

A photograph of three business professionals (two men and one woman) looking at a laptop screen. The man in the center is smiling. A green speech bubble with a yellow and blue arrow points to the text.

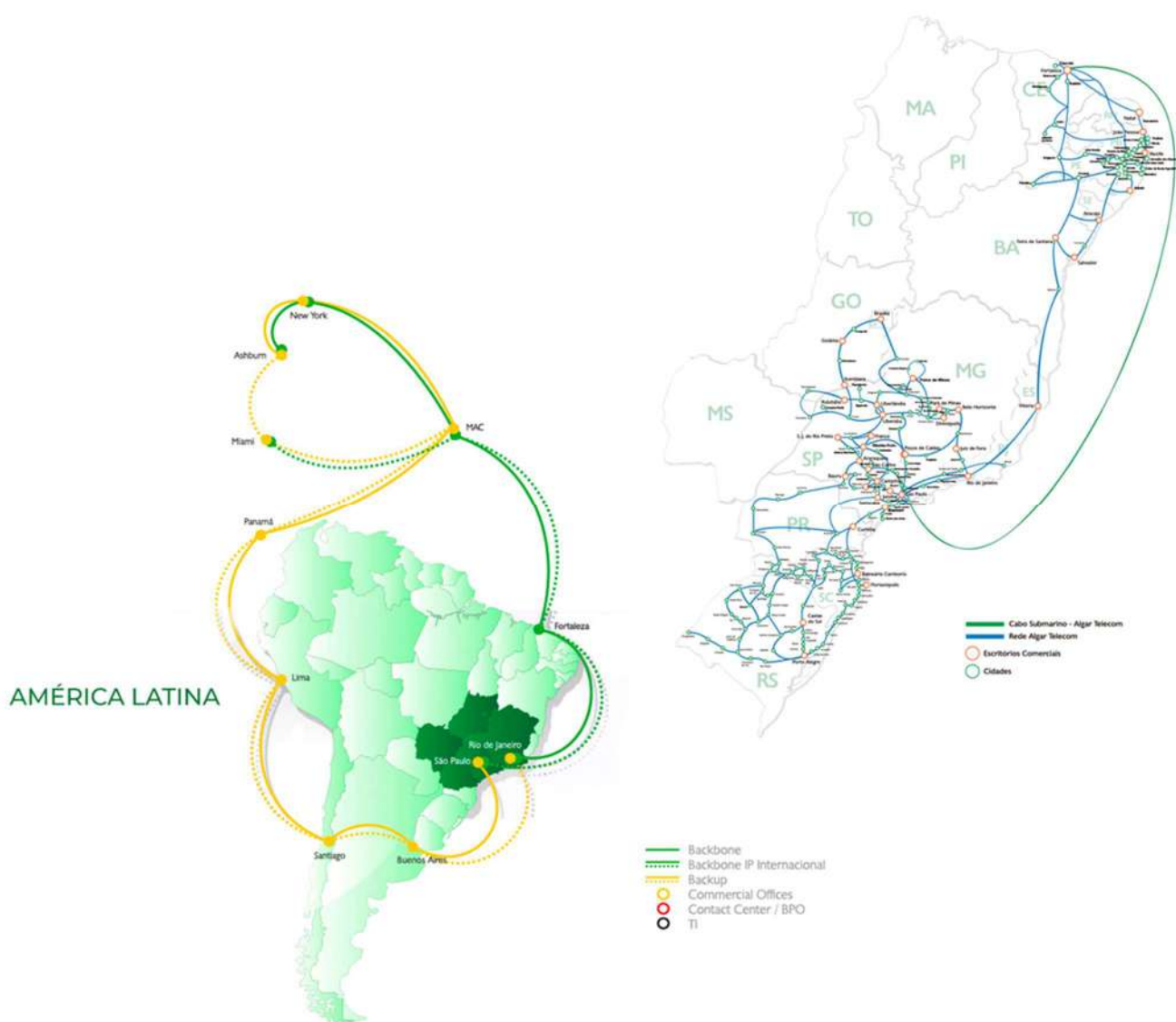
O MELHOR
ATENDIMENTO
SÓ QUEM ESTÁ
SEMPRE JUNTO
PODE OFERECER

PROPOSTA COMERCIAL



Somos a empresa de telecomunicações e tecnologia da informação que faz parte do grupo Algar. Na Algar Telecom, trabalhamos com tecnologia para trazer soluções que conectem as pessoas e melhorem o desempenho das empresas. Acreditamos na inovação para levar produtos e serviços cada vez mais eficientes e assertivos para os nossos clientes.

Nossas soluções chegam a 372 cidades, distribuídas em 16 estados brasileiros e no Distrito Federal. Produtos e serviços de conectividade são a base para a vida contemporânea e fazem parte da inclusão digital do país.



Nossa qualidade é reconhecida

ALGAR MULTIMIDIA S/A
CNPJ: 04.622.116/0001-13
Rua José Alves Garcia, 415, B: Brasil
CEP: 38.400-668, Uberlândia/MG



UMA DAS
150 EMPRESAS
MAIS INOVADORAS

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Conquistamos o prêmio de 3ª empresa mais inovadora do país no setor de Telecomunicações



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Algar Telecom eleita por 10 anos consecutivos como a Telecom mais sustentável do país pela Revista Exame



Great Place to Work® - Brasil 2022

Melhores empresas para trabalhar no Brasil



Prêmio Valor Inovação Brasil 2022

Terceira empresa mais inovadora no setor de Telecomunicações



100+
inovadoras

100+ Inovadoras no Uso de TI 2022

Entre as empresas mais inovadoras no uso de TI do Brasil



Great Place to Work® - Minas Gerais 2022

Melhores empresas para trabalhar em Minas Gerais

SELO CERTIGOV:

Nossa empresa possui o selo CertiGov. Esta certificação demonstra nosso comprometimento com as boas práticas de vendas no mercado e atesta nossas ações de integridade nos processos, políticas e na disseminação da cultura ética.



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ANEXO II

PROPOSTA COMERCIAL

À SECRETARIA DE ESTADO DE PLANEJAMENTO, ORÇAMENTO E ADMINISTRAÇÃO DO DISTRITO FEDERAL - SEPLAD Praça do Buri, Edifício Anexo do Palácio do Buri, 5º Andar, Ala Leste, Sala 504, CEP.: 70.075-900-Brasília-DF.

Objeto: Registro de preços para eventual contratação de empresas prestadoras de serviço de conectividade IP dedicado à Internet, com proteção contra ataques de negação de serviços do tipo DoS (Denial of Service) /DDoS (Distributed Denial of Service), incluindo instalação, manutenção e equipamentos exigidos para o perfeito funcionamento da solução, conforme condições e especificações constantes neste Termo de Referência e seus Anexos.

Proposta que faz a empresa ALGAR MULTIMIDIA S/A, inscrita no CNPJ n.º 04.622.116/0001-13 e inscrição estadual n.º 001.030.140.0075, estabelecida na Rua José Alves Garcia, nº 415, Bairro Brasil, Uberlândia/MG, para a contratação supramencionada, de acordo com todas as especificações e condições do Termo de Referência e seus Anexos.

PROPOSTA COMERCIAL E TABELA DE PREÇOS

Grupo	Item	Serviço	Descrição	QTD	Valor Unitário (Máximo) R\$	Valor Unitário	Valor Anual Total Máximo do Item R\$	Valor Total Máximo por Esmado 48 meses R\$
1	1	Link Internet	Fornecimento de circuito de internet do po IP dedicado	12	Mês	R\$ 35.476,00	R\$ 425.712,00	R\$ 1.702.848,00
	2	Instalação	Serviço de instalação de equipamentos	1	Serviço	R\$ 6.500,00	R\$ 6.500,00	R\$ 6.500,00
	3	Proteção AnDoS/DDoS	Proteção An-DoS/DDoS escalável de 10GB até 20GB no backbone nacional e no backbone internacional.	12	Mês	R\$ 13.855,00	R\$ 166.260,00	R\$ 665.040,00
Valor total do Grupo 1							R\$ 598.472,00	R\$ 2.374.388,00

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GRUPO	SERVIÇO			ESTIMATIVA										
	Item	Serviço	Descrição	QTD	Unidade de medida	Velocidade (Gbps)	Valor Mensal do Circuito com velocidade de 10 Gbps (VMC10) (R\$)	Valor Mensal do Circuito com velocidade de 12 Gbps (VMC12) (R\$)	Valor Mensal do Circuito com velocidade de 14 Gbps (VMC14) (R\$)	Valor Mensal do Circuito com velocidade de 16 Gbps (VMC16) (R\$)	Valor Mensal do Circuito com velocidade de 18 Gbps (VMC18) (R\$)	Valor Mensal do Circuito com velocidade de 20 Gbps (VMC20) (R\$)	Valor Anual Total Máximo do Item (VMC20*12) (R\$)	Valor Total Máximo do Item para 48 meses (VMC20*48) (R\$)
1	1	Link Internet	Fornecimento de circuito de internet do po IP dedicado com velocidade escalável de 10Gbps até 20Gbps, de acordo com a demanda, para instalação no Data Center Principal.	12	Mês	10, 12, 14, 16, 18 ou 20 Gbps sob demanda	R\$ 17.738,00	R\$ 21.285,60	R\$ 24.833,20	R\$ 28.380,80	R\$ 31.928,40	R\$ 35.476,00	R\$ 425.712,00	R\$ 1.702.848,00
	Item	Serviço	Descrição	QTD	Unidade de medida	Velocidade (Gbps)	Valor						Valor Anual Total	Valor Total Máximo do Item para 48 meses
	2	Instalação	Serviço de instalação de equipamentos	1	Serviço	R\$ 6.500,00							R\$ 432.212,00	R\$ 1.709.348,00
	Item	Serviço	Descrição	QTD	Unidade de medida	Velocidade (Gbps)	Valor Mensal da Proteção Anti-DoS/DDoS de 10GB (VMP10) (R\$)	Valor Mensal da Proteção Anti-DoS/DDoS de 12GB (VMP12) (R\$)	Valor Mensal da Proteção Anti-DoS/DDoS de 14GB (VMP14) (R\$)	Valor Mensal da Proteção Anti-DoS/DDoS de 16GB (VMP16) (R\$)	Valor Mensal da Proteção Anti-DoS/DDoS de 18GB (VMP18) (R\$)	Valor Mensal da Proteção Anti-DoS/DDoS de 20GB (VMP20) (R\$)	Valor Anual Total Máximo do Item (VMP20*12) (R\$)	Valor Total Máximo do Item para 48 meses (VMP20*48) (R\$)
	3	Proteção Anti-DoS/DDoS	Proteção Anti-DoS/DDoS escalável de 10GB até 20GB no backbone nacional e no backbone	12	Mês	10, 12, 14, 16, 18 ou 20 GB sob demanda	R\$ 6.327,50	R\$ 8.313,00	R\$ 9.698,50	R\$ 11.084,00	R\$ 12.469,50	R\$ 13.855,00	R\$ 166.260,00	R\$ 665.040,00
Valor total do Grupo 1												Total mensal R\$ 49.331,00	Total Anual R\$ 598.472,00	Total 48 Meses R\$ 2.374.388,00

Valor total: R\$ 2.374.388,00 (Dois milhões, trezentos e setenta e quatro mil, trezentos oitenta e oito reais)

31.3. * Para aferição do preço médio máximo na referida tabela deve ser considerado apenas o valor anual do circuito com velocidade de 20 Gbps (VMC20) + o valor da instalação (VI), uma vez que os acréscimos de velocidade se darão sob demanda até o limite máximo de 20Gbps. As demais velocidades do circuito serão calculadas conforme a proporcionalidade da velocidade demandada em relação aos 20Gbps, ou seja:

31.4.VMC10 (valor mensal do circuito na velocidade de 10Gbps) = 50% do VMC20 (valor mensal do circuito na velocidade de 20Gbps)

31.5.VMC12 (valor mensal do circuito na velocidade de 12Gbps) = 60% do VMC20 (valor mensal do circuito na velocidade de 20Gbps)

31.6.VMC14 (valor mensal do circuito na velocidade de 14Gbps) = 70% do VMC20 (valor mensal do circuito na velocidade de 20Gbps)

31.7.VMC16 (valor mensal do circuito na velocidade de 16Gbps) = 80% do VMC20 (valor mensal do circuito na velocidade de 20Gbps)

31.8.VMC18 (valor mensal do circuito na velocidade de 18Gbps) = 90% do VMC20 (valor mensal do circuito na velocidade de 20Gbps)

31.9.VMC20 (valor mensal do circuito na velocidade de 20Gbps) = 100% do VMC20 (valor mensal do circuito na velocidade de 20Gbps)

31.10. **A velocidade inicial de contratação do circuito do Item 1 do Grupo 1 será de 10Gbps com proteção Anti -DoS/DDoS de 10 GB, onde aumentos de velocidade e serão demandados à Contratada por meio de



Ordens de Serviço quando a utilização do circuito atingir 80% ou, justificadamente, a critério da SUTIC/SEPLAD. O aumento da Proteção Anti-DDoS ocorrerá conforme o aumento de velocidade.

31.11. **A velocidade inicial de contratação do circuito do Item 1 do Grupo 1 será de 10Gbps com Proteção Anti--DoS/DDoS de 10 GB, onde aumentos de velocidade e serão demandados à Contratada por meio de Ordens de Serviço quando a utilização do circuito atingir 80% ou, justificadamente, a critério da SUTIC/SEPLAD. O aumento da Proteção Anti-DDoS ocorrerá conforme o aumento de velocidade.

31.12.VMP10 (valor mensal da proteção Anti--DoS/DDoS de 10GB) = 50% do VMP20 (valor mensal da proteção Anti--DoS/DDoS de 20GB)

31.13.VMP12 (valor mensal da proteção Anti--DoS/DDoS de 12GB) = 60% do VMP20 (valor mensal da proteção Anti--DoS/DDoS de 20GB)

31.14.VMP14 (valor mensal da proteção Anti--DoS/DDoS de 14GB) = 70% do VMP20 (valor mensal da proteção Anti--DoS/DDoS de 20GB)

31.15.VMP16 (valor mensal da proteção Anti--DoS/DDoS de 16GB) = 80% do VMP20 (valor mensal da proteção Anti--DoS/DDoS de 20GB)

31.16. VMP18 (valor mensal da proteção Anti--DoS/DDoS de 18GB) = 90% do VMP20 (valor mensal da proteção Anti--DoS/DDoS de 20GB) 31.17. VMP20 (valor mensal da proteção Anti--DoS/DDoS de 20GB) = 100% do VMP20 (valor mensal da proteção Anti--DoS/DDoS de 20GB)

Fabricante/Modelo do Roteador Fornecido
<p>EQUIPAMENTOS:</p> <ul style="list-style-type: none">• Roteadores<ul style="list-style-type: none">○ Juniper○ MX204• Switch<ul style="list-style-type: none">○ Juniper <p>SWITCH METRO ACX7024-DC-2PSU</p>

- Validade da proposta: 60 (sessenta) dias corridos, contados da data prevista para abertura da licitação;
- os prazos de instalação, ativação e condições de aceitação do objeto, deverão atender o que estabelece o item 10 do Termo de Referência - Anexo I deste edital;

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- Prazo de entrega de até 30 (trinta) dias após o recebimento da Ordem de Serviço, conforme item 9.6 do Termo de Referência - Anexo I deste edital;
- **Em anexo, o Termo de Confidencialidade**, conforme modelo constante no Anexo VI deste Edital;
- **DECLARAMOS QUE A** licitante executará os serviços de acordo com as especificações e condições estabelecidas nos Anexos deste Edital.
- **DECLARAMOS QUE A** licitante repassará a transferência de conhecimento tecnológico em Brasília-DF, em ambiente disponibilizado por sua responsabilidade, sob as condições estabelecidas no Termo de Referência constante do Anexo I deste Edital, no local onde este serviço será prestado.
- **DECLARAMOS** de que cumpre a reserva de cargos prevista em lei para pessoas com deficiência ou para reabilitados via Previdência Social e que atende às regras de acessibilidade prevista na legislação.
- **EM ANEXO DOCUMENTO - apresentar documento probatório de que possui compromisso com a sustentabilidade ambiental, nos termos da Lei Distrital nº 4.770/2012, que poderá ser feito da seguinte forma:**
 - por Declaração**, onde a licitante afirma possuir o compromisso e responsabilidade com a Sustentabilidade Ambiental, nos termos das exigências impostas pela Lei Distrital nº 4.770/2012, conforme modelo constante do Anexo X deste edital, ou; ii) com a apresentação de documento probatório (atestado, declaração, certificado, registro, credenciamento, etc) emitido por Órgãos Públicos de qualquer ente da Federação que tenha competência legal na área ambiental que o produto ofertado, comercializado, ou o fornecedor, distribuidor ou fabricante está devidamente cadastrado, registrado, etc no respectivo Órgão, ou; iii) com a apresentação de documentos que o fornecedor está em fase de implantação de práticas sustentáveis, informando, no referido documento quais são as práticas já implantadas e, quais as metas pretendidas a atingir na questão da sustentabilidade ambiental.
 - iv) no caso do licitante apresentar os documentos comprobatórios, conforme mencionado nas alíneas i e iii poderá ser designada pela SEPLAD/DF uma Comissão de Avaliadores que juntamente com o Pregoeiro e sua Equipe poderá inspecionar/vistoriar o estabelecimento ou o ponto comercial do licitante, a fim de verificar as informações e declarações apresentadas.
 - v) **caso seja detectado pelos inspetores/avaliadores** que as informações declaradas pelo licitante não sejam verdadeiras, ou, que esteja de má fé, serão tomadas as medidas administrativas, e se for o caso, penais, cabíveis ao caso.



n) **DECLARAMOS** de que não incorre nas vedações previstas no art. 9º da Lei nº 8.666, de 21 de junho de 1993, e no art. 1º do Decreto nº 39.860, de 30 de maio de 2019, conforme modelo constante do Anexo XI deste edital;

Os dados da nossa empresa são:

- a) Razão Social: Algar Multimídia S/A;
- b) CNPJ (MF) nº: 04.622.116/0001-13;
- c) Representante (s) legal (is) com poderes para assinar o contrato:

1 - Nome: Jeankarlo Rodrigues da Cunha

Cargo: Gerente de Negócios Governo

CPF: 047.399.926-98

RG: M 9.043.997 SSP/MG

2 - Nome: Marcos Roberto Lopes de Oliveira

Cargo: Analista de Licitação

CPF: 097.674.026-59

RG: M 16.291.850 SSP/MG

- d) Inscrição Estadual nº: 001.030.140.0075 ;
- e) Endereço: Rua José Alves Garcia, nº 415, Bairro Brasil - Uberlândia / MG
- f) Fone: 0800 941 2822 (24 x 7). Fax: ** E-mail: editais@algartelecom.com.br;
- g) CEP: 38.400-668; e
- h) Cidade: Uberlândia Estado: MG.
- i) Banco/Conta Corrente/Agência;

Banco: Bradesco

Nº do Banco: 237

Agência: 0265-8

Conta corrente: 172188-7

Praça de Pagamento: Uberlândia/MG

- j) **Contato:** Bruno Fernandes dos Santos

Gerente de Contas Governo | Algar Telecom

Regional Brasil Central

+55 (61) 9 9155-0034

brunofs@algartelecom.com.br

ALGAR MULTIMIDIA S/A
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A empresa ALGAR MULTIMIDIA S/A, inscrita no CNPJ n.º 04.622.116/0001-13, estabelecida na Rua José Alves Garcia, nº 415, Bairro Brasil, Uberlândia/MG, neste ato representada pelo seu representante legal, Marcos Roberto Lopes de Oliveira, inscrito no CPF (ou CRA) sob o nº 097.674.026-59, declara interligar-se diretamente a pelo menos 2 (dois) outros sistemas autônomos (AS – Autonomous Systems) nacionais e pelo menos 1 (um) sistema autônomo internacional, relacionados abaixo, e que o somatório das bandas de saída entre os ASN (internacional e nacional) é **de 1.300 Gigabit/s**, tendo ciência do requisito mínimo de 20 Gigabit/s.

(AS – Autonomous Systems)	Internacional/Nacional	Banda de saída
Level 3 Parent, LLC	NACIONAL	600 Gbps
TELECOM ITALIA SPARKLE S.p.A.	NACIONAL	200 Gbps
Cogent Communications	INTERNACIONAL	200 Gbps
Level 3 Parent, LLC	INTERNACIONAL	300 Gbps

Por ser verdade, firmo a presente,

DADOS PARA PAGAMENTO

O procedimento de apresentação de fatura (nota fiscal com código de barras) ou via SIAFI, nos casos de órgãos vinculados à Administração Pública Federal, como é o caso da ANATEL, tendo em vista que o sistema de boleto permite a identificação célere do pagamento e a correta retenção dos impostos diretamente, sendo, pois, menores os riscos de problemas relacionados às emissões de faturas. Isto posto, entendemos que os pagamentos poderão ser via boleto com código de barras.

Caso opte por pagamentos via depósitos, solicitamos o envio das informações abaixo para o e-mail cobranca.governo@algartelecom.com.br para conclusão das baixas.

DADOS DO PAGAMENTO

- ✓ Nome do órgão
- ✓ CNPJ do órgão

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Rua José Alves Garcia, 415, B: Brasil
CEP: 38.400-668, Uberlândia/MG



- ✓ N° do Contrato
 - ✓ Banco e Agência
 - ✓ Data do depósito
 - ✓ Valor total do depósito
 - ✓ Vencimento da conta
 - ✓ Favorecido
 - ✓ Número da fatura
 - ✓ Valor da fatura
 - * Caso haja glosa informar motivo e valor
- **Atenção:** Caso não seja enviado as informações acima dentro do prazo de 5 (cinco) dias úteis, será dado as baixas a partir das faturas mais antigas pendentes.

INFORMAÇÕES COMPLEMENTARES

SAC Atendimento Governo/empresas: 0800 941 2822 (24 x 7).

Portal de autoatendimento, onde você consegue ter acesso (Faturas / Contestação / Chamados / Desbloqueio em Confiança / Produtos Ativos / Etc...)

Segue abaixo o link.

[PORTAL DE ATENDIMENTO](#) (Clique com botão direito e selecione Abrir Hiperlink)

Enviar o contrato para assinatura por parte desta empresa, para o seguinte destinatário:

ALGAR TELECOM S/A
A/C: Gestão de Contratos Governo – Coordenação de Vendas Governo
Rua José Alves Garcia, nº 415, Bairro: Brasil
CEP: 38.400-668, Uberlândia/MG

Contatos:

Nome: Bárbara Costa Araújo

Telefone: (34) 99174-0612

E-mail: contratosgoverno@algartelecom.com.br

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CEP: 38.400-668, Uberlândia/MG



Uberlândia, 14 de dezembro de 2023.

MARCOS ROBERTO LOPES DE OLIVEIRA:09767402659
Assinado de forma digital por MARCOS ROBERTO LOPES DE OLIVEIRA:09767402659

Marcos Roberto Lopes de Oliveira

Cargo: Analista de Licitação

CPF: 097.674.026-59

RG: M 16.291.850 SSP/MG

ALGAR MULTIMIDIA S/A
CNPJ: 04.622.116/0001-13
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ANEXO VII
DECLARAÇÃO DE ABSTENÇÃO DE VISTORIA

A empresa ALGAR MULTIMIDIA S/A, inscrita no CNPJ nº 04.622.116/0001-13, estabelecida endereço Rua Jose Alves Garcia nº 415, bairro Brasil , no município de Uberlândia, Estado de Minas Gerais, neste ato representada pelo seu representante legal Marcos Roberto Lopes de Oliveira, portador(a) da Carteira de Identidade Nº 16.291-850 e do CPF nº 097.674.026-59 , declara que se ABSTEM de realizar vistoria e está ciente que não poderá alegar desconhecimento do local, bem como das dificuldades que poderão surgir no curso da execução dos serviços objeto do Pregão Eletrônico nº 62/2023.

Atestamos para fins de comprovação em processo licitatório, referente ao Edital de Pregão Eletrônico n.º 00/20_ - COLIC/SCG/SECONTI/SEPLAD-DF, que abstivemo-nos de realizar vistoria e assumimos completa responsabilidade pelos imprevistos e problemas decorrentes do desconhecimento da realidade da SPLAD/DF, em razão de sua não realização.

Uberlândia, 14 de dezembro de 2023

MARCOS ROBERTO LOPES DE OLIVEIRA:0976740 2659	Assinado de forma digital por MARCOS ROBERTO LOPES DE OLIVEIRA:09767402 659
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Marcos Roberto Lopes de Oliveira

ANEXO V

DECLARAÇÃO PARA FORNECEDORES DE BENS E SERVIÇOS DE INFORMÁTICA E AUTOMAÇÃO

A empresa ALGAR MULTIMIDIA S/A, inscrita no CNPJ nº 04.622.116/0001-13, estabelecida endereço Rua Jose Alves Garcia nº 415, bairro Brasil , no município de Uberlândia, Estado de Minas Gerais, neste ato representada pelo seu representante legal Marcos Roberto Lopes de Oliveira, portador(a) da Carteira de Identidade Nº 16.291-850 e do CPF nº 097.674.026-59, DECLARA, para fins legais, sob as penas da lei, de que atende aos requisitos estabelecidos no art. 3º da Lei nº 8.248/1991 e nos incisos I ou II ou III do artigo 5º do Decreto Federal nº 7.174/2010.

Uberlândia, 14 de dezembro de 2023

MARCOS ROBERTO LOPES DE OLIVEIRA:09767402659
Assinado de forma digital por MARCOS ROBERTO LOPES DE OLIVEIRA:09767402659

Marcos Roberto Lopes de Oliveira

ANEXO VI

TERMO DE CONFIDENCIALIDADE

A empresa ALGAR MULTIMIDIA S/A, inscrita no CNPJ nº 04.622.116/0001-13, estabelecida endereço Rua Jose Alves Garcia nº 415, bairro Brasil, no município de Uberlândia, Estado de Minas Gerais, neste ato representada pelo seu representante legal Marcos Roberto Lopes de Oliveira, portador(a) da Carteira de Identidade Nº 16.291-850 e do CPF nº 097.674.026-59 nacionalidade brasileiro, estado civil casado, profissão analista de licitação, abaixo firmado, assume o compromisso de manter confidencialidade e sigilo sobre todas as informações técnicas e outras relacionadas a contratação de empresa especializada em Tecnologia da Informação – TI para a prestação dos serviços de serviço de conectividade IP dedicado à Internet, com proteção contra ataques de negação de serviços do tipo DoS (Denial of Service) / DDoS (Distributed Denial of Service), incluindo instalação, manutenção e equipamentos exigidos para o perfeito funcionamento da solução, conforme especificações e condições estabelecidas no termo de referência constante do Anexo I deste Edital., conforme condições e especificações constantes dos Anexos do Edital de Pregão Eletrônico n.º 62/2023- COLIC/SCG/SECONTI/SEPLAD-DF.

Por este termo de confidencialidade compromete-se:

1. A não utilizar as informações confidenciais a que tiver acesso, para gerar benefício próprio exclusivo e/ou unilateral, presente ou futuro, ou para uso de terceiros;
2. A não efetuar nenhuma gravação ou cópia da documentação confidencial a que tiver acesso relacionada a prestação dos serviços acima mencionada;
3. A não apropriar-se para si ou para outrem de material confidencial e/ou sigiloso que venha a ser disponível através da prestação dos serviços acima mencionados;
4. A não repassar o conhecimento das informações confidenciais, responsabilizando-se por todas as pessoas que vierem a ter acesso às informações, por seu intermédio, e obrigando-se, assim, a ressarcir a ocorrência de qualquer dano e/ou prejuízo oriundo de uma eventual quebra de sigilo das informações fornecidas.

Neste termo, as seguintes expressões serão assim definidas:

- “informação confidencial” significará toda informação revelada relacionada a prestação dos serviços acima descritos, através da execução do projeto, a respeito de, ou, associada com a Avaliação, sob a forma escrita, verbal ou por quaisquer outros meios.
- “Informação Confidencial” inclui, mas não se limita, à informação relativa às operações, processos, planos ou intenções, informações sobre produção, instalações, equipamentos, segredos de negócio, dados, habilidades especializadas, projetos, métodos e metodologia, fluxogramas, especificações, componentes, fórmulas, produtos, amostras, diagramas, desenhos, desenhos de esquema industrial, patentes, oportunidades de mercado e questões relativas a negócios revelados durante a execução do projeto.

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Rua José Alves Garcia, 415, B: Brasil
CEP: 38.400-668, Uberlândia/MG



- “Avaliação” significará todas e quaisquer discussões, conversações ou negociações entre, ou com as partes, de alguma forma relacionada ou associada com a apresentação da proposta acima mencionada.

A vigência da obrigação de confidencialidade, assumida por esta empresa por meio deste termo, terá validade por 20 anos, ou enquanto a informação não for tornada de conhecimento público pelo poder público, ou ainda, mediante autorização escrita, concedida à empresa pelas partes interessadas neste termo.

Pelo não cumprimento do presente Termo de Confidencialidade, fica o abaixo assinado ciente de todas as sanções judiciais que poderão advir.

Uberlândia, 14 de dezembro de 2023

MARCOS
ROBERTO LOPES DE
OLIVEIRA:09767402659

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ROBERTO LOPES DE
OLIVEIRA:09767402659

Marcos Roberto Lopes de Oliveira
Analista de licitação
ALGAR MULTIMIDIA S/A

TESTEMUNHAS:

ALEXANDRE DIAS
MONTEIRO:01549801619

Assinado de forma digital
por ALEXANDRE DIAS
MONTEIRO:01549801619

Nome: Alexandre Dias Monteiro
CPF: 015.498.01619

LUISA DE GOIS
AQUINO:98647083687

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digital por LUISA DE
GOIS
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Nome: Luisa De Gois Aquino
CPF: 986.470.836.87

OBS.: Este Documento deverá entregue juntamente com a documentação de PROPOSTA DE PREÇOS.

ALGAR MULTIMIDIA S/A
CNPJ: 04.622.116/0001-13
Rua José Alves Garcia, 415, B: Brasil
CEP: 38.400-668, Uberlândia/MG



DECLARAÇÃO DE NÃO REALIZAÇÃO DE VISTORIA

A empresa ALGAR MULTIMIDIA S/A, inscrita no CNPJ nº 04.622.116/0001-13, sediada no endereço Rua Jose Alves Garcia nº 415, bairro brasil , no município de Uberlândia, Estado de Minas Gerais, declara para fins de participação no **PREGÃO ELETRÔNICO Nº 46/2022**, que tem pleno conhecimento das condições e peculiaridades inerentes à natureza do trabalho, que assume total responsabilidade pela sua opção e que não utilizará desta para quaisquer questionamentos futuros que possam ensejar desavenças técnicas ou financeiras.

Uberlândia, 14 de dezembro de 2023

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DE	ROBERTO LOPES DE
OLIVEIRA:0976740	OLIVEIRA:09767402
2659	659

Marcos Roberto Lopes de Oliveira

ALGAR MULTIMIDIA S/A
CNPJ: 04.622.116/0001-13
Rua José Alves Garcia, 415, B: Brasil
CEP: 38.400-668, Uberlândia/MG

ANEXO IX
DECLARAÇÃO DE RESPONSABILIDADE AMBIENTAL

(não se aplica) – DOCUMENTAÇÃO EM ANEXO COMPROBATÓRIA.

Eu Marcos Roberto Lopes de Oliveira CPF n.º 097.674.026-59 como representante devidamente constituído da empresa ALGAR MULTIMIDIA S/A, inscrita no CNPJ n.º 04.622.116/0001-13, doravante denominado Licitante, para fins do disposto no PE n.º 62/2023 – COLIC/SCG/SECONTI/SEPLAD-DF, em atendimento a Lei Distrital n.º 4.770/2012, declara, sob as penas da lei, em especial o art. 299 do Código Penal Brasileiro, que:

a) A proponente está ciente de sua responsabilidade ambiental e se compromete em adotar práticas ecologicamente corretas realizando as seguintes ações:

i) Descartar o material utilizado (lâmpadas, cartuchos, recipientes de tintas, caixas de papelão), fazendo a separação dos resíduos recicláveis, tendo o cuidado necessário com acondicionamento dos materiais tóxicos: lâmpadas à base de vapor de mercúrio, sódio ou similar; cartuchos e recipientes de tintas e outros, de modo a evitar a evaporação de produtos tóxicos no meio ambiente.

ii) Destinações dos materiais recicláveis às cooperativas e associações dos catadores incentivando a prática da reciclagem e a proteção do meio ambiente.

iii) Utilizar papéis originários de áreas de reflorestamento para reprodução de documentos; sendo que para os fins a que se destina esta licitação, somente será utilizado papel reciclado na forma do exigido no Edital de Licitação.

b) A empresa reconhece sua responsabilidade com o meio ambiente, adotando todas as medidas necessárias para evitar, atenuar ou reparar os impactos resultantes desta atividade, mantendo-se disponível à fiscalização pelos Órgãos responsáveis, e que já iniciou (ou está em fase de implantação) as seguintes medidas: _____ (DEVERÁ INFORMAR QUAIS AS MEDIDAS JÁ IMPLANTADAS) tendo como meta em um prazo de _____ atingir o nível mínimo para reconhecimento pelos Organismos Ambientais de Empresa Sustentável.

c) Que está plenamente ciente do teor e da extensão desta declaração e que detém plenos poderes e informações para firmá-la, conforme exigido no PE n.º 62/2023 – COLIC/SCG/SECONTI/SEPLAD-DF.

Uberlândia, 14 de dezembro de 2023

MARCOS ROBERTO LOPES DE OLIVEIRA:09767402659

Assinado de forma digital por
MARCOS ROBERTO LOPES DE
OLIVEIRA:09767402659

Marcos Roberto Lopes de Oliveira

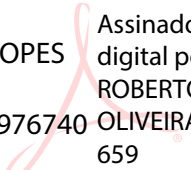
ALGAR MULTIMIDIA S/A
CNPJ: 04.622.116/0001-13
Rua José Alves Garcia, 415, B: Brasil
CEP: 38.400-668, Uberlândia/MG

ANEXO X
DECLARAÇÃO PARA OS FINS DO DECRETO Nº 39.860, DE 30 DE MAIO DE 2019

ÓRGÃO/ENTIDADE: Secretaria de Estado de Planejamento, Orçamento e Administração do Distrito Federal
PROCESSO: 04033-00001671/2023-84
MODALIDADE DE LICITAÇÃO: PREGÃO ELETRÔNICO
NÚMERO DA LICITAÇÃO: 62/2023
LICITANTE: ALGAR MULTIMIDIA S/A
CNPJ/CPF: 04.622.116/0001-13
INSCRIÇÃO ESTADUAL/DISTRITAL: 001.030.140.0075
REPRESENTANTE LEGAL: Marcos Roberto Lopes de Oliveira
CPF: 097.674.026-59

A pessoa física ou jurídica acima identificada, por intermédio de seu representante legal, declara que não incorre nas vedações previstas no art. 9º da Lei nº 8.666, de 21 de junho de 1993, e no art. 1º do Decreto nº 39.860, de 30 de maio de 2019. Essa declaração é a expressão da verdade, sob as penas da lei.

Uberlândia, 14 de dezembro de 2023

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DE		ROBERTO LOPES DE
OLIVEIRA:0976740		OLIVEIRA:09767402
2659		659

Marcos Roberto Lopes de Oliveira


ALGAR MULTIMIDIA S/A
CNPJ: 04.622.116/0001-13
Rua José Alves Garcia, 415, B: Brasil
CEP: 38.400-668, Uberlândia/MG



DECLARAÇÃO

Declaramos de que esta tomou conhecimento, por intermédio de seu representante técnico, de todas as condições de trabalho referentes aos serviços, nos termos do Termo de Referência

Uberlândia, 14 de dezembro de 2023

MARCOS		Assinado de forma
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DE		ROBERTO LOPES DE
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02659		59

Marcos Roberto Lopes de Oliveira

ALGAR MULTIMIDIA S/A
CNPJ: 04.622.116/0001-13
Rua José Alves Garcia, 415, B: Brasil
CEP: 38.400-668, Uberlândia/MG



Product Overview

Operators are finding opportunities and facing challenges to support new and complex services and applications with [5G](#), [IoT](#), and cloud—all while keeping experience-first networking in mind. The ACX7000 family platforms can help operators thrive. The [ACX7024](#) and [ACX7024X](#) are fixed, 360 Gbps, 1 U (24 cm deep) multiservice routers, powered by [Junos OS Evolved](#) and [Paragon Automation](#). They provide 1GbE to 100GbE port flexibility and delivers exceptional TCO, investment protection, and multiservice support for [service provider](#), enterprise, and wholesale use cases. Its compact footprint and precision timing support make the [ACX7024](#) and [ACX7024X](#) ideal for 4G/5G mobile network deployments.

ACX7024 AND ACX7024X CLOUD METRO ROUTERS DATASHEET

Product Description

The Juniper Networks® ACX7000 family of Cloud Metro Routers is designed to help operators achieve their capital, operational, and user experience goals. Part of the [Juniper Networks ACX7000 family](#) of routers, the ACX7024 and ACX7024X deliver exceptional TCO, investment protection, and support [Juniper® Cloud Metro](#) for 5G, Internet of Things (IoT), and cloud applications. These routers are ideal for service provider, enterprise, and residential use cases requiring a highly flexible, compact, multiservice, and environmentally industrial-rated platform.

ACX7000 Family Overview

ACX7000 family of routers is purpose-built for the IP service fabric underlay of a Juniper Cloud Metro. They leverage the industry's fastest chipset, provide a unique balance of system design, and set new benchmarks for sustainable, high-performance platforms. Managed by [Junos® OS Evolved](#) and [Juniper Paragon™ Automation Portfolio](#), the ACX7000 routers are embedded with [Paragon Active Assurance](#) and with [Zero Trust](#) security built in, enabling operators to deliver highly differentiated customer experiences. Available in environmentally industrial-rated, fixed, fixed plus modular, and fully modular designs, these energy and footprint efficient multiservice routers support high-precision timing technologies and are engineered for service provider, enterprise, residential (including PON with the [Juniper Unified PON Solution](#)), IoT, and 4G/5G mobile applications.



Figure 1. Juniper Networks ACX7000 Family—engineered for the IP service fabric of a Juniper Cloud Metro

Individually, ACX7000 platforms bring leading-edge performance, scale, and capability to any deployment. When building a comprehensive Juniper Cloud Metro architecture consisting of multiple ACX7000 family platforms, new dimensions of end-to-end operational capability, performance, and simplicity are realized. Forming the foundation of an IP service fabric underlay, the ACX7000 family of routers shares innovative features that elevate operations and enable the core characteristics of a Cloud Metro. To learn more about the full potential of the ACX7024 and 7024X, combine the information in this datasheet with the [ACX7000 Family of Cloud Metro Routers Datasheet](#) to fully understand the capabilities of the ACX7000 family investment.

Product Offering

ACX7024 and ACX7024X, from the ACX7000 family, are compact, fixed, 1 U (24 cm deep), high-performance multiservice routers. Designed for Cloud Metro deployments in industrial and commercial temperature environments, both routers incorporate 6 integrated fans (5+1 redundancy) for front-to-back and side-to-side (with baffle) airflow. They come with 2x field replaceable AC or DC power supplies (1+1 redundancy). Cost-effective and efficient thermal design enables usage of high-power 100GbE ZR transceivers on all supporting ports. They incorporate precision-timing capabilities, including advanced Class C timing for low-latency 5G services and GPS/GNSS (Global Navigation Satellite System) transceiver for best-in-class network experience. They support next-generation protocols, including [segment routing](#), SRv6, MPLS, and [Ethernet VPN \(EVPN\)–Virtual Extensible LAN \(VXLAN\)](#), and any overlay, underlay, or service. They deliver service-assured network slicing, network intelligence, and Juniper Paragon Automation for network efficiency and operational simplicity.

The ACX7024 and ACX7024X routers share identical features and capabilities while providing operators with key differentiators to fit the exacting needs of each deployment. The ACX7024 is designed to work in less-than-desirable, industrial-temperature applications. The ACX7024X, with its 8C processor and 64MB of RAM, provides high-scale and low-latency capabilities in commercial-temperature applications.

ACX7024: The ACX7024 is an industrial-rated (I-Temp) multiservice router. Next-generation silicon delivers 360 Gbps of throughput, a comprehensive feature set, and the scale needed to support today's and tomorrow's performance and bandwidth requirements. The ACX7024 router's fixed ports include 24 multi-rate (SFP28) ports, each configurable as 1GbE, 10GbE, and 25GbE, enabling operators to perform today's most common upgrades on a port-by-port basis. An additional 4 fixed (QSFP-28) 100GbE uplinks are available to support scale.

ACX7024X: The ACX7024X is a commercial-rated (C-Temp), high-scale multiservice router. Key highlights are next-generation silicon that delivers 360 Gbps of throughput, a comprehensive feature set, a more powerful processor, 4 times the memory for high-scale environments, a higher FIB scale, and faster look-ups. All these features help operators and enterprises meet the needs of high-performance bandwidth requirements today and tomorrow. The ACX7024X router fixed ports include 24 multi-rate (SFP28) ports, each configurable as 1GbE, 10GbE, and 25GbE, enabling operators to perform today's most common upgrades on a port-by-port basis. An additional 4 fixed (QSFP-28) 100GbE uplinks are available to support scale.

Features and Benefits

The cloud metro ready ACX7024 and ACX7024X are engineered for sustainability. They address the challenges of evolving service requirements and relentless traffic growth imposed by 4G/5G, IoT, and cloud applications, turning them into opportunities for operators to thrive.

Table 1: ACX7024 and ACX7024X Features and Benefits

Feature	Benefits
Junos OS Evolved and Embedded Active Assurance	Managed by Junos OS Evolved, Juniper Paragon Active Assurance Test Agents are embedded into all ACX7000 platforms enabling automated monitoring, diagnosis, remediation, and optimization of service delivery, service performance, and differentiated user experience.
Rugged and Efficient Design	Environmentally industrial-rated (-40 °C to +65 °C), commercial-rated (0° C to 40° C), and compact footprint (1 U, 24 cm deep, 19 in. rack) supports a variety of deployments. Efficient range (<97 W typical*, 150 W max) with front-to-back and side-to-side (with baffle) airflow. NOTE: Typical power consumption measured at 25° C ambient with 50% load on all ports
Build-As-You-Grow Operational Simplicity	Two-post, fixed rack mounting, 24 multi-rate ports support native port-by-port 1GbE, 10GbE, and 25GbE configuration and migration. As service demand grows, ACX7024 routers support usage of high-power 100GbE ZR transceivers on all supporting ports.
Next-Gen Capabilities	Next-gen capabilities include leading protocols such as segment routing, SRv6, MPLS, EVPN-VXLAN, advanced programmability, leading network slicing, telemetry, and support for any overlay, underlay, or service.
Zero-Trust Security	Enhanced security capabilities include secure boot, integrated tamper-proof design, and trust anchor with DevID, enabling device attestation and enhanced security through a unique cryptographic digital identity.
Cloud Metro-Ready	ACX7024 and ACX7024X offer deep buffering for end-to-end service assurance, precision timing capabilities such as Synchronous Ethernet, Precision Time Protocol (PTP), and advanced Class C timing for latency-optimized 5G service experiences, as well as GNSS/GPS (Grand master clock support via external GNSS receiver) network synchronization. An ideal choice for cloud metro, enterprise, and residential use cases, ACX7024 and ACX7024X also support the Juniper Unified PON Solution , IoT, and 4G/5G mobile applications.



Figure 2. Juniper Networks ACX7024—engineered for Metro CSR, CE, small WAN edge access and aggregation/pre-aggregation of a Juniper Cloud Metro



Figure 3. Juniper Networks ACX7024X—engineered for service provider and enterprise WANs, CPE, CE, access, and pre-aggregation of a Juniper Cloud Metro

Table 2. Built-In Interface Options

Model	1GbE/10GbE/25GbE SFP-28	100GbE QSFP-28
ACX7024	24	4
ACX7024X	24	4

Table 3. Maximum Port Capacity Supported Per Port Speed

Native Port Speeds	ACX7024	ACX7024X
100GbE	4	4
40GbE	4	4

Native Port Speeds	ACX7024	ACX7024X
25GbE	24	24
10GbE	24	24
1GbE	24	24

*Exact power consumption is subject to operating conditions and unit-to-unit variations.

Feature Matrix

A key differentiator and operator benefit of the ACX7000 family of Cloud Metro Router is that all platforms in the portfolio share the same feature set with limited hardware-driven exceptions. Refer to the [ACX7000 family of Cloud Metro Routers Datasheet](#) and Table 2 for a list of ACX7000 family features and platform-specific exceptions.

Specifications

This section lists basic specifications for the ACX7024 line of routers. For further detail, please refer to the hardware installation manuals at www.juniper.net/techpubs.

Table 4: Specifications

Specification	ACX7024	ACX7024X
ASIC throughput	360 Gbps	360 Gbps
CPU	Intel 4C	Intel 8C
Memory	RAM: 16GB DDR4	RAM: 64GB DDR4
Chassis type	Fixed	Fixed
Dimensions (W x H x D)	19 x 1.75 x 9.6 in (48.2 x 4.4 x 24.4 cm)	19 x 1.75 x 9.6 in (48.2 x 4.4 x 24.4 cm)
Weight (lb/kg) fully configured	12.5 lb (5.66 kg)	12.5 lb (5.66 kg)
Power (DC)	-48 VDC through -60 VDC	-48 VDC through -60 VDC
Power (AC)	90 VAC to 264 VAC	90 VAC to 264 VAC
Typical power draw (without optics)*	97 W @ 25° C	97 W @ 25° C
Maximum power draw (without optics)*	150 W	150 W
Operating temperature	-40° C to +65° C GR3108-class-2	0° C to 40° C GR-63-CORE
Cooling	6 fans, front-to-back airflow, baffle for side-side	6 fans, front-to-back airflow, baffle for side-side
Humidity	5% to 90% RH (noncondensing) operating	5% to 90% RH (noncondensing) operating
Interfaces	24x 1GbE/10GbE/25GbE SFP28 4x 100GbE QSFP-28	24x 1GbE/10GbE/25GbE SFP28 4x 100GbE QSFP-28
Synchronization interfaces	<ul style="list-style-type: none"> 1x RJ-45 port + TOD 1 PPS/10 MHz input and output GNSS Antenna (via USB) 	<ul style="list-style-type: none"> 1x RJ-45 port + TOD 1 PPS/10 MHz input and output GNSS Antenna (via USB)

*Exact power consumption is subject to operating conditions and unit-to-unit variations.

	ACX7024	ACX7024X
Safety Approvals		
CAN/CSA-C22.2 No. 60950-1-07, Information Technology Equipment	Yes	Yes
CAN/CSA-C22.2 No. 62368-1-14 Information Technology Equipment	Yes	Yes

	ACX7024	ACX7024X
EN 60825-1 Safety of Laser Products—Part 1: Equipment classification and requirements	Yes	Yes
IEC 60950-1:2005, AMD1:2009, AMD2:2013 Information Technology Equipment	Yes	Yes
IEC 62368-1:2014 (2nd Edition) Audio/Video, Information and Communication Technology Equipment	Yes	Yes
IEC 62368-1:2018 (3rd Edition) Audio/Video, Information and Communication Technology Equipment	Yes	Yes
UL 60950-1:2007 R10.14 Information Technology Equipment	Yes	Yes
UL/CSA 62368-1:2019 (3rd edition) Audio/Video, Information and Communication Technology Equipment	Yes	Yes

EMC

Australian Communications and Media Authority (ACMA) AS/NZS CISPR 32: 2015 Class A	Yes	Yes
BSMI CNS 13438 and NCC C6357 Taiwan Radiated and Conducted Emissions (at 10 meter)	Yes	Yes
CISPR 22:2008, Class A	Yes	Yes
CISPR 32:2015, Class A	Yes	Yes
Deutsche Telekom EMC specification 1TR9, Edition 03 2016	Yes	Yes
EN 55022:2010, Class A	Yes	Yes
EN 300 386, V1.6.1 (2012-09), Class A	Yes	Yes
EN 55032:2015, Class A	Yes	Yes
EN 300386 V2.1.1 (2016-07), Class A	Yes	Yes
FCC Part 15, Subpart B, for Class A digital devices	Yes	Yes
Innovation, Science and Economic Development Canada ICES 003, dated January 2016 Class A	Yes	Yes
KN32 Korea Radiated Emission Characteristics (at 10 Meter)	Yes	Yes
QCN 118:2018/BTTTT "Information technology equipment-Radio disturbance characteristics -limits and methods of measurement" Class A	Yes	Yes
TEC/SD/DD/EMC/221/05/OCT-16	Yes	Yes
VCCI-CISPR32:2016	Yes	Yes

Network Equipment Building System (NEBS)

Data Center DC 3160	Yes	Yes
EN 50125-3 Railway application Humidity (in building, shelter with C.C)	Yes	Yes
EN 50125-3 Railway application Vibration (outside track)	Yes	Yes
ETSI 300 019 -2-1 Class 1.2 Storage	Yes	Yes
ETSI 300 019 -2-2 Class 2.3 Transportation	Yes	Yes
ETSI 300 019 -2-3 Class 3.2 Operational	Yes	Yes
GR-63-CORE: NEBS, Physical Protection	Yes	Yes
GR-1089-CORE: EMC and Electrical Safety for Network Telecommunications Equipment	Yes	Yes
GR 3108 Class 2 environment (environmentally sealed cabinet)	Yes	No
IEC 61850- 3 Power utility (environmental)	Yes	Yes
IEE 1613 Power station (DC input minus 48VDC meets dielectric strength)	Yes	Yes
IEEE 1613 Power station (exception – forced air cooling and boot up time)	Yes	Yes
SR-3580 NEBS Criteria Levels (Level 3 Compliance)	Yes	Yes

Immunity

CISPR 24:2010	Yes	Yes
CISPR 35:2016	Yes	Yes
Deutsche Telekom EMC specification 1TR9, Edition 03 2016	Yes	Yes
EN 55024:2010	Yes	Yes
EN 300 386, V1.6.1 (2012-09)	Yes	Yes

	ACX7024	ACX7024X
EN 300386 V2.1.1 (2016-07)	Yes	Yes
Energy Utilities (Power utility/Substations): IEEE1613, IEEE 1613.1 and IEC 61850-3 with IEC 61000-6-5	Yes	Yes
ECR 3.0.1	Yes	Yes
KN35 Korea Radiated Immunity Characteristics	Yes	Yes
Railroad Utilities: EN50121-4	Yes	Yes
TCVN 7317:2003	Yes	Yes
TEC/SD/DD/EMC/221/05/OCT-16	Yes	Yes
Energy Efficiency		
AT&T TEER (ATIS-06000015.03.2013)	Yes	Yes
Verizon TEEER (VZ.TPR.9205 Issue 6)	Yes	Yes
ETSI ES 203 136 (2013-05)	Yes	Yes
ECR 3.0.1	Yes	Yes

Ordering Information

Product	Description
Hardware	
ACX7024-DC-1PSU	ACX7024, 1 U high, 240 mm deep; 24xSFP28 and 4xQSFP28; operating range -40 C to 65 C; DC non-redundant power supply unit
ACX7024-DC-2PSU	ACX7024, 1 U high, 240 mm deep; 24xSFP28 and 4xQSFP28; operating range -40 C to 65 C; DC redundant power supply unit
ACX7024-AC-1PSU	ACX7024, 1 U high, 240 mm deep; 24xSFP28 and 4xQSFP28; operating range -40 C to 65 C; AC non-redundant power supply unit
ACX7024-AC-2PSU	ACX7024, 1 U high, 240 mm deep; 24xSFP28 and 4xQSFP28; operating range -40 C to 65 C; AC redundant power supply unit
ACX7024X-AC-2PSU	ACX7024X, 1 U high, 240 mm deep, 24xSFP28 and 4xQSFP28, operating range 0 C to 40 C; AC dual power supply unit
ACX7024X-DC-2PSU	ACX7024X, 1 U high, 240 mm deep, 24xSFP28 and 4xQSFP28, operating range 0 C to 40 C; DC dual power supply unit

Common ACX7000 Family Software License

A recurring Cloud Metro theme highlights the many benefits operators experience by designing their brownfield or greenfield IP service fabric around the ACX7000 family portfolio. Benefits include common features and protocols, synchronized software updates, leading-edge performance and sustainability, network as a sensor (Active Assurance), embedded zero trust security, secure zero-touch provisioning (sZTP), Junos OS Evolved, Juniper Paragon Automation, and more. The application of common software license options across the entire portfolio is another example of operator convenience, flexibility, and simplicity. Refer to Table 3 in the [ACX7000 family of Cloud Metro Routers Datasheet](#) for a complete list of build-as-you-grow software license options.

Optics and Transceivers

The ACX7000 family supports varying port speeds with different transceiver options of direct attach copper (DAC), active optical cable (AOC), and breakout cable (BO). The most recent information

on supported optics can be found at <https://apps.juniper.net/home/>.

Juniper Networks Service and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit <https://www.juniper.net/us/en/products.html>.

About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security, and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability, and equality.

Statement of Product Direction

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Whois

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AS16735

TITULAR	ALGAR TELECOM S/A
DOCUMENTO	71.208.516/0001-74
RESPONSÁVEL	Vinicius Della Torres
PAÍS	BR
CONTATO DO TITULAR	AL TSA49
CONTATO DE ROTEAMENTO	CNORE
CONTATO DE ABUSO	CST87
CRIADO	17/08/2000
ALTERADO	10/04/2019

Blocos

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200.233.128.0/18	200.233.192.0/18	201.16.128.0/18
201.16.192.0/18	201.48.0.0/17	201.48.128.0/17
189.39.0.0/18	189.38.96.0/20	2001:1290::/32
189.112.0.0/16	2001:1291::/32	187.32.0.0/16
187.44.96.0/20	187.72.0.0/16	187.44.112.0/20
201.49.96.0/19	201.55.96.0/19	177.69.0.0/16
2804:620::/32	177.126.96.0/20	2804:808::/32
179.108.96.0/19	170.84.32.0/22	189.37.0.0/17

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MX SERIES UNIVERSAL ROUTING PLATFORMS

Product Overview

Unrelenting traffic growth—driven by higher speeds, more subscribers, mobile penetration, cloud adoption, and ubiquitous video consumption—is straining traditional service provider and enterprise networks. To accommodate this reality, Juniper's Secure Automated Distributed Cloud solution helps service providers react to changing market conditions and accelerate service delivery with world-class products and innovative architectural components. The MX Series is an integral part of this solution. Powered by the Junos OS and programmable Trio/Penta silicon chipset, MX Series platforms deliver powerful routing, switching, security, and services features that help operators successfully transform their networks—and their businesses—in today's hyper-connected world.

Product Description

The continuous expansion of mobile, video, and cloud-based services is disrupting traditional networks and impacting the businesses that rely on them. While annual double-digit traffic growth requires massive resource investments to prevent congestion and accommodate unpredictable traffic spikes, capturing return on that investment can be elusive. Emerging trends such as 5G mobility, Internet of Things (IoT) communications, and the continued growth of cloud networking promise even greater network challenges in the near future. The Juniper Networks® MX Series Universal Routing Platform delivers the industry's first end-to-end infrastructure security solution for enterprises as they look to move business-critical applications to public clouds. Delivering features, functionality, and secure services at scale in the 5G era with no compromises, the MX Series is a critical part of the network evolution happening now.

At the same time, traditional operations environments are increasingly challenged to meet consumer and business requirements for rapid service delivery and cloud-like network experiences. Issues related to monitoring and management are placing additional stress on already strained budgets and personnel, and promising technologies like Network Functions Virtualization (NFV) and SDN introduce an entirely new set of operational challenges.

Our hyper-connected world demands more agile, automated, and scalable networks. Now more than ever, network operators need to transform their networks—and their operations environments—to accommodate this reality.

Utilizing state-of-the-art software and hardware innovations, MX Series Universal Routing Platforms are helping network operators worldwide successfully transform their networks and services. Powered by the Juniper Networks Junos® operating system and the programmable Trio chipset, MX Series platforms support a broad set of automation tools and telemetry capabilities that enable a rich set of business- and consumer-oriented services with predictable low latency and wire-rate forwarding at scale, while providing the reliability needed to meet strict service-level agreements (SLAs).

An Agile Family of Cloud-Era Universal Routing Platforms

The MX Series portfolio was designed for agility and built from the ground up to support a universal set of edge applications, helping Juniper customers rapidly respond to evolving business and technical requirements while simplifying operations without sacrificing their current infrastructure investments.

With its massive scale and efficiency, the MX Series is ideal for space- and power-constrained environments. It redefines per-slot economics, enabling customers to do more with less while simplifying network design, reducing OpEx. It also enables the profitable delivery of a broad range of business, residential, mobile, cable, data center, and cloud services while seamlessly supporting traditional and emerging network architectures with adaptive software and pervasive security. The flexibility of the MX Series is enabled by the programmable Trio chipset, which allows MX Series platforms to add support for new features, such as telemetry, without costly hardware upgrades. Additionally, support for the Junos Automation Toolkit and the Juniper Extension Toolkit provide modern programming languages that reduce costs and increase profitability by improving productivity and customization.

This agility is evident in the wide variety of MX Series use cases that have been proven in the world's largest and most demanding networks, including:

- **Business Edge:** MX Series platforms support the broadest range of L2/L2.5/L3 VPN services which, in combination with multilayer, multiprotocol resiliency, ensure that customer SLAs are met under all network conditions.
- **Internet/Peering Gateway:** MX Series platforms support the high performance, reliability, scale, and density needed to efficiently peer with Internet and other service provider networks.
- **Broadband Network Gateway (BNG):** MX Series platforms offer the highest subscriber density and most sophisticated broadband edge features available in the industry.
- **Universal SDN Gateway:** The MX Series offers a comprehensive solution for interconnecting virtual and physical networks—as well as between virtual networks operating with different technologies—via support for Multiprotocol BGP (MBGP), dynamic tunnels using MPLSoGRE or Virtual Extensible LAN (VXLAN) encapsulation, virtual routing and forwarding (VRF) tables, E-VPNs, and Network Configuration Protocol (NETCONF), along with the ability to send traffic between VRF and global routing tables based on configuration and policy.

- **Data Center and Cloud Edge:** The MX Series is ideal for data center/cloud edge applications, with support for multiple overlay encapsulation methods, including VXLAN, Network Virtualization using Generic Routing Encapsulation (NVGRE), MPLSoUDP, MPLSoGRE, 802.1BR, SR-MPLS, and SR-V6. The MX Series also incorporates data plane security with inline MACsec in the MPC-10E line cards, making it a perfect fit for data center and cloud deployments.
- **Enterprise WAN:** Enterprises and government agencies worldwide use MX Series platforms to build their own overlay network on top of a service provider's Layer 2 or MPLS network, using encapsulation technologies such as MPLSoGRE, VXLAN, and IPsec for secure transport.
- **Universal Metro/Aggregation:** MX Series platforms offer a full suite of routing and switching features, allowing you to choose a deployment model that best fits your business and technical needs. The MX Series can be deployed as IP/IP VPN edge routers, Ethernet VPN (EVPN) and virtual private LAN service (VPLS) provider edge (VPLS-PE) routers, MPLS label-switching (LSR) routers, and as Layer 2 Ethernet switches or Layer 3 IP routers.
- **Mobile Backhaul:** In addition to switching, routing, and security features, MX Series platforms support highly scalable and reliable hardware-based timing that meets the strictest LTE requirements, including Synchronous Ethernet for frequency and the Precision Time Protocol (PTP) for frequency and phase synchronization. In addition, the MX104 is ETSI 300-compliant, enabling deployment in next-generation mobile applications such as 5G.

At-a-Glance: MX Series Universal Routing Platforms Comparison

The MX Series portfolio includes a wide range of physical and virtual platforms that share a common architecture and feature set. This enables Juniper customers to select the platform that best addresses their unique business goals and satisfies their scale, density, resiliency, space, power, and value-added service requirements without compromising on quality or features.

Modular MX Series Platforms

MX960, MX480, and MX240 Universal Routing Platforms are modular, chassis-based platforms.

- The MX960 has been proven in the world's largest service provider, cable, mobile, and data center networks, offering 12 Tbps of system capacity in support of business and residential broadband services as well as peering and provider edge applications.

- The MX480 is a modular, 7.5 Tbps-capable router that supports a wide range of cloud, campus, enterprise, data center, service provider, cable, and mobile service core applications.
- The MX240 is a compact, 3 Tbps-capable router ideal for space-constrained cloud, enterprise, data center, service provider, cable, and mobile service core deployments.

The latest generation of line card hardware for the MX960, MX480, and MX240 platforms delivers multi-terabit crypto capabilities with 256-bit encryption complying with AES-GCM encapsulation per RFC4303; AES-GCM encapsulation per RFC4106; AES-GMAC encapsulation per RFC4543; and AES-GMAC (IPv4/v6) encapsulation per RFCs 4302 and 4543. Along with multi-terabit routing, the latest MPC also delivers integrated Layer 2 MACsec features at flexible interface rates of 10GbE, 40GbE, and 100GbE.

Fixed-Configuration MX Series Platforms

MX204, MX150, MX104, MX80, MX40, MX10, and MX5 Universal Routing Platforms are fixed-configuration platforms that support modular interfaces.

- The MX204 is a space- and power-optimized router delivering ultra-high port density and throughput while consuming just 0.9 W/Gb. It addresses the emerging edge and metro Ethernet networking needs of service providers, mobile, web-scale operators, and MSOs by delivering 400 Gbps of throughput in support of high-density 100GbE, 40GbE, and discrete and breakout 10GbE and 1GbE interfaces—all in a single rack unit.
- The MX150 is a compact, full-featured router delivering 20 Gbps of throughput in support of 1GbE and 10GbE interfaces.

It provides a cost-effective solution for a wide range of low-bandwidth provider edge, business edge, broadband network gateway (BNG), and enterprise WAN applications.

- The MX104 is a mobile backhaul-optimized, ETSI 300 mm-compliant chassis with high redundancy and 80 Gbps of throughput. The MX104 offers four MIC slots and redundant fixed 10GbE interfaces for flexible network connectivity.
- The MX80, MX40, MX10, and MX5 are software upgradeable from 20 Gbps to 80 Gbps, enabling cost-effective “pay as you grow” scale. These platforms have up to four Modular Interface Card (MIC) slots and two fixed 10GbE interfaces for connecting to the network.

The following table provides a comparison between the various MX Series modular and fixed-configuration platforms.

Architecture and Key Components

Modular Components for Chassis-Based MX Series Platforms

The modular, chassis-based MX960, MX480, and MX240 share the following components:

- Modular Port Concentrators (MPCs) provide routing, MPLS, switching, inline services, subscriber management, and hierarchical quality of service (HQoS) among many other features. MPCs may also host interfaces directly or via Modular Interface Cards (MICs) that allow users to “mix and match” interface types. Powered by the programmable Trio chipset, MPCs collect and stream telemetry that identifies resource utilization, loss and delay, and other metrics.

Table 1. MX Series Universal Routing Platforms at a Glance

	MX960	MX480	MX240	MX204	MX150	MX104	MX80	MX40	MX10	MX5
Rack units	16	8	5	1	1	3.5	2	2	2	2
Systems per rack	3	6	9	48	48	13	24	24	24	24
Slots	11 MPCs	6 MPCs	2 MPCs	8 10GbE, 4 100GbE	NA	4 10GbE, 4 MIC slots	4 10GbE, 3 ¹ MIC slots	2 10GbE, 3 ² MIC slots	3 ³ MIC slots	3 ⁴ MIC slots
Per slot capacity	1.5 Tbps	1.5 Tbps	1.5 Tbps	NA	NA	NA	NA	NA	NA	NA
Maximum system throughput⁵	12 Tbps	7.5 Tbps	3 Tbps	400 Gbps	20 Gbps	80 Gbps	80 Gbps	60 Gbps	40 Gbps	20 Gbps
PDH	Yes	Yes	Yes	NA	NA	Yes	Yes	Yes	Yes	NA
Sonet/SDH	Yes	Yes	Yes	NA	NA	Yes	Yes	Yes	Yes	NA
Maximum 1GbE	440	240	80	24	12	80	80	60	40	20
Maximum 10GbE	528	300	120	24	2	8	8	4	1	NA
Maximum 40GbE	132	75	30	4	NA	NA	NA	NA	NA	NA
Maximum 100GbE	120	75	30	4	NA	NA	NA	NA	NA	NA
Maximum 400GbE	24	15	6	NA	NA	NA	NA	NA	NA	NA
10GbE DWDM	88	48	16	8	NA	NA	NA	NA	NA	NA
100GbE DWDM	22	40	4	4	NA	NA	NA	NA	NA	NA

¹The MX80 has two front MIC slots and one rear MIC slot. The rear MIC slot only supports the MS-MIC.

²The MX40 has two front MIC slots and one rear MIC slot. The rear MIC slot only supports the MS-MIC.

³The MX10 has two front MIC slots and one rear MIC slot. The rear MIC slot only supports the MS-MIC.

⁴The MX5 has one front MIC slot and one rear MIC slot. The rear MIC slot only supports the MS-MIC.

⁵Full duplex maximum system throughput values (to determine half-duplex values, double system throughput)

- Switch Control Boards (SCBs) feature an integrated switch fabric that connects to all slots in the chassis in a nonblocking architecture. The SCBs house the Routing Engine, control power to MPCs, monitor and control system functions such as fan speed and the system front panel, and manage clocking, resets, and boots.
- The Routing Engine (RE) provides the control plane, runs Juniper Networks Junos® operating system, and handles all routing protocol processes as well as the software processes that control MPCs, chassis components, system management, and user access to the router. REs communicate with MPCs via dedicated out-of-band management channels.

MPC-10E Line Card

The MPC-10E line card is a key contributor to the service provider transformation in the cloud era when deployed with MX960, MX480, and MX240 platforms in a Juniper Secure Automated Distributed Cloud environment. By providing the underlying network infrastructure with scale, agility, routing innovation, and pervasive security while incorporating universal (10/40/100/400GbE) ports, the MPC-10E protects existing investments with disaggregated software innovation and infinite programmability. Built-in automation enables rapid deployment without disrupting the existing MX960/MX480/MX240 footprint. The MPC-10E line card is powered by the new Juniper Penta silicon, which enables the benefits highlighted in Table 2.

Table 2. MPC-10E Line Card Benefits at a Glance

Attribute	Benefit
Performance	Triples MX960/MX480/MX240 chassis performance to 1/1.5 Tbps per slot with new SCBE3 fabric, enabling up to 12 Tbps throughput
Universal Interfaces	Reduces interface sparing with multi-rate 10/40/100GbE interfaces
Power Efficiency	Consumes ~0.5 W per gigabit per system level
Inline Data Plane Security	Features AES-256 MACsec line-side encryption
Investment Protection	Backward compatible with existing MPCs and REs: MPC3E/MPC4E/MPC5E/MPC7E, MX-SPC3, MPC2E/3E-NG, and 16x10G MPCs; RE-S-1800 and RE-S-X6 Routing Engine modules
Seamless Deployment	Reuse deployed MX960/MX480/MX240 chassis, power modules, and fan trays

Junos OS

Junos OS is a reliable, high-performance, modular network operating system that is supported across all of Juniper's physical and virtual routing, switching, and security platforms. Junos OS improves network operations and increases service availability, performance, and security with features like low-latency multicast, comprehensive quality of service (QoS), unified in-service software upgrade (unified ISSU), and Junos Continuity, which eliminates the risk and complexity of OS upgrades. With secure programming interfaces, versatile scripting support, and integration with popular orchestration frameworks, Junos OS offers flexible options for

DevOps style management that can unlock more value from the network.

The Programmable Trio Chipset

The programmable Trio chipset is Juniper-developed breakthrough silicon technology that is implemented across the MX Series portfolio. Its innovative design improves business economics by enabling a truly converged platform with maximum performance, service agility, and exceptional power and thermal efficiency.

Trio has a programmable forwarding data structure that allows fast microcode changes in the hardware itself, as well as a programmable lookup engine that allows inline service processing. Furthermore, Trio's programmable QoS engine supports coarse and fine-grained queuing to efficiently address the diverse requirements of core, edge, and aggregation use cases.

With its proven extensibility and agility, the programmable Trio chipset helps network operators worldwide successfully address their most complex technical and market challenges, and promises to meet the requirements of emerging applications for many years to come.

Network Edge Services

MX Series platforms can host optionally licensed Junos OS-based network edge services at scale, both inline on MPCs as well as on dedicated service cards. Hosting network edge services on MX Series platforms reduces network cost and complexity by eliminating numerous elements, operating systems, and interconnections.

- MPCs support inline services using the programmable Trio chipset; supported services include flow monitoring, 1:1 Network Address Translation (NAT), port mirroring, generic routing encapsulation (GRE), IP tunneling, logical tunnels, lawful intercept, and video monitoring.
- The MS-MPC and the MS-MIC provide dedicated processing for compute-intensive services such as carrier-grade NAT (CGNAT), IPsec, stateful firewall, deep packet inspection, flow monitoring, and load balancing.
- The MX-SPC3 provides security services such as carrier-grade NAT (CGNAT), stateful firewall, IDS, traffic load balancing, and DNS sinkhole.

MX Series Platform/Feature Matrix

		MX960	MX480	MX240	MX204	MX150	MX104	MX80	MX40	MX10	MX5
Security	Firewall filters/ACLs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DDoS—control plane	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DDoS—FlowSpec	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Stateless filters L2-L4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Stateful services	✓	✓	✓	✓	No	✓	✓	✓	✓	✓
Inline Services	GRE reassembly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	1:1 NAT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Flow monitoring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Video monitoring	✓	✓	✓	✓	No	✓	✓	✓	✓	✓
	Lawful intercept	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Mirroring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Card Supported Services⁶	Deep packet inspection	✓	✓	✓	No	No	No	No	No	No	No
	CGNAT	✓	✓	✓	No	No	✓	✓	✓	✓	✓
	Flow monitoring	✓	✓	✓	✓	No	✓	✓	✓	✓	✓
	Server traffic load balancing ⁷	✓	✓	✓	No	No	No	No	No	No	No
	IPsec	✓	✓	✓	No	No	✓	✓	✓	✓	✓
	Stateful firewall	✓	✓	✓	No	No	✓	✓	✓	✓	✓
	HTTP header manipulation	✓	✓	✓	No	No	No	No	No	No	No
Resiliency	Redundant RE	✓	✓	✓	No	No	✓	No	No	No	No
	Unified ISSU	✓	✓	✓	No	No	✓	No	No	No	No
	Nonstop active routing (NSR)	✓	✓	✓	No	No	✓	No	No	No	No
	Fast restoration	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Operation, Administration, and Maintenance (OAM)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
System Virtualization	Enhanced SLA and queuing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Junos Fusion Edge (AD)	✓	✓	✓	✓	No	✓	✓	✓	✓	✓
	Logical systems	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Virtual router/switch	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Path Computation Element Protocol (PCEP)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	OpenConfig	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	YANG data modeling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Juniper Extension Toolkit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

⁶Service Card supported services are available via optional software license and require an MX-SPC3, MS-MPC, or MS-MIC.

⁷For more information, see https://www.juniper.net/documentation/en_US/junos/topics/concept/tcf-tlb-overview.html

Key Features and Benefits

Unmatched Network Availability

MX Series platforms ensure network and service availability with a broad set of multilayered physical, logical, and protocol-level resiliency features, including Juniper's Virtual Chassis technology, which supports chassis-level redundancy while enabling users to manage two routers as a single element. Additionally, a multichassis link aggregation group (MC-LAG) implementation supports stateful chassis, card, and port redundancy, as well as subscriber and session persistence.

Application Aware Networking

MX Series platforms use deep packet inspection to detect applications, and they consult with user-defined policies to determine traffic treatment on a per-application basis, enabling highly customized and differentiated services at scale. Working in conjunction with Juniper Networks Contrail® Cloud Platform™, MX Series routers can also steer into complex service chains and stream granular data to analytics engines and back-office systems to permit real-time charging and end-user engagement at the application and content level.

Junos Continuity and Unified In-Service Software Upgrade (Unified ISSU)

Junos Continuity and unified ISSU features remove the downtime risks associated with implementing new hardware or upgrading operating systems.

- Junos Continuity eliminates OS upgrades and system reboots when adding new hardware to MX Series platforms; a plug-in package provides the drivers and support files needed to bring the hardware online.
- Unified ISSU reduces the risks associated with OS upgrades by enabling upgrades between two different Junos OS releases (major or minor) with no control plane disruption and minimal traffic disruption on the forwarding plane.

Junos Telemetry Interface

The Junos Telemetry Interface feature streams component-level data to monitoring, analytics, performance management, and visualization tools as well as to Path Computation Elements such as Juniper Networks NorthStar Controller. Analytics derived from this streaming telemetry can identify current and trending congestion, resource utilization, traffic volume, and buffer occupancy, which can be used to make informed decisions on network design and investments.

Integrated Timing

MX Series platforms support highly scalable and reliable hardware-based timing that meets the strictest LTE requirements, including Synchronous Ethernet for frequency, and the Precision Time Protocol (PTP) for frequency and phase synchronization.

Synchronous Ethernet and PTP can be combined in a “hybrid” mode to achieve the highest level of frequency (10 ppb) and phase (< 1.5 uS) accuracy required for LTE-Advanced, eliminating the need for external clocks.

Junos Fusion Provider Edge

Junos Fusion Provider Edge enables MX Series platforms to act as aggregation devices for the Juniper Networks EX4300 Ethernet Switch and QFX5100 line of data center switching platforms acting as satellite devices while appearing to management as a single, port-dense device managed by a single IP address. Junos Fusion Provider Edge significantly expands the number of network interfaces on the MX Series router while keeping operations simple.

Automated Support and Prevention

Juniper's Automated Support and Prevention consists of an ecosystem of tools, applications, and systems that simplify and streamline operations, delivering operational efficiency, reducing downtime, and increasing your network's ROI running Junos OS. Automated Support and Prevention brings operational efficiency by automating several time-consuming tasks such as incident management, inventory management, proactive bug notification, and on-demand End-of-Life/End-of-Support/End-of-Engineering (EOL/EOS/EOE) reports. The Junos Space® Service Now and Service Insight service automation tools are standard entitlements of all Juniper Care contracts.

Junos Automation Toolkit and Juniper Extension Toolkit

Included in Junos OS software, the Junos Automation Toolkit is a suite of tools supported on all Juniper Networks switches, routers, and security devices. These tools, which leverage the native XML capabilities of Junos OS, include commit scripts, op scripts, event policies and event scripts, and macros that help automate operational and configuration tasks. Additionally, the platform-independent Juniper Extension Toolkit provides a modern programming tool kit that includes support for:

- OpenConfig/YANG
- gRPC, Thrift, NETCONF
- JSON/XML
- API support for all modern programming languages
- Rich on-box scripting support using Python
- REST APIs

Together, Junos OS automation and programmability features simplify complex configurations and reduce the potential for configuration errors. They also save time by automating operational and configuration tasks, speed troubleshooting, and maximize network uptime by warning operators of potential problems and automatically responding to system events.

Security Intelligence for the Edge

The MX960, MX480, and MX240 can be used for advanced threat prevention when deployed as edge routers, further extending security coverage to applications and infrastructure.

Using Juniper's SecIntel capabilities, these MX Series routers offer another layer of network security by identifying and blocking command and control traffic discovered by Juniper Threat Labs and other industry-leading threat feeds, as well as by utilizing custom blacklists and whitelists at a network hardware level. This feature makes your MX Series router an information security enforcement point without having to invest in additional hardware.



Specifications

		MX960	MX480	MX240	MX204	MX150	MX104	MX80-MX5
Layout	System capacity	12 Tbps	7.5 Tbps	3 Tbps	400 Gbps	20 Gbps	80 Gbps	80 Gbps to 20 Gbps
	Slot orientation	Vertical	Horizontal	Horizontal	NA	NA	Horizontal	Horizontal
	Mounting	Front or center	Front or center	Front or center	Front or center	Front or center	Front or center	Front or center
Physical Specification	Dimensions (W x H x D)	17.37 x 27.75 x 23 in (44.11 x 70.49 x 58.42 cm)	17.45 x 14 x 24.5 in (44.3 x 35.6 x 62.2 cm)	17.45 x 8.71 x 24.5 in (44.3 x 22.1 x 62.2 cm)	17.6 x 1.75 x 18.7 in (44.7 x 4.45 x 47.5 cm)	17.36 x 1.72 x 12 in (44.09 x 4.37 x 30.48 cm)	17.22 x 9.46 x 6.09 in (43.7 x 24 x 15.47 cm)	17.5 x 3.5 x 23.46 in (44.5 x 8.9 x 59.6 cm)
	Weight fully loaded	334 lb/151.6 kg	180 lbs/81.6 kg	130 lb/59 kg	23.15 lb/10.5 kg	9.48 lb / 4.3 kg	32 lb/14.5 kg	30 lb/13.7 kg
	Weight unloaded	150 lbs/68.1 kg	65.5 lbs/29.7 kg	52 lbs/23.6 kg	17 lb/7.71 kg	NA	NA	NA
Routing Engine	Default memory	2x16 MB NOR flash storage; 64 GB of DDR4 RAM; 2x50 GB SSD	2x16 MB NOR flash storage; 64 GB of DDR4 RAM; 2x50 GB SSD	2x16 MB NOR flash storage; 64 GB of DDR4 RAM; 2x50 GB SSD	32GB DDR4; 2x100 GB SSD	Xeon D processor running Wind River Linux 7; 32 GB DDR4 RAM; 400 GB SSD	4 MB boot flash; 8 GB of NAND Flash; 4 GB of DDR3 RAM	8 MB boot flash; 4 GB on NAND flash storage; 2 GB of DDR2 RAM
	Number of cores	6 cores	6 cores	6 cores	8 cores	6 cores	1 core	1 core
Redundancy	Components	Power supplies, REs, fans	Power supplies, REs, fans	Power supplies, REs, fans	Power supplies and fans	Fans	Power supplies, REs, fans	Power supplies and fans
Environmental	Air flow	Front to back	Side to side	Side to side	Front to back	Front to back	Side to side [forced air]	Side to side [forced air]
	Operating temperature	32° to 115° F (0° to 46° C) at sea level	32° to 115° F (0° to 46° C) at sea level	32° to 115° F (0° to 46° C) at sea level	32° to 115° F (0° to 46° C)	32° to 122° F (0° to 50° C)	-40° to 149° F (-40° to 65° C)	32° to 115° F (0° to 46° C) at sea level
	Operating humidity	5% to 90%	5% to 90%	5% to 90%	5% to 90%	5% to 90%	5% to 90%	5% to 90%
	Operating altitude	10,000 ft (3048 m)	10,000 ft (3048 m)	10,000 ft (3048 m)	6,000 ft (1900 m)			10,000 ft (3048 m)
Certifications	NEBS	<ul style="list-style-type: none"> - GR-1089-Core EMC and Electrical Safety - Common Bonding Network (CBN) - National Electrical Code (NEC) - GR-63-Core Physical Protection 	<ul style="list-style-type: none"> - GR-1089-Core EMC and Electrical Safety - Common Bonding Network (CBN) - National Electrical Code (NEC) - GR-63-Core Physical Protection 	<ul style="list-style-type: none"> - GR-1089-Core EMC and Electrical Safety - Common Bonding Network (CBN) - National Electrical Code (NEC) - GR-63-Core Physical Protection 	<ul style="list-style-type: none"> - GR-1089-Core EMC and Electrical Safety - Common Bonding Network (CBN) - National Electrical Code (NEC) - GR-63-Core Physical Protection 	NA	<ul style="list-style-type: none"> - SR-3580 (2007) NEBS Criteria Levels (Level 3 Compliance) - GR-63-Core (2006) NEBS Physical Protection - GR-1089-Core (2006) EMC and Electrical Safety - GR-3108-CORE Issue 2, December 2008 - IEEE 1613: 2009 - IEC 61850-3: 2013 	<ul style="list-style-type: none"> - GR-63-Core Physical Protection - GR-1089-Core:EMC and Electrical Safety

Ordering Information

MX5, MX10, MX40, and MX80 Base Product Bundles

Product	Product Number	Description
MX5-MX80	MX5BASE-T	MX5 chassis with timing support—includes dual power supplies, MIC-3D-20GE-SFP, S-MX80-ADV-R, S-MX80-Q, and S-ACCT-JFLOW-IN-5G licenses. Power supply cable needs to be ordered separately.
	MX10BASE-T	MX10 chassis with timing support—includes dual power supplies, MIC-3D-20GE-SFP, 1 empty MIC slot, S-MX80-ADV-R, S-MX80-Q, and S-ACCT-JFLOW-IN-5G licenses. Power supply cable needs to be ordered separately.
	MX40BASE-T	MX40 chassis with timing support—includes dual power supplies, 2 empty MIC slots, 2x10GbE fixed ports, S-MX80-ADV-R, S-MX80-Q, and S-ACCT-JFLOW-IN-5G licenses. Power supply cable needs to be ordered separately.
	MX80BASE-P	MX80 chassis with PTP and Synchronous Ethernet support—includes one power supply, 2 empty MIC slots, 4x10GbE 10-gigabit small form-factor pluggable transceiver (XFP) built-in ports, fan tray with filter. Power supply cable needs to be ordered separately.
	MX80BASE-T	MX80 chassis with timing support—includes one power supply, 2 empty MIC slots, 4x10GbE XFP built-in ports, fan tray with filter. Power supply cable needs to be ordered separately.
MX104	MX104-AC	MX104 chassis with 4 MIC slots, 4X10GbE SFPP built-in ports (license required for activation), AC power supply, fan tray with filter, Packet Forwarding Engine and Routing Engine, Altius-MX104.
	MX104-DC	MX104 chassis with 4 MIC slots, 4X10GbE SFPP built-in ports (license required for activation), DC power supply, fan tray with filter, Packet Forwarding Engine and Routing Engine, Altius-MX104.

MX5, MX10, MX40, and MX80 A La Carte Chassis

Product	Product Number	Description
MX5	MX5-T-AC	AC chassis
	MX5-T-DC	DC chassis
MX10	MX10-T-AC	AC chassis
	MX10-T-DC	DC chassis
MX40	MX40-T-AC	AC chassis
	MX40-T-DC	DC chassis
MX80	MX80-T-AC	AC chassis
	MX80-T-DC	DC chassis
	MX80-AC	AC chassis
	MX80-DC	DC chassis
	MX80-48T-AC	AC chassis
	MX80-48T-DC	DC chassis

MX5, MX10, and MX40 Upgrade Licenses

Product	Product Number	Description
MX5	MX-5-10-UPG-B	Software upgrade for MX5 to MX10
	MX-5-40-UPG-B	Software upgrade for MX5 to MX40
	MX-5-80-UPG-B	Software upgrade for MX5 to MX80
MX10	MX-10-40-UPG-B	Software upgrade for MX10 to MX40
	MX-10-80-UPG-B	Software upgrade for MX10 to MX80
MX40	MX-40-80-UPG-B	Software upgrade for MX40 to MX80

MX80 Software Licenses

Product	Product Number	Description
MX80	S-MX80-ADV-R	License to support full scale L3 route and L3 VPN on MX80
	S-MX80-Q	License to support per VLAN queuing on MX80
	S-MX80-SA-FP	Subscriber Management Feature Pack License
	S-MX80-SSM-FP	Subscriber Service Management Feature Packet License (RADIUS/SRC Series-based service activation and deactivation) per service accounting features for subscribers, MX80

MX104 A La Carte Chassis

Product	Product Number	Description
MX104	MX104-AC-Base	MX104 base chassis with 1 AC power supply, fan tray, filter, 1 RE, 4 MIC slots (optics for fixed ports not included, MICs not included)
	MX104-DC-Base	MX104 base chassis with 1 DC power supply, fan tray, filter, 1 RE, 4 MIC slots (optics for fixed ports not included, MICs not included)

MX104 Upgrade Licenses

Product	Product Number	Description
MX104	S-MX104-UPG-2x10GE	Upgrade license to activate 2 x 10GbE fixed ports
	S-MX104-UPG-4x10GE	Upgrade license to activate 4 x 10GbE fixed ports

MX104 Software Licenses

Product	Product Number	Description
MX104	S-MX104-SSM-FP	L3 Subscriber Service Management Feature Packet License, MX104
	S-MX104-Q	License to support per VLAN queuing on MX104
	S-MX104-ADV-R	License to support full-scale L3 route and L3 VPN on MX104

MX150 Base Bundle

Product	Product Number	Description
MX150	MX150-R	MX150 with 10 10/100/1000BASE-T ports, two 100/1000BASE-X SFP ports, and two 10GBASE-X SFP+ ports (optics sold separately). 6-core x86 processor, 400 GB SSD, and 32 GB memory. Supports full L2/L3 feature sets including HQoS.

MX150 A La Carte Chassis

Product	Product Number	Description
MX150	MX150	MX150 with 10 10/100/1000BASE-T ports, two 100/1000BASE-X SFP ports, and two 10GBASE-X SFP+ ports (optics sold separately). 6-core x86 processor, 400 GB SSD, and 32 GB memory. Supports basic L2 features.

MX150 Upgrade Licenses*

Product	Product Number	Description
MX150	S-MX150-IR	Software license to support full L2 and limited L3 features and performance
	S-MX150-R	Software license to support full L2/L3 features and scale, including HQoS

*Both S-MX150-IR and S-MX150-R are needed to upgrade from MX150 to MX150-R

MX204 Base Product Bundles

Product	Product Number	Description
MX204	MX204	MX204 chassis with 3 fan trays and 2 power supplies
	MX204-R	MX204 chassis with 3 fan trays and 2 power supplies, R mode
	MX204-IR	MX204 chassis with 3 fan trays and 2 power supplies, IR mode

MX204 Chassis

Product	Product Number	Description
MX204	JNP204-CHAS	MX204 chassis, spare

MX204 Power Supply

Product	Product Number	Description
MX204	JPSU-650W-AC-AO	MX204 AC power supply, spare
	JPSU-650W-DC-AFO	MX204 DC power supply, spare

MX204 Fan Trays

Product	Product Number	Description
MX204	JNP-FAN-1RU	MX204 fan tray

MX240, MX480, and MX960 Base Bundles

Product	Product Number	Description
MX240	MX240BASE-AC-HIGH	4 slot MX240 base chassis with 1 AC power supply, 1 SCB
	MX240BASE-AC-LOW	4 slot MX240 base chassis with 2 AC power supplies, 1 SCB
	MX240BASE3-DC	4 slot MX240 base 3 chassis, DC power
	MX240BASE-DC	4 slot MX240 base chassis with 1 fan tray, 1 DC power supply, 1 SCB
	MX240BASE3-ACH	4 slot MX240 base 3 chassis, highline AC power
	MX240BASE3-ACL	4 slot MX240 base chassis, lowline AC power
MX480	MX480BASE3-AC	8 slot MX480 base bundle, AC power
	MX480BASE-AC	8 slot MX480 AC base chassis, 1 fan tray, 3 AC power supplies, 1 SCB, 1 RE
	MX480BASE3-DC	8 slot MX480 base 3 chassis, DC power
	MX480BASE-DC	8 slot MX480 base chassis with 1 fan tray, 2 DC power supplies, 1 SCB, 1 RE
MX960	MX960BASE3-AC	14 slot MX960 base 3 chassis, AC power
	MX960BASE-AC	14 slot MX960 base chassis with 2 fan trays, 3 AC power supplies, 2 SCBs, 1 RE
	MX960BASE3-AC-ECM	14 slot MX960 base 3 chassis with AC power and extended cable manager
	MX960BASE-AC-ECM	14 slot MX960 base chassis with AC power and extended cable manager
	MX960BASE3-DC	14 slot MX960 base 3 chassis, DC power
	MX960BASE-DC	14 slot MX960 base chassis with 2 fan trays, 2 DC power supplies, 2 SCBs, 1 RE
	MX960BASE3-DC-ECM	14 slot MX960 base 3 chassis with DC power and extended cable manager
	MX960BASE-DC-ECM	14 slot MX960 base chassis with DC power extended cable manager

MX240, MX480 and MX960 Premium Bundles

Product	Product Number	Description
MX240	MX240-PREMIUM2-AC-HIGH	4 slot MX240 premium 2 chassis with midplane, redundant RE, SCBEs, highline AC power
	MX240-PREMIUM2-AC-LOW	4 slot MX240 premium 2 chassis with midplane, redundant RE, SCBEs, lowline AC power
	MX240-PREMIUM2-DC	4 slot MX240 premium 2 chassis with midplane, redundant RE, SCBEs, DC power
	MX240-PREMIUM3-ACH	4 slot MX240 premium 3 chassis with enhanced midplane, redundant RE, SCBEs, highline AC power
	MX240-PREMIUM3-ACL	4 slot MX240 premium 3 chassis with enhanced midplane, redundant RE, SCBEs, lowline AC power
	MX240-PREMIUM3-DC	4 slot MX240 premium 3 chassis with enhanced midplane, redundant RE, SCBEs, DC power
MX480	MX480-PREMIUM2-AC	8 slot MX480 premium 2 chassis with midplane, redundant RE, SCBEs, AC power
	MX480-PREMIUM2-DC	8 slot MX480 premium 2 chassis with midplane, redundant RE, SCBEs, DC power
	MX480-PREMIUM3-AC	8 slot MX480 premium 3 chassis with enhanced midplane, redundant RE, SCBEs, AC power
	MX480-PREMIUM3-DC	8 slot MX480 premium 3 chassis with enhanced midplane, redundant RE, SCBEs, DC power
MX960	MX960-PREMIUM2-AC-ECM	14 slot MX960 premium 2 chassis with midplane, redundant Routing Engine, SCBEs, AC power, and extended cable manager
	MX960-PREMIUM2-DC-ECM	14 slot MX960 premium2 chassis with midplane, redundant Routing Engine, SCBEs, DC power, and extended cable manager
	MX960-PREMIUM3-AC-ECM	14 slot MX960 premium 3 chassis with enhanced midplane, redundant Routing Engine, SCBEs, AC power, and extended cable manager
	MX960-PREMIUM3-DC-ECM	14 slot MX960 premium 3 chassis with enhanced midplane, redundant Routing Engine, SCBEs, DC power, and extended cable manager
	MX960-PREMIUM2-AC	14 slot MX960 premium 2 chassis with midplane, redundant Routing Engine, SCBEs, AC power
	MX960-PREMIUM2-DC	14 slot MX960 premium 2 chassis with midplane, redundant Routing Engine, SCBEs, DC power
	MX960-PREMIUM3-AC	14 slot MX960 premium 3 chassis with midplane, redundant Routing Engine, SCBEs, AC power
	MX960-PREMIUM3-DC	14 slot MX960 premium 3 chassis with midplane, redundant Routing Engine, SCBEs, DC power

MX240, MX480, and MX960 Chassis

Base Unit	MX240	MX480	MX960
DC Chassis	MX240BASE-DC, MX240BASE3-DC	MX480BASE-DC, MX480BASE3-DC	MX960BASE3-DC; MX960BASE-DC
AC Chassis	MX240BASE-AC, MX240BASE3-ACH, MX240BASE3-ACL	MX480BASE-AC, MX480BASE3-AC	MX960BASE3-AC; MX960BASE-AC

MX240, MX480, and MX960 Power Supplies

Product	Product Number	Description
MX240 MX480	PWR-MX480-2400-DC-BB	MX480/MX240 2400W DC P/S, base bundle
	PWR-MX480-2400-DC-R	MX480/MX240 2400W DC P/S, redundant
	PWR-MX480-2400-DC-S	MX480/MX240 2400W DC P/S, spare
	PWR-MX480-2520-AC-BB	MX480/MX240 2520W AC P/S, base bundle
	PWR-MX480-2520-AC-R	MX480/MX240 2520W AC P/S, redundant
	PWR-MX480-2520-AC-S	MX480/MX240 2520W AC P/S, spare
MX960	MX960-PSM-5K-AC-BB	MX960 5000W AC power supply, base bundle
	MX960-PSM-5K-AC-R	MX960 5000W AC power supply, redundant
	MX960-PSM_5K-AC-S	MX960 5000W AC power supply, spare
	MX960-PSM-HV-BB	MX960 High Voltage Power, base bundle
	MX960-PSM-HV-R	MX960 High Voltage Power, redundant
	MX960-PSM-HV-S	MX960 High Voltage Power, spare
	PWR-MX960-4100-AC-BB	MX960 4100W AC power supply, base bundle
	PWR-MX960-4100-AC-R	MX960 4100W AC power supply, redundant
	PWR-MX960-4100-AC-S	MX960 4100W AC power supply, spare
	PWR-MX960-4100-DC-BB	MX960 4100W DC power supply, base bundle
	PWR-MX960-4100-DC-R	MX960 4100W DC power supply, redundant
	PWR-MX960-4100-DC-S	MX960 4100W DC power supply, spare

MPCs

Product Number	Description
MPC10E-10C-P-BASE	Fixed 8xQSFP28 multirate ports (10/40/100GbE) plus 2xQSFP56-DD multirate ports (10/40/100/400GbE) line card bundle with standard Junos software, perpetual
MPC10E-15C-P-BASE	Fixed 12xQSFP28 multirate ports (10/40/100GbE) plus 3xQSFP56-DD multirate ports (10/40/100/400GbE) line card bundle with standard Junos software, perpetual
MPC7E-10G	Fixed 40x10GbE line card bundle with full-scale L2/L2.5 and reduced scale L3 features; optional license permits up to 32,000 queues with HQoS
MPC7E-10G-RB	Fixed 40x10GbE line card bundle with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5, L3, and L3VPN features
MPC7E-10G-I-RB	Fixed 40x10GbE line card bundle with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5, L3 features, and up to 16 L3VPN instances
MPC7E-MRATE	Fixed 12xQSFP line card bundle for the MPC7-MRATE only; all ports support 4x10GbE and 40GbE, and 4 ports support 100GbE (QSFP 28), with full-scale L2/L2.5 and reduced scale L3 features; optional license permits up to 32,000 queues with HQoS
MPC7E-MRATE-RB	Fixed 12xQSFP line card bundle for the MPC7-MRATE only; all ports support 4x10GbE and 40GbE, and 4 ports support 100GbE (QSFP 28); includes full-scale L2/L2.5, L3, and L3VPN features
MPC7E-MRATE-I-RB	Fixed 12xQSFP line card bundle for the MPC7-MRATE only; all ports support 4x10GbE and 40GbE, and 4 ports support 100GbE (QSFP 28); includes full-scale L2/L2.5 and L3 features and up to 16 L3VPN instances
MPC7E-MRATE-Q	Fixed 12xQSFP line card for the MPC7-MRATE only; all ports support 4x10GbE and 40GbE, and 4 ports support 100GbE (QSFP 28) with HQoS; supports 1 million queues and 128,000 sessions; with full-scale L2/L2.5 and reduced scale L3 features
MPC7E-MRATE-Q-RB	Fixed 12xQSFP line card bundle; all ports support 4x10GbE and 40GbE, and 4 ports support 100GbE (QSFP 28) with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5, L3, and L3VPN features

Product Number	Description
MPC7E-MRATE-Q-I-RB	Fixed 12xQSFP line card bundle for the MPC7-MRATE only; all ports support 4x10GbE and 40GbE, and 4 ports support 100GbE (QSFP 28) with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5, L3 features, and up to 16 L3VPN instances
MPC5E-100G10G	Fixed 2x100GbE and 4x10GbE line card bundle with full-scale L2/L2.5 and reduced scale L3 features; optional license permits up to 32,000 queues with HQoS
MPC5E-100G10G-IRB	Fixed 2x100GbE and 4x10GbE line card bundle with full-scale L2/L2.5, L3 features and up to 16 L3VPN instances; optional license permits up to 32,000 queues with HQoS
MPC5E-100G10G-RB	Fixed 2x100GbE and 4x10GbE line card bundle with full-scale L2/L2.5, L3, and L3VPN features; optional license permits up to 32,000 queues with HQoS
MPC5E-40G10G	Fixed 6x40GbE or 24x10GbE line card bundle with full-scale L2/L2.5 and reduced scale L3 features; optional license permits up to 32,000 queues with HQoS
MPC5E-40G10G-IRB	Fixed 6x40GbE or 24x10GbE line card bundle with full-scale L2/L2.5, L3 features and up to 16 L3VPN instances; optional license permits up to 32,000 queues with HQoS
MPC5E-40G10G-RB	Fixed 6x40GbE or 24x10GbE line card bundle with full-scale L2/L2.5, L3, and L3VPN features; optional license permits up to 32,000 queues with HQoS
MPC5EQ-100G10G	Fixed 2x100GbE and 4x10GbE line card bundle with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5 and reduced scale L3 features
MPC5EQ-100G10G-IRB	Fixed 2x100GbE and 4x10GbE line card bundle with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5, L3 features, and up to 16 L3VPN instances
MPC5EQ-100G10G-RB	Fixed 2x100GbE and 4x10GbE line card bundle with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5, L3, and L3VPN features
MPC5EQ-40G10G	Fixed 6x40GbE or 24x10GbE line card bundle with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5 and reduced scale L3 features
MPC5EQ-40G10G-IRB	Fixed 6x40GbE or 24x10GbE line card bundle with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5, L3 features, and up to 16 L3VPN instances
MPC5EQ-40G10G-RB	Fixed 6x40GbE or 24x10GbE line card bundle with HQoS; supports 1 million queues and 128,000 sessions; includes full-scale L2/L2.5, L3, and L3VPN features
MPC4E-3D-2GE	Fixed 2x100GbE and 8x10GbE line card bundle with full-scale L2/L2.5 and reduced scale L3 feature
MPC4E-3D-32XGE-SFPP	Fixed 32x10GbE line card bundle with full-scale L2/L2.5 and reduced scale L3 features
MPC4E-3D-2CGE-8XGE-IRB	Fixed 2x100GbE and 8x10GbE line card bundle with full-scale L2/L2.5, L3 features; up to 16 L3VPNs per MPC
MPC4E-3D-32XGE-IRB	Fixed 32x10GbE SFPP line card bundle with full-scale L2/L2.5, L3 features; up to 16 L3VPNs per MPC
MPC4E-3D-2CGE8XGE-RB	Fixed 2x100GbE and 8x10GbE line card bundle with full-scale L2/L2.5, L3, and L3VPN features
MPC4E-3D-32XGE-RB	Fixed 32XGbE small form-factor pluggable transceiver (SFP) line card bundle with full-scale L2/L2.5, L3, and L3VPN features
MX-MPC3E-3D	MPC3 with support for 100GbE, 40GbE, and 10GbE interfaces, L2.5 features, optics sold separately
MX-MPC3E-3D-R-B	MPC3E with support for 100GbE, 40GbE, and 10GbE interfaces; includes full-scale L2, L3, L3VPN features; optics sold separately
MPC3E-3D-NG	Next-generation MPC3E with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5 and reduced scale L3 features; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by MPC1E, MPC2E, and MPC3E

Product Number	Description
MPC3E-3D-NG-IR-B	Next-generation MPC3E line card bundle with upgraded CPU and memory; offers full feature parity with the MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5 and L3 features and up to 16 L3VPNs per MPC; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by the MPC1E, MPC2E, and MPC3E
MX-MPC3E-3D-R-B	MPC3E with support for 100GbE, 40GbE, and 10GbE interfaces; includes full-scale L2, L3, L3VPN features; optics sold separately
MPC3E-3D-NG	Next-generation MPC3E with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5 and reduced scale L3 features; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by MPC1E, MPC2E, and MPC3E
MPC3E-3D-NG-IR-B	Next-generation MPC3E line card bundle with upgraded CPU and memory; offers full feature parity with the MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5 and L3 features and up to 16 L3VPNs per MPC; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by the MPC1E, MPC2E, and MPC3E
MPC3E-3D-NG-R-B	Next-generation MPC3E line card bundle with upgraded CPU and memory; offers full feature parity with the MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, L3, and L3VPN features; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by the MPC1E, MPC2E, and MPC3E
MPC3E-3D-NG-Q	Next-generation MPC3E with upgraded CPU and memory; offers full feature parity with the MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5 features, reduced scale L3 features, and HQoS with up to 512,000 queues per slot; supports all MICs supported by the MPC1E, MPC2E, and MPC3E
MPC3E-3D-NG-Q-IR-B	Next-generation MPC3E line card bundle with upgraded CPU and memory; offers full feature parity with the MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, L3, and up to 16 L3VPN features, and HQoS with up to 512,000 queues per slot; supports all MICs supported by the MPC1E, MPC2E, and MPC3E
MPC3E-3D-NG-Q-R-B	Next-generation MPC3E line card bundle with upgraded CPU and memory; offers full feature parity with the MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5 features, L3 features, and HQoS with up to 512,000 queues per slot; supports all MICs supported by the MPC1E, MPC2E, and MPC3E
MPC-3D-16XGE-SFPP	Fixed 16x10GbE line card bundle with L2.5 features
MPC-3D-16XGE-SFPP-R-B	Fixed 16x10GbE line card bundle with full-scale L2/L2.5 and L3 features
MPC2E-3D-NG	Next-generation MPC2E with upgraded CPU and memory; offers full feature parity with the MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5 and reduced scale L3 features; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by MPC1E and MPC2E
MPC2E-3D-NG-IR-B	Next-generation MPC2E line card bundle with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, L3 features, and up to 16 L3VPNs per MPC; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by MPC1E and MPC2E
MPC2E-3D-NG-R-B	Next-generation MPC2E line card bundle with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, L3, and L3VPN features; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by MPC1E and MPC2E
MPC2E-3D-NG-Q	Next-generation MPC2E with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, reduced scale L3 features, and HQoS with up to 512,000 queues per slot; supports all MICs supported by MPC1E and MPC2E

Product Number	Description
MPC2E-3D-NG-Q-IR-B	Next-generation MPC2E line card bundle with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, L3, and up to 16 L3VPN features, and HQoS with up to 512,000 queues per slot; supports all MICs supported by MPC1E and MPC2E
MPC2E-3D-NG-R-B	Next-generation MPC2E line card bundle with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, L3, and L3VPN features; flexible queuing option enables HQoS support with up to 32,000 total queues; supports all MICs supported by MPC1E and MPC2E
MPC2E-3D-NG-Q	Next-generation MPC2E with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, reduced scale L3 features, and HQoS with up to 512,000 queues per slot; supports all MICs supported by MPC1E and MPC2E
MPC2E-3D-NG-Q-IR-B	Next-generation MPC2E line card bundle with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, L3, up to 16 L3VPN features, and HQoS with up to 512,000 queues per slot; supports all MICs supported by MPC1E and MPC2E
MPC2E-3D-NG-Q-R-B	Next-generation MPC2E line card bundle with upgraded CPU and memory; offers full feature parity with MPC1E, MPC2E, and MPC3E; includes full-scale L2/L2.5, L3 features, and HQoS with up to 512,000 queues per slot; supports all MICs supported by MPC1E and MPC2E
MX-MPC2-3D	MPC2 with port queuing; includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2-3D-EQ	MPC2 line card bundle with per-IFL HQoS, 512,000 queues; includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2-3D-EQ-R-B	MPC2 line card bundle with per-IFL HQoS, 512,000 queues; includes full-scale L3, L2, and L2.5 features
MX-MPC2-3D-Q	MPC2 line card bundle with per-IFL HQoS, 256,000 queues (max 128,000 egress); includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2-3D-Q-R-B	MPC2 line card bundle; includes full-scale L3, L2, and L2.5 features
MX-MPC2-3D-R-B	MPC2 line card bundle; includes full-scale L3, L2, and L2.5 features
MX-MPC2E-3D-R-B	Enhanced MPC2 line card bundle; includes full-scale L3, L2, and L2.5 features
MX-MPC2E-3D	Enhanced MPC2 with port queuing; includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2E-3D-EQ	Enhanced MPC2 with per-IFL HQoS, 512,000 queues; includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2E-3D-EQ-R-B	Enhanced MPC2 line card bundle; includes full-scale L3, L2, and L2.5 features
MX-MPC2E-3D-P	Enhanced MPC2 with 1588v2, port queuing; includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2E-3D-P-Q-B	Enhanced MPC2 line card bundle; includes 1588v2, per-IFL HQoS, 256,000 queues (maximum 128,000 egress), full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2E-3D-P	Enhanced MPC2 with 1588v2, port queuing; includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2E-3D-P-Q-B	Enhanced MPC2 line card bundle; includes 1588v2, per-IFL HQoS, 256,000 queues (maximum 128,000 egress), full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2E-3D-Q	Enhanced MPC2 line card bundle; includes per-IFL HQoS, 256,000 queues (maximum 128,000 egress); includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC2E-3D-Q-R-B	Enhanced MPC2E line card bundle; includes per-IFL HQoS, 256,000 queues (maximum 128,000 egress); includes full-scale L3, L2, and L2.5 features
MX-MPC1-3D	MPC1 with port queuing; includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC1-3D-Q	MPC1 with per-IFL HQoS, 128,000 queues (maximum 64,000 egress); includes full-scale L2/L2.5 and reduced scale L3 features

Product Number	Description
MX-MPC1-3D-Q-R-B	MPC1 line card bundle; includes full-scale L3, L2, and L2.5 features
MX-MPC1-3D-R-B	MPC1 line card bundle; includes full-scale L3, L2, and L2.5 features
MX-MPC1E-3D	Enhanced MPC1 with port queuing; includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC1E-3D-Q	Enhanced MPC1 with per-IFL HQoS, 128,000 queues (maximum 64,000 egress); includes full-scale L2/L2.5 and reduced scale L3 features
MX-MPC1E-3D-Q-R-B	Enhanced MPC1 with per-IFL HQoS, 128,000 queues (maximum 64,000 egress) line card bundle; includes full-scale L3, L2, and L2.5 features
MX-MPC1E-3D-R-B	Enhanced MPC1 line card bundle; includes full-scale L3, L2, and L2.5 features
MS-MPC-128	Multiservices MPC supports a variety of optionally licensed applications, including stateful firewall, carrier-grade NAT, and deep packet inspection (DPI); each purchased separately
MX-SPC3	Security services card supports a variety of optionally licensed applications, including stateful firewall, carrier-grade NAT, IDS, traffic load balancing, and DNS sinkhole

Modular Interface Cards

Product Number	Description
MIC3-3D-10XGE-SFPP	MIC with 10x10GbE small form-factor pluggable plus transceiver (SFP+) interface; optics sold separately
MIC3-3D-1X100GE-CFP	MIC with 1x100GbE C form-factor pluggable transceiver (CFP) interface; optics sold separately
MIC3-3D-1X100GE-CXP	MIC with 1x100GbE 100-gigabit small form-factor pluggable transceiver (CXP) interface; optics sold separately
MIC3-100G-DWDM	MIC with 1x100GbE OTU4 dense wavelength-division multiplexing (DWDM) PIC, DP-QPSK, full C-band tunable, GFEC, HGFECC, SDFEC; requires MPC3E or MPC3E-NG; optics sold separately
MIC3-3D-2X40GE-QSFPP	MIC with 2x40GbE quad small form-factor pluggable plus transceiver (QSFP+) interface; optics sold separately
MIC-3D-1CHOC48	1 port channelized OC48/channelized STM16 (down to DS0) MIC
MIC-3D-1OC192-XFP	1 port OC192/STM64 MIC
MIC-3D-20GE-SFP	20x10/100/1000 MIC for MX Series; requires optics sold separately
MIC-3D-2XGE-XFP	2x10GbE MIC for MX Series; requires optics sold separately
MIC-3D-40GE-TX	40x10/100/1000 RJ-45 full height MIC (fixed optics)
MIC-3D-4CHOC3-2CHOC12	4 port channelized OC3/2 port channelized OC12 (down to DS0) MIC
MIC-3D-4COC3-1COC12-CE	Multi-rate circuit emulation MIC; 4 port channelized OC3/STM1 (to DS0) or 1 port channelized OC12/STM4 (to DS0)
MIC-MACSEC-20GE	2x10GbE/20x10GbE MACsec MIC for MX80/MX104/MX240/MX480/MX960, supports both 128b AES and 256b AES MACsec

Routing Engines

Product Number	Description
RE-S-X6-64G-BB	6 Core 2.0 GHz CPU and 64 GB memory, base bundle
RE-S-X6-64G-S	6 Core 2.0 GHz CPU and 64 GB memory, spare
RE-S-X6-64G-R	6 Core 2.0 GHz CPU and 64 GB memory, redundant RE
RE-S-X6-64G-LT-S	6 Core 2.0 GHz CPU with 64 GB memory, limited encryption version, spare
RE-S-X6-64G-LT-BB	6 Core 2.0 GHz CPU with 64 GB memory, limited encryption version, base bundle
RE-S-X6-64G-LT-R	6 Core 2.0 GHz CPU with 64 GB memory, limited encryption version, redundant
RE-S-X6-128G-S-BB	6 Core 2.0 GHz CPU with 128 GB memory, base bundle

Product Number	Description
RE-S-X6-128G-S-S	6 Core 2.0 GHz CPU with 128 GB memory, spare
RE-S-X6-128G-S-R	6 Core 2.0 GHz CPU with 128 GB memory, redundant
RE-S-1300-2048-BB	1.3 GHz CPU and 2 GB memory, base bundle
RE-S-2000-4096-UPG-BB	2 GHz CPU and 4 GB memory, base bundle
RE-S-1300-2048-R	1.3 GHz CPU and 2 GB memory, redundant
RE-S-2000-4096-R	2 GHz CPU and 4 GB memory, redundant
RE-S-1800X2-8G-R	Dual-core 1.8 GHz CPU and 8 GB memory, redundant
RE-S-1800X2-16G-R	Dual-core 1.8 GHz CPU and 16 GB memory, redundant
RE-S-1800X4-8G-R	Quad-core 1.8 GHz CPU and 8 GB memory, redundant
RE-S-1800X4-16G-R	Quad-core 1.8 GHz CPU and 16 GB memory, redundant
RE-S-1800X2-8G-UPG-BB	Dual-core 1.8 GHz CPU and 8 GB memory, upgrade for base bundle
RE-S-1800X2-16G-UPG-BB	Dual-core 1.8 GHz CPU and 16 GB memory, upgrade for base bundle
RE-S-1800X4-8G-UPG-BB	Quad-core 1.8 GHz CPU and 8 GB memory, upgrade for base bundle
RE-S-1800X4-16G-UPG-BB	Quad-core 1.8 GHz CPU and 16 GB memory, upgrade for base bundle
RE-S-1800X4-32G-BB	Quad core 1.8GHz CPU with 32 GB memory, base bundle
RE-S-1800X4-32G-R	Quad core 1.8GHz CPU with 32 GB memory, redundant
RE-S-1800X4-32G-S	Quad core 1.8GHz CPU with 32 GB memory, spare
RE-S-1800X4-32G-UB	Quad core 1.8GHz CPU with 32 GB memory, upgrade for base bundle
RE-S-1800X4-32G-WS	Quad core 1.8GHz CPU with 32 GB memory, worldwide version

Switch Control Board

Product Number	Description
SCB-MX960-BB	SCB for MX240, MX480, and MX960
SCBE-MX-BB	Enhanced Switch Control Board (SCBE) for MX240, MX480, and MX960
SCBE2-MX-BB	SCBE for MX240, MX480, and MX960
SCBE3-MX-BB	1.5 T fabric card for MX240, MX480, and MX960

Broadband Network Gateway (BNG) Licensing

Subscriber Access Feature Pack Licenses

One Subscriber Access (SA) license is required per chassis, and provides:

- Per-subscriber RADIUS accounting (time- and volume-based)
- RADIUS-based authentication and authorization
- Subscriber configuration via client profiles at subscriber login
- RADIUS and/or SDX-based address (pool) management
- Static and dynamic IP management
- Dynamic auto-sensed VLANs

Product Number	Description
S-SA-FP2	Subscriber Access feature pack license for MX240, MX480, MX960, MX2010, and MX2020
S-MX104-SA-FP	Subscriber Management feature pack license for MX104 including S-LNS-IN feature license
S-MX80-SA-FP	Subscriber Management feature pack license for MX80 including S-LNS-IN feature license

Note: Using the MX150 as a BNG requires a vBNG license. Please refer to the [vMX data sheet](#) for more information.

Subscriber Services Management Feature Pack Licenses

Subscriber Services Management licenses are optional additions to Subscriber Access licenses that offer:

- Per-service RADIUS accounting (time- and volume-based)
- Service profile activation/deactivation at subscriber login via RADIUS grants/access accepts (services activation/deactivation VSAs); or change existing sessions via RADIUS COA/RID or Session and Resource Control (SRC)
- Parameterization of service profiles
- ANCP QoS adjustment based on sync rate via Access Node Control Protocol (ANCP)

Product Number	Description
S-SSM-FP	Subscriber Service Management feature pack license (RADIUS/SRC-based service activation/deactivation); per-service accounting features for subscribers, for MX240, MX480, MX960, MX2010, and MX2020
S-MX104-SSM-FP	Subscriber Service Management feature pack license (RADIUS/SRC-based service activation/deactivation); per-service accounting features for subscribers, for MX104
S-MX80-SSM-FP	Subscriber Service Management feature pack license (RADIUS/SRC-based service activation/deactivation); per-service accounting features for subscribers, for MX80
S-SSP-FP	Subscriber Traffic Lawful Intercept feature pack License, for MX80, MX104, MX240, MX480, MX960, MX2010, and MX2020
S-BB-NASREQ	Junos Broadband Policy Enforcement feature license for dynamic subscriber authentication and authorization using NASREQ, for MX80, MX104, MX240, MX480, MX960, MX2010, and MX2020

Additional Subscriber Services Management licenses are available to support Inline L2TP LNS Tunneling, Subscriber-Based Lawful Intercept, Virtual Chassis, and interface with policy management systems, as indicated in the table below.

Product Number	Description
S-BB-GX	Junos Broadband Policy Enforcement feature license for PCRF communications using 3GPP Gx and Gx+, for MX80, MX104, MX240, MX480, MX960, MX2010, and MX2020
S-BB-GY	Junos Broadband Policy Enforcement feature license for online charging using 3GPP Gy interface, for MX80, MX104, MX240, MX480, MX960, MX2010, and MX2020
S-LNS-IN	Software license for Inline L2TP LNS, for MX240, MX480, MX960, MX2010, and MX2020
S-VCR	Software license for single member of an MX Series Virtual Chassis

Subscriber Access Scale Licenses

These tiered licenses support from 4000 to 256,000 sessions and are bound to one chassis.

Product Number	Description
S-SA-4K	Subscriber scale license, up to 4000 subscribers
S-SA-8K	Subscriber scale license, up to 8000 subscribers
S-SA-16K	Subscriber scale license, up to 16,000 subscribers
S-SA-32K	Subscriber scale license, up to 32,000 subscribers
S-SA-64K	Subscriber scale license, up to 64,000 subscribers
S-SA-128K	Subscriber scale license, up to 128,000 subscribers
S-SA-256K	Subscriber scale license, up to 256,000 subscribers

Subscriber Access Scale Upgrade Licenses

These tiered licenses support from 4000 to 256,000 sessions and are bound to one chassis.

Product Number	Description
S-SA-UP-8K	Subscriber scale upgrade, from 4000 to 8000 subscribers
S-SA-UP-16K	Subscriber scale upgrade, from 8000 to 16,000 subscribers
S-SA-UP-32K	Subscriber scale upgrade, from 16,000 to 32,000 subscribers
S-SA-UP-64K	Subscriber scale upgrade, from 32,000 to 64,000 subscribers
S-SA-UP-96K	Subscriber scale upgrade, from 64,000 to 96,000 subscribers
S-SA-UP-128K	Subscriber scale upgrade, from 96,000 to 128,000 subscribers
S-SA-UP-256K	Subscriber scale upgrade, from 128,000 to 256,000 subscribers

Flex Licensing

MX204

Product Number	Description
Base Hardware	
MX204-HW-BASE	MX204-HW-BASE integrated SKU with base hardware and standard Junos software, perpetual
Software	
S-MX-4C-A1-C1-1*	MX Series Advanced software feature subscription license for 1-year term; 4x100GbE software support included; valid for subscription renewals only
S-MX-4C-A1-C1-3	MX Series Advanced software feature subscription license for 3-year term; 4x100GbE software support included
S-MX-4C-A1-C1-5	MX Series Advanced software feature subscription license for 5-year term; 4x100GbE software support included
S-MX-4C-A1-C1-P	MX Series Advanced software feature perpetual license; 4x100GbE; software support not included
S-MX-4C-P1-C1-1*	MX Series Premium software feature subscription license for 1-year term; 4x100GbE software support included; valid for subscription renewals only
S-MX-4C-P1-C1-3	MX Series Premium software feature subscription license for 3-year term; 4x100GbE software support included
S-MX-4C-P1-C1-5	MX Series Premium software feature subscription license for 5-year term; 4x100GbE software support included
S-MX-4C-P1-C1-P	MX Series Premium software feature perpetual license; 4x100GbE; software support not included

MX240, MX480, MX960

Product Number	Description
MPC10E-10C Base Hardware	
MPC10E-10C-P-BASE	Fixed 8xQSFP28 multirate ports (10/40/100GbE) plus 2xQSFP56-DD multirate ports (10/40/100/400GbE) line card bundle with standard Junos software, perpetual
MPC10E-10C Software	
S-MX-10C-A1-1*	MX Series Advanced software feature subscription license for 1-year term; 10x100GbE software support included; valid for subscription renewals only
S-MX-10C-A1-3	MX Series Advanced software feature subscription license for 3-year term; 10x100GbE software support included
S-MX-10C-A1-5	MX Series Advanced software feature subscription license for 5-year term; 10x100GbE software support included
S-MX-10C-A1-P	MX Series Premium software feature perpetual license; 10x100GbE; software support not included
S-MX-10C-P1-1*	MX Series Premium software feature subscription license for 1-year term; 10x100GbE software support included; valid for subscription renewals only
S-MX-10C-P1-3	MX Series Premium software feature subscription license for 3-year term; 10x100GbE software support included
S-MX-10C-P1-5	MX Series Premium software feature subscription license for 5-year term; 10x100GbE software support included
S-MX-10C-P1-P	MX Series Premium software feature perpetual license; 10x100GbE; software support not included
MPC10E-15C Base Hardware	
MPC10E-15C-P-BASE	Fixed 12xQSFP28 multirate ports (10/40/100GbE) plus 3xQSFP56-DD multirate ports (10/40/100/400GbE) line card bundle with standard Junos software, perpetual
MPC10E-15C Software	
S-MX-15C-A1-1*	MX Series Advanced software feature subscription license for 1-year term; 15x100GbE software support included; valid for subscription renewals only
S-MX-15C-A1-3	MX Series Advanced software feature subscription license for 3-year term; 15x100GbE software support included
S-MX-15C-A1-5	MX Series Advanced software feature subscription license for 5-year term; 15x100GbE software support included
S-MX-15C-A1-P	MX Series Premium software feature perpetual license; 15x100GbE; software support not included
S-MX-15C-P1-1*	MX Series Premium software feature subscription license for 1-year term; 15x100GbE software support included; valid for subscription renewals only
S-MX-15C-P1-3	MX Series Premium software feature subscription license for 3-year term; 15x100GbE; software support included
S-MX-15C-P1-5	MX Series Premium software feature subscription license for 5-year term; 15x100GbE software support included
S-MX-15C-P1-P	MX Series Premium software feature perpetual license; 15x100GbE; software support not included

*1-year term license for Advanced and Premium tier are renewal only

Junos OS

- USA: Junos OS
- Worldwide: Junos-WWW

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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