

E4-E5 (CM)

BSNL Wi-MAX Deployment Strategies

WELCOME

- **This is a presentation for the E4-E5 Technical Module for the Topic : BSNL Wi-MAX Deployment Strategies**
- **Eligibility: Those who have got the Upgradation from E4 to E5.**
- **This presentation is last updated on 18.04.2011.**
- **You may also visit the Digital library of BSNL to see current version of this topic as well as updated version if any.**

In this presentation

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- **Wi-MAX services offered by BSNL**
- **Wi-MAX spectrum allotted to BSNL**
- **Wi-Max deployment options**
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- **Wi-MAX connections status**
- **Wi-MAX numbering scheme**
- **Wi-MAX tariffs plans**
- **Conclusion**

Introduction

- **BSNL is the first operator in India to provide Wi-MAX services.**
- **Wi-MAX technology provides fixed as well as fully mobile high speed broadband connectivity along with roaming feature.**
- **It provides users a thrilling Internet browsing experience.**

Wi-MAX services offered by BSNL



BSNL offers following services through Wi-MAX technology:-

- High speed broadband connectivity upto 7 Mbps**
- Leased Lines**
- VPN Services**
- Web based Video Conferencing**

Wi-MAX services offered by BSNL



Advantages of BSNL Wi-MAX services:

- Data Download/Upload at very high speed upto 7 Mbps
- Superior Performance
- World's latest wireless broadband technology
- Very low cost and low starting tariff
- Wide range of user friendly tariff plans

Wi-MAX services offered by BSNL



- **BSNL offers large variety of Customer Premises Equipments (CPEs) including Outdoor, Indoor and USB dongles from which customers can choose as per their application requirements.**
- **Indoor** : Best suited for Home/Office users. Can be used in moving vehicle also.
- **Dongle**: Small Dongle can be connected directly to PC / Laptop via USB port.
- **Outdoor**: Suitable for remote and rural areas.

Wi-MAX Coverage

RF Environment	CPE Type	Coverage (Approx. Cell Radius in Kms)
Urban	Laptop with USB Dongle	1.5 (non-LoS)
Urban	Indoor CPE	2.5 (non-LoS)
Urban	Outdoor CPE	8 (Line of Site)
Rural	Outdoor CPE	15 (Line of Site)

Wi-MAX Spectrum allotted to BSNL



DoT allotted BWA spectrum to BSNL as per its policy announced in August, 2008:-

- 20 MHz (2x10 MHz) in FDD mode for GJ, MH & AP circles:-**
 - 2535 MHz to 2540 MHz uplink**
 - 2540 MHz to 2545 MHz downlink**

 - 2635 MHz to 2640 MHz uplink**
 - 2640 MHz to 2645 MHz downlink**
- 20 MHz (TDD) Rest of Circles**
 - 2645 +/- 10 MHz with 2645 MHz being the central frequency**

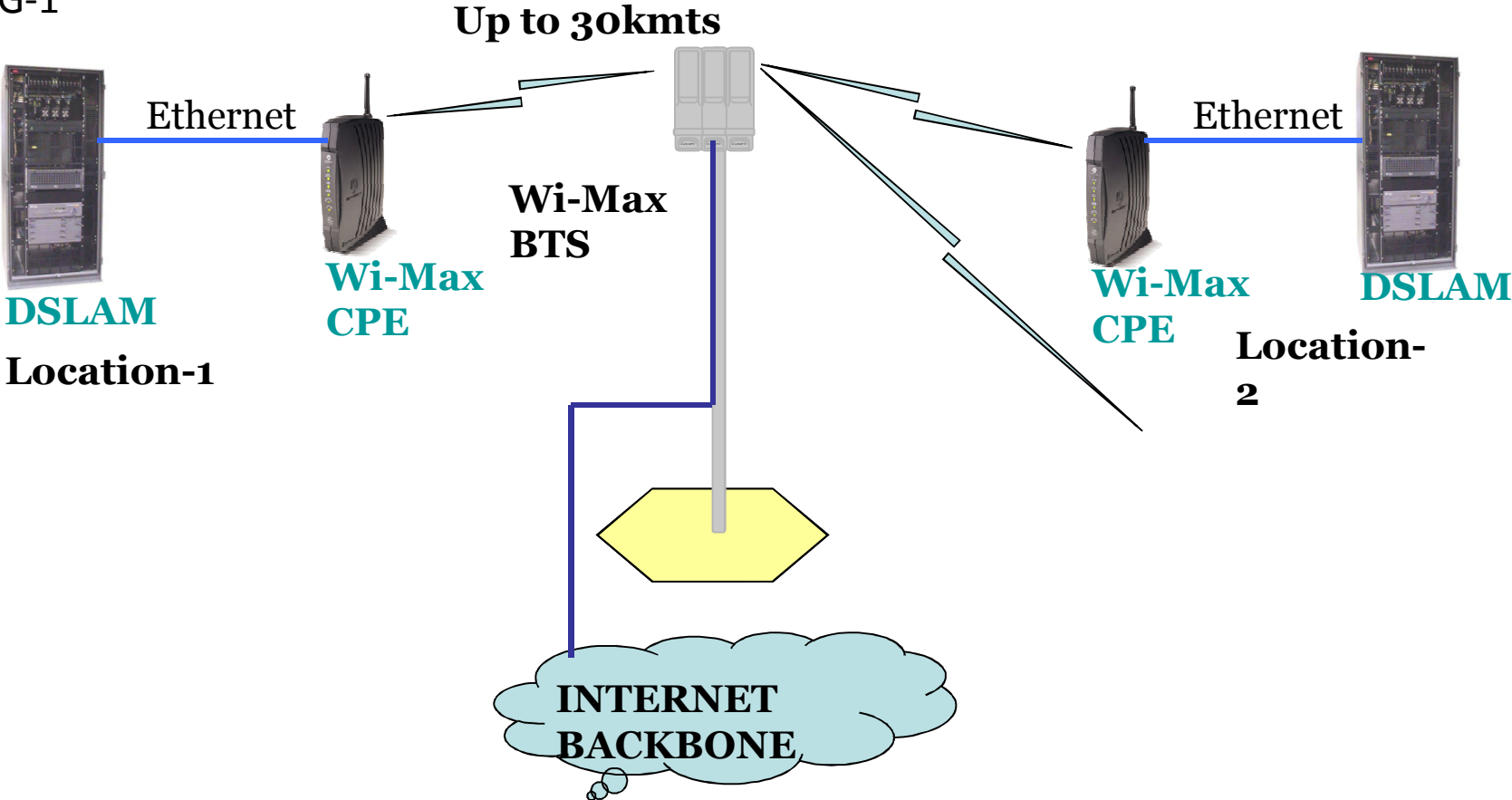
Wi-MAX deployment options

Wi-MAX can be deployed by service providers for various applications like:-

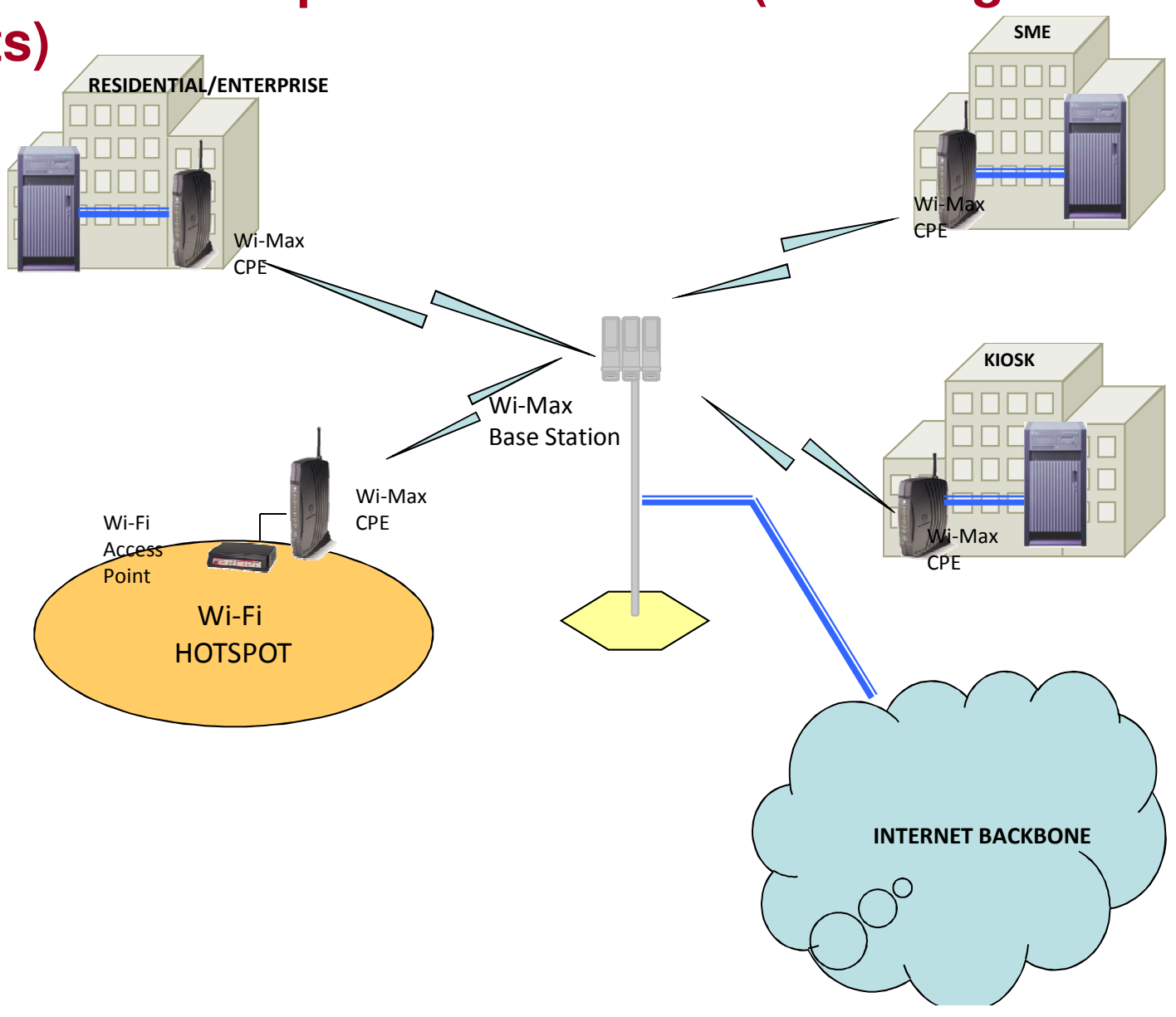
- **As backhaul for Remote DSLAM**
- **For wireless broadband connection for residential / Enterprise customers (including Wi-Fi Hot Spots)**
- **For Broadband connection for Enterprise customers (LAN cases)**
- **As backhaul of Wi-Fi Hot Spots**
- **For MPLS-VPN connectivity**

Use of Wi-MAX as backhaul for Remote DSLAM

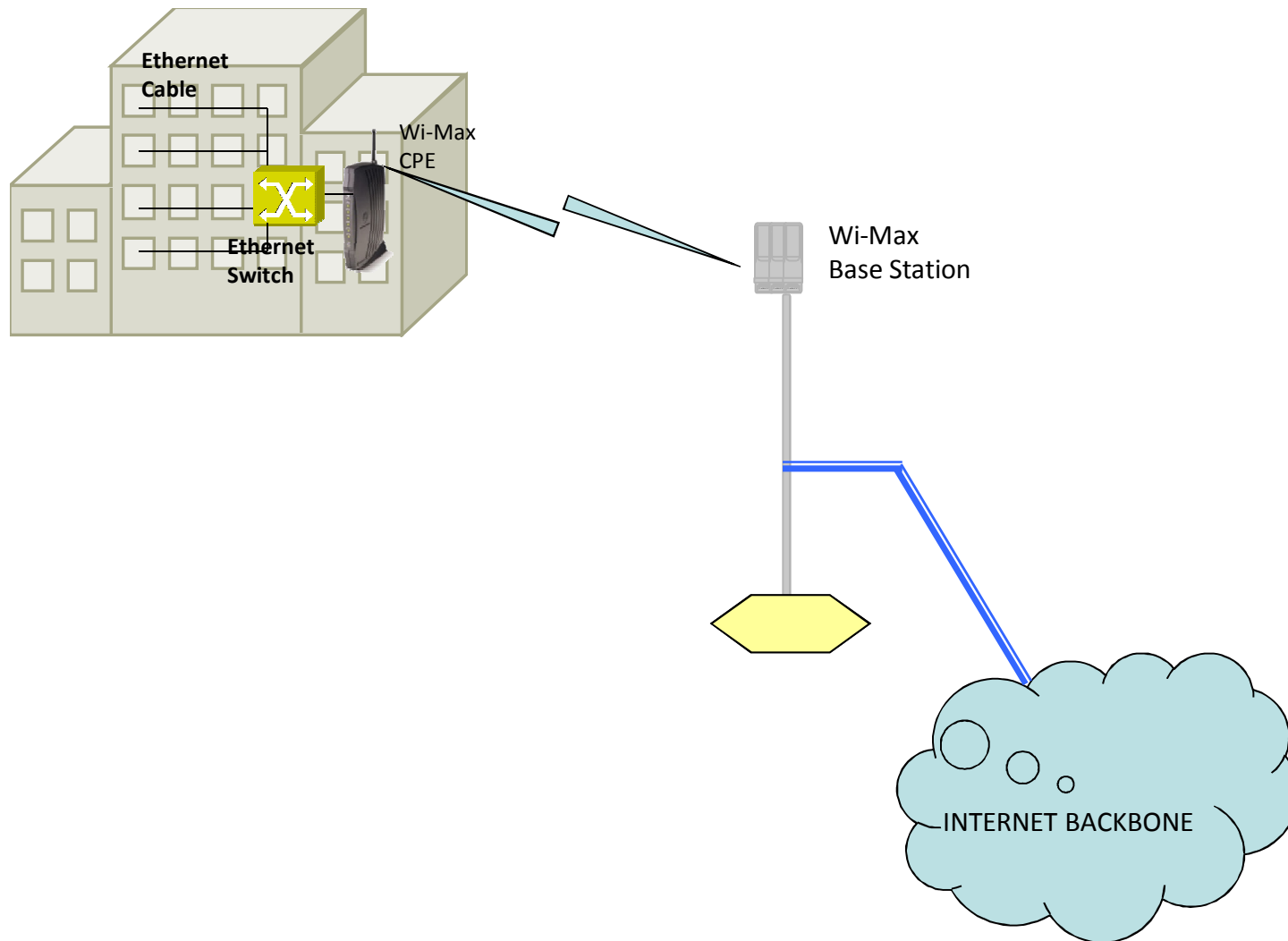
FIG-1



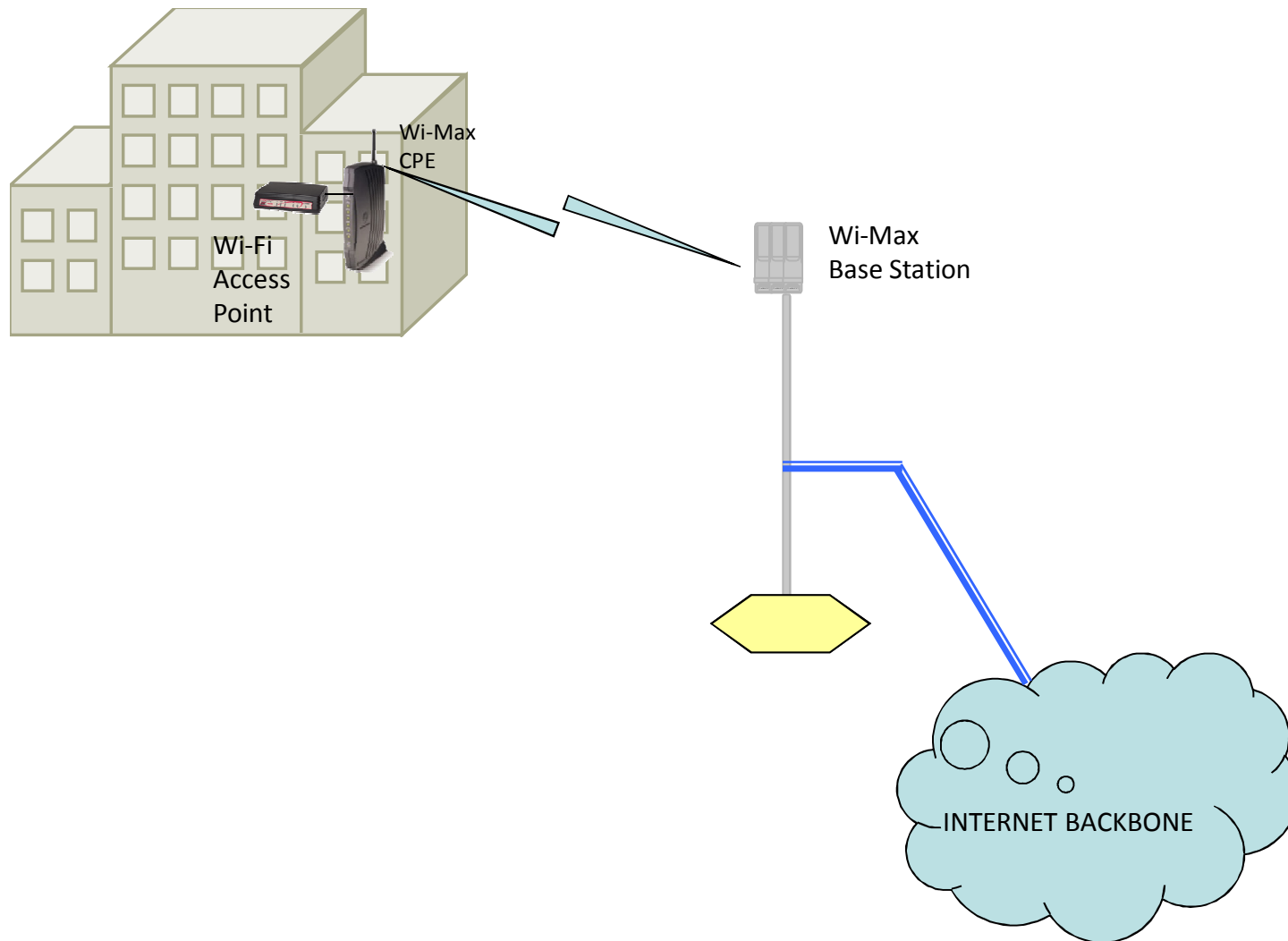
Wi-MAX for providing Wireless Broadband Connection for residential/enterprises customers (including Wi-Fi Hot Spots)



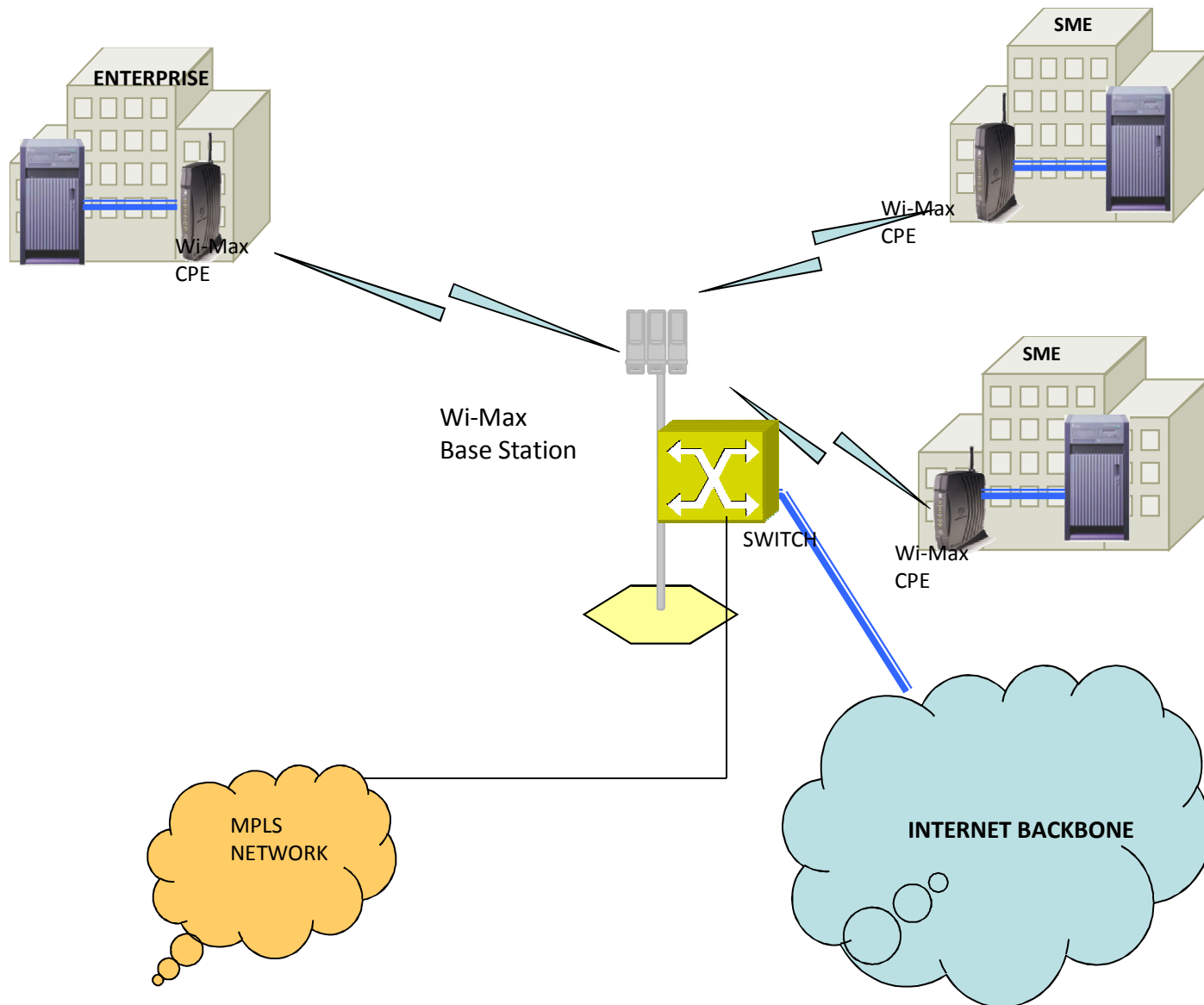
Use of Wi-MAX for Broadband connection for enterprise customers (LAN cases)



Use of Wi-MAX as a backhaul for WI-FI Hot Spots



Wi-MAX for providing MPLS-VPN connectivity



BSNL Wi-MAX deployment strategies



- **Wi-MAX trial project**
- **Deployment in rural areas as project under DIT**
- **Own deployment by BSNL in Punjab and Kerala Circles**
- **Deployment through M/s Soma Network in Gujarat, Maharashtra and AP Circles on revenue sharing basis**
- **In remaining 16 LSAs deployment is through franchisee on revenue sharing agreement basis through EoI**

BSNL trial project

- **BSNL undertook a trial project on Wi-MAX in 2006 by placing order on M/s Motorola.**
- **8 Wi-MAX BTS were installed at Bangalore, Kolkata, Pune, Ahmedabad, Hyderabad, Pinjore, Rohtak and Panipat.**
- **BTS at Pinjore, Rohtak and Panipat were meant for rural applications**
- **120 CPEs were procured for urban and rural applications**

BSNL trial project

- **Customers were allowed to procure own CPEs (Aperto make only)**
- **Frequency spectrum used 3.3 - 3.4 Ghz**
- **Each BTS designed to provide upto 36 Mbps bandwidth**
- **Each CPE could provide up to 10 Mbps speed**
- **BTS to serve upto 30 Km (LoS) and upto 2 Km (non-LoS)**
- **Tariff was same as broadband connection**

Wi-MAX Rural Phase-I Project



- Department of Information Technology (DIT) project for wireless Broadband connectivity to 11666 rural Common Service Centres (CSCs) in 1000 Blocks.
- STP was In-charge for Execution of the Project.
- PO to M/s HCL Infosystems Ltd. for North and East for 592 BTS and core equipment.
- PO to M/s Gemini Communications Ltd. for South and West for 408 BTS and core equipment.
- Supplier's Scope : Supply, Installation, commissioning and Maintenance.
- BSNL to provide Infrastructure like space, power, tower, media etc.
- Services have been launched in phases from Dec'2009 onwards.

Wi-MAX Rural Phase-I BTS Status on 31.03.2011

S. No	Company	BTS Delivered	BTS Installed	BTS Integrated	AT offered	AT done	Circles covered
1	M/s HCL	592	592	585	565	501	AS/JKD/MP/NE-I & II/UP(E) & (W) /WB /CHGR /HR /BR/PB /UTRL/HP/RJ
2	M/s Gemini	408	385	344	320	158	TN/KTK/AP/MH/GJ/OR
	Total	1000	977	829	865	659	

Wi-MAX Rural Phase-II Project

- **6851 BTSs are to be installed to cover 51000 Rural Common Service Centres**
- **Project is funded by DIT**
- **Purchase orders have already been issued to M/s Gemini (for 2707 BTS), M/s ICOMM (for 1357 BTS) and M/s ZTE (for 1718 BTS).**
- **Advance purchase order has been issued to M/s VMCL (for 1069 BTS).**

Wi-MAX Rural Phase-II BTS Status on 31.03.2011

S. No	Company	No of BTS to be Delivered	Delivered	BTS Installed	BTS Integrated	AT offered	AT done	Circles covered
1	M/s Gemini	2707	50	0	0	0	0	PB/HR/RJ/GJ/MH/MP/CHGR
2	M/s ICOMM	1357	678	585	0	0	0	UP(W)/AS/WB/UTRL/KTK/AP/TN
3	M/s ZTE	1718	1498	999	592	0	0	BR/JKD/UP(E)
4	M/s VMCL	APO issued for 1069 BTS in October, 2010						CHTD/OR/HP/NE-I&II/J&K
	Total	6851	2226	1584	592	0	0	

Services to be provided from CSCs



- **Payment of utility bills**
- **Issue of birth certificates**
- **Land records**
- **All applications associated with e-governance projects of State Governments**
- **Video conferencing enabling tele-medicine and tele-education**
- **High speed internet browsing**

BSNL Urban project for Kerala & Punjab



- **PO for supply of 450 BTS awarded to M/s ICOMM under Wi-MAX Urban Project (Kerala)**
- **Wi-MAX services were launched on 27.02.2010 at Ernakulum.**
- **Other parts of Kerala Circle are being covered gradually as per BTS deployments.**
- **PO for supply of 350 BTS awarded to M/s Huawei under Wi-MAX Urban Project (Punjab)**
- **Wi-MAX services were launched on 31.03.2010 in 22 cities/towns of Punjab Circle.**

Urban Wi-MAX BTS Status as on 31.03.2011

S.No	Company	BTS Delivered	BTS Installed	BTS Integrated	AT offered	AT done	Circles covered
1	M/s Huawei	350	346	341	341	333	Punjab
2	M/s ICOMM	450	450	449	449	444	Kerala
	Total	800	796	790	790	777	

Wi-MAX deployment through M/s SOMA Networks



- **Franchise Agreement with M/s Soma Networks for Gujarat, Maharashtra and Andhra Pradesh.**
- **Revenue share Model.**
- **A total of 3,000 Base Stations to be deployed in GJ, MH and AP.**
- **Services launched in Gujarat in January, 2009**
- **Services launched in AP & Maharashtra in April, 2009.**

Franchise Agreements for Wi-MAX



- Franchises agreement signed in Oct/Nov, 2010**
 - **With M/s Teracom for Karnataka, Rajasthan and Bihar Circles**
 - **With M/s Take Solutions for Tamil Nadu, UP (W) and Orissa Circles**
 - **With M/s Starnet for Chennai District and H. P. Circles**
- Revenue share Model.**
- Equipment installation, O & M, Marketing to be carried out by Franchise.**

Franchise Agreements for Wi-MAX



- BSNL to provide power, space, media and Bandwidth.**
- Franchisees are required to launch services after six months of the signing of agreement i.e. April/May, 2011.**
- STP Chennai has floated Expression of Interest (EoI) for West Bengal, Assam, North-East, J & K, Kolkata and M. P. Circles. The bids are to be opened in April/May, 2011.**
- LOI for rollout of Wi-MAX services in Haryana Circle was cancelled.**

Rollout Obligation of Franchisees

Agreements with franchisees are being entered into from time to time. As per agreement, rollout schedule in terms of capacity and number of subscribers is as below for Type “A”, Type “B” and Type “C” circles:-

LSA : Metro or A	CUMULATIVE CAPACITY NUMBERS					
	On the day of Comm. Launch of Services	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
Total Aggregate Capacity	5000	200000	500000	800000	900000	1000000
No of Subscribers Provisioned	0	45000	180000	399000	720000	900000

LSA : B	CUMULATIVE CAPACITY NUMBERS					
	On the day of Comm. Launch of Services	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
Total Aggregate Capacity	4000	160000	400000	640000	720000	800000
No of Subscribers Provisioned	0	30000	120000	270000	480000	600000

LSA : C	CUMULATIVE CAPACITY NUMBERS					
	On the day of Comm. Launch of Services	End of Year 1	End of Year 2	End of Year 3	End of Year 4	End of Year 5
Total Aggregate Capacity	2000	80000	200000	320000	360000	400000
No of Subscribers Provisioned	0	12000	48000	108000	192000	240000

Wi-MAX connections status as on 31.03.2011



- **No. of Wi-Max connections (BSNL): 10702**
- **No. of Wi-MAX connections (SOMA): 3124**
- **Leading Circles for BSNL**
 - Punjab : 4524**
 - Kerala : 3177**
- **Leading Circle for SOMA**
 - Gujarat : 2205**
 - Maharashtra : 667**

Wi-MAX numbering scheme

- **Wi-MAX subscribers are to be identified by 10 digit alpha-numeric number.**
- **The first character to signify the Circle to which subscriber belongs as given in the table on next slide.**
- **The next character would be either B or F, with B signifying BSNL connection and F signifying Franchisee connection.**
- **The next character would be either 1 or 2, with 1 signifying Post-paid and 2 signifying Pre-paid connections.**
- **Next seven characters on position 4 till 10 will be numeric and would represent the unique number allotted to the subscriber.**

Allotment of codes to Circles



Sl. No.	Name of Circle	Alphabet Fixed
1	Andhra Pradesh	A
2	Bihar	B
3	Chattisgarh	C
4	Andaman & Nikobar	D
5	UP(East)	E
6	Jharkhand	F
7	Gujrat	G
8	Haryana	H
9	Himachal Pradesh	I
10	Jammu & Kashmir	J
11	Kolkata TD	K
12	Kerela	L
13	Chennai TD	M
14	North East I	N
15	Orissa	O
16	Punjab	P
17	North	Q
18	Rajasthan	R
19	Assam	S
20	Tamilnadu	T
21	Uttranchal	U
22	West Bengal	V
23	UP West	W
24	Karnataka	X
25	Madhya Pradesh	Y
26	Maharashtra	Z

Wi-MAX Tariff Plans

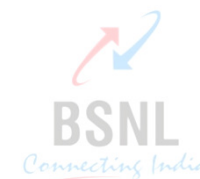
- ❖ **BSNL offers different tariff plans for Wi-MAX users which are as under:-**
 - **CSC Tariff Plans**
 - **Urban Tariff Plans**
 - **Rural Tariff Plans**

CSC Post-Paid Tariff Plans



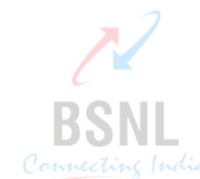
Particulars	WI CSC 400	WI CSC 1000	WI CSC UL 999	WI CSC UL 1500
Bandwidth	512Kbps to 2 Mbps		512 Kbps	512 Kbps
Fixed monthly charges (Rs.)	400	1000	999	1500
Free data usage limit/month	4 GB	8 GB	Unlimited	Unlimited
Usage charges beyond free limit (Rs./MB)	0.60	0.40	NA	NA
Free E-mail IDs and space	One E-Mail ID with 5 MB space			
Security deposit	One month FMC			

Wi-MAX Urban Tariff Plans-I



Particulars	WI 220	WI 350	WI 750	HOWI 999
Bandwidth	512 Kbps to 2 Mbps			
FMC	220	350	750	999
Discounted annual payment option	2200	3500	7500	9990
FMC for I/D & O/D CPE	50	50	50	50
FMC for USB dongle	40	40	40	40
Free usage/month	400 MB	1 GB	4 GB	Unlimited
Usage charges beyond free limit (Rs./MB)	0.80	0.80	0.80	NA
Free E-mail ID/space	1/5 MB	1/5MB	1/5 MB	2/5 MB
SD	One month FMC			

Wi-MAX Urban Tariff Plans-II



Particulars	BUWI UL 1999	BUWI UL 3500	BUWI UL 7000	
Bandwidth	512 Kbps-2 Mbps	1 Mbps	2 Mbps	
FMC	1999	3500	7000	
Discounted annual payment option	19990	35000	70000	
FMC for I/D & O/D CPE	40	40	40	
FMC for USB dongle	30	30	30	
Free usage/month	Unlimited	Unlimited	Unlimited	
Usage charges beyond free limit (Rs./MB)	NA	NA	NA	
Free E-mail ID/space	4/5 MB	2/5MB	2/5 MB	
SD	One month FMC			

Wi-MAX Rural Tariff Plans-I

Particulars	Rural USO 140	Rural USO 210
Bandwidth	256 Kbps	256 Kbps
FMC	140	210
Download/Upload limit	4 MB	1 GB
Usage charges beyond free limit (Rs./MB)	0.60	0.60
FMC for rent of CPE	220 for Indoor, 260 for Outdoor, 150 for USB	

Wi-MAX Rural Tariff Plans-II

Particulars	Unlimited Wi-MAX 256 Kbps
Bandwidth	256 Kbps
One time installation charges	Rs. 750
FMC	1000
Discounted annual payment option	100000
Free E-Mail IDs/space	2/5 MB
Download/Upload limit	Unlimited
Security deposit	One month FMC

Wi-MAX Pre-paid Tariff Plans



BSNL has introduced Wi-MAX pre-paid tariffs plans which are :-

- **Volume based prepaid recharge vouchers for unlimited speed**
- **Top up vouchers for volume based plans**
- **Validity vouchers for volume based plans**

Conclusion

- **Wi-MAX is a promising Broadband Wireless Access technology.**
- **BSNL has got a head start and should capitalise on it.**
- **After completion of auction of BWA spectrum recently, other operators will start rolling out broadband services soon.**
- **BSNL has to gear itself for facing stiff competition ahead.**

