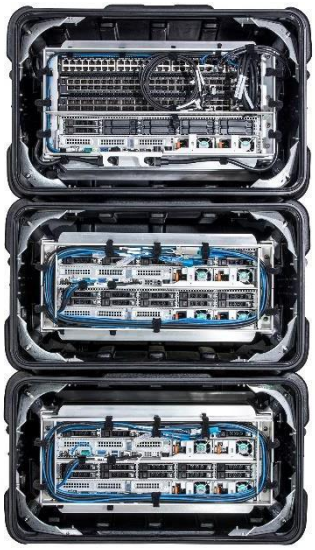
DELL Technologies

Spec Sheet



Dell EMC Tactical Azure Stack Hub

Go from on-premises to the edge

Overview

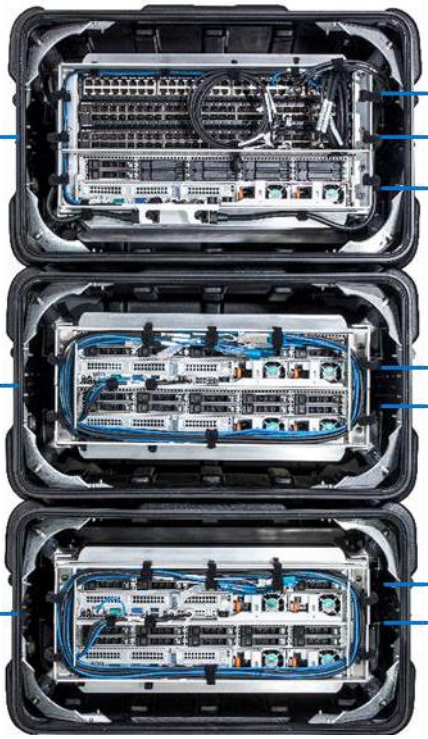
Dell EMC Tactical System for Microsoft Azure Stack Hub (“Tactical Azure Stack Hub”) is the first hybrid cloud platform that is designed to deliver Azure Stack Hub capabilities beyond the data center to tactical, remote, and harsh environments. It provides a familiar and consistent experience for deploying and managing Azure-based services in the field and enables a wide range of use cases for government, military, energy and mining applications. Tactical Azure Stack can also be used in forward deployments and mobile environments in marine, aerospace and other demanding conditions, with or without network connectivity.

For cloud operators, developers and tenants, there are no differences between Tactical Azure Stack Hub and Azure Stack Hub deployed on premises. Dell Technologies’ industry-exclusive patch and update capabilities, hardware lifecycle management, and our service and support are all consistent, whether you’re running in an established data center or in a harsh, mobile, or forward deployed environment. This solution also incorporates integration with Isilon, CloudLink, and Dell EMC's Data Protection portfolio. We’re ready to support you in every stage of your hybrid cloud journey with one call to Dell Technologies for service and support of the entire stack.

Developed and fully engineered through our exclusive partnership with Tracewell Systems, Tactical Azure Stack Hub is based on Dell EMC PowerSwitch networking switches and PowerEdge servers, and Tracewell’s expertise in ruggedized systems. Its core components are identical to the Dell EMC all-flash Data Center Azure Stack Hub offering and the solution is available in select regions from Dell Technologies and authorized partners.

The base configuration consists of the Management case and two Compute cases. The Management case includes the Tactical R640 hardware management server, two 25GbE top-of-rack switches, and the baseboard management switch. Each Compute case houses two Tactical R640 scale unit servers and the solution is available in 4-, 8-, 12- and 16-node configurations.

Tactical Azure Stack Hub (rear view)



Compute case (minimum two per configuration)*

- Two Dell EMC Tactical R640 servers (2U each) per case.
- Adapted for tactical use. Configuration options are based on Dell EMC PowerEdge R640 All-Flash server configurations*:
    - From 24-core with 384-768 GB memory, and 19.2TB total raw SSD capacity to 48-core with 768 GB memory 38.40TB total raw SSD capacity.
- Scale units can be added up to the limits of Azure Stack.
- Height: 13.58”
  Width: 23.80”
  Depth: Operating (transit covers removed): 25.63”
  Depth: Transporting (transit covers installed): 31.50”
- Weight: 100 lbs. each (including servers) ESTIMATED

Management case (one per configuration)*

- One Dell EMC Tactical R640 HLH Management server (2U), one Dell EMC S3048-ON management switch (1U) and two S5248-ON top-of-rack switches (1U each)
- Dell EMC Tactical R640 HLH Management server based on Dell EMC PowerEdge R640 All- Flash server adapted for tactical use:
    - 1x Intel 6130 16-core processor, 96 GB memory, 3.84 TB total raw SSD capacity
- Height: 15.34”
  Width: 23.80”
  Depth: Operating (transit covers removed): 25.63”
  Depth: Transporting (transit covers installed): 31.50”
- Weight: 125 lbs. each (including server and switches) ESTIMATED

Environment Specifications

Dell EMC PowerEdge R640 Environmental Specifications Summary

1. Temperature
    a. Storage
        - –40°C to 65°C (–40°F to 149°F)
    b. Continuous operation (for altitude less than 950 m or 3117 ft)
        - 10°C to 35°C (50°F to 95°F) with no direct sunlight on the equipment.
            - NOTE: Maximum of 205 W, 28 core processor is supported in systems with eight 2.5 inch processor direct attached PCIe SSD drives, and three PCIe slot chassis.
            - NOTE: Certain configurations may have ambient temperature restrictions. For more information see the Ambient temperature limitations section.
    c. Fresh air
        - For information about fresh air, see Expanded Operating Temperature section.
        - Maximum temperature gradient (operating and storage) 20°C/h (68°F/h)
2. Relative humidity
    a. Storage
        - 5% to 95% RH with 33°C (91°F) maximum dew point. Atmosphere must be non-condensing at all times.
    b. Operating
        - 10% to 80% relative humidity with 29°C (84.2°F) maximum dew point.
3. Maximum vibration
    a. Operating
        - 0.26 Grms at 5 Hz to 350 Hz (all operation orientations)
    b. Storage
        - 1.88 Grms at 10 Hz to 500 Hz for 15 min (all six sides tested)
4. Maximum shock
    a. Operating
        - Six consecutively executed shock pulses in the positive and negative x, y, and z axes of 6 G for up to 11 ms
    b. Storage
        - Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms
5. Maximum altitude
    a. Operating
        - 3048 m (10,000 ft)
    b. Storage
        - 12,000 m (39,370 ft)

6. Expanded operating temperature
    a. Continuous operation
        - 5°C–40°C at 5% to 85% RH with 29°C dew point
            - NOTE: Outside the standard operating temperature (10°C–35°C), the system can operate continuously in temperatures as low as 5°C and as high as 40°C.
        - For temperatures between 35°C–40°C, de-rate maximum allowable temperature by 1°C per 175 m above 950 m (1°F per 319 ft).
    b. ≤ 1% of annual operating hours
        - –5°C–45°C at 5% to 90% RH with 29°C dew point
            - NOTE: Outside the standard operating temperature (10°C–35°C), the system can operate down to –5°C or up to 45°C for a maximum of 1% of its annual operating hours.
        - For temperatures between 40°C and 45°C, de-rate maximum allowable temperature by 1°C per 125 m above 950 m (1°F per 228 ft).
            - NOTE: When operating in the expanded temperature range, system performance may be impacted.
            - NOTE: When operating in the expanded temperature range, ambient temperature warnings may be reported on the LCD panel and in the System Event Log.
7. Refer to Dell EMC documentation for additional details and restrictions. https://www.dell.com/support/home/us/en/04/product-support/product/poweredge-r640/manuals
8. Dell EMC Tactical R640 variant meets or exceeds all of the above.
9. Source: Dell EMC PowerEdge R640 Owners Manual 2018-02 Rev A01

Dell EMC PowerSwitch S3048-ON Environmental Specifications Summary

1. Operating Temperature
    - 32° to 113°F (0° to 45°C)
2. Operating Humidity
    - 5 to 85% (RH), non-condensing
3. Storage Temperature
    - –40° to 158°F (–40° to 70°C)
4. Storage Humidity
    - 5 to 95%, non-condensing
5. Maximum Thermal Output
    - 292.42 BTU/hr 85.7W
6. Maximum operational altitude
    - 10,000 feet (3,048 meters)
7. Maximum non-operational altitude
    - No performance degradation to 35,000 feet (10,668 meters)
8. Shock
    - Dell EMC Spec SV0115 — ODM
9. Refer to Dell EMC documentation for additional details and restrictions.
    - https://www.dell.com/support/home/us/en/04/product-support/product/force10-s3048-on/manuals
10. Source: Dell S3048-ON Installation Guide 2018-04 Rev A06

Dell EMC PowerSwitch S5248-ON Environmental Specifications Summary

1. Operating Temperature
    - 0°C to 45°C (32°F to 113°F) continuously
        - **NOTE**: Reduce maximum temperature by 1°C/125 meters (1°F/228 feet) above 950 meters (3,117 feet).
2. Operating Humidity
    - 5% to 85% (RH), non-condensing
3. Storage Temperature
    - –40° to 158°F (–40° to 70°C)
4. Storage Humidity
    - 5% to 90% (RH), non-condensing
5. Maximum Thermal Output
    - 647W = 2208 BTU/hr
6. Maximum operational altitude
    - 10,000 feet (3,048 meters)
7. Maximum non-operational altitude
    - 39,370 feet (12,000 meters)
8. Shock
    - Dell EMC Spec SV0115
9. Refer to Dell Technologies documentation for additional details and restrictions.
    - https://www.dell.com/support/home/en-us/product-support/product/networking-s5248f-on/docs
10. Source: Dell EMC PowerSwitch S5200F-ON Series Installation Guide, December 2019

MIL-STD-810G Environmental Specifications Summary (GOAL)

The Tactical Azure Stack System is fully integrated within rugged transit cases and will be designed to meet the following MIL-STD 810G environmental standards. During storage and transport, the transit case covers are fully installed. During operation, the transit covers are fully removed:

1. Vibration
    - The system shall operate without degradation following exposure to the non-operating vibration environment as described by the following methods in MIL-STD 810G.
        - Method 514.6/Annex C/Category 4/2.1.2 Mission/field Transportation
        - Method 514.6/Annex C/Category 7/2.4 Aircraft – Jet.
        - Method 514.6/Annex C/Category 8/ 2.5 Aircraft – Propeller
2. Storage and Transport
    - During storage and transport, the system (in its carrying case) shall withstand exposure to temperatures from -34°C (-30°F) to +60°C (+140°F) loading as specified in Methods 501.5 and 502.5.
3. Indoor Operation
    - During indoor operation, the system shall operate within the temperature range of 0°C (+32°F) to +40°C (+104°F) loading as specified in in Methods 501.5 and 502.5.
4. Relative Humidity
    - During storage and transport, the system shall withstand exposure to a relative humidity of 10% to 90%, non-condensing as specified in MIL-STD 810G Method 520.3
5. Altitude
    - During storage and transport, the system (in its carrying case) shall withstand exposure to altitudes from 100 ft. below mean sea level (BMSL) to 15,000 ft. above mean sea level (AMSL) loading as specified in MIL-STD 810G Methods 520.3 and 500.5.
    - During operation, the system shall withstand exposure to altitudes from 100 feet BMSL to 10,000 feet AMSL as specified in MIL-STD 810G.
6. Shock
    - The system shall operate without degradation following exposure to shock (drop) environment as described by the following methods in MIL-STD 810G.
        - Method 516.6 Shock
7. Dust and Sand
    - During storage and transport, the system (in their carrying cases) shall be protected when exposed to sand and dust.
    - During storage and transport, the system (in their carrying cases) shall be protected in accordance with MIL-STD 810 Rev G Method 510.5
8. Wind, Rain, Snow, Ice
    - During storage and transport, the system (in their carrying cases) shall be protected when exposed to Wind, Rain, Snow and Ice.
    - During storage and transport, all transit cases and/or equipment shall protect all non-weatherized equipment from direct exposure to any combination of the following: wind, rain, snow, and ice in accordance with MIL-STD 810 Rev G Methods 506.5 and 521.3

9. Tactical Azure Stack system while in development will include MIL-STD-810G testing as a part of the schedule. Design to meet is currently based on similarity to other systems of a comparable nature for which Tracewell has test data.

High and low temperature tolerances while in storage and transit and while operating up to 100% utilization. The “Basic Hot (A2)” and “Basic Cold (C1)” daily cycles identified in Table 1, Part Three of MIL-STD 810G (page: PART THREE-10) serve as minimum storage and transit and operating temperature thresholds.

1. Basic Hot (A2) – Ambient Air 30 – 43C (86 – 110F)
    - Standard R640 server meets 45C operating when the expanded operating specification is considered.
        - Other non-Azure approved Dell variants may be available to meet up to 55degC.
    - Standard S3048-ON and S5248F-ON switches meet 45F operating.
2. Basic Hot (A2) – Induced 30 – 63C (86 – 145F)
    - All items should meet temperature range non-operating (storage)
    - This requirement does not appear to have an operating component.
3. Basic Cold (C1) – Ambient Air -21 to -32C (-5 to -25F)
    - Standard R640 server only meets -5C operating when the expanded operating specification is considered.
    - Standard S3048-ON and S5248F-ON only meets 0C operating.
4. Basic Cold (C1) – Induced -25 to -33C (-13 to -28F)
    - All items should meet temperature range non-operating (storage).
    - This requirement does not appear to have an operating component.

Note on extended temperature operation

- Other non-Azure approved Dell variants may be available to meet up to 55degC.
- Tracewell has experience with adding airflow heating capability to extend the low temperature operating range of commercial electronic systems. Such capability will typically occupy an additional 1U of rack space.

For more information about our solutions for Microsoft Azure Stack Hub and Tactical Azure Stack Hub, follow Dell EMC Integrated System for Microsoft Azure Stack Hub for more information and contact your Dell Technologies account representative.