

MODIFICACIÓN DE ÓRDENES DE COMPRA

Tienda Virtual del Estado Colombiano

Id Solicitud:	410404
Número de orden de compra a modificar:	128048

Entidad compradora:	CORPORACIÓN AUTÓNOMA REGIONAL DE LAS CUENCAS DE LOS RÍOS NEGRO - NARE "CORNARE"
Nombre del solicitante:	Jeniffer Cristina Arbelaez Castro
Proveedor:	GREEN SERVICES AND SOLUTIONS SAS
Mecanismo de agregación de demanda:	ETP III

Tipo de Solicitud:	Modificación de la Orden de Compra
Fecha:	2024-06-19 11:04:42

Campos a Actualizar

Campo	Valor Actual	Nuevo Valor
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Cuentas asociadas

Id	Nombre	Código	Segmento 1	Segmento 2
122259	CORNARE	117	117	

Artículos actuales

No	Artículo	Cantidad	Unidad	Precio	Cuenta	Total
1	etp03 - ACCESORIO-44. Base refrigerante para portatil - NA - Todas las zonas	3.0	0.55 Metros	30000.00	117	90000.00

2	etp03 - ETP-PT-50. ETP - PORTATIL TIPO WORKSTATION 17 PULGADAS PESO MAXIMO 3,7 KG - 6400 - 8 NUCLEOS - AVANZADO - SDD - 1 TB PCIE - ECC - 32 GB - ZONA 2	1.0	0.55 Metros	10575000.00	117	10575000.00
3	etp03 - ETP-PT-52. ETP - PORTATIL TIPO WORKSTATION 17 PULGADAS PESO MAXIMO 3,7 KG - 5600 - 6 NUCLEOS - INTERMEDIO - SDD - 1 TB PCIE - ECC - 16 GB - ZONA 2	2.0	0.55 Metros	10203712.00	117	20407424.00
4	etp03 - COMPONENTE-PT-64. COMPONENTE - TARJETA GRAFICA DE 16 GB - 4X PORTATIL TIPO WORKSTATION - NA - NA - NA - NA - NA - NA - TODAS LAS ZONAS	3.0	0.55 Metros	2500000.00	117	7500000.00
5	etp03 - COMPONENTE-PT-71. COMPONENTE - SISTEMA OPERATIVO WINDOWS FOR WORKSTATION PORTATIL DE 15" Y 17" - NA - NA - NA - NA - NA - NA - TODAS LAS ZONAS	3.0	0.55 Metros	550000.00	117	1650000.00

6	etp03 - COMPONENTE- PT-72. COMPONENTE - CERTIFICACION EPEAT GOLD - NA - NA - NA - NA - NA - NA - NA - TODAS LAS ZONAS	3.0	0.55 Metros	3896.86	117	11690.58
7	etp03 - COMPONENTE- PT-75. COMPONENTE - ENERGY STAR 8.X O SUPERIOR - (N/A CUANDO EL SISTEMA OPERATIVO ES LINUX) O CHINA CERTIFICATE FOR ENERGY CONSERVATION PRODUCT O ECODESIGN AND ENERGY LABELLING - NA - NA - NA - NA - NA - NA - NA - TODAS LAS ZONAS	3.0	0.55 Metros	3896.86	117	11690.58
8	etp03 - COMPONENTE- PT-76. COMPONENTE - CERTIFICADO EN EL ESTANDAR MILITAR MIL- STD 810H - NA - NA - NA - NA - NA - NA - NA - TODAS LAS ZONAS	3.0	0.55 Metros	3896.86	117	11690.58
9	etp03 - IVA	1.0	0.55 Metros	7648924.19	117	7648924.19

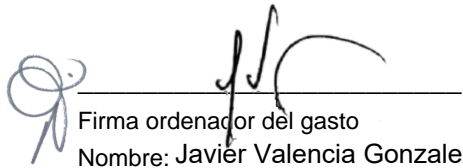
Artículos editados y/o agregados

Tipo	No	Artículo	Cantidad	Unidad	Precio	Cuenta	Total
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Nuevo	Nuevo	etp03 - COMPONENTE- PT-92 - Sistema Operativo Windows 11 Pro	3.00	Unidad	550000.00	117	1650000.00
Eliminar	5	etp03 - COMPONENTE- PT-71. COMPONENTE SISTEMA OPERATIVO WINDOWS FOR WORKSTATION PORTATIL DE 15" Y 17" - NA - NA - NA - NA - NA - NA - NA - TODAS LAS ZONAS	3.0	0.55 Metros	550000.00	117	1650000.00

Detalle o justificación de la aclaración

GREEN SERVICES AND SOLUTIONS SAS, N.I.T. 900571849, indica a CORNARE que el sistema operativo no es posible entregarlo, en razón a que Microsoft no permite la instalación debido a la estandarización que han hecho los fabricantes a nivel de procesadores., tal como constan en comunicaciones anexas a la solicitud y comunicado oficial de Microsoft.



Firma ordenador del gasto
Nombre: Javier Valencia Gonzalez



Documento: 71.687.029



Firma de proveedor Green Services and Solutions S.A.S.
Nombre: Isabel Cristina Rivas Ruiz

Documento: 32.205.470



Esp: G

Expediente: 160-2024-2
Radicado: DC-00838-2024
Sede: SANTUARIO
Dependencia: Oficina Gestion Documental
Tipo Documental: Solicitud de Modificatorio
Fecha: 19/06/2024 Hora: 14:01:52 Folios: 1



SOLICITUD MODIFICACIÓN CONTRACTUAL

Código: F-GJ-258
Versión: 05
Página: 1 de 1

1. IDENTIFICACION DE LA SOLICITUD

FECHA DE SOLICITUD 19 6 2024
DIA MES AÑO

TIPO DE MODIFICACIÓN	ADICIÓN (presupuesto)	
	PRÓRROGA (tiempo)	
	SUSPENSIÓN	
	REINICIO	
	CAMBIO DE ACTIVIDADES Y/O PRECIOS	X
OTRA		

Si seleccionó OTRA, indique cuál en este espacio:

Nit/CC del Cofinanciado/Contratista
900571849

a contrato/ convenio No.:
160-2024-2

Nombre / Razón social Cofinanciado/Contratista
GREEN SERVICES AND SOLUTIONS SAS

Radicado proyecto No.:
112052-2024

Fecha de inicio
30 4 2024
DIA MES AÑO

Fecha de finalización vigente*
31 7 2024
DIA MES AÑO

*En caso de presentar prórrogas, se debe ingresar la última registrada

2. JUSTIFICACIÓN:

Cornare suscribió orden de compra N° 128048 a través de la tienda virtual del estado colombiano (Colombia compra eficiente, acuerdo marco ETP III), con el contratista GREEN SERVICES AND SOLUTIONS SAS, con fecha de suscripción el día 30 de abril de 2024.

De acuerdo con los requerimientos técnicos de los equipos contratados CORNARE solicito entre otros ítems, Software licenciado y preinstalado, Sistema Operativo Windows for Workstation, aplica para Portátil tipo Workstation de 15" y 17" con memoria ECC, mismas que se encuentran en la orden de compra. Una vez firmado el contrato, se nos indica por parte del contratista e integrante del Acuerdo Marco ETP III, GREEN SERVICES AND SOLUTIONS SAS, N.I.T. 900571849, que dicho sistema operativo no es posible entregarlo, en razón a que Microsoft no permite la instalación debido a la estandarización que han hecho los fabricantes a nivel de procesadores., tal como constan en comunicaciones anexas a la solicitud y comunicado oficial de Microsoft.

Una vez verificado lo anterior por la supervisión se identifíco que con las características actuales de los portátiles, el sistema operativo Windows para Workstation no podría ser instalado, y que ningún proveedor podría cumplir con las especificaciones solicitadas, por lo tanto se verifico el sistema Operativo Windows 11 PRO de acuerdo a lo indicado por el contratista, se identifica que el mismo cumple con la necesidad de la corporación que es un sistema operativo que cumple técnicamente con lo solicitado inicialmente y que el mismo no afecta el valor económico del contrato.

Se aclara que la supervisión realizo verificación del sistema en el mercado y el mismo se ajusta al valor inicialmente contratado, por lo tanto se modifica la especificación técnica del sistema operativo la cual quedara

**SISTEMA OPERATIVO WINDOWS 11 PRO – CANTIDAD 3 – VALOR: \$550.000
La supervisión ve viable la modificación y recomienda realizarla**

3. VALOR EJECUTADO

Valor ejecutado al momento de realizar la solicitud	\$	-
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5. VR. ADICION REQUERIDA

APORTANTES*	Si los recursos son propios de CORNARE indique con una X	Si los recursos provienen de CONVENIO, indique el número de convenio	Valor en especie	Valor en dinero	Subtotal por aportante
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -
					\$ -

4. PRÓRROGA/ SUSPENSIÓN REQUERIDA

TOTAL (EN MESES O DÍAS indicar al frente)	MESES		DÍAS	
Nueva fecha después de la presente prórroga solicitada	31/07/2024			

DÍA MES AÑO

VR. TOTAL ADICION (\$) **

\$

-

\$

-

\$ 0

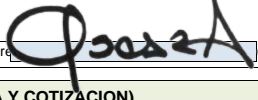
*En caso de que el número de aportantes supere la cantidad de filas dispuestas para ello, podrá ingresar tantas filas como sea necesario.

**La suma de las adiciones en valor, no podrá superar el 50% del valor inicial del contrato/convenio, de conformidad con la Ley 80 de 1993, artículo 40.

SUPERVISOR - firma Nombre

Oscar Dario Arango

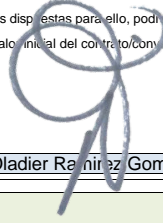
CORD.SUPERVISIÓN - firma Nombre



Vo. Bo. SECRETARIO GENERAL

Nombre:

Oladier Ramirez Gomez



6. ANEXOS (FICHA TECNICA Y COTIZACION)

7. ESPACIO PARA REGISTRO DEL BANCO DE PROYECTOS



MARINA JARAMILLO TOBON <mjaramillo@cornare.gov.co>

RE: SIMULADORES TVEC: Envío de mensaje: 24730-RUT- Novedad

Monica Alejandra Barrientos Arango <monica.barrientos@greencss.com>
Para: MARINA JARAMILLO TOBON <mjaramillo@comare.gov.co>
Cc: Jeniffer Cristina Arbelaez Castro <jarbelaez@cornare.gov.co>, Oscar Arango Gomez <oarango@comare.gov.co>, Revisiones Juridica <revisionesjuridica@comare.gov.co>

Hola Mariana.

Dando respuesta al correo adjunto la siguiente información:

- Carta Aclaratoria
- Carta Aclaratoria por parte del Fabricante
- Fichas técnicas de lenovo y hp

Expediente:	160-2024-2
Radicado:	DC-00673-2024
Sede:	SANTUARIO
Dependencia:	Oficina Gestión Documental
Tipo Documental:	Correspondencia Recibida del Contratista (Oficios de Entrada)
Fecha:	10/05/2024
Hora:	14:04:43
Folios:	39



Quedo muy atenta a los comentarios

Monica A Barrientos A

Consultora Comercial

Green S&S Edge S.A.S

+57 3182256168

monica.barrientos@greencss.com

www.greencss.com



De: MARINA JARAMILLO TOBON <mjaramillo@comare.gov.co>

Enviado el: jueves, 9 de mayo de 2024 10:24 a. m.

Para: Monica Alejandra Barrientos Arango <monica.barrientos@greencss.com>

CC: Jeniffer Cristina Arbelaez Castro <jarbelaez@comare.gov.co>; Oscar Arango Gomez <oarango@comare.gov.co>; Revisiones Jurídica <revisionesjuridica@cornare.gov.co>

Asunto: Re: SIMULADORES TVEC: Envío de mensaje: 24730-RUT- Novedad

CORREO EXTERNO

ATENCIÓN: Este correo electrónico se originó desde fuera de la organización. No haga clic en enlaces ni abra archivos adjuntos a menos que reconozca al remitente y sepa que el contenido es seguro.

Buenos días Monica

En la conversación telefónica inicial que se tuvo cuando se estaba validando la ficha técnica presentada por ustedes, donde le exprese que dicha ficha no cumplía porque el Windows era Windows 11 Pr

Además desde el acuerdo marco se estableció **Portátil tipo Workstation y windows para workstation**, si la referencia **DELL PRECISION 7780** no cumple con estas especificaciones, debe ofrecer otr

Muchas gracias.

Marina Jaramillo Tobón

Oficina de Sistemas

CORNARE

Autopista Medellín - Bogotá Carrera 59 N. 44 - 33 Km. 54
PBX: 5461015 ext. 194
El Santuario - Antioquia

Conectados por la Vida, la Equidad y el Desarrollo Sostenible



El mié, 8 may 2024 a las 14:45, Monica Alejandra Barrientos Arango (<monica.barrientos@greencss.com>) escribió:

Hola Marina.

Acorde a nuestra conversación adjunto el certificado del Fabricante.

Quedo muy atenta a los comentarios

Monica A Barrientos A

Consultora Comercial

Green S&S Edge S.A.S

+57 316226166

monica.barrientos@greencss.com

www.greencss.com



De: Jeniffer Cristina Arbelaez Castro <jarbelaez@cornare.gov.co>

Enviado el: viernes, 3 de mayo de 2024 3:22 p. m.

Para: Monica Alejandra Barrientos Arango <monica.barrientos@greencss.com>

CC: MARINA JARAMILLO TOBON <mjaramillo@cornare.gov.co>; Oscar Arango Gomez <oarango@cornare.gov.co>; Revisiones Juridica <revisionesjuridica@cornare.gov.co>

Asunto: Re: SIMULADORES TVEC: Envío de mensaje: 24730-RUT- Novedad

CORREO EXTERNO

ATENCIÓN: Este correo electrónico se originó desde fuera de la organización. No haga clic en enlaces ni abra archivos adjuntos a menos que reconozca al remitente y sepa que el contenido es :

Cordial saludo Monica en revisión de su correo, se indica que jurídicamente no es posible cambiar las especificaciones técnicas del contrato, en razón a que hay más oferentes que no fueron seleccionados

por lo anterior, amablemente se sugiere verificar si es necesario cambiar la marca ofrecida que cumpla con las especificaciones técnicas de la orden de compra

Estaremos atentos muchas gracias

El jue, 2 may 2024 a las 9:57, Monica Alejandra Barrientos Arango (<monica.barrientos@greencss.com>) escribió:

Cordial saludo Jeniffer.

Validando la información con el Fabricante sobre el sistema operativo de las Workstation Marca Dell Precision 7780, el sistema operativo del equipo es Windows 11 profesional

Adicionalmente, este licenciamiento está ligado a los procesadores XEON W, sin embargo, INTEL decidió sacar de su portafolio los procesadores XEON mobile, ya que los precios

de las Workstation ofrecidas crecen hasta 64 Gigas como se evidencia en la pagina 13 de la ficha técnica adjunta a la entidad

Tabla 8. Memory specifications (continued)

Description	Notes
Memory configuration	• 8 DIMM (SO-DIMM)
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B, 128 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B, 128 B, 64 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B, 128 B, 64 B, 32 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B, 128 B, 64 B, 32 B, 16 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B, 128 B, 64 B, 32 B, 16 B, 8 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B, 128 B, 64 B, 32 B, 16 B, 8 B, 4 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B, 128 B, 64 B, 32 B, 16 B, 8 B, 4 B, 2 B
Memory configuration	• 8 DIMM (SO-DIMM) 32 GB, 16 GB, 8 GB, 4 GB, 2 GB, 1 GB, 512 MB, 256 MB, 128 MB, 64 MB, 32 MB, 16 MB, 8 MB, 4 MB, 2 MB, 1 MB, 512 KB, 256 KB, 128 KB, 64 KB, 32 KB, 16 KB, 8 KB, 4 KB, 2 KB, 1 KB, 512 B, 256 B, 128 B, 64 B, 32 B, 16 B, 8 B, 4 B, 2 B, 1 B

Quedo atenta a los comentario si continuamos con la orden

Monica A Barrientos A

Consultora Comercial

Green S&S Edge S.A.S

+57 3182256166

monica.barrientos@greencss.com

www.greencss.com



De: Jeniffer Cristina Arbelaez Castro <jarbelaez@cornare.gov.co>
Enviado el: miércoles, 1 de mayo de 2024 3:46 p. m.
Para: Monica Alejandra Barrientos Arango <monica.barrientos@greencss.com>
CC: MARINA JARAMILLO TOBON <mjaramillo@cornare.gov.co>
Asunto: Re: SIMULADORES TVEC: Envío de mensaje: 24730-RUT

CORREO EXTERNO

ATENCIÓN: Este correo electrónico se originó desde fuera de la organización. No haga clic en enlaces ni abra archivos adjuntos a menos que reconozca al remitente y sepa que el contenido es seguro.

Mil gracias Monica, la orden de compra ya se encuentra cargada en la plataforma para que procedan generando la garantía, mil gracias

El mar, 30 abr 2024 a las 15:09, Monica Alejandra Barrientos Arango (<monica.barrientos@greencss.com>) escribió:

Cordial saludo.

Por favor su ayuda con el RUT de la entidad actualizado.

Quedo muy atenta a los comentarios

Monica A Barrientos A

Consultora Comercial

Green S&S Edge S.A.S

+57 3182256166

monica.barrientos@greencss.com

www.greencss.com



De: Monica Alejandra Barrientos Arango
Enviado el: lunes, 29 de abril de 2024 3:01 p. m.
Para: jarbelaez@cornare.gov.co
Asunto: RV: SIMULADORES TVEC: Envío de mensaje: 24730
Importancia: Alta

Cordial saludo.

Adjunto la información solicitada.



ALERTA SISTEMA DE PREVENCIÓN DE FRAUDES

Lugar y fecha de generación: Medellín, 19/04/2024 4:37:26 P.M.

Señor(es)
GREEN SERVICES AND SOLUTIONS S.A.S.
 Matrícula Nro.: 478814-12

Destinatarios del correo: finanzas@greencss.com

La CÁMARA DE COMERCIO DE MEDELLÍN PARA ANTIOQUIA, pensando en los empresarios y atendiendo lo dispuesto en la Circular Externa de la Superintendencia de Sociedades, implementó el Sistema de Prevención de Fraudes - SIPREF - que garantiza la seguridad y confiabilidad de la información de los registros públicos:

Por tal motivo, desarrolló el servicio de alertas para mantenerle informado sobre la radicación de documentos, modificaciones o inscripciones que su empresa realice en el Registro Mercantil, en el Registro de Entidades Sin Ánimo de Lucro o en el Registro Único de Proponentes.

De acuerdo con lo anterior, le informamos que luego de ejercer el control de legalidad al documento que se indica, la Cámara procedió a su registro:

Fecha radicación: 19/04/2024
 Nro. radicado: 26398197-2024

Descripción acto: RENOVIACION RUP

Es de anotar que contra los actos de registro proceden los recursos administrativos en los términos y en la oportunidad establecidas en los artículos 74 y 76 del Código de Procedimiento Administrativo y de lo Contencioso Administrativo.

Quedo muy atenta a los comentarios

Monica A Barrientos A

Consultora Comercial

Green S&S Edge S.A.S

+57 3182256186

monica.barrientos@greencss.com

www.greencss.com



De: Jose Fernando Carmona Mejía <josefernando.carmona@greencss.com>

Enviado el: lunes, 29 de abril de 2024 2:58 p. m.

Para: Monica Alejandra Barrientos Arango <monica.barrientos@greencss.com>

CC: Operaciones Green <operaciones@greencss.com>; German Nieto <german.nieto@greencss.com>; Elizabeth Gutierrez <Elizabeth.Gutierrez@greencss.com>

Asunto: RV: SIMULADORES TVEC: Envío de mensaje: 24730

Importancia: Alta

Buenas tardes,

@Monica Alejandra Barrientos Arango, revisa si te sirven estos pantallazos soporte de la renovación o si no pregúntale a @Elizabeth Gutierrez que más podemos presentar



ALERTA SISTEMA DE PREVENCIÓN DE FRAUDES

Lugar y fecha de generación: Medellín, 19/04/2024 4:37:26 P.M.

Señor(es)
GREEN SERVICES AND SOLUTIONS S.A.S.
Matrícula Nro.: 478814-12

Destinatarios del correo: finanzas@greencss.com

La CÁMARA DE COMERCIO DE MEDELLÍN PARA ANTIOQUIA, pensando en los empresarios y atendiendo lo dispuesto en la Circular Externa de la Superintendencia de Sociedades, implementó el Sistema de Prevención de Fraudes - SIPREF - que garantiza la seguridad y confiabilidad de la información de los registros públicos.

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Consulta de trámites por NIT

Nombre persona natural: Digite el NIT de inicio y el dígito de verificación.

Matrícula: 904571849

NIT: No soy un robot

Botones: Buscar, Imprimir

Mostrar de radicado: Información, Consulta externa

Fecha de radicación: Información, Consulta externa

Solicitud virtual: NIT: 904571849, Entidades SIC [?]

NIT: Nombre o razón social: GREEN SERVICES AND SOLUTIONS S.A.S., Trámites BDA [?]

Radica y fecha	Nombre del trámite	Documento	Estado
26398197 DE 19/04/2024	RENOVACION PROPONENTES		TERMINADO
26395952 DE 02/07/2024	DESIGNACION, RENOVACION, REVOCACION DE ADMINISTRADORES DE SOCIEDADES COMERCIALES	ACTA NO. 36 DE 18/03/2024	TERMINADO
2629347 DE 22/03/2024	RENOVACION POR INTERNET	NA	TERMINADO

Detalle del trámite	
Fecha de consulta:	29/04/2024 2:51:59 PM
El trámite registrado el 08/04/2024 fue finalizado satisfactoriamente el 19/04/2024.	
Indicador	26378197
Municipalidad	478814-12
Nombre o Razón Social	GREEN SERVICES AND SOLUTIONS S.A.S.
Tipo de trámite	Reservación del Proponente
Documento	.
Sede de la Cámara de Comercio	BAQUÍAS
Fecha de inicio del trámite	08/04/2024
Correo electrónico de notificación	monica@greencss.com
Fecha de finalización del trámite	19/04/2024
Estado	El trámite fue registrado satisfactoriamente.
<input checked="" type="checkbox"/> Puede descargar su certificado desde la opción registro o adquisición haciendo clic aquí.	

Cordialmente,



JOSÉ FERNANDO CARMONA MEJÍA

Analista de Integración Operacional

+57 316 375 0390



Josefernando.carmona@greencss.com

www.greencss.com

De: Monica Alejandra Barrientos Arango <monica.barrientos@greencss.com>
 Enviado el: lunes, 29 de abril de 2024 2:38 p. m.
 Para: Jose Fernando Carmona Mejía <josefernando.carmona@greencss.com>
 CC: German Nieto <german.nieto@greencss.com>; Operaciones Green <operaciones@greencss.com>
 Asunto: RE: SIMULADORES TVEC: Envío de mensaje: 24730

Hola Jose.

La entidad me esta solicitando el RUP en firme o el certificado de cuando quedaria en firme.

Saludos

Monica A Barrientos A

Consultora Comercial

Green S&S Edge S.A.S

+57 3182256166

monica.barrientos@greencss.com

www.greenccs.com



De: Jose Fernando Carmona Mejía <josefernando.carmona@greencss.com>
 Enviado el: lunes, 29 de abril de 2024 12:25 p. m.
 Para: Monica Alejandra Barrientos Arango <monica.barrientos@greencss.com>
 CC: German Nieto <german.nieto@greencss.com>; Operaciones Green <operaciones@greencss.com>
 Asunto: RE: SIMULADORES TVEC: Envio de mensaje: 24730
 Importancia: Alta

Buenas tardes,

Adjunto lo solicitado y otros documentos por si te los piden. Estamos atentos si requieres algo adicional de nuestra parte.

Cordialmente,



JOSÉ FERNANDO CARMONA MEJÍA

Analista de Integración Operacional

+57 318 376 0300



josefernando.carmona@greencss.com

www.greencss.com

De: Monica Alejandra Barrientos Arango <monica.barrientos@greencss.com>
 Enviado el: lunes, 29 de abril de 2024 12:19 p. m.
 Para: Operaciones Green <operaciones@greencss.com>
 CC: German Nieto <german.nieto@greencss.com>
 Asunto: RV: SIMULADORES TVEC: Envio de mensaje: 24730

Hola Team.

Por favor su ayuda con la siguiente documentación para legalizar una orden. Esta información es por GREEN SERVICES AND SOLUTIONS

RUP, Antecedentes de Contraloría, Procuraduría, antecedentes judiciales de la policía Nacional, Medidas correctivas de la Policía Nacional y REDAM (Registro de deudores alimentarios r

Quedo muy atenta a los comentarios

Monica A Barrientos A

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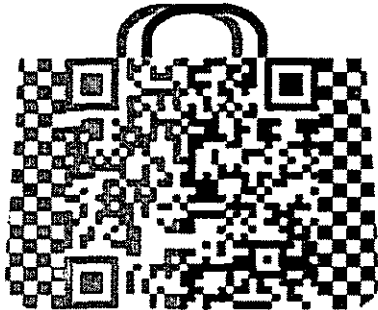
www.greencss.com



De: NOTIFICACIONES TVEC CCE <notificacionestvec@colombiacompra.gov.co>
Enviado el: lunes, 29 de abril de 2024 10:51 a. m.
Para: CCE <cce@greencss.com>
Asunto: SIMULADORES TVEC: Envío de mensaje: 24730

CORREO EXTERNO

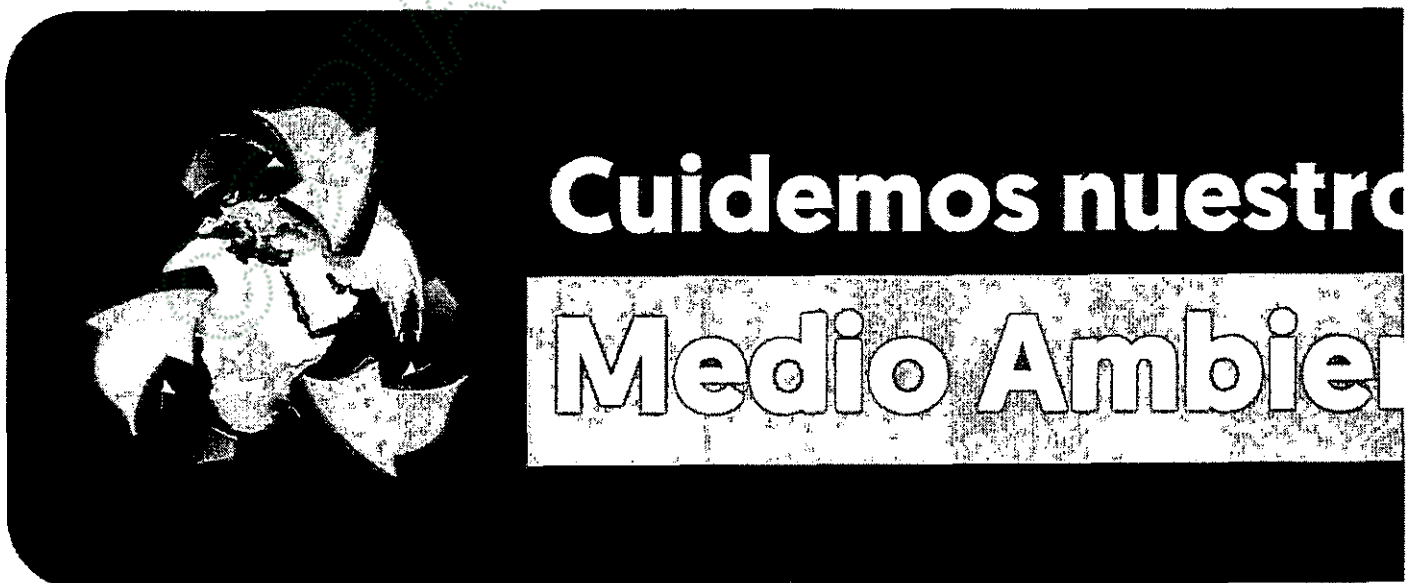
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Agencia Nacional de Contratación Pública

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- GREENCSS LLC - United States
greenUSA@greencss.com
+1 305 360 6272

Muchas gracias.



Jeniffer Cristina Arbeláez Castro
Abogada Oficina Jurídica

CORNARE
Autopista Medellín - Bogotá Carretera 59 N. 44 - 48 Km. 54
PBX: 461616 ext. 193
El Santuario - Antioquia

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Muchas gracias.



Jeniffer Cristina Arbeláez Castro
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10/5/24, 13:43

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4 adjuntos

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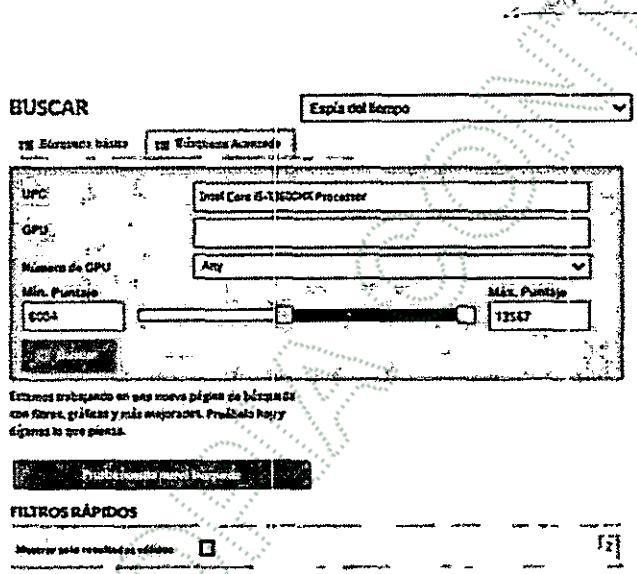
Medellín, 09 de mayo de 2024

Señores:
CORPORACIÓN AUTÓNOMA REGIONAL DE LAS CUENCAS DE LOS RÍOS NEGRO - NARE
"CORNARE"
Comité Evaluador

Referencia: Compraventa- Nacional Compraventa -LOTE 6-Portátiles -Consecutivo 24730
Asunto: Aclaración especificaciones técnicas

Atendiendo a la solicitud de aclaración solicitada por parte de la entidad, nos permitimos aclarar las especificaciones técnicas del equipo ofertado.

1. El acuerdo marco para las pruebas de rendimiento se basa en el benchmark PCMARK10, donde el equipo que estamos ofreciendo es de mejor configuración de acuerdo a lo solicitado por la entidad, la entidad está solicitando pruebas de rendimiento en el procesador de 5600 y 6400 para los portátiles workstation, los equipos que estamos entregando superan las pruebas de rendimiento como se evidencia en la grafica 13567



- Existen varios tipos de procesadores y generaciones para la línea de Intel tenemos procesadores Intel Core y Procesadores Intel Xeon W, Hace más de año y medio Intel dejó de fabricar procesador Intel® Xeon® W-1000 processors to 12th Gen Intel® Core™ processors for mobile and stationary workstations, estos procesadores estaban diseñados para equipos portátiles y soportaban Sistema operativo windows for workstation, ahora intel migro toda su linea de procesadores dejando solo los procesadores intel Xeon W para estaciones de trabajo tipo TORRE que soportan windows for Workstation por ende los portátiles no vienen con este sistema operativo este sistema operativo.
- Como se indica en la carta por medio del fabricante Dell todas las Workstation tipo portátil Intel Core por decisión de Microsoft solo vienen con Windows 11 profesional.

- Validando con los demás fabricantes las especificaciones técnicas del sistema operativo para los portátiles Workstation solo se licencia con Windows 11 profesional y estos vienen con procesadores Intel core y no con procesadores XEONES W estos procesadores solo vienen en equipos tipo torre
- Equipo Lenovo Thinkpad P16 Viene licenciado de fabrica con Sistema Operativo Windows 11 Profesional (se adjunta catalogo del fabricante)

ThinkPad P16 Gen 2 **Lenovo** Lenovo

PERFORMANCE

Processor
Processor Family
Intel® Xeon® Core™ W / P / R (13th Gen) or Core™ W (12th Gen) workstation, supports up to 24 cores up to 5.6GHz

Processor	Cores	Threads	Base Frequency	Max Frequency	Caché	Processor Options
Core™ W-16000	16 (8 P-core + 8 E-core)	24	Processor 2.6GHz / E-core 1.8GHz	Processor 4.8GHz / E-core 3.2GHz	32MB	Intel® UHD Graphics
Core™ W-11700	11 (8 P-core + 3 E-core)	18	Processor 3.7GHz / E-core 1.9GHz	Processor 5.1GHz / E-core 3.7GHz	32MB	Intel® UHD Graphics
Core™ W-11500	11 (8 P-core + 3 E-core)	18	Processor 3.0GHz / E-core 1.8GHz	Processor 4.2GHz / E-core 3.0GHz	32MB	Intel® UHD Graphics
Core™ W-11350	11 (8 P-core + 3 E-core)	18	Processor 3.2GHz / E-core 1.8GHz	Processor 4.5GHz / E-core 3.0GHz	32MB	Intel® UHD Graphics
Core™ W-11350	11 (8 P-core + 3 E-core)	18	Processor 3.2GHz / E-core 1.8GHz	Processor 4.5GHz / E-core 3.0GHz	32MB	Intel® UHD Graphics
Core™ W-11350	11 (8 P-core + 3 E-core)	18	Processor 3.2GHz / E-core 1.8GHz	Processor 4.5GHz / E-core 3.0GHz	32MB	Intel® UHD Graphics
Core™ W-11350	11 (8 P-core + 3 E-core)	18	Processor 3.2GHz / E-core 1.8GHz	Processor 4.5GHz / E-core 3.0GHz	32MB	Intel® UHD Graphics
Core™ W-11350	11 (8 P-core + 3 E-core)	18	Processor 3.2GHz / E-core 1.8GHz	Processor 4.5GHz / E-core 3.0GHz	32MB	Intel® UHD Graphics
Core™ W-11350	11 (8 P-core + 3 E-core)	18	Processor 3.2GHz / E-core 1.8GHz	Processor 4.5GHz / E-core 3.0GHz	32MB	Intel® UHD Graphics
Core™ W-11350	11 (8 P-core + 3 E-core)	18	Processor 3.2GHz / E-core 1.8GHz	Processor 4.5GHz / E-core 3.0GHz	32MB	Intel® UHD Graphics

Operating Systems

- Windows® 11 Pro
- Windows® 11 Home
- Windows® 11 Home Single Language
- Windows® 10 Pro 64
- Red Hat Linux
- Red Hat Enterprise Linux 9.2 (workload with no details and what information, please refer Red Hat Certified Solutions)
- Ubuntu Linux LTS
- Ubuntu Linux with Data Studio Proved
- No previous operating systems

se adjunta el link de la pagina de Lenovo donde se puede evidenciar todas las referencias de las Workstation tipo portátil con sistema operativo Windows 11 profesional ninguna viene con Windows for workstation <https://psref.lenovo.com/>

By Brand	ThinkPad Workstations
ThinkStation	P Series ThinkPad P1 Gen 5 ThinkPad P14s Gen 4 (AMD) ThinkPad P15v Gen 3 (Intel) ThinkPad P16s Gen 2 (AMD) ThinkPad P16v Gen 1 (AMD) ThinkPad P16v Gen 2 (Intel) ^{NEW}
ThinkPad Workstations	ThinkPad P1 Gen 6 ThinkPad P14s Gen 4 (Intel) ThinkPad P16 Gen 2 ThinkPad P16s Gen 2 (Intel) ThinkPad P16v Gen 1 (Intel)

- Equipo Workstation HP Zbook G10, Viene con sistema operativo Windows 11 profesional (se adjunta catalogo del fabricante),

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Features

OPERATING SYSTEM

Preinstalled OS Windows 11 Pro - HP recommends Windows 11 Pro¹
Windows 11 Home - HP recommends Windows 11 Pro²
Windows 11 Pro (preinstalled with Windows 10 Pro Downgrade)³
Ubuntu 22.04⁴
FreeDOS 3.0

¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See <https://www.windows.com>.

² This system is preinstalled with Windows 10 Pro software and also comes with a license for Windows 11 Pro software and provision for recovery software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

³ For detailed Linux® OS hardware support information, see: https://www.hp.com/support/linux_hardware_matrix.

⁴ NOTE: Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not

Se envia el link de la pagina de hp donde se evidencia los diferentes modelos de Workstation portátil con sistema operativo Windows 11 profesional www.hp.com/countries/workstations/zbook-

Es de aclarar que las características del equipo en ningún momento se están cambiando, colombia compra eficiente debe actualizar la plataforma de licenciamiento de los equipos ya que los fabricantes hay migrado a última generación.

Quedo muy atenta a los comentarios

Monica Barrientos



Bogotá D.C., 5/7/2024 (MM/DD/YY)

Sres

GREEN SERVICES AND SOLUTIONS SAS

Colombia

Referencia: 24730 Compraventa - Nacional Compraventa - LOTE 6 - PORTÁTILES

Por medio de la presente, Dell Colombia Inc., ("Dell") en su nombre y en nombre de las subsidiarias directas e indirectas de Dell Inc., fabricantes oficiales de los equipos de computación y periféricos marca Dell, con oficinas principales en One Dell Way, Round Rock Texas, Estados Unidos de América, declaramos:

GREEN SERVICES AND SOLUTIONS SAS (el "Partner") es un "Distribuidor Autorizado no Exclusivo" de productos y servicios de nuestra marca, miembro del Dell Technologies Partner Program bajo la categoría de Solution Provider/Channel - Titanium en el territorio de Colombia (el "Territorio"). Conforme a lo anterior el Partner posee nuestro apoyo en esta ocasión para ofertar nuestros productos y servicios (PRECISION 7780) a(al) CORPORACIÓN AUTÓNOMA REGIONAL DE LAS CUENCAS DE LOS RÍOS NEGRO - NARE "CORNARE", por su cuenta y riesgo.

Les informamos que los equipos PRECISION 7780 ofertados cuentan con las siguientes certificaciones: ROHS, Energy Star y Epeat Gold.

Los PRECISION 7780 cuentan con los siguientes servicios: 3Y Basic Onsite Service after remote diagnosis with Hardware-Only Support. La prestación de dichos servicios es proporcionada por nosotros o alguno de nuestros canales autorizados de servicios en el Territorio.


Les informamos que los equipos PRECISION 7780 ofertados cuentan con las siguientes características:

- Sistema Operativo - Windows 11 Profesional.

Toda WS con procesador es I9 o inferior lleva Windows 11 Pro. Para WS con Procesador Xeon, lleva la opción de Windows 11 Pro para WS.

No es un tema de Dell, es como está estructurado por Microsoft.

Atentamente,

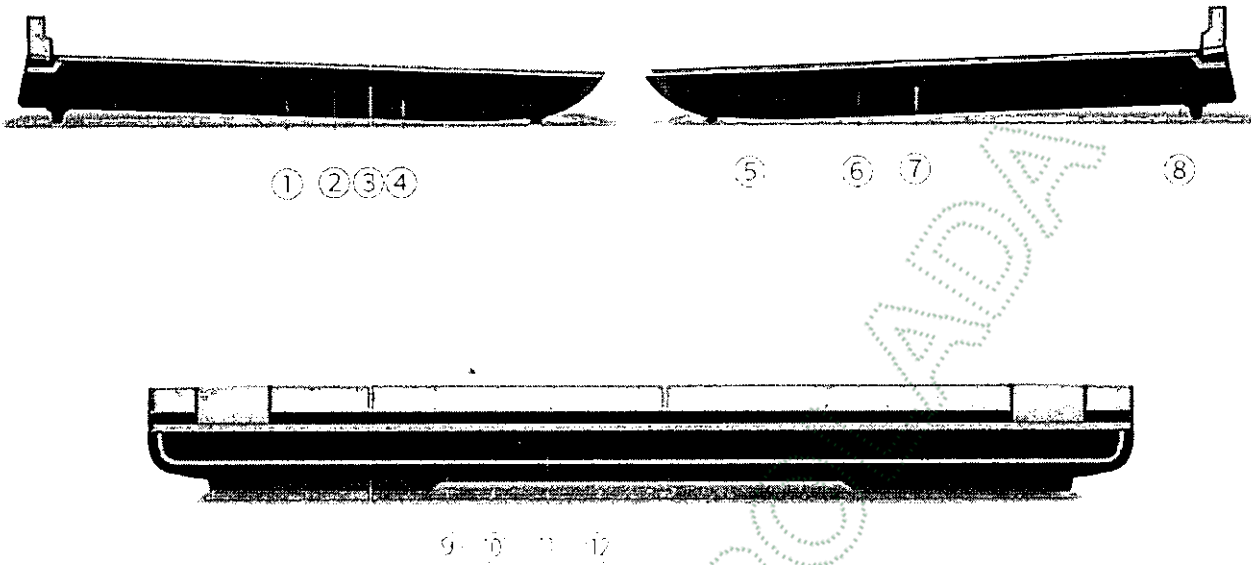


David Hernández López
Apoderado
Letter Owner: Shelsie Gonzalez

COPIA CONTROLADA



OVERVIEW



1. USB-A (USB 10Gbps), Always On	7. USB-A (USB 5Gbps)
2. USB-C (USB 10Gbps), data transfer only	8. Kensington Nano Security Slot
3. Headphone / microphone combo jack (3.5mm)	9. Power connector
4. Nano-SIM card slot *	10. Thunderbolt 4
5. Smart card reader *	11. Thunderbolt 4
6. SD Express 7.0 card reader	12. HDMI

Notes:

- Items with * are only available on selected models

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PERFORMANCE

Processor

Processor Family

Intel® HX series Core™ i5 / i7 / i9 (13th Gen) or Core™ i7 (14th Gen) processor; supports up to 24 cores; up to 5.6GHz.

Processor**

Processor Name	Cores	Threads	Base Frequency	Max Frequency	Cache	Processor Graphics
Core™ i5-13600HX	14 (6 P-core + 8 E-core)	20	P-core 2.6GHz / E-core 1.9GHz	P-core 4.8GHz / E-core 3.6GHz	24MB	Intel® UHD Graphics
Core™ i7-13700HX	16 (8 P-core + 8 E-core)	24	P-core 2.1GHz / E-core 1.5GHz	P-core 5.0GHz / E-core 3.7GHz	30MB	Intel® UHD Graphics
Core™ i7-13850HX	20 (8 P-core + 12 E-core)	28	P-core 2.1GHz / E-core 1.5GHz	P-core 5.3GHz / E-core 3.8GHz	30MB	Intel® UHD Graphics
Core™ i9-13950HX	24 (8 P-core + 16 E-core)	32	P-core 2.2GHz / E-core 1.6GHz	P-core 5.5GHz / E-core 4.0GHz	36MB	Intel® UHD Graphics
Core™ i9-13980HX	24 (8 P-core + 16 E-core)	32	P-core 2.2GHz / E-core 1.6GHz	P-core 5.6GHz / E-core 4.0GHz	36MB	Intel® UHD Graphics
Core™ i7-14700HX	20 (8 P-core + 12 E-core)	28	P-core 2.1GHz / E-core 1.5GHz	P-core 5.5GHz / E-core 3.9GHz	33MB	Intel® UHD Graphics

Operating System

Operating System**

- Windows® 11 Pro
- Windows® 11 Home
- Windows® 11 Home Single Language
- Windows® 11 DG Windows® 10 Pro 64
- Fedora Linux
- Red Hat Enterprise Linux 9.2 (certified only, for detailed and latest information, please visit [Red Hat Certified Hardware](#))^[1]
- Ubuntu Linux LTS
- Ubuntu Linux with Data Science Preload
- No preload operating system

Notes:

[1] Red Hat Enterprise Linux 9.2 certification will be available after Aug 18, 2023.

Graphics

Graphics

Graphics	Type	Memory	TGP	Key Features
Intel® UHD Graphics	Integrated	Shared	Share CPU TDP	DirectX® 12.1
NVIDIA® RTX 1000 Ada Generation Laptop GPU	Discrete	6GB GDDR6	60W	DirectX® 12 Ultimate, Vulkan Support, NVIDIA® FXAA / TXAA Anti-Aliasing, NVIDIA® RTX Desktop Manager
NVIDIA® RTX 2000 Ada Generation Laptop GPU	Discrete	8GB GDDR6	60W	DirectX® 12 Ultimate, Vulkan Support, NVIDIA® FXAA / TXAA Anti-Aliasing, NVIDIA® RTX Desktop Manager
NVIDIA® RTX 3500 Ada Generation Laptop GPU	Discrete	12GB GDDR6 ECC	115W	DirectX® 12 Ultimate, Vulkan Support, NVIDIA® FXAA / TXAA Anti-Aliasing, NVIDIA® RTX Desktop Manager
NVIDIA® RTX 4000 Ada Generation Laptop GPU	Discrete	12GB GDDR6 ECC	115W	DirectX® 12 Ultimate, Vulkan Support, NVIDIA® FXAA / TXAA Anti-Aliasing, NVIDIA® RTX Desktop Manager
NVIDIA® RTX 5000 Ada Generation Laptop GPU	Discrete	16GB GDDR6 ECC	115W	DirectX® 12 Ultimate, Vulkan Support, NVIDIA® FXAA / TXAA Anti-Aliasing, NVIDIA® RTX Desktop Manager
NVIDIA® RTX A1000 Laptop GPU	Discrete	6GB GDDR6	60W	DirectX® 12 Ultimate, Vulkan Support, NVIDIA® FXAA / TXAA Anti-Aliasing, NVIDIA® RTX Desktop Manager

Monitor Support

Monitor Support

Supports up to 4 independent displays (native display and 3 external monitors via HDMI® and Thunderbolt™). More external displays can be supported via docking or daisy chain.

- HDMI® supports up to 3840x2160@60Hz on integrated or Arc™ graphics models; 7680x4320@60Hz on NVIDIA® graphics models
- Thunderbolt™ supports up to 5120x3200@60Hz

Chipset

Chipset

Intel® WM790 chipset

Memory

Max Memory

- Models with ECC memory: Up to 128GB (4x 32GB SO-DIMM DDR5-5600 ECC)
- Models with Non-ECC memory: Up to 192GB (4x 48GB SO-DIMM DDR5-5600 Non-ECC)

Memory Slots

Four DDR5 SO-DIMM slots, dual-channel capable

Memory Type**[1]

- DDR5-5600 ECC
- DDR5-5600 non-ECC

Memory Protection

ECC on models with ECC DIMMs and ECC capable processor (i5-13600HX / i7-13850HX / i9-13950HX)

Notes:

[1] System comes with DDR5-5600 memory and will run as lower speed due to platform limitations: 4x 32GB / 4x 48GB configurations run as DDR5-3600. Other configurations run as DDR5-4000.

Storage

Storage Support[1]

Up to two drives, 2x M.2 SSD

- M.2 2280 SSD up to 8TB, 4TB each
- RAID 0/1 support

Storage Slot

Two M.2 2280 PCIe® 4.0 x4 slots

Storage Type

Disk Type	Interface	Offering	Security
M.2 2280 SSD	PCIe® NVMe®, PCIe® 4.0 x4	256GB / 512GB / 1TB	Opal 2.0
M.2 2280 SSD	PCIe® NVMe®, PCIe® 4.0 x4 Performance	512GB / 1TB / 2TB / 4TB	Opal 2.0

RAID

RAID 0/1 support

Notes:

[1] The storage capacity supported is based on the test results with current Lenovo® storage offerings.

Removable Storage

Card Reader

SD Express 7.0 card reader

Multi-Media

Audio Chip

High Definition (HD) Audio, Realtek® ALC3306 codec

Speakers

ThinkPad P16 Gen 2

Stereo speakers, 2W x2, Dolby® Atmos®

Microphone

- Dual-microphone array, far-field, Dolby® Voice®
- No microphone

Camera**

- FHD 1080p + IR hybrid with privacy shutter and Ultrasonic Human Presence Detection, fixed focus
- FHD 1080p with privacy shutter, fixed focus

Battery

Battery

Integrated Li-Polymer 94Wh battery, supports Rapid Charge (charge up to 80% in 1hr) with 230W AC adapter

Power Adapter

Power Adapter**[1]

- 170W slim tip (3-pin) AC adapter, 100-240V, 50-60Hz
- 230W slim tip (3-pin) AC adapter, 100-240V, 50-60Hz

Notes:

[1] AC adapter offerings depend on the country.

DESIGN

Display

Display**

Size	Resolution	Touch	Type	Brightness	Surface	Aspect Ratio	Contrast Ratio	Color Gamut	Refresh Rate	Viewing Angle (L/R/U/D)	Key Features
16"	WUXGA (1920x1200)	None	IPS™	300nits	Anti-glare	16:10	1200:1	100% sRGB	60Hz	85°/85°/85°/85°	Eyesafe® Certified 2.0, Low Blue Light, X-Rite® Factory Color Calibration, 83.4% screen to body ratio, DC dimming
16"	WUXGA (1920x1200)	None	IPS	400nits	Anti-glare	16:10	1200:1	100% sRGB	60Hz	89°/89°/89°/89°	83.9% screen to body ratio, TÜV Low Blue Light, DC dimming
16"	WQXGA (2560x1600)	None	IPS ^[2]	500nits	Anti-glare	16:10	1200:1	100% sRGB	165Hz	89°/89°/89°/89°	Eyesafe® Certified 2.0, Low Blue Light, X-Rite® Factory Color Calibration, 83.4% screen to body ratio, DC dimming
16"	WQUXGA (3840x2400)	None	IPS ^[3]	800nits	Anti-glare	16:10	1500:1	100% DCI-P3	60Hz	85°/85°/85°/85°	Eyesafe® Certified 2.0, TÜV Low Blue Light,



											DisplayHDR™ 400, Dolby® Vision®, X-Rite® Factory Color Calibration, 83.4% screen to body ratio, DC dimming
16"	WQUXGA (3840x2400)	Multi-touch	OLED	SDR 400nits / HDR 500nits	Anti-reflection, anti-smudge	16:10	100,000:1	100% DCI-P3	60Hz	87.5° / 87.5° / 87.5° / 87.5°	Eyesafe® Certified 2.0, TÜV Low Blue Light, Dolby® Vision®, DisplayHDR™ True Black 500, X-Rite® Factory Color Calibration, 83.4% screen to body ratio

Color Calibration

X-Rite® factory color calibration

Touchscreen

- OGM (One Glass Metal mesh) multi-touch, supports 10-point touch (OLED display)
- Non-touch

Notes:

[1], [2], [3] IPS (in-plane switching) technology may refer to IPS, PLS, ADS, AHVA, AAS.

Input Device

Pen

- Lenovo® Precision Pen 2 with built-in rechargeable battery, 4096 levels of pressure sensitivity, tilt detection, supports WGP, AES 2.0 and MPP 2.0 protocols. For more information, please read [Lenovo® Precision Pen 2](#)
- No pen (purchase separately)
- No support

Keyboard

6-row, spill-resistant, multimedia Fn keys with Unified Communications controls, numeric keypad

Keyboard Backlight

LED backlight

UltraNav™

3-button TrackPoint® pointing device and glass-like Mylar® surface multi-touch Trackpad, 67.6 x 115 mm (2.66 x 4.53 inches)

Mechanical

Dimensions (WxDxH)^[1]

364 x 266 x 30.23 mm (14.3 x 10.5 x 1.2 inches)

Weight^[2]

Starting at 2.95 kg (6.5 lbs)

Case Color

Storm grey (top), villi black (bottom)

Case Material

AL5052 (97.25% aluminium, 2.5% magnesium, and 0.25% chromium; top), PPS + 50% GF (bottom)

Notes:

[1] The system dimensions may vary depending on configurations.

[2] The system weight is approximate and based on results in Lenovo® lab, which varies depending on the source of component, variance of the distribution of each component, and manufacturing process. It may not be the exact weight for each specific model.

CONNECTIVITY

Network

Ethernet

No onboard Ethernet^[1]

WLAN + Bluetooth®

- Intel® Wi-Fi® 6E AX211, 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.3^[2]
- No WLAN and Bluetooth®

WWAN**

- Wireless WAN upgradable to 4G (with antenna ready)
- Fibocom L860-GL-16, 4G LTE CAT16, M.2 card, with embedded eSIM functionality
- No support

SIM Card

No physical SIM card inbox

NFC

- Near Field Communication
- No support

Notes:

[1] Ethernet support via optional docking or Lenovo® USB-C® to Ethernet Adapter, up to 2.5GbE.

[2] Wi-Fi® 6E full features might be limited by country-level restrictions.

Wi-Fi® 6E is only enabled on Windows® 11 and operates as Wi-Fi® 6 with Windows® 10.

6GHz Wi-Fi® 6E operation is dependent on the support of the operating system, routers/APs/Gateways that support Wi-Fi® 6E, and the regional regulatory certifications & spectrum allocation.

Bluetooth® 5.3 operation requires Windows® 11. For more information please visit [General Bluetooth® Support Information on Microsoft®](#).

Ports^[1]

Standard Ports^[2]

- 1x USB-A (USB 5Gbps / USB 3.2 Gen 1)
- 1x USB-A (USB 5Gbps / USB 3.2 Gen 1), Always On
- 1x USB-C® (USB 10Gbps / USB 3.2 Gen 2), with USB PD 3.0
- 2x Thunderbolt™ 4 / USB4® 40Gbps (support data transfer, Power Delivery 3.0 and DisplayPort™ 1.4)
- Models with NVIDIA® graphics: 1x HDMI® 2.1, up to 8K/60Hz
- Models with integrated or Intel® Arc™ graphics: 1x HDMI® 2.1, up to 4K/60Hz
- 1x Headphone / microphone combo jack (3.5mm)
- 1x SD Express 7.0 card reader

Optional Ports***

- 1x Smart card reader
- 1x Nano-SIM card slot (WWAN support models)

Notes:

[1] The transfer speed of the ports will vary and, depending on many factors, such as the processing speed of the host device, file attributes, and other factors related to system configuration and your operating environment, will be slower than the theoretical speed.

[2] Power Delivery only supports power-out for charging peripherals.

Docking

Docking

Various docking solutions supported via Thunderbolt™ or USB-C®.

For more compatible docking solutions, please visit [Docking for ThinkPad® P16 Gen 2](#)

SECURITY & PRIVACY

Security

Security Chip

Discrete TPM 2.0, TCG certified, FIPS 140-2 certified

Physical Locks

Kensington® Nano Security Slot™, 2.5 x 6 mm

Smart Card Reader

- Smart card reader
- No smart card reader

Fingerprint Reader

Touch style fingerprint reader integrated in power button, match-on-chip

BIOS Security

- Power-on password
- Supervisor password
- NVMe® password
- Self-healing BIOS

Other Security

- (Optional) IR camera for Windows® Hello (facial recognition)
- (Optional) Ultrasonic Human Presence Detection for IR camera
- (Optional) Camera privacy shutter
- Bottom cover tamper detection

MANAGEABILITY

System Management

System Management

- Intel® vPro® Enterprise^[1]
- Non-vPro®

Notes:

[1] Intel® vPro® offers a superset of DASH's defined capabilities.

SERVICE

Warranty

Base Warranty**

- 1-year courier or carry-in service
- 1-year courier or carry-in with 2-year system board service (Korea only)
- 1-year limited onsite service
- 3-year (1-yr battery) courier or carry-in service
- 3-year (1-yr battery) limited onsite service

ENVIRONMENTAL

Operating Environment

Temperature^[1]

- Operating: 5°C (41°F) to 35°C (95°F)
- Storage and transportation in original shipping packaging: -20°C (-4°F) to 60°C (140°F)
- Storage without package: 5°C (41°F) to 43°C (109°F)

Relative Humidity

- Operating: 8% to 95% at wet-bulb temperature 23°C (73°F)
- Storage and transportation: 5% to 95% at wet-bulb temperature 27°C (81°F)

Altitude

Maximum altitude (without pressurization): 3048 m (10,000 ft)

Notes:

[1] When you charge the battery, its temperature must be no lower than 10°C (50°F).

ACCESSORIES

Bundled Accessories

Bundled Accessories^[1]

- Lenovo® HDMI® to VGA Monitor Adapter
- Lenovo® USB-C® to DisplayPort™ Adapter
- Lenovo® USB-C® to Ethernet Adapter (2.5Gbps)
- Lenovo® USB-C® to VGA Adapter

Notes:

[1] For more compatible accessory solutions, please visit [Accessories for ThinkPad® P16 Gen 2](#)

CERTIFICATIONS

Green Certifications^[1]

Green Certifications^[2]

- ENERGY STAR® 8.0
- EPEAT™ Gold Registered^[3]
- RoHS compliant
- TCO Certified 9.0

Notes:

[1] The items listed under the "Green Certifications" section may not only refer to certification but also registration or self-declaration. For ESG & regulatory compliance documents, please visit <https://compliance.lenovo.com>.

[2] EPEAT™ registration and ENERGY STAR® certification are dependent on system OS. Please visit epeat.net and energystar.gov for more information.

[3] EPEAT™ is registered where applicable, please visit epeat.net for registration status by country.

Other Certifications

Mil-Spec Test

MIL-STD-810H military test passed

Other Certifications

- (Optional) Eyesafe® Certified 2.0
- TÜV Rheinland® Low Blue Light

ISV Certifications

ISV Certifications

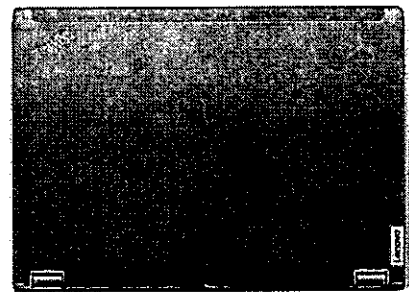
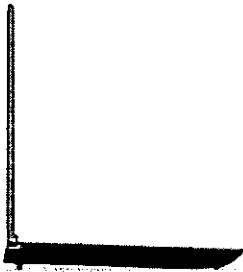
Please visit ISV certifications for Lenovo® Workstations

- Feature with ** means that only one offering listed under the feature is configured on selected models.
- Feature with *** means that one or more offerings listed under the feature could be configured on selected models.
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you.

- The specifications on this page may not be available in all regions, and may be changed or updated without notice.

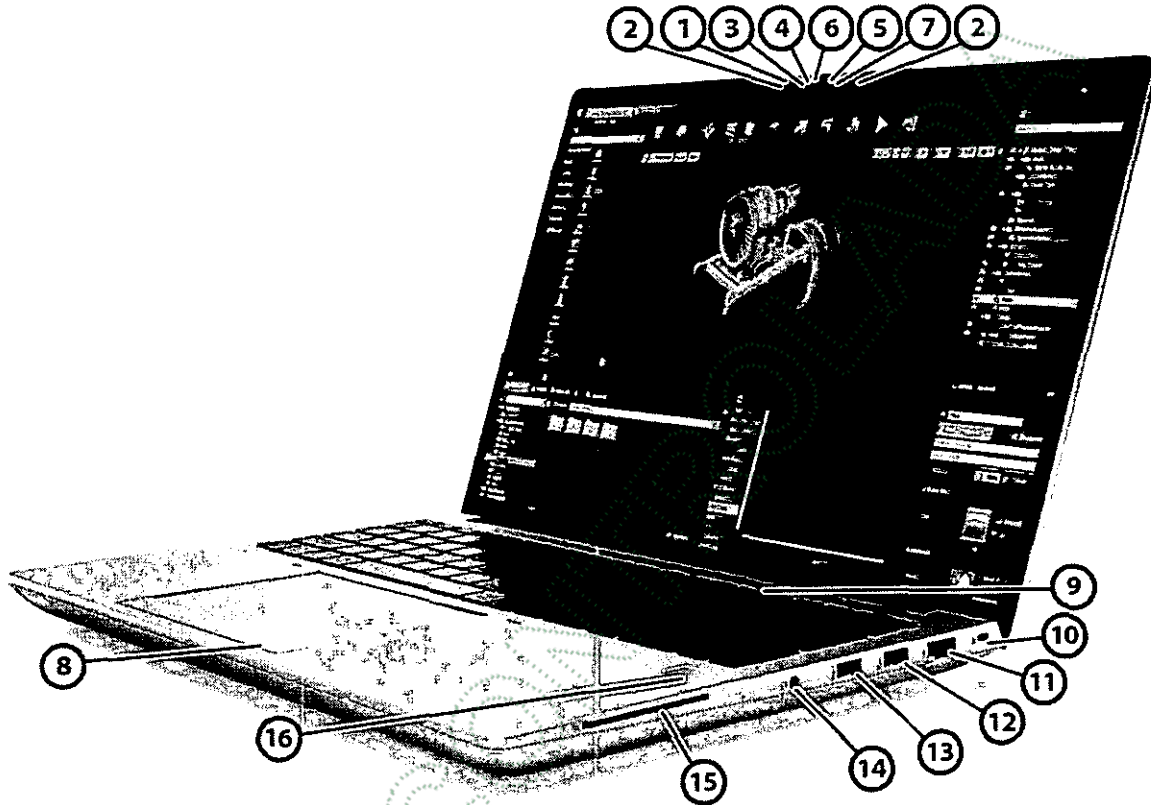
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Overview

HP ZBook Fury G10 Mobile Workstation PC

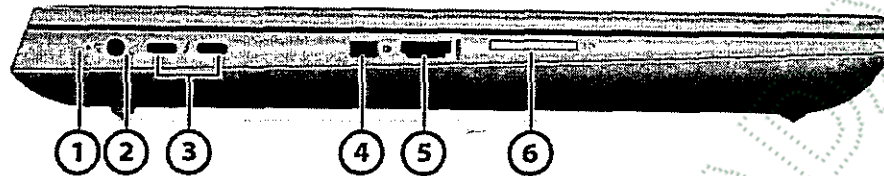


- 1. Ambient Light Sensor (Optional)
- 2. Top Facing Microphone (2)
- 3. Webcam LED (Optional)
- 4. IR Camera (Optional)
- 5. HD Camera (Optional)
- 6. Camera Shutter
- 7. IR Camera LEDs (Optional)
- 8. 3-Button Touchpad

Right

- 9. Power Button
- 10. Nano Security Lock slot
- 11. RJ45
- 12. 1 SuperSpeed USB Type-A 5Gbps signaling rate
- 13. 1 SuperSpeed USB Type-A 5Gbps signaling rate (charging)
- 14. headphone/microphone combo
- 15. SmartCard Reader
- 16. Fingerprint Sensor (Optional)

Overview

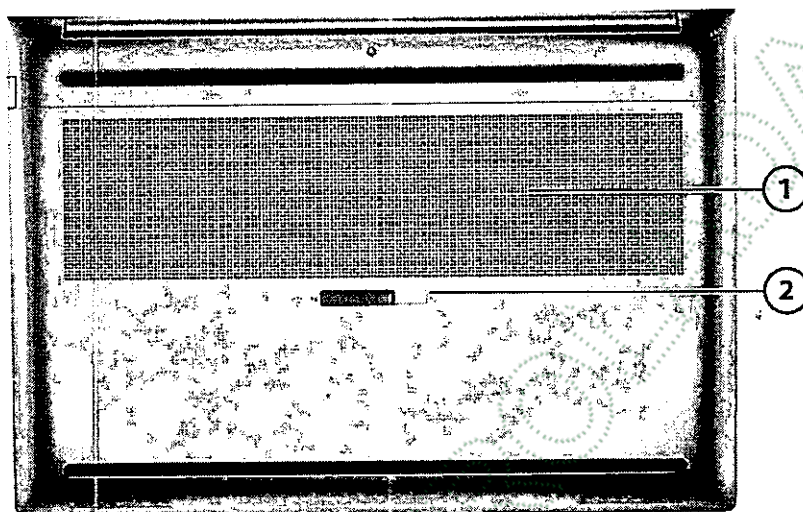


Left

- | | |
|--|--------------------------|
| 1. Power Charging indicator | 4. mDP port ¹ |
| 2. Power connector | 5. HDMI port |
| 3. (2) Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4, HP Sleep and Charge) | 6. SD 7.0 Card Reader |

¹If both DP streams are used by Type-C® ports, Mini-DP is inactive on RTX A1000 and 2000 Ada SKUs

Overview



Bottom

1. Fan Venting

2. Service Door Latch

Overview

At A Glance

- Crank up your multi-tasking and productivity with a desktop-class processor on a mobile device. With an Intel® Core™ processor and NVIDIA RTX™ professional graphics simultaneously tackle model training and deep learning or 3D animation and VFX.
- Accelerate your workflow. Power through projects with up to 128 GB RAM ECC Memory for fast rendering, editing and visual effects performance.
- Keep cool under any workload with HP Vaporforce Thermals, with curved metal blades, that help protect your workstation from overheating, so you can cut through your heaviest workloads with peak processing power.
- Move around without losing viewers' attention during video calls with HP Auto Frame. Now with a 88-degree field of view, the 5MP camera and audio follow as you move within the camera's frame.
- Long battery life can get you through a day of meetings without plugging in. Quickly recharge your PC with HP Fast Charge. You'll get up to 50% battery life in just 30 minutes of charging.
- Multiple ports for maximum productivity. Enhanced transfer and upload speeds via dual Thunderbolt™ 4 ports. Get wide-ranging connectivity options: USB 4.0, HDMI, mDP, SD card, Smart Card Reader and more.
- Detect if someone has tried to open the back cover of your device with Tamper Lock
- Choice of touch and non-touch displays
- Choice of displays [2]:
 - Non-Touch:
 - 39.6 cm (15.6") diagonal, FHD (1920 x 1080), IPS, anti-glare, 250 nits, 45% NTSC;
 - 40.6 cm (16") diagonal, WQUXGA (3840 x 2400), 120 Hz, IPS, anti-glare, eDP + PSR, micro-edge, 500 nits, 100% DCI-P3, HP DreamColor
 - 40.6 cm (16") diagonal, WUXGA (1920 x 1200), IPS, BV, eDP + PSR, micro-edge, 400 nits, 100% sRGB;
 - 40.6 cm (16") diagonal, WUXGA (1920 x 1200), IPS, anti-glare, eDP + PSR, micro-edge, 1000 nits, 100% sRGB, HP Sure View integrated privacy screen
 - Touch:
 - 40.6 cm (16") diagonal, WQUXGA (3840 x 2400), OLED, touch, BrightView, eDP + PSR, micro-edge, Low Blue Light, 400 nits, 100% DCI-P3
- Have confidence in what you see on screen with an optional HP DreamColor Display with 100% DCI-P3 color gamut and a 120Hz refresh rate you get smooth motion for high-speed videos.
- The 16:10 aspect ratio reduces the need to scroll by showing 11% more vertical content than a 16:9 aspect ratio display. See more of your project without minimizing program menus or toolbars.
- Our ZBooks are designed to undergo extensive MIL-STD 810H testing
- With Z Light Space software, customize your keyboard lighting with the RGB per-key LED backlighting. For commonly used software apps, like Adobe Photoshop, AutoCAD or SOLIDWORKS, use pre-loaded color-maps or create your own.
- HP Wolf Security for Business creates a hardware-enforced, always-on, resilient defense. From the BIOS to the browser, above, in, and below the OS, these constantly evolving solutions help protect your PC from modern threats.

NOTE: See important legal disclosures for all listed specs in their respective features sections.

Features

OPERATING SYSTEM

Preinstalled OS	Windows 11 Pro – HP recommends Windows 11 Pro ² Windows 11 Home - HP recommends Windows 11 Pro ² Windows 11 Pro (preinstalled with Windows 10 Pro Downgrade) ^{2,3} Ubuntu 22.04 ⁴ FreeDOS 3.0
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² Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.

³ This system is preinstalled with Windows 10 Pro software and also comes with a license for Windows 11 Pro software and provision for recovery software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

⁴ For detailed Linux® OS/hardware support information, see: http://www.hp.com/support/linux_hardware_matrix.

NOTE: Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel® and AMD® 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>. A full list of HP products and the Windows 10 versions tested is available on the HP support website. <https://support.hp.com/us-en/document/c05195282>

PROCESSOR

13th Generation Intel® Core™ i9-13950HX with Intel® UHD Graphics (1.6 GHz E-core base frequency, 2.2 GHz P-core base frequency, up to 4 GHz E-core Max Turbo frequency, up to 5.5 GHz P-core Max Turbo frequency, 36 MB L3 cache, 8 P-cores and 16 E-cores, 32 threads) supports Intel® vPro® Technology ^{1,2,3,4,5}

13th Generation Intel® Core™ i7-13850HX with Intel® UHD Graphics (1.5 GHz E-core base frequency, 2.2 GHz P-core base frequency, up to 3.8 GHz E-core Max Turbo frequency, up to 5.3 GHz P-core Max Turbo frequency, 30 MB L3 cache, 8 P-cores and 12 E-cores, 28 threads) supports Intel® vPro® Technology ^{1,2,3,4,5}

13th Generation Intel® Core™ i7-13700HX with Intel® UHD Graphics (1.5 GHz E-core base frequency, 2.1 GHz P-core base frequency, up to 3.7 GHz E-core Max Turbo frequency, up to 5.0 GHz P-core Max Turbo frequency, 30 MB L3 cache, 8 P-cores and 8 E-cores, 24 threads) ^{1,2,3,4}

13th Generation Intel® Core™ i5-13600HX with Intel® UHD Graphics (1.9 GHz E-core base frequency, 2.6 GHz P-core base frequency, up to 3.6 GHz E-core Max Turbo frequency, up to 4.8 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 20 threads) supports Intel® vPro® Technology ^{1,2,3,4,5}

¹ Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.

² Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

³ Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See www.intel.com/technology/turboboost for more information.

⁴ In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

Features

⁵ Intel vPro[®] requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional 3rd party software in order to run. Features of vPro[®] Essentials and Enterprise vary. See <http://intel.com/vpro>

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Features

CHIPSET

Intel® WM790

INTEL® CORE™ I5 WITH VPRO®/CORE™ I7 WITH VPRO®/ CORE™ I9 WITH VPRO® TECHNOLOGY CAPABLE

Intel® Core™ i5 with vPro®, Core™ i7 with vPro®, and Core™ i9 with vPro® technology is a selectable feature that is available on units configured with select processors, a qualified Intel® WLAN module and a preinstalled Windows® operating system. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel® Active Management Technology (iAMT) offers built-in manageability and proactive security for networked mobile workstations, even when they are powered off* or when the operating system is inoperable. It can help identify threats before they reach the network, isolate infected systems, and update regardless of their power state.^{1,2}

¹ Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

² Intel vPro® requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional 3rd party software in order to run. Features of vPro® Essentials and Enterprise vary. See <http://intel.com/vpro>

GRAPHICS

Integrated

Intel® UHD Graphics^{1,2,3,4}

Discrete^{2,5,6,7,8,9}

NVIDIA RTX™ 5000 Ada Generation Laptop GPU (16 GB DDR5 GDDR6 dedicated)

NVIDIA RTX™ 4000 Ada Generation Laptop GPU (12 GB DDR5 GDDR6 dedicated)

NVIDIA RTX™ 3500 Ada Generation Laptop GPU (12 GB DDR5 GDDR6 dedicated)

NVIDIA RTX™ 2000 Ada Generation Laptop GPU (8 GB DDR5 GDDR6 dedicated)

NVIDIA RTX™ A1000 6GB Laptop GPU (6 GB DDR5 GDDR6 dedicated)

Supports

DIS: Support HD decode, DX12, HDMI 2.1, HDCP 2.3

UMA: Support HD decode, DX12, HDMI 2.0 aka HDMI 2.1 TMDS, HDCP 2.3

¹ UHD content required to view UHD images.

² Both UMA & Discrete configurations support up to 4 displays when on the HP Thunderbolt Dock G2 (sold separately) – Max. resolution = 2.5K @60Hz (DP1) & 2.5K @60Hz (DP2) & FHD (VGA) OR 4K @60Hz (one DP Port) & 4K @60Hz (Type-C® output port using a Type C®-to-DP adapter).

³ Support HD decode, DX11, DX12, HDMI 2.0, HDCP 2.3 via DP up to 4K @ 60Hz and via HDMI up to 4K @ 60Hz

⁴ Shared video memory (UMA) uses part of the total system memory for video performance. System memory dedicated to video performance is not available for other use by other programs.

⁵ NVIDIA dGPU: Support HD decode, DX12, Multi-Function USB-C port, DP 1.4, HDCP 2.3, DP max resolution up to 5K@60Hz and 8K@60Hz (With DSC), HDMI 2.1 support up to 4K@60Hz and 8K@60Hz (with DSC and FRL).

Features

⁶ Discrete configurations support 4 independent displays (both Intel and NVIDIA Graphic cards, DIS mode need to close lid or only 3 displays max are supported externally. Max. resolution = 4K@60Hz (Type-C output port using a Type C-to-DP adapter), 4K@60Hz (Type-C output port using a Type C-to-DP adapter), or 4K @60Hz (mDP1) & 4K @60Hz (HDMI).

⁷ GPU configurations may be limited to specific GPU/Memory Configurations

⁸ Intel GPU and NVIDIA® RTX A1000 Laptop GPU: Support HD decode, DX12, Multi-Function USB-C port, DP 1.4, HDCP 2.3, DP max resolution up to 5K@60Hz and 8K@60Hz (With DSC), HDMI 2.1 support up to 4K@60Hz and 8K@60Hz (with DSC and FRL)

⁹ MiniDP cable sold separately and If both DP streams are used by Type-C ports, Mini-DP is inactive on RTX A1000 and 2000 Ada SKUs as HW limitation.

¹⁰ NOTES:

NVIDIA Feature: Discrete Graphics (RTX 3500 Ada, 4000 Ada, 5000 Ada) can turn "ECC ON" with the VRAM

- NV Control Panel should have the following selectable option:
 - Change ECC State
- Native Display: There is no option to Change ECC State in NV Control Panel
- External Display: There is an option to Change ECC State in NV Control Panel
- Software Driver solution available in Q3 2022

NOTE: The HP custom vapor chamber (Z VaporForce) is only available on configurations with NVIDIA RTX™ A3000 Laptop GPU and higher GFX.

DISPLAY

Non-touch

- 16.0" diagonal, WUXGA (1920 x 1200), IPS, anti-glare, 1000 nits, 72% NTSC, HP Sure View Reflect integrated privacy screen^{1,3,5,6,7,8}
- 16.0" diagonal, WUXGA (1920 x 1200), IPS, BV, eDP + PSR, micro-edge, 400 nits, 100% sRGB^{1,3,6,8}
- 16.0" diagonal, 4K WQUXGA (3840 x 2400), 120 Hz, IPS, UWVA, anti-glare, 500 nits, 100% DCI-P3, HP DreamColor^{1,3,6,8,*}
- 15.6" diagonal FHD (1920x1080) Anti-Glare WLED UWVA, 45% NTSC, 250 nits eDP 1.2 w/o PSR bent Narrow Bezel^{1,3,6,8}

Touch

- 16.0" diagonal, 4K WQUXGA (3840 x 2400), OLED, LBL, multitouch-enabled, UWVA, BrightView, TS, Corning® Gorilla® Glass 5, 400 nits, 100% DCI-P3^{1,3,5,6,7,8}
- 16.0" WUXGA (1920x1200) touch, BV WLED+LBL UWVA sRGB 100 400 NB2Y eDP 1.4+PSR2^{1,3,5,6,7,8}

Displays support

Supports up to 4 displays through the HP Thunderbolt 280W G4 Dock

Display Size

16.0"

40.64 cm (16")

15.6"

39.62 cm (15.6")

¹HD content required to view HD images.

³Resolutions are dependent upon monitor capability, and resolution and color depth settings.

⁵Actual brightness will be lower with touchscreen or Sure View.

⁶UHD content required to view UHD images.

⁷HP Sure View is optional and must be configured at purchase. It operates in landscape orientation.

⁸Display options may be limited to specific CPU / GPU Configurations.

*DreamColor display not available with WWAN

Features

DOCKING

Docking station model #1	HP Thunderbolt 280W G4 Dock w/Combo Cable
Total number of supported displays (incl.the notebook display)	4
Max.resolutions supported	Dual 4K @30Hz or dual 4K UHD @ 60Hz is supported Single 8K @30Hz (multiple tiles) for Thunderbolt hosts Non-TBT hosts DP 1.4 in high-res mode (1) 8K video single cable @30Hz
Dock Connectors	2xDP, 1xHDMI, 1xTB, 1xUSB-C Alt Mode
Technical limitations	Thunderbolt Hosts: Exception: HDMI port Maximum of (4) displays with maximum resolution of 5K@ 30Hz running Thunderbolt host. Max resolution possible is dual 8K displays @ 60Hz running Thunderbolt host or running a non-Thunderbolt host in High Resolution mode @30Hz Non-Thunderbolt hosts: The highest resolution for dual displays running a non-Thunderbolt host in multi-function mode is (1) 5K dual cable (using both DP ports) +(1) 4K on USB-C DP port Non-Thunderbolt hosts: support (3) displays with a max resolution of: (2) 5K single cable + (1) 4K UHD @ 60 Hz in high resolution mode. In multi-function mode the maximum resolution for (3) displays is (2) 5K single cable @ 30Hz + (1) 4K UHD @ 30Hz.
Docking station model #2	HP Elite USB-C Dock G5
Total number of supported displays (incl.the notebook display)	3
Max.resolutions supported	Three 1680x1050 @ 60 Hz Dual 2K @ 60Hz Single 4K @ 60Hz (3840 x 1440)
Dock Connectors	1xHDMI, 2xDP
Technical limitations	
Docking station model #3	HP USB-C Universal Dock G2
Total number of supported displays (incl.the notebook display)	3
Max.resolutions supported	Dual 4K @ 60Hz Single 5K @ 60Hz
Dock Connectors	1xHDMI, 2xDP
Technical limitations	

Features

STORAGE AND DRIVES*

Maximum Storage

12 TB PCIe Gen4x4 M.2

PCIe® NVMe™ M.2 2280 Storage

4 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

2 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

2 TB PCIe® Gen4x4 NVMe™ SED SSD

1 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

1 TB PCIe® Gen4x4 NVMe™ SED SSD

512 GB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

512 GB PCIe® Gen4x4 NVMe™ SED SSD

Storage Slots

4 M.2 Solid State Drive

DRIVE CONTROLLERS

M.2 Storage Bay (PCIe NVMe): PCIe® Gen4 x4 lanes NVMe™ Solid State Drive

* For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35GB of disk is reserved for system recovery software.

NOTE: SSD/SODIMM requires low to moderate technical skills required to replace

DRIVE CONTROLLERS

M.2 Storage Bay (PCIe NVMe)

PCIe® Gen4 x4 lanes NVMe™ Solid State Drive

RAID:

Supported RAID 0, RAID 1*, RAID 5 and RAID 10**

*RAID 0, RAID 1 not supported on Opal SSD

**RAID 5 and RAID 10 are not available out of factory but can be configured by the end-user. RAID 5, RAID 10 not supported on Opal SSD, no 4TB SSD

MEMORY

Maximum Memory

128 GB DDR5-4800 ECC SODIMM

128 GB DDR5-5600 non-ECC SODIMM

RAM Support – 8GB, 16GB, 32GB, 64GB, 128GB

Memory

8GB (1x8GB) DDR5 4800

16GB (1x16GB) DDR5 4800

16GB (2x8GB) DDR5 4800

32GB (1x32GB) DDR5 4800

32GB (2x16GB) DDR5 4800

32GB (4x8GB) DDR5 4800

64GB (2x32GB) DDR5 4800

64GB (4x16GB) DDR5 4800

128GB (4x32GB) DDR5 4800

8GB (1x8GB) DDR5 5600

16GB (1x16GB) DDR5 5600

16GB (2x8GB) DDR5 5600

32GB (1x32GB) DDR5 5600

32GB (2x16GB) DDR5 5600

Features

- 32GB (4x8GB) DDR5 5600
- 64GB (2x32GB) DDR5 5600
- 64GB (4x16GB) DDR5 5600
- 128GB (4x32GB) DDR5 5600
- 16GB (1x16GB) DDR5 4800 ECC
- 32GB (1x32GB) DDR5 4800 ECC
- 32GB (2x16GB) DDR5 4800 ECC
- 64GB (2x32GB) DDR5 4800 ECC
- 64GB (4x16GB) DDR5 4800 ECC
- 128GB (4x32GB) DDR5 4800 ECC

Memory Slots

- 4 SODIMM
- 2 DIMMs per channel; support up to 4000 MT/s
- DDR5 SODIMMS, system runs at 4000 MT/s
- Supports Dual Channel Memory

Memory Speed

Memory DDR5-4800 SODIMM.

Memory DDR5-5600 SODIMM.

Intel® 13th Gen Core™ HX-Series Processors: Memory transfer speed will be 3600 MT/s or 4000 MT/s under identical DIMM conditions.

Current identical DIMM conditions:

- 2 DIMM per Channel (with 2 Rank DDR5 module): 3600 MT/s
- 2 DIMM per Channel (with 1 Rank DDR module): 4000 MT/s
- 1 DIMM per Channel (with either 1 Rank or 2 Rank DDR module): 4000 MT/s

NOTE: DIMM per Channel is DPC

NOTE: 8GB and 16GB DIMM are 1 Rank module

NOTE: 32GB DIMM is 2 Rank module

DIMM1	DIMM2	DIMM3	DIMM4	Memory Speed	DIMM / Channel	Availability
✓				1 Rank: 4000 MT/s 2 Rank: 4000 MT/s	1 DPC	Configuration available from factory
✓	✓			1 Rank: 4000 MT/s 2 Rank: 4000 MT/s	1 DPC	Configuration available from factory
✓	✓	✓		1 Rank: 4000 MT/s 2 Rank: 3600 MT/s	2 DPC	Configuration not available from factory
✓	✓	✓	✓	1 Rank: 4000 MT/s 2 Rank: 3600 MT/s	2 DPC	Configuration available from factory

Mixing Memory DIMM Vendors/Suppliers

Mixing memory DIMM supplier and/or capacity may cause a downgrade in memory speed, signal integrity or functional issues.

Mixing memory Rank (1 Rank and 2 Rank from table above) in the same channel will cause the memory speed to drop to 2000 MHz and could encounter an unstable condition.

Recommendation: Do not install different Rank memory modules in the same channel.

Memory Installation Sequence

Intel® 12th Gen Core™ HX-Series Processors have specific population (installation sequence) rules. To avoid a no-boot issue, there is/are DIMM population installation sequence requirements for cases where only one DIMM is populated per channel, then the furthest memory connector from the CPU should be populated first.

Features

Memory installation sequence is labeled on the memory shielding cover or User Guide. Memory must be installed in correct sequence.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.

NOTE: SSD/SODIMM requires low to moderate technical skills required to replace

NOTE: FreeDOS is limited to 32GB MAX ex-factory. Customer can add RAM, but should not uninstall their FreeDOS rev., but can upgrade.

NOTE: Transfer rates up to 4000 MT/s for nECC and ECC memory combinations when memory suppliers are consistent. If suppliers are not consistent, speeds may drop to 2000 MT/s for nECC and 2000 MT/s for ECC memory combinations. A custom configuration including part number AY104AV can be used to lock in a consistent vendor.

NOTE: Intel® allows architectures designed with four DIMM slots to run at 4000 MT/s

NOTE: Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory channels.

COPYRIGHT CONTROL

Features

NETWORKING/COMMUNICATIONS

LAN¹

Intel® I219-LM GbE, vPro®
Intel® I219-V GbE, non-vPro®

¹GbE—The term “10/100/1000” or “Gigabit” Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

WLAN¹

Intel® Wi-Fi CERTIFIED 6E AX211 (2x2) and Bluetooth® 5.3 combo wireless card, vPro®
Intel® Wi-Fi CERTIFIED 6E AX211 (2x2) and Bluetooth® 5.3 combo wireless card, non-vPro®

¹Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, and Windows 11 to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Not supported with Windows 10.

WWAN

Intel® XMM™ 7560 LTE Advanced Pro¹
Intel® 5G Solution 5000²

¹WWAN use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.

²Intel 5G module is optional and must be configured at the factory. Module designed for 5G NR NSA (non-standalone) networks as carriers deploy Evolved-Universal Terrestrial Radio Access New Radio Dual Connectivity (ENDC) with both 100Mhz of 5G NR and LTE channel bandwidth, using 256QAM 4x4 as defined by 3GPP. Module requires activation and separately purchased service contract. Check with service provider for coverage and availability in your area. Data connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. Backwards compatible to 4G LTE and 3G HSPA technologies. 5G module planned to be available in select platforms and select countries, where carrier supported.

NFC

NFC Mirage module NXP NPC300 I2C

AUDIO/MULTIMEDIA

Audio

Audio by Bang & Olufsen, 2 speakers with discrete amplifier, 3 Internal Microphone (2 Front, 1 Back) dual array digital microphones, functions keys for volume up and down, combo microphone/headphone jack, HD audio with 200Hz Bass Roll off

Camera^{1,2}

5MP+IR Camera 13th Gen (88 deg FOV)

¹ HD content required to view HD images.

² Windows Hello face authentication utilizes a camera specially configured for near infrared (IR) imaging to authenticate and unlock Windows devices as well as unlock your Microsoft Passport.

Features

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

HP Premium Quiet Keyboard – spill-resistant, full-size, backlit keyboard and DuraKeys

HP RGB Keyboard – Full-size, per-key RGB backlit keyboard

NOTE: RGB will only function after Z Light Space Software is activated

NOTE: Ubuntu will not function with RGB as Z Light Space is a WinApp. No Ubuntu support

Pointing Devices

Touchpad with image sensor and glass surface supporting multi-touch gestures and taps

Function Keys

ESC: system information

F1 – Display Switching

F2 – Blank or Privacy

F3 – Brightness Down

F4 – Brightness Up

F5 – Audio Mute

F6 – Volume Down

F7 – Volume Up

F8 – Mic Mute

F9 – Blank or Backlight Toggle (for backlit keyboard)

F10 – Insert

F11 – Airplane Mode

F12 – HP Command Center

Power Button (with LED)

delete

Hidden Keys

home

end

Fn+R – Break

Fn+S – Sys Rq

Fn+C – Scroll Lock

Fn+left/right arrow

SOFTWARE AND SECURITY

Software

HP Easy Clean²⁸

HP PC Hardware Diagnostics Windows

Touchpoint Customizer for Commercial

myHP app

HP Smart Support¹⁹

HP Mac Address Manager

HP Hotkey Support

HP Support Assistant¹

HP Notifications

HP Privacy Settings

HP Power Manager⁵

Buy Microsoft Office (Sold separately)

Bing search for IE11

HP Noise Cancellation Software

Native Miracast support²

17- month Adobe® free trial offer²⁹

HP Z Light Space³¹

Features

Data Science Stack³²
HP Services Scan³³

Manageability Features

HP Connect for Microsoft Endpoint Manager²¹
HP Image Assistant Gen5 (download)
HP Manageability Integration Kit (download)⁸
HP Client Management Script Library (download)
HP Patch Assistant (download)²²
HP Driver Packs (download)³⁰
HP Cloud Recovery²³
HP Client Catalog (download)

Security Management

HP Wolf Security for Business²⁴ includes:

HP Sure Click²⁵
HP Sure Sense¹⁶
HP Sure Run Gen5²⁶
HP Sure Recover Gen5¹⁰
HP Sure Start Gen7¹²
HP Tamper Lock⁶
HP Sure Admin¹⁴
HP Client Security Manager Gen7¹⁵
HP Device Access Manager
HP Power On Authentication
Master Boot Record security
Pre-boot authentication
Windows Defender
MS Bitlocker Encryption
Nano Security Lock Slot⁹

BIOS

HP BIOSphere Gen6³
HP Secure Erase¹³
Absolute Persistence Module⁴
HP DriveLock & Automatic DriveLock
BIOS Update via Network
HP Wake on WLAN
Fingerprint Sensor (select models)²⁷
Secured-Core PC Enable¹⁷
Trusted Platform Module TPM 2.0 Embedded Security Chip

BIOS Version

ISO/IEC 19678: 2015 (formerly NIST 800-147) compliant
UEFI version: 2.7
UEFI Class 3

Security

TPM

Model: STMicroelectronics ST33HTPH2X32AHE4
Version: 2.0
Revision: 1.59
FIPS 140-2 Compliant: Yes

Model: IFX SLB9672
Version: FW 15.22

Features

Revision: N/A
FIPS 140-2 Compliant: Yes

Fingerprint Sensor (Optional)

Voltage: 3.0-3.6V
Operating temperature: -20° - 85°C
Imaging current: 31mA
Wake on finger current: 40 uA
Capture rate: 30ms/frame
ESD Resistance: IEC 6100-4-2 4B (+/-15KV)
Detection Matrix: 363 dpi, sensing area 8x8 mm

Security Features

HP Fingerprint Sensor (optional)²⁷

Smartcard Reader

Model number: Alcor AU9560
FIPS 201 Compliant: Yes

Does the BIOS implement the ISO/IEC 19678:2015 (formerly NIST 800-147) guidelines?: Yes

UEFI version: 2.7
Class: Class 3

¹ HP Support Assistant requires Windows and Internet access.

² Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>.

³ HP BIOSphere Gen6 features may vary depending on the platform and configurations.

⁴ Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit:

<http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

⁵ HP Power Manager requires Windows 10 and higher and can be downloaded from the Microsoft Store.

⁶ HP Tamper Lock must be enabled by the customer or your administrator.

⁷ Microsoft Defender Opt in and internet connection required for updates.

⁸ HP Manageability Integration Kit can be downloaded from <https://ftp.ext.hp.com/pub/caps-softpaq/cmit/HPMIK.html>.

⁹ Nano Security lock slot is Lock sold separately.

¹⁰ HP Sure Recover Gen5 is available on select HP PCs and requires Windows 10 and an open network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data. Network based recovery using Wi-Fi is only available on PCs with Intel Wi-Fi Module

¹¹ HP Sure Recover with Embedded Reimaging Gen3 is an optional feature which must be configured at purchase with a base unit that has the On System Recovery (OSR) module. See product specifications for availability. You must back up important files, data, photos, videos, etc. before use to avoid loss of data. HP Sure Recover with Embedded Reimaging (Gen1) does not support platforms with Intel® Optane™.

¹² HP Sure Start Gen 7 is available on select HP PCs and workstations. See product specifications for availability.

¹³ Secure Erase – For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 “Clear” sanitation method. HP Secure Erase does not support platforms with Intel® Optane.

¹⁴ HP Sure Admin requires Windows 11, HP BIOS, HP Manageability Integration Kit from <http://www.hp.com/go/clientmanagement> and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.

¹⁵ HP Client Security Manager Gen7 requires Windows and is available on select HP Pro, Elite and Zbook PCs. See product specifications for details.

¹⁶ HP Sure Sense is available on select HP PCs with Windows 10 Pro, Windows 10 Enterprise, Windows 11 Pro, or Windows 11 Enterprise OS.

¹⁷ Secured-core PC requires an Intel® vPro® or AMD Ryzen™ Pro processor. Requires 8 GB or more system memory. Secured-core PC functionality can be enabled from the factory.

¹⁹ HP Smart Support requires HP TechPulse to be installed. For more information about how to enable or to download HP Smart Support, please visit <http://www.hp.com/smart-support>.

Features

²¹ HP Connect for Microsoft Endpoint Manager is available from the Azure Market Place for HP Pro, Elite, Z and Point-of-Sale PCs managed with Microsoft Endpoint Manager. Subscription to Microsoft Endpoint Manager required and sold separately. Network connection required.

²² HP Patch Assistant available on select HP PCs with the HP Manageability Kit that are managed through Microsoft System Center Configuration Manager. HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.

²³ HP Cloud Recovery is available for Z by HP, HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, wired network connection. **NOTE:** You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Detail please refer to: <https://support.hp.com/us-en/document/c05115630>.

²⁴ HP Wolf Security for Business requires Windows 10 or higher, includes various HP security features and is available on HP Pro, Elite, RPOS and Workstation products. See product details for included security features.

²⁵ HP Sure Click requires Windows 10 Pro or higher or Enterprise. See https://bit.ly/2PrLT6A_SureClick for complete details.

²⁶ HP Sure Run Gen5 is available on select HP PCs and requires Windows 10 and higher.

²⁷ HP Fingerprint Reader is an optional feature that requires Windows 10 IoT and must be configured at purchase.

²⁸ HP Easy Clean requires Windows 10 RS3 and higher and will disable the keyboard, touchscreen, and clickpad only. Ports are not disabled. See user guide for cleaning instructions.

²⁹ Offer available worldwide (excluding China and embargoed countries or other countries identified as restricted by applicable law or regulation) to new and existing subscribers who are 18+. Click on the Adobe icon in the start menu to redeem a 1-month free trial membership for select Adobe software. The software is tied to the device and is not transferrable. If you would like to sign up for an auto-renewing subscription, you can provide your payment method at sign-up. By adding a payment method, your subscription will automatically renew at the then current rate on your renewal date until you cancel. If you cancel before the end of the one-month free trial, you won't be charged. You can cancel your subscription anytime via your Adobe Account page or by contacting Customer Support. Please see current prices for Adobe Spark and the remaining Adobe products available in this offer. Offer not available to Education, OEM, or volume licensing customers. Subject to availability where the recipient resides. Additional terms and conditions may apply. VOID WHERE PROHIBITED OR RESTRICTED BY LAW.

³⁰ HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.

³¹ Optional feature that requires RGB keyboard at hardware purchase.

³² Available on select skus only.

³³ HP Services Scan is provided with Windows Update on select products and will check entitlement on each hardware device to determine if an HP TechPulse-enabled service has been purchased, and will download applicable software automatically. HP TechPulse is a telemetry and analytics platform that provides critical data around devices and applications. For full system requirements or to disable this feature, please visit <http://www.hpdaas.com/requirements>. Not applicable in China.

Features

POWER

Power Supply

HP Slim Smart 150W External Right Angle AC Power Adapter³
HP Slim Smart 200W External Right Angle AC Power Adapter
HP Slim Smart 230W External Right Angle AC Power Adapter

Battery

HP XL-Long Life 95Whr Polymer Fast Charge 8 cell⁴

Battery Recharge Time

Supports battery HP Fast Charge: approximately 50% in 30 minutes²

Battery life¹

Up to 17:14 hrs (UMA)

¹ MM18 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.

² Recharge up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/- 10% due to System tolerance.

³ 150W Power Adapter is not available with NVIDIA RTX™ Graphics

⁴ Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.

ENVIRONMENTAL

ENERGY STAR® certified³

EPEAT® registered where applicable. EPEAT® registration varies by country. See www.epeat.net for registration status by country.¹

IEEE 1680.1-2018 EPEAT®

Low halogen²

¹ Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit www.epeat.net for more information.

² External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.

³ Configurations of the HP Zbook Fury G10 Mobile Workstation PC that are ENERGY STAR® certified are identified as HP Zbook Fury G10 Mobile Workstation PC ENERGY STAR on HP websites and on <http://www.energystar.gov>.

Features

WEIGHTS & DIMENSIONS

Dimensions (w x d x h)

36.3 x 25.0 x 2.86 cm (WLAN)

14.29 x 9.86 x 1.12 in (WLAN)

36.3 x 25.0 x 2.77 cm (WWAN)

14.29 x 9.86 x 1.09 in (WWAN)

Weights*

Starting at 5.173 lbs (2.350 kg) (UMA)

Weight varies by configuration and components.

*Weight will vary by configuration. Does not include power adapter.

PORTS/SLOTS

MicroSD 7.1 SD7.0 Media Card Reader supports next generation secure digital and is compatible to SD, SDHC, SDXC, SDUC media

Left side

1 power connector

2 Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4, HP Sleep and Charge)

1 SD 7.1 Media Card Reader

1 Mini DisplayPort™ 1.4 with UMA and Discrete Graphics

1 HDMI 2.1 (depends on graphics selection) HDMI2.0 for UMA, HDMI2.1 for Discrete.

Right side

1 headphone/microphone combo

1 RJ-45

1 SuperSpeed USB Type-A 5Gbps signaling rate (charging)

1 SuperSpeed USB Type-A 5Gbps signaling rate

1 nano security lock slot

1 smart card reader

SERVICE AND SUPPORT

HP Services offers 1-year warranty and 90 day software limited warranty options depending on country. All batteries have a default one year limited warranty except for HP Long Life batteries which will follow the one or three year warranty of the platform. Refer to <http://www.hp.com/support/batterywarranty/> for additional battery information. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <https://cpc2.ext.hp.com/>.

¹ HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit <http://www.hp.com/go/cpc>. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

SYSTEM UNIT



Features

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	19.5V
	Average Operating Power(idle)	System in idle mode + max panel brightness Adapter Safety test condition
	Integrated graphics	CPU < 55W
	Discrete Graphics	Nvidia RTX A1000/A2000 < 45W Nvidia RTX A3000/A4000/A5000 < 80W
	Max Operating Power	< 230W
Temperature	Operating	32° to 95° F (0° to 35° C), System performance may be reduced above 32°C (89.6°F). No sustained direct exposure to sunlight.
	Non-operating	-4-140°F (-20 – 60°C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%; 38.7C (101.6F) maximum wet bulb tempera-ture; non-condensing.
Shock	Operating	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Maximum Altitude (unpressurized)	Operating	3048m (10,000ft)
	Non-operating	12192m (40,000ft)
Temperature Derating with Altitude	Operating	1.8°F / 1000 ft (1°C / 304.8 m)
Planned Industry Standard Certifications	Regulatory Model Number	HSN-I56C
	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Selected models
	EPEAT®	EPEAT Gold in United States
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	MIL STD 810H	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes

¹Configurations of the HP Zbook Fury G10 Mobile Workstation PC that are ENERGY STAR® certified are identified as HP Zbook Fury G10 Mobile Workstation PC ENERGY STAR on HP websites and on <http://www.energystar.gov>.

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Features

²Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit www.epeat.net for more information.

COPPIA CONTROLADA



Technical Specifications – Displays

DISPLAYS

16 in WQXGA (3840 x 2400) BrightView UWVA DCI-P3 NB2Z 400 eDP 1.4+PSR 100 bent OLED Panel

Active Area (W x H, mm)	344.448 x 215.280 (typ)
Dimensions (W x H, mm)	348.578 x 224.310 (max)
Diagonal Size (inch)	16
Thickness (body/PCB, mm)	1.242 / 3.143 (max)
Weight (g)	230 (max)
Interface	eDP1.4
Surface Treatment	Bright View
Contrast Ratio	100,000:1 (typ)
Refresh Rate (Hz)	60 (typ)
Brightness (nits)	400 (typ)
P.P.I.	283
Pixel Resolution	Pitch 3840 x 2400 (WQXGA)
	Format RGB
Backlight	OLED
Color Gamut Coverage	DCI-P3 100%
Color Depth	8
Viewing Angle	UWVA 85/85/85/85
Power Consumption (W, EBL@ 150nits max /200nits max)	6.10 (max) / 7.40 (max)
Low Blue Light	Yes
Touch Enabled	Yes
Touch Point Supported	10-point multi-touch
Pen Enabled	No

*All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

16 in WQXGA DreamColor (3840 x 2400) Anti-Glare UWVA LED DCI-P3 NB2Y 500 eDP1.4 w/o PSR 100 120Hz bent LCD Panel

Active Area (W x H, mm)	344.680 x 215.420 (typ)
Dimensions (W x H, mm)	349.980 x 225.420 (max)
Diagonal Size (inch)	16
Thickness (body/PCB, mm)	2.3 / 4.1(max)
Weight (g)	300 (max)
Interface	eDP1.4
Surface Treatment	Anti-Glare
Contrast Ratio	1200:1 (typ)
Refresh Rate (Hz)	120 (typ)
Brightness (nits)	500 (typ)
P.P.I.	283
Pixel Resolution	Pitch 3840 x 2400 (WQXGA)
	Format RGB
Backlight	WLED
Color Gamut Coverage	DCI-P3 100%

Technical Specifications – Displays

Delta E	<2
Color Depth	8
Viewing Angle	UWVA 89/89/89/89
Power Consumption (W, EBL@ 150nits max /200nits max)	4.98 (max)/ 5.84 (max)
Low Blue Light	No
Touch Enabled	No
Touch Point Supported	No
Pen Enabled	No

*All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

16.0 in WUXGA (1920 x 1200) Anti-Glare UWVA WLED+LBL sRGB NB2Y 1000 eDP 1.3+PSR 100 Privacy G4 Plus bent LCD Panel

Active Area (W x H, mm)	344.680 x 215.420 (typ)	
Dimensions (W x H, mm)	349.980 x 225.420 (max)	
Diagonal Size (inch)	16	
Thickness (body/PCB, mm)	2.2 / 3.9 (max)	
Weight (g)	310 (max)	
Interface	eDP 1.3	
Surface Treatment	Anti-Glare	
Contrast Ratio	1500:1 (typ)	
Refresh Rate (Hz)	60 (typ)	
Brightness (nits)	1000 (typ)	
P.P.I.	142	
Pixel Resolution	Pitch	1920 x1200 (WUXGA)
	Format	RGB
Backlight	WLED	
Color Gamut Coverage	sRGB 100%	
Color Depth	8	
Viewing Angle	UWVA 85/85/85/85	
Power Consumption (W, EBL@ 150nits max /200nits max)	N/A	
Low Blue Light	Yes	
Touch Enabled	No	
Touch Point Supported	No	
Pen Enabled	No	

*All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

16 in WUXGA (1920 x 1200) Anti-Glare UWVA WLED+LBL sRGB NB2Y 400 eDP 1.4+PSR2 Low-Power 100 bent LCD Panel

Active Area (W x H, mm)	344.678 x 215.424 (typ)	
Dimensions (W x H, mm)	350.680 x 226.470 (max)	
Diagonal Size (inch)	16	
Thickness (body/PCB, mm)	2.6 / 4.6 (max)	
Weight (g)	330 (max)	
Interface	eDP1.4	

Technical Specifications – Displays

Surface Treatment	Anti-Glare	
Contrast Ratio	1000:1 (typ)	
Refresh Rate (Hz)	60 (typ)	
Brightness (nits)	400 (typ)	
P.P.I.	142	
Pixel Resolution	Pitch	1920 x1200 (WUXGA)
	Format	RGB
Backlight	WLED	
Color Gamut Coverage	sRGB 100%	
Color Depth	8	
Viewing Angle	UWVA 89/89/89/89	
Power Consumption (W, EBL@ 150nits max /200nits max)	1.60 (max)/ 1.95 (max)	
Low Blue Light	Yes	
Touch Enabled	Yes	
Touch Point Supported	10-point multi-touch	
Pen Enabled	No	

*All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

16 in WUXGA (1920 x 1200) Anti-Glare UWVA WLED+LBL sRGB NB2Y 400 eDP 1.4+PSR2 Low-Power 100 bent LCD Panel

Active Area (W x H, mm)	344.678 x 215.424 (typ)	
Dimensions (W x H, mm)	350.680 x 226.470 (max)	
Diagonal Size (inch)	16	
Thickness (body/PCB, mm)	2.6 / 4.6 (max)	
Weight (g)	330 (max)	
Interface	eDP1.4	
Surface Treatment	Anti-Glare	
Contrast Ratio	1000:1 (typ)	
Refresh Rate (Hz)	60 (typ)	
Brightness (nits)	400 (typ)	
P.P.I.	142	
Pixel Resolution	Pitch	1920 x1200 (WUXGA)
	Format	RGB
Backlight	WLED	
Color Gamut Coverage	sRGB 100%	
Color Depth	8	
Viewing Angle	UWVA 89/89/89/89	
Power Consumption (W, EBL@ 150nits max /200nits max)	1.60 (max)/ 1.95 (max)	
Low Blue Light	Yes	
Touch Enabled	No	
Touch Point Supported	No	
Pen Enabled	No	

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Technical Specifications – Displays

*All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 45percent cg 250nits eDP 1.2 w/o PSR bent NWBZ	Active Area (W x H, mm)	344.16 x 193.59 mm (typ.)
	Dimensions (W x H, mm)	350.96 x 205.54 mm (max)
	Diagonal Size (inch)	15.6 inch
	Thickness (body/PCB, mm)	3.0 mm/ 5.0 mm (w/PCB) (max)
	Weight (g)	370 g (max)
	Interface	eDP 1.2 (2 lane)
	Surface Treatment	Anti-Glare
	Contrast Ratio	600:1 (typ.)
	Refresh Rate (Hz)	60 Hz
	Brightness (nits)	250 nits
	P.P.I.	142
	Pixel Resolution	Pitch 1920 x 1080 (FHD)
		Format RGB Stripe
	Backlight	LED
	Color Gamut Coverage	NTSC 45%
	Color Depth	6 bits (Hi FRC supportive w/ condition to enable)
	Viewing Angle	UWVA 85/85/85/85
	Power Consumption (W, EBL@ 150nits max /200nits max)	2.62 (max) / 3.27 (max)
	Low Blue Light	No
	Touch Enabled	No
Touch Point Supported	No	
Pen Enabled	No	

*All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.



Technical Specifications – Storage

STORAGE AND DRIVES

4TB PCIe-4x4 2280 NVMe Three Layer Cell double-sided M.2 Solid State Drive	Form Factor	M.2 2280	
	Capacity	4TB	
	NAND Type	TLC	
	Height	0.14 in (3.6 mm)	
	Width	0.87 in (22 mm)	
	Weight	15g	
	Interface	PCIe NVMe Gen4X4	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±10%	5000 MB/s ±10%
	Logical Blocks	8,001,594,720	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
Features	Pyrite 2.0; TRIM; L1.2		
	NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.		
SSD 2TB 2280 PCIe-4x4 NVMe Three Layer Cell	Form Factor	M.2 2280	
	Capacity	2 TB	
	NAND Type	TLC	
	Height	0.09 in (2.3 mm)	
	Width	0.87 in (22 mm)	
	Weight	0.02 lb (10 g)	
	Interface	PCIe NVMe Gen4X4	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±10%	5000 MB/s ±10%
	Logical Blocks	4,000,797,360	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
Features	Pyrite 2.0; TRIM; L1.2		
	NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.		
SSD 1TB 2280 PCIe-4x4 NVMe Three Layer Cell	Form Factor	M.2 2280	
	Capacity	1TB	
	NAND Type	TLC	
	Height	0.09 in (2.3 mm)	
	Width	0.87 in (22 mm)	
	Weight	0.02 lb (10 g)	
	Interface	PCIe NVMe Gen4X4	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±10%	5000 MB/s ±10%
	Logical Blocks	2,000,409,264	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
Features	Pyrite 2.0; TRIM; L1.2		

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Technical Specifications – Storage

SSD 512GB 2280 PCIe-4x4 NVMe Three Layer Cell	Form Factor	M.2 2280		
	Capacity	512GB		
	NAND Type	TLC		
	Height	0.09 in (2.3 mm)		
	Width	0.87 in (22 mm)		
	Weight	0.02 lb (10 g)		
	Interface	PCIe NVMe Gen4X4		
	Performance	Minimum Sequential Read	Minimum Sequential Write	
		6400 MB/s ±10%	3500 MB/s ±10%	
		Logical Blocks	1,000,215,215	
2TB PCIe-4x4 2280 NVMe Self Encrypted OPAL2 Three Layer Cell Solid State Drive	Form Factor	M.2 2280		
	Capacity	2TB		
	NAND Type	TLC		
	Height	0.09 in (2.3 mm)		
	Width	0.87 in (22 mm)		
	Weight	0.02 lb (10 g)		
	Interface	PCIe NVMe Gen4X4		
	Performance	Minimum Sequential Read	Minimum Sequential Write	
		6400 MB/s ±10%	5000 MB/s ±10%	
		Logical Blocks	4,000,797,360	
1TB PCIe-4x4 2280 NVMe Self Encrypted OPAL2 Three Layer Cell Solid State Drive	Form Factor	M.2 2280		
	Capacity	1TB		
	NAND Type	TLC		
	Height	0.09 in (2.3 mm)		
	Width	0.87 in (22 mm)		
	Weight	0.02 lb (10 g)		
	Interface	PCIe NVMe Gen4X4		
	Performance	Minimum Sequential Read	Minimum Sequential Write	
		6400 MB/s ±10%	5000 MB/s ±10%	
		Logical Blocks	2,000,409,264	

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Technical Specifications – Storage

**512GB PCIe-4x4 2280
NVME Self Encrypted
OPAL2 Three Layer Cell
Solid State Drive**

Form Factor

Capacity

NAND Type

Height

Width

Weight

Interface

Performance

Logical Blocks

Operating Temperature

Features

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.

M.2 2280

512GB

TLC

0.09 in (2.3 mm)

0.87 in (22 mm)

0.02 lb (10 g)

PCIe NVMe Gen4X4

Minimum Sequential Read

6400 MB/s ±10%

Minimum Sequential Write

3500 MB/s ±10%

1,000,215,215

32° to 158°F (0° to 70°C) [ambient temp]

TCG Opal 2.0; TRIM; L1.2

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.



Technical Specifications – Networking

NETWORKING/COMMUNICATION

Intel AX211 Wi-Fi 6E +BT Wireless LAN Standards
5.3 M.2 160MHz CNVI
WLAN vPro®

Interoperability	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
Frequency Band	Wi-Fi certified 802.11b/g/n/ax • 2.402 – 2.482 GHz 802.11a/n/ac/ax • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz • 5.955 – 6.415 GHz • 6.435 – 6.515 GHz • 6.535 – 6.875 GHz • 6.895 – 7.115 GHz
Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: max 300Mbps • 802.11ac : 1733Mbps • 802.11ax : max 2.4Gbps
Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM , 1024QAM
Security¹	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • WPA3 certification • IEEE 802.11i • WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points

Technical Specifications – Networking

Output Power²	<ul style="list-style-type: none"> • 802.11b : +17dBm minimum • 802.11g : +16dBm minimum • 802.11a : +17dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +13dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum • 802.11ac VHT160(5GHz) : +10dBm minimum • 802.11ax HE40(2.4GHz) : +12dBm minimum • 802.11ax HE80(5GHz) : +10dBm minimum • 802.11ax HE160(5GHz) : +10dBm minimum 				
Power Consumption	<ul style="list-style-type: none"> • Transmit mode 2.0 W • Receive mode 1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW 				
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode				
Receiver Sensitivity³	<ul style="list-style-type: none"> • 802.11b, 1Mbps : -93.5dBm maximum • 802.11b, 11Mbps : -84dBm maximum • 802.11a/g, 6Mbps : -86dBm maximum • 802.11a/g, 54Mbps : -72dBm maximum • 802.11n, MCS07 : -67dBm maximum • 802.11n, MCS15 : -64dBm maximum • 802.11ac, MCS0(VHT80) : -84dBm maximum • 802.11ac, MCS9(VHT80) : -59dBm maximum • 802.11ac, MCS9(VHT160) : -58.5dBm maximum • 802.11ax, MCS11(HE40): -57dBm maximum • 802.11ax, MCS11(HE80): -54dBm maximum • 802.11ax, MCS11(HE160): -53.5dBm maximum 				
Antenna Type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications				
Form Factor	PCI-Express M.2 MiniCard				
Dimensions	<ol style="list-style-type: none"> 1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm 				
Weight	<ol style="list-style-type: none"> 1. Type 2230 : 2.8g 2. Type 1216: 1.3g 				
Operating Voltage	3.3v +/- 9%				
Temperature	<table border="0"> <tr> <td>Operating</td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </table>	Operating	14° to 158° F (-10° to 70° C)	Non-operating	-40° to 176° F (-40° to 80° C)
Operating	14° to 158° F (-10° to 70° C)				
Non-operating	-40° to 176° F (-40° to 80° C)				
Humidity	<table border="0"> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </table>	Operating	10% to 90% (non-condensing)	Non-operating	5% to 95% (non-condensing)
Operating	10% to 90% (non-condensing)				
Non-operating	5% to 95% (non-condensing)				
Altitude	<table border="0"> <tr> <td>Operating Non-</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </table>	Operating Non-	0 to 10,000 ft (3,048 m)	operating	0 to 50,000 ft (15,240 m)
Operating Non-	0 to 10,000 ft (3,048 m)				
operating	0 to 50,000 ft (15,240 m)				
LED Activity	LED Amber – Radio Off; LED Off – Radio ON				

Technical Specifications – Networking

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless Technology

Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DHS) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.
Power Consumption	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
Bluetooth Software Supported	Microsoft Windows Bluetooth Software
Link Topology	
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) BT5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range

*Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, and Windows 11 to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Not supported with Windows 10.

Technical Specifications – Networking

Intel AX211 Wi-Fi 6E +BT Wireless LAN Standards
5.3 M.2 160MHz CNVi
WLAN non-vPro®

Interoperability	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
Frequency Band	Wi-Fi certified 802.11b/g/n/ax • 2.402 – 2.482 GHz 802.11a/n/ac/ax • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz • 5.955 – 6.415 GHz • 6.435 – 6.515 GHz • 6.535 – 6.875 GHz • 6.895 – 7.115 GHz
Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: max 300Mbps • 802.11ac: 1733Mbps • 802.11ax: max 2.4Gbps
Modulation	Direct Sequence Spread Spectrum
Security¹	OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x, WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • WPA3 certification • IEEE 802.11i • WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power²	• 802.11b: +17dBm minimum • 802.11g: +16dBm minimum • 802.11a: +17dBm minimum • 802.11n HT20(2.4GHz): +14dBm minimum • 802.11n HT40(2.4GHz): +13dBm minimum

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Technical Specifications – Networking

	<ul style="list-style-type: none">• 802.11n HT20(5GHz) : +14dBm minimum• 802.11n HT40(5GHz) : +13dBm minimum• 802.11ac VHT80(5GHz) : +10dBm minimum• 802.11ac VHT160(5GHz) : +10dBm minimum• 802.11ax HE40(2.4GHz) : +12dBm minimum• 802.11ax HE80(5GHz) : +10dBm minimum• 802.11ax HE160(5GHz) : +10dBm minimum
Power Consumption	<ul style="list-style-type: none">• Transmit mode 2.0 W• Receive mode 1.6 W• Idle mode (PSP) 180 mW (WLAN Associated)• Idle mode 50 mW (WLAN unassociated)• Connected Standby 10mW• Radio disabled 8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	<ul style="list-style-type: none">• 802.11b, 1Mbps : -93.5dBm maximum• 802.11b, 11Mbps : -84dBm maximum• 802.11a/g, 6Mbps : -86dBm maximum• 802.11a/g, 54Mbps : -72dBm maximum• 802.11n, MCS07 : -67dBm maximum• 802.11n, MCS15 : -64dBm maximum• 802.11ac, MCS0(VHT80) : -84dBm maximum• 802.11ac, MCS9(VHT80) : -59dBm maximum• 802.11ac, MCS9(VHT160) : -58.5dBm maximum• 802.11ax, MCS11(HE40) : -57dBm maximum• 802.11ax, MCS11(HE80) : -54dBm maximum• 802.11ax, MCS11(HE160) : -53.5dBm maximum
Antenna Type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
Weight	1. Type 2230 : 2.8g 2. Type 1216: 1.3g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating Non-operating 0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON
HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless Technology	
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)



Technical Specifications – Networking

Data Rates and Throughput	<p>Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps</p> <p>BLE : 1 Mbps data rate; throughput up to 0.2 Mbps</p> <p>Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels</p> <p>Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)</p>
Transmit Power	<p>The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.</p>
Power Consumption	<p>Peak (Tx): 330 mW</p> <p>Peak (Rx): 230 mW</p> <p>Selective Suspend: 17 mW</p>
Bluetooth Software Supported	<p>Microsoft Windows Bluetooth Software</p>
Link Topology	
Power Management	<p>Microsoft Windows ACPI, and USB Bus Support</p>
Certifications	<p>FCC (47 CFR) Part 15C, Section 15.247 & 15.249</p>
Power Management Certifications	<p>ETS 300 328, ETS 300 826</p> <p>Low Voltage Directive IEC950</p> <p>UL, CSA, and CE Mark</p>
Bluetooth Profiles Supported	<p>BT4.1-ESR 5/6/7 Compliance</p> <p>LE Link Layer Ping</p> <p>LE Dual Mode</p> <p>LE Link Layer</p> <p>LE Low Duty Cycle Directed Advertising</p> <p>LE L2CAP Connection Oriented Channels</p> <p>Train Nudging & Interlaced Scan</p> <p>BT4.2 ESR08 Compliance</p> <p>LE Secure Connection- Basic/Full</p> <p>LE Privacy 1.2 –Link Layer Privacy</p> <p>LE Privacy 1.2 –Extended Scanner Filter Policies</p> <p>LE Data Packet Length Extension</p> <p>FAX Profile (FAX)</p> <p>Basic Imaging Profile (BIP)2</p> <p>Headset Profile (HSP)</p> <p>Hands Free Profile (HFP)</p> <p>Advanced Audio Distribution Profile (A2DP)</p> <p>BT5.2</p> <p>ESR9/10 Compliance</p> <p>LE Advertisement Extensions</p> <p>Channel Selection Algo</p> <p>Limited High Duty Cycle Non-Connectable Advertising</p> <p>2Mbps LE</p> <p>LE Long Range</p>
Security & Manageability	<p>Intel® vPro® support with appropriate Intel® chipset components</p> <p>*Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, and Windows 11 to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Not supported with Windows 10.</p>

Technical Specifications – Networking

Intel® 5G Solution 5000

Technology/Operating bands

WCDMA/HSPA+ operating bands:

Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)
Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)
Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)
Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)
Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)

LTE FDD/TDD operating bands:

Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)
Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)
Band 3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL)
Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)
Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)
Band 7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL)
Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)
Band 12: 699 to 716 MHz (UL), 729 to 746 MHz (DL)
Band 13: 777 to 787 MHz (UL), 746 to 756 MHz (DL)
Band 14: 788 to 798 MHz (UL), 758 to 768 MHz (DL)
Band 17: 704 to 716 MHz (UL), 734 to 746 MHz (DL)
Band 18: 815 to 830 MHz (UL), 860 to 875 MHz (DL)
Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL)
Band 20: 832 to 862 MHz (UL), 791 to 821 MHz (DL)
Band 25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL)
Band 26: 814 to 849 MHz (UL), 859 to 894 MHz (DL)
Band 28: 703 to 748 MHz (UL), 758 to 803 MHz (DL)
Band 29: 717 to 728 MHz (DL)
Band 30: 2305 to 2315 MHz (UL) 2350 to 2360 MHz (DL)
Band 32: 1452 to 1496 MHz (DL)
Band 34: 2010 to 2025 MHz (UL/DL)
Band 38: 2570 to 2620 MHz (UL/DL)
Band 39: 1880 to 1920 MHz (UL/DL)
Band 40: 2300 to 2400 MHz (UL/DL)
Band 41: 2496 to 2690 MHz (UL/DL)
Band 42: 3400 to 3600 MHz (UL/DL)
Band 43: 3400 to 3800 MHz (UL/DL)
Band 46: 5150 to 5925 MHz (DL)
Band 48: 3550 to 3700 MHz (UL/DL)
Band 66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL)
Band 71: 663 to 698 MHz (UL), 617 to 652 MHz (DL)

5G NR Sub 6GHz

n1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)
n2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)
n3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL)
n5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)
n7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL)
n8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)
n20: 832 to 862 MHz (UL), 791 to 821 MHz (DL)
n25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL)
n28: 703 to 748 MHz (UL), 758 to 803 MHz (DL)
n38: 2570 to 2620 MHz (UL/DL)
n40: 2300 to 2400 MHz (UL/DL)
n41: 2496 to 2690 MHz (UL/DL)
n48: 3550 to 3700 MHz (UL/DL)
n66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL)

Technical Specifications – Networking

	n71: 663 to 698 MHz (UL), 617 to 652 MHz (DL) n77: 3300 to 4200 MHz (UL/DL) n78: 3300 to 3800 MHz (UL/DL) n79: 4400 to 5000 MHz (UL/DL)
Wireless protocol standards	5G NR Air Interface 3GPP Rel15 5G NR sub-6 LTE Rel14 20 layers and 2 Gbps downlink (DL) throughput – 4 × 4 MIMO across 5x CA 200 Mbps/uplink (UL) throughput – 40 MHz ULCA and 256 QAM WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
GPS	Standalone, A-GPS (MS-A, MS-B)
GPS Bands	GPS: L1 (1575.42MHz) GLONASS: L1 (1602MHz) BeidouB1(1561.098MHz) Galileo E1 (1575.42) QZSS(1575.42 MHz)
Maximum Data Rates	SA 5G/NR sub-6 Peak: DL4.67Gbps/ UL 1.25Gbps 5G NSA sub 6G : DL: 3.8 Gbps/UL 700Mbps LTE: ue-CategoryDL 19, (DL : 1.6 Gbps) ue-CategoryUL 13 , (UL: 150Mbps) DC-HSPA+: 42 Mbps (Download), 11.5 Mbps (Upload)
Maximum Output Power	LTE: 23 dBm in all band except B41 LTE B41 HPUE = 26dBm NR: 23 dBm in all band except n41, n77, n78 and n79 LTE n41, n77, n78 and n79 HPUE = 26dBm HSPA+: 23.5 dBm
Maximum Power Consumption	5G Sub 6 : 2500 mA LTE : 1,300 mA (peak) ; 1100 mA (average) HSPA+ : 1,100 mA (peak) ; 800 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	8 g
Dimensions (Length x Width x Thickness)	52 mm × 30 mm × 2.6 mm
eSIM	Support

* Intel® 5G module is optional and must be configured at the factory. Module designed for 5G NR NSA (non-standalone) networks as carriers deploy Evolved-Universal Terrestrial Radio Access New Radio Dual Connectivity (ENDC) with both 100MHz of 5G NR and LTE channel bandwidth, using 256QAM 4x4 as defined by 3GPP. Module requires activation and separately purchased service contract. Check with service provider for coverage and availability in your area. Data connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. Backwards compatible to 4G LTE and 3G HSPA technologies. 5G module planned to be available in select platforms and select countries, where carrier supported.

Intel® XMM™ 7560 R+ LTE-Advanced Pro

Technology/Operating bands	FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 14 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1900 (Band 25), 850 (Band 26), 700 (Band 28), 700 (Band 29 RX only), 2300 (Band 30), 1700/2100 (Band 66), 600 (band 71). TDD LTE: 2100 (Band 34), 2600 (Band 38), 1900 (Band 39), 2400 (Band 40), 2500 (Band 41), 3500
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Technical Specifications – Networking

	(Band 42), 3700 (Band 43), 3700 (band 48), 5200 (Band 46 RX only) MHz; HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz
Wireless protocol standards	3GPP Release 12 LTE Specification DL-CAT.16, DL 100MHz BW throughput up to 978Mbps; UL-CAT.13 40MHz throughput up to 150Mbps WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
GPS	Standalone GPS/Beidou/Glonass, A-GPS (MS-A, MS-B)
GPS Bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz
Maximum Data Rates	LTE: 978 Mbps (Download), 150 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
Maximum Output Power	LTE: 23 dBm in all band except B41 LTE B41 HPUE = 26dBm HSPA+: 23.5 dBm
Maximum Power Consumption	LTE : 1,200 mA (peak) ; 900 mA (average) HSPA+ : 1,100 mA (peak) ; 800 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm
eSIM	Support

*Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

NFC Mirage module (NXP NPC300 I2C 10mmx17mm)

Dimensions (L x W x H)	Module 25 mm by 10 mm by 2.0 mm
Chipset	NPC300
System interface	I2C
NFC RF standards	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 ISO/IEC 18092 ECMA-340 NFCIP-1 Target and Initiator ECMA-320 NFCIP-2
NFC Forum Support Reader (PCD-VCD) Mode(1)	Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2 ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Jewel and Topaz cards
Card Emulation (PICC-VICC) Mode(1)	ISO/IEC 14443 A ISO/IEC 14443 B and B'

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Technical Specifications – Networking

		MIFARE FeliCa
Frequency		13.56 MHz
NFC Modes Supported		Reader/Writer, Peer-to-Peer
Raw RF Data Rates		106, 212, 424, 848 kbps
Operating temperature		0°C to 70°C
Storage temperature		-20°C to 125°C
Humidity		10-90% operating 5-95% non-operating
Supply Operating voltage		4.35 to 5.25 Volts
I/O Voltage		1.8V or 3.3V
Power Consumption	Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)	Polling 7.3 mA
	Mode Power Consumption, Typical	Detected Test Tag Type 1 Total 283.8 mA Net Module 236.8 mA
		Detected Test Tag Type 2 Total 288.8 mA Net Module 241.8 mA
		Detected Test Tag Type 3 Total 287.7 mA Net Module 240.7 mA
		Detected Test Tag Type 4 Total 282.3 mA Net Module 235.3 mA
Antenna		Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module.
Intel® I219-LM 1 Gigabit Network Connection LOM (vPro®)	Connector	RJ-45
	System Interface	PCI(Intel proprietary) + SMBus
	Data rates supported	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
	IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
	Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling(Hash Mode only) Jumbo Frame 9K
	Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
	Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption



Technical Specifications – Networking

	Advanced link down power saving for reducing link down power consumption
Management Interface	Auto MDI/MDIX Crossover cable detection
IT Manageability	Wake-on-LAN from modern standby or sleep state (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
Security & Manageability	Intel® vPro® support with appropriate Intel® chipset components

Intel® I219v 1 Gigabit Network Connection LOM (non-vPro®)	Connector	RJ-45
	System Interface	PCI(Intel proprietary) + SMBus
	Data rates supported	1. 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 2. 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 3. 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40) 4. Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10, 100 & 1000 Mbit/s
	IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3bz 2.5GBASE-T
	Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling(Hash Mode only) Jumbo Frame 9K
	Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
	Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	Management Interface	Auto MDI/MDIX Crossover cable detection
	IT Manageability	Wake-on-LAN from modern standby or sleep state (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))

Technical Specifications – Networking

Comprehensive diagnostic and configuration software suite
Virtual Cable Doctor for Ethernet cable status

Security & Manageability Intel® non-vPro® support with appropriate Intel® chipset components

Qualcomm 9205

Technology/Operating bands

FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 14 upper), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1900 (Band 25), 850 (Band 26), 800 (Band 27), 700 (Band 28), 1700/2100 (Band 66), 700 (band 85) MHz.
GSM/GPRS/EGPRS: 850, 900, 1800, 1900MHz.

Wireless protocol standards

- 3GPP TS 51.010-1 V10.5.0: Mobile Station (MS) conformance specification; Part 1: Conformance specification
- 3GPP TS 36.521-1 V14.3.0: User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing
- 3GPP TS 21.111 V10.0.0: USIM and IC card requirements
- 3GPP TS 51.011 V4.15.0: Specification of the Subscriber Identity Module -Mobile Equipment (SIM-ME) interface
- 3GPP TS 31.102 V10.11.0: Characteristics of the Universal Subscriber Identity Module (USIM) application
- 3GPP TS 31.11 V10.16.0: Universal Subscriber Identity Module (USIM) Application Toolkit (USAT)
- 3GPP TS 36.124 V10.3.0: Electro Magnetic Compatibility (EMC) requirements for mobile terminals and ancillary equipment
- 3GPP TS 27.007 V10.0.8: AT command set for User Equipment (UE)
- 3GPP TS 27.005 V10.0.1: Use of Data Terminal Equipment – Data Circuit terminating Equipment (DTE – DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)

GPS

Standalone GPS/Beidou/Glonass, A-GPS (MS-A, MS-B)

GPS Bands

1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz

Maximum Data Rates

LTE FDD: 375 Kbps (Download), 1119 Kbps (Upload)
GSM:
- GPRS: 107 Kbps (Download), 85.6 Kbps (Upload)
- EGPRS: 296 Kbps (Download), 236.8 Kbps (Upload)

Maximum Output Power

LTE: 21.5 dBm in all band
GSM:34dBm

Maximum Power Consumption

LTE : 1,200 mA (peak) ; 900 mA (average)
HSPA+ : 1,100 mA (peak) ; 800 mA (average)

Form Factor

M.2, 2242-S3 Key B

Weight

5.5 g

Dimensions

(Length x Width x Thickness)

22 x 42 x 2.3 mm

eSIM

Support

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Technical Specifications – Networking

AUDIO

HD Stereo Codec	ALC3315
Audio I/O Ports	Headset connector supports a CTIA
Internal Speaker Amplifier	Using External AMP for 41internal speaker.
Multi-streaming Capable Sampling	Playback multi-streaming can be enabled in the audio control panel to allow independent audio. Streams to be sent to/from the front and rear jacks or integrated speaker.
Wavetable Syntheses	DAC: 48000Hz ADC: Internal MIC: 48000Hz External MIC: 44100Hz
Analog Audio	Support 3.5mm Headset : CTIA only and Headphone-out
# of Channels on Line-Out	No line out
Internal Speaker	Yes

POWER

HP 150W Slim 4.5 mm PFC Right Angle Smart (3-pin) AC Power Adapter	Dimensions	138x66x22mm	
	Weight	unit: 325g +/- 10g	
	Input	Input Efficiency	88% at 115 Vac and 89% at 230Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	2.7 A at 90 Vac and Maximum Load
	Output	Output power	150W
		DC output	19.5V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<16.0A
		DC Plug	4.5mm Barrel Type
	Connector	C6	
	Environmental Design	Operating temperature	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 16,400 ft (0 to 5000m)
		Humidity	5% to 95%
Storage Humidity		5% to 95%	
EMI and Safety Certifications	Eg: *CE Mark – full compliance with LVD and EMC directives * Worldwide safety standards – IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1, Class1, SELV; Agency approvals – C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class		



Technical Specifications – Networking

B, CISPR32 Class B, CCC, NOM-001 NYCE.

* MTBF – over 200,000 hours at 25°C ambient condition.

COPIA CONTROLADA

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Technical Specifications – Power

HP 200W Slim 4.5 mm PFC Right Angle Smart (3-pin) AC Power Adapter	Dimensions	152x73x23.5mm		
	Weight	unit: 510g +/- 10g		
	Input	Input Efficiency	88% at 115 Vac and 89% at 230Vac	
		Input frequency range	47 ~ 63 Hz	
	Output	Input AC current	2.7 A at 90 Vac and Maximum Load	
		Output power	200W	
	Connector	DC output	19.5V	
		Hold-up time	5ms at 115 Vac input	
	Environmental Design	Output current limit	<21.0A	
		DC Plug	4.5mm Barrel Type	
	EMI and Safety Certifications	Connector	C14	
		Operating temperature	32° to 95° F (0° to 35° C)	
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)	
		Altitude	0 to 16,400 ft (0 to 5000m)	
		Humidity	5% to 95%	
		Storage Humidity	5% to 95%	
	Eg:			
*CE Mark – full compliance with LVD and EMC directives				
* Worldwide safety standards – IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1, Class1, SELV;				
Agency approvals – C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE.				
* MTBF – over 200,000 hours at 25°C ambient condition.				
HP 230W Slim 4.5 mm PFC Right Angle Smart (3-pin) AC Power Adapter	Dimensions	180x88x25.4mm		
	Weight	unit: 650g +/- 10g		
	Input	Input Efficiency	88% at 115 Vac and 89% at 230Vac	
		Input frequency range	47 ~ 63 Hz	
	Output	Input AC current	3.5 A at 90 Vac and Maximum Load	
		Output power	230W	
	Connector	DC output	19.5V	
		Hold-up time	5ms at 115 Vac input	
	Environmental Design	Output current limit	<25.0A	
		DC Plug	4.5mm Barrel Type	
	EMI and Safety Certifications	Connector	C14	
		Operating temperature	32° to 95° F (0° to 35° C)	
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)	
		Altitude	0 to 16,400 ft (0 to 5000m)	
		Humidity	5% to 95%	
		Storage Humidity	5% to 95%	



Technical Specifications – Power

EMI and Safety Certifications	Eg: *CE Mark – full compliance with LVD and EMC directives * Worldwide safety standards – IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1, Class1, SELV; Agency approvals – C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF – over 200,000 hours at 25°C ambient condition.
95Whr XL-Long Life Polymer Fast Charge 8 cell Battery	Dimensions (H x W x L) 314.2x59.4x16.91 mm (12.37x2.34x0.67 inch) Weight 0.396kg +/-0.010kg (0.875lb +/-0.02lb) Cells/Type 8-cell Lithium-Ion Polymer cell / 624266 Energy Voltage 15.44V/ 17.72V Amp-hour capacity 5.907Ah /6.154Ah Watt-hour capacity 95Wh Temperature Operating (Charging) 32° to 113° F (0° to 45° C) Operating (Discharging) 14° to 140° F (-10° to 60° C) Fuel Gauge LED NA Warranty Refer to products warranty Optional Travel Battery Available No
	<p>*Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.</p> <p>Refer to http://www.hp.com/support/batterywarranty/ for battery warranty information.</p> <p>NOTE: batteries are not customer replaceable.</p>

Technical Specifications – Environmental

ENVIRONMENTAL DATA

Eco-Label Certifications & declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- US Federal Energy Management Program (FEMP)
- EPEAT[®] Gold registered in the United States. See <http://www.epeat.net> for registration status in your country.
- TCO Certified
- China Energy Conservation Program (CECP)
- China State Environmental Protection Administration (SEPA)
- Taiwan Green Mark
- Korea Eco-label
- Japan PC Green label*

Sustainable Impact Specifications

- Product Carbon Footprint (hp.com)
- Ocean-bound plastic in Speaker
- 25% post-consumer recycled plastic
- 80% recycled metal
- External Power Supply 90% Efficiency
- Low halogen
- Outside Box and corrugated cushions are 100% sustainably sourced and recyclable
- Molded Paper Pulp Cushion inside box is 100% sustainably sourced and recyclable
- Bulk packaging available

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

Energy Consumption (in accordance with US ENERGY STAR® test method)

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	11.09 W	11.11 W	10.94 W
Normal Operation (Long idle)	NA	NA	NA
Sleep	NA	NA	NA
Off	0.41 W	0.43 W	0.4 W

NOTE:

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	37.9 BTU/hr	38 BTU/hr	37.4 BTU/hr
Normal Operation (Long idle)	NA	NA	NA
Sleep	NA	NA	NA
Off	1.4 BTU/hr	1.5 BTU/hr	1.4 BTU/hr

Technical Specifications – Environmental

***NOTE:** Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{Wad} , bels)	Sound Pressure (L_{pAm} , decibels)
Typically Configured – Idle	2.9	20.8
Fixed Disk – Random writes	2.9	21.0
Optical Drive – Sequential reads	2.9	21.0

Longevity and Upgrading This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product is 93.3% recycle-able when properly disposed of at end of life.

Packaging Materials

External:	PAPER/Corrugated	291 g
	PAPER/Corrugated	72 g
	PAPER/Molded Pulp	160 g
	PAPER/Paper	3 g
	Internal:	PLASTIC/Polyethylene low density – LDPE

The plastic packaging material contains at least 0.0% recycled content.

The corrugated paper packaging materials contains at least 55.0% recycled content.

RoHS Compliance

HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.

We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.

We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the scope of the commitment to include further restricted substances as regulations continue to evolve.

Technical Specifications – Environmental

To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Bis(2-Ethylhexyl) phthalate (DEHP)
- Benzyl butyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Diisobutyl phthalate (DIBP)
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging Usage

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

HP offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

Technical Specifications – Environmental

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/recyclers>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

HP Inc. Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report

<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>

Eco-label certifications

<http://www8.hp.com/us/en/hp-information/environment/ecolabels.html>

ISO 14001 certificates:

<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842>
and

<http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf>

Footnotes

- Percentage of ocean-bound plastic contained in each component varies by product
- Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard.
- External power supplies, WWAN modules, power cords, cables and peripherals excluded.
- 100% outer box packaging and corrugated cushions made from sustainably sourced certified and recycled fibers.
- Fiber cushions made from 100% recycled wood fiber and organic materials.
- Plastic cushions are made from >90% recycled plastic.
- Recycled metal is expressed as a percentage of the total weight of the metal according to ISO 14021 definitions for metal parts over 25 grams

Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part #
Bags	HP Prelude Pro Recycle Backpack	1X644AA
	HP Prelude Pro Recycle Top Load	1X645AA
	HP Prelude 15.6 Top Load	1E7D7AA
	HP Prelude 15.6 Top Load	2Z8P4AA
	HP Prelude 15.6 Top Load	50P31AA
	HP Prelude 15.6 Backpack	1E7D6AA
	HP Prelude 15.6 Backpack	2Z8P3AA
	HP Prelude 15.6 Backpack	50P32AA
	HP Renew Business 17.3 Laptop Backpack	3E2U5AA
	HP Renew Business 17.3 Laptop Bag	3E2U6AA
	HP Renew Business 15.6 Laptop Bag	3E5F8AA
	HP Renew Executive 16 Laptop Backpack	6B8Y1AA
	HP Renew Executive 16 Laptop Bag	6B8Y2AA
	HP Travel 25 Liter 15.6 Iron Gray Laptop Backpack	6B8U4AA
	HP Travel 25 Liter 15.6 Iron Gray Laptop Backpack	6H2D8AA
	HP Travel 18 Liter 15.6 Iron Gray Laptop Backpack	6B8U6AA
	HP Travel 18 Liter 15.6 Iron Gray Laptop Backpack	6H2D9AA
Docking	HP USB-C Dock G5	26D32AA
	HP USB-C Dock G5	5TW10AA
	HP Thunderbolt Dock Audio Module	3AQ21AA
	HP 120W Thunderbolt Dock	2UK37AA
	HP 120W Thunderbolt Dock	6HP48AA
	HP Thunderbolt Dock 230W G2	2UK38AA
	HP TB Dock G2 w/ Combo Cable	3TR87AA
	HP USB-C/A Universal Dock G2	5TW13AA
	HP TB Dock G2 Combo Cable	3XB96AA
	HP USB-C/A Universal Dock G2 TAA	7UP88AA
	HP Thunderbolt 280W TAA G4 Dock w/Combo Cable	4J0J9AA
HP Thunderbolt 280W G4 Dock w/Combo Cable 3yr	72Y43AA	
Input/Output	HP HDMI to VGA Adapter	H4F02AA
	HP USB-C to USB 3.0 Adapter	N2Z63AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HP USB-C to VGA Adapter	N9K76AA
	HP USB-C to VGA Adapter	P7Z54AA
	HP USB-C to HDMI 2.0 Adapter	2PC54AA
	HP 7.4 mm to 4.5 DC dongle	K0Q39AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to RJ45 Adapter G2	4Z527AA
	HP USB-C to RJ45 Adapter G2	4Z534AA
	HP USB 3.0 to Gig RJ45 Adapter G2	4Z7Z7AA
	HP USB-C to USB-C 100W Cable	5AR72AA

Options and Accessories (sold separately and availability may vary by country)

Keyboard/Mouse	HP 320K Wired Keyboard	95R37AA
	HP 125 Wired Keyboard	266C9AA
	HP 975 USB+BT Dual-Mode Wireless Keyboard	3Z726AA
	HP 455 Programmable Wireless Keyboard	4R177AA
	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165AA
	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA
	HP 235 Wireless Mouse and Keyboard Combo	1Y4D0AA
	HP 225 Wired Mouse and Keyboard Combo	286J4AA
	HP 655 Wireless Keyboard and Mouse Combo	4R009AA
	HP Wired 320M Mouse	9VA80AA
	HP Premium Wireless Mouse	1JR31AA
	HP Travel Bluetooth Mouse	6SP30AA
	HP Multi-Device 635 Black Wireless Mouse	1D0K2AA
	HP Creator 935 Black Wireless Mouse	1D0K8AA
	HP 128 LSR Wired Mouse	265D9AA
	HP 125 Wired Mouse	265A9AA
	HP 435 Multi-Device Wireless Mouse	3B4Q5AA
	HP 355 Compact Multi-Device Keyboard	692S9AA
	HP 155 Wired Mouse	5B8B7AA
	HP 715 Rechargeable Multi-Device Bluetooth Mouse	6E6F0AA
HP 925 Ergonomic Vertical Wireless Mouse	6H1A5AA	
Hub	HP USB-C Mini Dock	1PM64AA
	HP USB-C Travel Hub G2	7PJ38AA
	HP Universal USB-C Multiport Hub	50H55AA
	HP Universal USB-C Multiport Hub	50H98AA
Audio/Video	HP USB G2 Stereo Headset	428H5AA
	HP USB G2 Stereo Headset	428K6AA
	HP 3.5mm G2 Stereo Headset	428H6AA
	HP 3.5mm G2 Stereo Headset	428K7AA
	HP 365 BT Speaker	567D3AA
	HP 325 FHD USB-A Webcam	53X27AA
	HP 965 4K Streaming Webcam	695J5AA
Power	HP Zbook 200W Slim Smart 4.5mm AC Adapter	491C7AA
	HP Zbook 230W Slim Smart 4.5mm AC Adapter	6E6M1AA
Memory	HP 32GB DDR5 4800 SODIMM Memory	5S4C0AA
	HP 32GB DDR5 4800 SODIMM Memory	5S4C0UT
	HP 32GB DDR5 (1x32GB) 4800 SODIMM ECC Memory	6D8T4AA
	HP 32GB DDR5 (1x32GB) 4800 SODIMM ECC Memory	6D8T4UT
	HP 16GB DDR5 (1x16GB) 4800 SODIMM ECC Memory	6D8T0AA

QuickSpecs

HP ZBook Fury G10 Mobile Workstation PC

Options and Accessories (sold separately and availability may vary by country)

	HP 16GB DDR5 (1x16GB) 4800 SODIMM ECC Memory	6D8T0UT
	HP 16GB DDR5 4800 SODIMM Memory	5S4C4AA
	HP 16GB DDR5 4800 SODIMM Memory	5S4C4UT
	HP 8GB DDR5 4800 SODIMM Memory	5S4C3AA
	HP 8GB DDR5 4800 SODIMM Memory	5S4C3UT
	32GB DDR5 (1x32GB) 5600 SODIMM Memory	83P92AA
	16GB DDR5 (1x16GB) 5600 SODIMM Memory	83P91AA
	8GB DDR5 (1x8GB) 5600 SODIMM Memory	83P90AA
Storage	HP USB External DVDRW Drive	F2B56AA
	HP USB External DVDRW Drive	Y3T76AA
	HP 512GB PCIe-4x4 NVMe M.2 Solid State Drive	5R8X9AA
	HP 1TB PCIe-4x4 NVMe M.2 Solid State Drive	5R8Y0AA
	HP 2TB PCIe-4x4 NVMe TLC M.2 Solid State Drive	6D8L6AA
Security	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Master Keyed Cable Lock	1AJ40AA
	HP Sure Key Cable Lock	6UW42AA
	HP Nano Combination Cable Lock	63B28AA
	HP Essential Nano Combination Cable Lock	63B31AA



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Date of change:	Version History:		Description of change:
May 2, 2023	From v1 to v2	Changed	PROCESSOR, ENVIRONMENTAL DATA, POWER, WEIGHTS & DIMENSIONS sections
May 8, 2023	From v2 to v3	Changed	DISPLAY section
June 6, 2023	From v3 to v4	Changed	STORAGE AND DRIVES section
July 5, 2023	From v4 to v5	Changed	PROCESSOR section
July 13, 2023	From v5 to v6	Changed	PROCESSOR section
August 1, 2023	From v6 to v7	Changed	ENVIRONMENTAL DATA section
August 7, 2023	From v7 to v8	Changed	Image page 1
September 5, 2023	From v8 to v9	Changed	SOFTWARE AND SECURITY section
September 22, 2023	From v9 to v10	Changed	DISPLAY, SOFTWARE AND SECURITY sections
November 3, 2023	From v10 to v11	Changed	Options and Accessories section
January 17, 2024	From v11 to v12	Changed	DISPLAY, ENVIRONMENTAL DATA sections
January 30, 2024	From v12 to v13	Changed	TPM section
February 26, 2024	From v13 to v14	Changed	KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS section
March 4, 2024	From v14 to v15	Changed	OPERATING SYSTEM section



MARINA JARAMILLO TOBON <mjaramillo@cornare.gov.co>

RV: FAVOR CONSULTA HP - MICROSOFT

Rubén Darío Herrera Uribe <rherrera@e-global.com.co>

11 de junio de 2024, 8:05

Para: Marina Jaramillo Tobon <mjaramillo@cornare.gov.co>, Oscar Dario Arango Gomez <oarango@cornare.gov.co>

Psi (ver hilo)

	<p>Rubén Darío Herrera Uribe Consultor de Negocios</p> <p>+ 57 (604) 322 1882 + 57 (301) 545 5243 Calle 8B # 65- 191 oficina 309 Medellín – Antioquia www.e-global.com.co E-GLOBAL S.A</p>		
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Conectividad

Arquitectura de LAN, Wireless LAN, SD-WAN/SD-Branch para Acceso a Capacidades Digitales.



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Cómputo

Suministro de equipos y partes para la asistencia al soporte para la computación personal (Computadores, impresoras, diademas, accesorios, repuestos).

De: Yorfarly Aristizabal <Yorfarly.Aristizabal@microsoft.com>

Enviado el: lunes, 10 de junio de 2024 11:24 p. m.

Para: Rubén Darío Herrera Uribe <rherrera@e-global.com.co>

CC: Valerye Trochez Flor (Adecco Servicios Colombia S.A.) <v-valeryet@microsoft.com>

Asunto: RE: FAVOR CONSULTA HP - MICROSOFT

Importancia: Alta

Hola Ruben deseando que te encuentres bien

Windows 11 Pro for Workstations es compatible con procesadores de alto rendimiento y está diseñado para manejar cargas de trabajo exigentes y ofrece nuevas capacidades de productividad con Copilot en Windows.

En tema de los procesadores compatibles con Windows 11 Pro for Workstations incluyen procesadores Intel Core de octava generación (Coffee Lake) o posterior, Intel Xeon de la familia Skylake o posterior, AMD Ryzen 2000 o posterior y AMD EPYC de segunda generación o posterior.

Comparto el listado completo y actualizado de los procesadores Intel compatibles con Windows 11:

<https://learn.microsoft.com/es-es/windows-hardware/design/minimum/supported/windows-11-supported-intel-processors>

Cualquier inquietud adicional con gusto estaré atento

Saludos!!!



Yorfarly Aristizabal
Morales

DPS Partner
Development
Management

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65 17

[yorfarly.aristizabal@
microsoft.com](mailto:yorfarly.aristizabal@microsoft.com)

De: Rubén Darío Herrera Uribe <rherrera@e-global.com.co>

Enviado el: viernes, 31 de mayo de 2024 3:11 p. m.

Para: Yorfarly Aristizabal <Yorfarly.Aristizabal@microsoft.com>

Asunto: [EXTERNO] RV: FAVOR CONSULTA HP - MICROSOFT

Hola Yorfarly, muy buen dia.

Doc, es que el cliente Cornare tiene este tema por resolver:

El cliente esta comprando unas Work Station HP, pero resulta que por costumbre, estaban pidiendo:

- Portátil tipo Workstation de 17" y peso máximo de 3,7 KG con batería Incluido

Procesador Core i7. UMBRAL DE RENDIMIENTO PCMARK 10: 6000 - Procesamiento Avanzado, Cores: 8 Nucleos, Disco duro SSD DE 1 TB PCIe Memoria ECC de 32 GB

- Software licenciado y preinstalado, **Sistema Operativo Windows for Workstation,**

La idea es entonces soportarles, porque ya no se usa Windows for Work Station, sino Win 11 Pro.

Como veras en el hilo, ya HP dijo porque, pero nos dicen que los llamados a hacer esta certificación es desde Microdoft.

La idea es que el cliente necesita apoyo urgente para poder darle continuidad a su proceso de contratacion y justificar el requerimiento son tener que cancelar el proceso contractual

Agradezco la ayuda

 <p>Rubén Darío Herrera Uribe Consultor de Negocios</p> <p>+ 57 (604) 322 1882 + 57 (301) 545 5243 Calle 8B # 65- 191 oficina 309 Medellín – Antioquia www.e-global.com.co E-GLOBAL S.A</p>  		
<p>Ciberseguridad</p> <p>Arquitecturas para proteger el perímetro, la red interna, los dispositivos, las aplicaciones, los datos y la información.</p> 	<p>Conectividad</p> <p>Arquitectura de LAN, Wireless LAN, SD-WAN/SD-Branch para Acceso a Capacidades Digitales.</p> 	<p>Nube Híbrida</p> <p>Diseño e Implementación de la Infraestructura y Plataforma para aplicaciones y Servicios.</p> 
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De: Castro Zapata, Claudia Alejandra (CW) <claudia.alejandra.castro.zapata@hp.com>

Enviado el: lunes, 27 de mayo de 2024 10:48 a. m.

Para: Rubén Darío Herrera Uribe <rherrera@e-global.com.co>

Asunto: RE: FAVOR CONSULTA HP

Buen día Ruben

A continuación relaciono la respuesta de nuestra preventa:

Hola Clau, ¿cómo estás?

Hablé con Javi y me dice que esta versión de Win 11 for Workstation es Microsoft quien habilita que sea instalado únicamente en máquinas con procesadores de la familia Intel XEON (que solo se configuran en máquinas WS Desktop)

****Deben revisar con Microsoft para una certificación o documento de habilitación.***

Gracias por su atención

Claudia Alejandra Castro

HP Inc., Commercial Organization
Inside Partner Business Manager

Mobile: 3154543981

Email: claudia.c@hp.com

www.HP.com



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From: Rubén Darío Herrera Uribe <rherrera@e-global.com.co>

Sent: Monday, May 27, 2024 10:12 AM

To: Castro Zapata, Claudia Alejandra (CW) <claudia.alejandra.castro.zapata@hp.com>

Subject: RV: FAVOR CONSULTA HP

CAUTION: External Email

Asunto: RV: FAVOR CONSULTA HP

Hola Clau, buen dia.

Tengo un cliente que es Cornare. Y estan comprando unas Work Station HP, pero resulta que por costumbre, estaban pidiendo:

- Portátil tipo Workstation de 17" y peso máximo de 3,7 KG con batería Incluido

UMBRAL DE RENDIMIENTO PCMARK 10: 6000 - Procesamiento Avanzado, Cores: 8 Nucleos, Disco duro SSD DE 1 TB PCIe Memoria ECC de 32 GB

- Software licenciado y preinstalado, **Sistema Operativo Windows for Workstation**, aplica para Portátil tipo Workstation de 15" y 17" con memoria ECC

La idea es entonces soportarles, por que ya no se usa Windows for Work Station, sino Win 11 Pro.

Sera que me puedes ayudar con eso?

Saludos

 <p>Rubén Darío Herrera Uribe Consultor de Negocios</p> <p>+ 57 (604) 322 1882 + 57 (301) 545 5243 Calle 8B # 65- 191 oficina 309 Medellín – Antioquia www.e-global.com.co E-GLOBAL S.A</p>  		
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De: MARINA JARAMILLO TOBON <mjaramillo@cornare.gov.co>

Enviado el: miércoles, 15 de mayo de 2024 10:01 a. m.

Para: Rubén Darío Herrera Uribe <rherrera@e-global.com.co>

Asunto: Re: FAVOR CONSULTA MICROSOFT Y HPE

Ruben buenos dias

Sera que con sus contactos podemos tener una respuesta oficial de microsoft con este tema, es que en la juridica me dicen que esto amerita hacer un modificadorio al contrato y necesitamos justificarlo bien, si nos puedes ayudar te lo agradeceria, es que yo estuve intentando contactarme con ellos y telefonicamente no ha sido posible.

Gracias

		<p>Marina Jaramillo Tobón Oficina de Sistemas</p> <p>CORNARE Autopista Medellín - Bogotá Carrera 59 N. 44 - 48 Km. 54 PBX. 5461616 ext.184 El Santuario - Antioquia</p> <p>¡Conectados por la Vida, la Equidad y el Desarrollo Sostenible!</p>
		

El mar, 14 may 2024 a las 18:07, MARINA JARAMILLO TOBON (<mjaramillo@cornare.gov.co>) escribió:

Muchas gracias por la aclaración.

El mar, 14 de may de 2024, 3:24 p. m., Rubén Darío Herrera Uribe <rherrera@e-global.com.co> escribió:

Hola Marina, muy buenas tardes.

En efecto así es. Hoy en día las Work station vienen con Windows 11 pro, debido a la estandarización que han hecho los fabricantes a nivel de procesadores.

Saludos

De: MARINA JARAMILLO TOBON <mjaramillo@cornare.gov.co>

Enviado el: martes, 14 de mayo de 2024 1:47 p. m.

Para: Rubén Darío Herrera Uribe <rherrera@e-global.com.co>

CC: Oscar Arango Gomez <oarango@cornare.gov.co>

Asunto: FAVOR CONSULTA MICROSOFT Y HPE

Ruben Buenas Tardes

Necesitamos un favor, es en el proceso de compra de portatiles por el acuerdo marco solicitamos

- Portátil tipo Workstation de 17" y peso máximo de 3,7 KG con batería Incluido

UMBRAL DE RENDIMIENTO PCMARK 10: 6000 - Procesamiento Avanzado, Cores: 8 Nucleos, Disco duro SSD DE 1 TB PCIe Memoria ECC de 32 GB

- Software licenciado y preinstalado, Sistema Operativo Windows for Workstation, aplica para Portátil tipo Workstation de 15" y 17" con memoria ECC

El proveedor nos indica que no pueden darnos este sistema operativo y este es el argumento:

Existen varios tipos de procesadores y generaciones para la línea de Intel tenemos

procesadores Intel Core y Procesadores Intel Xeon W, Hace más de año y medio Intel dejo de fabricar procesador Intel® Xeon® W-1000 processors to 12th Gen Intel® Core™ processors for mobile and stationar y workstations, estos procesadores estaban diseñados para equipos portátiles y soportaban Sistema operative windows for workstation, ahora intel migro toda su linea de procesadores dejando solo los

procesadores intel Xeon W para estaciones de trabajo tipo TORRE que soportan windows for Workstation por ende los portátiles no vienen con este sistema operativo

este sistema operativo.

LOS DE DELL DAN ESTA RESPUESTA

Toda WS con procesador es I9 o inferior lleva Windows 11 Pro. Para WS con Procesador Xeon, lleva la opción de Windows 11 Pro para WS.
No es un tema de Dell, es como está estructurado por Microsoft.

Nos puedes ayudar a validar si esto es cierto? y si es posible tener algo por escrito para corroborar o desmentir este argumento.

Gracias 🙏🙏



Marina Jaramillo Tobón
Oficina de Sistemas
CORNARE
Autopista Medellín - Bogotá Carrera 59 N. 44 - 48 Km. 54
PBX. 5461616 ext. 184
El Santuario - Antioquia

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17/6/24, 1:37 p.m.

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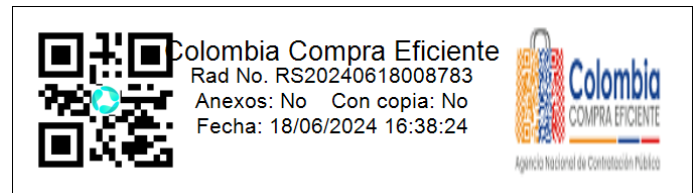
Bogotá D.C., 18 de junio de 2024

Señor

DIEGO ALEJANDRO ARBOLEDA GIRALDO

GREEN SERVICES AND SOLUTIONS

diego.arboleda@greencss.com



ASUNTO: Respuesta a Petición con Número de Radicado No. P20240527005500.

La Agencia Nacional de Contratación Pública – Colombia Compra Eficiente –, en ejercicio de la competencia otorgada por el Decreto Ley 4170 de 2011 y 1822 de 2019 y de conformidad con las modalidades del derecho de petición contempladas en la Ley 1755 de 2015, así como lo establecido en el artículo 4 de la resolución 1707 de 2018 expedida por esta Agencia, damos respuesta a su petición de fecha 27 de mayo de 2024 en donde indica:

PETICIÓN REALIZADA

Cordial Saludo,

Green services and solutions con Nit 900571849-1, de acuerdo al anexo 3 especificaciones técnicas compraventa etp, Numeral 2.1.1.7.1 página 21, nos permitimos aclarar que los portátiles workstation ya no vienen con sistema operativo Windows for Workstation, esto debido a que los procesadores han venido evolucionando.

1. Existen varios tipos de procesadores y generaciones para la línea de Intel tenemos procesadores Intel Core y Procesadores Intel Xeon W, Hace más de año y medio Intel dejó de fabricar procesador Intel® Xeon® W-1000 processors to 12th Gen Intel® Core™processors for mobile and stationary workstations, estos procesadores estaban diseñados para equipos portátiles y soportaban Sistema operativo windows for workstation, ahora intel migro toda su linea de procesadores dejando solo los procesadores intel Xeon W para estaciones de trabajo tipo TORRE que soportan windows for Workstation por ende los portátiles no vienen con este sistema operativo(SIC).

LA AGENCIA NACIONAL DE CONTRATACIÓN PÚBLICA – COLOMBIA COMPRA EFICIENTE- ANCP-CCE RESPONDE:

Tras leer con atención la petición allegada se comunica que el equipo de administración del AMP ETP III está realizando consultas con fabricantes del sistema operativo y los procesadores mencionados, para aclarar la información de la comunicación. Según la información que se pretende conseguir, se tomarán medidas de modificación como se solicita en la petición.



FORMATO PQRSD

Código: CCE-REC-FM-17

Versión: 02 DEL 22 DE AGOSTO DE 2023

Por último, aprovechamos la oportunidad de manifestar la entera disposición de la Agencia Nacional de Contratación Pública –Colombia Compra Eficiente– para atender las peticiones o solicitudes, así como para brindar el apoyo que se requiera en el marco de nuestras funciones a través de nuestros diferentes canales de atención:

- ✚ Línea nacional gratuita o servicio a la ciudadanía: 01800 0520808
- ✚ Línea en Bogotá (Mesa de servicio): +57 601 7456788
- ✚ Línea de servicio y atención al ciudadano: +57 601 7956600
- ✚ Página web: www.colombiacompra.gov.co

Para terminar, lo invitamos a seguirnos en las redes sociales en las cuales se difunde información institucional:

Twitter: [@colombiacompra](https://twitter.com/colombiacompra)

Facebook: [ColombiaCompraEficiente](https://www.facebook.com/ColombiaCompraEficiente)

LinkedIn: [Agencia Nacional de Contratación Pública - Colombia Compra Eficiente](https://www.linkedin.com/company/agencia-nacional-de-contratacion-publica-colombia-compra-eficiente) Instagram: [@colombiacompraeficiente_cce](https://www.instagram.com/colombiacompraeficiente_cce)

Cordialmente,



RUBÉN DARÍO HERNÁNDEZ FORERO
Gestor y Supervisor AMP ETP III

Elaboró	José J. Mattos Perilla Administrador AMP ETP III
Revisó:	Felipe Alfonso Muñoz Tocarruncho Abogado de Administración AMP ETP III
Aprobó:	Rubén Darío Hernández Forero Gestor y Supervisor AMP ETP III