



ODEN T - Value Proposition

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ODEN-T: Use Cases and Value Proposition

- **Limited RF Spectrum** - Companies spend billions for lease rights
 - ODEN T improves RF spectrum efficiency by 40% average
 - ODEN T adds value through increased customers over existing RF spectrum
- **Increasing data traffic** – Demand for more data and media content
 - ODEN T provides downlink performance value
 - ODEN T increases revenue through improved Quality of Experience (QoE) with reduced handset wait times
 - ODEN T retains optical clarity at the handset
 - ODEN T supports the video demands of larger screen formats entering the consumer market
- **Reduced service coverage** – Areas of low signal strength
 - ODEN T increases revenue through media access in areas of reduced service coverage.
 - ODEN T improves the customer cellular experience



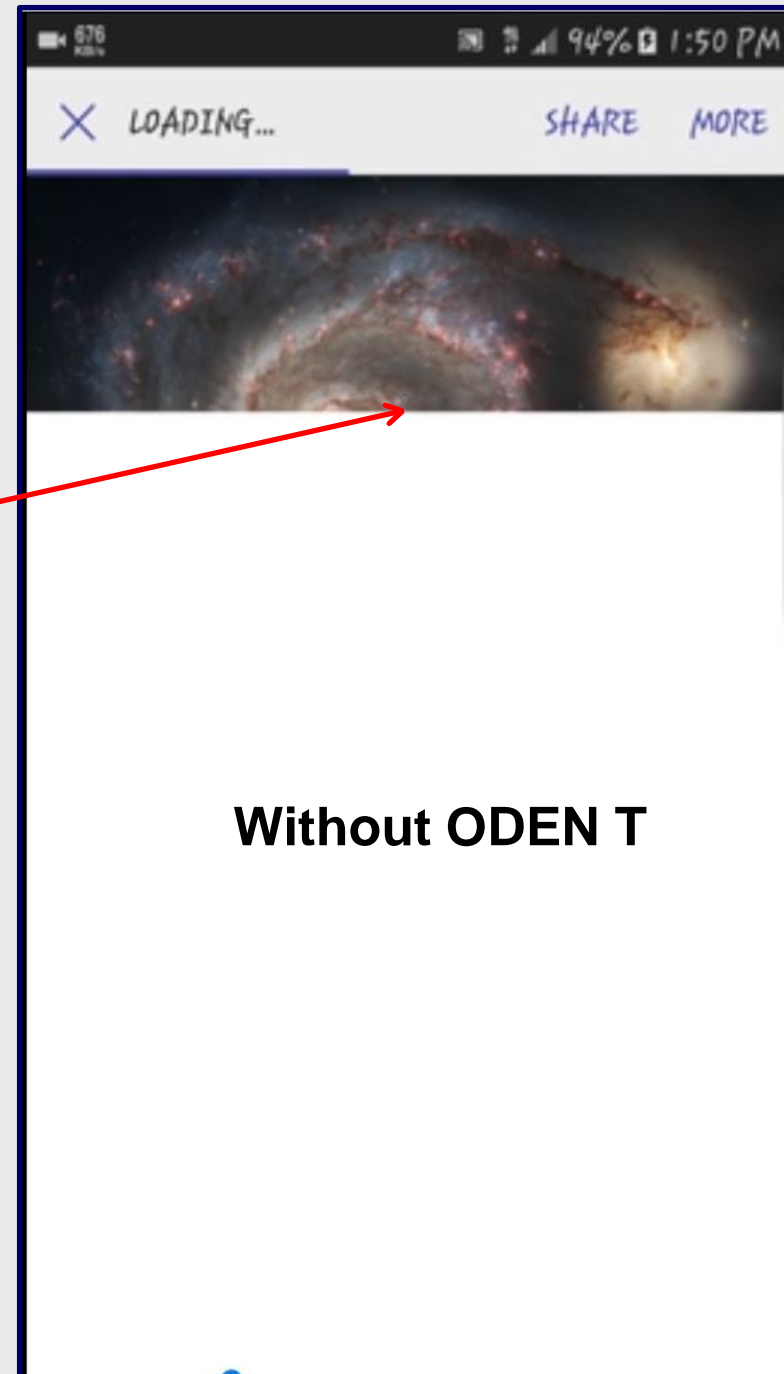
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ODEN-T: Demonstration of 40.7MB NASA Data File

- 40.7MB JPEG NASA Image —comparison of “without” and “with ODEN T”

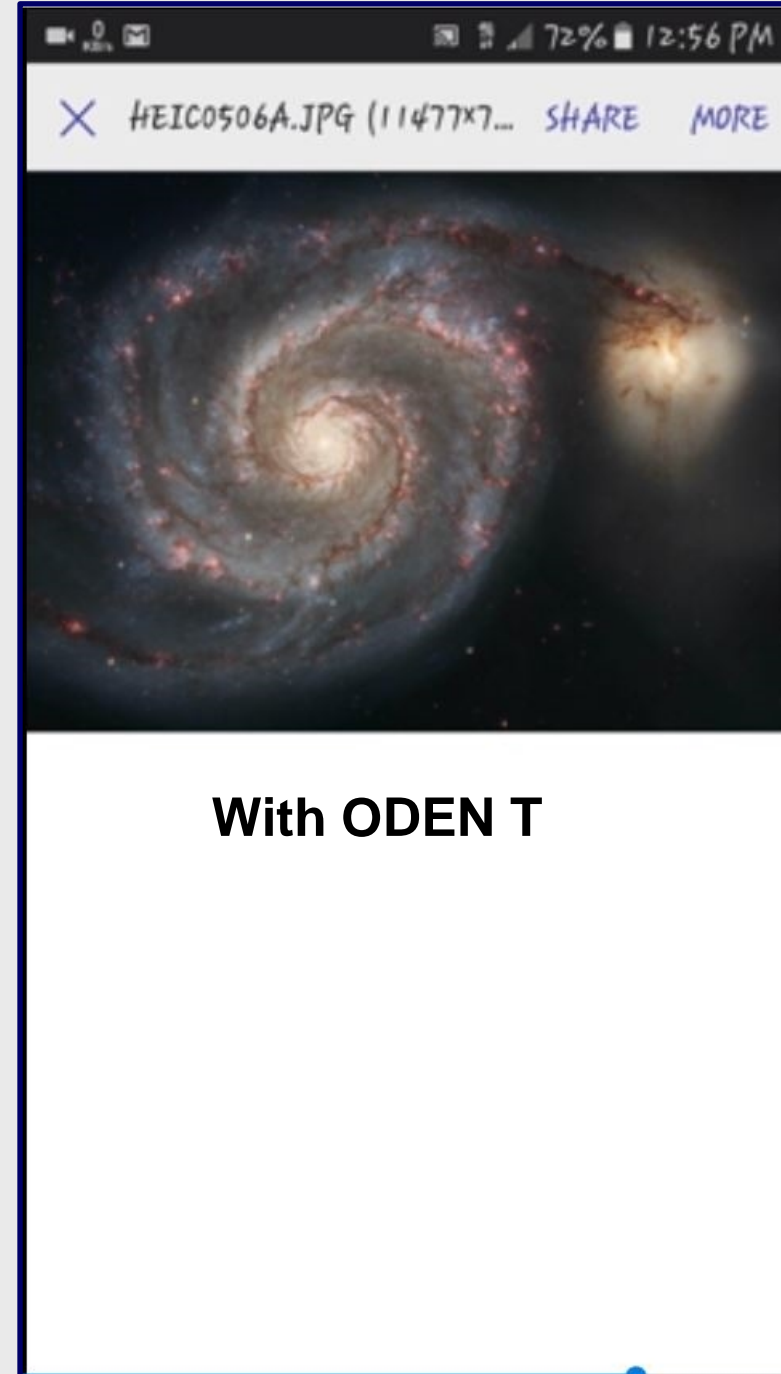
WITHOUT ODEN T

- File Size = 40.7MB
- At time 28 seconds, less than 40% of image displayed
- Total time to display image is 70 seconds



WITH ODEN T

- File Size = 2MB
- Total time to display complete image is 28 seconds
- Compression ratio = 14.5 to 1
- Compression savings = ~95%



- Galaxy S7 Android phones – comparison shows:
 - Reduction of file size and RF spectrum savings
 - Reduction of handset wait time
 - Optical clarity retained

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ODEN-T: Demonstration of 40.7MB NASA Data File (LIVE)

ODEN-T Demo Video Available on
<https://Timmes.com/tests>



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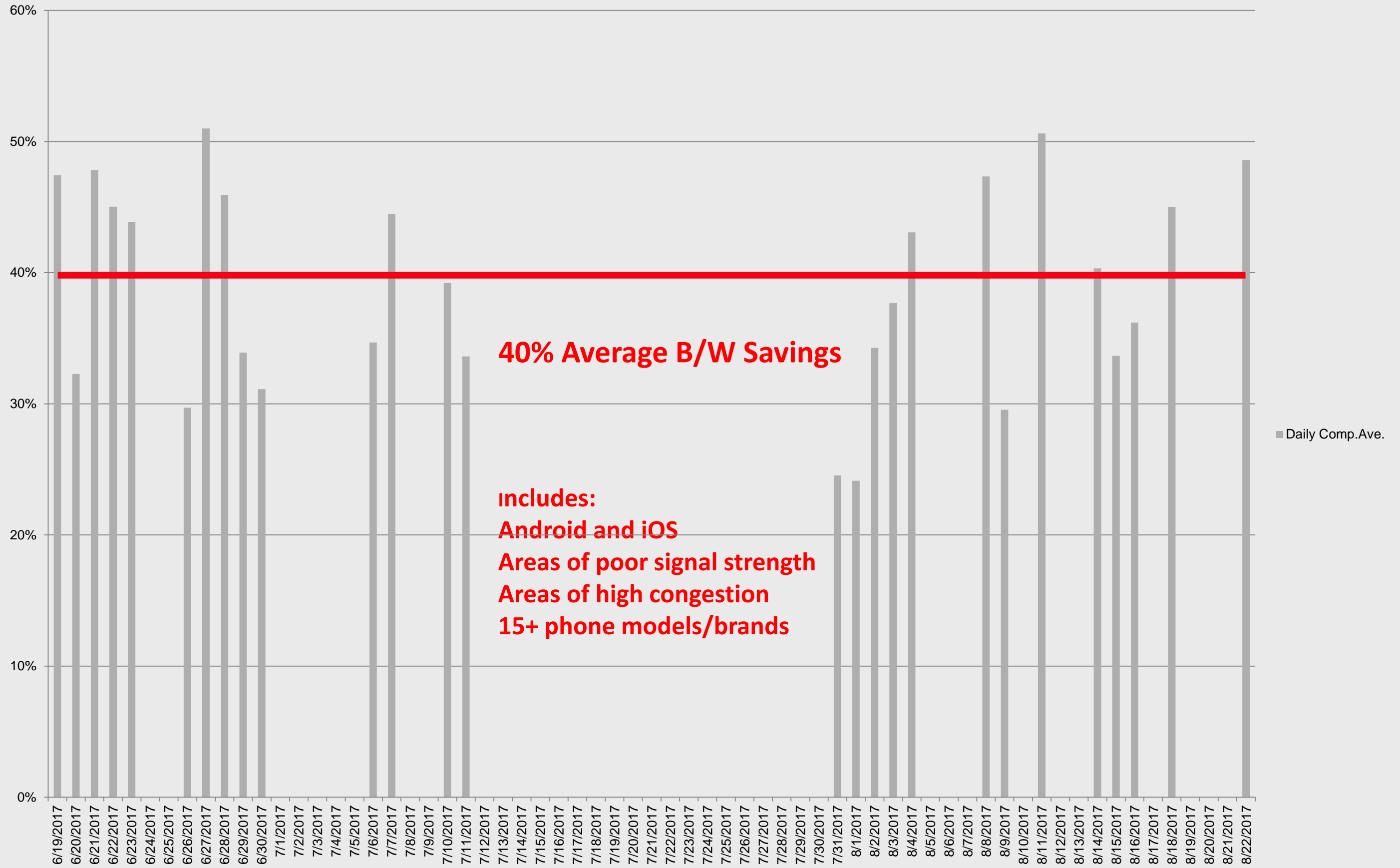
ODEN-T: Key Value Elements

- Improves efficiency of data transmitted over the RF spectrum
- Compatible with all mobile commercial operating systems including Android and iOS
- Benefits all downlink cellular data connections, most impactful on 3G and below networks
- Provides improved performance on Android and iOS devices
- Configuration of smart phones is easy
- ODEN T can be deployed either through cloud based server or a local server at TELCO's Network Operations Center (NOC)
- ODEN T usage data will be provided for the billing process

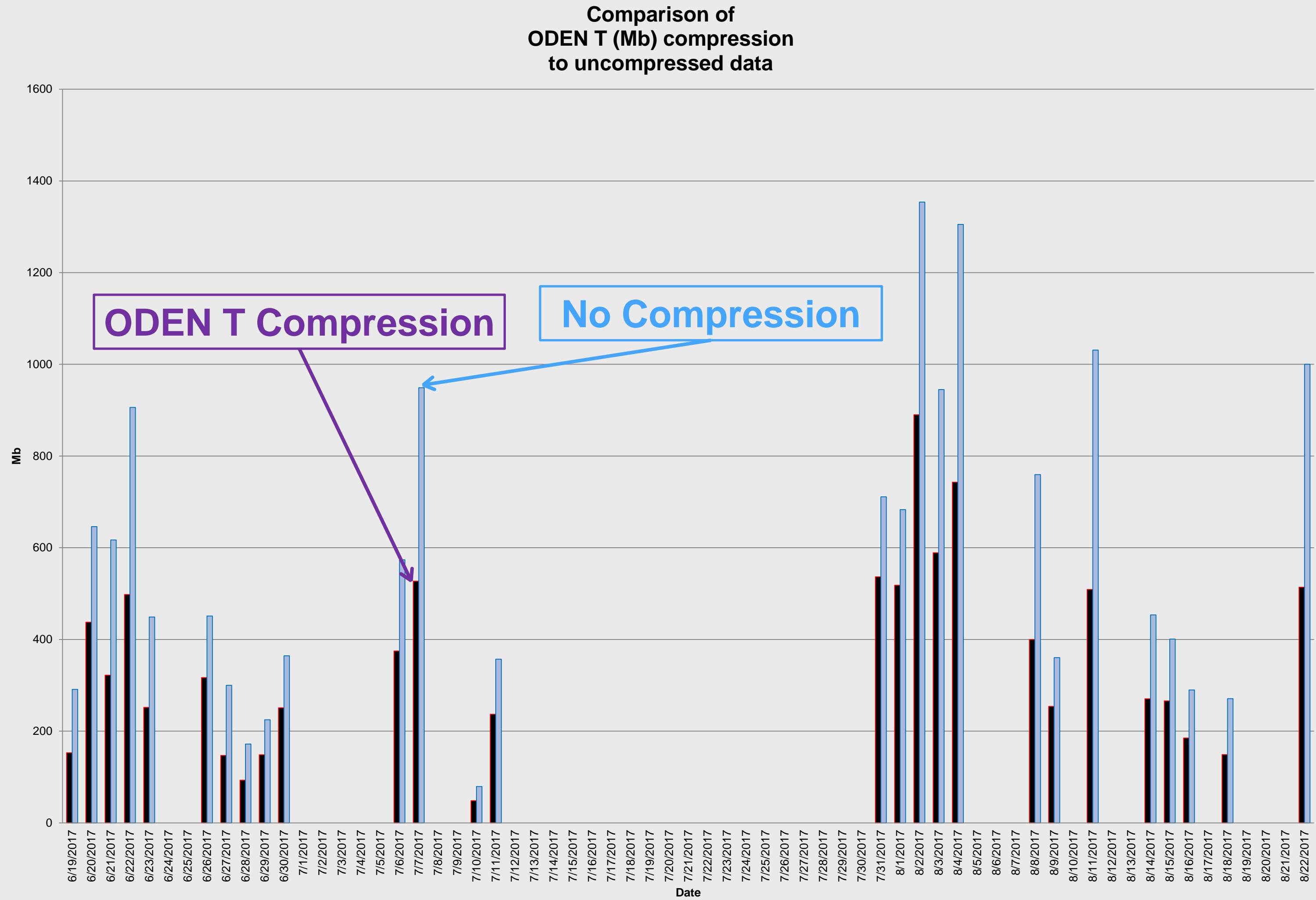


ODEN T: Beta Test Compression Savings (06/19/17 to 08/16/17)

Daily Compression Average



ODEN T: Comparison of ODEN T (Mb) to uncompressed data (06/19/17 to 08/16/17)



ODEN-T: Summary of TELCO Beta Test Results

- Improve efficiency of data transmitted over RF spectrum and bandwidth
 - Result: ODEN T average RF spectrum savings 40%
 - Results: Facebook 59%, YouTube 35%, and Instagram 35%
- Improve Performance in Reduced Service Areas
 - Result: ODEN T phone is always faster, phone w/o ODEN T timed out
- Improve Performance in Low Signal Strength Areas
 - Result: ODEN T phone is always faster, phone w/o ODEN T timed out
- Improve Performance in Highly Congested Areas
 - Result: ODEN T phone is always faster,
- Reduce Handset Wait Times, QoE, for Downloads
 - Result: ODEN T is faster
- Retain optical clarity of compressed Images and Videos
 - Result: Image quality is the same with ODEN T compression compared to phones without ODEN T. There is no difference when comparing with ODEN T and without ODEN T
- Demonstrate Performance with Android and iOS O/S
 - Result: Both Android and iPhone with ODEN T worked perfectly

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ODEN-T: How It Works

- The ODEN T server is a proxy.
- ODEN T compresses the data returned while proxying the request for the handset.
- ODEN T can be hosted on a local server, typically inside the NOC security enclave, or in the Cloud.
- Handset configuration is easily completed via a web link, over-the-air, or at point of sale.



ODEN-T: Financial Considerations

- **Cost Benefit Analysis (CBA)**
- **Return on Investment factors to consider**
 - Telecom Billing Method
 - ✓ Prepay or Post pay or combination
 - ✓ TIMMES will provide the telecom and billing information
- **Summary** - More revenue, less bandwidth used, and increased customer satisfaction.

ODEN-T: ODEN-T Fielding at TELCO NOC

➤ ODEN T Server Installation

- ✓ TIMMES provides and installs a local ODEN-T server at TELCO designated NOC.
- ✓ Server, software, and licensing expenditures are responsibility of TIMMES.
- ✓ ODEN-T server connectivity is provided via two ports ; one routable to the internet and one to receive requests forwarded to the ODEN-T server. .
- ✓ TELCO certifies the stability of electrical connections, power, rack space, and environmental requirements.

➤ ODEN T Training for TELCO - ODEN T requires minimal training.

- ✓ TIMMES' personnel will remain on-site during installation/network testing.
- ✓ TELCO personnel will assist in ODEN-T installation and configuration.
- ✓ TIMMES will conduct a “train the trainer” program, establish a 24X7 support service, provide assistance and subject matter experts to create marketing documentation, and assistance during the introduction period.

➤ ODEN T Acceptance by TELCO

- ✓ Prior to ODEN-T team departure, a formal ODEN-T acceptance agreement between TIMMES and TELCO will be completed to certify ODEN-T is fully operational within the TELCO cellular network.



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ODEN-T: Summary

- ODEN-T improves the efficiency of data across existing bandwidth and RF spectrum
- ODEN-T is the only cellular data compression and transport technology that offers increased performance across all cellular technologies including 2G, 3G, 4G networks
- ODEN-T provides cellular service providers increased revenue through the efficient use of the RF spectrum and access to more subscribers
- **ODEN-T is proven and ready for operations!**



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TIMMES CONFIDENTIAL

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