NUf – Mobil Agenda

Småcelleseminar

Femtoceller. Produkter, muligheter og utfordringer.

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Session Objectives

- Small Cell Market Drivers
- Small Cell Terminology and Segments
- Small Cell Challenges and Opportunities
- Cisco Small Cell Vision and Products

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Overall Small Cell Market Drivers

High growth opportunities are attracting intense competition

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Enterprise Indoor issues: Oslo example (Press vision)

Nye kontorbygg kvel

MOBILTRØBBEL: Hele Barcode-prosjektet ved Bjørvika i Oslo er et eksempel på spenstige bygg med rene linjer. For mobiloperatørene kommer ikke disse byggene uten utfordringer. Glassene er belagt med en tynn og usynlig aluminiumsfilm som stopper høyfrekvente mobilsignaler. Foto: Leif Martin Kirknes

MOBILDEKNING INNENDØRS

Moderne bygg dreper mobildekningen

Slik får du bedre innendørsdekning

Enten du er bedrift eller privatperson finnes det råd mot dårlig dekning innendørs.

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KOMMENTARER (0)

En kombinasjon av ny mobilteknologi, telefoner med dårligere antenner og
byggeforskrifter gjør at stadig flere av oss opplever dårlig innendørsdekning
har flere alternativer for å bedre innendørsdekningen. Er du privatperson er
færre, men de finnes fortsatt:

Glassfasader, miljøkrav og arkitektur skaper hodebry for mobiloperatørene. Nye bygg må utrustes med forsterkende antenner, men ingen vil ta regningen.

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Address Increase Capacity with “Inside-Out” Deployments

Traditional **Outside-In** Deployment

20–35% traffic is served outdoors

Macro Cell sites are scarce

Macro cell sites are costly $$$

Inside-Out Deployment

65–80% usage is now indoors

Users are well-served

Small Cell costs are low $

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Small Cells: Evolving Terminology to Match Demand

Location >	Indoor			Outdoor	
	Home	**Enterprise** Office, campus, hotel	**Urban** City centres		**Rural**

Before the mobile data revolution

Primary driver >	**Coverage extension and end user experience**	**Voice coverage**	**Coverage and capacity**		**Voice coverage**
Old name >	**Femtocell**	**Picocell**	**Microcell**		

After the mobile data revolution

Primary driver >	**Coverage extension and end user experience**	**Coverage (voice and data)**	**Data capacity**	**Data capacity**	**Voice coverage**
New name >	**Femtocell**	**Enterprise Small Cell**	**Metro SC Indoor**	**Metro SC Outdoor**	**Rural Small Cell**

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Vision on Small Cell technologies

Radio type / Technology	3G	LTE	Wi-Fi
Spectrum	Dedicated/ Owned	Dedicated/Owned	Shared
Voice	Yes Integrated	Yes integrated	Limited OTT
Mobility	Yes	Yes	Limited
+			
Throughput Per cell	DL 20Mbps UL 10Mbps	DL 100Mbps UL 50Mbps	DL 500Mbps UL 500Mbps
Device support	Phone 90% Tablet 10% PC 5%	Phone 5% Tablet 1% PC 5%	Phone 90% Tablet 100% PC 100% TV, STB, bulb etc
Multi operator/ Guest access	Limited	Limited	Yes

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Barriers to Small Cell Deployment

Power

Cost

Operation

Real Estate

Multivendor HetNet

Backhaul

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Small Cells Challenges and Opportunities

Residential

- Zero-touch installation
- Self-healing
- Self-configuration

Enterprise

- Wi-Fi like installation
- Interference mitigation
- Self-configuration
- Self-optimization
- Small Cell co-ordination (Grid)
- Active Mobility
- Wi-Fi integration

Venue

- Wi-Fi like installation
- Co-ordination with Macro
- Self-configuration
- Self-optimization
- Load-balancing and capacity management
- Enhanced Mobility
- Wi-Fi convergence

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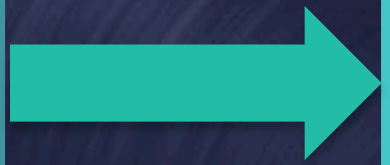
Consider New Valuation Strategies

Large Enterprise / Venue

Net Cost

- Most deployments financed by the SP
- Primary objective is retention of enterprise account (mobile lines)



SMB & Satellite Offices

Net Gain

- Margin on sale of hardware, installation and managed service
- Reduce churn
- Improve ARPU (increased usage)

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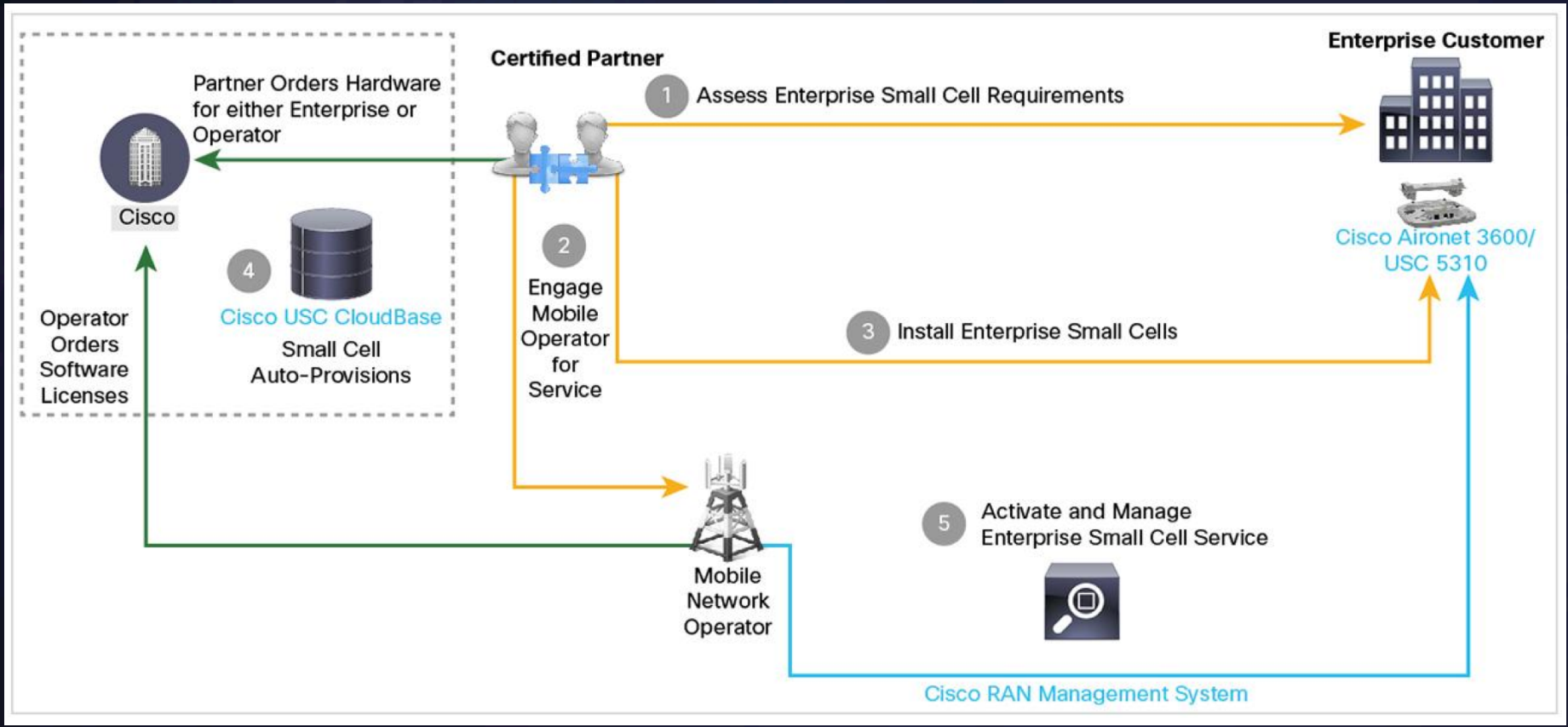
New model of Small Cells go-to-market



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What is the Killer App for Enterprise Small Cell?

- VOICE
- VOICE
- VOICE

Beyond voice:

- Data
- Location services
- Cloud managed IP PBX
- Emergency services
- Employee services
- Guest services
- And more…

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Cisco Small Cell Product segments

	RESIDENTIAL	SOHO	ENTERPRISE	HOTSPOT	VENUE	Concourse	Outdoor
POWER	7-13dBm	13dBm	20dBm	20dBm	20-24dBm	24-33dBm	33-37dBm
USERS	4 Users	8 Users	16 Users	16 Users	16-32+ Users	32-64 Users	>64 Users
ACCESS	3G/LTE – Closed	3G/LTE-Closed/Open	3G/LTE Open + Wi-Fi	3G/LTE Open + Wi-Fi	3G/LTE Open + Wi-Fi	3G/LTE Open	3G/LTE Open
DEPLOYMENT	Single Unit	Single unit	1 – 10+ units	1-3 units per site	10s units per venue	1 -10 units per macro sector	1 -10 units per macro sector

USC 3000 Home/SoHo

USC 5000 Enterprise

USC 7000 Venue

USC 9000 Outdoor

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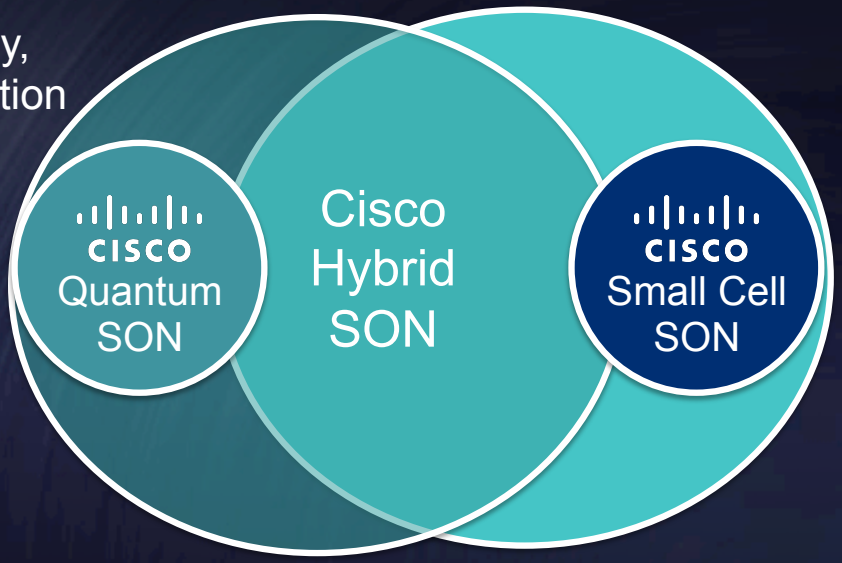
Cisco SON Differentiation

Best of Breed Orchestrated for Most Mature and Complete SON in Industry

- Multi-vendor, multi-technology, multi-layer Het-Net orchestration
- Automated closed-loop optimization
- AP SON orchestration
- Small cell/macro integration, including shared carrier



- Dynamic real-time optimization and self-healing
- Measurement-based adaptiveness
- ActiveSON for peering among small cell groups
- Scalable, simple installation experience – just like Wi-Fi

- Instant AP deployment with auto planning, initialization & optimization
- Enhanced mobility, reduced interference and effective macro offload
- Smart SON agent in AP orchestrated by Quantum SON
- Optimal Het-Net Quality of Experience

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Thank you.

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