



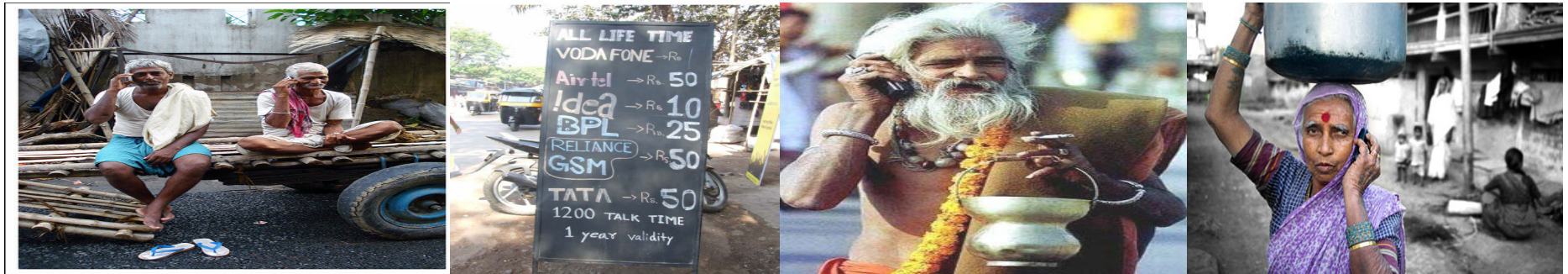
Integrated approach to Cell Tower infrastructure Management

Sanil Nambiar
Solution Consultant, IBM India / South Asia

Telecom Infrastructure : More than just a business ...



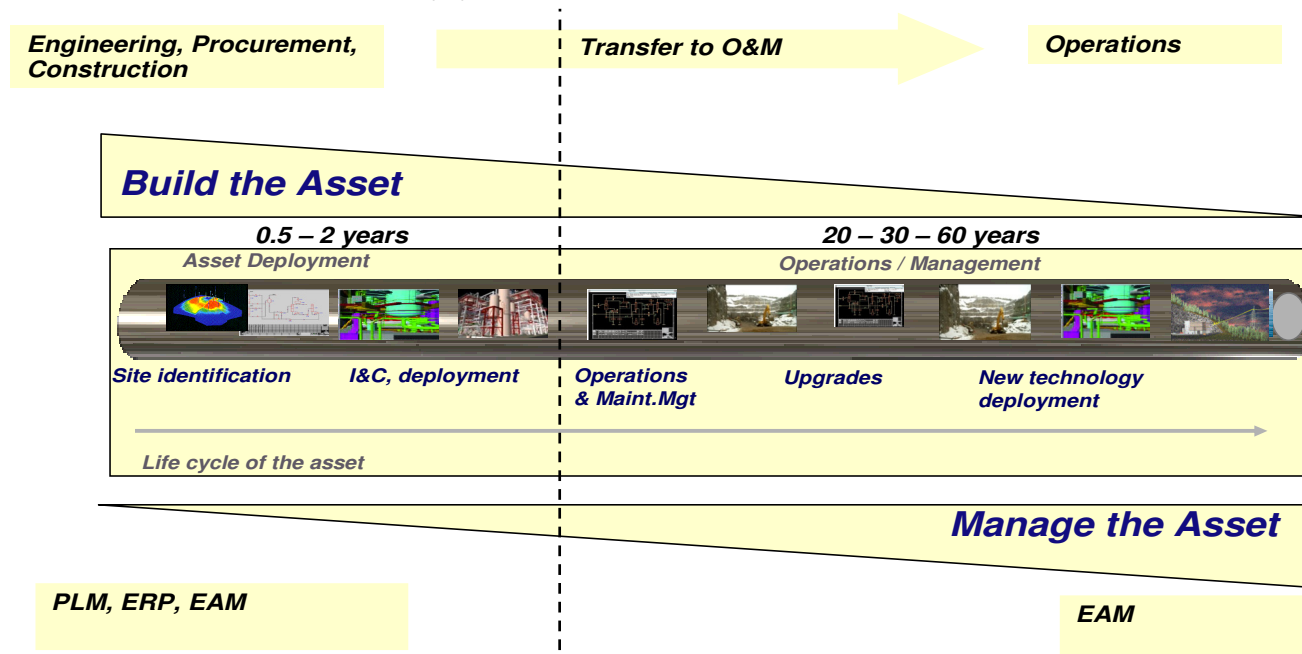
- Makes communication available and affordable for the masses
- Makes Telecom service providers profitable despite low tariffs
- Bridges the rural-urban divide
- The largest Tower infra operator in India manages 100,000 towers over 200,000 sq km of area, with <4 hours of EB supply in rural areas, and a distributed workforce of 30,000 people





Overview

- Telecom infrastructure is an asset-intensive business
 - Lifecycle : Asset deployment, followed by provision of **space, power** and **services** to customers (internal or external) over many years



Common Characteristics



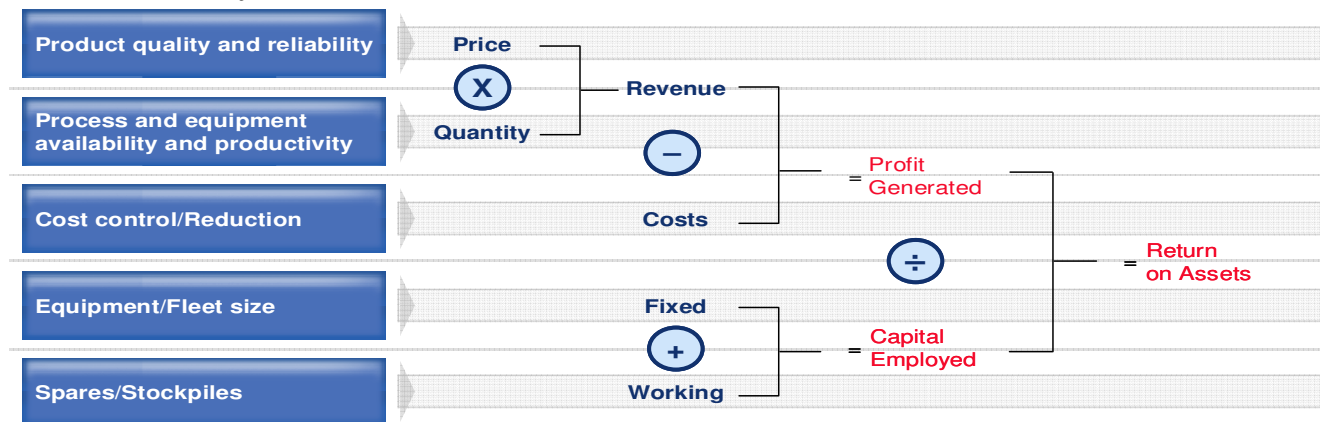
- Capital-intensive “build” phase, followed by long “run” (operate & maintain) phase
 - **Build** : Site Acquisition (ground / roof sites), Planning (Coverage), Procurement and Installation (power and Telecom equipment)
 - **Run** : Maximize tenancy (= asset utilization), Minimize opex to run / maintain sites (manpower, energy = Grid / Battery / Diesel)
 - Business performance is a function of capex and opex productivity
- Tight cash flows require low, predictable opex over a long term
- Large number of distributed assets – require advanced automation for remote management
- Critical dependency of core Business processes on IT
 - Site Acquisition
 - Opportunity to Order
 - Procure to Pay
 - Stock to Build
 - Order to Cash (Billing)
 - Deploy to Retire (Asset Lifecycle, Corrective/Preventive/Predictive Maintenance)
 - Governance, Risk and Compliance





Key business performance drivers

- Capex productivity
 - Asset Lifetime and performance
 - Tenancy (if Applicable in future)
- Opex productivity
 - Energy and fuel
 - Labor
 - Spares and inventory



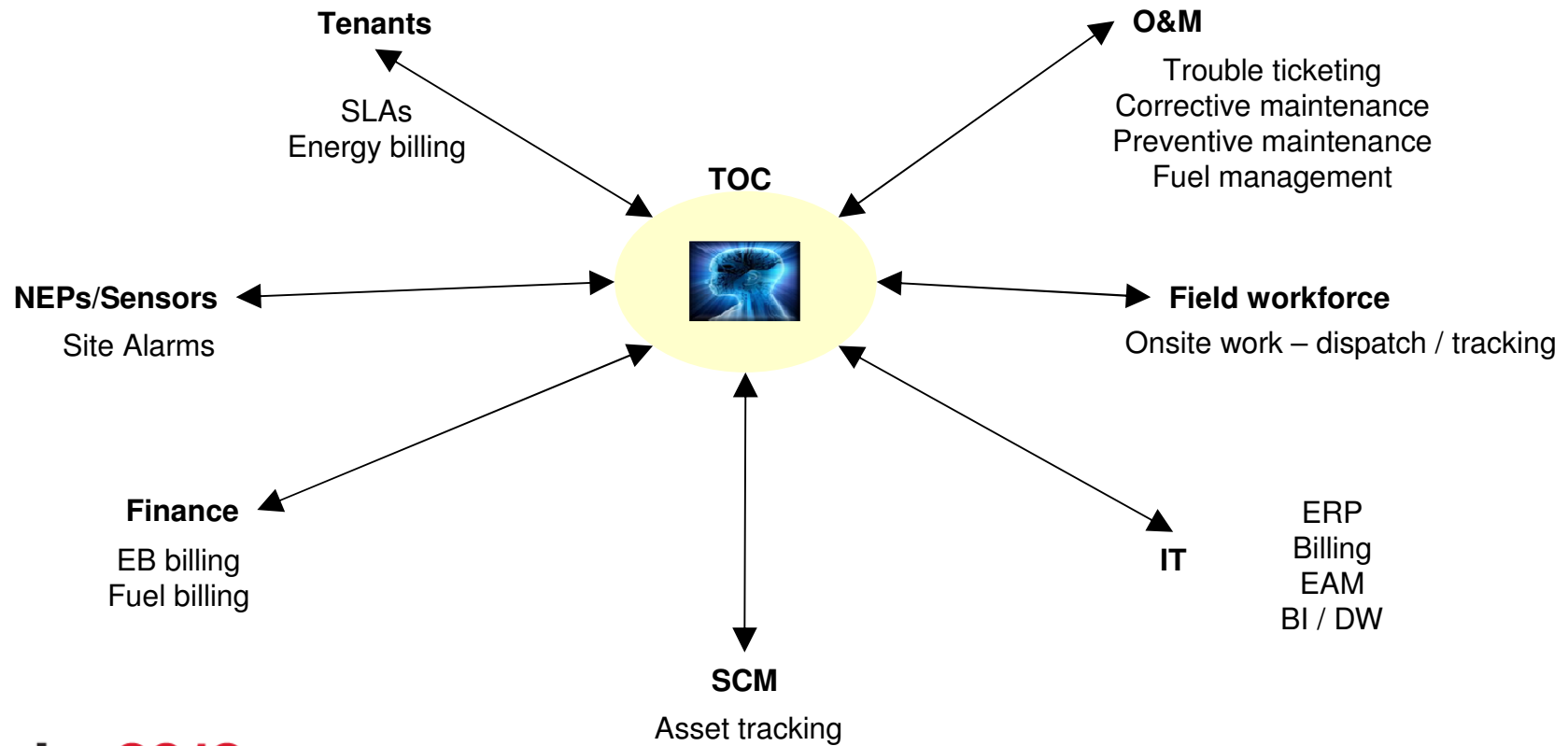


Tower Management PoV

- IBM's tower management solution **explicitly** supports the tower operator's business goals –
 - Empowers the Operator through participation across the entire lifecycle – web-based 24X7 monitoring, reporting, site finding, project tracking, billing, payments
 - Lowers manpower and energy opex – enabling competitive Cell site /Tower operations
 - Proactive / Preventive management – enabling offering of tighter SLAs
 - Centralized management and control over remote assets and workforce

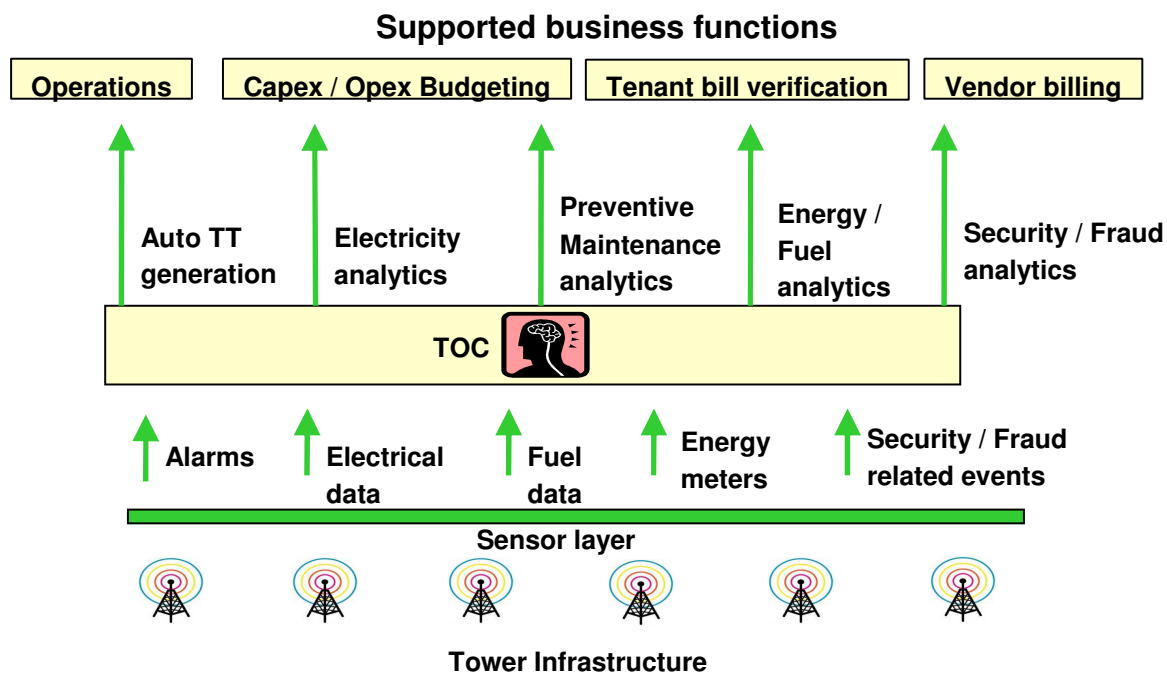
With significant deployment experience and pre-built assets, IBM is uniquely positioned to deliver value in the shortest timeframe

TOC (Tower Operations Centre) is at the heart of operational transformation

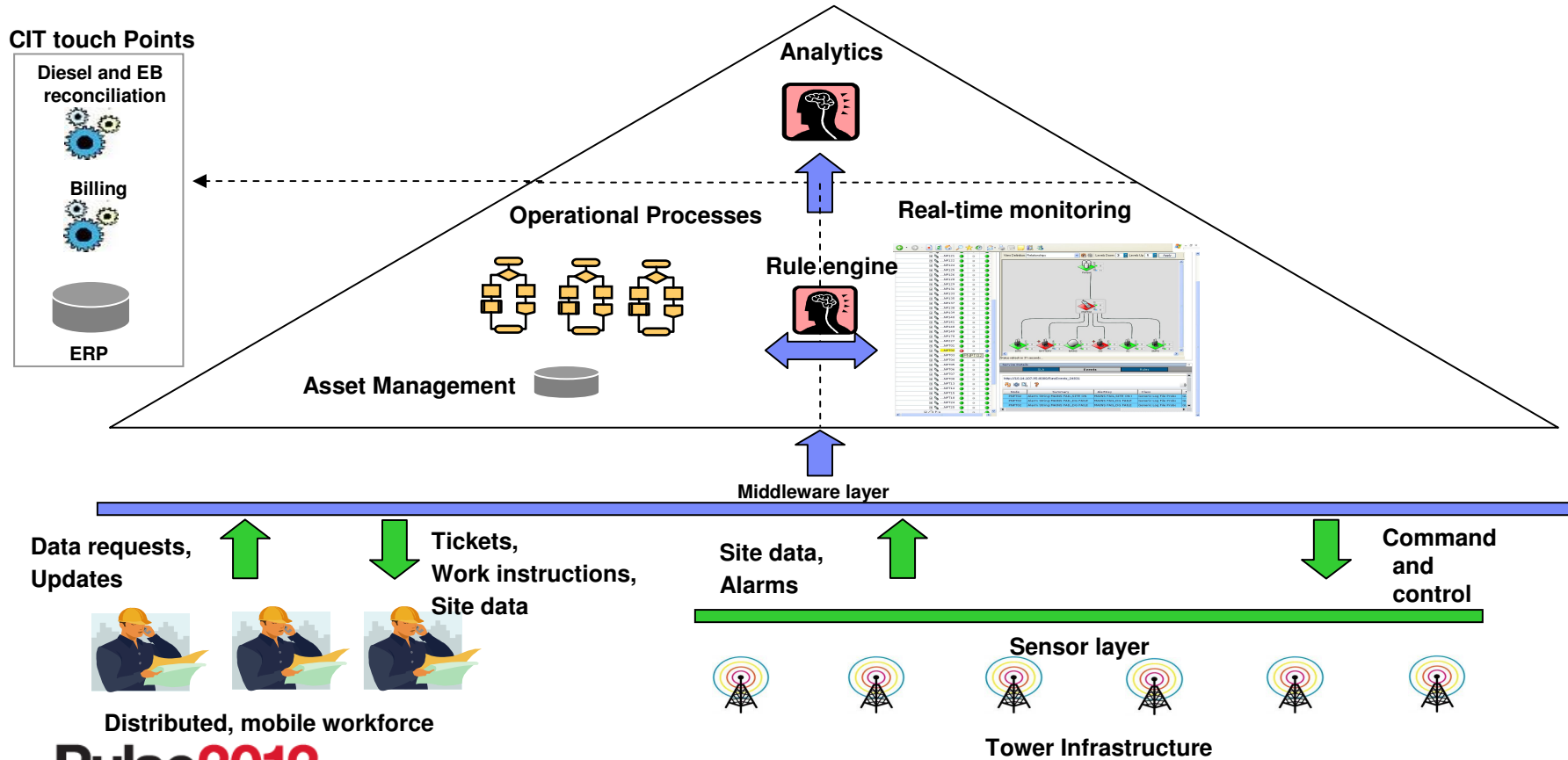




TOC in the business process ecosystem



High-level solution architecture



CIT touch Points

Diesel and EB reconciliation

Billing

ERP





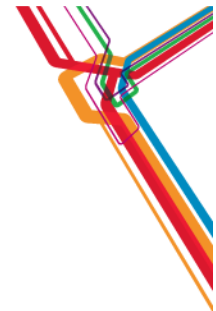
Large Indian tower operator

- Rolled out in 11 circles, with centralized NOC in Gurgaon. About 12,000 of 30,000 towers instrumented
- Live, multi-modal data acquisition from towers
 - **Sensor data over SMS, GPRS, OSS (Nokia, Ericsson)**
 - ~ 2 million alarms per day

***Massive volume of data, not suitable for manual operations !
Requires system intelligence and process automation***

- Rule engine, the “brain” of TOC, converts raw data into actionable intelligence
 - System's rules are effective - only about 6,000 alarms are determined to be actionable
 - About 210,000 tickets are created in a month => Less than a ticket a day at a given site
- Complete infrastructure asset inventory
- OSS and Sensor data drives O&M





Unified Site Dashboard

Unified View

Contacts	Name	Mobile No.	Email
OnM Head	Palash Chandra Ray	995-89-85245	palashuray@bharti-infra.tel.in
ZTM	Prabhat Kumar	995-89-89634	prabhat.kumar@bharti-infra.tel.in
Cluster Incharge	Mithun Saha	995-89-85266	Mithun.Saha@bharti-infra.tel.in
Technician	Lakshya Kalai	995-7882688	---
Guard	---	---	---

Site Status | Alarm history | Tickets

Site Availability

Passive Infra	●
Active Infra	●
Active Infra(Anchor)-OSS	●
BTS Opco-1	●
0.0	
BTS Opco-2	●
0.0	
BTS Opco-3	●
0.0	
BTS Opco-4	●
0.0	

Power Availability

Mains: ON

DG: OFF

Battery: ●

Battery Low: ●

Temperature: 31.9

Power Alarms

Mains	DG	Battery	Rectifier
Mains State: ●	DG ON(DG) DG OFF (G): ●	Site on Battery: ●	Rectifier Fail: ●
PIU Restart: ●	DG Fail Start: ●	Battery Fuse: ●	Rectifier Off: ●
PIU Manual Mode: ●	DG Fail Stop: ●	Low Battery Voltage: ●	Load Fuse: ●
Mains Low: ●	Fuel State: ●	Sensor Disconnect: ●	
	DG Fault: ●		
	LLOP Fault: ●		

Channelwise DC Energy Consumption Profile

	Opco1	Opco2	Opco3	Opco4
Channel 1	1813.5	0.3	4287.5	0.4
Channel 2	0	0	0	0
Channel 3	0	0	0	0
Channel 4	0	0	0	0
Total	1813.5	0.3	4287.5	0.4

Other Alarms

Communication	Environment
PIU Communication: ●	Door State: ●
IO Communication: ●	Door State Chiller: ●
DCEM1 Communication: ●	High Temperature: ●
DCEM2 Communication: ●	High Temperature Chiller: ●
DCEM3 Communication: ●	Fire and Smoke: ●
DCEM4 Communication: ●	A/C: ●
ACEMDG Comm: ●	Both A/C: ●
ACEMEB Comm: ●	

Meter Readings

	Mains	DG	Battery
KWH	4486	3742	-
Run Hrs	4982.4	1721.4	3831.4
voltage1	0	0	49.6
Voltage2	0	-	-
Voltage3	0	-	-
Frequency	0	0	-
Current	0	-	-
LCH1	0	-	-
LCH2	0	-	-
LCH3	0	-	-
Fuel Level	-	90	-

*Note: Red ● means problem and green ● means normal



PLEASE RATE THIS SESSION VIA THE PULSE 2012 MOBILE CONFERENCE GUIDE!

HTTP://PULSE2012.MOBI
username: <your email address>
password: pulse2012

Each session you rate gives you
an additional entry into the Pulse prize draw!

The winner will be announced during the conference close on Friday.





Major Prize – Stay Connected Total RRP \$2K

Samsung Galaxy Tab 8.9 4GB
Approx Cost: \$840



Magic Cube – virtual keyboard
Approx cost \$168



Navman MY85XLT In-Car GPS
Approx Cost: \$216



Jabra Freeway Handsfree Car Kit
Approx Cost: \$129



Olympus TG-320 Tough Digital Camera Red
Approx Cost: \$242



Tivoli model three platinum radio
Approx Cost: \$499.00





Trademarks and disclaimers

© Copyright IBM Australia Limited 2012 ABN 79 000 024 733 © Copyright IBM Corporation 2012 All Rights Reserved. TRADEMARKS: IBM, the IBM logos, ibm.com, Smarter Planet and the planet icon are trademarks of IBM Corp registered in many jurisdictions worldwide. Other company, product and services marks may be trademarks or services marks of others. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml

The customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer.

Information concerning non-IBM products was obtained from a supplier of these products, published announcement material, or other publicly available sources and does not constitute an endorsement of such products by IBM. Sources for non-IBM list prices and performance numbers are taken from publicly available information, including vendor announcements and vendor worldwide homepages. IBM has not tested these products and cannot confirm the accuracy of performance, capability, or any other claims related to non-IBM products. Questions on the capability of non-IBM products should be addressed to the supplier of those products.

All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Some information addresses anticipated future capabilities. Such information is not intended as a definitive statement of a commitment to specific levels of performance, function or delivery schedules with respect to any future products. Such commitments are only made in IBM product announcements. The information is presented here to communicate IBM's current investment and development activities as a good faith effort to help with our customers' future planning.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

Prices are suggested U.S. list prices and are subject to change without notice. Starting price may not include a hard drive, operating system or other features. Contact your IBM representative or Business Partner for the most current pricing in your geography.

Photographs shown may be engineering prototypes. Changes may be incorporated in production models.

