex Telephone Co-op
EtherReach
Ethertronics
Ethio Telecom
Ethos
Etisalat
Etisalat Misr
ETRI (Electronics and Telecommunications Research Institute)
ETSI (European Telecommunications Standards Institute)
Evolve Broadband
Exalt
ExteNet Systems
Extreme Networks
FarEasTone
FastBack Networks
Fastlink (Regional Telecom)
Femtel
FibroLAN
Firetide
Fitel
Fjarskipti (Vodafone Iceland)
Forsk
Fortinet
FPT Telecom
Freescale Semiconductor
Fujitsu
Gemtek
Genband
Georgia Magticom
Glo Mobile
Globacom



Global Mobile
Globe
GoNet Systems
Goodman Networks
Gore
GrenTech
GSA
GSMA (GSM Association)
Guavus
Guineanet
GWT (Global Wireless Technologies)
Handlink
Hatteras
Hitachi
HP
Huahuan
Huawei
Hutchison 3
IBW International
ICE
iConnect
IDC Moldova
iDirect
IEEE (Institute of Electrical and Electronics Engineers)
IM2
Imagine Group
IMS Forum
InfoCommunication Union
InfoVista
Ingenia Telecom
InnerWireless (Acquired by Black Box)
Intel
InterDigital
Intracom
Intucell Systems
Inwi
Iowa Statewide Interoperable Communications Board (ISICSB)
ip.access
IPITEK



IPV6 Forum
Islandcom
IT&E Guam
JDSU
Juni
Juniper Networks
Kcell
KDDI
Kentrox
Kordia
KPN
KPN Base
KPU (Alaska)
KT
KT Corp Rwanda
Lanka Bell
Lantiq
Lattelecom
Lavastorm
Leap Wireless/Cricket
Lemko
LG U+
LightPoint Communications
Lightsquared
LIME
Linkem
LMT
LSI
LTC
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Manx Telecom
Mascom Wireless
Massnet
MAX Telecom
Maxim Integrated
Maxis
N / T l

MaxyTel Megafon



Menatelecom

Mentum

Meru Networks

Mesaplexx

Meteor

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Node-H
Nomadix
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NorthwestCell
Nova
NSN (Nokia Solutions & Networks)
nTelos
nTelos Wireless
NTT DoCoMo
Nuage Networks (Alcatel-Lucent)
O2 Secure Wireless
Octasic
Oi
Omantel
Omnitel
On Telecomunicacoes
ONE
Ooredoo
Open Mobile
Optimi
Optimus
Optiway



Optulink

Optus

Orange Armenia

Orange Austria

Orange Dominicana

Orange France

Orange Liechtenstein

Orange Luxembourg

**Orange Mauritius** 

Orange Moldova

Orange Romania

Orange Slovak Republic

Orange Spain

Orange Switzerland

Orange Uganda

**Orckit Corrigent** 

Osnova Telecom

Overture

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Panhandle Telephone Co-op

**PCCW** 

Peoples Telephone Co-op

Personal

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Plano Engineering

Plexxi

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Positron-Aktino

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**Public Wireless** 

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Quortus

R (Spain)

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**RADWIN** 

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Reverb Networks

**RF Window** 

**RFNet** 

RFS (Radio Frequency Systems)

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Rohde & Schwarz

Rorotika

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Ro-Timak Technology

**Ruckus Wireless** 

RusViet Telecom

S and R Communications

**S&T** Telephone Cooperative

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Sagebrush Cellular (Nemont)

Sagem

Sagemcom

SAI Technology

Saima Telecom

Samsung

Sasktel

Sazz

Schema

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SerComm

**SFR** 



**SGRITA** 

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SIAE Microelectronics

Siklu

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SingTel

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SK Telesys

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SSTL

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**Starcomms** 

StarHub

STC

Strata Networks

Strix Systems

Sub10 Systems

**Sunrise Communications** 

Surfline Communications

**SWIFT Networks** 

Swisscom



Sycamore

Symena

Syringa Wireless

T Mobile

Tango

Tango Networks

Taqua

**Tarana Wireless** 

Tata Elxsi

TCCA (TETRA and Critical Communications Association)

**TDC** 

TD-Forum

TDIA (TD Industry Alliance)

TE Connectivity (Tyco Electronics Connectivity)

Tecom

**TEKTELIC** 

**Tektronix Communications** 

Telcel

Telco Systems

Tele2

Tele2 Kazakhstan

Tele2 Sweden

Telecom Italia Mobile (TIM)

Telecom Malaysia

Telecom New Zealand

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**Texas Instruments** 

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Thumb Cellular

Tigo

Tikona

TIM Brasil

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TMN (Portugal Telecom)

T-Mobile Czech Republic

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Turkcell
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UbeeAirWalk
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Ubiquisys
Ubiquiti Networks
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UMTS Forum
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Vainakh Telecom
VDC (VNPT)
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Velatel-Aerostrong
Verizon Wireless
Videocon
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VIP mobile



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Viva

Vivacell-MTS

Vivato

Vivo

**VMWare** 

Vodacom

Vodacom Tanzania

Vodafone

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Vodafone Czech Republic

Vodafone Egypt

Vodafone Fiji

Vodafone Greece

Vodafone Ireland

Vodafone Italy

Vodafone New Zealand

Vodafone Portugal

Vodafone Qatar

Vodafone Romania

Vodafone Spain

Vodafone UK

Vox

**VTel Wireless** 

Vubiq

Wataniya

Wataniya Telecom

WBS (iBurst)

WebRadar

West Central Wireless

Wi-Ex

Wilson Electronics

Wind

Wind Mobile

WNC (Wistron NeWeb Corp.)

Woosh

**Xceed Technologies** 

Xilinx



XL Axiata

**Xplornet** 

Yoigo

Yota

YTL Communications Yes

Zain

Zain Jordan

Zain Saudi

Zamtel

Zhone

Ziggo

Zinwave

Zoda Fones

ZTE



# **About**

SON offers an opportunity to minimize the lifecycle cost of running a network by eliminating the cumbersome process of manually configuring the network at the time of deployment, right through to dynamically optimizing performance during the network's commercialization. This can significantly reduce the cost of the carrier's services, improving the OpEx to revenue ratio.

Global Wireless Network Infrastructure Revenue by Submarket: 2010 – 2020 (\$ Million)



The increasingly heterogeneous nature of these network investments brings significant operational challenges in terms of human labor and consequently cost. Manually configuring and optimizing these networks can often lead to significant delays before a network is stable enough to be commercialized.

SON allows wireless carriers to avoid these operational challenges by automating the planning, configuration and ongoing optimization of these networks, thus minimizing rollout delays and reducing operational expenditures.



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