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CISCO
MINING 20
SUMMIT 23

Sustainable Mining

The need for technology to achieve our goals

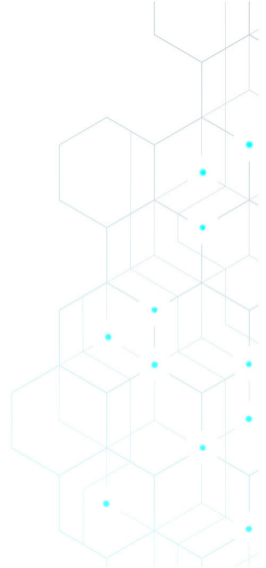




Roland Plett

Cisco Global Mining Lead

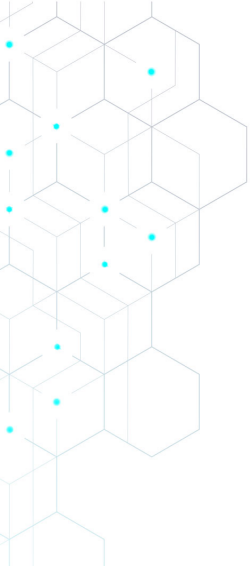
Calgary Canada



2,183 Mining Companies in 83 Countries


CISCO
MINING 20
SUMMIT **23**

WWW.MININGSUMMIT.CL



Between efficient
mining and a
sustainable future,
there's a bridge



Digital
Operations

Connected
Worker

Sustainability

Security

Digital
Operations

Connected
Worker

Sustainability

Security



Integ.rated Remote Operations Center



Connected Plant





Measurement Reporting





Condition Monitoring

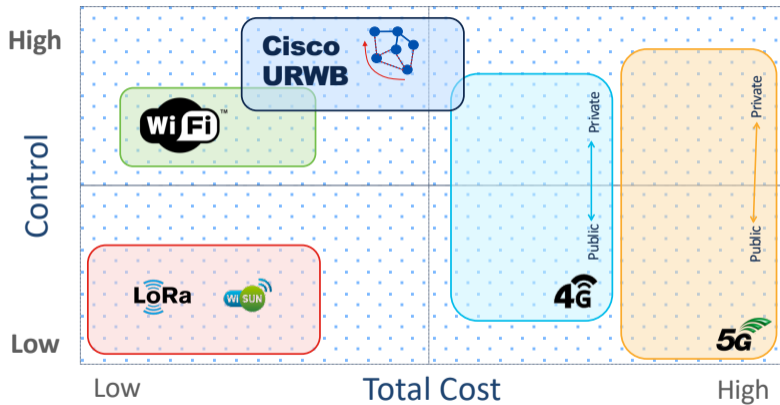


Predictive Maintenance

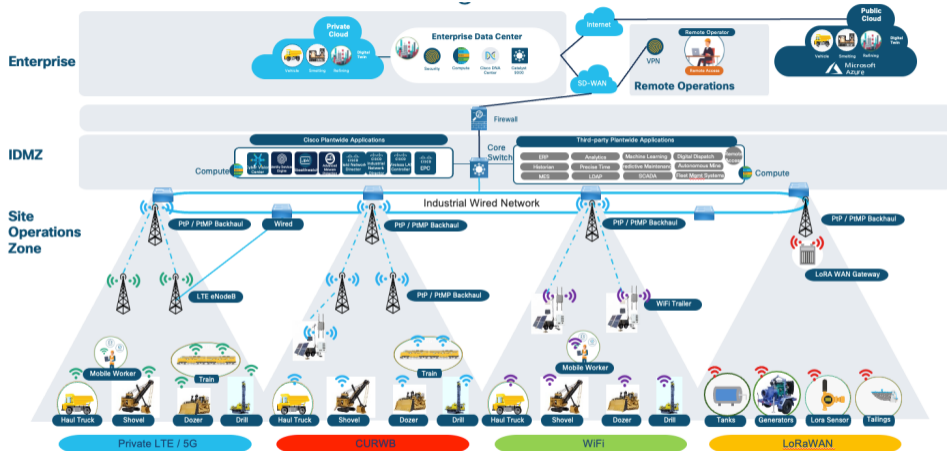


Integrated Remote Operations Center

Multi-Access Wireless



Multi-Access Wireless



Wireless Leadership



Next generation of outdoor and industrial wireless portfolio

Purpose-built dedicated
wireless client



Catalyst IW9165E
Rugged Access Point
and Wireless Client

Cisco URWB

WGB

Wireless backhaul that's
easy to deploy



Catalyst IW9165D Heavy
Duty Access Point

Cisco URWB

Premier outdoor and
industrial access



Catalyst IW9167E Heavy
Duty Access Point

Cisco URWB

Wi-Fi 6/6E-ready*

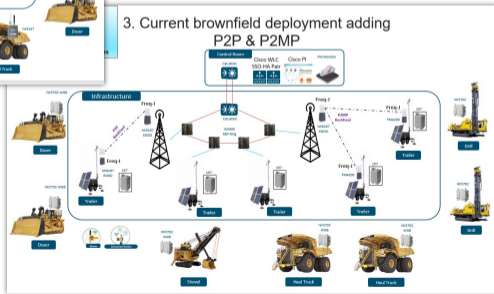
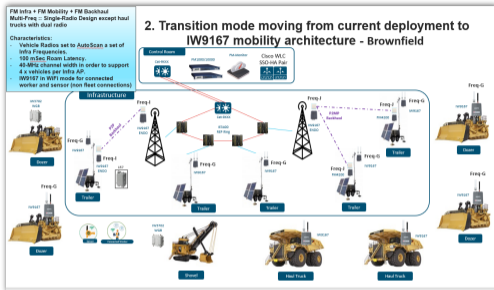
WGB

Connect more devices. Wirelessly. Reliably. Even on the move.

*Wi-Fi 6E subject to regulatory agencies regulations and approvals

With Your Installed Network

1572 + 9167





Tele-remote Dozing



The image shows an autonomous drilling rig in a tunnel. The rig is orange and black, with several large black hoses and yellow and blue flexible hoses. It is positioned in a tunnel with a curved, ribbed ceiling. The tunnel wall is marked with red numbers and symbols, including 16, 17, 18, 19, 20, 21, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 1, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50. A blue banner with the text "Autonomous Drilling" is overlaid on the top right. The bottom right corner features a digital overlay with a globe and a network of glowing blue nodes and lines.

Autonomous Drilling

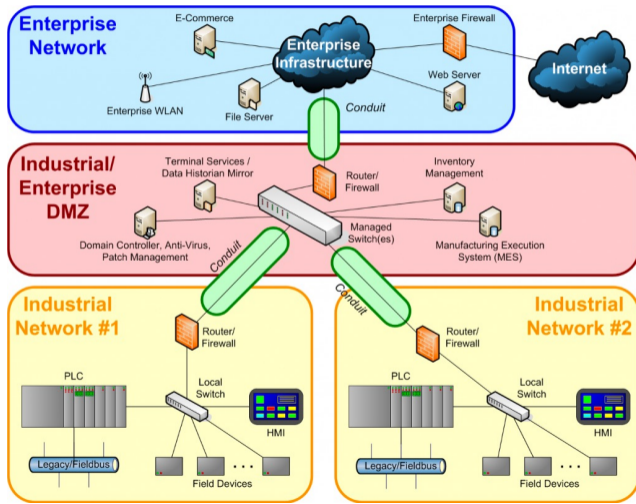
Digital
Operations

Connected
Worker

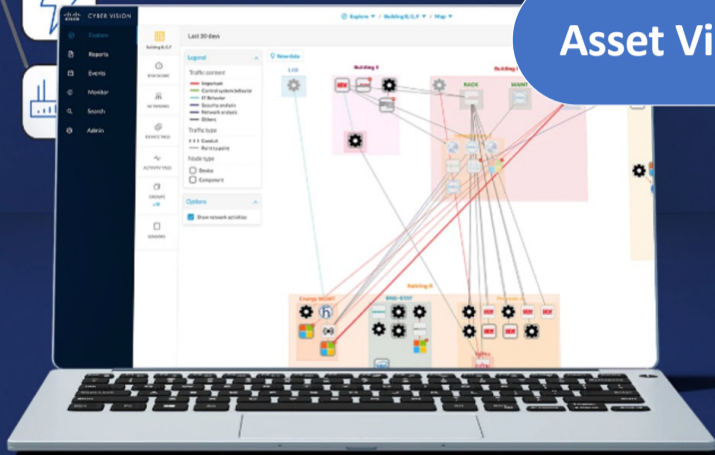
Sustainability

Security

Secure Foundation



Asset Visibility & Risk Mitigation



Industrial Threat Defense

**SECURITY
ALERT**

```
function(e, t, n) {  
  var r, l = 0,  
      o = e.length,  
      a = M(e);  
  while (o > 0) {  
    for (i = 0; i < o; i++)  
      if (r = t.apply(e[i], n), r === !1) break  
  }  
  if (r === !1) break  
  for (l in e)  
    if (r = t.apply(e[l], n), r === !1) break  
  }  
  if (a) {  
    for (i = 0; i < o; i++)  
      if (r = t.call(e[i], i, e[i]), r === !1) break  
  }  
  if (l in e)  
    if (r = t.call(e[l], l, e[l]), r === !1) break;  
  return e  
}
```

```
function(e) {  
  return null == e ? "" : b.call(e)  
}  
function(e) {  
  return null == e ? "" : (e + "").replace(C, "")  
}
```

```
function(e, t) {  
  var n = t || {};  
  return null != e && M(Object(e)) ? x.merge(n, "string" == typeof e ? [e] :
```

```
function(e, t, n) {  
  var r;  
  if (o) {  
    for (i = 0; i < o; i++)  
      if (r = t.call(t, e, n))  
        return r;  
  }  
  return t.call(t, e, n)
```

```
function(e, t, n) {  
  var r;  
  if (o) {  
    for (i = 0; i < o; i++)  
      if (r = t.call(t, e, n))  
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function(e, t, n) {  
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      if (r = t.call(t, e, n))  
        return r;  
  }  
  return t.call(t, e, n)
```

Digital
Operations

Connected
Worker

Sustainability

Security



Pervasive Voice and Video



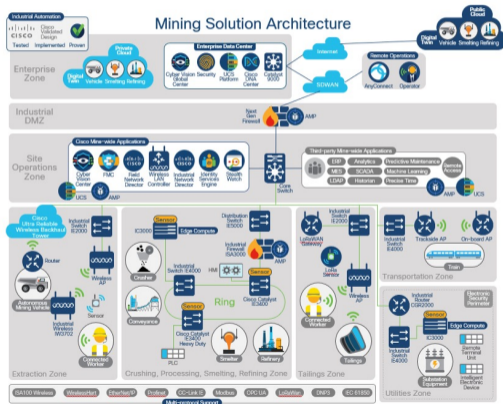
Hands Free Communication

Tested Architectures



Cisco Secure Mining Connectivity Architecture (including for Autonomous Operations)

Proven to work with: **CATERPILLAR**



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Outcomes

- Increase productivity and asset utilization with automation and autonomous operations
- Improved worker safety and productivity
- Lower cost to operate large asset fleet (haul trucks, dozers)
- Lower risk of cybersecurity threats
- Fewer safety incidents involving vehicles, shovels
- Increased innovation through end-to-end connectivity

Use cases

- Autonomous and remote operations of mining equipment with Sandvik for underground mining
- Increased safety for operators using tele-remote operations for Sandvik
- Integration of autonomous networks with other mine networks for dispatch, mobile workers and plant operations
- Secure and robust network supporting the mine process systems

New features

- Pervasive and secure 802.11 wireless network for Digital Dispatch and Autonomous Operations of haul trucks, shovels and other equipment
- Secure, reliable wired network to support the wireless network (end point to application)
- Joint testing and validation with Cisco and Sandvik in underground mining environment

Powerful Products

Get the reliable, secure connectivity you need with Cisco IoT



Cisco Ultra-Reliable Wireless Backhaul

Get ultra-reliable, low-latency wireless backhaul for mission-critical, and real-time applications anywhere you need them.



Cisco Catalyst Industrial Ethernet Switches

Connect your assets in any environment, with the cybersecurity, network automation, and agility you need.



Cisco Cyber Vision

Gain visibility to drive cybersecurity through segmentation. Detect OT threats to protect endpoints and avoid downtime.



Why Cisco?

- Trusted leader in industrial networking
- Understands both IT and OT
- Extends OT security beyond just segmentation
- Leaders in industrial wireless
- Partners to bring more complete solutions
- Large ecosystem of partners

<https://cs.co/miningportfolio>



