LEVERAGING FULL BAND CAPTURE TO IMPROVE THE CUSTOMER EXPERIENCE AND OPERATIONAL PERFORMANCE

Jon Schnoor
Director Advanced Solutions Engineering
Ubee Interactive

Christine Fiske
VP Technology Solutions
Profusion Analytics
Agenda

- Introduction
- FBC: The What/How/Why
- New Capabilities
- Advanced Diagnostics
- Business & Operational Intelligence Possibilities
- Predictive Analytics
- Benefits of FBC
- Conclusion
FBC – The What

- Captures the entire DS spectrum at the CPE
  - Digitizes the RF spectrum
  - Non-service impacting to the customer
- Eliminates traditional analog tuner concept
- Any channel for any service
- Delivers spectrum analysis at the CPE
  - In-chip memory and HW provide processing for SA
  - SA data used locally or remotely via SNMP
FBC – The How

- Front-end digital tuner captures entire DS spectrum (54-1002 MHz)
- Digital tuning replaces traditional tuner concepts
- Converts the analog signal to a digital signal for advanced data processing

Then  Now
FBC – The Why

- Service deployment flexibility
- Digital signal enables advanced signal processing techniques
- Overcomes limitations of existing analog CPE designs
- Reduces cost of implementation, power requirements and design footprint
- Full spectrum capture and analysis of DS signal
New Capabilities

- FBC Chipsets can facilitate improved service reliability and QoS for your subscribers
- Visibility into full spectrum, including the video frequencies, enables:
  - Non-intrusive, actionable, remote spectrum analytics not previously available
  - Preemptive, noninvasive troubleshooting of RF issues
  - The establishment of empirical data regarding node health for the full forward spectrum
Advanced Diagnostics

- Spectrum data throughout the network
- Construct spectral maps of the access network
- Real-time RF capture to facilitate immediate, intelligent decisions
- Proactive, targeted problem resolution
Business Intelligence Possibilities

Sample spectrum reports for your internal support teams and executives:

- Intraday node status based on spectrum health for one or all three lines of business. CEA status can also be provided for video spectrum
- Corrected/Uncorrectable Packet Errors by node and device type
- Overall BER, MER, SNR, Channel Equalization etc.
- 24 hour, weekly, and monthly network availability uptime based on empirical knowledge/spectrum variances
- Firmware deployments & potential impacts can be tracked and reported on
Operational Intelligence Possibilities

Device Signature Profile + Daily Spectrum Triangulation = Operational Intelligence:

- Detailed spectrum variance alerts in deployed devices when compared back to the baseline device & birth certificate
- Analysis of recurring problems with certain modem models or firmware
- Understanding of LTE interference that may drive FCC fines
Operational Intelligence Possibilities

**Spectrum Health Status by Product** - Variances can be displayed geographically by customer type – residential, MDU or commercial and by line of business – video, internet, telephony

- Graphical readouts of the spectrum can be provided to assist with troubleshooting customer impacting issues
- Recommended solutions can be provided to minimize time to repair
Predictive Analytics

Live Customer Modem Spectrum Analysis

Comparison to Variance Catalog in DW

Match to Resonant Peaking

Proactive Alert to Engineering & Tech Ops

Identify Variance At Inception
Benefits of FBC

- Reduction in board footprint
- Increases ability to support industry performance requirements
- Increases ability for data processing & analysis
- Overall power requirements are reduced
- Deployment flexibility for Operators
Benefits Continued

- Evolution from a service centric to a customer centric approach
- Empirical data regarding node health for full forward spectrum
- Remote analysis/troubleshooting of spectrum for all HHP
- Increased service reliability, decreased truck rolls and calls into the call center
- Performance baselines and trend monitoring
Conclusion

- Implementation of front-end digital tuners can facilitate the capture of downstream spectrum.
- Proactive RF analysis can detect physical problems to reduce service calls and improve service reliability.
- The use of spectrum analytics can help preemptively identify and address full band spectrum variances.
- Reduce costs, increase operational performance and increase customer satisfaction.
Jon Schnoor  
Director Advanced Solutions Engineering  
Ubee Interactive  
jon.schnoor@ubeeinteractive.com  
303-539-8253

Christine Fiske  
Profusion Analytics  
cfiske@profusionanalytics.com  
303-952-4917